IV. ENVIRONMENTAL IMPACT ANALYSIS
I. NOISE

INTRODUCTION

This section analyzes the potential for adverse impacts on Project area noise levels resulting from implementation of the Project. Information used in the following analysis is drawn from the Project description, the Traffic Impact Analysis prepared for the Project and the Town 1987 General Plan and 2007 General Plan.

ENVIRONMENTAL SETTING

Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table IV.I-1, Representative Environmental Noise Levels, illustrates representative noise levels in the environment.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

- L_{dn}, the Day-Night Average Level, is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.

- CNEL, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 P.M. to 10:00 P.M. and a 10 dBA "weighting" added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.7 dBA CNEL.

- L_{min}, the minimum instantaneous noise level experienced during a given period of time.

- L_{max}, the maximum instantaneous noise level experienced during a given period of time.

Table IV.I-1
Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 1998.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70

dBA. Noise levels greater than 85 dBA can cause temporary or permanent hearing loss. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet suburban residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather and reflecting or shielding, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more.

Fundamentals of Environmental Groundborne Vibration

Groundborne vibration is sound radiated through the ground, and is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides, etc.), or manmade causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous, such as factory machinery, traffic, trains, and most construction vibrations (with the exception of pile driving, blasting, and some other types of construction/demolition), or transient, such as explosions.[1]

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

The ground motion caused by vibration is measured as particle velocity in inches per second in the United States. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. According to data published by the California Department of Transportation (Caltrans), the PPV threshold of perception for humans falls approximately in the 0.006-0.019 range. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible.

The general human reaction to various continuous vibration levels, as well as their potential damage to buildings, is described in Table IV.I-2, Reaction of People and Damage to Buildings at Various Continuous Vibration Levels.

As shown in Table IV.I-2, data published by Caltrans indicate that 0.08 inch/second PPV is the level at which continuous vibrations are readily perceptible by people, and 0.10 inch/second PPV is the level at which continuous vibrations begin to annoy people in buildings. It should be noted, however, that the annoyance levels in Table IV.I-2 need to be interpreted with care. Depending on the activity (or inactivity) a person is engaged in, vibrations may be annoying at much lower levels than those shown in Table IV.I-2. In particular, elderly, retired, or ill people staying mostly at home, people reading in a quiet environment, people involved in vibration sensitive hobbies or other activities are but a few examples of people that are potentially annoyed by much lower vibration levels.[2]

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

Table IV.I-2
Reaction of People and Damage to Buildings at Various Continuous Vibration Levels

Vibration Level (Peak Particle Velocity – in/sec)[a]	Human Reaction	Effect on Buildings
0.006-0.019	Threshold of perception; possibility of intrusion.	Vibrations unlikely to cause damage of any type.
0.08	Vibrations readily perceptible.	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected. This criterion level may also be used for historical buildings, or buildings that are in poor condition.
0.10	Level at which continuous vibrations begin to annoy people.	Virtually no risk of "architectural" damage to normal buildings.
0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations).	Threshold at which there is a risk of "architectural" damage to normal dwelling-houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage.
0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

[a] *The vibration levels are based on peak particle velocity in the vertical direction. Where human reactions are concerned, the value is at the point at which the person is situated. For buildings, the value refers to the ground motion. No allowance is included for the amplifying effect, if any, of standard components.*

Source: California Department of Transportation, Transportation Related Earthborne Vibrations, Technical Advisory Number TAV-02-01-R9601, February 20, 2002.

Regulatory Framework

Federal

Noise

There are no federal noise regulations applicable to the Project.

Groundborne Vibration

The *CEQA Guidelines* do not define the levels at which groundborne vibration is considered "excessive." This analysis uses the Federal Railway Administration's vibration impact thresholds for sensitive buildings, residences, and institutional land uses. These thresholds for residences and buildings where

people normally sleep (e.g., nearby residences) are 80 vibration decibel (VdB) for infrequent activities (less than 70 per day) and 72 VdB for frequent events (more than 70 per day).

State

Noise

The California Department of Health Services (DHS), Office of Noise Control, has published the Guidelines for Noise and Land Use Compatibility, which recommend guidelines for local governments to use when setting standards for human exposure to noise and preparing noise elements for general plans. These guidelines are summarized in Table IV.I-3, Noise and Land Use Compatibility Criteria. It should be noted that application of these guidelines to development projects is not mandated by the DHS; however, each jurisdiction is required to consider the Noise and Land Use Compatibility Criteria when developing its general plan noise element and when determining acceptable noise levels within its community.

Table IV.I-3
Noise and Land Use Compatibility Criteria

Land Use	Community Noise Exposure (L_{dn} or CNEL, dB)			
	Normally Acceptable[a]	**Conditionally Acceptable[b]**	**Normally Unacceptable[c]**	**Clearly Unacceptable[d]**
Single-family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 70
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 80
Auditoriums, Concert Halls, Amphitheaters	---	50 - 70	---	above 65
Sports Arena, Outdoor Spectator Sports	---	50 - 75	---	above 70
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	---	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	---
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	---

[a] 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.
[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health Services (DHS).

As shown in Table IV.I-3, 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 (L_{dn} or CNEL). For single-family, duplex, and mobile homes, an exterior noise level up to 60 dBA (L_{dn} or CNEL) is considered to be a "normally acceptable" noise level, which is based on the assumption that any buildings involved are of normal construction that would not require special noise insulation. For multi-family homes, motels, and hotels, an exterior noise level up to 65 dBA (L_{dn} or CNEL) is considered to be a "normally acceptable" noise level. Between these noise values and 70 dBA (L_{dn} or CNEL), exterior noise levels for these land uses would be considered to be "conditionally acceptable," where construction should only occur after a detailed analysis of the noise reduction requirements is made and needed noise attenuation features are included in the Project. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. For commercial uses, exterior noise levels up to 70 dBA (L_{dn} or CNEL) are considered to be a "normally acceptable" noise level, while exterior noise levels up to 77 dBA (L_{dn} or CNEL) are considered to be a "conditionally acceptable" noise level.

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new multi-family dwellings. Dwellings are to be designed so that interior noise levels will meet this standard for at least 10 years from the time of building permit application.

Local

Town of Mammoth Lakes Noise Regulation

The Town of Mammoth Lakes (Town) is the local agency responsible for adopting and implementing policies as they relate to noise levels and its affect on land uses within its jurisdiction. Both acceptable and unacceptable noise levels associated with construction activities and exterior noise levels at various land use zones have been defined and quantified. Chapter 8.16 of the Mammoth Lakes Municipal Code (Town Noise Ordinance) controls unnecessary, excessive, and annoying noise in the Town. The Town Noise Ordinance sets forth sound measurement and criteria, maximum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain uses, standards for determining when noise is deemed to be a disturbance to the peace, and legal remedies for violations.

Exterior Noise Limits

Section 8.16.070 of the Town Noise Ordinance establishes exterior noise limits for various land use categories. These exterior noise limits are shown in Table IV.I-4, Town of Mammoth Lakes Exterior

Noise Limits. According to Section 8.16.070 of the Town Noise Ordinance, noise levels are not allowed to exceed:

1) The noise standard for that land use identified in Table IV.I-4 for a cumulative period of more than thirty minutes in any hour; or

2) The noise standard plus five decibels for a cumulative period of more than fifteen minutes in any hour; or

3) The noise standard plus ten decibels for a cumulative period of more than five minutes in any hour; or

4) The noise standard plus fifteen decibels for a cumulative period of more than one minute in any hour; or

5) The noise standard plus twenty decibels or the maximum measured ambient level, for any period of time.

Table IV.I-4
Town of Mammoth Lakes Exterior Noise Limits

Receiving Land Use	Time Period	Noise Zone Classification[a] Maximum Noise Levels (dBA) (Levels Not to Be Exceeded More Than Thirty Minutes in Any Hour)		
		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	--	--
Heavy 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 classification 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.

In addition, if the existing exterior ambient noise level exceeds 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. Furthermore, in the event the ambient noise

level exceeds the fifth noise limit category, the maximum allowable noise level under this category would be increased to reflect the maximum ambient noise level (Section 8.16.070 and 8.16.080 of the Town Noise Ordinance).

Interior Noise Limits

Section 8.16.080 of the Town Noise Ordinance establishes interior noise limits for multifamily residential dwellings. According to Section 8.16.080 of the Town Noise Ordinance, interior noise levels resulting from outside sources within residential units shall not exceed 45 dBA for a cumulative period more than five minutes in any hour between 7 A.M. and 10 P.M., and 35 dBA for a cumulative period of more than five minutes in any hour between 10 P.M. and 7 A.M. In addition, interior noise levels may not exceed:

1) The noise standards plus five decibels for a cumulative period of more than one minute in any hour; or

2) The noise standard plus ten decibels or the maximum measured ambient, for any period of time.

Furthermore, if the existing interior ambient noise level exceeds 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.

Construction Noise Limits

According to Section 15.08.020 of the Town Municipal Code, construction activities are permitted between the hours of 7 A.M. and 8 P.M., Monday through Saturday. Work hours on Sundays and Town recognized holidays are limited to the hours between 9 A.M. and 5 P.M., and are permitted only with the approval of the building official or designee.

The Town has established noise standards for construction activity in Section 8.16.090 of the Town Noise Ordinance. The construction noise standards are shown in Table IV.I-5, Town of Mammoth Lakes Construction Noise Standards. As shown below in Table IV.I-5, the Town of Mammoth Lakes has established maximum exterior noise levels during permitted work hours from the operation of equipment used in construction, drilling, repair, alteration, or demolition work. All mobile and stationary internal-combustion powered equipment and machinery are also required to be equipped with suitable exhaust and air-intake silencers in proper working order.

Table IV.I-5
Town of Mammoth Lakes Construction Noise Standards

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

[a] *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 ten days) of mobile equipment.*
[c] *Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of ten days or more) of stationary equipment.*

Source: Town of Mammoth Lakes Noise Ordinance, Chapter 8.16.

Town of Mammoth Lakes Groundborne Vibration Regulation

A vibration threshold has been established in Section 8.16.090 of the Town Noise Ordinance. As indicated in Section 8.16.090 of the Noise Ordinance, operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. According to Section 8.16.020 of the Town Noise Ordinance, the vibration perception threshold is generally defined as a motion velocity of 0.01 inch per second over the range of one to one hundred Hertz (Hz),[3] which is considered to be the minimum ground-borne or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects.

[3] *Hertz is a unit of frequency equal to one cycle per second.*

Existing Conditions

Existing Noise Environment

The Project site and surrounding area are characterized predominantly by residential and recreational uses. The majority of the Project area has or is currently being developed. Developments include six residential areas, the Snowcreek Athletic Club, and the nine-hole golf course. There are also a few undeveloped parcels that remain within the Master Plan Area. The land surrounding the Project area located to the south and east is USFS land that is heavily used for both summer and winter recreation activities. West of the Project area is the Old Mammoth residential district, which generally consists of low-density residential uses.

According to the Town General Plan Noise Element, the most significant noise sources in the Town include:

- Traffic on State Route 203 and major Town roadways
- Aircraft operations at Mammoth/June Lakes Airport (Mammoth Yosemite Airport)
- Helicopter operations at Mammoth Hospital[4]
- Snowmaking operations
- Snow removal activities
- Avalanche control operations
- Industrial activities near State Route 203 and Meridian Boulevard

Additional noise sources in the Town also result from temporary or periodic construction activities as well as recreational activities, such as the use of snowmobiles and off-road motorcycles. Located within the Town, the Project site is also subject to these various noise sources.

Existing Roadway Noise Levels On-site

While the various noise sources identified above generate mostly short-term noise levels, vehicular traffic is the major long-term noise source in the Town. Existing (winter 2005) roadway noise levels were calculated for the roadway segments of Minaret Road, extending from the north into the Project site, and

[4] *The Mammoth Hospital is no longer being used for helicopter operations.*

Old Mammoth Road, bisecting the Project site, to identify on-site noise levels due to traffic.[5] This task was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108) and traffic volumes from the Project traffic analysis (included as Appendix H). The noise model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for the state of California by Caltrans. The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The calculated average daily 24-hour noise levels along these roadway segments are presented in Table IV.I-6, Existing (Winter 2005) Roadway Noise Levels Onsite.

Existing Roadway Noise Levels Off-site

Existing (Winter 2005) roadway noise levels were calculated for the roadway segments in the Project vicinity that have existing noise-sensitive uses facing the roadways. As with the on-site noise levels, this task was accomplished using the FHWA-RD-77-108 model and traffic volumes from the Project traffic analysis. The average daily noise levels along these roadway segments are presented in Table IV.I-7, Existing (Winter 2005) Roadway Noise Levels Off-site. These noise measurements shown represent the noise levels experienced at approximately 75 feet from the roadway centerline.

Table IV.I-6
Existing (Winter 2005) Roadway Noise Levels On-site

Roadway	Roadway Segment	Reference CNEL at 100 feet[a]	Distance to Noise Contour (feet)		
			70 L_{dn}	65 L_{dn}	60 L_{dn}
Minaret Road	Main Street to Meridian Boulevard	58.5	17	37	80
Old Mammoth Road	West of Minaret Road	56.6	13	27	59
	Minaret to Meridian	62.3	26	57	123

[d] *Distances are in feet from roadway centerline. The identified noise level at 100 feet from the roadway centerline is for reference purposes only as a point from which to calculate the noise contour distances. It does not reflect an actual building location or potential impact location.*

Source: Christopher A. Joseph and Associates, 2006. Calculation data and results are provided in Appendix H to this Draft EIR.

[5] *The roadway noise levels are calculated for the existing (2005) typical winter conditions, which were used to represent the baseline condition in the Traffic Impact Analysis for the Project.*

Table IV.I-7
Existing (Winter 2005) Roadway Noise Levels Off-site

Roadway	Roadway Segment	Off-Site Noise Sensitive Uses	dBA L_{dn} at 75 feet[a]
Minaret Road	Meridian to Main Street	Residential	63.2
Old Mammoth Road	North of Meridian	Residential	66

[a] *The dBA L_{dn} values represent the noise levels experienced at approximately 75 feet from the roadway centerline.*

Source: Christopher A Joseph and Associates, 2006. Calculation data and results are provided in Appendix H of this EIR.

Existing Groundborne Vibration

Existing sources of groundborne vibration in the Town, including the Project site and its vicinity, generally include, but are not limited to, construction activities, avalanche control activities (e.g., blasting), snow removal activities, and roadway truck traffic. Within the Project area, the existing residential uses are considered to be vibration-sensitive land uses.

ENVIRONMENTAL IMPACTS

Methodology

Implementation of the Project could result in the introduction of noise levels that may exceed permitted Town noise levels. The primary sources of noise associated with the Project would be construction activities at the Project site and Project-related traffic volumes associated with operation of the proposed residential and commercial developments. Secondary sources of noise would include new stationary sources (such as heating, ventilation, and air conditioning units) and increased human activity throughout the Project site. The net increase in Project site noise levels generated by these activities and other sources have been quantitatively estimated and compared to the applicable noise standards and thresholds of significance.

Aside from noise levels, groundborne vibration would also be generated during the construction phase of the Project by various construction-related activities and equipment. Thus, the groundborne vibration levels generated by these sources have also been estimated and compared to applicable thresholds of significance.

Construction Noise Levels

Construction noise levels were estimated by data published by the United States Environmental Protection Agency (U.S. EPA). Potential noise levels are identified for off-site locations that are sensitive to noise, including existing residences.

Roadway Noise Levels

Roadway noise levels have been calculated for various locations around the Project site vicinity. The noise levels were calculated using the FHWA-RD-77-108 model and traffic volumes from the Project traffic analysis. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans.

Groundborne Vibration Associated with Construction Equipment

Groundborne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by Harris Miller Miller & Hanson Inc. for the Federal Transit Administration. Potential vibration levels resulting from construction of the Project are identified for off-site locations that are sensitive to vibration, including existing residences.

Thresholds of Significance

In accordance with Appendix G of the *CEQA Guidelines*, the Project could have a significant environmental impact if it would result in:

(a) Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;

(b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;

(c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project;

(d) A substantial temporary or periodic increase in ambient noise levels in the Project above levels existing without the Project;

(e) Exposure of people residing or working in the Project area to excessive noise levels if the Project is located within an area covered by an airport land use plan, or where such plan has not been adopted, within two miles of a public airport or public use airport; or

(f) Exposure of people residing or working in the Project area to excessive noise levels if the Project is located in the vicinity of a private airstrip.

The State *CEQA Guidelines* do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." This analysis uses the Town of Mammoth Lakes' vibration impact threshold identified in Section 8.16.090 of the Town Noise Ordinance. According to Section 8.16.090 of the Town Noise Ordinance, operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the

source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The vibration perception threshold is generally defined in the Town Noise Ordinance as a motion velocity of 0.01 inch per second over the range of one to one hundred Hertz (Hz).

The *CEQA Guidelines* do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this section, a noise level increase of three dBA is barely perceptible to most people, a five dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. Based on this information, an increase in the L_{dn} noise level resulting from the Project at noise sensitive land uses of three dBA or greater would be considered a significant impact when projected noise levels would exceed those considered satisfactory for the affected land use (see Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). If the noise environment at the sensitive land use is at or below normally-acceptable noise levels, an increase in noise levels of five dBA or greater would be considered significant.

Project Impacts and Mitigation Measures

Impact NOISE-1 Exposure of Persons to Excessive Noise Levels

Construction Noise

Construction of the Project would require the use of heavy equipment for site grading and excavation, installation of utilities, paving, and building fabrication. Development activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of the activity.

The U.S. EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Tables IV.I-8, Noise Ranges of Typical Construction Equipment, and IV.I-9, Typical Outdoor Construction Noise Levels. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA L_{eq} to 72 dBA L_{eq} at 200 feet from the source to the receptor.

During construction, two basic types of activities would be expected to occur and generate noise. The first activity would involve the preparation, excavation, and grading of the Project site to accommodate the building foundations for the new residential developments that are being proposed.[6] The second

[6] *Limited commercial development (up to a maximum of 29,000 square feet of retail space and up to a maximum of 50,000 square feet of conference center/commercial space) would also be allowed in specific sectors of the plan with discretionary approval by the Town.*

activity that would generate noise during construction would involve the physical construction and finishing of the new buildings. Overall, construction activities within the Project site are anticipated to occur over a six-year period, ending in 2017. No pile driving activities would be required for the Project.

Table IV.I-8
Noise Ranges of Typical Construction Equipment

Construction Equipment	Noise Levels in dBA L_{eq} at 50 feet[a]
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68–82
Saws	72–82
Pneumatic Impact Equipment	83–88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

[a] *Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.*

Source: U.S. EPA 1971

Table IV.I-9
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet with Mufflers (dBA L_{eq})	Noise Levels at 60 Feet with Mufflers (dBA L_{eq})	Noise Levels at 100 Feet with Mufflers (dBA L_{eq})	Noise Levels at 200 Feet with Mufflers (dBA L_{eq})
Ground Clearing	82	80	76	70
Excavation, Grading	86	84	80	74
Foundations	77	75	71	65
Structural	83	81	77	71
Finishing	86	84	80	74

Source: U.S. EPA, 1971.

As shown in Table IV.I-9, typical outdoor noise levels at noise-sensitive receptors 50 feet from the noise source could range from 77 dBA to 86 dBA L_{eq}, without implementation of noise reduction measures. The noisiest pieces of equipment that would be used during the Project's construction phase would

include jackhammers and pavers, which produce noise levels of approximately 75 and 80 dB(A) at 50 feet with implementation of the required feasible noise reduction control measures. Construction equipment would not include pile drivers.[7] As with all construction equipment, these noise levels would diminish rapidly with distance from the construction site at a rate of approximately six dB (A) per doubling of distance.

The nearest sensitive receptors are the multi-family residences located approximately 100 feet to the west –southwest of Lot 15. These multi-family residential units would experience noise levels of approximately 80 dBA during site grading and finishing. Additional multi-family residential units are located approximately 180 feet to the southwest of Lot 8, 400 feet to the north of Lot 15, and 400 feet to the west of Lot 12. These additional multi-family residential units may experience noise levels of approximately 74 dBA and 68 dBA, respectively, during site grading and finishing. Single-family residential units are located approximately 1,500 feet to the southwest of Lot 9 while a Catholic Church is located approximately 1,000 feet to the west of Lot 12. In addition, the Mammoth Creek Park and Sherwin Sierra Meadows Ranch are located approximately 1,200 feet and 1,400 feet from Lot 2, respectively, while the Snowcreek Athletic Club is located approximately 1,600 from Lot 12. Due to the distance of these receptors from the Project site, and the fact that noise attenuates at approximately six dB (A) per doubling of distance, it is not likely that construction noise would be audible at these locations.

In addition, as discussed previously, the Project would be constructed in four Phases, with Phases II, III and IV consisting of multi-family residential units. The units in these Phases would be occupied by residents prior to the construction of each subsequent Phase, resulting in "new" sensitive receptors being generated by the development of each Phase within the Project site. In other words, upon completion of Phase II, the nearest residential units may be located as close as approximately 50 feet from the development of Phase III. Therefore, these 'new" sensitive receptors may be exposed to maximum noise levels of approximately 86 dBA L_{eq} during site grading and finishing of Phase III. Similarly, the residents of Phase III may be exposed to noise generated during the construction of Phase IV resulting in these "new" sensitive receptors being exposed to noise levels of approximately 89 dBA L_{eq} during site grading and finishing of Phase III. Residents of Phase IV would not be exposed to major construction noise.

Currently, under Section 15.08.020 of the Town Municipal Code, construction activities are limited to between the hours of 7 A.M. and 8 P.M., Monday through Saturday. Work hours on Sundays and Town recognized holidays are limited to the hours between 9 A.M. and 5 P.M., and are permitted only with the approval of the building official or designee. In addition, the Town has established noise standards for construction activity in Section 8.16.090 of the Town Noise Ordinance (see Table IV.I-5, Town of Mammoth Lakes Construction Noise Standards). According to these established construction noise standards, the maximum exterior noise levels allowed in multi-family residential areas for mobile (e.g., excavator, backhoe, dozer, loader, etc.) and stationary equipment (e.g., generators, compressors, pumps,

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[7] *CAJA Correspondence with Tammy Bennett, Project Engineer, The Chadmar Group, January 4, 2007.*

etc.) during 7 A.M. to 8 P.M. Monday through Saturday are 80 dBA and 65 dBA, respectively. In addition, the maximum exterior noise levels allowed in multi-family residential areas for mobile and stationary equipment during 8 P.M. to 7 A.M. Monday through Saturday, and all day Sunday and legal holidays, are 64 dBA and 55 dBA, respectively. Furthermore, all mobile and stationary internal-combustion powered equipment and machinery are required to be equipped with suitable exhaust and air-intake silencers in proper working order under the Town Noise Ordinance.

Because the Project would be required to comply with the provisions of the Town Municipal Code and Noise Ordinance, construction activities associated with the Project would only occur within the hours permitted for construction within the Town (i.e., 7 A.M. to 8 P.M., Monday through Saturday, and 9 A.M. to 5 P.M. on Sundays and Town recognized holidays with approval of the building official or designee). However, construction noise levels experienced by off-site residential uses in the surrounding area could exceed the maximum exterior noise level standards allowed for mobile and stationary construction equipment under the Town Noise Ordinance. As such, a significant impact could result. To reduce the noise levels resulting from construction of the Project to the extent feasible, Mitigation Measures NOISE-1a and NOISE-1b shall be implemented, which requires the Project to comply with the construction hours of the Town Municipal Code and that construction best management practices (BMPs) to be implemented by contractors to reduce construction noise levels. While these noise attenuation measures would reduce the construction noise levels of the Project to the maximum extent feasible, they would not ensure that the noise levels would not exceed the Town's maximum exterior noise standard for construction activity at single-family residential, multi-family residential, commercial, and business properties (see Table IV.I-5, Town of Mammoth Lakes Construction Noise Standards). Depending on the distance of nearby off-site uses to the Project site, implementation of Mitigation Measures NOISE-1a through NOISE-1c would ensure that noise levels are below the Town's maximum exterior noise standards for construction activity, resulting in a ***less than significant*** impact.

Mitigation Measure NOISE-1a Exposure of Persons to Excessive Noise Levels

Construction activities shall be limited to between the hours of 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 shall be permitted only with the approval of the building official or designee.

Mitigation Measure NOISE-1b Exposure of Persons to Excessive Noise Levels

Project developers shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels:

- Provide advance notification of construction to the immediate surrounding land uses around a development site
- Ensure that construction equipment is properly muffled according to industry standards

- Place noise-generating construction equipment and locate construction staging areas away from residences, where feasible

- Schedule high noise-producing activities between the hours of 8 A.M. and 5 P.M. to minimize disruption on sensitive uses

- Implement noise attenuation measures to the extent feasible, which may include, but are not limited to, noise barriers or noise blankets

Mitigation Measure NOISE-1c Exposure of Persons to Excessive Noise Levels

Project developers shall require by contract specifications that construction staging areas within the Project site would be located as far away from vibration-sensitive sites as feasible.

Impact NOISE-2 Excessive Construction-Related Groundborne Vibration

Construction activities that would occur within the Project site would include grading and excavation which would have the potential to generate low levels of groundborne vibration. Table IV.H-10, Vibration Source Levels for Construction Equipment, identifies various vibration velocity levels for the types of construction equipment that would operate during the construction of the Project. Based on the information presented in Table IV.H-10, vibration levels could reach as high as approximately 87 VdB within 25 feet of the Project site from the operation of large bulldozers.

Table IV.H-10
Vibration Source Levels for Construction Equipment

Construction Equipment		Approximate VdB at 25 feet
Pile Driver (impact)	Upper Range	112
	Typical	104
Pile Drive (sonic)	Upper Range	105
	Typical	93
Large Bulldozer		87
Caisson Drilling		87
Loaded Trucks		86
Jackhammer		79
Small Bulldozer		58

Source: Harris Miller Miller Hanson, Transit Noise and Vibration Impact Assessment, May 2006.

Construction activities associated with the Project would have the potential to impact existing off-site sensitive receptors, which include the residential uses that are located adjacent to the Project site's boundaries to the west and south. Similar to noise levels, vibration levels attenuate at approximately 6 VdB per doubling of distance. Therefore, a vibration level of 100 VdB measured at 50 feet from the source would be reduced to approximately 94 VdB at 100 feet from the source.

The nearest sensitive receptors are the multi-family residences located approximately 100 feet to the west–southwest of Lot 15. These multi-family residential units may experience vibration levels of approximately 81 VdB during site grading and finishing. Additional multi-family residential units are located approximately 180 feet to the southwest of Lot 8, 400 feet to the north of Lot 15 and 400 feet to the west of Lot 12. These additional multi-family residential units may experience noise levels of approximately 75.9 VdB and 68.9 VdB, respectively, during site grading and finishing. Single-family residential units are located approximately 1,500 feet to the southwest of Lot 9 while a Catholic Church is located approximately 1,000 feet to the west of Lot 12. In addition, the Mammoth Creek Park and Sherwin Sierra Meadows Ranch are located approximately 1,200 feet and 1,400 feet from Lot 2, respectively, while the Snowcreek Athletic Club is located approximately 1,600 from Lot 12. Due to the distance of these receptors from the Project site, and the fact that vibration attenuates at approximately six VdB per doubling of distance, it is not likely that construction vibrations would be noticable at these locations.

In addition, as discussed previously, the Project would be constructed in four Phases, with Phases II, III and IV consisting of multi-family residential units. The units in these Phases would be occupied by residents prior to the construction of each subsequent Phase, resulting in "new" sensitive receptors being generated by the development of each Phase within the Project site. In other words, upon completion of Phase II, the nearest residential units may be located as close as approximately 50 feet from the development of Phase III. Therefore, these 'new" sensitive receptors may be exposed to maximum vibration levels of approximately 87 VdB during site grading and finishing of Phase III. Similarly, the residents of Phase III may be exposed to noise generated during the construction of Phase IV resulting in these "new" sensitive receptors being exposed to noise levels of approximately 87 VdB during site grading and finishing of Phase III. Residents of Phase IV would not be exposed to major construction noise.

As discussed under Regulatory Framework above, the Town has identified a vibration impact threshold in Section 8.16.090 of the Town Noise Ordinance. According to Section 8.16.090 of the Town Noise Ordinance, operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. However, the nearest existing residences would be approximately 100 feet from construction.

Construction of the Project would require the use of typical construction equipment that could generate some ground-borne vibration and ground-borne noise, but the Project would not involve the use of pile drivers, which have the potential to generate substantial vibration. In addition, per the Town's requirements, construction activities that would produce groundborne vibration would primarily occur between the hours of 7:00 AM and 8:00 PM Monday through Friday. Therefore, these activities would not occur during recognized sleep hours for residents. Based on this information, proposed construction activities associated with the Project would not expose sensitive receptors in the Project vicinity to excessive groundborne vibration levels. Therefore, Project impacts related to excessive construction-

related groundborne vibration would be considered ***less than significant*** and no mitigation measures would be required.

Impact NOISE-3 Temporary Increases in Noise (Construction Noise)

As discussed previously, the uses nearest the Project site that are sensitive to construction noise are the single-family and multi-family residential uses adjacent to the Project site's southern and western boundaries. The property line of the nearest off-site, multi-family residential uses is located approximately 100 feet from the edge of the areas of construction within the Project site. Based on this distance, construction activities occurring at the Project site could reach approximately 80 dBA L_{eq} during the daytime at the property line of these single-family residential uses. As discussed under the Thresholds of Significance heading of this section, this EIR assumes that an increase of five dBA or greater over ambient noise levels is substantial and significant. Therefore, demolition and construction activities associated with the Project, particularly the use of heavy machinery, could generate temporary intermittent noise in excess of the Town's noise standards. However, construction activities would only occur during the permitted hours designated in the Town's Municipal Code, and thus would not occur during recognized sleep hours for residences or on days that residents are most sensitive to exterior noise. In addition, construction activities would also be required to comply with the construction noise standards established in the Town Noise Ordinance. As such, although a physical increase in ambient noise levels would occur from the construction activities associated with the Project, this temporary increase would not create an adverse effect on nearby residents. Therefore, with compliance with the Town's Municipal Code and Noise Ordinance, the magnitude of this impact would be reduced to a ***less than significant*** level.

Impact NOISE-4 Permanent Increases in Noise (Operational Impacts)

Traffic Noise Levels On-site

Upon completion of the Project, noise levels within the Project site would be primarily generated by vehicular traffic on the surrounding roadways. As discussed previously, the Town has established exterior noise standards for different land uses. As indicated in the Town Noise Ordinance, noise levels at each land use may not exceed the exterior noise standard plus 20 dBA for any period of time (maximum noise level). As such, the maximum noise level that is allowed for any period of time for single-family residential uses would be 70-80 dBA L_{dn} during daytime hours and 60-70 dBA L_{dn} from 10P.M. until 7 a.m. (See Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). The average daily noise levels along the roadway segments of Minaret Road and Old Mammoth Road were determined in order to identify on-site noise levels due to traffic on these roadways in the future when the Project is completed. Table IV.I-10, Cumulative Plus Project Roadway Noise Levels Onsite, shows the average daily 24-hour noise levels along these roadway segments in the future when development of the Project along with the other related projects is completed.

Table IV.I-11 shows the distances from the roadway centerlines to the 70 L_{dn} contour for each of the roadways that would either bisect or border the Project site in the future when buildout of the Project has been completed. Based on the conceptual site plan for the Project showing the locations of the proposed residential uses relative to the surrounding roadways, none of the residential uses proposed in the Project site would be located within the 70 L_{dn} contours of the roadways analyzed in Table IV.I-11. Thus, the proposed residential uses within the Project site would not be exposed to traffic noise levels exceeding 70 L_{dn}. Thus, impacts associated with traffic noise levels on-site would be considered ***less than significant***.

Table IV.I-11
Future Plus Project Roadway Noise Levels On-site

Roadway	Roadway Segment	Reference CNEL at 100 feet[a]	Distance to Noise Contour (feet)		
			70 L_{dn}	65 L_{dn}	60 L_{dn}
Minaret Road	Main Street to Meridian Boulevard	61	25	54	116
Old Mammoth Road	West of Minaret Road	59.1	19	40	87
	Minaret to Meridian	62.9	33	72	155

[b] *Distances are in feet from roadway centerline. The identified noise level at 100 feet from the roadway centerline is for reference purposes only as a point from which to calculate the noise contour distances. It does not reflect an actual building location or potential impact location.*

Source: Christopher A. Joseph and Associates, 2006. Calculation data and results are provided in Appendix H to this Draft EIR.

Off-Site Traffic Noise

The increase in traffic resulting from implementation of the Project would increase the ambient noise levels at sensitive off-site locations in the Project vicinity. Because traffic is considered to be a long-term noise source, a substantial permanent increase in ambient noise levels in the Project vicinity could potentially occur. Table IV.I-12, Predicted Future Roadway Noise Levels identifies the changes in future noise levels along the study-area roadway segments in the Project vicinity that have existing residential uses. As discussed previously, a difference of three dBA between 24-hour noise levels is a barely-perceptible increase to most people. A five dBA increase is readily noticeable, and a difference of ten dBA would be perceived as a doubling of loudness. Thus, as discussed under the Thresholds of Significance heading of this section, this EIR assumes that an increase of five dBA or greater over ambient noise levels is substantial and significant. Furthermore, this EIR also assumes that an increase in noise level of three dBA or greater over ambient noise levels is substantial and significant if the noise increase would meet or exceed the Town's noise level standard for the affected land use, while any increase in noise level below three dBA would be considered imperceptible and ***less than significant***.

Table IV.I-12
Future Off-Site Future Roadway Noise Levels

Roadway Segment	Existing Noise Sensitive Uses	Noise Levels in dBA L_{dn} at 75 feet[a]			
		Existing Noise Levels	Cumulative (Existing Plus Approved Projects)	Increase	Significance Threshold[b]
Minaret Road Meridian to Main Street	Residential	63.2	64.9	1.7	3.0
Old Mammoth Road North of Meridian	Residential	66.0	66.7	0.7	3.0

[a] *The dBA L_{dn} values represent the noise levels experienced at approximately 75 feet from the roadway centerline.*

[b] *As described under the Thresholds of Significance heading of this section, the significance threshold is three dBA if the noise increase would meet or exceed the Town's noise level standard for the affected land use (see Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). However, if the noise levels remain below the Town's noise level standard for the affected land use, then an increase in noise levels of five dBA or greater would be considered significant.*

Source: Christopher A. Joseph and Associates 2006. Calculation data and results are provided in Appendix H to this Draft EIR.

As shown in Table IV.I-12, implementation of Project would increase local noise levels off-site by a maximum of 1.7 dBA Ldn at the segment of Minaret Road located between Meridian Boulevard and Main Street. Because the increase in local noise levels along roadway segments resulting from implementation of the Project would not exceed the established thresholds of significance, this would not represent a substantial permanent increase in ambient noise levels. Therefore, this impact would be considered ***less than significant*** and no mitigation measures are required.

On-Site Non-Vehicular Noise

Upon completion of the proposed residential developments associated with the Project, sources of noise that would be generated by operation of the new residential buildings would include new stationary sources such as ventilation and air conditioning (HVAC) systems. In addition, limited commercial development (75,000 square feet of commercial space) would also be developed. As such, the potential commercial developments would also include stationary sources of noise such as HVAC systems as well as noise associated with delivery vehicles and loading dock activities. However, in accordance with Section 8.16.090 of the Town Noise Ordinance, the HVAC systems associated with the proposed residential and commercial developments within the Project site would be required to be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in excess of the exterior noise standards established for different land uses in the Town (see Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). In terms of noise generated by delivery vehicles and loading dock activities at the Hotel and new commercial developments, Section 8.16.090 of the Town Noise Ordinance also prohibits the loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10 P.M. and 7 A.M. in such a manner as to cause a noise disturbance across a residential property line. Furthermore, the new commercial developments

within the Project site would also be subject to the exterior noise standards established by the Town. Thus, with compliance with the provisions of the Town Noise Ordinance, potential noise impacts associated with HVAC systems and commercial loading dock activities would be considered ***less than significant*** and no mitigation measures are required.

Ice Skating Pond

As discussed previously in Section III, Project Description, the Project would be built in several phases with the construction of a Hotel, which includes an outdoor ice skating pond, occurring in the first phase. The operation of the outdoor ice skating pond would require the use of various types of equipment in order to freeze the water contained within the ice skating pond, to remove snow during the winter months and to maintain the surface of the ice. These various types of equipment all have the potential to generate noise which may exceed the Town of Mammoth Lakes Noise and Land Use Compatibility Criteria, as outlined above in Table IV.I-3.

The main piece of equipment which would be used on a consistent basis, and is key to the functionality and operation of the ice skating pond, is the Chiller. Factors influencing the amount of noise produced by the Chiller include the amount of "load" on the unit, ambient air temperature, orientation of the unit and whether or not the equipment operates at 50 Hz or 60 Hz. Although the Chiller would normally operate only during the daytime hours of 7:00 a.m. to 10:00 p.m., there may times when the Chiller operates during the nighttime hours. Therefore, at "full" load conditions, assuming a 60 Hz unit, an air temperature of 74 F or less, and an unshielded Chiller unit typical noise levels range from 66 to 68 Leq dBA at 50 feet from the source. The nearest existing sensitive receptors to the Hotel are the multi-family residences located approximately 800 feet to the southwest from the center of the ice skating pond. Therefore, as discussed previously, due to the attenuation of noise of approximately 6 dBA per double of distance, the operation of the Chiller unit may produce noise levels of approximately 41.9 to 46.9 dBA Leq. Therefore, the resulting noise level would be within the 50 – 65 dBA "normally acceptable" category for multi-family residential uses of the Land Use Compatibility Criteria shown above in Table IV.I-3 and this impact would be ***less than significant***.

In addition, noise from a Zamboni, an ice surface edger and portable snow blowers used for ice grooming and/or snow removal purposes would also produce noise during operation of the ice skating pond. Noise from these pieces of equipment typically ranges from 64 – 71 Leq dBA at 50 feet from the source. As mentioned above, the nearest existing sensitive receptors to the Hotel are the single family residences located approximately 800 feet to the southwest from the center of the ice skating pond. Therefore, as discussed previously, due to the attenuation of noise of approximately 6 dBA per double of distance, the operation of the Chiller unit may produce noise levels of approximately 42.9 to 49.9 dBA Leq. Therefore, the resulting noise level would be within the 50 – 65 dBA "normally acceptable" category for multi-family residential uses of the Land Use Compatibility Criteria shown above in Table IV.I-3 and this impact would be ***less than significant***.

Furthermore, future multi-family residential units would be located approximately 100 to the north of the proposed ice skating pond. As discussed previously, the maximum noise levels typically generated during operation of an ice skating pond range from 64 – 71 Leq dBA and are generated by use of snow grooming machinery. These noise levels would be reduced to approximately 58 – 64 dBA Leq due to distance. Therefore, the resulting noise level would be within the 50 – 65 dBA "normally acceptable" category for multi-family residential uses of the Land Use Compatibility Criteria shown above in Table IV.I-3 and this impact would be ***less than significant***.

Impact NOISE-5 Excessive Operational Groundborne Vibration

Impacts of groundborne vibration associated with Project construction are discussed above under Impact Noise-2. The Project does not involve any other sources of groundborne vibration and groundborne noise. Therefore, Project impacts associated with excessive operational groundborne vibration would be considered ***less than significant*** and no mitigation measures are required.

CUMULATIVE IMPACTS

Impact NOISE-6 Cumulative Impacts

This cumulative impact analysis considers development of the Project in combination with ambient growth and other development projects within the vicinity of the Project. As noise is a localized phenomenon, and drastically reduces in magnitude as distance from the source increases, only projects and growth in the nearby area could combine with the Project to result in cumulative noise impacts.

Development of the Project in combination with the related projects would result in an increase in construction-related and traffic-related noise in the Project area. The nearest residential related projects to portion of the Project site where construction activities would be concentrated, however, are located approximately 1,500 feet to the north ("The Sherwin") and 1,000 feet to the west ("Snowcreek VI – The Lodges" and "Snowcreek VII"). Due to the distance of these receptors from the areas of the Project site where most construction would be concentrated, and the fact that noise attenuates at approximately six dB (A) per doubling of distance, it is not likely that construction noise would be audible at these locations, thus greatly minimizing or eliminating the potential cumulative noise effect.

Additionally, each of the related projects would be subject to Section 15.08.020 of the Town Municipal Code, which limits the hours of allowable construction activities. Each of the related projects would also be subject to Section 8.16.090 of the Town Noise Ordinance, which establishes noise standards for mobile and stationary construction equipment. With conformance with Sections 15.08.020 of the Town Municipal Code and 8.16.090 of the Town Noise Ordinance, the cumulative construction noise impact would be ***less than significant***.

Future construction associated with the related projects could result in a cumulatively significant impact with respect to temporary or periodic increases in ambient noise levels. Construction noise is localized in

nature and decreases substantially with distance. Consequently, in order to achieve a substantial cumulative increase in construction noise levels, more than one source emitting high levels of construction noise would need to be in close proximity to the Project. While cumulative development in the Project vicinity would include a total of 41 related projects, two of which are as close as approximately 1,000 feet from the areas of the Project site where most construction would occur, the construction activities for each related project would only occur during the permitted hours designated in the Town's Municipal Code, and thus would not occur during recognized sleep hours for residents or on days that residents are most sensitive to exterior noise. In addition, the construction activities would also be required to comply with the construction noise standards established in the Town Noise Ordinance. As such, while the physical impact from an increase in ambient noise levels would occur from the construction activities associated with the related projects, an adverse effect on nearby residents would not occur. Therefore, the cumulative impact of the Project would be ***less than significant***.

Cumulative development in the Town would not result in the exposure of people to or the generation of excessive groundborne vibration, due to the localized nature of vibration impacts and the fact that all construction would not occur at the same time and at the same location. As mentioned above, the construction activities for each related project would only occur during the permitted hours designated in the Town's Municipal Code, and thus would not occur during recognized sleep hours for residents or on days that residents are most sensitive to exterior noise. In addition, the construction activities would also be required to comply with the construction vibration threshold established in the Town Noise Ordinance. As such, future cumulative development would result in a less-than-significant cumulative impact. Therefore, the cumulative impact of the Project would also be ***less than significant***.

The cumulative baseline and cumulative plus Project ambient noise levels are presented in Table IV.I-13. As shown in Table IV.I-13, cumulative development would increase local noise levels by a maximum of 0.7 dBA Ldn at the segment of Old Mammoth Road located between Minaret Road and Meridian Boulevard. Because the increase in local noise levels along roadway segments resulting from implementation of the Project would not exceed the established thresholds of significance, this would not represent a substantial permanent increase in ambient noise levels. Therefore, this impact would be considered ***less than significant*** and no mitigation measures are required.

Table IV.I-13
Cumulative Roadway Noise Levels

Roadway Segment	Existing Noise Sensitive Uses	Noise Levels in dBA L_{dn} at 75 feet[a]			
		Cumulative (Existing Plus Approved Projects)	Cumulative Plus Project	Increase	Significance Threshold[b]
Minaret Road	Residential	61	61.3	0.3	3.0
Old Mammoth Road West of Minaret Road	Residential	58.7	58.7	0.0	3.0
Minaret Road to Meridian Boulevard	Residential	62.9	63.6	0.7	3.0

[c] *The dBA L_{dn} values represent the noise levels experienced at approximately 75 feet from the roadway centerline.*

[d] *As described under the Thresholds of Significance heading of this section, the significance threshold is three dBA if the noise increase would meet or exceed the Town's noise level standard for the affected land use (see Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). However, if the noise levels remain below the Town's noise level standard for the affected land use, then an increase in noise levels of five dBA or greater would be considered significant.*

Source: Christopher A. Joseph and Associates 2006. Calculation data and results are provided in Appendix H to this EIR.

With regard to stationary sources, it is also not expected that there would be a cumulatively significant impact. The major stationary source of noise that will be introduced into the Snowcreek Master Plan Area would likely be HVAC equipment for new residential and commercial developments. However, in accordance with Section 8.16.070 of the Town Noise Ordinance, all new developments within the Town would also be subject to the exterior noise standards established by the Town for different land uses (see Table IV.I-4, Town of Mammoth Lakes Exterior Noise Limits). Furthermore, in accordance with Section 8.16.090 of the Town Noise Ordinance, the HVAC systems associated with new developments in the Town would be required to be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in excess of the exterior noise standards established for different land uses in the Town. Thus, with compliance with the provisions of the Town Noise Ordinance, potential noise impacts associated with HVAC systems would be ***less than significant*** and no mitigation measures are required

LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measures NOISE-1a -1b, and -1c listed above, which would require the implementation of BMPs during construction at the Project site to reduce construction noise levels, construction-related noise impacts associated with the Project would be reduced to a ***less than significant*** level.

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