13 NOISE

13.1 ENVIRONMENTAL SETTING

This chapter discusses the potential noise impacts due to, and on the Project site. This chapter provides information on the existing noise environment, impacts associated with the development of the Project, impacts upon the Project site, and mitigation measures to ensure compliance with State and local criteria.

13.1.1 Characteristics of Environmental Noise

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. *Noise* can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called *A-weighting,* which is written "dBA." In general, human sound perception is such that a change in sound level of 3 dB is just noticeable; a change of 5 dB is clearly noticeable; and a change of 10 dB is perceived as doubling or halving sound level.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (L_{xx}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). Below are brief definitions of these measurements and other terminology used in this chapter.

- **Sound.** A vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Ambient Noise.** The composite of noise from all sources near and far in a given environment exclusive of particular noise sources to be measured.
- **Decibel (dB).** A unit-less measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals. The human hearing threshold is defined as zero dB.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Sound Level (L_{eq}).** The average of sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A weighted L_{eq} is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.

- **Exceedance Sound Level (L_{xx}).** The sound level exceeded during the stated percentage of the time during a sound level measurement period. For example, L_{90} is the sound level exceeded 90% of the time and L_{10} is the sound level exceeded 10% of the time.
- **Maximum and Minimum Sound Levels (L_{max} and L_{min}).** The maximum or minimum sound level measured during a measurement period.
- **Day-Night Level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 PM to 7:00 AM.
- **Vibration.** Mechanical oscillations about an equilibrium point.
- **Peak Particle Velocity (PPV).** A measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent and are treated as such in this assessment. Typical indoor and outdoor noise levels are shown in Table 13-1.

Table 13-1

Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet fly-over at 1000 feet	— 110 —	Rock band concert
Gas lawn mower at 3 feet	— 100 —	
Diesel truck at 50 feet at 50 mph	— 90 —	Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Gas lawn mower, 100 feet; Noisy urban area, daytime; Commercial area	— 70 —	Vacuum cleaner at 10 feet; Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library
Quiet rural nighttime	— 20 —	Bedroom at night
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: California Department of Transportation 1998.

13.1.2 Effects of Noise on People

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

1. Subjective effects of annoyance, nuisance, and dissatisfaction;
2. Interference with activities such as speech, sleep, and learning; and
3. 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. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. 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.

Thus, 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 level, the following relationships occur:

- A change in noise levels of 3 dBA is considered a just-perceivable difference;
- A change in level of 5 dBA is a noticeable difference, and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness(White, 1975).

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 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, between 3 dB and 4.5 dB per doubling of distance.

13.1.3 Vibration

Operation of heavy construction equipment, particularly pile driving and other impacts devices such as pavement breakers create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (PPV).

Table 13-2 summarizes typical vibration levels generated by construction equipment (Federal Transit Administration 2006).

Table 13-2

Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet
Pile driver (impact)	0.644 to 1.518
Pile drive (sonic/vibratory)	0.170 to 0.734
Vibratory roller	0.210
Hoe ram	0.089
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: FTA 2006.

Vibration amplitude attenuates (the gradual loss in intensity) over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. Equation 1, below, can be used to estimate the vibration level at a given distance for typical soil conditions (Federal Transit Administration 2006). PPV_{ref} is the reference PPV from Table 13-2:

Equation 1

$$PPV = PPV_{ref} \times (25/Distance)^{1.5}$$

Tables 13-3 and 13-4 summarize typical human response to transient and continuous vibration that is usually associated with construction activity. Equipment or activities typical of continuous vibration include: excavation equipment, static compaction equipment, tracked vehicles, traffic on a roadway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include: impact pile drivers, blasting, drop balls, "pogo stick" compactors, and crack-and-seat equipment (California Department of Transportation 2004).

Table 13-3

Human Response to Transient Vibration

PPV	Human Response
2.0	Severe
0.9	Strongly perceptible
0.24	Distinctly perceptible
0.035	Barely perceptible

Source: Caltrans 2004.

Table 13-4

Human Response to Continuous Vibration

PPV	Human Response
3.6 (at 2 Hz) to 0.4	Very disturbing
0.7 (at 2 Hz) to 0.17	Disturbing
0.10	Strongly perceptible
0.035	Distinctly perceptible
0.012	Slightly perceptible

Source: Caltrans 2004.

13.1.4 Blasting Airblast and Vibration

Blasting is unlikely, but may be required as part of Project construction activities. The two primary environmental effects of blasting are airblast and groundborne vibration. The following is a brief discussion of each of these effects.

Ground Vibration

Blasting creates seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Ground vibration can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. Vibration amplitudes decrease with increasing distance.

As seismic waves travel outward from a blast, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the PPV.

Airblast

Energy released in an explosion creates an air overpressure (commonly called an airblast) in the form of a propagating wave. If the receiver is close enough to the blast, the overpressure can be felt as the pressure front of the airblast passes. The accompanying booming sound lasts for only a few seconds. The explosive charges used in mining and mass grading are typically wholly contained in the ground, resulting in an airblast with frequency content below about 250 cycles per second, or Hz.

Because an airblast lasts for only a few seconds, use of L_{eq} (a measure of sound level averaged over a specified period of time) to describe blast noise is inappropriate. Airblast is properly measured and described as a linear peak air overpressure (i.e., an increase above atmospheric pressure) in pounds per square inch (psi). Modern blast monitoring equipment is also capable of measuring peak overpressure data in terms of unweighted dB. Decibels, as used to describe airblast, should not be confused with or compared to dBA, which are commonly used to describe relatively steady-state noise levels. An airblast with a peak overpressure of 130 dB can be

described as being mildly unpleasant, whereas exposure to jet aircraft noise at a level of 130 dBA would be painful and deafening.

Human Response to Airblast and Vibration

Human response to blast vibration and airblast is difficult to quantify. Vibration and airblast can be felt or heard well below the levels that produce any damage to structures. The duration of the event and blast frequency have an effect on human response. Blast events are relatively short, on the order of several seconds for sequentially delayed blasts. Generally, as blast duration and vibration frequency increase, the potential for adverse human response increases. Studies have shown that a few blasts of longer duration will produce a less adverse human response than short blasts that occur more often.

Table 13-5 summarizes the average human response to vibration and airblast that may be anticipated when a person is at rest in quiet surroundings. If the person is engaged in any type of physical activity, the level required for the responses indicated are increased considerably.

It is important to understand that the forgoing describes the average responses of individuals. Individual responses can fall anywhere within the full range of the human response spectrum. At one extreme are those people who receive some tangible benefit from the blasting operation and probably would not be disturbed by any level of vibration and airblast, as long as it does not damage their property. At the opposite extreme are people who would be disturbed by even barely detectable vibration or airblast. Individuals at either of these two extremes were not considered in the listing of average human response or in the impact conclusions that follow.

Table 13-5

Human Response to Airblast and Ground Vibration from Blasting

Response	Ground Vibration Range PPV (inches per second)	Airblast Range (dB)
Barely to distinctly perceptible	0.02–0.10	50–70
Distinctly perceptible to strongly perceptible	0.10–0.50	70–90
Strongly perceptible to mildly unpleasant	0.50–1.00	90–120
Mildly unpleasant to distinctly unpleasant	1.00–2.00	120–140
Distinctly unpleasant to intolerable	2.00–10.00	140–170

Source: Caltrans 2004.

13.1.5 Regional Setting

The Project site is located within Placer County on the west shoreline of Lake Tahoe, six miles south of Tahoe City along SR 89. Land uses in the Project area include the Homewood Mountain Resort (HMR) and associated recreation and commercial uses, and commercial and residential uses in the vicinity. The main sources of noise are from ski resort operations and from vehicular traffic along SR 89. Noise sources in Placer County include noise from traffic traveling on roadways within the County, aircraft overflights, and recreational activities such as boating and skiing.

13.1.6 Local Setting

Stationary Sources

Existing noise sources associated with HMR operation include automobile traffic, snowmaking, and occasional outdoor concerts. j.c. brennan & associates conducted ambient noise monitoring for existing conditions with and without snowmaking at various locations around the Project area. Table 13-6 provides ambient noise monitoring results during a period without snowmaking, and Table 13-7 provides ambient noise monitoring results during snowmaking (j.c. brennan and Associates 2007, 2009).

Table 11-4 (Historic Traffic Volumes) in Chapter 11 – Transportation, Parking, and Circulation shows historic traffic volumes in the HMR area. Large-scale concerts are normally held twice a year during the summer months. The amplification of voice and instrumental music together with applause and audience response can result in excessive noise at nearby residences. In general, snowmaking occurs at nighttime throughout the ski season, depending on the amount of natural snowfall. Snowmaking may occur continually for several days at a time early in the season, or prior to opening of the ski resort to establish an early base of snow. Snow grooming typically occurs every night during the ski season. Parking lot activities and automobile traffic occur during the times the ski facility is open, with peak periods of activity in the morning and evening hours. Snow removal occurs in the parking lots after snowfall, typically at nighttime.

Table 13-6

Continuous Ambient Noise Monitoring Results

				Average Measured Hourly Noise Levels, dBA							
				Daytime				Nighttime			
Site	Location	Date	CNEL (dBA)	L_{eq}	L_{max}	L_{50}	L_{90}	L_{eq}	L_{max}	L_{50}	L_{90}
A	Southeastern Project Boundary	March 23-25, 2007	54.2	50.8	59.6	32.2	28.5	47.0	57.1	25.5	22.2
			53.0	51.2	61.1	32.3	28.8	45.0	48.9	25.3	22.2
			51.0	51.2	60.4	34.2	30.2	40.8	43.9	27.1	23.6
B	Eastern Project Boundary	March 27-28, 2007	42.4	43.9	53.6	24.1	21.0	27.5	43.1	22.9	20.3
			46.9	43.8	59.7	34.0	30.6	39.6	47.3	30.7	26.4
C	Northeastern Project Boundary	March 23-25, 2007	62.0	50.7	67.9	41.2	37.5	56.1	53.4	35.2	32.0
			50.0	50.9	66.6	41.4	37.9	37.7	49.0	34.7	32.5
			54.1	55.8	68.1	41.5	38.0	36.7	47.0	34.8	32.9

Source: j.c. brennan & associates , 2007.

Table 13-7

Continuous Ambient Noise Monitoring Results With and Without Snowmaking

Site	Location	Date	CNEL*/dBA
A	Residential uses near South Base area	December 18, 2008	65.1*/60.0
		December 19, 2008	65.8*/62.7
		December 20, 2008	65.4*/59.9
		December 21, 2008	58.6/**
B	Eastern Project Boundary	December 18, 2008	62.5*/51.6
		December 19, 2008	61.7*/55.8
		December 20, 2008	55.0*/48.0
		December 21, 2008	52.5/**
C	Northeastern Project Boundary	December 18, 2008	50.3*/48.1
		December 19, 2008	55.9*/52.7
		December 20, 2008	43.3*/35.4
		December 21, 2008	44.7/**

Source: j.c. brennan & associates 2009.

* Indicates the CNEL with snowmaking operations. Snowmaking was continuous (24 hours each day) from December 18 through December 20, 2008.

** No snowmaking occurred during this day.

The Homewood Volunteer Ski Patrol operates in the Project area. Noise-generating activities include educational clinics, trainings, and special events.

Mobile Sources

Noise sources associated with roadways include traffic along SR 89 and local streets in the Project area. The Project will result in additional trips from employee and ski shuttles and a dial-a-ride service in the winter and summer, and a water taxi service in the summer. Table 11-4 (Historic Traffic Volumes) in Chapter 11 – Transportation, Parking, and Circulation shows historic traffic volumes in the HMR area.

Noise Sensitive Land Uses

Noise sensitive land uses are generally defined as locations where people reside or where the presence of noise could adversely affect the use of the land. Typical noise-sensitive land uses include residences, schools, hospitals, and parks. Noise-sensitive land uses that could be affected by the Project include existing residences adjacent to the South Base and the North Base areas. Recreational activities in the Project area are not considered noise-sensitive land uses because they are transitory in nature with exposure of users typically being less than one hour. The West Shore Inn is located east across SR 89 approximately 225 feet from the North Base area. The single-family homes, residential condominiums, townhomes, and employee housing in with the Project are considered sensitive receptors once constructed.

The following analysis considers the impact of Project-related noise on the surrounding environment, and the impact of noise from the surrounding environment on the Project.

13.2 REGULATORY SETTING

13.2.1 Federal

There are no federal regulations that are applicable to noise impacts of the Project. The U.S. Bureau of Mines (USBM) provides recommended limits on airblast and vibration from blasting.

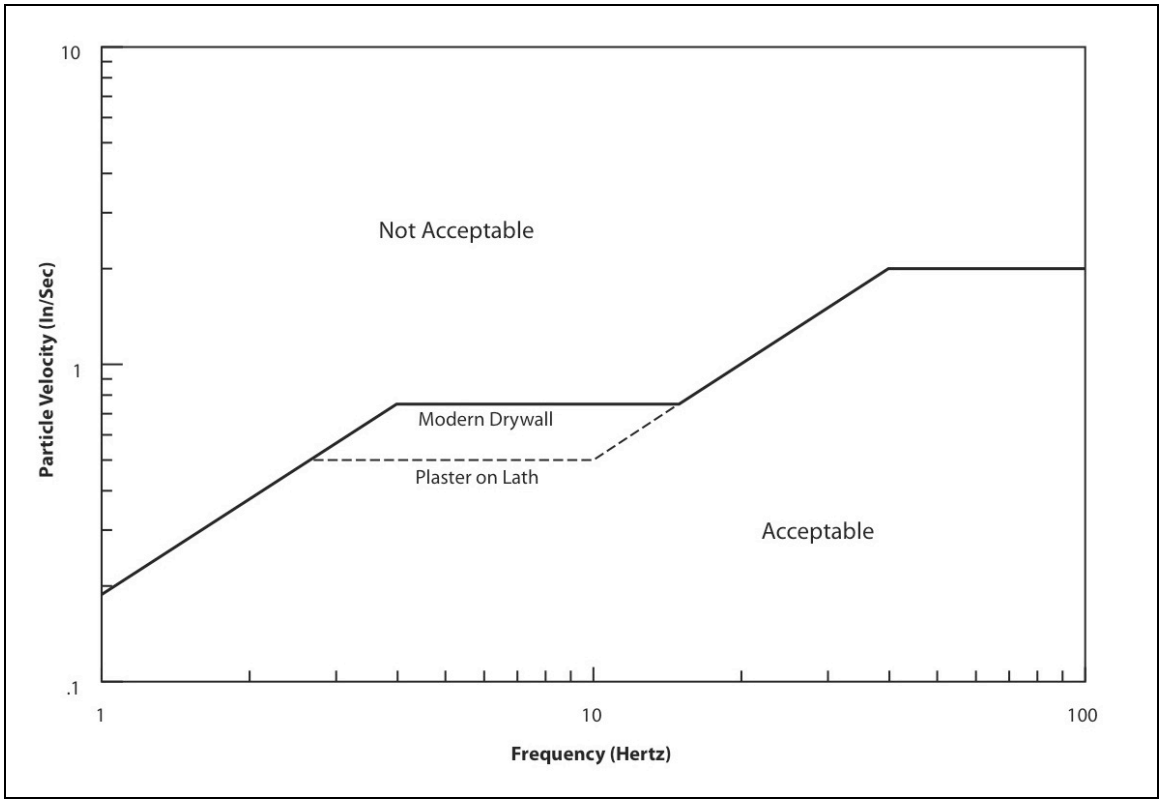
Airblast Criteria

Conventional noise criteria (for steady-state noise sources) and limits established for repetitive impulsive noise (such as for gun-firing ranges) do not apply to air overpressures from blasting. *USBM Report of Investigations 8485* (U.S. Bureau of Mines 1980a) and the regulations issued more recently by the U.S. Office of Surface Mining and Reclamation Enforcement specify a maximum safe overpressure of 0.013 psi (133 dB) for impulsive airblast when recording is accomplished with equipment having a frequency range of response of at least 2–200 Hz.

Ground Vibration Criteria

USBM Report of Investigations 8507 (U.S. Bureau of Mines 1980b) contains blasting-level criteria that can be appropriately applied to keep ground vibration well below levels that might cause damage to neighboring structures. At low-vibration frequencies, velocities of ground vibration are restricted to low levels. As vibration frequency increases, higher velocities are allowed up to a maximum of 2.00 inches per second. Figure 13-1 depicts blasting-level criteria as a function of frequency.

Figure 13-1. R18507 Alternative Blasting Level Criteria



To determine the velocity limit from Figure 13-1 that would apply to the neighboring properties, the dominant frequency ranges of the vibration must first be determined. The distribution of explosives, distance from the blast, and the nature of the transmitting medium (soil and rock) between the blast site and the affected structure affect the dominant frequency of the blast vibration. Timing between the detonations also affects the frequency, but only in relatively close proximity to the blast.

At a distance of 500–1,000 feet from the blast, vibration frequency would typically be 25–100 Hz. At a distance of 1,000–2,500 feet, the frequency would be 10–40 Hz. At a distance of 2,500–5,000 feet, the frequency would be 4–35 Hz. The PPV limits specified in Figure 13-1 range from 0.50 inch per second at 4 Hz to 2.00 inches per second at 40 Hz and above. The limit of 0.50 inches per second is considered a reasonable threshold for this Project given that many of the structures are older.

13.2.2 State

Title 24, Part 2, of the State of California Building Code establishes noise standards for all new multi-family residential units. Where exterior noise levels exceed 60 dBA CNEL/L_{dn}, the code stipulates that an acoustical analysis shall be performed and submitted before construction. The acoustical analysis is required to establish mitigation measures that will limit maximum CNEL/L_{dn} levels to 45 dBA in any inhabitable room. Although there are no generally applicable interior noise standards pertinent to all uses, California communities typically adopt a CNEL/L_{dn} standard of 45 dBA as a maximum limit on interior noise in all residential units.

13.2.3 Local

Placer County General Plan Noise Element

Placer County General Plan (Placer County 1994) goals and policies pertaining to noise are designed to protect County residents from the harmful and annoying effects of exposure to excessive noise. *General Plan* Noise Element Goal 9A and applicable policies include the following:

Goal 9.A: To protect County residents from the harmful and annoying effects of exposure to excessive noise.

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 13-8 below] 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 13-8 below].

9.A.2. The County shall require that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards of Table 9-1 [see Table 13-8 below] as measured immediately within the property line of lands designated for noise-sensitive uses.

9.A.4. Impulsive noise produced by blasting should not be subject to the criteria listed in Table 9-1 [see Table 13-8 below]. Single event impulsive noise levels produced by gunshots or blasting shall not exceed a peak linear overpressure of 122 db, or a C-weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from impulsive sounds such as gunshots and

blasting shall not exceed 60 dB LCdn or CNELC on any given day. These standards shall be applied at the property line of a receiving land use.

9.A.5. Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 9-1 [see Table 13-8 below] at existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. The requirements for the content of an acoustical analysis are listed in Table 9-2.

9.A.6. The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Figure 9-1 [see Table 13-8 below].

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, 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 13-9 below].

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 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.

9.A.10. Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 9-3 or the performance standards of Table 9-1 [see Table 13-8 below], the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. At the discretion of the County, the requirement for an acoustical analysis may be waived provided that all of the following conditions are satisfied:

a. The development is for less than five single-family dwellings or less than 10,000 square feet of total gross floor area for office buildings, churches, or meeting halls;

b. The noise source in question consists of a single roadway or railroad for which up-to-date noise exposure information is available. An acoustical analysis will be required when the noise source in question is a stationary noise source or airport, or when the noise source consists of multiple transportation noise sources;

c. The existing or projected future noise exposure at the exterior of buildings which will contain noise-sensitive uses or within proposed outdoor activity areas (other than outdoor sports and recreation areas) does not exceed 65 dB Ldn (or CNEL) prior to mitigation. For outdoor sports and recreation areas, the existing or projected future noise exposure may not exceed 75 dB Ldn (or CNEL) prior to mitigation;

d. The topography in the Project area is essentially flat; that is, noise source and receiving land use are at the same grade; and

e. Effective noise mitigation, as determined by the County, is incorporated into the project design to reduce noise exposure to the levels specified in Table 9-1 or 9-3. Such measures may include the use of building setbacks, building orientation, noise barriers, and the standard noise mitigations contained in the Placer County Acoustical Design

Manual. If closed windows are required for compliance with interior noise level standards, air conditioning or a mechanical ventilation system will be required.

9.A.11. The County shall implement 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.

9.A.12. Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3, the emphasis of such measures 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.

Table 13-8

Allowable L_{dn} Noise Levels Within Specified Zone Districts Applicable to New Projects Affected by or Including Non-Transportation Noise Sources (Table 9-1 of the *Placer County General Plan*)

Zone District of Receptor	Property Line of Receiving Use[1]	Interior Spaces[2]
Residential adjacent to industrial	60 dBA	45 dBA
Other Residential	50 dBA	45 dBA
Office/Professional	70 dBA	45 dBA
Transient Lodging	65 dBA	45 dBA
Neighborhood Commercial	70 dBA	45 dBA
General Commercial	70 dBA	45 dBA
Recreation and Forestry	70 dBA	-

Notes:

[1] Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.

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

Placer County Noise Ordinance

Placer County's noise ordinance is found in Article 9.36 in the Placer County Code. Placer County's noise ordinance prohibits the creation of any sound that results in a 5 dBA increase in the ambient noise level, as measured at the property line of any affected sensitive receptor, or any sound that exceeds the sound level standards summarized in Table 13-10.

Noise from construction activities is also addressed in Placer County's noise ordinance. Section 9.36.030 stipulates that construction activities between the hours of 6:00 AM and 8:00 PM, Monday through Friday, and 8:00 AM and 8:00 PM, Saturdays and Sundays, are exempt.

Table 13-9

Maximum Allowable Noise Exposure for Transportation Noise Sources
(Table 9-3 of the *Placer County General Plan*)

Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	603	45	--
Transient Lodging	603	45	--
Hospitals, Nursing Homes	603	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	603	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

[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 Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/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.

Table 13-10

Placer County Noise Ordinance Sound Level Standards

Sound Level Descriptor	Daytime (7:00 AM to 10:00 PM)	Nighttime (10:00 PM to 7:00 AM)
Hourly L_{eq}, dB	55	45
Maximum Level (L_{max}) dB	70	65

Tahoe Regional Planning Agency Code of Ordinances, Chapter 23: Noise Limitations

Chapter 23 (Noise Limitations) of the Tahoe Regional Planning Agency (TRPA*) Code of Ordinances* establishes noise limitations for areas within TRPA's jurisdiction. The purpose is to implement the Goal and Policies of the Noise Subelement of the Land Use Element and maintain the TRPA noise thresholds. Chapter 23 establishes noise limitations for single noise events from aircraft, marine crafts, motor vehicles, motorcycles, off-road vehicles, and oversnow vehicles. Section 23.2 states that TRPA shall use the maximum level recorded on a noise meter, L_{max}, for measuring single noise events. The noise levels set forth in Subsection 23.2.A are the maximum permissible noise levels for the types of operations listed, unless specifically exempted under Section 23.8.

Section 23.2.A establishes noise level standards (expressed in CNEL) that shall not be exceeded; projects that result in exceedences of the noise level standards shall not be approved by TRPA. In addition, Section 23.2.A stipulates that community noise levels shall not exceed levels existing on August 26, 1982, where such levels are known.

Chapter 23 also provides guidance on the measurement of noise levels (Section 23.4), noise monitoring (Section 23.5), and performance standards (Section 23.6).

Section 23.8 further states that TRPA-approved construction or maintenance projects, or the demolition of structures, are exempt from Chapter 23 (Noise Limitations) between the hours 8:00 AM and 6:30 PM.

Tahoe Regional Planning Agency Regional Plan for the Lake Tahoe Basin: Goals and Policies

The *1987 Regional Plan* for the Lake Tahoe Basin describes the needs and goals of the region and provides statements of policy to guide decision making as it affects the region's resources and remaining capacities. The *Regional Plan* with all of its elements, as implemented through agency ordinances, rules, and regulations provides for the achievement and maintenance of the adopted environmental threshold carrying capacities (thresholds) while providing opportunities for orderly growth and development. The Goals and Policies contained within the *Regional Plan* establish thresholds applicable for areas within TRPA's jurisdiction.

The *Regional Plan* Land Use Element contains noise thresholds for aircraft noise sources; single-event noise sources (i.e., noise from boats, motor vehicles, motorcycles, off-road vehicles, and snowmobiles that occur in a non-regular or non-repetitive manner); and community noise levels, which are used to determine land use compatibility. The TRPA community noise thresholds from the *Regional Plan* are summarized in Table 13-11.

Table 13-11

TRPA Community Noise Level Standards

Land Use Category/Transportation Corridor	Average Noise Level or CNEL Range (dBA)
Land Use Category	
High Density Residential Areas	55
Low Density Residential Areas	50
Hotel/Motel Areas	60
Commercial Areas	60
Industrial Areas	65
Urban Outdoor Recreation Areas	55
Rural Outdoor Recreation Areas	50
Wilderness and Roadless Areas	45
Critical Wildlife Habitat Areas	45
Transportation Corridor[1, 2]	
US 50	65[3]
SR 89, SR 207, SR 28, SR 267 and N 431	55[3]
South Lake Tahoe Airport	60[4]

Source: Tahoe Regional Planning Agency 1986

Notes:

[1] Background noise levels will not exceed the noise levels specified in this table.

[2] It shall be a policy of the TRPA Governing Board in the development of the *Regional Plan* to define, locate, and establish CNEL levels for transportation corridors.

[3] Recommended CNEL levels for transportation corridors.

[4] This recommended threshold overrides the land use CNEL thresholds and is limited to an area within 300 feet from the edge of the road.

[5] This recommended threshold applies to those areas impacted by the approved flight paths.

Tahoe Regional Planning Agency Regional Plan for the Lake Tahoe Basin: Plan Area Statements

TRPA has adopted environmental thresholds for the Lake Tahoe Region. The noise thresholds are numerical CNEL values for various land use categories and transportation corridors.

The TRPA has divided the Lake Tahoe Region into more than 174 separate Plan Areas. For each Plan Area, a "Plan Area Statement" (PAS) is made as to how that particular area should be regulated to achieve regional environmental and land use objectives. As a part of each Statement, an outdoor CNEL standard is established. The Project site is located within Plan Areas 157, 158, and 159. The noise thresholds for these Plan Areas are 55 dB CNEL, 55 dB CNEL and 60 dB CNEL, respectively.

13.3 EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

This section describes the significance criteria that will be used to determine potential noise impacts. Table 13-12 presents the evaluation criteria for potential noise impacts. Table 13-12 also cites the source from which the point of significance was derived.

Table 13-12

Evaluation Criteria with Point of Significance—Noise

Evaluation Criteria	Agency Requirements		Point of Significance[1]
	Placer County	TRPA	
NOI-1. Will construction (including blasting activities) of the Project expose the public to high noise levels or vibration?	Daytime (7:00 AM to 10:00 PM) construction noise exceeding 55 dBA, L_{eq} and nighttime (10:00 PM to 7:00 AM) construction noise exceeding 45 dBA, L_{eq} outside of the exempted hours of 6:00 AM to after 8:00 PM, Monday to Friday. Daytime (7:00 AM to 10:00 PM) construction noise exceeding 55 dBA, L_{eq} and nighttime (10:00 PM to 7:00 AM) construction noise exceeding 45 dBA, L_{eq} outside of the exempted hours of 8:00 AM to after 8:00 PM, Saturday and Sunday.	a) Before 8:00 AM and after 6:30 PM b) 1 inch per second peak particle velocity measured at property line or "yard" line[1]	a) Daytime (7:00 AM to 10:00 PM) construction noise exceeding 55 dBA, L_{eq} and nighttime (10:00 PM to 7:00 AM) construction noise exceeding 45 dBA, L_{eq} outside of the exempted hours of 6:00 AM to after 8:00 PM, Monday to Friday. Daytime (7:00 AM to 10:00 PM) construction noise exceeding 55 dBA, L_{eq} and nighttime (10:00 PM to 7:00 AM) construction noise exceeding 45 dBA, L_{eq} outside of the exempted hours of 8:00 AM to after 8:00 PM, Saturday and Sunday. b) 1 inch per second peak particle velocity measured at property line or "yard" line[2].
NOI-2. Will operation and maintenance of the Project expose the public to high noise levels (e.g., above CNEL permitted in the applicable Plan Area Statements, Community Plan or Master Plan) from transportation sources?	Exterior noise levels greater than 50 dBA, L_{dn}/CNEL at the property line of the receiving land use.	Greater than applicable Plan Area or Community Plan CNEL limits or significant increase in noise (>3 dB for areas in Plan Area attainment or any increase in noise for Plan Areas out of attainment) measured at property line or "yard" line[2].	Exterior noise levels greater than 50 dBA, L_{dn}/CNEL at the property line of the receiving land use, or greater than applicable Plan Area or Community Plan CNEL limits or significant increase in noise (>3 dB for areas in Plan Area attainment or any increase in noise for Plan Areas out of attainment) measured at property line or "yard" line[2].
NOI-3. Will noise from Project concerts, snowmaking, or other resort operations effect existing or proposed noise-sensitive land uses?	Exterior noise levels greater than 50 dBA, L_{dn}/CNEL at the property line of the receiving land use.	Greater than applicable Plan Area or Community Plan CNEL limits or significant increase in noise (>3 dB for areas in Plan Area attainment or any increase in noise for Plan Areas out of attainment) measured at property line or "yard" line[2].	Exterior noise levels greater than 50 dBA, L_{dn}/CNEL at the property line of the receiving land use, or greater than applicable Plan Area or Community Plan CNEL limits or significant increase in noise (>3 dB for areas in Plan Area attainment or any increase in noise for Plan Areas out of

Evaluation Criteria	Agency Requirements		Point of Significance[1]
	Placer County	TRPA	
			attainment) measured at property line or "yard" line[2].

[1] Point of significance represents the most stringent of the two agency requirements.

[2] The property or yard line of the affected receptor whichever is closer to the affected structure.

In 2010, the California Supreme Court clarified that "[n]either CEQA nor the CEQA Guidelines mandates a uniform, inflexible rule for determination of the existing conditions baseline. Rather, an agency enjoys the discretion to decide, in the first instance, exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence." The Court limited this flexibility by further stating that "[a]n approach using hypothetical allowable conditions as the baseline results in 'illusory' comparisons that 'can only mislead the public as to the reality of the impacts and subvert full consideration of the actual environmental impacts, a result at direct odds with CEQA's intent." (Communities for a Better Environment v. South Coast Air Quality Management District (2010) 48 Cal.4th 310).

Past practice in traffic impact analysis undertaken to help determine the significance of a project's air quality impact has often relied upon a "future no-project" scenario as its CEQA baseline. The project's impact is derived from the difference between "future with-project" and "future no-project" scenarios. This approach has been used because it offers a means of comparing with- and without-project scenarios that share common assumptions for future growth and improvements. It may not, however, conform to the Communities for a Better Environment decision. In fact, that approach was invalidated in late 2010 in the Sixth District Court of Appeal's decision in Sunnyvale West Neighborhood Assn. v. City of Sunnyvale (2010) —Cal.App.4th—.

In recognition of the Communities for a Better Environment and Sunnyvale West decisions, this EIR uses the baseline year of 2008 to evaluate impacts on air quality under CEQA. Data on existing noise sources, such as mobile (e.g., traffic) and stationary (e.g., snowmaking) sources are used to quantify noise generated by the Pproposed Project, assuming it was constructed in 2008. The estimated noise is compared to existing conditions without the Project to determine the significance of the noise impact. This approach complies with the intent of the Communities for a Better Environment by providing a significance determination based on the change from existing conditions.

Determining the significance of an impact by comparing anticipated project conditions to existing conditions is a relatively straightforward analysis for most impacts. However, the noise impact of a project that will not be operational for years is not easily compared to existing conditions. By the time the Project is operational in 2021 there will be new infrastructure and background growth in the region unrelated to the Project that will impact area roads and noise sources. The 2008 conditions modeled for the Project and used as the basis for the noise analysis do not include reasonable assumptions about new infrastructure, background growth, and future noise generation factors. As a result, although this analysis provides a comparison between existing conditions and existing conditions with the Project in place, the resultant significance determination will likely overstate the extent of change in the noise environment that is a direct result of the Project.

Note that the existing conditions analysis is intended to satisfy the Communities for a Better Environment and Sunnyvale West decisions for the CEQA determination and does not affect the TRPA analysis, which is based on the National Environmental Policy Act (NEPA). The significance of the impacts under buildout conditions in comparison to the future no project scenario is disclosed alongside the existing conditions analysis to satisfy TRPA requirements.

13.4 ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION

13.4.1 No Project (Alternative 2)

No Project (Alternative 2) represents the existing land use configuration, which would remain unchanged in the future. No construction activity would take place, and therefore construction noise was not evaluated. Because the existing land uses would not change under No Project (Alternative 2), operational noise under the No Project (Alternative 2) is not discussed separately below.

13.4.2 Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 4, 5 and 6

The Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 4, 5, and 6 are similar in terms of the impacts they would have on noise and where appropriate are analyzed as a single unit below. Alternative 1A is similar to the Proposed Project, but includes four fewer residential condos. Where appropriate, the Proposed Project (~~and~~ Alternative~~s~~ 1/1A) and Alternative 3 are therefore analyzed as a single unit. ~~and will be referred to as Proposed Project (Alternative 1) and Alternatives 1A/3~~

13.4.3 Construction Noise

Specific construction equipment is not known at this time. Therefore, a default list of construction equipment listed in Appendix M of Chapter 12 - Air Quality was used for this analysis. Typical noise levels (dBA) from construction equipment are shown in Table 13-13 below. In order to evaluate a reasonable worst-case scenario, noise from the three loudest pieces of equipment likely to operate at the same time has been evaluated. These include a paver, a bulldozer, and a truck. Noise levels were entered into a spreadsheet model based on FTA 2009 guidelines (Federal Transit Administration 2009) to generate noise levels at nearby receptors.

Table 13-13

Construction Equipment Noise

Equipment	Typical Noise Level (dBA) 50 feet from Source
Grader	85
Bulldozers	85
Truck	88
Loader	85
Roller	74
Air Compressor	81
Backhoe	80
Pneumatic Tool	85
Paver	89
Pile Driver	101
Concrete Pump	82

Source: Federal Transit Administration 2009.

Pile driving is not anticipated because current schematic designs indicate perimeter and spread footing foundations rather than piles (Tirman, pers. comm.). However, in order to represent a worst-case scenario it was assumed that a pile driver would be used.

13.4.4 Construction Vibration and Airblast

Construction will potentially require pile driving and blasting, so the impacts of vibration and airblast during construction were evaluated. To assess the damage potential from ground vibration induced by construction equipment, PPV was calculated using Equation 1 [$PPV = PPV_{ref} \times (25/Distance)^{1.5}$] and compared to Tables 13-14 and 13-15 below. Table 13-2 above summarizes vibration source levels for construction equipment.

Boulders below grade may require blasting. However, it is anticipated that techniques other than blasting will be used to break up boulders. Blasting will be limited if required (Tirman pers. comm.). Details about where and when blasting would occur were not available. Therefore, vibration and airblast from blasting was calculated using methods recommended by the California Department of Transportation 2004 and assuming a 30 lb charge. Although blasting is not likely to occur, effects were quantified to describe a worst-case scenario.

Table 13-14

Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inches per second)	
	Transient Sources[1]	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Source: California Department of Transportation 2004.

Note:

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

Table 13-15

Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (inches per second)	
	Transient Sources[1]	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Source: California Department of Transportation 2004.

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

13.4.5 Operational Noise

Operational noise includes noise from both mobile and stationary sources. Traffic noise was evaluated by entering existing and future traffic segment volumes provided by the Project traffic engineers (Fehr & Peers 2009, see Chapter 11 – Transportation, Parking, and Circulation) into a spreadsheet model based on the *FHWA's Traffic Noise Model (TNM)*. In addition to the automobile traffic there will be additional trips generated by the dial-a-ride service, employee and ski shuttles, and a water taxi. Impacts from the employee shuttle were evaluated by using the *FTA Noise Lookup Tables* (Federal Transit Administration 2006). Impacts from the skier shuttle, dial-a-ride, and water taxi vehicle trips are discussed qualitatively because these trips will be consistent with existing traffic and boating activity in the area.

Noise from stationary sources includes noise generated by the ski resort operations during winter and by summer concerts at the outdoor amphitheatre. The main source of noise from on-site ski resort activities will be from snowmaking. Impacts on noise from snowmaking are based on noise monitoring conducted for the *Environmental Noise Assessment* by j.c. brennan & associates (j.c. brennan & associates 2009). j.c. brennan & associates conducted noise measurements of existing snowmaking equipment used at HMR, and results are shown above in Table 13-7. Noise level data was collected at three locations for three different types of snowmaking guns that would be used in the improved snowmaking system under the Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6. The monitoring locations were at 50 feet in front, side, and rear of the equipment. Table 13-16 shows the results of the noise level data associated with the snowmaking equipment. Other stationary sources including the outdoor amphitheatre are discussed qualitatively.

Table 13-16

Snowmaking Equipment Noise Levels

Snowmaking Equipment	Type	Noise Levels at Position		
		Front @ 50'	Side @ 50'	Rear @ 50'
Super Polecat 25 horsepower	Fan Gun	75 dBA	71 dBA	77 dBA
Super Wizzard 25 horsepower	Fan Gun	76 dBA	70 dBA	76 dBA
Viking Snowtower	Fan Gun	78 dBA	70 dBA	65 dBA

Source: j.c. brennan & associates 2009.

Table 13-17

Calculated Construction Noise Levels

Distance Between Source and Receiver (feet)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	0	92	91
100	-6	-2	85	83
150	-10	-3	80	78
200	-12	-4	77	75
225	-13	-4	75	74
300	-16	-5	72	71
400	-18	-6	69	67
500	-20	-6	66	65
600	-22	-7	64	63
700	-23	-7	62	61
800	-24	-7	61	59
900	-25	-8	60	58
1,000	-26	-8	58	57
1,200	-28	-9	56	55
1,400	-29	-9	55	53
1,600	-30	-9	53	51
1,800	-31	-10	52	50
2,000	-32	-10	50	49
2,500	-34	-10	48	46
3,000	-36	-11	46	44

13.4.6 Construction Noise Impacts

Impact: **NOI-1. Will construction (including blasting activities) of the Project expose the public to high noise levels or vibration?**

Analysis: *Significant Impact; Proposed Project (Alternative 1/1A), and Alternatives ~~1A,~~ 3, 5, and 6*

Noise impacts resulting from construction depend on the noise generated by construction equipment, the timing and duration of noise generating activities, and the distance and shielding between construction noise sources and noise sensitive areas. Noise levels from excavation and grading activities will typically be in the range of 79 to 84 dBA (L_{eq}) at 50 feet. Noise from building construction (foundations, structure, finishing) will typically be in the range of 75 to 78 dBA (L_{eq}) at 50 feet from the source (U.S. Environmental Protection Agency 1971). Combined noise from the three loudest pieces of equipment likely to be used would reach 93 dB, L_{eq} at 50 feet. In order to evaluate noise from construction activity, the three loudest pieces of equipment in Table 13-13 were combined in order to represent a worst-case scenario.

Construction noise levels attenuate at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain often result in much lower construction noise levels at distant receptors. Table 13-17 shows the calculated maximum (L_{max}) and L_{eq} sounds levels that would result from Project construction.

The nearest residences to the North Base area are located along Sacramento Avenue south of the existing gravel parking lot, as close as 100 feet from the Project area. Residences along Silver Street are as close as 150 feet from the Project area, and residences east of SR 89 are approximately 200 feet from the Project area. As shown in Table 13-17, noise at these locations could reach 85 dBA, 80 dBA, and 77 dBA, respectively.

The nearest residences to the South Base area are located along Tahoe Ski Bowl Way and Lagoon Road east of the existing parking lots and maintenance facility, as close as 100 feet to the Project area. As shown in table 13-17, maximum noise levels at adjacent residences could reach 85 dBA without acoustical shielding from structures or terrain.

In addition, pile drivers could be used under the Proposed Project (Alternative 1/1A) and Alternatives 3, 5, and 6. As shown in Table 13-18, noise from pile drivers could be as loud as 93 dBA at 100 feet from the source.

Construction would occur seasonally between May 2011 and December 2020 at various locations throughout the Project area and is anticipated to occur during normal working hours. Construction would occur at particular locations for only a fraction of the time between May 2011 and December 2020 (i.e. construction would not occur over the entire Project area for nine continuous years). Appendix N details the estimated construction schedule.

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration. Vibration from non-impact construction activity is typically below the threshold of perception when the activity is more than 50 feet from the receptor. Additionally, vibration from these activities will be of limited duration and will end when construction is completed. Vibration from non-impact equipment would be less than 0.10 inches per second at 25 feet. Vibration from pile driving, assuming a typical pile driver (Table 13-2), would be less than 0.5 inches per second (the damage threshold for older buildings and residences in Table 13-14) within about 30 feet of pile driving.

Vibration and airblast would also occur if blasting techniques are used. Tables 13-19 and 13-20 below depict calculated PPV and PSI at three distances from Project construction areas to represent potential impacts at the nearest sensitive receptors under a worst-case scenario.

Construction noise in Placer County is exempt from 6:00 AM to 8:00 PM. Construction noise outside of these hours would be significant if it exceeds 55 dBA from 8:00 PM to 10:00 PM or 45 dBA from 10:00 PM to 6:00 AM. Noise from pile driving would reach maximum levels of 93 dBA at the nearest residences to the Project area. Placer County does not have thresholds for vibration. As stated in Table 13-14, an appropriate damage potential threshold at older residential structures should be 0.3 PPV (inches per second). As stated in Table 13-15, strongly perceptible PPV would be 0.10 inches per second.

Construction noise from 8:00 AM to 6:30 PM is exempt under the TRPA Codes of Ordinances Chapter 23 – Noise Limitations.

Table 13-18

Calculated Noise Levels from Pile Driver

Distance Between Source and Receiver (feet)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	0	101	99
100	-6	-2	93	92
150	-10	-3	89	87
200	-12	-4	85	84
225	-13	-4	84	82
300	-16	-5	81	79
400	-18	-6	77	76
500	-20	-6	75	73
600	-22	-7	73	71
700	-23	-7	71	69
800	-24	-7	69	68
900	-25	-8	68	67
1,000	-26	-8	67	65
1,200	-28	-9	65	63
1,400	-29	-9	63	62
1,600	-30	-9	62	60
1,800	-31	-10	60	59
2,000	-32	-10	59	58
2,500	-34	-10	57	55
3,000	-36	-11	54	53

Table 13-19

Calculated Vibration from Blasting

Distance (feet)	Calculated PPV (inches/second)
150	0.501
225	0.262
300	0.165

Source: Caltrans 2004.

Table 13-20

Calculated Airblast from Blasting

Distance (feet)	Calculated PSI (pounds per square inch)	Calculated dB
150	0.00715	127.8
225	0.00440	123.6
300	0.00311	120.6

Source: Caltrans 2004.

The results in Tables 13-19 and 13-20 indicate that blasting with a 30 pound charge would result in a maximum of 0.501 PPV (inches per second) and 127.8 dB would occur at the nearest residence. The predicted vibration level is below the TRPA thresholds of 1.0 PPV inches per second for vibration and the recommended threshold of 133 dB for blasting. However, depending on the location of blasting and the size of the charge, there is potential for blasting to result in vibration that exceeds the 0.5 inches per second damage threshold for older buildings and residential structures indicated in Table 13-14. Consequently, vibration and airblast impacts from blasting are potentially significant. Mitigation Measures NOI-1a and NOI-1b would reduce this impact to less than significant. Vibration from pile driving is not expected to exceed 0.5 in/sec beyond 30 feet from pile driving is therefore considered to be less than significant.

As shown in Table 13-17, construction noise could reach up to 85 dBA at the nearest residences, and if pile drivers are used noise could reach up to 93 dBA. Using the most stringent thresholds, noise from construction activity occurring within the hours of 8:00 AM to 6:30 PM is exempt. Therefore, if construction activity occurs outside of these hours, this impact would be considered significant and mitigation would be required. Detailed information on the construction schedule is not available. Because it is possible that construction activity could take place outside of the exempted hours, this impact is considered significant and Mitigation Measure NOI-1c is required to reduce this impact.

Mitigation: **Mitigation Measure NOI-1a: Employ Measures to Reduce Airblast and Vibration from Blasting.**

Contractors shall retain a qualified blasting specialist to develop a site-specific blasting program report to assess, control, and monitor airblast and ground vibration from blasting. The report shall be reviewed and approved by the County prior to issuance of a blasting permit. The report shall include, at minimum, the following measures:

- The contractor shall use current state-of-the-art technology to keep blast-related vibration at offsite residential, other occupied structures and well sites as low as possible, consistent with blasting safety. In no instance shall blast vibration, measured on the ground adjacent to a residential, other occupied structure, or well site be allowed to exceed the frequency-dependent limits specified in the Alternative Blasting Level Criteria contained in USBM Report of Investigations 8507.
- The project contractor shall use current state-of-the-art technology to keep airblast at offsite residential and other occupied structures as low as possible. In no instance shall airblast, measured at a residence or other occupied structure, be allowed to exceed the 0.013-psi (133-dB) limit recommended in USBM Report of Investigations 8485.
- The project contractor shall monitor and record airblast and vibration for blasts within 1,000 feet of residences and other occupied structures to verify that measured levels are within the recommended limits at those locations. The contractor shall use blasting seismographs containing three channels that record in three mutually perpendicular axes and which have a fourth channel for recording airblast. The frequency response of the instrumentation shall be from 2 to 250 Hz, with a minimum sampling rate of 1,000 samples per second per channel. The recorded data must be such that the frequency of the vibrations can be determined readily. If blasting is found to exceed specified levels, blasting shall cease, and alternative blasting or excavation methods shall be employed that result in the specified levels not being exceeded.
- Airblast and vibration monitoring shall take place at the nearest offsite residential or other occupied structure. If vibration levels are expected to be lower than those required to trigger the seismograph at that location, or if permission cannot be obtained to record at that location, recording shall be accomplished at some closer site in line with the structure. Specific locations and distances where airblast and vibration are measured shall be documented in detail along with measured airblast and vibration amplitudes.

Mitigation Measure NOI-1b: Conduct Building Inspection prior to Blasting.

HMR shall inspect any existing buildings located within a 500-foot radius of planned blasting activities. The inspection shall document preexisting conditions. The preinspection survey of the buildings shall be completed with the use of photographs, videotape, or visual inventory, and shall include inside and outside locations. All existing cracks in walls, floors, driveways, etc., shall be documented with sufficient detail for comparison during and upon completion of blasting activities to determine whether actual vibration damage has occurred. The results of both surveys shall be provided to the County for review and acceptance of conclusions. Should damage occur, construction operations shall be halted until the problem activity can be identified. Once identified, the problem activity shall be modified to eliminate the problem and protect the adjacent

buildings. Any damage to nearby buildings shall be repaired back to the pre-existing condition.

Mitigation Measure NOI-1c: Employ noise-reducing construction practices.

HMR shall design and implement measures to reduce noise from construction. HMR will prepare a noise control plan that will identify feasible measures that can be employed to reduce construction noise, including enclosing or shielding noise-generating equipment and locating equipment as far as practical from sensitive uses would also be effective. Implementation of such measures is anticipated to provide up to 10 dB of noise reduction. The noise control plan shall employ noise-reducing construction practices such that construction noise does not exceed: (1) 55 dBA Leq between the hours of 8:00 PM to 10:00 PM and 45 dBA between the hours of 10:00 PM to 6:00 AM on weekdays; or (2) 55 dBA between the hours of 8:00 PM and 10:00 PM and 45 dBA between the hours of 10:00 PM and 8:00 AM on weekends. The plan must be approved by the TRPA and Placer County prior to issuing a Grading Permit. The noise control plan may include, and is not limited to, the following measures:

- Gasoline or diesel engine construction equipment shall have sound-control devices that are at least as effective as those originally provided by the manufacturer and that equipment be operated and maintained to minimize noise generation.
- Prohibit gasoline or diesel engines from having unmuffled exhaust.
- Locate noise-generating equipment as far as practical from noise-sensitive uses.
- Use noise-reducing enclosures around noise-generating equipment.
- Schedule substantial noise-generating activity, and blasting in particular, during daytime or early evening hours.
- Place temporary barriers between noise sources and noise-sensitive land uses or taking advantage of existing barrier features (terrain, structures, edge of trench) to block sound transmission.
- Cover trenches where blasting will occur.
- Prohibit backup alarms and provide an alternate warning system, such as a flagman or radar-based alarm that is compliant with State regulations.

After Mitigation: *Less than Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6*

Mitigation Measures NOI-1a and NOI-1b reduce vibration impacts from blasting. Mitigation Measure NOI-1c reduces construction noise levels below the County thresholds of 55 dBA L_{eq} between the hours of 8:00 PM to 10:00 PM and 45 dBA L_{eq} between the hours of 10:00 PM to 6:00 AM on weekdays, and 55 dBA between the hours of 8:00 PM and 10:00 PM and 45 dBA between the hours of 10:00 PM and 8:00 AM on weekends.

Analysis: *Significant Impact; Alternative 4*

Alternative 4 entails closing the ski resort and creating up to 16 estate residential lots and one commercial lot. A majority of the estate home lots would be located on the mountain of the ski resort. Pile driving and blasting would not occur under Alternative 4. Because

the nearest residences to construction activities will be at least 50 feet from on-site construction activity, the vibration impact of construction activity is considered less than significant.

To evaluate noise from construction activity, the three loudest pieces of equipment in Table 13-13 were combined in order to represent a worst case scenario. Construction noise potential under Alternative 4 would be similar to noise under the Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6 (Table 13-17) but would be limited to the commercial lot at the North Base area and the home sites which are generally located on the mountain and away from adjacent land uses.

Residences are located within 150 feet of the North Base area commercial lot. Maximum noise levels at the residences could reach 80 dBA without acoustical shielding from structures or terrain. Residences are located within 300 feet from the potential home site located at the South Base area, and maximum noise levels could reach 72 dBA without acoustical shielding. Construction would occur from May 2011 through October 2011 and would typically occur during normal working hours. Appendix N includes a detailed construction schedule.

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration. Vibration from non-impact construction activity is typically below the threshold of perception when the activity is more than about 50 feet from the receptor. Additionally, vibration from these activities will be of limited duration and will end when construction is completed.

Construction noise in Placer County is exempt from 6:00 AM to 8:00 PM. Construction noise outside of these hours would be significant if it exceeds 55 dBA from 8:00 PM to 10:00 PM or 45 dBA from 10:00 PM to 6:00 AM. Placer County does not have thresholds for vibration. As stated in Table 13-14, an appropriate damage potential threshold at older residential structures should be 0.3 PPV (inches per second). As stated in Table 13-15, strongly perceptible PPV would be 0.10 inches per second.

Construction noise from 8:00 AM to 6:30 PM is exempt under the *TRPA Codes of Ordinances Chapter 23 – Noise Limitations*.

Using the most stringent thresholds, noise from construction activity from 8:00 AM to 6:30 PM is exempt. If construction activity occurs outside of these hours, this impact would be considered significant and mitigation would be required. Detailed information on the hours construction would take place is currently not available. Because it is possible that construction activity could take place outside of the exempted hours, this impact is considered significant and mitigation is required to reduce this impact to less than significant.

Mitigation: **Mitigation Measure NOI-1c: Employ noise-reducing construction practices**

After Mitigation: *Less than Significant Impact; Alternative 4*

Mitigation Measure NOI-1c reduces construction noise levels below the County thresholds of 55 dBA L_{eq} between the hours of 8:00 PM to 10:00 PM and 45 dBA L_{eq} between the hours of 10:00 PM to 6:00 AM on weekdays, and 55 dBA between the hours of 8:00 PM and 10:00 PM and 45 dBA between the hours of 10:00 PM and 8:00 AM on weekends.

13.4.7 Operational Noise Impacts

Operational impacts include stationary sources such as noise from snowmaking, and mobile sources such as traffic and additional trips generated by the shuttle, dial-a-ride, and water taxi.

Impact: **NOI-2. Will operation and maintenance of the Project expose the public to high noise levels (e.g., above CNEL permitted in the applicable Plan Area Statements, Community Plan or Master Plan) from transportation sources?**

Analysis: *Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A and~~ 3*

Residences are located throughout the surrounding roadway network. In addition, new residences will be built with the Proposed Project (Alternative 1/1A) and Alternatives ~~1A and~~ 3. Significant noise impacts are identified where existing noise sensitive receptors would be exposed to noise increases that exceed the noise significance thresholds.

Traffic-related noise will be generated by existing and anticipated traffic on SR 89. The Project will contribute to traffic on SR 89, and will therefore contribute to traffic-related noise. Traffic generated by the Project is a small proportion of the overall amount of traffic on SR 89 (see Chapter 11 – Transportation, Parking, and Circulation). In addition, as shown in Table 11-4 (Historic Traffic Volumes) in Chapter 11 – Transportation, Parking, and Circulation, historic traffic volumes in the HMR area are steadily decreasing. Therefore, because traffic-related noise is a function of all traffic on the roadway (existing and Project-related traffic), the focus is on noise levels that will occur if the Project is approved, in conjunction with existing and anticipated traffic.

Traffic noise levels on SR 89 were calculated based on traffic noise modeling using the *FHWA TNM*. The calculated traffic noise levels at 100 feet from the centerline of SR 89 under future traffic conditions are summarized in Table 13-21.

The Project will generate trips from employee and ski shuttles, dial-a-rides, and water taxis. The employee shuttle buses are planned to operate during both the summer and winter seasons. The employee shuttle will be a 20-25 passenger van and will serve the employee housing areas on the North Shore, which will reduce employee vehicle traffic. Shuttle and dial-a-ride vehicles will be smaller vans, such as a 195 horsepower Chevrolet Express. Scheduled shuttle service is planned to operate between Homewood and Tahoe City seven days a week from 7:00 AM to 11:00 PM every hour.

Dial-a-ride service will operate during the summer and winter seasons from 8:00 AM to 6:30 PM. Service will be provided in the winter as far north as Tavern Shores and Granlibakken, and as far south as Rubicon Bay (excluding the Talmont and Upper Ward Canyon areas). Summer service will accommodate rides to/from the HMR in an area bounded by Granlibakken Road to the north and Sugar Pine Point to the south.

The water taxi will likely be a 20-25 passenger hybrid vehicle and will operate in the summer months between Homewood and Tahoe City. This service is planned to operate seven days a week between 9:00 AM and 8:00 PM at least every hour. Vehicle trips from the shuttles and dial-a-ride will run on local roadways. Noise from the employee shuttle can reach 45 L_{eq} on local roadways (Federal Transit Administration 2006). The shuttles, dial-a-rides, and water taxis will help to minimize single-passenger automobile trips.

Table 13-21

Noise Levels for Existing plus the Project (Alternatives 1/1A) and Alternative 3, 1A, &3.

Segment along SR 89	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
	Existing No Project	Existing + Alts. 1/1A, 1A, and &3	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.5	55.4	-0.2	102.6	55.4	-	-
SR 28 to Granlibakken	62.8	63.0	0.2	291.3	146.3	77.5	38.3
Granlibakken to Sequoia	62.0	62.2	0.2	261.4	130.7	69.8	-
Sequoia to Pineland	61.6	61.9	0.2	249.4	125.3	66.3	-
Pineland to Grand	62.2	62.5	0.3	262.8	135.3	74.0	36.3
Grand to Park	62.1	62.4	0.3	258.6	132.9	72.7	35.4
Park to Silver	61.1	61.5	0.4	235.5	119.1	63.2	-
Silver to Homewood Driveway	61.1	61.4	0.3	235.1	118.9	63.1	-
Homewood Driveway to Fawn	61.1	61.4	0.3	235.0	118.8	63.1	-
Fawn to Tahoe Ski Bowl Way	61.3	61.6	0.2	239.7	120.9	64.1	-
Tahoe Ski Bowl Way to Elm Street	62.1	62.3	0.2	255.6	131.1	71.9	34.8
Elm Street to Pine Street	60.9	61.1	0.2	225.5	114.3	60.9	-

Noise Levels for 2030 plus Project (Alternative 1/1A) and Alternative 3Alternatives 1&3.

Segment along SR 89	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
	2030 No Project	2030 + Alts. 1&3	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.6	55.5	-0.1	101.4	54.8	–	–
SR 28 to Granlibakken	66.4	66.6	0.2	468.5	232.5	117.7	62.5
Granlibakken to Sequoia	65.6	65.8	0.2	419.2	208.9	105.9	56.9
Sequoia to Pineland	65.1	65.4	0.3	394.6	196.2	99.3	53.9
Pineland to Grand	67.6	66.0	-1.6	407.5	208.0	108.3	59.2
Grand to Park	65.4	65.9	0.5	401.2	204.9	106.7	58.5
Park to Silver	64.5	64.8	0.3	365.5	182.6	93.6	49.9
Silver to Homewood Driveway	64.5	64.8	0.3	363.9	181.8	93.3	49.7
Homewood Driveway to Fawn	64.5	64.8	0.3	364.2	182.0	93.3	49.8
Fawn to Tahoe Ski Bowl Way	63.7	64.9	1.2	371.7	185.5	94.7	50.8
Tahoe Ski Bowl Way to Elm Street	65.5	66.5	1.0	440.9	224.2	116.7	63.3
Elm Street to Pine Street	64.3	64.5	0.2	350.4	174.8	90.5	47.7

In Placer County, noise from mobile sources would be significant if exterior noise levels are greater than 50 dBA, L_{dn}/CNEL at the property line of the receiving land use. The *TRPA Community Plan* regulates noise for transportation corridors. For SR 89, noise is regulated to 55 dBA within 300 feet of the roadway. Noise from mobile sources would be significant if exterior noise levels are greater than 55 dBA within 300 feet of the roadway, or if the change in noise is greater than 3 dBA. In addition, for Plan Areas that are out of attainment, any increase in noise would be significant.

Plan Areas 156, 157, and 160 have noise standards of 55, 55, and 60 dBA, respectively. As shown in Table 13-21, noise exceeds 55 dBA (the more stringent threshold) even without the Project. Based on a personal communication with TRPA staff, any increase in noise, relative to future no project conditions, would be significant because the standard is currently exceeded. Therefore, it is necessary to fully mitigate/offset the incremental increase in noise, relative to future no project conditions (Emmett, pers. comm.). Using an existing baseline indicates that traffic noise levels would increase by 0.4 dBA under the Project (Alternative 1/1A) and Alternative 3.~~The greatest incremental increase in noise levels, relative to existing conditions, due to project-related traffic is predicted to be 0.4 dBA, while the greatest incremental increase in noise levels,~~ R~~r~~elative to future no project conditions~~, due to~~ P~~p~~roject-related traffic noise is predicted to increase by~~be~~ 1.2 dBA. Noise from the shuttles and dial-a-ride vehicles will be consistent with current noise on local roadways. Noise from the water taxi will be consistent with other boating activities in the Tahoe City and Homewood areas. Traffic noise would increase by 0.4 dBA~~,~~ relative to existing conditions~~,~~ and 1.2 dBA~~,~~ relative to future conditions~~,~~ for areas that are currently out of attainment with regards to TRPA Plan Areas. Therefore, this impact is considered to be significant.

Mitigation: **Mitigation Measure NOI-2: Employ measures to ensure Project-related traffic noise does not increase relative to existing and future no project conditions.**

The Project Applicant shall design and implement measures to reduce noise from traffic related to the Proposed Project (Alternative 1). HMR will prepare a noise control plan that will identify feasible measures that can be employed to reduce traffic noise by 0.4 dBA~~,~~ relative to existing conditions~~.~~ and 1.2 dBA~~,~~ relative to future conditions. The noise control plan shall employ noise-reducing measures such that Project-related noise does not increase relative to future no project conditions. This is in addition to the ongoing reduction in traffic volumes observed on SR 89 (see Chapter 11 – Transportation, Parking, and Circulation). The plan must be approved by the TRPA and Placer County prior to issuing a Grading Permit. The noise control plan may include, and is not limited to, the following measures:

- Constructing/use of barriers, berms, and acoustical shielding (reductions of 3dB to 5dB).
- Utilizing noise-reducing pavement (reductions of 2-5dB).
- Lowering speed limits, if feasible and practical (reductions of 1-2dB).
- Programs to pay for noise mitigation such as low cost loans to owners of noise-impacted property or establishment of developer fees (no actual noise reduction from this, reduction depends on actual measure that is implemented.).
- Acoustical treatment of buildings (reductions of 3-5dB).

After Mitigation: *Less than Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A and~~ 3*

Mitigation Measure NOI-2 would ensure that the Project-related traffic noise impacts would not result in any increase in noise levels (CNEL) relative to existing and future no project conditions, which would mitigate the Project's impact on traffic noise.

Analysis: *Less than Significant Impact; Alternative 4*

Alternative 4 entails closing the existing ski resort and creating up to 16 estate residential lots and one commercial lot. A majority of the estate lots would be accessed from the South Base area of the ski resort. Scattered residences are located throughout the surrounding roadway network. Significant noise impacts are identified where existing noise sensitive receptors would be exposed to noise increases that exceed the noise significance thresholds.

Traffic noise levels on SR 89 were calculated based on traffic noise modeling using the FHWA TNM. As stated in the Air Quality chapter, the traffic data indicated that roadway volumes would be worse in the PM peak-hour than in the AM peak hour. The data included traffic volumes in the surrounding area, which indicated that traffic volumes are highest during the summer season. Therefore, summer PM peak-hour traffic was modeled. The calculated traffic noise levels at 100 feet from the centerline SR 89 under future traffic conditions are summarized in Table 13-22.

Table 13-22

Noise Levels for Existing plus Alternative 4.

	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
Segment along SR 89	Existing No Project	Existing + Alt. 4~~s. 1, 1A, &3~~	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.5	54.5	-1.0	92.9	49.4	-	-
SR 28 to Granlibakken	62.8	62.8	0.0	283.1	142.0	75.4	36.8
Granlibakken to Sequoia	62.0	62.0	0.0	253.7	127.2	67.6	-
Sequoia to Pineland	61.6	61.6	0.0	240.9	121.5	64.3	-
Pineland to Grand	62.2	62.2	0.0	252.5	129.8	71.0	34.1
Grand to Park	62.1	62.1	0.0	247.8	127.6	69.6	33.1
Park to Silver	61.1	61.1	0.0	225.0	114.1	60.8	-
Silver to Homewood Driveway	61.1	61.1	0.0	225.3	114.2	60.9	-
Homewood Driveway to Fawn	61.1	61.2	0.1	227.0	115.1	61.3	-
Fawn to Tahoe Ski Bowl Way	61.3	61.4	0.1	233.3	118.1	62.7	-
Tahoe Ski Bowl Way to Elm Street	62.1	62.2	0.1	250.1	128.6	70.2	33.6
Elm Street to Pine Street	60.9	61.0	0.0	220.1	111.6	59.6	-

Noise Levels for 2030 + Alternative 4.

	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
Segment along SR 89	2030 No Project	2030 + Alt 4	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.6	55.5	-0.1	101.7	54.9	–	–
SR 28 to Granlibakken	66.4	66.4	0	456.3	226.6	114.9	61.2
Granlibakken to Sequoia	65.6	65.6	0	407.8	202.9	102.8	55.5
Sequoia to Pineland	65.1	65.1	0	382.0	190.3	96.7	52.2
Pineland to Grand	67.6	65.7	-1.9	391.2	199.8	104.0	57.2
Grand to Park	65.4	65.5	0.1	380.3	194.1	100.8	55.6
Park to Silver	64.5	64.5	0	350.7	175.0	90.5	47.7
Silver to Homewood Driveway	64.5	64.5	0	351.1	175.2	90.6	47.8
Homewood Driveway to Fawn	64.5	64.6	0.1	353.3	176.4	91.1	48.1
Fawn to Tahoe Ski Bowl Way	63.7	64.8	1.1	362.5	181.2	93.0	49.5
Tahoe Ski Bowl Way to Elm Street	65.5	65.5	0	382.8	195.3	101.5	56.0
Elm Street to Pine Street	64.3	64.3	0	342.5	170.6	88.8	46.4

Under Alternative 4, HMR would close and there would be substantially less winter traffic. In Placer County, noise from mobile sources would be significant if exterior noise levels were greater than 60 dBA, Ldn/CNEL at the property line of the receiving land use. The *TRPA Community Plan* regulates noise for transportation corridors. For SR 89, noise from mobile sources would be significant if exterior noise levels were greater than 55 dBA within 300 feet of the roadway, or if the change in noise is greater than 3 dBA.

Plan Areas 156, 157, and 160 have noise standards of 55, 55, and 60 dBA, respectively. As shown in Table 13-22, noise exceeds 55 dBA (the more stringent threshold) even without the Project. ~~-~~Based on a conversation with TRPA, any increase in noise, relative to future no project conditions, would be significant and that it is necessary to fully mitigate/offset the incremental increase in noise, relative to future no project conditions (Emmett, pers. comm.). Using an existing baseline indicates that traffic noise levels would increase by 0.1 dBA under Alternative 4. Relative to future no project conditions Project-related traffic noise under Alternative 4 is predicted to increase by 1.1 dBA.~~The greatest incremental increase in noise levels, relative to existing conditions, due to project-related traffic is predicted to be 0.1 dBA, while the greatest incremental increase in noise levels, relative to future no project conditions, due to project-related traffic is predicted to be 1.1 dBA~~. Because traffic noise would increase for areas that are currently out of attainment with regards to TRPA Plan Areas, this impact is considered significant.

Mitigation: **Mitigation Measure NOI-2: Employ measures to ensure Project-related traffic noise does not increase relative to existing and future no project conditions.**

After Mitigation: *Less than Significant Impact; Alternative 4*

Mitigation Measure NOI-2 would ensure that the Project-related traffic noise impacts would not result in any increase in noise levels (CNEL) relative to existing and future no project conditions, which would mitigate the Project's impact on traffic noise.

Analysis: *Significant Impact; Alternative 5*

Alternative 5 includes multi-family residential uses at the North Base parking area along with skier services, retail and hotel uses. Up to 16 single-family lots would be developed at the South Base area. Scattered residences are located throughout the surrounding roadway network. Significant noise impacts are identified where existing noise sensitive receptors would be exposed to noise increases that exceed the noise significance thresholds.

Traffic noise levels on SR 89 were calculated based on traffic noise modeling using the *FHWA TNM*. As stated in the Air Quality chapter, the traffic data indicated that roadway volumes would be worse in the PM peak-hour than in the AM peak hour. The data included traffic volumes in the surrounding area, which indicated that traffic volumes are highest during the summer season. Therefore, summer PM peak-hour traffic was modeled. The calculated traffic noise levels at 100 feet from the centerline of SR 89 under future traffic conditions are summarized in Table 13-23.

Table 13-23

Noise Levels for Existing plus Alternative 5.

	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
Segment along SR 89	Existing No Project	Existing + Alt. 5~~s. 1, 1A, &3~~	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.5	55.4	-0.1	102.8	55.5	-	-
SR 28 to Granlibakken	62.8	62.9	0.1	288.7	145.0	76.9	37.8
Granlibakken to Sequoia	62.0	62.1	0.1	258.6	129.4	69.0	-
Sequoia to Pineland	61.6	61.8	0.2	246.5	124.0	65.5	-
Pineland to Grand	62.2	62.5	0.2	260.0	133.7	73.1	35.7
Grand to Park	62.1	62.3	0.2	255.6	131.1	71.9	34.8
Park to Silver	61.1	61.4	0.3	232.4	117.7	62.5	-
Silver to Homewood Driveway	61.1	61.4	0.3	232.2	117.6	62.5	-
Homewood Driveway to Fawn	61.1	61.4	0.2	232.0	117.5	62.4	-
Fawn to Tahoe Ski Bowl Way	61.3	61.5	0.2	237.6	120.0	63.6	-
Tahoe Ski Bowl Way to Elm Street	62.1	61.1	-1.0	218.0	113.5	61.7	-
Elm Street to Pine Street	60.9	61.1	0.2	223.9	113.5	60.5	-

Noise Levels for 2030 + Alternative 5

Segment along SR 89	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
	2030 No Project	2030 + Alt. 5	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.6	55.5	-0.1	101.7	54.9	–	–
SR 28 to Granlibakken	66.4	66.5	0.1	464.7	230.5	116.8	62.1
Granlibakken to Sequoia	65.6	65.7	0.1	415.0	206.7	104.7	56.4
Sequoia to Pineland	65.1	65.3	0.2	390.5	194.3	98.3	53.3
Pineland to Grand	67.6	65.9	-1.7	402.9	205.7	107.1	58.7
Grand to Park	65.4	65.7	0.3	391.2	199.8	104.0	57.2
Park to Silver	64.5	64.7	0.2	361.0	180.5	92.7	49.3
Silver to Homewood Driveway	64.5	64.7	0.2	360.3	180.1	92.6	49.2
Homewood Driveway to Fawn	64.5	64.7	0.2	360.4	180.2	92.6	49.2
Fawn to Tahoe Ski Bowl Way	63.7	64.9	1.2	367.9	183.7	94.0	50.3
Tahoe Ski Bowl Way to Elm Street	65.5	65.6	0.1	386.8	197.3	102.7	56.6
Elm Street to Pine Street	64.3	55.5	-8.8	245.2	123.4	65.2	

In Placer County, noise from mobile sources would be significant if exterior noise levels were greater than 60 dBA, L_{dn}/CNEL at the property line of the receiving land use. The *TRPA Community Plan* regulates noise for transportation corridors. For SR 89, noise from mobile sources would be significant if exterior noise levels were greater than 55 dBA within 300 feet of the roadway, or if the change in noise is greater than 3 dBA. In addition, for Plan Areas that are out of attainment, any increase in noise would be significant.

Plan Areas 156, 157, and 160 have noise standards of 55, 55, and 60 dBA, respectively. As shown in Table 13-~~21~~23, noise exceeds 55 dBA (the more stringent threshold) even without the Project. Based on a conversation with TRPA, any increase in noise, relative to future no project conditions, would be significant and it is necessary to mitigate the incremental increase in noise, relative to future no project conditions (Emmett, pers. comm.). Using an existing baseline indicates that traffic noise levels would increase by 0.3 dBA under Alternative 5. Relative to future no project conditions Project-related traffic noise under Alternative 5 is predicted to increase by 1.2 dBA.~~The greatest incremental increase in noise levels, relative to existing conditions, due to project-related traffic is predicted to be 0.3 dBA, while the greatest incremental increase in noise levels, relative to future no project conditions, due to project-related traffic is predicted to be 1.2 dBA~~. Noise from the shuttles and dial-a-ride vehicles will be consistent with current noise on local roadways. Noise from the water taxi will be consistent with other boating activities in the Tahoe City and Homewood areas. However, because traffic noise would increase by 0.3 dBA~~,~~ relative to existing conditions~~,~~ and 1.2 dBA~~,~~ relative to future conditions~~,~~ for areas that are currently out of attainment with regards to TRPA Plan Areas, this impact is considered significant.

Mitigation: **Mitigation Measure NOI-2: Employ measures to ensure Project-related traffic noise does not increase relative to existing and future no project conditions.**

After Mitigation: *Less than Significant Impact; Alternative 5.*

Mitigation Measure NOI-2 would ensure that the Project-related traffic noise impacts would not result in any increase in noise levels (CNEL) relative to existing and future no project conditions, which would mitigate the Project's impact on traffic noise.

Analysis: *Significant Impact; Alternative 6*

Alternative 6 includes multi-family residential uses at the North Base parking area along with skier services, retail and hotel uses. Up to 16 single-family lots would be developed at the South Base area. Scattered residences are located throughout the surrounding roadway network. Significant noise impacts are identified where existing noise sensitive receptors would be exposed to noise increases that exceed the noise significance thresholds.

Traffic noise levels on SR 89 were calculated based on traffic noise modeling using the FHWA TNM. As stated in the Air Quality chapter, the traffic data indicated that roadway volumes would be worse in the PM peak-hour than in the AM peak hour. The data included traffic volumes in the surrounding area, which indicated that traffic volumes are highest during the summer season. Therefore, summer PM peak-hour traffic was modeled. The calculated traffic noise levels at 100 feet from the centerline of SR 89 under future traffic conditions are summarized in Table 13-24.

In Placer County, noise from mobile sources would be significant if exterior noise levels were greater than 60 dBA, L_{dn}/CNEL at the property line of the receiving land use. The *TRPA Community Plan* regulates noise for transportation corridors. For SR 89, noise from mobile sources would be significant if exterior noise levels were greater than 55 dBA within 300 feet of the roadway, or if the change in noise is greater than 3 dBA. In addition, for Plan Areas that are out of attainment, any increase in noise would be significant.

Plan Areas 156, 157, and 160 have noise standards of 55, 55, and 60 dBA, respectively. As shown in Table 13-~~21~~24, noise exceeds 55 dBA (the more stringent threshold) even without the Project. Based on a conversation with TRPA, any increase in noise, relative to future no project conditions, would be significant and it is necessary to mitigate the incremental increase in noise, relative to future no project conditions because the area is out of attainment (Emmett, pers. comm.). Using an existing baseline indicates that traffic noise levels would increase by 0.2 dBA under Alternative 6. Relative to future no project conditions Project-related traffic noise under Alternative 6 is predicted to increase by 1.2 dBA.~~The greatest increase in noise levels, relative to existing conditions, due to project-related traffic is predicted to be 0.2 dBA, while the greatest incremental increase in noise levels, relative to future no project conditions, due to the traffic is predicted to be 1.2 dBA~~. Noise from the shuttles and dial-a-ride vehicles will be consistent with current noise on local roadways. Noise from the water taxi will be consistent with other boating activities in the Tahoe City and Homewood areas. However, because traffic noise would increase by 0.2 dBA~~,~~ relative to existing conditions~~,~~ and 1.2 dBA~~,~~ relative to future conditions~~,~~ for areas that are currently out of attainment with regards to TRPA Plan Areas~~,~~ this impact is considered significant.

Table 13-24

Noise Levels for Existing plus Alternative 6.

Segment along SR 89	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
	Existing No Project	Existing + Alts. ~~1, 1A, &36~~	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	62.8	62.9	0.1	287.1	144.1	76.5	37.6
SR 28 to Granlibakken	62.0	62.1	0.1	257.7	129.0	68.8	-
Granlibakken to Sequoia	61.6	61.8	0.2	246.4	123.9	65.5	-
Sequoia to Pineland	62.2	62.4	0.2	259.5	133.4	73.0	35.6
Pineland to Grand	62.1	62.3	0.2	254.8	130.8	71.6	34.6
Grand to Park	61.1	61.3	0.2	231.4	117.2	62.3	-
Park to Silver	61.1	61.3	0.2	231.0	117.0	62.2	-
Silver to Homewood Driveway	61.1	61.3	0.2	231.8	117.4	62.4	-
Homewood Driveway to Fawn	61.3	61.5	0.2	236.8	119.6	63.5	-
Fawn to Tahoe Ski Bowl Way	62.1	62.2	0.1	251.2	129.2	70.6	33.8
Tahoe Ski Bowl Way to Elm Street	60.9	61.1	0.2	225.0	114.1	60.8	-
Elm Street to Pine Street	62.8	62.9	0.1	287.1	144.1	76.5	37.6

Noise Levels for 2030 + Alternative 6.

Segment along SR 89	Noise Level at 100 feet CNEL			Distance to Contours (feet)			
	2030 No Project	2030 + Alt 5	Change	55 dBA	60 dBA	65 dBA	70 dBA
Driveway to SR 28	55.6	55.5	-0.1	101.7	54.9	-	-
SR 28 to Granlibakken	66.4	66.5	0.1	464.1	230.3	116.7	62.1
Granlibakken to Sequoia	65.6	65.7	0.1	414.5	206.4	104.6	56.3
Sequoia to Pineland	65.1	65.3	0.2	390.2	194.1	98.2	53.3
Pineland to Grand	67.6	65.9	-1.7	401.9	205.2	106.8	58.5
Grand to Park	65.4	65.7	0.3	390.5	199.4	103.8	57.1
Park to Silver	64.5	64.7	0.2	360.3	180.1	92.6	49.2
Silver to Homewood Driveway	64.5	64.7	0.2	359.8	179.8	92.5	49.1
Homewood Driveway to Fawn	64.5	64.7	0.2	360.7	180.3	92.7	49.3
Fawn to Tahoe Ski Bowl Way	63.7	64.9	1.2	368.7	184.1	94.2	50.4
Tahoe Ski Bowl Way to Elm Street	65.5	65.6	0.1	389.3	198.7	103.4	56.9
Elm Street to Pine Street	64.3	64.5	0.2	348.6	173.8	90.1	47.4

Mitigation: **Mitigation Measure NOI-2: Employ measures to ensure Project-related traffic noise does not increase relative to existing and future no project conditions.**

After Mitigation: *Less than Significant Impact; Alternative 6.*

Mitigation Measure NOI-2 would ensure that the Project-related traffic noise impacts would not result in any increase in noise levels (CNEL) relative to existing and future no project conditions, which would mitigate the Project's impact on traffic noise.

Impact: NOI-3. Will noise from Project concerts, snowmaking, or other resort operations effect existing or proposed noise-sensitive land uses?

Analysis: *Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6*

Noise from operational sources would be significant if exterior noise levels were greater than the Placer County standards of 50 dBA, L_{dn}/CNEL at the property line of the receiving land use. Noise is regulated under the *TRPA Community Plan* by land use category. Noise for high density residential uses are regulated to 55 dBA, noise from hotels and commercial uses are regulated to 60 dBA, and noise for outdoor recreational uses are regulated to 55 dBA. For Plan Areas that are out of attainment, any increase in noise would be considered significant. Plan Areas 156, 157, and 160 have noise standards of 55, 55, and 60 dBA, respectively.

Operations and maintenance at HMR would generate noise under the Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6 due to activities such as snow grooming, ski patrol activities, avalanche control, snowmaking, and concerts. The Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6 propose no changes to existing grooming, or ski patrol activities at HMR, so no impact would occur. Other operational noise sources include HVAC systems, cooling towers/evaporative condensers, loading docks, lift stations, emergency generators, and outdoor public address systems. Similarly, these noise sources are a part of the existing noise environment with HMR operations and noise levels associated with other noise sources are not anticipated to increase under the Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6.

Snowmaking typically occurs at nighttime throughout the ski season depending upon the amount of natural snowfall. To represent a worst-case scenario, it was assumed that snowmaking would occur every night of the ski season from midnight until 7:00 AM, and for 3 continual days per week for two weeks in the beginning of the season (Tirman pers. comm.). This is comparable to existing snowmaking operations. HMR currently uses 25 horsepower fan-gun technology for snowmaking. Fan guns include the Super Polecat, Super Wizzard, and the Viking Snowtower models. There are five guns operating at the north side and 5 guns operating at the south side of HMR. The Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6 would add guns on both the north and south sides, but it is currently unknown how many new guns will be used and the exact locations of the guns relative to existing and proposed noise sensitive land uses (Tirman, pers. comm.). Because the number and type of guns as well as the location of each gun is currently unknown, the noise levels from snowmaking cannot be quantified.

The new amphitheatre is planned to be the permanent home of the annual Lake Tahoe Music Festival. Amplification of voice and music, combined with applause and other audience reactions could result in audible sound at nearby residential units. The amphitheatre will be located between the base of the gondola and the hotel outdoor deck area. The nearest existing residence is on Sacramento Avenue and is located

approximately 400 feet from the new amphitheatre. New residential units along Tahoe Ski Bowl Way would be as close as 250 feet to the amphitheatre, and the hotel would be immediately adjacent to the amphitheatre. Although sound levels at a rock concerts can reach 110 dBA (see Table 13-1), concerts at the amphitheatre are smaller-scale and are not anticipated to reach this level. Residential Building A is located between the amphitheatre and existing residences on Sacramento Avenue and will provide substantial acoustical shielding between the amphitheatre and existing residences. The building will also provide acoustical shielding between the amphitheater and most of the new residential units along Tahoe Ski Bowl Way. New residential townhome units at the north end of Tahoe Ski Bowl way would not be shielded by the building. The amphitheatre will project amplified sound towards the mountain, and sound energy will primarily dissipate in that direction.

Sound from the amphitheatre is anticipated to result in significant impacts at new HMR proposed residential townhomes located along the north end of Tahoe Ski Bowl Way. Depending on the type of music acts and the degree of amplification there is potential for significant noise impacts to occur at existing residences as well. Concerts, which are currently held periodically throughout the year, would require a special use permit from TRPA specifying hours of activities and specific sound level limits. Mitigation Measures NOI-3a and NOI-3b would reduce this impact to a less-than-significant level.

As shown in Table 13-7, noise from snowmaking currently exceeds these standards at the residential uses near the South Base area and residential uses near the North Base area (e.g., the eastern Project boundary). Therefore, any increase in noise from snowmaking in these locations is considered significant. Mitigation Measure NOI-3a is required to reduce this impact at new residences in the Project area. Mitigation Measure NOI-3c is required to reduce this impact at existing residences to a less than significant level.

Mitigation: **Mitigation Measure NOI-3a: Design new residences to reduce interior noise below 45 dBA, L_{dn}.**

HMR shall design and construct new residences such that interior noise from snowmaking and other sources of noise (including concerts, HVAC systems, cooling towers/evaporative condensers, loading docks, lift stations, emergency generators, and outdoor public address systems) in the area does not exceed 45 dBA, L_{dn}. HMR will retain a qualified acoustical consultant to design the necessary acoustical treatments. Measures that can be implemented include installing acoustically rated doors and windows, use of upgraded wall and roof materials to provide additional acoustical insulation, and sealing gaps in walls and ceilings with acoustical caulking. The acoustical consultant will prepare a report for the TRPA and Placer County demonstrating compliance with noise standards inside of residential units.

Mitigation Measure NOI-3b: Implement design and operational measures at the amphitheater to ensure compliance with the adjacent Planning Area Statement (PAS) CNEL limit at existing residences.

HMR shall demonstrate that the amphitheater has been designed such that operational noise at existing residences will be in compliance with the adjacent Planning Area Statement (PAS) CNEL limit. An acoustical engineer with experience in the prediction and mitigation of outdoor theater sound levels, HVAC systems, cooling towers/evaporative condensers, loading docks, lift stations, emergency generators, and outdoor public address systems shall be consulted prior to design and construction of the proposed amphitheater and other stationary ~~p~~Project elements with the potential to generate noise. The acoustical engineer shall identify feasible mitigation measures for

reducing noise-related impacts to nearby residences. Mitigation measures may include, but are not limited to, orientation and location of the amphitheater, construction of noise barriers and shielding, limitations on speaker orientation, limitations on noise-generation levels, and hours of activity. The ~~project~~ Project A~~a~~pplicant shall incorporate the mitigation measures into the design and operation of the amphitheater and other stationary ~~p~~Project elements with the potential to generate noise.

Mitigation Measure NOI-3c: Implement measures to ensure noise levels at existing residences are reduced to meet the adjacent Plan Area Statement (PAS) CNEL limit.

To reduce existing and proposed snowmaking noise levels to a less than significant level, HMR must reduce noise levels to meet adjacent PAS CNEL limits. The reduction of noise to PAS CNEL levels shall be reevaluated annually to ensure that HMR is implementing all possible snowmaking measures available to work towards the attainment of the PAS CNEL noise standards for Plan Areas 157, 158, and 159 (55dB, 55dB, and 60dB, CNEL, respectively). HMR will prepare a noise control plan to design, construct/install, and operate new snowmaking equipment so that the increase in noise associated with snowmaking conditions, (see Table 13-7) is reduced to meet the appropriate PAS limit. The plan must be approved by the TRPA and Placer County prior to HMR using any new snowmaking equipment. The noise control plan may include, and is not limited to, the following measures:

- Situate snowmaking equipment as far as practicable from existing noise sensitive land uses (reductions of 2-3dB). If setbacks are used to control snowmaking noise, snow could be moved from the location where it is made, and mechanically deposited in the desired location. This measure would involve the use of snow grooming equipment, which would also produce noise. In general, snow grooming equipment produces lower levels than snowmaking equipment, and the time required to move the snow would be less than the time required to make snow on a continuous basis. Typical snow grooming equipment is approximately the size of a bulldozer. Bulldozers between 100 and 250 HP can generate maximum noise levels of 81-85 dBA (Hoover & Keith, 2000). It is reasonable to assume that snowgrooming equipment would generate similar noise levels. Thus the overall noise impacts of this alternative in a given area would be lower than for continuous snowmaking using snowmaking nozzles.
- Place temporary barriers between noise sources and noise-sensitive land uses or taking advantage of existing barrier features (terrain, structures, edge of trench) to block sound transmission. Barriers would be most effective where the nozzles are close to the noise sensitive land uses. The barriers should be solid and massive, and placed close to the nozzles to block line of sight to the receivers. Thick (1/2 inch) plywood or wood, and straw bales are examples of suitable materials for such an application. Where nozzles are placed in fixed, elevated positions, barriers could consist of tower structures with plywood sides blocking line of sight to the nozzles (reductions of 3-9dB). At the South and North Base areas, the construction of proposed HMR buildings may provide permanent barriers between snowmaking operations and adjacent land uses.
- Select quieter snow making equipment (reductions of 2-3dB). HMR currently uses fan gun technology for its snowmaking system, which is quieter than compressed air/water nozzles used at other resorts. However, the latest snowmaking gun technology shall be consulted when purchasing new equipment.

The new and quieter equipment shall be used in locations closest to noise sensitive land uses.

- Prohibit/minimize the operation of snow making activities during nighttime hours (prohibition eliminates nighttime noise that is penalized in the calculation of CNEL averages).
- Reduce the number of snow making equipment operating concurrently (reduction of 2-3 dB).
- Reducing the number of nozzles close to noise sensitive land uses. (In general, a 50 percent reduction in the number of nozzles in a given area will result in a reduction of 3 dB, which is considered to be a perceptible reduction in noise levels).

After Mitigation: *Less than Significant; Proposed Project (Alternative 1/1A), and Alternatives ~~1A,~~ 3, 5, and 6*

As stated above, in Plan Areas out of attainment, any increase in noise would be significant. Mitigation Measures NOI-3a and NOI-3b would reduce impacts from the amphitheatre, and Mitigation Measures NOI-3a and NOI-3c would reduce impacts from snowmaking to meet PAS CNEL levels, and therefore would be less than significant.

Analysis: *Less than Significant Impact; Alternative 4*

Alternative 4 entails closing HMR and creating up to 16 estate residential lots and one commercial lot at the North Base area. A majority of the estate lots would be accessed from the South Base area of the ski resort. Operational noise under Alternative 4 would be similar to the adjacent residential neighborhoods east of the South Base area.

Noise from operational sources would be significant if exterior noise levels were greater than the Placer County standards of 50 dBA, L_{dn}/CNEL at the property line of the receiving land use. Noise is regulated under the *TRPA Community Plan* by land use category. Under Alternative 4, impacts would include typical noise from residential and commercial areas, which is not anticipated to exceed the Placer County threshold of 60 dBA or TRPA PAS standards. This impact is considered less than significant.

Mitigation: No mitigation is required.

13.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact: NOISE-C1: Will the Project result in a substantial impact upon the cumulative noise environment?

Analysis: *No Impact; No Project (Alternative 2)*

The No Project (Alternative 2) will not contribute new noise sources to the existing environment, and no impacts would result. The No Project (Alternative 2) would not have a cumulatively considerable impact on noise.

Mitigation: No mitigation is required.

Analysis: *Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6*

The traffic volumes in the traffic analysis in Chapter 11 – Traffic, Parking, and Circulation were based on cumulative growth in the HMR area. Consequently, the noise analysis was also based on cumulative growth and represents cumulative effect

conditions. The Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6 would result in minor increased in noise compared to the No Project (Alternative 2) (see Tables 3.6-21 through 3.6-23). Based on a conversation with TRPA, any increase in noise, relative to future no project conditions, would be significant and that it is necessary to fully mitigate/offset the incremental increase in noise, relative to future no project conditions (Emmett, pers. comm.). Plan Areas 156, 157, and 160 are currently out of attainment due to traffic and snowmaking noise. Noise from traffic is anticipated to increase with the Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6. Noise from snowmaking is also expected to increase. However, Mitigation Measure NOI-2 would reduce traffic noise relative to existing and future no-project conditions, and Mitigation Measures NOI-3a and NOI-3c would reduce snowmaking noise to PAS CNEL levels. In addition, Mitigation Measures NOI-3a and NOI-3b would reduce noise from the amphitheatre at new and existing residences. Therefore, impacts from noise would be reduced to less than significant levels.

Mitigation: **Mitigation Measure NOI-2: Employ measures to ensure Project-related traffic noise does not increase relative to existing and future no project conditions.**

Mitigation Measure NOI-3a: Design new residences to reduce interior noise below 45 dBA, L_{dn}.

Mitigation Measure NOI-3b: Implement design and operational measures at the amphitheater to ensure compliance with the adjacent Planning Area Statement (PAS) CNEL limit at existing residences.

Mitigation Measure NOI-3c: Implement measures to ensure noise levels at existing residences are reduced to meet the adjacent Plan Area Statement (PAS) limit.

After Mitigation: *Less than Significant Impact; Proposed Project (Alternative 1/1A) and Alternatives ~~1A,~~ 3, 5, and 6*

Cumulative impacts would be considered less than significant with implementation of Mitigation Measures NOI-2, NOI-3a, NOI-3b and NOI-3c.

Analysis: *Less than Significant Impact; Alternative 4*

Alternative 4 would remove the ski resort and build single-family residences on the mountain and a retail facility along SR 89. Alternative 4 is expected to reduce noise in the Project area and vicinity by reducing traffic volumes on area roadways and by closing summer and winter ski area activities, including snowmaking, concerts, snow grooming, and parking lot activities. Consequently, Alternative 4 would not have a cumulatively considerable impact on noise.

Mitigation: No mitigation is required.

13.6 REFERENCES

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