



5.5 NOISE

The purpose of this section is to analyze Project-related noise source impacts on-site and to surrounding land uses. Mitigation measures are also recommended to avoid or reduce the Project's impacts. This section evaluates short-term construction-related impacts as well as long-term buildout operational conditions. Information in this section is based on the following documents:

- ◆ San Luis Obispo County Noise Element;
- ◆ San Luis Obispo County Code; and
- ◆ *Cambria and San Simeon Acres Community Plans of the North Coast Area Plan Draft EIR*, May 18, 2005.

EXISTING CONDITIONS

NOISE SCALES, DEFINITIONS, AND HEALTH IMPACTS

Standard Unit of Measurement

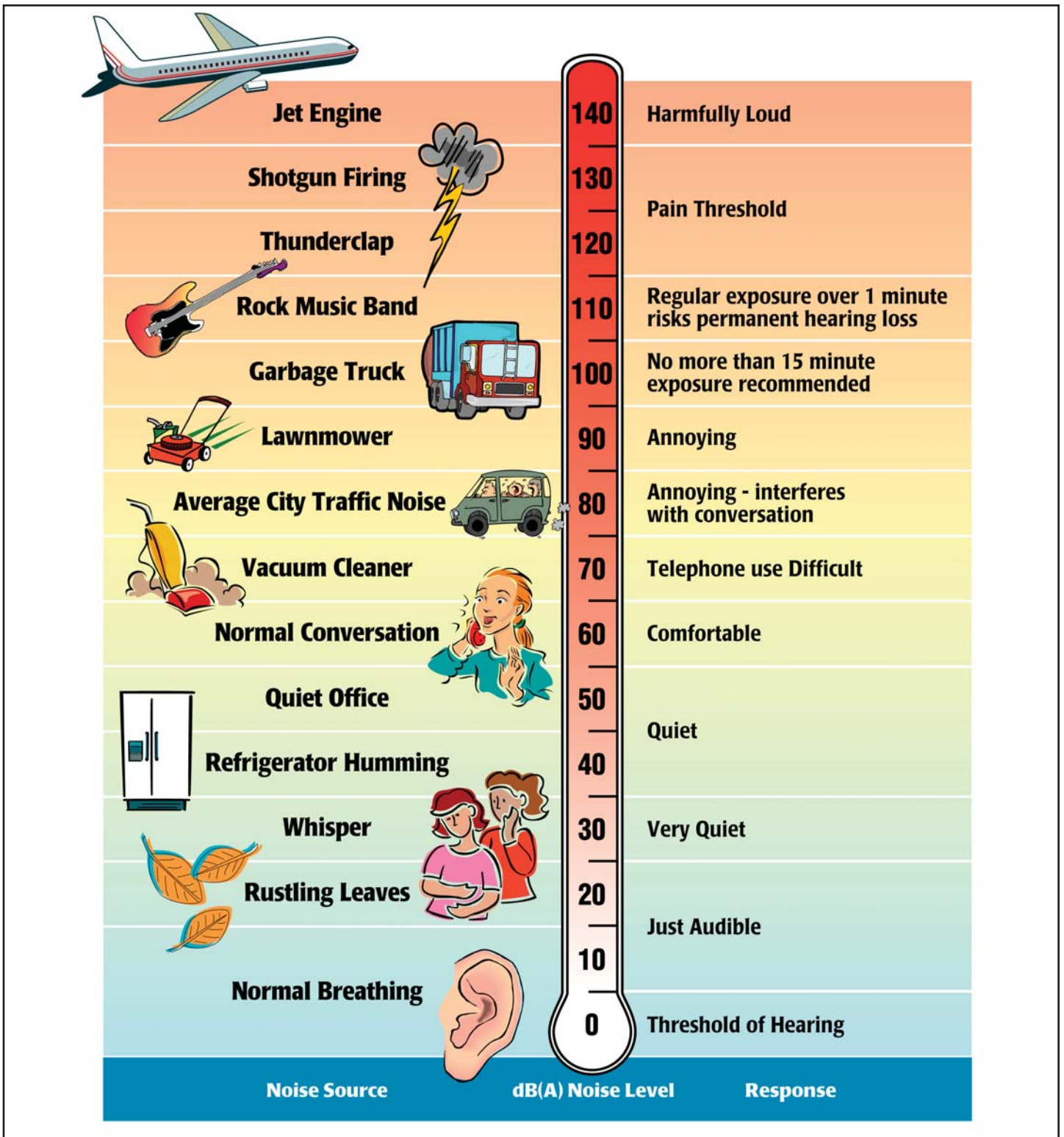
Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been revised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples, of various sound levels in different environments are shown in Exhibit 5.5-1 (Sound Levels and Human Response).

Many methods have been developed for evaluating community noise to account for, among other things:

- ◆ The variation of noise levels over time;
- ◆ The influence of periodic individual loud events; and
- ◆ The community response to changes in the community noise environment.

Table 5.5-1 (Noise Descriptors) provides a listing of methods to measure sound over a period of time.



SOURCE: Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.
 Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004), March 1974.



**Table 5.5-1
Noise Descriptors**

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq} . The L_{dn} is calculated by averaging the L_{eq} 's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
L_{01} , L_{10} , L_{50} , L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent and 90 percent of a stated time period.
Source: Cyril M. Harris, <i>Handbook of Noise Control</i> , 1979.	

Health Effects of Noise

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases.



However, an individual's reaction to a particular noise depends on many factors such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- ◆ Noise-Induced Hearing Loss;
- ◆ Interference with Communication;
- ◆ Effects of Noise on Sleep;
- ◆ Effects on Performance and Behavior;
- ◆ Extra-Auditory Health Effects; and
- ◆ Annoyance.

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by nonoccupational sources.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research implicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior and increased incidence of "hostile" behavior. Noise



has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

REGULATORY SETTING

It is difficult to specify noise levels that are generally acceptable to everyone. What is an annoyance to one person may be unnoticed by another. Standards may be based on documented complaint activity in response to documented noise levels, or based on studies on the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population.

This section summarizes the laws, ordinances, regulations, and standards that are applicable to the project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, Federal and State agencies provide standards and guidelines to the local jurisdictions.

United States Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) offers guidelines for community noise exposure in the publication *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*. These guidelines consider occupational noise exposure as well as noise exposure in homes. The EPA recognizes an exterior noise level of 55 decibels day-night level (dB L_{dn}) as a general goal to protect the public from hearing loss, activity interference, sleep disturbance, and annoyance. The EPA and other Federal agencies have adopted suggested land use compatibility guidelines that indicate that residential noise exposures of 55 to 65 dB L_{dn} are acceptable. The EPA notes, however, that these levels are not regulatory goals, but are levels defined by a negotiated scientific consensus, without concern for economic and technological feasibility or the needs and desires of any particular community.



State Noise Standards

The State of California Office of Noise Control has established guidelines for acceptable community noise levels, which are based on the CNEL rating scale. The guidelines rank noise land use compatibility in terms of “normally acceptable”, “conditionally acceptable”, and “clearly unacceptable” noise levels for various land use types. As shown in Table 5.5-2 (California Land Use Compatibility Noise Guidelines), a project in the “normally acceptable” category would be acceptable in terms of both its indoor/outdoor noise exposure without special noise abatement measures. Where outdoor noise exposure is less important, projects can be designed to provide acceptable interior environments in the “conditionally acceptable” category. This may involve providing air conditioning so that windows can remain closed, or, at higher levels, sound rated windows and walls. Acoustical reports are recommended to be required where the noise exposure is “conditionally acceptable” or “normally unacceptable.”

**Table 5.5-2
California Land Use Compatibility Noise Guidelines**

Land Use Category	Community Noise Exposure			
	L _{dn} or CNEL, dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70-75	75-85
Residential - Multiple Family	50 - 65	60 - 70	70 - 75	70 - 85
Transient Lodging - Motel, Hotels	50 - 65	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA
NA: Not Applicable				
Notes:				
<u>Normally Acceptable.</u> Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.				
<u>Conditionally Acceptable.</u> 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, but with closed windows and fresh air supply systems or air conditioning will normally suffice.				
<u>Normally Unacceptable.</u> New Construction or development should 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.				
<u>Clearly Unacceptable.</u> New construction or development should generally not be undertaken.				
Source: <i>General Plan Guidelines</i> , Office of Planning and Research, California, October 2003.				

As shown in Table 5.5-2, the State Office of Noise Control, in its Land Use Compatibility Standards, defines an outdoor level of 60 dBA CNEL or less as being “normally acceptable” for residential uses. The intent of the 60 dBA CNEL level is partly to provide acceptable outdoor levels. A 60 dBA CNEL is generally considered to be an appropriate exterior level near roadways where outdoor use is a major consideration, such as in backyards, recreation areas in residential projects, and many park areas. A second intent of the 60 dBA CNEL standard is to



provide, either through design, location, or insulation, for interior noise levels no greater than 45 dBA CNEL, which is generally accepted as the maximum acceptable noise level for most indoor residential activities.

State Noise Insulation Standards are consistent with the Office of Noise Control residential Land Use Compatibility standards. In 1974, the State adopted Noise Insulation Standards (Title 25, State Administrative Code) for new hotels, motels, and dwellings other than single-family detached dwellings. Those standards established 45 dBA CNEL as the maximum interior sound level (attributable to exterior sources) in any room. Where exterior sound levels are 60 dBA CNEL or above, acoustical analyses for projects are required to ensure that the structure has been designed to limit outside noise to the allowable interior levels. The State Noise Insulation Standards also include standards to be met for sound transmission between units.

Local agencies may regulate noise levels of most sources not regulated by the Federal government, may provide standards for insulation of noise receivers either within the structure or by placement of noise barriers such as walls, and, through land use decisions, may reduce noise impacts by separating noise generators from noise sensitive uses.

San Luis Obispo County Noise Standards

GENERAL PLAN NOISE ELEMENT

Policies in the *San Luis Obispo County Noise Element (Noise Element)* are intended to mitigate short-term and long-term, interior and exterior, noise impacts. The *Noise Element* contains a number of project-specific measures intended to reduce interior noise levels by increments of 15 to 30 dBA, and thereby reduce noise impacts to less than significant levels. These policies include:

- ◆ *Policy 3.3.2: New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected future levels of noise from transportation noise sources which exceed 60 dBA or CNEL (70 L_{dn} or CNEL for outdoor sports and recreation) unless the project design includes effective mitigation measures...*
- ◆ *Policy 3.3.4: New development of noise-sensitive land uses shall not be permitted where the noise level due to existing stationary noise sources will exceed [a daytime L_{eq} of 50 dBA and a nighttime L_{eq} of 45 dBA] unless effective noise mitigation measures have been incorporated...*
- ◆ *Policy 3.3.5: Noise created by new proposed stationary noise sources shall be mitigated.*

COUNTY CODE

County Code Sections 23.06.044 through 23.06.050 establish standards for acceptable exterior and interior noise levels and describe how noise is to be measured. Pursuant to Code Section 23.06.044 (Exterior Noise Level Standards) no person shall create any noise or allow the creation of any noise, which causes the exterior noise level when measured at noise-sensitive land uses to exceed an hourly average (L_{eq}) of 50 dBA during the daytime (7:00 AM to 10:00 PM) and 45 dBA at night (10:00 PM to 7:00 AM) at the property lines. Maximum instantaneous noise levels shall not exceed 70 dBA during the daytime and 65 dBA at night. If noise



generated by a project were projected to exceed these levels at a residential property line, this would be considered a significant noise impact.

Pursuant to Code Section 23.06.042 (Exceptions to Noise Standards), noise sources associated with construction are exempt from the Noise Ordinance standards, provided such activities do not take place before 7:00 AM or after 9:00 PM any day except Saturday or Sunday, or before 8:00 AM or after 5:00 PM on Saturday or Sunday.

EXISTING CONDITIONS

People are subject to a multitude of sounds in the urban environment. Excessive noise cannot only be undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon three factors: the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the noise source area.

Sensitive Receptors

The *Noise Element* lists noise-sensitive land uses that have been identified by the County of San Luis Obispo. Sensitive land uses include the following:

- ◆ Residential development, except temporary dwellings and residential accessory uses;
- ◆ Schools – preschool to secondary, college and university; specialized education and training;
- ◆ Health care services (hospitals);
- ◆ Nursing and personal care;
- ◆ Churches;
- ◆ Public assembly and entertainment;
- ◆ Libraries and museums;
- ◆ Hotel and motels;
- ◆ Bed and breakfast facilities;
- ◆ Outdoor sports and recreation; and
- ◆ Offices.

North Coast Planning Area Noise Sources

Roadways, including Highway 1 and Main Street, are the primary transportation noise sources in Cambria. Stationary noise sources include the construction of individual projects, as well as ongoing commercial activity. These noise sources are described in greater detail below.

HIGHWAY NOISE

Highway 1 is a highway of local and regional importance, and the major transportation corridor through the north coast area. The highway carries traffic volumes in sufficient numbers to produce significant noise levels. Existing noise conditions along Highway 1 through Cambria are shown in Table 5.5-3 (Existing Traffic Noise Contours in Cambria). The existing traffic noise is illustrated as noise contours from the center of the roadways. Along segments of Highway 1, noise levels in excess of 60 dBA L_{dn} are experienced under existing conditions.



**Table 5.5-3
Existing Traffic Noise Contours in Cambria**

Transportation Corridor	Distance from Centerline of Roadway to Contour (in feet)	
	60 dBA	70 dBA
Highway 1		
Old Creek Road to Ardath Drive	304	66
Ardath Drive to Pico Creek	291	69
Source: <i>Cambria and San Simeon Acres Community Plans of the North Coast Area Plan Draft EIR</i> , Table 4.9-2 (Existing Noise Contour Data in Cambria from Center of Roadway).		

STATIONARY NOISE SOURCES

The Noise Element does not identify any significant stationary commercial or industrial noise sources in or near Cambria. However, a wide variety of commercial land uses are permitted under the existing zoning designations and it is possible that some undocumented stationary sources exist. Cambria does not contain any land designated for industrial use. The Cambria electrical substation complies with the local noise standards and does not present any significant noise impacts to the community.

CONSTRUCTION NOISE

Construction noise associated with individual development projects occurs throughout the community. Because of its intermittent and short term nature, it is not possible to characterize construction noise either by location or intensity. However, construction noise typically ranges from 70 to 95 dBA at 50 feet from the noise source, depending on the amount and types of equipment used.

SIGNIFICANCE CRITERIA

According to Appendix G of the *CEQA Guidelines* (Initial Study Checklist Form), a project would typically have a significant noise impact if it would:

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



- ◆ For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; refer to Section 7.0 (Effects Found Not To Be Significant).
- ◆ For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels; refer to Section 7.0 (Effects Found Not To Be Significant).

IMPACTS AND MITIGATION MEASURES

SHORT-TERM CONSTRUCTION NOISE IMPACTS

- ❖ **GRADING AND CONSTRUCTION ASSOCIATED WITH THE WATER MASTER PLAN IMPROVEMENTS COULD EXPOSE PERSONS TO OR GENERATE NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN SAN LUIS OBISPO COUNTY'S NOISE ELEMENT OR NOISE ORDINANCE. ADDITIONALLY, THE WATER MASTER PLAN IMPROVEMENTS COULD RESULT IN TEMPORARY/PERIODIC INCREASES IN AMBIENT NOISE LEVELS. FOLLOWING COMPLIANCE WITH SAN LUIS OBISPO COUNTY CODE REQUIREMENTS AND IMPLEMENTATION OF THE RECOMMENDED MITIGATION, IMPACTS ARE CONCLUDED TO BE LESS THAN SIGNIFICANT.**

Impact Analysis:

Potable and Recycled Water Distribution Systems

Construction of the potable and recycled water distribution system components is assumed to occur over approximately three to ten years depending upon funding availability. The noise level associated with the construction of the potable and recycled water distribution systems would vary during the construction period, depending upon the construction phase. The first phase, site preparation, is generally the noisiest and has the shortest duration. Activities during this phase include excavation, earth-moving, and soils compaction. High groundborne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, compactors, scrapers, and other heavy-duty construction equipment.

In addition to construction noise from the distribution systems facility sites, increased noise along access routes would be generated during the construction periods due to movement of equipment and workers to and from the sites. Throughout the construction process, heavy equipment would be staged on-site, and the primary mobile source noise would be workers traveling to and from the site. The daily transportation of construction workers would not be a substantial percentage of current daily traffic volumes in the area and would not be anticipated to increase traffic noise levels by more than 1 dBA.

Implementation of the proposed improvements may expose adjacent sensitive receptors to sporadic high noise levels and groundborne vibration associated with remediation and construction activities. Table 5.5-4 (Typical Construction Equipment Noise Levels) indicates the noise levels associated with construction equipment.



**Table 5.5-4
Typical Construction Equipment Noise Levels**

Type of Equipment	A-Weighted Sound Level (dBA at 50 feet)
Front Loaders	71 – 96
Backhoes	71 – 94
Tractors	73 – 96
Scrapers and graders	76 – 96
Trucks	69 – 96
Generators	69 – 83

Source: Harris, Cyril, *Handbook of Noise Control and Measurement*, 1979.

A reasonable worst-case assumption is that the three loudest pieces of equipment would operate simultaneously and continuously over at least one hour within a focused area of 15 yards of each other. The combined sound level of three of the loudest pieces of equipment (scraper, bulldozer, and heavy truck) is 92 dBA measured at 50 feet from the noise source. Table 5.5-5 (Estimated Construction Noise in the Project Area), which assumes this combined source level, summarizes predicted noise levels at various distances from an active construction site.

**Table 5.5-5
Estimated Construction Noise in the Project Area**

Distance Attenuation	
Distance to Receptor (Feet)	Sound Level at Receptor (dBA)
50	92
100	86
200	80
400	73
600	69
800	67
1,000	64

The following assumptions were utilized:
 Basic sound level drop-off rate: 3.0 dB per doubling distance
 Molecular absorption coefficient: 0.7 dB per 1,000 feet
 Analogous excess attenuation: 1.0 dB per 1,000 feet
 Reference sound level: 92 dBA
 Distance for reference sound level: 50 feet
 Simultaneous operation of 1 scraper, 1 heavy truck, and 1 bulldozer

The noise level estimates in Table 5.5-5 take into account distance to receptor attenuation, attenuation from molecular absorption, and anomalous excess attenuation.¹ Construction noise would be most noticeable during the initial months of site-intensive grading. The primary sources of acoustical disturbance would be random incidents, which would last less than one

¹ Hoover, R. M., and Keith, R.H., *Noise Control for Buildings, Manufacturing Plants, Equipment and Products*, 1996.



minute, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts.

Construction-related noise levels in excess of 60 dBA may impact sensitive receptors located within 1,000 feet of the construction site; refer to Table 5.5-5. To minimize any extraneous construction noise impacts to sensitive receptors, construction activities associated with the proposed water facilities would be subject to compliance with Code Section 23.06.042 (Exceptions to Noise Standards), which limits construction hours. Additionally, mitigation measures are recommended, which would mitigate construction-related noise impacts. Further review may be necessary on a project-by-project basis to evaluate site-specific construction-related impacts.

Water Demand Management

This Project component involves improvements to the current conservation program and regulations, which would not generate construction-related noise. No impact would occur in this regard.

Seawater Desalination

A project-level EIR would be prepared for the seawater desalination plant when project-specific information is available. The short-term construction noise analysis would need to consider the combined noise level of the construction equipment typically required for construction of a seawater desalination plant and the impacts on nearby sensitive receptors; refer to Table 5.5-6 (Typical Construction Equipment and Noise Levels for Seawater Desalination Plants). As outlined in Table 5.5-6, construction noise levels could reach 93.6 dBA 50 feet from the construction site. A future project-specific EIR/EIS would need to further determine the potential short-term construction-related noise impacts after more details become known regarding the desalination facility. Additionally, the EIR/EIS would analyze alternative desalination facility sites.

**Table 5.5-6
Typical Construction Equipment and Noise Levels
for Seawater Desalination Plants**

Construction Phase	Loudest Construction Equipment	Equipment Noise Level at 50 feet (dBA)	Composite Site Noise Level at 50 feet (dBA)
Desalination Plant	Forklift (2)	75	88.8
	Track Mount Crane (1)	75	
	Wheel Mount Crane (1)	75	
	Flatbed Truck (2)	88	
Desalinated Water Conveyance Facilities (Pipelines)	Backhoe (1)	85	93.6
	Compactor (1)	80	
	Derrick Crane (1)	88	
	Flatbed Truck (2)	88	
Pump Stations	Backhoe (1)	85	92.0
	Heavy Truck (1)	88	
	Derrick Crane (1)	88	

Source: J.D. Barnes, et. al., *Power Plant Construction Noise Guide*, 1977.



It is not known whether horizontal directional drilling (HDD) would be used on the Project. A pending geotechnical/hydrogeologic investigation would develop various alternatives for subsequent environmental analysis.

Mitigation Measures:

- NOI-1 Construction activities shall comply with San Luis Obispo County Code Section 23.06.042 (Exceptions to Noise Standards), which prohibits construction activities before 7:00 AM or after 9:00 PM any day except Saturday or Sunday, or before 8:00 AM or after 5:00 PM on Saturday or Sunday.
- NOI-2 The contractor shall site all stationary noise-generating construction equipment, as far as possible from nearby noise-sensitive receptors. Where feasible, noise-generating construction equipment shall be shielded from nearby noise-sensitive receptors by noise-attenuating buffers. Stationary noise sources located within 1,000 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings. Portable acoustic barriers shall be placed around noise-generating equipment that is located less than 200 feet from noise sensitive receptors.
- NOI-3 The contractor shall provide sound control devices on construction equipment powered by gasoline or diesel engines, which are at least as effective as those provided by the original equipment manufacturer (OEM). No equipment shall be permitted to have an un-muffled exhaust.
- NOI-4 Noise-generating mobile equipment and machinery shall be turned-off when not in use.
- NOI-5 Residences within 1,000 feet of a construction area shall be notified of the construction schedule in writing, prior to construction. The contractor shall designate a noise disturbance coordinator who shall be responsible for responding to complaints regarding construction noise. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. A contact number for the noise disturbance coordinator shall be conspicuously placed on construction site fences and written into the construction notification schedule sent to nearby residences.
- NOI-6 The following measures shall be implemented for all drilling activities associated with the proposed seawater desalination system:
 - ◆ During construction, noise blankets shall be used to fully enclose equipment associated with tunneling, if habitable structures or businesses are located within 500 feet of the construction site.
 - ◆ The equipment engine shall be covered and the contractor shall ensure that mufflers are in good working condition.

Level of Significance: Less Than Significant With Mitigation Incorporated.



LONG-TERM OPERATIONAL NOISE

- ❖ **OPERATIONS AND MAINTENANCE ACTIVITIES ASSOCIATED WITH THE PROPOSED WATER MASTER PLAN IMPROVEMENTS COULD EXPOSE PERSONS TO OR GENERATE NOISE LEVELS IN EXCESS OF SAN LUIS OBISPO COUNTY'S NOISE ELEMENT OR NOISE ORDINANCE STANDARDS. ADDITIONALLY, THE WATER MASTER PLAN IMPROVEMENTS COULD RESULT IN PERMANENT INCREASES IN AMBIENT NOISE LEVELS. ANALYSIS HAS CONCLUDED THAT IMPLEMENTATION OF THE RECOMMENDED MITIGATION AND COMPLIANCE WITH SAN LUIS OBISPO COUNTY CODE REQUIREMENTS WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT.**

Impact Analysis:

Potable and Recycled Water Distribution Systems

The potable and recycled water distribution systems would generate noise from both mobile and stationary sources.

Mobile Noise Sources. As discussed in Section 5.3 (Traffic and Circulation), most of the facilities associated with the potable and recycled water distribution systems (i.e., distribution pipelines, reservoirs, pump stations, hydrants, valves, etc.) would be "unmanned," generating only infrequent vehicle trips by maintenance employees. Only a nominal increase in vehicle trips would occur with Project implementation; therefore, traffic related noise impacts would be less than significant.

Stationary Noise Sources. Implementation of the proposed potable and recycled water distribution systems would introduce new noise sources that may impact nearby noise sensitive receptors. The major noise sources associated with the proposed improvements are the pump stations and maintenance activities associated with the pipelines and reservoirs. Although several noise sources would be introduced, many of them would operate only intermittently and at various locations throughout the community. These noise sources would usually not operate concurrently. Through the County's development review process, future potable and recycled water system improvements would be evaluated to determine the land use permit for authorizing their use and the conditions for their establishment and operation. Discussed below are the various types of noise sources that should be analyzed as part of the development review process.

Pump Stations. The potable water distribution system would involve a new pump station near the Charring Pressure Reducing Valve Station and relocation/replacement of Pumps A, B, C, and D at the Water Yard Pump Station. The recycled water distribution system would involve one new pump station at the existing wastewater treatment plant (WWTP) and one hydro-pneumatic pumping system at Santa Lucia Middle School.

As shown in Table 5.5-7 (Stationary Equipment Noise Levels), typical operating conditions for pump stations result in noise levels ranging from 73 dBA to 80 dBA at 50 feet from the pump station, depending on the size of the engine. Typically, a pump station housing is designed to limit near field (within a close radius) noise levels ranging from 85 to 93 dBA at 50 feet. Noise enclosures provide as much as a 15 to 10 dBA attenuation depending on the type of noise absorption materials. The amount of noise radiated from the wall surfaces and



ventilation system of any given pump housing is controllable over a reasonably wide range of frequencies.

**Table 5.5-7
Stationary Equipment Noise Levels**

Equipment Type	Horsepower (HP)	Nominal Noise Levels at 50 feet (dBA L_{eq})
Compressors	100	78
	200	81
Generators	20	74
	400	81
	1300	84
Pumps	25	73
	200	76
	350	80

Source: Wieland Associates, 1999.

Operations at the proposed pump stations would be subject to compliance with County Code Sections 23.06.044 through 23.06.050, which establish standards for acceptable exterior and interior noise levels. Noise levels at residential areas and other sensitive receptors should not exceed 45 dBA during the night and 50 dBA during the daytime. Therefore, pump stations located within 500 feet of sensitive receptors (i.e., residential homes, schools, or hospitals) should be designed not to exceed the 50 dBA at the sensitive receptor property line per the County's noise standards. Note that these noise limitations are for steady-state, base load operations, and exclude startups, shutdowns, and off-normal or emergency conditions.

Based on the conceptual nature of the proposed pump stations, the specific mitigation components cannot be adequately determined at this time. To reduce potential impacts in this regard, mitigation is recommended that requires orientation of equipment away from any sensitive receptors, proper selection of equipment, installation of equipment with proper acoustical shielding, and preparation of a subsequent noise assessment. Implementation of the recommended mitigation and compliance with County Code Sections 23.06.044 through 23.06.050 would reduce potential impacts from the proposed water pumps. Further review may be necessary on a project-by-project basis to evaluate site-specific noise impacts from pump stations.

Maintenance Activities

Pump Stations. Operation of the proposed pump stations would include the following maintenance procedures:

- ◆ Conduct routine operation maintenance checks;
- ◆ Conduct routine general pump station cleaning and maintenance;
- ◆ Perform routine maintenance of pump station exteriors;
- ◆ Routinely test pumps during non-emergency periods, verify operational readiness under anticipated full emergency project head;



- ◆ Annually perform major maintenance and clean-up; and
- ◆ Service motor cooling system (emergency pumps), replace pump seals, paint pump station and equipment, and disassemble pumps to inspect bearing and impeller (recirculation pumps, emergency pumps) on an as needed basis.

Reservoirs. The potable water distribution system would involve one or two new reservoirs at the Stuart Street Facility. The recycled water system would involve one or two new reservoirs, including one behind the Santa Lucia Middle School and one at the existing WWTP. Operations at reservoirs are not considered significant noise generators. Storage reservoirs would require scheduled maintenance, which would result in short-term random incidences of noise generation.

Distribution Pipelines. Where possible, the distribution pipelines would be located along existing public rights-of-way and planned roadways. Operation of the pipeline facilities would not result in significant noise impacts, since these facilities would be located below ground surface. The following are general pipeline and interconnection operation and maintenance procedures:

- ◆ Weekly visual inspection of pipeline alignments;
- ◆ Mowing within pipeline alignments;
- ◆ Grading of access roads as needed;
- ◆ Testing and servicing of blow-off valves, air/vacuum relief valve assemblies as needed;
- ◆ Yearly walking of pipeline alignment and inspection of systems; and
- ◆ Pressure testing pipeline, painting pipeline appurtenances, repairing tunnel entrances, and repairing minor leaks in buried pipeline joints or segments (when necessary).

Sound associated with pipeline maintenance would result in short-term random incidences that would not result in an increase of ambient noise levels within the surrounding area.

The scheduled maintenance activities at the proposed pump stations, reservoirs, and distribution pipelines would result in short-term random incidences of noise generation that would not result in an increase of ambient noise levels within the surrounding area. Additionally, maintenance activities would be limited to daylight hours to avoid disturbing any sensitive receptors located in proximity to the water facility. A less than significant impact is anticipated in this regard.

Water Demand Management

This Project component involves improvements to the current conservation program and regulations, which would not generate long-term noise from mobile or stationary sources. No impact would occur in this regard.

Seawater Desalination

Mobile Noise Sources. The proposed desalination plant site is located in a rural setting, containing limited sensitive receptors. Also, the trip generation associated with new plant employees, disposal of solid waste, and chemical delivery would not cause a significant



increase in traffic. As a result, the trip generation associated with the desalination plant is not anticipated to cause a significant increase in traffic noise levels.

Stationary Noise Sources. Currently, the proposed seawater desalination plant site is vacant. The Project proposes a new desalination plant, including a building and parking lot. For this component, the seawater must undergo pre- and post-treatment processes before it can be pumped into the distribution system. Major noise sources associated with the proposed desalination plant that could impact nearby noise sensitive receptors include the following:

- ◆ Water pumps and other seawater processing equipment;
- ◆ Mechanical equipment;
- ◆ Slow moving delivery/supply trucks on the Project site; and
- ◆ Parking lots (i.e., car door slamming, engine start-up, and car pass-by trips).

Although several noise sources would be introduced, many of them would operate for only brief time periods. Other noise sources, such as water pumps, seawater processing equipment, mechanical equipment, and parking lot traffic, would operate for comparatively longer periods of time. Through the County's development review process, future seawater desalination plant improvements would be evaluated to determine the land use permit for authorizing their use and the conditions for their establishment and operation. Discussed below are the various types of noise sources that should be analyzed as part of the development review process.

Pumps and Other Seawater Processing Equipment. It is anticipated that water pumps and other seawater processing equipment would be housed within the proposed desalination plant building. As discussed previously, typical operating conditions for pump stations result in noise levels ranging from 73 dBA to 80 dBA at 50 feet from the pump station, depending on the size of the engine. Based on the conceptual nature of the proposed desalination processes, the anticipated noise levels from seawater processing equipment cannot be adequately determined at this time.

Mechanical Equipment. Mechanical equipment, such as heating, ventilation, and air-conditioning (HVAC) units would be included at the desalination plant. These units typically generate 55 dB(A) at 50 feet from the source.

Slowly Moving Trucks (Deliveries). Although infrequent, it is anticipated that truck deliveries would occur at the proposed desalination plant. The maximum noise levels of slow moving heavy and small trucks range between 73 and 70 dBA, respectively, at 50 feet.

Parking Area. The desalination plant would include an employee parking area. Traffic associated with parking lots is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the CNEL scale. Also, noise would primarily remain on-site and would be temporary (during peak-events). Perceptible noise from parking lots would occur primarily during the "daytime" hours. However, the instantaneous maximum sound levels generated by a car door slamming, an engine starting-up, and cars passing by may be an annoyance to adjacent sensitive receptors. Parking lot noise can also be considered a "stationary" noise source and may occur after 10:00 PM. Typical noise levels generated by parking areas are an estimated 70 dB(A) at 50 feet during peak events (this is an "instantaneous" or peak noise level). Parking lot noise would also be partially masked by background noise from adjacent roads and typical community noise sources. Conversations in parking areas may also be an annoyance to



adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech.

The seawater desalination system components would be subject to compliance with County Code Sections 23.06.044 through 23.06.050, which establish standards for acceptable exterior and interior noise levels. Based on the noise estimates presented above and the County standards, noise generated by water pumps, seawater processing equipment, mechanical equipment, delivery/supply trucks, and parking lots could exceed the County's noise standards unless mitigated. Because of the conceptual nature of the proposed desalination plant, the specific mitigation components that would be associated with stationary noise sources cannot be adequately determined at this time. Typical mitigation is recommended, which requires orientation of equipment away from any sensitive receptors, proper selection of equipment, installation of equipment with proper acoustical shielding, and preparation of a subsequent noise assessment. The Project EIR for the seawater desalination facility would need to address the combined noise levels associated with the stationary sources and the Project design features utilized to reduce noise impacts.

The scheduled maintenance activities at the desalinated water conveyance system (pipelines), pump stations, and the HDD wells would result in short-term random incidences of noise generation that are not expected to increase the ambient noise levels in the surrounding area. The future environmental analysis should also acknowledge noise from these maintenance activities.

A future project-specific EIR/EIS would need to further determine the potential long-term noise impacts from mobile and stationary sources after more details become known regarding the desalination facility. Additionally, the EIR/EIS would analyze alternative desalination facility sites.

Mitigation Measures:

- NOI-7 Future water facilities shall be subject to compliance with San Luis Obispo County Code Sections 23.06.044 through 23.06.050, which establish standards for acceptable exterior and interior noise levels and describe how noise is to be measured.
- NOI-8 Pump stations located within 500 feet of sensitive receptors (i.e., residential homes, schools, or hospitals) shall be designed to not exceed the 50 dBA at the sensitive receptor property line, per San Luis Obispo County noise standards. (Note that these noise limitations are for steady-state, base load operations, and exclude startups, shutdowns, and off-normal or emergency conditions.)
- NOI-9 Prior to development permit approval, a subsequent noise assessment shall be prepared that evaluates the exterior noise impacts from the pump stations proposed within 500 feet of sensitive receptors. Said assessment shall demonstrate that adequate noise mitigation is provided to ensure that San Luis Obispo County standards are met, based on the actual pad elevations, and building and pump designs. The following noise attenuation features shall be implemented, as needed:
- ◆ Enclosing the pump within a concrete and masonry building that is fully grouted, with appropriate wall thickness.



- ◆ Installing sound attenuating panel insulation on the roof.
- ◆ Providing a ventilation system designed to mitigate the noise from normal pump operation.
- ◆ To the extent possible, the pump stations shall be oriented away from the nearest noise sensitive receptor.

NOI-10 To the extent possible, mechanical equipment and other seawater processing equipment shall be oriented away from the nearest noise sensitive receptor or be installed with a noise shield around the equipment to provide the proper acoustical shielding.

NOI-11 Prior to issuance of any grading permit for the seawater desalination plant, an acoustical analysis report and appropriate plans shall be prepared, describing the plant's stationary noise generation potential and noise mitigation measures (such as the installation of double walls, sound absorbing materials, acoustic barriers, sound control curtains, and sound baffles) to ensure that stationary noise equipment levels do not exceed San Luis Obispo County's noise standard of 50 dBA, at the nearest sensitive receptor property line.

Level of Significance: Less Than Significant With Mitigation Incorporated.

CUMULATIVE IMPACTS

❖ **THE WATER MASTER PLAN PROJECT, COMBINED WITH FUTURE DEVELOPMENT WITHIN THE NORTH COAST AREA, COULD INCREASE THE AMBIENT NOISE LEVELS. THE IMPACTS AND MITIGATION MEASURES WOULD BE DETERMINED ON A PROJECT-BY-PROJECT BASIS. COMPLIANCE WITH SAN LUIS OBISPO COUNTY REGULATORY REQUIREMENTS ON A PROJECT-BY-PROJECT BASIS WOULD REDUCE CUMULATIVE IMPACTS TO A LESS THAN SIGNIFICANT LEVEL.**

Impact Analysis:

Short-term (construction) noise is a localized activity and would only affect land uses that are immediately adjacent to the construction areas. Contractors at the job sites would be required to adhere to the County's Noise standards. The 2005 NCAP Update EIR concluded that compliance with County noise policies would reduce any potential noise impacts to less than significant levels.² Thus, the cumulative construction noise impacts would be less than significant.

Long-term noise generated by cumulative activity would be subject to compliance with County Code Sections 23.06.044 through 23.06.050, which establish standards for acceptable exterior and interior noise levels and describe how noise is to be measured. Individual projects would be required to comply with the County's noise level standard of 50 dBA for residential uses and other sensitive receptors, and include mitigation measures if this standard is exceeded. Thus, cumulative long-term noise impacts would be less than significant.

² Design, Community & Environment, *Cambria and San Simeon Acres Community Plans of the North Coast Area Plan Draft EIR*, May 18, 2005, Page 4.9-9.



Mitigation Measures: No mitigation measures are recommended beyond compliance with San Luis Obispo County regulatory requirements on a project-by-project basis.

Level of Significance: Less Than Significant Impact.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Compliance with San Luis Obispo County's noise standards and implementation of the recommended mitigation measures would reduce short-term, long-term, and cumulative noise impacts to a less than significant level.