CHAPTER 8
NOISE

8.1 ENVIRONMENTAL SETTING

8.1.1 Background

Sound is caused by variations in air pressure that occur frequently enough (at least 20 times per second) to be detected by the human ear. Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels over an extended period has been demonstrated to cause hearing loss, the principal human response to noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is characterized by a number of variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in hertz, and intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above approximately 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. Typical noise levels of common noise sources are identified in the Environmental Noise Assessment provided in Appendix F, Figure 3, of this Draft Environmental Impact Report (EIR).

8.1.1.1 Noise Level Measurements

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds in the environment consist of a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects the fact that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (measured in A-weighted decibels [dBA]). In practice, the level of a noise source is measured using a sound level meter that includes a filter corresponding to the dBA curve, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from several sources that creates a relatively steady

background noise, referred to as the ambient noise level. Measured dBA sound levels are used to identify the average community ambient noise level, which is expressed as the "equivalent sound level" (L_{eq}). The maximum measured dBA level is referred to as L_{max} and the minimum dBA level measured is reflected as L_{min}.

The L_{eq} is used to determine the day/night average noise level (L_{dn}). The L_{dn} is based on the average noise level over a continuous 24-hour period, with a +10 dB weighting applied to noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). The nighttime penalty is based on the assumption that people are more sensitive to nighttime noise than daytime noise. Because L_{dn} represents a 24-hour average, it tends to deemphasize short-term variations in the noise environment.

8.1.1.2 Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. Although vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, and vibration is usually associated with transmission through the ground or a structure. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on individual sensitivity and the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocity (inches per second). Standards pertaining to perception and damage to structures have been developed for vibration in terms of peak particle velocity. The general range at which vibration becomes distinctly to strongly perceptible is 0.1 to 0.50 inches per second peak particle velocity (Appendix F).

8.1.2 Existing Noise Conditions in Project Area

The Alpine Sierra Subdivision (proposed project) site is presently undeveloped, with no existing structures. Land uses north of the project site consist of single-family residential, and uses south of the site consist of condominiums and the Stanford Alpine Chalet lodging. The Alpine Meadows Ski Resort is located adjacent to a portion of the southern site boundary; a large parking area associated with the resort is immediately south of the site.

The project area is sparsely developed and, with the exception of seasonal activity associated with the Alpine Meadows Ski Resort and periodic avalanche-control activities, there are no substantial sources of noise in the immediate project vicinity. As a result, the existing ambient noise environment in the immediate project vicinity is defined primarily by light traffic on Alpine Meadows Road during non-ski season, and by heavier traffic and resort activity during the winter ski season. Noise-sensitive land uses in the immediate project vicinity generally consist of existing single-family residences to the north and south.

8.1.2.1 Ambient Noise Assessment

To quantify noise levels in the project vicinity, Bollard Acoustical Consultants Inc. conducted continuous (24-hour) ambient noise-level measurement surveys (see Appendix F). The continuous noise-level measurements were conducted at three locations (see Figure 8-1, Noise Measurement Locations) during the summer and winter seasons. Summer monitoring was conducted between Friday, September 6 and Monday, September 9, 2013. Winter monitoring was conducted between Friday, April 4 and Monday, April 7, 2014. Table 8-1, Continuous Ambient Noise Monitoring, provides the noise levels identified during the continuous surveys.

Table 8-1
Continuous Ambient Noise Monitoring

Site	Season	Sound Levels (dBA)				
		Daytime (7:00 a.m.–10:00 p.m.)		*Nighttime (10:00 p.m.–7:00 a.m.)*		
		Average (L_{eq})	*Maximum (L_{max})*	*Average (L_{eq})*	*Maximum (L_{max})*	*L_{dn}*
Site 1	Summer	47	69	39	52	48
	Winter	55	70	43	61	55
Site 2	Summer	39	55	30	43	40
	Winter	40	54	36	43	43
Site 3	Summer	35	52	27	38	37
	Winter	N/A	N/A	N/A	N/A	N/A

Source: Appendix F (Bollard Acoustical Consultants Inc. 2015).
Notes: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum measured sound level; L_{dn} = day/night average noise level; N/A = not applicable.
Noise measurements were not conducted at Site 3 in winter due to inaccessibility of the site.

As shown in Table 8-1, existing ambient noise conditions in the project vicinity are fairly low at locations removed from Alpine Meadows Road (Sites 2 and 3), with average daytime noise levels in the low 40s dBA and average nighttime levels in the low 30s dBA L_{eq}. At the sites located closer to Alpine Meadows Road (Site 1), average daytime noise levels were in the low 50s dBA and nighttime levels in the low 40s dBA L_{eq}. This range of measured ambient noise levels is suitable for residential development.

8.1.2.2 Existing Traffic Noise Environment

To assess existing noise levels generated by traffic on roadways in the project vicinity, Bollard Acoustical Consultants Inc. used the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based on reference noise factors for automobiles, medium trucks, and heavy trucks. It considers variables such as vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustic characteristics of the project site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions.

The results of this modeling are provided in Table 8-2, Existing Traffic Noise Levels and Distances to Noise Level Contours, which indicates the existing noise level in terms of L_{dn} for each roadway at 100 feet from the centerline and the distance from the centerline to existing traffic noise level contours. Both summer and winter conditions were considered in the analysis.

Table 8-2
Existing Traffic Noise Levels and Distances to Noise Level Contours

Roadway	Segment	L_{dn} at 100 feet (dBA)	Distance to L_{dn} Contours (Feet)		
			70 dBA	*65 dBA*	*60 dBA*
Winter					
SR-89	North of Alpine Meadows Road	65.9	53	114	246
	South of Alpine Meadows Road	65.4	49	106	228
Alpine Meadows Road	West of SR-89	60.3	23	49	105
	North of Site Access	59.4	20	43	92
	South of Site Access	59.4	20	43	92
Summer					
SR-89	North of Alpine Meadows Road	65.6	51	110	236
	South of Alpine Meadows Road	65.7	51	111	239
Alpine Meadows Road	West of SR-89	55.8	11	24	52
	North of Site Access	47.7	3	7	15
	South of Site Access	47.5	3	7	15

Source: FHWA RD-77-108 with inputs from Bollard Acoustical Consultants Inc. 2015 (see Appendix F).
Notes: L_{dn} = day/night sound level; dBA = A-weighted decibels; SR = State Route.

8.1.3 Existing Vibration Conditions

No appreciable off-site sources of vibration were identified during Bollard Acoustical Consultants Inc.'s field surveys of the area (see Appendix F). Existing ambient vibration levels were subjectively evaluated as being below the threshold of perception. During periodic avalanche-control activities in winter months, avalanche guns are used to propel explosive charges onto the mountains to mitigate the potential for avalanches. Although no vibration data was available for avalanche-control activities in the Alpine Meadows Ski Resort, such events undoubtedly result in brief periods of perceptible vibration at local residences.

8.2 REGULATORY SETTING

8.2.1 Federal and State Regulations

There are no state or federal regulations related to assessment of the project's noise impacts, although federal guidelines provide direction regarding what constitutes a significant change in noise conditions. The Federal Interagency Committee on Noise (FICON) determined what level of increase in noise level (measured in terms of L_{dn}) is noticeable; and a noticeable change may

indicate a significant impact (FICON, as reported in Bollard Acoustical Consultants Inc. 2015 [see Appendix F]). These findings, as shown in Table 8-3, Significance of Changes in Cumulative Noise Exposure, indicate that, at lower existing noise levels, a greater increase is needed to create a significant impact. The FICON findings were developed as part of an assessment related to aircraft operations, but these findings have commonly been applied to all types of community noises.

Table 8-3
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project	Significant Impact Occurs if the Project Increases Ambient Noise Levels by:
<60 dBA	+ 5 dB or more
<60–65 dBA	+ 3 dB or more
>65 dBA	+ 1.5 dB or more

Source: FICON as reported in Appendix F (Bollard Acoustical Consultants Inc. 2015).
Notes: dBA = A-weighted decibels; dB = decibels.

8.2.2 Local Regulations

8.2.2.1 Placer County General Plan

The Placer County General Plan (Placer County 2013) includes the following basic goals related to noise exposure, and Appendix C of this Draft EIR provides an evaluation of the project's consistency with applicable General Plan policies.

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

This goal is supported by several policies that establish performance standards and maximum allowable noise levels. The noise standards that are applicable to the proposed project are provided in Table 8-4, Maximum Allowable Noise Levels (L_{dn}) within Specified Zone Districts, and Table 8-5, Maximum Allowable Noise Exposure Transportation Noise Sources.

Table 8-4
Maximum Allowable Noise Levels (L_{dn}) within Specified Zone Districts

Zone District or Receptor	Property Line of Receiving Use (dBA)	Interior Spaces[a] (dBA)
Residential Adjacent to Industrial[b]	60	45
Other Residential[c]	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood Commercial	70	—

Table 8-4
Maximum Allowable Noise Levels (L_{dn}) within Specified Zone Districts

Zone District or Receptor	Property Line of Receiving Use (dBA)	Interior Spaces[a] (dBA)
General Commercial	70	45
Timberland Preserve	—	—
Recreation & Forestry	70	—
Open Space	—	—
Mineral Reserve	—	—

Source: Placer County 2013, Table 9-1.
Notes: L_{dn} = day/night average noise level; dBA = A-weighted decibels.
Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

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

b Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses. For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

c Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards. Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit.

Table 8-5
Maximum Allowable Noise Exposure Transportation Noise Sources

Land Use	Outdoor Activity Areas[a]	Interior Spaces	
	L_{dn}/CNEL (dBA)	*L_{dn}/CNEL (dBA)*	*L_{eq} dBA[b]*
Residential	60[c]	45	—
Transient Lodging	60[c]	45	—
Hospitals, Nursing Homes	60[c]	45	—
Theaters, Auditoriums, Music Halls	—	—	35
Churches, Meeting Halls	60[c]	—	40
Office Buildings	—	—	45
Schools, Libraries, Museums	—	—	45
Playgrounds, Neighborhood Parks	70	—	—

Source: Placer County 2013, Table 9-3.
L_{dn} = day/night average sound level; CNEL = Community Noise Equivalent Level, dBA = A-weighted sound level.

a 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.

b As determined for a typical worst-case hour during periods of use.

c Where it is not possible to reduce noise in outdoor activity areas to 60 dBA L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dBA L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

8.2.2.2 Placer County Code

Article 9.36 of the Placer County Code sets noise exposure standards for evaluating non-transportation-related noise impacts (Placer County 2015). The hourly standard is 55 dBA for daytime noise and 45 dBA for nighttime noise. A maximum level of 70 dBA is permitted during the day and 65 dBA at night. The Placer County Code also prohibits creation of noises that would exceed the existing ambient sound level by 5 dB.

The Placer County Code provides the construction noise is exempt from the noise standards identified in Article 9.36 provided that construction equipment is fitted with factory-installed muffling devices and is properly maintained and that construction occurs during the following periods:

- Monday through Friday, 6:00 a.m. to 8:00 p.m.
- Saturday and Sunday, 8:00 a.m. to 8:00 p.m.

8.3 IMPACTS

8.3.1 Significance Criteria

The analysis conducted for the Initial Study (Appendix A) determined that the proposed project would have no impact with respect to the following significance criteria:

- Would the project expose people to excessive noise associated with a public airport or public use airport?
- Would the project expose people to excessive noise associated with a private airstrip?

Therefore, these topics are not discussed further in this Draft EIR.

The analysis below evaluates the potential for the project to result in significant noise impacts related to the following criteria:

- Would the project expose people to or generate noise levels in excess of General Plan and Community Plan standards?
- Would the project expose people to or generate excessive groundborne vibration or groundborne noise levels?
- Would the project cause a substantial permanent increase in ambient noise levels?
- Would the project cause a temporary increase in ambient noise levels?

8.3.2 Project Impacts

Impact 8.1

Would the project expose people to or generate noise levels in excess of general plan and community plan standards?

Significance and Mitigation	Alternative A	Alternative B
Significance before mitigation:	Less than significant	Less than significant
Mitigation measures:	None	None
Significance after mitigation:	Less than significant	Less than significant

Alternative A and Alternative B Impacts

Non-Transportation Noise

For noise generated by off-site, non-transportation noise sources, such as activities associated with the Alpine Meadows Ski Resort, the County Noise Ordinance standards of 55 dBA during daytime and 45 dBA during nighttime are applied, as these standards are more restrictive than the County Noise Element standards (see Table 8-4). As outlined in Appendix F: Noise, there is over 1,000 feet between the proposed Alpine Sierra Development and the Alpine Meadows Ski Resort. The Noise analysis states that the unshielded snowmaking activities are predicted to be as high as 48 dB at the nearest portion of the project site when snowmaking is occurring, an intermittent and seasonal activity that is typically limited to the months of October through April depending on snowpack conditions and atmospheric conditions conducive to snowmaking.

The Placer County Noise Ordinance limits the maximum average hourly sound exposure from non-transportation noise sources at the property boundary of a residential land use to 55 dB Leq in the daytime and 45 dB Leq at night (between the hours of 10:00 p.m. and 7:00 a.m.). For reference, 45 dB is the approximate sound level of a floor fan on a low setting or a very quiet conversation whereas normal speech is approximately 65 dB. Existing permitted snowmaking activities at the resort could result in an intermittent exceedance by as much as 3 dB at the southern property boundary of some lots located in the western development pod of Alternative A (lots 38 – 47) and Alternative B (lots 29 – 33), but only when snowmaking would occur after 10:00 p.m. and prior to 7:00 a.m. Noise levels are measured at the property boundary to determine if noise levels could interfere with outdoor activities and enjoyment of property. Outdoor uses would typically not occur between 10:00 p.m. and 7:00 a.m. thus the potential for exposure to increased sound levels for persons on those properties during these discrete periods is very limited. Furthermore, modern residential construction results in a noise level reduction of 25 dB or more for indoor spaces, and therefore snowmaking would not result in impacts to indoor uses. Thus impacts related to exposure

of people within the project site to unacceptable noise levels from non-transportation sources would remain **less than significant.**

Transportation Noise

Off-Site Roads

For noise generated by off-site traffic, the 60 dBA L_{dn} exterior and 45 dBA L_{dn} interior noise standards of Table 8-5 apply. To predict existing-plus-project traffic noise levels in the vicinity of the project, Bollard Acoustical Consultants Inc. used the traffic volumes data from the Traffic Impact Analysis for this project (LSC 2015, provided in Appendix E to this Draft EIR) and the FHWA Traffic Noise Prediction Model discussed above. Noise levels generated by project traffic are presented in Table 8-6, Predicted Traffic Noise Exposure Levels at 100 Feet from Roadway Centerlines.

Table 8-6
Predicted Traffic Noise Exposure Levels at 100 Feet from Roadway Centerlines

Roadway	Segment Description	Winter Conditions			Summer Conditions		
		Existing No Project (dBA)	*Existing Plus Project (dBA)*	*Change (dB)*	*Existing No Project (dBA)*	*Existing Plus Project (dBA)*	*Change (dB)*
SR-89	North of Alpine Meadows Road	65.9	65.9	0.0	65.6	65.6	0.0
	South of Alpine Meadows Road	65.4	65.4	0.0	65.7	65.7	0.0
Alpine Meadows Road	West of SR-89	60.3	60.4	0.1	55.8	56.2	0.4
	North of Site Access	59.4	59.6	0.2	47.5	49.9	2.4
	South of Site Access	59.4	59.5	0.1	47.5	47.5	0.0

Source: FHWA RD-77-108, with inputs from Bollard Acoustical Consultants Inc. 2015 (see Appendix F).
Notes: dBA = A-weighted decibels; dB = decibels; SR = State Route.

Alternative A would generate approximately 277 new daily vehicle trips on Alpine Meadows Road. As shown in Table 8-6, Alternative A would result in an increase in traffic noise ranging from 0.0 to 2.4 dB L_{dn} during summer conditions and 0.0 to 0.2 dB L_{dn} during winter conditions, measured at a distance of 100 feet from the roadway centerline.

Noise levels would remain below 60 dBA for two roadway segments and existing noise levels already exceed 60 dBA for three roadway segments. In those segments where existing noise levels are below 60 dBA, the project's noise increase would not be significant because the increase would remain below the thresholds provided in Table 8-3.

As demonstrated in Table 2 of Appendix F: Noise Study, Alternative A would not increase noise levels on the two segments of State Route (SR) 89 where noise levels are currently 65.9 dBA and 65.4 dBA in the winter and 65.6 dBA and 65.7 dBA in the summer. The segment of Alpine Meadows Road west of SR-89 is the third location where existing noise levels exceed 60 dBA. This occurs only in the winter; the summer noise level along this segment is 55.8 dBA. In the winter, Alternative A would result in a 0.1 dB increase to noise levels along this segment, resulting in a noise level of 60.4 dBA. As shown in Table 2 of the Environmental Noise Assessment (Appendix F), the 60 dBA contour for this segment is 105 feet from the road centerline under existing winter conditions. Existing condominiums located within 105 feet of the road centerline are exposed to the existing 60.3 dBA noise level and would be exposed to the 60.4 dBA noise level as a result of Alternative A. Under the existing conditions, residents of the condominiums are exposed to transportation noise levels that slightly exceed Placer County's standards; the project would not create a new exposure to excessive noise levels, but would slightly increase the noise level in this location. However, the 0.1 dB increase in noise level due to Alternative A would not be audible or perceptible and would remain below the noise level increase necessary to create a significant impact as shown in Table 8-3. Therefore, the Alternative A's impact related to generating or exposing existing residents in the vicinity to excessive transportation noise levels would be **less than significant.**

On-Site Roads

The FHWA Model was used to determine the future traffic noise generated by the interior roadways (Road A) of the project upon the existing residences to the immediate north of the project site. The outdoor activities of the existing residences are located approximately 100 feet from the centerline of the future on-site project roadway (Road A). According to the traffic study, Alternative A would generate approximately 277 vehicle trips at the site access point over the course of a busy day. Assuming a vehicle speed of 35 miles per hour, 277 daily trips, and a distance of 100 feet from the centerline of Road A, the FHWA Model predicted a traffic noise level of 43 dBA L_{dn} at the outdoor activity areas of the nearest existing residences to the north. The predicted Road A traffic noise level at the outdoor activity areas of the nearest existing residences would be in compliance with the Placer County transportation exterior noise criteria of 60 dBA L_{dn} at the nearest existing residences.

Proposed Road A would be elevated relative to existing residences on John Scott Trail. The elevation difference between John Scott Trail and proposed Road A would be 40 to 100 feet. The majority of traffic noise from automobiles is from the noise of tires moving across pavement. Due to the elevated position and substantial intervening vegetation, the Road A tire/pavement interface would not likely be visible from the nearest existing residences on John Scott Trail, as discussed further in Chapter 5 Visual Resources. The most substantial noise-generating component of Road A would be largely shielded from view of the nearest existing residents and

the physical barriers between the noise source and the receiver would result in some diminishment of the noise transmission.

Although the rear property line of the nearest residential lot on the south side of John Scott Trail would be 115 feet from the centerline of proposed Road A, the nearest building façade of the nearest residence would be approximately 170 feet from the proposed Road A centerline. The distance from the nearest residences on the north side of John Scott Trail to proposed Road A would be approximately 300 feet. By comparison, the nearest building façades of residences constructed on John Scott Trail to the centerline of John Scott Trail are approximately 40 feet. With the greater distance between the noise source and the existing residences, noise from single-event pass-bys of vehicles on the existing John Scott Trail are predicted to be between 7 and 13 dB louder than single-event vehicle pass-bys on proposed Road A at the existing residences on John Scott Trail. Vehicle traffic on proposed Road A would not expose existing residents in the area to noise levels in excess of 60 dBA.

The Environmental Noise Assessment (Appendix F) also considered whether sounds could reflect off of the proposed Road A retaining walls toward the existing residences on John Scott Trail. The analysis found the following:

- The angle of sound reflection off of a barrier is equal to the angle of incidence. As a result, noise from tires on Road A would hit the proposed retaining wall horizontally and would be reflected in the opposite direction horizontally. Because the residential building pads on John Scott Trail are between 40 and 100 feet below the elevation of proposed Road A, any reflected sound would essentially pass above those residences.
- Sound impacting a perfectly reflective surface essentially results in a doubling of sound energy, provided the source of the sound is very close to the reflective surface (as would be the case with the proposed retaining walls). A doubling of sound energy results in a 3 dB increase in noise levels. Therefore, assuming the retaining wall is perfectly reflective, a 3 dB increase in sound levels would result. However, the retaining wall would be constructed of large blocks and would not be perfectly smooth and 100% reflective. Therefore, reflected sound from the proposed retaining wall back in the northerly direction would be less than 3 dB higher than the noise source.
- The elevation difference between Road A and the residences on John Scott Trail would be such that reflected sound would be directed above those residences. Even with perfect reflection of sound in the direction of those residences, which is a physical impossibility, sound from single-event passages of vehicles on Road A would still be approximately 4 to 10 dB lower than sound already generated by single-event passages of vehicles on John Scott Trail at the existing residences along that roadway.

- Even with a perfect, unshielded reflection of sound from the retaining walls, the predicted Road A traffic noise level at the outdoor activity areas of the nearest existing residences on John Scott Trail would be approximately 46 dBA L_{dn}. This level is well below the Placer County transportation exterior noise criteria of 60 dBA L_{dn} at the nearest existing residential property boundary. In addition, average ambient noise levels in the project area nearest to the existing homes just north of Road A were measured to be 48 dBA L_{dn} during the summer monitoring period and 55 dBA L_{dn} during the winter monitoring period. As a result, noise generated by new project traffic on Roadway A would also be well below measured existing ambient noise conditions at the nearest existing residences, even after consideration of worst-case reflection of sound from the proposed retaining walls.

The predicted future non-transportation noise levels at the exterior and interior areas of the existing residences to the north would be in compliance with Placer County's 60 dBA L_{dn} exterior and 45 dB L_{dn} interior traffic noise level standards. As a result, this impact would be **less than significant** and no mitigation measures would be required.

Alternative B Impacts

Alternative B would generate less traffic than Alternative A, which would reduce the amount by which the project would increase noise levels in the vicinity. As with Alternative A, impacts from Alternative B related to generation of or exposure of people to noise levels that exceed Placer County's standards would be **less than significant** and no mitigation measures would be required**.**

Mitigation Measures

No mitigation measures are required.

Impact 8.2

Would the project expose people to or generate excessive groundborne vibration or groundborne noise levels?

Significance and Mitigation	Alternative A	Alternative B
Significance before mitigation:	Less than significant	Less than significant
Mitigation measures:	None	None
Significance after mitigation:	Less than significant	Less than significant

Alternative A and Alternative B Impacts

Under either project alternative, the project would not include any appreciable sources of ongoing vibration. Short-term vibration generated by project construction would dissipate

rapidly with distance and would be below the vibration criterion of 0.1–0.50 inches per second peak particle velocity (Appendix F). Field inspections of the immediate project area revealed no discernable sources of vibration that would adversely affect future sensitive land uses within the project site. Therefore, vibration impacts either because of the project or on the project are not anticipated. This impact would be **less than significant** for either project alternative and no mitigation measures would be required.

Mitigation Measures

No mitigation measures are required.

Impact 8.3

Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Significance and Mitigation	Alternative A	Alternative B
Significance before mitigation:	Less than significant	Less than significant
Mitigation measures:	None	None
Significance after mitigation:	Less than significant	Less than significant

Alternative A Impacts

The project area is sparsely developed and there are no substantial sources of noise in the immediate project vicinity other than seasonal activity associated with the Alpine Meadows Ski Resort and periodic avalanche-control activities. As a result, the existing ambient noise environment in the immediate project vicinity is defined primarily by light traffic on Alpine Meadows Road during the non-ski season, and by heavier traffic and resort activity during the winter ski season.

As discussed above and shown in Table 8-1, the existing noise levels at the project site are fairly low at locations distant from Alpine Meadows Road, with average daytime noise levels in the low 40s dBA and average nighttime levels in the low 30s dBA L_{eq}. At the sites located closer to Alpine Meadows Road, average daytime noise levels were in the low 50s dBA and nighttime levels in the low 40s dBA L_{eq}. However, neither of the project alternatives would result in construction of residences near Alpine Meadows Road.

Substantial increases are defined using the FICON guidelines shown in Table 8-3. Specifically, given the low existing noise levels in the area, project-related noise level increases of 5 dB or greater are considered significant for this assessment.

Non-Transportation Noise

Alternative A would create non-transportation noise as a result of residents occupying and using their property and from use of the proposed on-site recreation facilities. The proposed on-site recreation facilities would be located at the proposed intersection of Road A and Court C. This location is a minimum of 280 feet from the nearest off-site residences. Noise generated at the proposed recreation facilities would not increase ambient noise levels at existing residences in the vicinity.

In addition, routine HOA operations would include use of snow removal equipment along the roadways within the project site. These activities would occur internal to the project site and a minimum of 150 feet from any existing residence. Use of snow removal equipment within the project site is not expected to increase ambient noise levels at existing residences in the vicinity. A sewer lift station would be located near the northeast corner of the project site and would include a backup generator enclosed in a small shelter for use during emergency power outages. Noise associated with the daily operation of the lift station pumps would not be appreciable. Noise associated with operation of the generator during power outages is unlikely to exceed noise thresholds at the nearest property boundary since it would be housed within an equipment cabinet and due to the infrequent and short duration of use would not result permanent noise impacts.

Transportation Noise

As shown in Table 8-6, Alternative A would result in no change to noise levels 100 feet from the centerline of SR-89. The existing noise levels at Alpine Meadows Road are 60 dBA L_{dn} or less. The FICON criteria establish a significant increase as an increase of 3–5 dB L_{dn} or more. Along Alpine Meadows Road, the project would result in an increase in noise levels ranging from 0.0 to 2.4 dB L_{dn}.

Average ambient noise levels in the project area nearest to the existing homes just north of Road A were measured to be 48 dBA L_{dn} during the summer monitoring period and 55 dBA L_{dn} during the winter monitoring period. As discussed under Impact 8.1, the FHWA Model predicted a traffic noise level of 43 dBA L_{dn} at the outdoor activity areas of the nearest existing residences to the north. As a result, noise generated by new project traffic on Road A would also be well below measured existing ambient noise conditions at the nearest existing residences.

Because the transportation noise levels due to Alternative A would be below the FICON criteria and would not result in a noticeable increase ambient noise at sensitive receptors in the project area, Alternative A would have a **less-than-significant** impact related to transportation noise and no mitigation measures would be required.

Alternative B Impacts

Alternative B would generate less traffic than Alternative A, which would reduce the amount by which the project would increase noise levels in the vicinity. Alternative B would also develop fewer residential lots than Alternative A. These factors would reduce the degree to which the project would create a permanent increase in noise levels; therefore, impacts would be **less than significant** and no mitigation measures would be required.

Mitigation Measures

No mitigation measures are required.

Impact 8.4

Would the project cause a substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project?

Significance and Mitigation	Alternative A	Alternative B
Significance before mitigation:	Potentially significant	Potentially significant
Mitigation measures:	Mitigation Measures 8.4a through 8.4e	Mitigation Measures 8.4a through 8.4e
Significance after mitigation:	Less than significant	Less than significant

Alternative A Impacts

Substantial noise increases are defined using the FICON guidelines shown in Table 8-3. Specifically, because the existing noise levels in the vicinity are less than 60 dB, project-related noise increases of 5 dB or greater are considered significant. However, construction activities are exempt from the noise standards from 6:00 a.m. to 8:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday, as long as all construction equipment is fitted with factory-installed muffling devices and is maintained in good working order.

Construction of Alternative A would generate noise associated with the use of construction equipment and increased truck traffic in the project vicinity. Activities involved in construction would generate maximum noise levels ranging from 85 to 90 dBA at a distance of 50 feet. Typical noise levels associated with commonly used construction equipment are identified in Table 8-7, Common Construction Equipment Noise Levels.

Table 8-7
Common Construction Equipment Noise Levels

Type of Equipment	Maximum Noise Level at 50 Feet (dBA)
Bulldozers	85
Heavy trucks	84
Backhoes	80
Pneumatic tools	85

Source: FHWA RD-77-108, as cited in Appendix F (Bollard Acoustical Consultants Inc. 2015).
Note: dBA = A-weighted decibels.

Although construction activities and material transport activities would be temporary, they would result in periods of elevated noise levels. This impact is considered **potentially significant**. Mitigation Measure (MM) 8.4a through MM 8.4e identify requirements for Alternative A to comply with Placer County Code Article 9.36 regarding construction noise; to maintain construction vehicles in good working order; to operate away from sensitive land uses; and to comply with Placer County General Plan policies. These measures would minimize the noise generated during project construction and ensure that construction traffic routes minimize exposure of existing residential land uses to noise. With implementation of these measures, this impact would be reduced to **less than significant**.

Alternative B Impacts

Alternative B would require generally the same level of construction activity and in the same locations as Alternative A. Construction noise impacts would be the same as those evaluated for Alternative A. Construction could result in temporary increases in noise levels, and this would be a **potentially significant** impact. With implementation of MM 8.4a through MM 8.4e, this impact would be reduced to **less than significant**.

Mitigation Measures

MM 8.4a: Construction noise emanating from any construction activities for which a grading or building permit is required shall be prohibited on Sundays and federal holidays, and shall occur only as follows:

- Monday through Friday, 6:00 a.m. to 8:00 p.m.
- Saturday, 8:00 a.m. to 6:00 p.m.

The Placer County (County) Planning Services Division shall verify that these restrictions are indicated on the Grading and Improvement Plans prior to approval of the Improvement Plans or issuance of a grading permit.

MM 8.4b: The project applicant shall include the following note on the Improvement Plans: All construction equipment shall be fitted with factory-installed muffling devices, and all construction equipment shall be maintained in good working condition to lower the likelihood of any piece of equipment emitting noise beyond the standard decibel level for that equipment.

MM 8.4c: Include the following note on the Improvement Plans:

- All equipment and vehicles shall be turned off when not in use.
- Unnecessary idling of internal combustion engines shall be prohibited.
- Idling shall be limited to no more than 5 minutes.

MM 8.4d: Prior to issuance of grading and/or building permits, County staff shall ensure that project Grading and Improvement Plans identify locations for all stationary noise-generating construction equipment, such as air compressors, that are located as far as practical from nearby homes. Where such equipment must be located near adjacent residences, project Grading and Improvement plans shall include provisions to provide acoustical shielding of such equipment prior to issuance of grading and/or building permits.

MM 8.4e: Prior to issuance of grading and/or building permits, County staff shall ensure that project Grading and Improvement Plans identify equipment and material storage locations that are sited as far as possible from nearby sensitive receptors.

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SOURCE: Bollard Acoustical Consultants, Inc 2015

FIGURE 8-1

Noise Measurement Locations

Alpine Sierra Subdivision - Environmental Impact Report

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