INTRODUCTION

Noise

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility of sound is subjective and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness." Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human, frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The A-weighted sound level is expressed in dBA. This scale de-emphasizes low frequencies to which human hearing is less sensitive and focuses on mid- to high-range frequencies. Due to the physical characteristics of noise transmission and reception, an increase of 10 dBA is normally required to achieve a doubling of loudness, as perceived by the human ear. In addition, a 3-dBA increase is recognizable to most people in the context of the community noise environment. A change in noise level will usually not be detectable unless the new noise source is at least as loud as the ambient conditions.

Objects that obstruct the line-of-sight between a noise source and a receptor reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as barrier insertion loss. If a receptor is located behind the wall but has a view of the source (i.e., line-of-sight not fully blocked), some barrier insertion loss would still occur, though to a lesser extent. Conversely, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall reflects noise back to the receptor, thereby compounding the noise.

Time variation in noise exposure is typically expressed in terms of the average energy over time (L_{eq}), or alternatively, as a statistical description of the sound level that is exceeded over some fraction of a period of time (typically conducted over one hour). For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_8 and L_{25}

represent the noise levels that are exceeded 8 and 25 percent of the time, respectively, or for 5 and 15 minutes during a 1-hour period, respectively.

Although the A-weighted scale accounts for the range of people's response, and therefore, is commonly used to quantify individual event or general community sound levels, the degree of annoyance also depends on several other perceptibility factors. These factors include:

- Ambient (background) sound level;
- Magnitude of sound event with respect to the background noise level;
- Duration of the sound event;
- Number of event occurrences and their repetitiveness; and
- Time of day that the event occurs.

Several methods have been devised to relate noise exposure over time to human response. Commonly used noise metrics for this type of study are the Community Noise Equivalent Level (CNEL) or day-night average level (L_{dn}). Both of these descriptors represent the weighted energy noise level for a 24-hour day after including a 10 dB penalty for noise levels occurring at night between the hours of 10:00 P.M. to 7:00 A.M. The CNEL, originally developed for use in the California Airport Noise Regulation, additionally includes a 5 dBA penalty to noise occurring during evening hours from 7:00 P.M. to 10:00 P.M. These descriptors account for the increased sensitivity to noise events that occur during the quiet late evening and nighttime periods.

Ground-Borne Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Man-made vibration issues are therefore, usually confined to short distances (i.e., 500 feet or less) from the source.

3.5.1 REGULATORY FRAMEWORK

Many government agencies have established noise standards and guidelines to protect people from potential hearing damage and various other adverse physiological and social effects associated with noise. Standards and guidelines that are applicable to implementation of the Eagle Base Lodge Development Project are discussed below.

a. Federal

The United States Department of Housing and Urban Development (HUD) has set a goal of 45 dBA L_{dn} as a desirable maximum interior noise standard for HUD-assisted residential units.[44] This same noise level is also generally accepted within the State of California. While HUD does not specify acceptable exterior noise levels, standard construction of residential dwellings constructed under Title 24 standards typically provide 20 dBA of attenuation with the windows closed. Based on this attenuation, the exterior L_{dn} for HUD assisted dwelling units should not exceed 65 dBA.

The United States Environmental Protection Agency has developed guidelines on recommended maximum noise levels to protect public health and welfare.[45] For example, 55 dBA is recommended as the maximum for the annual average L_{dn} in outdoor residential areas and areas where people spend widely varying amounts of time and other places in which quiet is a basis for use. With regard to worker noise exposure, Federal regulations (e.g., 29 CFR Part 1919.120) safeguard the hearing of workers exposed to occupational noise, enforced by the Occupational Safety and Health Administration (OSHA). For example, it is illegal for employees to be exposed to noise levels of 115 dBA for more than 15 minutes during any workday.

There are no federal standards for ground-borne vibration; however, the Federal Transit Authority (FTA) has established a PPV threshold of 0.2 inch per second for vibration in proximity to fragile buildings and 2.0 inches per second as a safe criterion for well engineered structures.[46]

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[44] *The day-night average level (L_{dn}) is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of ten decibels to sound levels during the nighttime from 10 P.M. to 7 A.M. The 10-decibel penalty is applied to account for increased noise sensitivity during the nighttime hours. The L_{dn} represents the daily energy noise exposure averaged on an annual basis.*

[45] *USEPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.*

[46] *Federal Transit Authority, Transit Noise and Vibration Impact Assessment, Final Report, April 1995.*

b. State

The State of California, Department of Health Services, Environmental Health Division, has published the Guidelines for Noise and Land Use Compatibility (the State Guidelines) which recommend guidelines for local governments to use when setting standards for human exposure to noise and preparing Noise Elements for General Plans. The State Guidelines, summarized in Table 33 on page 191, indicate that residential land uses and other noise sensitive receptors generally should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or L_{dn}). Application of this compatibility matrix to development projects is not mandated by the Department of Health Services; however, each jurisdiction is required to consider the State Guidelines when developing its General Plan Noise Element and when determining acceptable noise levels within its community.

There are no adopted State policies or standards for ground-borne vibration. The traditional view has been that common vibrations related to roadway traffic and construction activities pose no threat to buildings or structures. However, the California Department of Transportation (Caltrans) does recommend that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, and 15 to 30 meters (50 to 100 feet) of a historic building or a building in poor condition. According to data published by the California Department of Transportation (Caltrans), 0.1 inch/sec PPV is the level at which continuous vibrations begin to annoy people, and 0.2 inch/sec PPV is the threshold at which there is a risk of architectural damage to normal dwelling structures that contain plastered walls and/or ceilings.[47]

c. Local

Town of Mammoth Lakes General Plan

As required under Section 65302(f) of the California Government Code, each community must prepare and adopt a comprehensive long-range General Plan for its physical development containing seven mandatory elements, including a Noise Element. The Noise Element must: (1) identify and appraise noise problems in the community; (2) recognize the State Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels. The Town of Mammoth Lakes Noise Element policies that relate to the proposed project include the following:

- Policy 4.2.1—New development of noise sensitive land uses shall not be permitted in areas exposed to existing or projected future levels of noise from transportation noise

[47] *California Department of Transportation, Transportation Related Earthborne Vibrations, Technical Advisory Number TAV-02-01-R9601, February 20, 2002.*

Table 33

Land Use Compatibility for Community Noise Sources

Land Use Category	*Noise Exposure (L_{dn} or CNEL, dBA)*						
	55	*60*	*65*	*70*	*75*	*80*	
Residential – Low-Density Single-Family, Duplex, Mobile Homes							
Residential – Multiple Family							
Transient Lodging – Motel, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditorium, Concert Hall, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

	NORMALLY ACCEPTABLE: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
	NORMALLY UNACCEPTABLE: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken. Construction costs to make the indoor environmental acceptable would be prohibitive and the outdoor environment would not be usable.

Source: State of California, General Plan Guidelines, Governor's Office of Planning and Research, 2003

sources which exceed 60 dB L_{dn} in outdoor activity areas or 45 dB L_{dn} in interior spaces.

- Policy 4.2.2—Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 60 dB L_{dn} within

Table 34

Maximum Allowable Noise Exposure-Stationary Noise Sources[a]

Noise Descriptor	Daytime (7 A.M. to 10 P.M.)	Nighttime (10 P.M. to 7 A.M.)
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

[a] *As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.*

Source: Revised Mammoth Lakes Noise Element of the General Plan, 1997

outdoor activity areas and 45 dB L_{dn} within interior spaces of existing noise sensitive land uses.

- Policy 4.2.3—New development of noise sensitive land uses shall not be permitted where the noise level from existing stationary noise sources exceed a daytime noise standard of 50 dBA Leq or 70 dBA L_{max} and a night time noise standard of 45 dBA Leq or 65 dBA L_{max}.

- Policy 4.2.4—Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed the noise level standards provided in Policy 4.2-3 at noise-sensitive uses.

To achieve compliance with the policies of the Noise Element, the Noise Element provides implementation measures. The following implementation measures are applicable to the proposed project.

Measure 5.1 The Town shall review new public and private development proposals to determine conformance with the policies of the Noise Element.

Measure 5.2 The Town shall require an acoustical analysis in those cases where a project potentially threatens to expose noise-sensitive land uses to excessive noise levels. The presumption of the noise levels shall be based on the location of new noise-sensitive uses to known noise sources, or staff's professional judgment that a potential for adverse noise impacts exists. Acoustical analyses shall be required early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of building permits.

Measure 5.3 The Town shall develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

Measure 5.4 The Town shall develop and employ procedures to monitor compliance with the policies of the Noise Element after completion of projects where noise mitigation measures have been required.

Measure 5.5 The Town shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for multi-family housing, hotels and motels.

Measure 5.6 The Town shall request the California Highway Patrol, the sheriff's office and the police department to actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems.

The Town is currently in the process of revising its General Plan. The Draft Updated General Plan, dated April 2005, maintains the same list of goals and policies for noise and, therefore, the list of goals and policies provided above would remain applicable to the proposed project.

Town of Mammoth Lakes Municipal Code

Chapter 8.16 of the Mammoth Lakes Municipal Code (Town Noise Ordinance) controls unnecessary, excessive and annoying noise in the Town. However, this chapter does not control noise sources that are preempted by other jurisdictions including in-flight aircraft and motor vehicles operating on public rights-of-way. As outlined in Section 8.16.070 of the Town Noise Ordinance and presented in Table 35 on page 194, the Town has established maximum exterior noise levels based on land use zones. Noise levels in excess of the levels indicated in Table 35 are conditionally permitted, depending on the intensity of the noise and the duration of exposure.[48] The Town Noise Ordinance also states that interior noise levels resulting from outside sources within residential units shall not exceed 45 dBA L_{50} between 7 A.M. and 10 P.M.,

[48] *Noise levels may not exceed the exterior noise standard for a cumulative period of more than thirty minutes in any hour; or plus five decibels for a combined period of more than fifteen minutes in any hour; or plus ten decibels for a combined period of more than five minutes in any hour; or plus fifteen decibels for a combined period of more than one minute in any hour; or plus twenty decibels for any period of time (maximum noise level).*

Table 35

Town Exterior Noise Ordinance Standards

Receiving Land Use	Time Period	Noise Zone Classification[a] Maximum Noise Levels (dBA) L_{50} Rural/ Suburban	Suburban	Urban
One and Two Family Residential	10 P.M. to 7 A.M.	40	45	50
	7 A.M. to 10 P.M.	50	55	60
Multiple Dwelling Residential/Public Space	10 P.M. to 7 A.M.	45	50	55
	7 A.M. to 10 P.M.	50	55	60
Limited Commercial/Some Multiple Dwellings	10 P.M. to 7 A.M.	55	—	—
	7 A.M. to 10 P.M.	60	—	—
Commercial	10 P.M. to 7 A.M.	60	—	—
	7 A.M. to 10 P.M.	65	—	—
Light Industrial	Anytime	70	—	—
Industrial	Anytime	75	—	—

[a] *The classification of different areas of the community in terms of environmental* noise *zones shall be determined by the* noise *control officer, based upon assessment of community* noise *survey data. Additional area classifications should be used as appropriate to reflect both lower and higher existing ambient levels than those shown. Industrial* noise *limits are intended primarily for use at the boundary of industrial zones rather than for* noise *reduction within the zone.*

Source: Town of Mammoth Lakes Noise Ordinance, Chapter 8.16

and 35 dBA L_{50} between 10 P.M. and 7 A.M.[49] If the existing interior or exterior ambient noise levels exceed the permissible level within the noise limit categories, the allowable noise exposure standard is increased in five dBA increments in each category as appropriate to encompass or reflect the ambient noise level (Section 8.16.070 and 8.16.080 of the Town Noise Ordinance).

Town Code Section 8.16.090 (B)(6) establishes exterior noise standards that regulate construction noise from mobile and stationary equipment for various general zoning classifications. Non-scheduled, intermittent, short-term operations (less than 10 days) of mobile equipment (e.g., backhoes, bulldozers, etc.) standards are provided in Table 36 on page 195. Noise standards for repetitively scheduled and relatively long-term construction operations

[49] *Noise levels may not exceed the interior noise standard for a cumulative period of more than five minutes in any hour; or plus five decibels for a combined period of more than one minute in any hour; or plus ten decibels for any period of time (maximum noise level).*

Table 36

Town Construction Noise Standards

Construction Equipment [a]	Type I Areas Single-Family Residential	Type II Areas Multi-Family Residential	Type III Areas Semi-Residential Commercial [a]	Business Properties
Mobile Equipment [b]				
Daily, except Sundays and legal holidays; 7:00 A.M. to 8:00 P.M.	75 dBA L_{50}	80 dBA L_{50}	85 dBA L_{50}	----
Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays	60 dBA L_{50}	64 dBA L_{50}	70 dBA L_{50}	----
Daily, including Sunday and legal holidays, all hours	----	----	----	85 dBA L_{50}
Stationary Equipment [c]				
Daily, except Sundays and legal holidays; 7:00 A.M. to 8:00 P.M.	60 dBA L_{eq}	65 dBA L_{eq}	70 dBA L_{eq}	----
Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays	50 dBA L_{eq}	55 dBA L_{eq}	60 dBA L_{eq}	----
Daily, including Sunday and legal holidays, all hours	----	----	----	75 dBA L_{50}

[a] *The Town requires that all mobile or stationary internal combustion engine-powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.*

[b] *Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment (e.g., excavator, backhoe, dozer, etc.).*

[c] *Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment (e.g., generators, compressors, etc.).*

Source: Town of Mammoth Lakes Noise Ordinance, Section 8.16.090

(periods of 10 days or more) of stationary equipment (e.g., compressors and generators) are also provided in Table 36. Section 15.08.020 of the Town Code limits construction noise between 7 A.M. and 8 P.M., Monday through Saturday. Work hours on Sundays and Town recognized holidays shall be limited to the hours between 9 A.M. and 5 P.M. and permitted only with the approval of the building official or designee.

The Town has established a vibration threshold within the Noise Ordinance. According to Section 8.16.090 of the Noise Ordinance, operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one 150 feet (46 meters) from the source if on a public space or public right-of-way. While not defined, the perception threshold is generally defined as a motion velocity of 0.01 inch per second.

3.5.2 AFFECTED ENVIRONMENT

a. Existing Noise Environment

The existing noise environment in the project area is dominated by traffic noise from nearby roadways. The heaviest traveled roadways in the vicinity of the project area include Meridian Boulevard and Majestic Pines Road, which are located along the southern and northeastern boundaries of the project site, respectively. Additional sources of noise within the project vicinity are associated with recreation activities, lodges, and residential uses (e.g., barking dogs, property maintenance). In addition, intermittent noises associated with construction, snow removal activities, snowmaking operations, and avalanche control).

(1) Ambient Noise Levels

The noise environment in the project area was characterized by conducting a survey of the area and performing long-term and short-term noise measurements from January 18th to 23rd, 2006. Long-term ambient sound measurements were conducted at three different locations, using Larson-Davis Model 820 Type I sound level meters. These monitoring locations were selected to characterize the general ambient noise level in the project area. As shown in Figure 3.5-1, Location 1 was north of the proposed project site in close proximity to nearby residential uses. Location 2 was located northeast of the project site, also near residential uses to represent conditions approximately 100 feet from Majestic Pines Road. Location 3 was located within the southwest corner of the project site, approximately 50 feet north of Meridian Boulevard and indicative of conditions approximately 50 feet from Meridian Boulevard. A summary of sound measurement data collected from the three measurement locations is provided in Table 37 on page 197**.** As shown in Table 33, the measured L_{dn} was substantially higher for the fist two measurement days and was the result of high wind conditions, heavy snow fall, and resultant snow removal. The latter two days, on Friday and Saturday, were substantially quieter and indicative of a weekend ski day. The measured L_{dn} for Location 1 ranged from 48.3 dBA to 62.1 dBA L_{dn} and the average noise level over the weekend was 49.0 dBA L_{dn}. The measured L_{dn} for Location 2 ranged from 51.9 dBA to 66.9 dBA L_{dn} and the average noise level over the weekend was 53.7 dBA L_{dn}. The measured L_{dn} for Location 3 ranged from 62.1 dBA to 69.2 dBA L_{dn} and the average noise level over the weekend was 62.8 dBA L_{dn}.

Long-term noise measurements were conducted in July of 2005 by Brown-Buntin Associates to characterize noise conditions in the Town during summertime conditions. The closest and most representative noise monitoring location was approximately 2,000 feet north of the project site, located at 107 Sugar Pine. The measured L_{dn} for this location was 50.7 dBA and is within the range of noise levels measured during wintertime conditions at the project site (49.0 dBA to 53.7 dBA L_{dn})

Table 37

Summary of Long-Term Ambient Noise Measurement Data for Year 2006 (dBA) [a]

Measurement Location and Day	Daytime Hourly Ambient L_{eq} (Weekday/Weekend)[b]			Nighttime Hourly Ambient L_{eq}[b]			L_{dn}
	Avg.	Min.	Max.	Avg.	Min.	Max.	
Location 1 (North)							
January 18, 2006	57.4	44.5	61.0	55.2	41.1	63.0	62.1
January 19, 2006	47.0	39.3	52.1	48.6	37.8	54.5	54.8
January 20, 2006	46.9	39.4	50.9	41.6	33.9	48.7	49.6
January 21, 2006	46.6	40.1	52.3	39.3	37.1	41.3	48.3
Location 2 (North-East)							
January 18, 2006	62.2	51.2	66.2	60.1	45.4	67.5	66.9
January 19, 2006	50.4	44.2	53.3	54.9	43.1	60.8	60.9
January 20, 2006	50.6	47.2	54.3	48.7	29.5	57.0	55.6
January 21, 2006	46.5	44.4	49.1	44.9	42.5	46.7	51.9
Location 3 (South)							
January 18, 2006	63.3	56.1	68.5	62.3	44.9	67.1	69.2
January 19, 2006	60.7	56.2	64.9	65.4	55.3	69.5	71.4
January 20, 2006	59.8	56.1	61.4	56.1	38.4	62.7	63.5
January 21, 2006	59.3	55.7	61.0	54.1	50.1	58.1	62.1

[a] *Based on a continuous ambient sound measurement using a Larson-Davis 820 Type 1 Integrating Sound Level Meter. Measurement locations are depicted in Figure 17 on page 200, and noise measurement data is provided in Appendix D.*

[b] *Per the Town Noise Ordinance, daytime hours are from 7 A.M. to 10 P.M., and nighttime hours are from 10 P.M. to 7 A.M.*

Source: PCR Services Corporation, 2006

In addition to continuous long-term noise monitoring, short-term noise measurements were also conducted to characterize the noise level of the activities associated with the project, such as outdoor eating areas, snow blower operation, ski-lift, and parking lot activities. The short-term measured noise summary is provided in Table 38 on page 198.

The 1997 Noise Element also contains information on noise levels from snow removal and avalanche control operations. These are normal and existing noise sources within the Town of Mammoth Lakes. As indicated in the Noise Element, snow removal activities on roadways and in parking lots generate noise levels of 68 to 87 dBA at 100 feet from the equipment and can occur at any time during a 24-hour day. These noise levels are consistent with the short-term measured noise levels provided in Table 38. Snow removal activities for purposes of public safety are considered emergency work and are therefore exempt from noise level limits of the Town's Noise Ordinance.

Table 38

Short Term Noise Measurements (Interval Data)

Date	Time (PST)	Duration (mm:ss)	Source or Location	L_{eq} (dBA) @ 50 ft.
January 21, 2006	13:42	14:15	Eagle Lodge Outdoor Eating Area	65.1
January 21, 2006	14:01	15:03	Eagle Lodge Ski Lift Line	62.9
January 21, 2006	14:18	04:45	Snow Blower	61.6
January 21, 2006	14:27	15:49	Juniper Springs Lodge Auto Entrance	51.5
January 21, 2006	14:46	13:47	Eagle Lodge Parking Lot	59.8
January 21, 2006	15:28	00:33	Snow Mobiles	64.1
January 21, 2006	20:10	03:42	Snow Groomers	62.8
January 21, 2006	7:45	01:06	Bobcat with Snow Blower	70.0

Source: PCR Services Corporation, 2006

In summary, ambient noise levels may be expected to vary considerably in the area surrounding the project area due to weather conditions, proximity to roadways and whether or not snow removal equipment is in use. This is evidenced in the ambient noise measurement data provided in Table 37.

(2) Traffic Noise Levels

To further characterize the area's noise environment, the L_{dn} generated by existing traffic on local roadways was established using roadway noise equations provided in the Caltrans Technical Noise Supplement (TeNS) document and traffic volume data provided by the Project's traffic consultant. As indicated in Table 39 on page 199, the calculated L_{dn} for the analyzed roadway segments as a result of existing traffic volumes ranged from 47.6 dBA L_{dn} to 60.2 dBA L_{dn} at 100 feet from the roadway right-of-way based on surface-street traffic volumes only. Existing vehicular generated noise levels along the roadway segments with residential uses are consistent with the 60 L_{dn} noise standard, with the exception of Main Street east of Minaret Road segment.

b. Sensitive Receptors

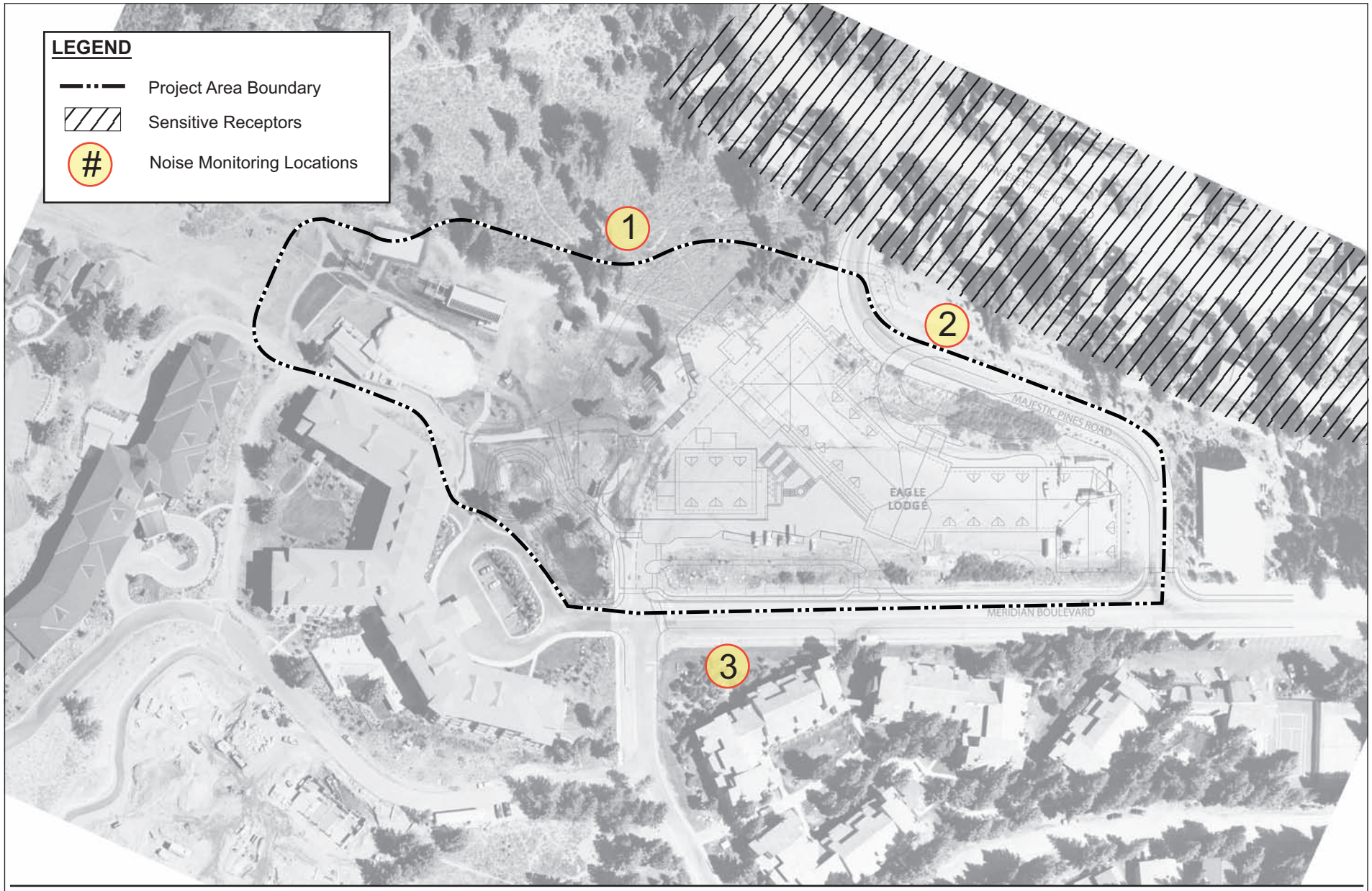
Some land uses are considered more sensitive to intrusive noise and vibration than others due to the amount of exposure and the types of activities typically involved at the receptor location. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise and vibration than commercial and industrial land uses. As shown in Figure 17 on page 200, the Summit Condominiums are located to the south of the site across Meridian Boulevard. Southwest of the site is the Juniper

Table 39

Predicted Existing Vehicular Traffic Noise Levels

Roadway Segment	Adjacent Land Use	Noise Exposure Compatibility Category	Existing L_{dn} (dBA) at 100 feet from Roadway Right-of-Way 100 Feet
Main Street East of Old Mammoth Road	Commercial/Residential	Conditionally Acceptable	55.5
Main Street West of Old Mammoth Road	Commercial/Residential	Conditionally Acceptable	59.7
Main Street East of Minaret Road	Commercial/Residential	Conditionally Acceptable	60.2
Lake Mary Road West of Minaret Road	Commercial/Residential	Conditionally Acceptable	58.5
Lake Mary Road West of Kelly Road	Commercial/Residential	Normally Acceptable	49.5
Old Mammoth Road South of Main Street	Commercial/Residential	Conditionally Acceptable	58.8
Old Mammoth Road North of Meridian Boulevard	Commercial/Residential	Conditionally Acceptable	57.7
Old Mammoth Road South of Meridian Boulevard	Commercial/Residential	Conditionally Acceptable	57.8
Meridian Boulevard, East of Old Mammoth Road	Commercial/Residential	Conditionally Acceptable	56.1
Meridian Boulevard, West of Old Mammoth Road	Commercial/Residential	Conditionally Acceptable	56.2
Meridian Boulevard, East of Minaret Boulevard	Commercial/Residential	Conditionally Acceptable	57.1
Meridian Boulevard, West of Minaret Road	Commercial/Residential	Conditionally Acceptable	56.6
Meridian Boulevard, East of Majestic Pines Road North	Commercial/Residential	Conditionally Acceptable	55.2
Meridian Boulevard, West of Majestic Pines Road North	Commercial/Residential	Conditionally Acceptable	54.4
Minaret Road, Main Street for Forest Trail	Commercial/Residential	Conditionally Acceptable	59.6
Minaret Road, South of Main	Commercial/Residential	Conditionally Acceptable	56.5
Majestic Pines Drive, North of Meridian Boulevard	Residential	Conditionally Acceptable	50.1
Majestic Pines Drive, South of Meridian Boulevard	Residential	Conditionally Acceptable	48.7
Kelly Road, South of Lake Mary Road	Residential	Normally Acceptable	47.6

Source: PCR Services Corporation, 2006



PCR

Scale not provided

Source: PCR Services Corporation, 2006

Figure 17
Noise Monitoring Locations

Springs Lodge. To the west of the Juniper Springs Lodge is multi-family residential development. The closest residences are located approximately 70 feet from the project site boundary. Other potentially sensitive uses in the more distant area include multi-family residential development to the west of Juniper Springs Lodge.

Vibration sensitive infrastructure within the project vicinity include the Mammoth Community Water District (MCWD) Ground Water Treatment Plant No. 2 located immediately to the east of the site across Majestic Pines Road and the vault housing for MCWS Well 16 within the southern portion of Lot 5 located adjacent to Meridian Boulevard.

3.5.3 ENVIRONMENTAL CONSEQUENCES

a. Criteria for Determining Impact Significance

(1) CEQA Significance Criteria

Pursuant to Appendix G of the CEQA Guidelines, projects would be considered to have a significant impact on noise if the project would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The specific noise significance thresholds presented below are based on the CEQA Guidelines, industry standards, and standards provided by the Town of Mammoth Lakes. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernable to most people in an exterior environment. Table 33, Table 34, and Table 35 provide the Town of Mammoth Lakes stationary source noise standards, exterior noise standards, and construction noise standards, respectively. Based on these factors and Town of Mammoth Lakes policies and

standards that are relevant for project development, noise impacts are considered significant if any of the following conditions are met:

- The project's on-site construction noise levels exceed Town Code Section 8.16.090 (B)(6) standards;

- The project's operational stationary noise sources exceed 50 dBA L_{eq} or 70 dBA L_{max} between 7 A.M. and 10 P.M., and 45 dBA L_{eq} or 65 dBA L_{max} between 10 P.M. and 7 A.M. at the nearest receptors;

- The project's on-site operational noise sources exceed 55 dBA L_{50} between 7 A.M. and 10 P.M. and 50 dBA L_{50} between 10 P.M. and 7 A.M. at the nearest receptors (Exterior Noise Standards for Suburban Multiple Dwelling Residential/Public Space);[50]

- The project's on-site operational noise sources increase ambient levels at the nearest receptors by more than 5 dBA, where ambient noise levels remain below the Town of Mammoth's Exterior Noise Standards and by more than 3 dBA, where noise levels exceed the Town of Mammoth's Exterior Noise Standards.

- The project's mobile source noise increases the ambient L_{dn} by more than 5 dBA, where residential uses are exposed to existing noise levels of less than the recommended 60 dB L_{dn} noise level provided in Policy 4.2.1 of the Town of Mammoth Lakes Noise Element.

- The project's mobile source noise increases the ambient L_{dn} by more than 3 dBA, where residential uses are exposed to existing noise levels that exceed the recommended 60 dB L_{dn} noise level provided in Policy 4.2.1 of the Town of Mammoth Lakes Noise Element.

A cumulative impact is considered significant if any of the following conditions are met:

- The cumulative mobile source noise levels from the project and related projects increase the ambient L_{dn} by more than 5 dBA, where residential uses are exposed to existing noise levels of less than the recommended 60 dB L_{dn} noise level provided in Policy 4.2.1 of the Town of Mammoth Lakes Noise Element.

[50] *The Town's Noise Ordinance states that if the existing interior or exterior ambient noise level exceeds that permissible within the noise limit categories, the allowable noise exposure standard is increased in five dBA increments in each category as appropriate to encompass or reflect the ambient noise level (Section 8.16.070 and 8.16.080 of the Town Noise Ordinance).*

- The cumulative mobile source noise levels from the project and related projects increase the ambient L_{dn} by more than 3 dBA, where residential uses are exposed to existing noise levels that exceed the recommended 60 dB L_{dn} noise level provided in Policy 4.2.1 of the Town of Mammoth Lakes Noise Element.

(2) Methodology

(a) Construction Noise

Construction noise impacts are evaluated by determining the noise levels generated by the different types of construction activity, calculating the construction-related noise level at nearby sensitive receptor locations, and comparing these construction-related noise levels to ambient noise levels (i.e., noise levels without construction noise). More specifically, the following steps were undertaken to calculate construction-period noise impacts:

1. Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data (see Table 37 on page 197);

2. Noise levels for each construction phase were obtained from the United States Environmental Protection Agency's (USEPA) published construction equipment noise exposure levels;

3. Distances between construction site locations (noise source) and surrounding sensitive receptors were measured;

4. The construction noise level was then calculated for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance;

5. For each sensitive receptor location, the construction noise level obtained above from Step 4 was added to the ambient noise level described in Step 1 to calculate the construction noise impact in terms of an hourly L_{eq}; and

6. Noise level increases were compared to the construction noise significance thresholds identified above.

(b) Roadway Noise

Roadway noise impacts are evaluated using the Caltrans Technical Noise Supplement (TeNS) methodology with the roadway traffic volume data provided in the Traffic Study (see Appendix B of this Draft EIR). This methodology allows for incorporation of roadway

configurations, barrier information (if any), and receiver distances. Roadway-noise attributable to project development is calculated and compared to baseline noise levels that would occur under the "No Project" condition.

(c) Stationary Point-Source Noise During Project Operations

Stationary point-source noise impacts are evaluated by identifying the noise levels generated by outdoor stationary noise sources such as rooftop mechanical equipment and loading dock activities, calculating the hourly L_{eq} noise level from each noise source at surrounding sensitive receiver property line locations, and comparing such noise levels to ambient noise levels. More specifically, the following steps were undertaken to calculate outdoor stationary point-source noise impacts:

1. Ambient noise levels at surrounding sensitive receptor locations were determined based on field measurement data (see Table 37 on page 197);

2. Mechanical equipment noise levels (hourly L_{eq}) were estimated based on Town Noise Ordinance requirements;

3. Additional sources (e.g., plaza, parking, loading dock) were evaluated based on field measurement data;

4. Distances between stationary noise sources and surrounding sensitive receptor locations were measured;

5. Stationary-source noise levels were then calculated for each sensitive receptor location based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance;

6. For each surrounding sensitive receptor location, stationary-source noise levels obtained from Step 4 were added to the ambient noise level described in Step 1 to ascertain stationary-source noise impacts in terms of a hourly L_{eq}; and

7. Noise level increases were compared to the stationary source noise significance thresholds identified above.

(d) Ground-Borne Vibration During Construction and Project Operations

Ground-borne vibration impacts were evaluated by identifying potential vibration sources, measuring the distance between vibration sources and surrounding structure locations, and making a significance determination based on the PPV (construction-period) and RMS (operations-period) significance thresholds described above.

c. Environmental Consequences of the Proposed Action

(1) Construction Impacts

(a) Noise

(i) On-site Construction Noise

Construction of the project is expected to start in spring 2007 and to take approximately two years to complete. Noise impacts from construction activities occurring within the project site would be a function of the noise generated by construction equipment, the equipment location, and the timing and duration of the noise-generating activities. Construction activities would include four stages: (1) site clearing, mass excavation, and site preparation; (2) foundation construction; (3) buildings construction; and (4) finishing and cleanup. Each stage involves the use of different types of construction equipment and, therefore, has its own distinct noise characteristics. Furthermore, construction of the subterranean parking garage may involve some blasting.

Site preparation activities including excavation and grading require use of earth moving equipment, such as heavy-duty trucks, excavators, backhoes, and front-end loaders. Foundation construction generally involves use of concrete trucks, cranes and pneumatic tools. Building construction typically includes use of hammers, generators, compressors, and delivery trucks. Finishing and site cleanup activities generally require use of trucks, landscape rollers, and compactors.

Individual pieces of construction equipment that would be used for project construction produce maximum noise levels of 74 dBA to 91 dBA at a reference distance of 50 feet from the noise source, as shown in Table 40 on page 206. These maximum noise levels would occur when equipment is operating under full power conditions or during impact moment such as during pile driving or jack hammering. However, the equipment used on construction sites often operate under less than full power condition, or part power. Actual measurements performed while equipment is performing work indicate that shift-long equivalent L_{eq} sound levels are typically 2 dBA to 15 dBA less than maximum noise levels. For project-long (i.e., total duration of construction activity) equivalent L_{eq} levels can be further reduced to account for the percentage of time that equipment actually operate on the construction site.[51]

[51] *Beranek and Ver, Noise and Vibration Control Engineering, Principles and Applications, p. 652, 1992.*

Table 40

Construction Equipment Maximum Noise Levels

Equipment	Noise Level (dBA) at 50 feet
Air Compressor	81
Backhoe	80
Blasting	94
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Scraper	89
Truck	88

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 1995

To better characterize construction-period noise levels, the average composite noise level (L_{eq}) associated with each construction stage is provided in Table 41 on page 207. These average composite noise levels are based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage, and is typically attributable to multiple pieces of equipment operating simultaneously. As shown in Table 41, the average construction-period noise level is expected to range from 77 dBA to 92 dBA at a reference distance of 50 feet. These estimated construction noise levels are governed primarily by the high noise-producing pieces of equipment to be used and represent conservative worst-case conditions in which the maximum amount of construction equipment would be operating during a one-hour period. Furthermore, the assumptions involved in estimating these noise levels do not include existing noise reducing factors such as topographic features and wind effects. In addition, these estimated maximum hourly noise levels would not be typical of noise levels throughout the construction period.

Table 41

Composite Average L_{eq} Noise Levels Per Construction Stage

	Composite Sound Level in dBA (L_{eq}) at Indicated Distance from Center of Construction Activity				
Construction Stage	**50 feet**	**100 feet**	**150 feet**	**200 feet**	**500 feet**
Ground Clearing	82	76	72.5	70	62
Excavation, Grading	86	80	76.5	74	66
Foundation	77	71	67.5	65	57
Structural	83	77	73.5	71	63
Finishing	86	80	76.5	74	66

Notes: A hard surface propagation path drop-off rate of 6-dB per doubling of distance, corresponded to point source (such as construction equipment) sound attenuation is used.

Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971; and PCR Services Corporation, 2006

In order to present a conservative analysis for construction noise, the 86 dBA noise level, the highest composite noise level, at a reference distance of 50 feet, was used to evaluate the proposed project's construction noise impacts related to each of the construction stages except blasting activities. The estimated aggregate construction noise levels during the heaviest periods of activity at residential uses on the north and south of the project site are provided in Table 42 on page208. As shown in Table 42, the residences located to the north and south of the project site immediately across the adjacent roadways, would occasionally experience construction noise levels of 78 dBA (hourly L_{eq}) during the heaviest periods of construction. Visitors residing at Juniper Springs Lodge could experience intermittent noise levels up to 76 dBA during heaviest period of construction. Comparison of these predicted noise levels with the Town's maximum allowable construction noise (L_{eq}), as provided in Table 37 shows that the worst-case construction hourly L_{eq} would exceed the allowable construction noise limit at the nearest single-family residence to the north and 2) would not exceed the allowable construction noise limit at the sensitive receptors to the south and southwest of the project site. In addition, when blasting is required, then the closest residences could experience a high impulse noise level (L_{max}) of 86 dBA. As a result, the proposed project would result in a short-term significant impact without incorporation of mitigation measures.

Maximum construction noise levels would be experienced intermittently as only portions of the project site would be under construction at any one time. The majority of the time construction noise levels at sensitive locations would be much lower due to reduced construction activity and the phasing of construction (i.e., construction noise levels at a given location would be reduced as construction activities conclude or move to another more distant location of the site).

Table 42

Highest Estimated L_{eq} Construction Noise Levels at Receptor Locations (During Heaviest Periods of Construction Activity for One-Hour Period)

Receptor Number and Land Use [a]	Measured Baseline Ambient Noise (dBA) [b]	Closest Distance to Construction Site (feet)	Predicted Aggregate Construction Noise (dBA) [c]	Applicable Standards (mobile construction) [d] (dBA)	Predicted Blasting Noise L_{max} (dBA)
1-Residential Uses to the North (Single-Family)	62.2	125	78.0	75	84.0
2-Summit Condominiums to the South	63.3	125	78.0	80	84.0
3- Juniper Springs Lodge to the Southwest	63.3	160	75.9	85	81.9

[a] *Receptors are shown in Figure 17.*
[b] *Based on the measures data shown in Table 38 on page 198.*
[c] *Based on heaviest period of construction activity over a one-hour period.*
[d] *Maximum construction noise limits, per Noise Ordinance §8.16.090, provided in Table 35 on page 194.*

Source: PCR Services Corporation, 2006

(ii) Truck Haul Route Noise

Project construction would generate traffic from construction worker travel, as well as the arrival and departure of trucks delivering construction materials to the site and the hauling of debris generated by on-site grading activities. Both the number of construction workers and trucks would vary throughout the construction process in order to maintain a reasonable schedule of completion. The number of on-site construction workers, based on the specific construction activity underway (i.e., grading, building erection, etc.), could range from approximately 25 to 50, with the lower end of the range occurring during building site grading and the upper end of the range occurring during finishing work (i.e., drywall, paring, electrical, etc.).

In general, it is anticipated that the majority of the construction workers would arrive and depart the site during off-peak hours (i.e., arrive prior to 7:00 A.M. and depart between 3:00 to 4:00 P.M.). The construction work force would likely be from all parts of the Mammoth region, but would access the site via Meridian Boulevard.

Depending upon the specific nature of the construction activity (e.g., grading, finish construction, landscaping), the majority of truck traffic would be distributed evenly across the workday. It is anticipated that during peak construction activity, project construction would generate up to approximately 167 daily trips (i.e., average of approximately 21 haul trips per hour). Excavated material that would be reused for backfill on the site would be stored

temporarily on the Lower Pumpkin Trail and at the MMSA Gravel Pit near Chair 2 on Highway 203. Material would be hauled off-road to the Pumpkin Trail. Material would be hauled on-road to the Gravel Pit adjacent to Chair 2 for temporary storage. In addition, on-road hauling would occur to transport excavated material to Canyon Lodge where it would be stored near the base of Chair 7 for future use on MMSA on-mountain projects. All on-road construction traffic routes would be subject to review and approval by the Town of Mammoth Lakes, pursuant to Mitigation Measure AES-2. Anticipated haul routes for semi-trailers, trucks and trailers, and other construction-related vehicles would be via Meridian Boulevard.

Noise levels associated with the construction related traffic are anticipated to temporarily increase the ambient noise level along the off-road and on-road haul routes (each truck by pass would last less than five seconds). As such, it is assumed that less than two minutes of truck passing noise occurring each hour (i.e., 105 seconds). This temporary noise increase would occur during peak periods of construction and cease upon completion of the initial construction phases. As with the general construction activities, truck trips would be limited to the hours of construction as outlined within Chapter 8.16 of the Mammoth Lakes Ordinance Code. Therefore, a less than significant noise impact is anticipated to occur along the off-road and on-road truck haul routes.

(b) Vibration

The Project would be constructed using typical construction techniques. As such, it is anticipated that the equipment to be used during construction would not cause excessive groundborne noise or vibration. However, construction of the subterranean parking garage would involve blasting activities. Since no data is currently available regarding the specific locations of blasting or the charge sizes necessary, measures the following mitigation measures are recommended to ensure that the potential vibratory effects of blasting are mitigated to a less than significant impact.

(2) Operation Noise Impacts

(a) Off-site Roadway Noise

Project implementation would result in additional traffic, thereby contributing to noise levels on local roadways in and around the project area. Table 43 on page 210 provides the calculated L_{dn} for analyzed roadway segments for the near-term cumulative condition and includes the following scenarios: existing conditions; near-term future without development of the proposed project; near-term future with development of the proposed Project; the increase attributed to Project-generated traffic volumes; and the near-term cumulative increase (i.e., increase attributable to ambient growth, related projects, and proposed Project traffic volumes)

Table 43

Year 2009 Traffic Noise Levels

Roadway Segment	Existing L_{dn}	Calculated Future L_{dn} (dBA) at Roadway Right-of-Way: Future No Project	Future with Project	Project Increment [a]	Cumulative Increment [b]
Main Street East of Old Mammoth Road	55.5	55.6	55.7	0.1	0.2
Main Street West of Old Mammoth Road	59.7	59.8	59.8	0.0	0.1
Main Street East of Minaret Road	60.2	60.6	60.6	0.0	0.4
Lake Mary Road West of Minaret Road	58.5	59.6	59.6	0.0	1.1
Lake Mary Road West of Kelly Road	49.5	54.4	54.4	0.0	4.9
Old Mammoth Road South of Main Street	58.8	59.0	59.0	0.0	0.2
Old Mammoth Road North of Meridian Boulevard	57.7	58.3	58.5	0.2	0.8
Old Mammoth Road South of Meridian Boulevard	57.8	58.3	58.4	0.1	0.6
Meridian Boulevard, East of Old Mammoth Road	56.1	56.7	56.9	0.2	0.8
Meridian Boulevard, West of Old Mammoth Road	56.2	56.8	57.5	0.7	1.3
Meridian Boulevard, East of Minaret Boulevard	57.1	57.3	58.2	0.9	1.1
Meridian Boulevard, West of Minaret Road	56.6	56.9	58.6	1.7	2.0
Meridian Boulevard, East of Majestic Pines Road North	55.2	55.6	58.0	2.4	2.8
Meridian Boulevard, West of Majestic Pines Road North	54.4	54.9	57.6	2.7	3.2
Minaret Road, Main Street for Forest Trail	59.6	59.9	59.9	0.0	0.3
Minaret Road, South of Main	56.5	57.9	58.1	0.2	1.6
Majestic Pines Drive, North of Meridian Boulevard	50.1	52.3	53.6	1.3	3.5
Majestic Pines Drive, South of Meridian Boulevard	48.7	48.9	50.2	1.3	1.5
Kelly Road, South of Lake Mary Road	47.6	52.6	52.7	0.1	5.1

Note: Traffic noise levels are calculated based on the project traffic study, which is provided in Appendix B of this document..

Source: PCR Services Corporation, 2006

above existing noise levels. Table 44 on page 211 provides the calculated Ldn for analyzed roadway segments for the 2024 cumulative condition. It should be noted that identified estimates do not adjust for any existing noise barriers or differences in elevation and identify traffic noise only generated along a specific roadway segment). A 30 mph average vehicle speed was assumed for all conditions. This is considered a conservative (a high estimate) as lower average speeds may occur, due to the majority of vehicle travel occurring in the day when higher vehicle use may cause slowing.

Table 44

Year 2024 Traffic Noise Levels

Roadway Segment	Existing L_{dn}	Calculated Future L_{dn} (dBA) at Roadway Right-of-Way: Future No Project	Future with Project	Project Increment [a]	Cumulative Increment [b]
Main Street East of Old Mammoth Road	55.5	60.7	60.7	0.0	5.2
Main Street West of Old Mammoth Road	59.7	63.7	63.7	0.0	4.0
Main Street East of Minaret Road	60.2	64.2	64.3	0.1	4.1
Lake Mary Road West of Minaret Road	58.5	63.5	63.5	0.0	5.0
Lake Mary Road West of Kelly Road	49.5	58.9	59.0	0.1	9.5
Old Mammoth Road South of Main Street	58.8	62.2	62.2	0.0	3.4
Old Mammoth Road North of Meridian Boulevard	57.7	62.8	62.9	0.1	5.2
Old Mammoth Road South of Meridian Boulevard	57.8	62.9	63.0	0.1	5.2
Meridian Boulevard, East of Old Mammoth Road	56.1	60.9	61.1	0.2	5.0
Meridian Boulevard, West of Old Mammoth Road	56.2	60.7	61.3	0.6	5.1
Meridian Boulevard, East of Minaret Boulevard	57.1	62.3	62.9	0.6	5.8
Meridian Boulevard, West of Minaret Road	56.6	62.1	63.2	1.1	6.6
Meridian Boulevard, East of Majestic Pines Road North	55.2	59.6	61.6	2.0	6.4
Meridian Boulevard, West of Majestic Pines Road North	54.4	59.1	61.3	2.2	6.9
Minaret Road, Main Street for Forest Trail	59.6	63.5	63.5	0.0	3.9
Minaret Road, South of Main	56.5	62.7	62.8	0.1	6.3
Majestic Pines Drive, North of Meridian Boulevard	50.1	58.5	59.2	0.7	9.1
Majestic Pines Drive, South of Meridian Boulevard	48.7	54.3	54.9	0.6	6.2
Kelly Road, South of Lake Mary Road	47.6	57.3	57.4	0.1	9.8

Note: Traffic noise levels are calculated based on the project traffic study, which is provided in Appendix B of this document..

Source: PCR Services Corporation, 2006

As indicated in Table 43, the maximum project related noise increase of 2.7 dBA occurs along Meridian Boulevard, West of Majestic Pines Road North, from 54.9 dBA to 57.6 dBA. The maximum project related noise increase is below the 5 dBA significance threshold, where existing noise levels are less than 60 dB L_{dn} and below the 3 dBA significance threshold, where existing noise levels are greater than 60 dB L_{dn}. As indicated in Table 43, all but one of the roadway segments modeled for existing, future without project, and future with project traffic volumes would result in projected vehicular generated noise levels below the 60 dBA L_{dn} recommended noise level established by the Town of Mammoth Lakes in the Noise Element.

Main Street, east of Minaret Road, would result in projected vehicular generated noise levels above the 60 dBA L_{dn} noise standard established by the Town of Mammoth Lakes for both existing and near-term cumulative conditions. As shown in the table, the near-term cumulative noise level would increase from 60.2 dBA to 60.6 dBA or 0.4 dBA and the project related increase would be less than 0.1 dBA and below the 3 dB significance threshold. The maximum near-term cumulative noise increase from 47.6 dBA to 52.7 dBA or 5.1 dBA occurs along Kelly Road, South of Lake Mary Road, of which the project contributes approximately 0.1 dBA.

As indicated in Table 44, roadway segments along Main Street, Lake Mary Road, Old Mammoth Road, Meridian Boulevard, and Majestic Pines Drive modeled for cumulative without project, and cumulative with project traffic volumes would result in projected vehicular generated noise levels above the 60 dBA L_{dn} recommended noise level established by the Town of Mammoth Lakes in the Noise Element. As shown in the table, the analyzed roadway segments would exceed the cumulative 5 dBA significance threshold, where existing noise levels are less than 60 dB L_{dn} and the cumulative 3 dBA significance threshold, where existing noise levels are greater than 60 dB L_{dn}. The maximum 2024 cumulative noise increase from 47.6 dBA to 57.4 dBA or 9.8 dBA occurs along Kelly Road, South of Lake Mary Road, of which the project contributes approximately 0.1 dBA.

(i) Stationary Point-Source Noise

The project site currently consists of temporary ski facilities which include a surface parking lot with approximately 225 parking spaces; ski facilities consisting of a temporary structure with attached trailers, that provide approximately 12,000 square feet of interior space; and an exterior barbeque and dining area. A permanent ski facility, Base VII, located immediately west of the intersection of Meridian Boulevard and Majestic Pines Road, has been envisioned as part of the overall development of the MMSA. As such, the proposed project would include the 1984 update for an expedited schedule to develop ski facilities on the east side of the ski area and to increase the skier capacity of Base VII. The underlying purpose of the project is to allow the development of MMSA's permanent lodge, which would replace the existing, temporary facility.

The proposed Eagle Base Lodge Development project would develop permanent skier amenities and expand the service capacity to include a mixed use of day skier commercial services, general commercial services and a mix of residential product type that will encourage high transient occupancy. In addition, although the majority of the project uses are geared toward winter time, the facilities would also lend themselves to summer uses such as a summertime outdoor performing arts venue, potential access to the summer mountain bike park, other outdoor activities such as a climbing rock or challenge ropes course, and assembly opportunities. While the peak use would be winter, the development would accommodate and provide for year-round use of the facility.

The proposed project would introduce new sources of noise to the area, but would largely replace or redistribute existing sources of noise (e.g., surface parking lot, barbeque, and dining area) to different areas on the project site. As an example, residential uses to the north and northeast of the project site currently experience noise from the parking lot and from the dining area. However, the proposed project would include a subterranean parking structure that would reduce parking activity noise levels and the proposed permanent structure would buffer these residential uses from the exterior activity areas (e.g., swimming pool/ice rink). No changes in existing MMSA operations would occur as a result of the proposed project (i.e., gondolas, chairlifts, snow making, grooming, avalanche control).

Specific noise sources associated with the operation of the expanded facilities (Eagle Base Lodge Development Project) would include:

- Mechanical equipment (e.g., boiler, chiller, and emergency generator) and miscellaneous rooftop mechanical equipment;
- Loading dock activities (maneuvering and idling trucks, trash compactors, banging and clanging of equipment);
- Ambulance bay;
- Parking activities;
- Vehicle Access (passenger loading/unloading); and
- Plaza activities (crowds, ice skating, music events and public announcement (PA) systems).

Although several noise sources would be introduced on the project site, many of them would operate for brief periods of times, such as ambulances, truck movements, trash compactors and trash collection, and parking lot sweepers/snow plows. These types of sources usually do not operate concurrently and can meet the hourly permitted noise standards described in the Town's Noise Ordinance.

Other daily noise sources, such as air conditioning equipment, parking lot/garage traffic, and loading dock activities, operate for comparatively longer periods. A discussion of each of these noise sources is provided below, followed by a discussion of the potential composite noise level increase (due to multiple noise sources) at sensitive receptors.

Mechanical Equipment

Project development would include mechanical equipment, which could generate noise levels that are audible at both on- and off-site noise sensitive locations. Such equipment could include, but not be limited to, boilers, chillers, emergency generators, air conditioners, fans, blowers, compressors, and pumps that would be used to support the basic functioning of various structures and/or facilities on the property. However, most of this mechanical equipment would be enclosed or would include noise control measures such as intake/exhaust silencers, acoustical linings, and parapet screens to ensure that the noise generated by mechanical equipment operations would meet Mammoth Lakes Municipal Code noise standards (see Table 34 on page 192). As such, noise from stationary mechanical equipment associated with the proposed project would not exceed 50 dBA during daytime hours and 45 dBA during nighttime hours at the nearest sensitive receptors. Impacts are expected to be less than significant and no mitigation measures are required.

Loading Dock and Refuse Collection/Recycling

The project would include a loading dock and trash/recycling area, which would be enclosed and screened from residential uses north of the project site. By blocking the sound transmission path between the loading dock-area noise sources and nearby residential uses, noise levels would comply with the Mammoth Lakes Municipal Code noise standards.

Parking Activities

Various noise events would also occur within the proposed 544-space subterranean parking garage with up to 544-spaces. The parking garage would include two full levels and one partial level of subterranean parking. This subterranean parking garage would replace the existing surface parking lot, in which measured noise levels were approximately 60 dBA at a reference distance of 50 feet. As such, the noise from parking activities would be enclosed within the structure and would be reduced compared to the current use of the existing parking lot. Therefore, noise from parking activities would be less than significant and no mitigation measures would be required.

Vehicle Access

The proposed project would provide a delivery truck access and drop off loading/unloading for lodging along Majestic Pines Road. This area currently generates noise level associated with parking activities. Based on ambient measurement data presented in Table 38, noise levels associated with the proposed activities versus parking activities would be approximately eight dBA lower. In addition, a skier/shuttle and charter bus drop off

loading/unloading area is located along Meridian Boulevard. The uses in this area would be generally similar to existing uses and a change in noise levels associated with these activities is not anticipated.

Plaza Activities

As shown in Figure 5 on page 19, much of the outdoor space (e.g., skating rink, dining common areas, etc), would be shielded from the nearby residential uses by proposed buildings and/or intervening slope. Noise measurements conducted for crowd and outdoor dining areas were approximately 65.1 dBA at a distance of 50 feet. This noise level would be approximately 47 dBA at the closest residential uses to the north of the project site and would not exceed the Town's Noise Ordinance standards. Impacts are expected to be less than significant and no mitigation measures are required.

The proposed project may utilize outdoor background music and PA systems, the use of which would increase ambient noise levels in the vicinity. In an effort to reduce the significance of stationary noise impacts associated with the outdoor activities, background music, or PA systems, noise reduction measures, such as the use of directional speakers that are directed away from adjacent residential uses, modification to speaker systems and sound level limitations would serve to reduce the potential for significant noise impacts to adjacent residential uses. With the implementation of the aforementioned noise reduction or similar measures, it is anticipated that noise levels associated with outdoor background music and PA systems would not exceed the 55 dBA L_{50} and the 75 dBA L_{max} hourly maximum noise level during any one hour time period between the hours of 7:00 a.m. and 10:00 p.m. in accordance with Chapter 8.16 of the Town's Noise Ordinance, as measured at the property line of a receiving land use.

It is expected that the plaza and outdoor gathering places would host outdoor events and activities. The Town's Noise Ordinance considers outdoor activities that are "occasional outdoor gatherings, public dances, shows, sporting or entertainment events, subject to permit or license issued by the Town" to be exempt from the noise regulations. Therefore, activities which are defined as the above would fall below the Town's threshold of significance and do not require additional mitigation.

(3) Composite Noise Level Impacts from Proposed Project Operations

The potential composite noise level noise impact at sensitive land uses was evaluated by accounting for individual noise sources (e.g., loading dock, ice skating rink, etc.) present on the project site and comparing the composite noise level to the Town's standards and background ambient noise level.

The noise from each of these activities was logarithmically summed at the nearest residential uses. These noise levels are included in Table 45 on page 217. The nearest residential uses to the northeast could be exposed to composite noise from on-site activities of 44.9 dBA L_{50}. This value is less than the Town's daytime standard of 55 dBA. In comparison to the measured ambient average daytime noise level of 50.6 dBA at Location 1, combined on-site activities could increase the ambient noise level by approximately 1.4 dBA. Therefore, noise from combined activities at these residential uses would be less than the 5-dBA incremental significance threshold for areas that comply with the Town's daytime noise standard of 55 dBA. Therefore, for the nearest residential uses northeast of the project site, combined noise levels are considered to have a less than significant impact.

The nearest residential uses to the north could be exposed to noise from on-site activities of 49.9 dBA L_{50}, which is less than the Town's daytime standard of 55 dBA. In comparison to the measured ambient average daytime noise level of 46.8 dBA at Location 2, combined on-site activities could increase the ambient noise level by approximately 4.8 dBA. Therefore, noise from combined activities at these residential uses would be less than the 5-dBA incremental significance threshold for areas that comply with the Town's daytime noise standard of 55 dBA. Therefore, for the nearest residential uses north of the project site, combined noise levels are considered to have a less than significant impact.

The nearest residential uses to the south (Summit Condominiums) could be exposed to noise from on-site activities of 55.6 dBA L_{50}, which exceeds the Town's daytime standard of 55 dBA. However, the measured ambient average daytime noise level representative of this area at Location 3 is 59.9 dBA. The Town's Noise Ordinance states that if the existing interior or exterior ambient noise level exceeds that permissible within the noise limit categories, the allowable noise exposure standard is increased in five dBA increments in each category as appropriate to encompass or reflect the ambient noise level (Section 8.16.070 and 8.16.080 of the Town Noise Ordinance). Thus, on-site activities would be less than the existing daytime ambient noise level. In comparison to the measured ambient average daytime noise level of 55.9 dBA at Location 3, combined on-site activities could increase the ambient noise level by approximately 1.4 dBA. Therefore, noise from combined activities at these residential uses would be less than the 3-dBA incremental significance threshold for areas that exceed the Town's daytime noise standard of 55 dBA. Therefore, for the nearest residential uses south of the project site, combined noise levels are considered to have a less than significant impact.

The nearest sensitive land uses to the west (Juniper Springs Lodge) could be exposed to noise from on-site activities of 51.4 dBA L_{50}, which is less than the Town's daytime standard of 55 dBA. In comparison to the measured ambient average daytime noise level of 59.5 dBA at Location 3, combined on-site activities could increase the ambient noise level by approximately 0.6 dBA. Therefore, noise from combined activities at these residential uses would be less than the 3-dBA incremental significance threshold for areas that exceed the Town's daytime noise

Table 45

Combined Noise Levels Generated by On-Site Activities

Activity/ Noise Source	Reference Noise Level @ 50 feet	Distance (Feet)	Barrier Insertion Loss	Adjusted Noise Level	Existing Ambient Noise Level	Future Ambient Noise Level	Noise Level Increase
Residential Uses (Northeast)							
Veh/Delivery Truck Access North	52	200	0	39.5	49.2	49.6	0.4
Vehicle/Bus Access South	60	450	12	28.7	49.2	49.2	0.0
Ice Skating Rink/Pool	65	550	12	32.3	49.2	49.3	0.1
Parking Garage	60	300	10	34.2	49.2	49.3	0.1
Arrival Lower Plaza	65	350	12	36.2	49.2	49.4	0.2
Upper Plaza	65	400	12	35.0	49.2	49.4	0.2
Loading Dock	72	200	20	40.0	49.2	49.7	0.5
Composite Noise Level				**44.9**	49.2	**50.6**	**1.4**
Residential Uses (North)							
Vehicle/Delivery Truck Access North	52	450	5	27.4	46.8	46.8	0.0
Vehicle/Bus Access South	60	600	12	26.2	46.8	46.8	0.0
Ice Skating Rink/Pool	65	450	0	45.9	46.8	49.4	2.6
Parking Garage	60	450	10	30.7	46.8	46.9	0.1
Arrival Lower Plaza	65	450	12	34.0	46.8	47.0	0.2
Upper Plaza	65	400	0	46.9	46.8	49.9	3.1
Loading Dock	72	300	20	36.4	46.8	47.2	0.4
Composite Noise Level				**49.9**	46.8	**51.6**	**4.8**
Residential Uses (South)							
Vehicle/Delivery Truck Access North	52	400	12	21.4	59.9	59.9	0.0
Vehicle/Bus Access South	60	125	0	51.8	59.9	60.5	0.6
Ice Skating Rink/Pool	65	350	0	48.2	59.9	60.2	0.3
Parking Garage	60	150	10	40.3	59.9	59.9	0.0
Arrival Lower Plaza	65	250	0	51.1	59.9	60.4	0.5
Upper Plaza	65	375	12	35.6	59.9	59.9	0.0
Loading Dock	72	400	20	33.9	59.9	59.9	0.0
Composite Noise Level				**55.6**	59.9	**61.3**	**1.4**
Residential Uses (South)							
Veh/Delivery Truck Access North	52	1,000	12	13.5	59.9	59.9	0.0
Vehicle/Bus Access South	60	450	0	40.7	59.9	60.0	0.1
Ice Skating Rink/Pool	65	300	0	49.5	59.9	60.3	0.4
Parking Garage	60	650	10	27.5	59.9	59.9	0.0
Arrival Lower Plaza	65	650	12	30.8	59.9	59.9	0.0
Upper Plaza	65	500	0	45.1	59.9	60.0	0.1
Loading Dock	72	750	20	28.5	59.9	59.9	0.0
Composite Noise Level				**51.4**	59.9	**60.5**	**0.6**

Source: PCR Services Corporation, 2006

standard of 55 dBA. Therefore, combined noise levels at the adjacent Juniper Springs Lodge are considered to have a less than significant impact.

d. Mitigation Measures

The following mitigation measure is required to reduce construction noise levels, particularly at the northern residences, to a less than significant level.

NOI-1: Prior to issuance of any grading, excavation, or building permits, the applicant shall provide and secure the approval of the authorized noise control officer for a program designed to adequately comply with Town of Mammoth Lakes Noise Ordinance and respond to possible noise complaints. At a minimum, the program shall include the following requirements:

1. Noise-generating equipment operated at the project site shall be equipped with effective noise control devises, i.e., mufflers, intake silencers, lagging, and/or engine enclosures. All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated.

2. Effective temporary sound barriers shall be used and relocated, as needed, whenever possible, to block the line-of-sight between the construction equipment and the noise-sensitive receptors, i.e., residential uses located to the north and south of the project site.

3. Loading and staging areas must be located on site and away from the most noise-sensitive uses surrounding the site.

4. A construction relations officer shall be designated to serve as liaison with residents, and a contact telephone number shall be provided to residents.

The following mitigation measures are required to reduce construction vibration impacts from blasting activities to a less than significant level.

NOI-2: The applicant shall develop a Blasting Plan that details the measures necessary to ensure potential vibration impacts would comply with Federal and State recommended construction vibration limitations. The plan shall include at a minimum the following:

- A testing or pilot program shall be conducted to assure that off-site vibration levels do not exceed the 2.0 inches per second PPV significance threshold from blasting activities initiated on the site. Under the pilot program the applicant shall install vibration monitors at the following locations: (1) along the fenceline of the closest offsite residential uses, (2) along the fenceline of the MCWD Ground Water Treatment Plant No. 2 located immediately to the east of the site across Majestic Pines Road, and (3) the vault housing for MCWD Well 16 located adjacent to Meridian Boulevard.

- Once the monitors are in place, a blasting test would commence. The testing procedures would consist of detonation of increasing sized charges with concurrent checking of monitored levels so as to assure that off-site vibration levels do not exceed the 2.0 inches per second PPV significance threshold. Based on this testing program, an optimal set of blasting parameters (e.g., frequency responses and soil damping characteristics for different sized charges) shall be established.

- The off-site vibration monitors shall remain in place throughout blasting activities, thereby providing ongoing protection for off-site uses and/or facilities throughout this phase of the Project's construction process.

NOI-3: All drilling and blasting operations shall be conducted by a State-licensed blasting contractor with adequate blasting insurance.

NOI-4: All drilling and blasting will be performed during hours designated by local, State, or federal ordinances.

NOI-5: Written notice shall be provided to MCWD and residents within a quarter-mile radius of the blast site 24 prior to the initiation of blasting.

e. Environmental Consequences of Alternative 1 – Development in Accordance with Existing Regulations Alternative

Construction activities associated with Alternative 1 would be considerably less than the Proposed Action since the majority of construction would only occur within Area 4 of the Juniper Ridge Master Plan. Because the type of construction associated with this Alternative would be similar to the Proposed Action, daily construction-related noise levels experienced both within the site and the immediate vicinity would be less than significant with incorporation of mitigation measures. Under this Alternative fewer noise sensitive receptors would be impacted due to the reduced scope of this Alternative. In addition, there would be fewer days of construction activity associated with this Alternative since less area would be developed.

Alternative 1 would be constructed using typical construction techniques and the equipment to be used during construction would not cause excessive groundborne noise or vibration. Blasting activities would still be necessary for construction of the parking structure. However, the parking structure would not require as deep of excavation as the proposed subterranean parking structure. Thus, less blasting would likely be necessary and would lessen overall blasting vibration at nearby sensitive receptors. Regardless, with the incorporation of mitigation measures vibration impacts are considered less than significant.

This Alternative would result in a reduction in noise levels associated with operational on-site equipment and activity and would be less than significant. No outdoor shows and events would occur with this Alternative. An expected reduction of 37 percent in traffic volumes associated with this Alternative would yield a slight reduction in comparison to the Proposed Action traffic noise. This Alternative would result in a less than significant project-level roadway noise impact, but would contribute to a cumulative roadway noise impact.

f. Environmental Consequences of Alternative 2 – Reduced Intensity Alternative

Construction activities associated with Alternative 2 would be less than under the Proposed Action since less development would be constructed under this Alternative. Because the type of construction associated with this Alternative would be similar to the Proposed Action, daily construction-related noise levels experienced both within the site and the immediate vicinity would be similar to the Proposed Action and are considered less than significant with incorporation of mitigation measures. However, fewer noise sensitive receptors would be impacted due to the reduced scope of this Alternative. In addition, there would be fewer days of construction activity associated with this Alternative since less development would be developed.

This alternative would be constructed using typical construction techniques and the equipment to be used during construction would not cause excessive groundborne noise or vibration. Blasting activities would be necessary for construction of the underground parking structure. However, the parking structure would not require as deep of excavation as the proposed subterranean parking structure. Thus, less blasting would likely be necessary and would lessen overall blasting vibration at nearby sensitive receptors. With the incorporation of mitigation measures vibration impacts are considered less than significant.

This Alternative would result in a reduction in noise levels associated with operational on-site equipment and activity. The on-site equipment and activity noise levels associated with the Proposed Action are not considered significant and would be less so with this Alternative. An expected reduction of 11 percent in traffic volumes associated with this Alternative would yield a slight reduction in comparison to the Project traffic noise. Alternative 2 would result in a

less than significant project-level roadway noise impact, but would contribute to a cumulative roadway noise impact.

f. Environmental Consequences of Alternative 3 – Alternate Design Alternative

Under this alternative, construction activities would be similar to the Proposed Action, since the scope of development would be the same. Daily construction-related noise levels experienced both within the site and the immediate vicinity would be similar to the Proposed Action and are considered less than significant with incorporation of mitigation measures.

This Alternative would be constructed using typical construction techniques and the equipment to be used during construction would not cause excessive groundborne noise or vibration. The depth of excavation would be the same as the Proposed Action and therefore, the amount of blasting activities would be the same. However, vibration impacts are considered less than significant with incorporation of mitigation measures.

On-site equipment and activity areas would be consistent with noise sources included as part of the Proposed Action. The on-site equipment and activity noise levels would be less than significant. Total daily traffic would be the same as the Proposed Action. Alternative 3 would result in a less than significant project-level roadway noise impact, but would contribute to a cumulative roadway noise impact.

g. Environmental Consequences of Alternative 4 – No Action Alternative

No development would occur within the project site under this Alternative and the existing tent would be removed. Consequently, the No Action Alternative would not generate any new or increased sources of noise on the project site or within the surrounding vicinity. Impacts would be less than significant.