SECTION 4.8
NOISE

This section describes the noise environment at and near the project site, and it analyzes potential noise impacts generated by the proposed project. The analysis includes the potential impacts of noise generated by project construction, project operations and traffic on noise-sensitive areas, primarily residences. The evaluation is based upon a noise analysis conducted by Bollard & Brennan, Inc.

4.8.1 SETTING

NOISE FUNDAMENTALS AND TERMINOLOGY

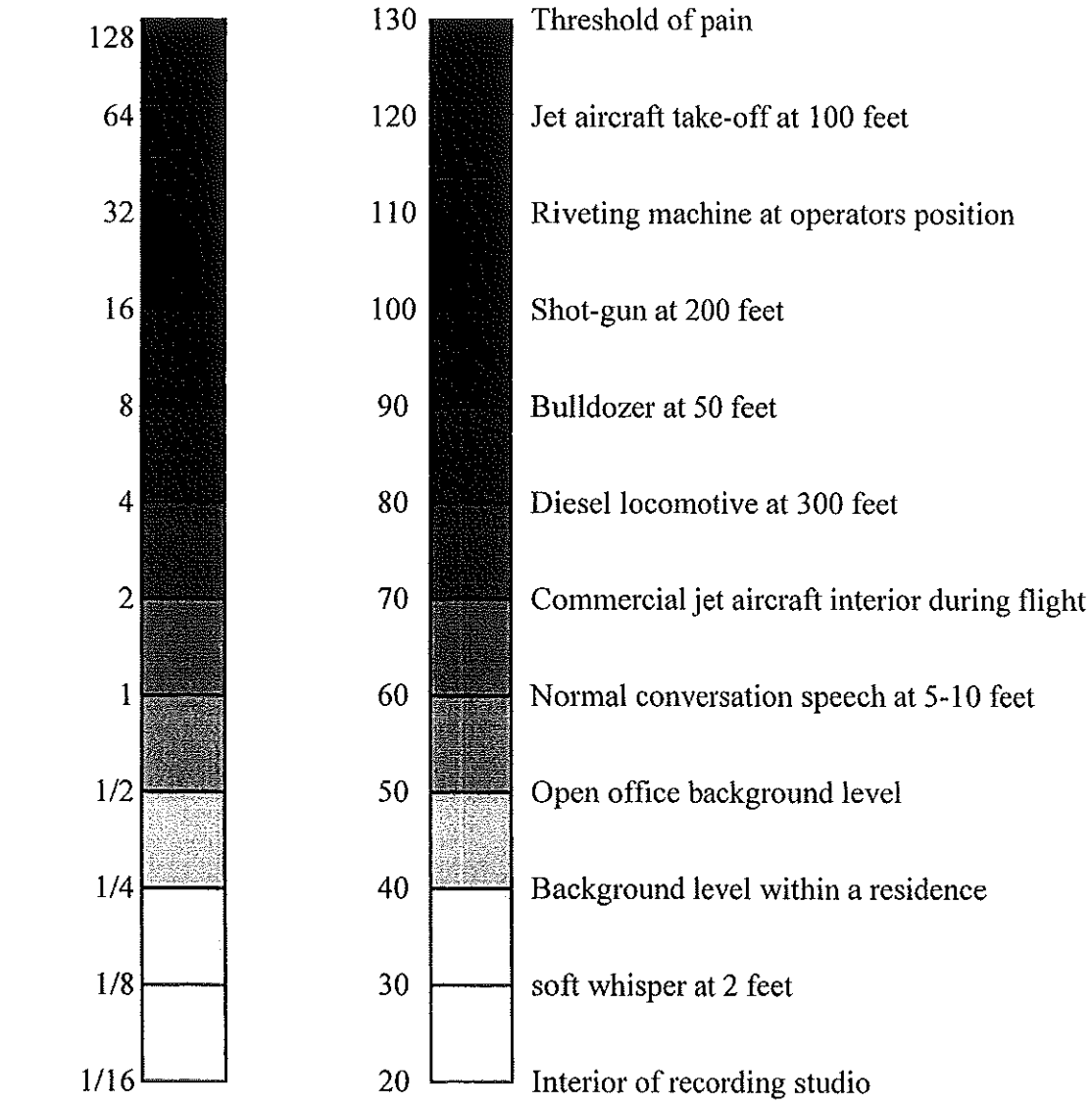
Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough - at least 20 times per second - they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz). Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 decibels (dB). Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers is a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels correspond closely to human perception of relative loudness. **Figure 4.8-1** illustrates common noise levels associated with various sources. Because the decibel scale is logarithmic, the noise produced by two noise sources does not equal the sum of their individual decibel levels. For example, the total noise generated by two 60 dB sources is 63 dB, not 120 dB. Moreover, if two noise levels differ by 10 dB or more, the difference in sound energy is so great that the two levels essentially are not additive. Thus, the total noise generated by a 50-dB source and a 60-dB source is 60 dB.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq) over a given time period (usually one hour). The Leq is the foundation of the Day-Night Average Level noise descriptor, Ldn, and shows very good correlation with community response to noise.

The Day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours.

FIGURE 4.8-1
TYPICAL A-WEIGHTED SOUND LEVELS OF COMMON NOISE SOURCES



The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Ldn-based noise standards are commonly used to assess noise impacts associated with traffic, railroad and aircraft noise sources.

EXISTING AMBIENT NOISE ENVIRONMENT

Figure 4.8-3 shows the general orientation of the project site and proposed on-site uses. The existing ambient noise environment in the immediate project vicinity is defined primarily by traffic on Highway 89, and by existing light-industrial activities on the project site. Noise-sensitive receptors in the immediate project vicinity consist of residences located from 2,500 to about 5,000 feet northwest of the major noise-producing components of the project. These nearest residences are generally located as shown on **Figure 4.8-3**.

Noise levels at the residential area nearest to the project site are relatively low in the absence of traffic on Highway 89. **Figure 4.8-2** shows a view of the nearest residences looking northwest from SR-89. To quantify the existing ambient noise environment in the project vicinity, short-term noise level measurements were conducted at one location on the project site and at one location adjacent to the nearest residences on May 30, 2000. The noise measurement sites are shown on **Figure 4.8-3.** Weather conditions present during the monitoring program were typical for the season, consisting of mild temperatures, partly cloudy skies, variable relative humidity and mostly calm winds.

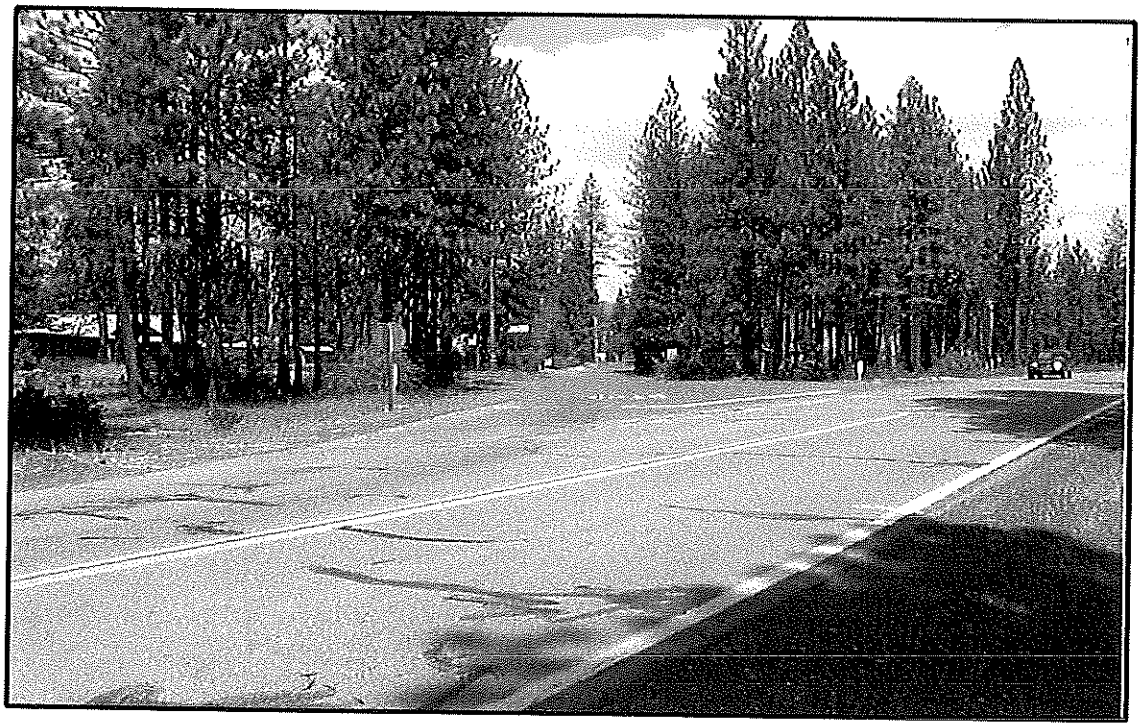
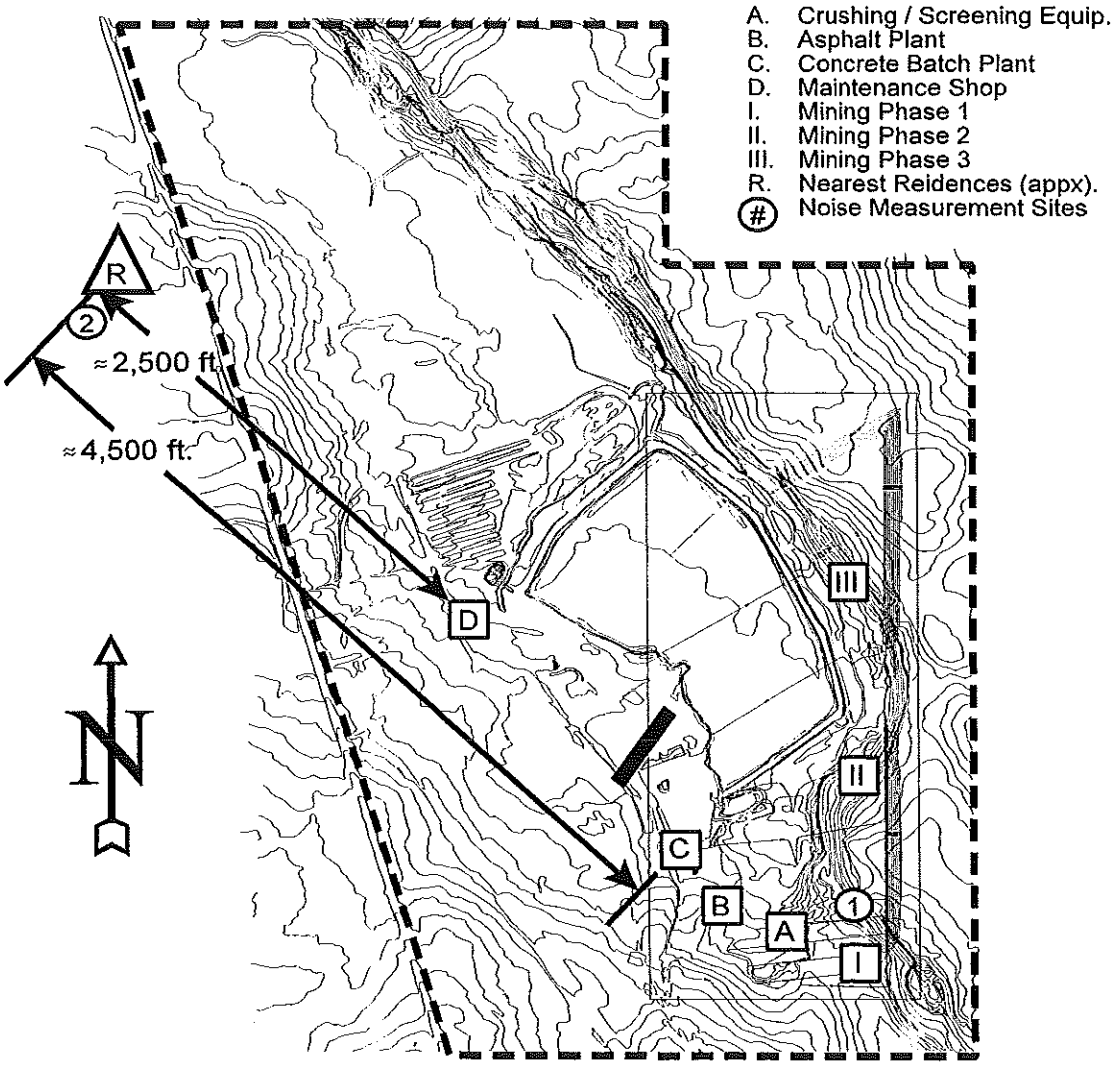


Figure 4.8-2
View of Nearest Residences to Project Site, Looking Northwest from SR 89

Figure 4.8-3
Hat Creek Project Site, Approximate Locations of Proposed Project Components and Nearest Residences



The numerical summaries of the ambient noise level measurements are provided in **Table 4.8-1**. The data indicate that daytime average and maximum levels were approximately 50 and 70 dB Leq and Lmax, respectively, at the nearest residences to the project site.

It is worth noting that the project site was formerly home to a lumber mill, so there is a history of industrial noise and heavy truck trip generation in the immediate project vicinity. This analysis does not attempt to provide a quantitative evaluation of the historical noise environment, but this information is provided for qualitative context.

TABLE 4.8-1
AMBIENT NOISE MEASUREMENT RESULTS
EASTSIDE AGGREGATES PROJECT SITE VICINITY - MAY 30, 2000

Site	Description	Duration	Average (Leq)	Maximum (Max)
1	Project Site - Phase 1 Mining Area	30 min.	41	54
2	Nearest Residences to Northwest	45 min.	52	70

Noise measurement locations are identified on Figure 4.8-1.
Source: Bollard & Brennan, Inc.

4.8.2 REGULATORY FRAMEWORK

SHASTA COUNTY GENERAL PLAN

The County General Plan contains the following objectives and policies concerning noise that pertain to the project:

Objectives

N-1 To protect County residents from the harmful and annoying effects of exposure to excessive noise.

N-2 To protect the economic base of the County by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

N-3 To encourage the application of state-of-the-art land use planning methodologies in areas of potential noise conflicts.

Policies

N-b Noise created by new proposed non-transportation noise sources shall ne mitigated so as not to exceed the noise level standards of **Table 4.8-2** as measured immediately within the property line of lands designated for noise-sensitive uses. Noise generated

from agricultural operations conducted in accordance with accepted standards and practices is not required to be mitigated [**Table 4.8-2** is referred to as Table N-1 in the Shasta County General Plan].

N-c Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of **Table 4.8-2** at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

N-f Noise created by new transportation noise sources shall be mitigated so as not to exceed the levels specified in **Table 4.8-3** at outdoor activity areas or interior spaces of existing noise-sensitive land uses [**Table 4.8-3** is referred to as Table N-3 in the Shasta County General Plan].

N-i Where noise mitigation measures are required to achieve the standards of **Table 4.8-2**, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

N-l The use of site planning and building materials/design as primary methods of noise attenuation is encouraged. Recommended techniques include items such as:

- Use building setbacks and dedicating noise easements to increase the distance between the noise source and the receiver.
- Using noise-tolerant structures, such as garages and carports, to shield noise-sensitive areas.

TABLE 4.8-2
NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION SOURCES

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	55	50
Maximum level, dB	75	65

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The County can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.

In rural areas where large lots exist, the exterior noise level standard shall be applied at a point 100' away from the residence.

Industrial, light industrial, commercial and public service facilities which have the potential for producing objectionable noise levels at nearby noise-sensitive uses are dispersed throughout the County. Fixed noise sources which are typically of concern include, but are not limited to the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including lumber mills, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

TABLE 4.8-3
MAXIMUM ALLOWABLE NOISE EXPOSURE,
TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL,dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[4]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

[2] As determined for a typical worst-case hour during periods of use.

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

[4] In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.

4.8.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines indicates that a project may have significant impacts on noise if it does any of the following:

1) Exposes persons to or generates noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

2) Exposes persons to or generates excessive groundborne vibration or groundborne noise levels.

3) Causes a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

4) Causes a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Noise Element of the Shasta County General Plan establishes noise standards for new projects. For this project, noise impacts are considered significant if project-generated noise exceeds the Shasta County Noise Element standards shown in **Table 4.8-2** and **Table 4.8-3** at the nearest existing residences to the project site.

METHODOLOGY

For the noise level measurement survey that determined existing noise conditions, Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute.

The major noise sources identified for this project are the aggregate mining activities at the Phase I, II, and III locations, aggregate crushing and screening activities, the asphalt plant, the concrete plant, and the truck repair facility. The noise emissions of these various noise sources were obtained from Bollard & Brennan file data for similar sources and from published acoustical literature.

Table 4.8-4 shows the types of equipment proposed for use at the Eastside Aggregates site and the reference maximum noise levels corresponding to the operation of that equipment. These noise levels were obtained from Bollard & Brennan file data for similar noise sources and from the *Dry Creek Surface Mine Project EIR*, the *Kaweah River Rock Company's Surface Mining Permit Project EIR* and the *Kaweah River Basin Investigation Feasibility Study Draft EIR* .

Distances from the noise producing equipment shown in **Table 4.8-4** to the nearest existing residential uses will vary for each of the proposed three mining phases, as will the distances to the asphalt, concrete and processing equipment, and the truck maintenance facility. **Table 4.8-5** shows the distances from the proposed noise-producing activities to the nearest residential activities and the noise levels predicted at the nearest residences resulting from those activities. **Table 4.8-5** is based on a sound decay rate of 6 dB per doubling of distance from the noise source, and an additional attenuation of 1.5 dB per 1000 feet for molecular absorption of sound and anomalous excess attenuation.

TABLE 4.8-4
MAJOR NOISE-PRODUCING EQUIPMENT AND ASSOCIATED NOISE LEVELS
EASTSIDE AGGREGATES PROJECT - SHASTA COUNTY

Equipment Type	Approximate Noise Level at 100 feet, dBA	
	Maximum	Average
Combined Excavating Equipment: (Water Truck, Grader, Loader, Dozer)	90	80
Portable Crushing/Screening Plant	85	80
Asphalt Plant	85	80
Concrete Plant	85	80
Truck Repair Facility:		
Air Compressor	70	60
Impact Wrench	75	65
Die Grinder	70	60

Notes: Average noise levels represent any one-hour period and assume continuous operation of the excavation and plant operations, and heavy but intermittent usage of equipment at the truck repair facility.

It should be noted that the vehicle repair facility noise levels shown in **Table 4.8-5** will be further attenuated by the repair facility building itself and that portions of the mining and processing activities will also be shielded by a large earthen berm (denoted by a thick black line on **Figure 4.8-3.**). To provide a conservative estimate of project-related noise at the nearest existing residences, the noise reduction provided by these features was not included in the levels shown in **Table 4.8-5**. To the extent that these features provide shielding of various noise sources from view of the existing residences, the additional noise reduction attributable to those noise sources is estimated to be on the order of 5-10 dB.

Methodology for Assessing Off-Site Truck Traffic Noise Levels

To assess project-related traffic noise impacts, traffic noise levels are predicted at a representative distance of 200 feet from the Highway 89 centerline for both project and no-project conditions. Noise impacts are identified at existing noise-sensitive areas if the noise level increases which result from the project exceed the significance thresholds described previously in this section.

TABLE 4.8-5
DISTANCES FROM PROJECT-RELATED ACTIVITIES TO NEAREST RESIDENCES AND PREDICTED NOISE LEVELS
EASTSIDE AGGREGATES PROJECT - SHASTA COUNTY

Source(s)[1]	Distance (ft)[2]	Predicted Attenuation, dB[3]		Resulting Noise Levels	
		Distance	Atmospheric	Lmax	Leq
Phase I Excavation	5,500	-65	-8	47	37
Phase II Excavation	4,800	-34	-7	49	39
Phase III Excavation	4,000	-32	-6	52	42
Crushing/Screening Plant	5,200	-34	-8	43	38
Asphalt Plant	4,900	-35	-7	44	39
Concrete Plant	4,500	-33	-7	45	40
Truck Repair Facility	2,500	-28	-4	43	33
Combined / Cumulative[6]	---	---	---	54	46

Notes:
1. Figure 4.8-1 shows locations of the major noise sources associated with this project.
2. These distances shown are approximated in feet from the nearest residences to the general locations of the major noise sources.
3. Noise level predictions are based on the reference hourly noise levels shown in Table 4.8-4 for the reference distance of 100 feet.
4. A 6 dB attenuation rate per each doubling of distance from the 100 foot reference distance was used to project sound levels from sources to receivers. In addition, an attenuation rate of 1.5 dB per 1000 feet for atmospheric and excess anomalous attenuation was used to project sound levels from sources to receivers.
5. These levels represent the maximum and average hourly noise levels predicted at the nearest residential locations during normal activities proposed at the project site.
6. The combined/cumulative levels represent the energy summation of noise from all of the major noise sources operating concurrently, based on Phase III mining (worst-case) and assuming maximum noise levels are generated concurrently (conservative assumption).

Traffic Noise Prediction Model

To describe existing and projected noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions. To predict traffic noise levels in terms of Ldn, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

FHWA Traffic Noise Prediction Model Inputs and Results

Traffic volumes for future conditions and scenarios are contained in **Table 3-3** of Section 3.0, Project Description. A complete listing of the FHWA Model input data for future conditions is provided in Appendix B of this document. **Table 4.8-6** shows the predicted traffic noise levels for

the project, in terms of Ldn at a distance of 200 feet from the centerline of Highway 89, which is the approximate distance from the roadway centerline to the nearest existing residences.

TABLE 4.8-6
PREDICTED TRAFFIC NOISE LEVELS AT NEAREST EXISTING RESIDENCES
EASTSIDE AGGREGATES PROJECT - SHASTA COUNTY

Roadway	Distance	Predicted Ldn at 200 feet from SR-89 C/L			Ldn Increase, dB	
		No-Project Ldn	Typical Project Ldn	Peak Project Ldn	Typical Project	Peak Project
Highway 89	200 feet	58.3	49.7	58.1	+0.6	+2.9

Source: FHWA RD-77-108 with inputs from the traffic section, Bollard & Brennan and Caltrans.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 4.8.1 **Temporary increases in noise levels would occur during project construction activities. [LS]**

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels ranging from 85 to 90 dB at a distance of 100 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. This noise increase would be of short duration, and would likely occur primarily during daytime hours. Impacts of construction noise, therefore, are considered ***less than significant.***

Impact 4.8.2 **The project would generate noise associated with excavation and other quarry activities. [LS]**

Table 4.8-5 indicates that maximum noise levels generated by excavation equipment at the project site would vary from 47 to 52 dB Lmax at the nearest residences to the mining sites. These levels are well below the 65 dB Lmax nighttime noise standard applied by Shasta County to non-transportation noise sources, and well below the existing measured maximum noise level of 70 dB at those locations.

Table 4.8-5 also indicates that average noise levels generated by excavation equipment at the project site would vary from 37 to 42 dB Leq at the nearest residences to the mining sites. These levels are

below the 50 dB Leq nighttime noise standard applied by Shasta County to non-transportation noise sources, and are also below the existing measured average noise level of 52 dB at those locations. Because typical excavation-related noise is not predicted to exceed either the Shasta County nighttime noise standards or existing ambient noise levels, noise impacts associated with the mining of aggregate at the project site are expected to be ***less than significant.***

Impact 4.8.3 **The project would generate noise associated with the crushing and screening operation. [LS]**

Table 4.8-5 indicates that maximum and average noise levels generated by the crushing and screening plant equipment at the project site would be approximately 43 dB Lmax and 38 dB Leq at the nearest residences to that equipment. These levels are well below the 65 dB Lmax nighttime and 50 dB Leq nighttime noise standard applied by Shasta County to non-transportation noise sources. In addition, these levels are below the existing maximum and average noise levels measured at the nearest existing residential areas. As a result, noise impacts associated with operation of the crushing and screening plant equipment are expected to be ***less than significant.***

Impact 4.8.4 **The project would generate noise associated with the asphalt plant. [LS]**

Table 4.8-5 indicates that maximum and average noise levels generated by the asphalt plant equipment at the project site would be approximately 44 dB Lmax and 39 dB Leq at the nearest residences to that equipment. These levels are well below the 65 dB Lmax nighttime and 50 dB Leq nighttime noise standard applied by Shasta County to non-transportation noise sources. In addition, these levels are below the existing maximum and average noise levels measured at the nearest existing residential areas. As a result, noise impacts associated with operation of the asphalt plant equipment are expected to be ***less than significant.***

Impact 4.8.5 **The project would generate noise associated with the concrete batch plant. [LS]**

Table 4.8-5 indicates that maximum and average noise levels generated by the concrete plant equipment at the project site would be approximately 45 dB Lmax and 40 dB Leq at the nearest residences to that equipment. These levels are well below the 65 dB Lmax nighttime and 50 dB Leq nighttime noise standard applied by Shasta County to non-transportation noise sources. In addition, these levels are below the existing maximum and average noise levels measured at the nearest existing residential areas. As a result, noise impacts associated with operation of the concrete plant equipment are expected to be ***less than significant.***

Impact 4.8.6 **The project would generate noise associated with the truck repair facility. [LS]**

Table 4.8-5 indicates that maximum and average noise levels generated by the truck repair equipment at the project site would be approximately 43 dB Lmax and 33 dB Leq at the nearest

residences to that equipment. These levels are well below the 65 dB Lmax nighttime and 50 dB Leq nighttime noise standard applied by Shasta County to non-transportation noise sources. In addition, these levels are below the existing maximum and average noise levels measured at the nearest existing residential areas. As a result, noise impacts associated with operation of the truck repair equipment are expected to be ***less than significant.***

Impact 4.8.7 **The project would generate noise associated with traffic to and from the project site. [LS]**

Table 4.8-6 indicates that neither the typical nor peak project traffic generation would result in a significant increase in traffic noise levels in the immediate project vicinity. The **Table 4.8-6** data are also conservative, in that it was assumed that all project-generated truck traffic could arrive and depart the site from the north, thereby passing in close proximity to the nearest existing residences. Because it is likely that some of the project truck traffic would arrive or depart from the south, the predicted project-related traffic noise levels shown in **Table 4.8-6** are likely overstated. Because typical project-related traffic is not predicted to result in a significant increase in traffic noise levels in the project vicinity, this impact is considered ***less than significant.***

Impact 4.8.8 **Blasting from quarry operations could disturb residents in the vicinity. [SM]**

The detonation of explosives may generate air blast and vibrations. The severity of the blast may be increased by incorrect drill patterns, inadequate placement of explosives and associated equipment, and gas escapes through fractures or mud seams. Atmospheric conditions, such as temperature inversions and surface winds, can also affect air blast pressure considerably. Windows on structures are most vulnerable to the potential effects of air blast, but structures themselves seldom sustain damage (Atlas Powder Company, 1987).

Complaints resulting from blast vibration and air blast, to a large extent, are mainly due to the annoyance effect, fear of damage and the startling effect rather than from actual damage. The human body is very sensitive to low vibration and air blast levels. With air blast, generally levels of over 120 dB will produce some annoyance and fright. The principal effect of air blast are most often a slight overpressure that rattles windows and a noise that startles people. However, these effects are sometimes enough to give people the impression that their houses were shaken by blasting. Whether or not structures were actually affected, the perceptions of people of the effects of blasting are generally more important than any data on ground vibration and air blast (Atlas Powder Company, 1987).

In a letter to Hat Creek Construction dated January 5, 1996, Alpha Explosives recommended a blasting program that would reduce potential vibration impacts on nearby residents (Alpha Explosives, 1996). However, no test blast were conducted to confirm that assertion, nor did Alpha Explosives address potential air blast impacts. Therefore, blasting impacts are considered ***significant and subject to mitigation.***

Mitigation Measures

The following mitigation measures are based upon standard mitigation measures for blasting developed by the County:

MM 4.8.8a Blasting shall take place only between the hours of 9:30 a.m. to 3:30 p.m., Monday through Friday, up to a total of six times per year.

Timing/Implementation: Upon commencement of quarry activities. Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8b Blasting shall not create any vibration detectable without instruments at or outside of the parcel boundaries.

Timing/Implementation: Upon commencement of quarry activities. Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8c Blasting shall be conducted to meet the following requirements. If there is a discrepancy between standards, the more restrictive standard shall apply:

a) The peak particle velocity ("ground vibration") generated from any blast shall not exceed 0.5 inches per second for vibration frequencies below 40 hertz, and 2.0 inches per second for vibration frequencies of 40 hertz or more, measured directly between the nearest residence and the blast site.

b) The maximum air overpressure ("air blast") generated from any blast shall not exceed 0.014 pounds per square inch (psi), measured directly between the nearest residence and the blast site.

The project applicant shall establish blast criteria based upon the maximum permitted ground vibration and air blast. The criteria shall include the minimum distance between the nearest shot hole and the site of damage concern, the maximum total amount of explosive used in a detonation sequence, the minimum and maximum depth of the blasting holes, the type of stemming of the holes, the spacing of the hole grid, the maximum number of pounds of explosive per hole, the maximum number of pounds of explosive per time delay, and the number of milliseconds per delay in each direction on the grid. The project applicant shall submit a report to the Planning Division containing the above information, and prior to the first blast shall notify the Planning Division at least two weeks in advance. The blast criteria shall be revised, if necessary, to ensure that maximum levels of

ground vibration and air blast are not exceeded, based upon analysis of the first blast (see **MM 4.8.8d**). The project applicant shall report to the Planning Division whether and how the blast criteria have been revised.

Timing/Implementation: Prior to first blast.
Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8d A qualified independent consultant shall record the effect of the first blast with a minimum of one seismometer and one air pressure blast recording instrument set up at a location between the blast site and nearby residential structures. The consultant shall submit a report to the Shasta County Planning Division within two weeks of the first blast. The report shall include copies of the recording instrument tapes of the blast and an analysis of the recording data to determine whether the blast met the criteria established by the project applicant.

Timing/Implementation: Upon commencement of first blast.
Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8e The project applicant shall notify all residents and businesses within 1.5 miles of the blast site at least 24 hours prior to each blast. The project applicant shall also notify the Fire Dispatch Center by telephone at 225-2411at least 24 hours prior to each blast.

Timing/Implementation: Prior to each blast.
Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8f If complaints are received from nearby residents, the County may require the project applicant to arrange annual or more frequent blast monitoring by a qualified independent consultant. Based upon the results of such monitoring, the project applicant may be required to revise the blast criteria so as to reduce or eliminate the blast effect generating complaints.

Timing/Implementation: Upon commencement of blasting.
Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.8g The project applicant shall obtain a blasting permit from the Shasta County Sheriff's Office.

Timing/Implementation: Prior to first blast.
Enforcement/Monitoring: Shasta County Sheriff's Office

MM 4.8.8h Explosives may be stored on the project site, provided that their transportation, handling and storage comply with all applicable Federal, State and local regulations.

Timing/Implementation: Upon commencement of quarry activities.
Enforcement/Monitoring: Shasta County Division of Environmental Health.

In addition, Mitigation Measure 4.8.9b sets forth procedures on handling complaints concerning vibrations caused by blasting. Implementation of the mitigation measures would minimize the potential noise and vibration effects of blasting conducted as part of quarry operations. They would provide warning for nearby residents and establish a mechanism by which complaints would be handled. Impacts after mitigation would be ***less than significant***.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact 4.8.9 **The predicted noise levels generated by individual components of the project could have a significant impact when combined. [PSM]**

Table 4.8-5 indicates that maximum and average noise levels generated by the combined operation of all of the major identified on-site noise sources at the project site would be approximately 54 dB Lmax and 46 dB Leq at the nearest residences to that equipment. These levels would satisfy the 65 dB Lmax nighttime and 50 dB Leq nighttime noise standards applied by Shasta County to non-transportation noise sources. In addition, these levels are below the existing maximum and average noise levels measured at the nearest existing residential areas. Nonetheless, the predicted average level of 46 dB Leq approaches the County nighttime noise level standard of 50 dB, and does not provide a substantial margin of safety relative to that noise standard in light of the number of noise-related variables associated with the proposed operation. In addition, the cumulative contribution of noise from each of the on-site sources could cause project-related noise to approach or exceed early morning ambient noise levels at the nearest residences. As a result, this impact is considered ***potentially significant and subject to mitigation***.

Mitigation Measures

MM 4.8.9a Short-term noise level measurements shall be conducted by the project applicant at the nearest residences to ensure that the various components of the project are not exceeding the County's adopted noise standards. If the results of that monitoring indicate that the County's noise standards are

exceeded, additional noise control measures shall be implemented as needed. Such measures could include increasing setbacks, modifications of project hours of operations, the use of localized noise barriers in the form of aggregate stockpiles, portable sound attenuating blankets suspended in close proximity to the processing equipment, or other barrier configurations as may be appropriate. Noise level measurements shall be conducted at least twice annually in the first year of full project operations, and at least once annually afterwards.

Timing/Implementation: Following commencement of regular activities at the project site. Monitoring to be conducted as part of annual mine inspection. Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

MM 4.8.9b In the event that the Planning Division receives complaints about noise or vibrations, the Planning Director shall review the complaint and determine whether it can be verified. If it can be verified, the Planning Director shall inform the project applicant that a study must be submitted to the Planning Division from an acoustical engineer or other qualified professional, including actual measurements of noise and vibration from project operations and blasting. The Planning Director may choose to have the Planning Division hire the acoustical engineer or other qualified professional to perform the study. In that case, the project applicant shall deposit monies with the Planning Division to cover the cost of the study and associated administrative costs. If the complaint is verified by the study, the study shall recommend measures to reduce or eliminate the causes of the complaint. The Planning Director shall require the project applicant to implement the recommendations deemed feasible by the Planning Director.

Timing/Implementation: Upon receipt of complaint following commencement of regular activities at the project site.
Enforcement/Monitoring: Shasta County Department of Resource Management - Planning Division.

Implementation of the mitigation measures would ensure monitoring of noise levels and that noise levels would be reduced if they exceed County standards. Impacts after mitigation would be ***less than significant.***

REFERENCES

Dry Creek Surface Mine Project EIR , State Clearinghouse No. 94112033, December 1995.

Kaweah River Basin Investigation Feasibility Study Draft EIR , June 1996.

Kaweah River Rock Company's Surface Mining Permit Project EIR , State Clearinghouse No. 89032709, April 1998.

Shasta County General Plan, as amended 1998.