

4.7 NOISE

Note: After the Draft EIR was released, the applicant chose to remove the car wash facilities from the Project site, and use of the car wash area is no longer part of the proposal. All references to future use of the car wash area have been removed from the project description and the impact analysis.

This section focuses on temporary noise impacts from short-term construction on local residents and those using the nearby recreational trail. Impacts on wildlife, including special-status species, are discussed in Section 4.2, Biological Resources. Long-term impacts would be brief and periodic, resulting only from the Fire Department's use of the proposed access road during emergencies and infrequent maintenance activities, and thus are not considered further. Additionally, the area where the emergency access road would be located is already used as a trail, and its continued use as a trail would not change the existing noise environment. Vehicle use would be prevented by a gate near Coronado Drive, and use by pedestrians and bicyclists would not be expected to increase as a result of the construction of a short (approximately 500-foot) road along a portion of the existing trail. Impacts associated with repaving the hammerhead turnaround, which has already been completed, would have been short-term and minor. ~~Car washing would generate minimal amounts of noise. Thus, impacts from repaving and use of the car wash area are not considered further.~~

4.7.1 Existing Conditions

4.7.1.1 Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighted scale adjusts the actual sound pressure levels making them consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

In addition to the instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound pressure level is the noise equivalent level (Leq). The Leq is defined as a single A-weighted level (or dBA value) that is equivalent to the amount of energy in the actual fluctuating levels sampled over a period of time. Typically, Leq is measured over a 1-hour period.

Generally, a doubling of sound energy is equivalent to an increase of 3 dB. A sound that is 10dB more than the ambient sound level would result in a negligible increase (less than 0.5 dB) in total ambient sound levels. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dB change in community noise levels is noticeable, while changes of 1 to 2 dB are generally not perceived. Quiet suburban areas typically have noise levels in the 40 to 50 dBA range, while those along arterial streets are in the 50 to 60+ dBA range. Normal conversational levels are in the 60 to 65 dBA range, and ambient noise levels greater than that can interrupt conversations.

Noise levels typically attenuate at a rate of 6 dB per doubling of distance from point sources such as industrial machinery. Noise from lightly traveled roads typically attenuates at a rate of about

4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. To evaluate community noise on a 24-hour basis, the day-night average sound level (Ldn) was developed. Ldn is the average of all A-weighted levels for a 24-hour period with a 10 dB upward adjustment added to those noise levels occurring between 10:00 PM and 7:00 AM to account for the general increased sensitivity of people to nighttime noise levels.

The community noise equivalent level (CNEL) is identical to the Ldn with one exception. The CNEL adds 5 dB to evening noise levels (7:00 PM to 10:00 PM). Thus, both the Ldn and CNEL noise measures represent a 24-hour average of A-weighted noise levels with Ldn providing a nighttime adjustment and CNEL providing both an evening and nighttime adjustment.

4.7.1.2 Fundamentals of Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the United States, is referenced as vibration decibels (VdB).

The background vibration velocity level in residential areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. 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 range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. The general human response to different levels of groundborne vibration velocity levels is described in Table 4.7-1.

Table 4.7-1 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.
90 VdB	Difficulty with tasks such as reading computer screens.

VdB = vibration decibels

Source: U.S. Federal Transit Administration (FTA) 2006.

4.7.1.3 Existing Noise Sources

The primary noise sources in the area are those associated with vehicular traffic from Hollister Avenue, a four-lane roadway that is located along the Project's northern frontage. To a lesser extent, local neighborhood roads such as Daytona Drive and Coronado Drive near the Project

site, as well as the existing roads within the mobile home park also contribute to the existing noise environment. In addition, typical noise sources associated with residential neighborhoods (e.g., lawn mowing, dogs barking) are also part of the existing noise environment. Noise measurements included in the Goleta GP/CLUP (City of Goleta 2006) show an Leq of approximately 60 dBA near the pool area at Rancho ~~Estates~~Goleta. Noise measurements taken near Sea Gull Drive approximately 800 feet west of the mobile home park were approximately 58 dBA Leq. This is comparable to the sound level near Sea Gull Drive at the mobile home park. The area near the emergency access road experiences slightly less noise than the latter location due to its greater distance from Hollister Avenue.

4.7.1.4 Sensitive Noise Receptors

The GP/CLUP's (City of Goleta 2006) Noise Element defines sensitive receptors as users or types of uses that are interrupted (rather than merely annoyed) by relatively low levels of noise. These include residential neighborhoods, schools, libraries, hospitals and rest homes, auditoriums, certain open space areas, and public assembly places. The existing residential and recreational uses in the vicinity of the Project are considered noise-sensitive. The limit of acceptable noise exposure for sensitive noise receptors is typically 60 dBA CNEL. Table 4.7-2 shows the noise and land use compatibility criteria in the City's Noise Element.

Table 4.7-2 GP/CLUP Community Noise Exposure

Land Use Category	Community Noise Exposure (Ldn or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable*	Normally Unacceptable	Clearly Unacceptable
Residential – low density	50-60	60-65	65-75	75-85+
Residential – multiple family	50-60	60-65	65-75	75-85+
Schools, libraries, churches, hospitals, and nursing homes	50-60	60-65	65-80	80-85+
Playgrounds and neighborhood parks	50-70	n/a	70-75	75-85+
Golf courses, riding stables, water recreation, and cemeteries	50-70	n/a	70-80	80-85+
Office buildings, business commercial, and professional	50-67.5	67.5-75	75-85+	n/a
Industrial, manufacturing, utilities, and agriculture	50-70	70-75	75-85+	n/a

Notes:

* 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 are included in the design.

Source: General Plan/Coastal Land Use Plan (GP/CLUP; City of Goleta 2006), Chapter 9, Noise Element

4.7.1.5 Groundborne Vibration

Within the City of Goleta, sources of groundborne vibration include the Santa Barbara Municipal Airport, Union Pacific Railroad, and U.S. Highway 101. Noise contours are often used as a means of assessing the potential of groundborne vibration. According to the Goleta GP/CLUP, a small portion of the Rancho ~~Estates~~Goleta Mobile Home Park at the entrance off Hollister Avenue is located within the existing 60 dBA CNEL noise contour and the anticipated 65 dBA CNEL noise contours in the year 2030 for roadways. This indicates that groundborne vibration from this source

could occur at the entrance of the Project site. The Project site is outside the existing 60 dBA CNEL noise contour and the anticipated 65 dBA CNEL noise contours in the year 2030 for the Santa Barbara Municipal Airport and Union Pacific Railroad, indicating that groundborne vibration in the Project area from these sources would not occur (City of Goleta 2006). In addition, certain construction equipment and activities, including the use of heavy equipment, can cause groundborne vibration.

4.7.2 Regulatory Framework

4.7.2.1 Federal

No federal regulations relevant to noise apply to this Project.

4.7.2.2 State

California Code of Regulations has regulations for evaluating the compatibility of various land uses as a function of community noise exposure. The State of California also establishes noise limits for vehicles licensed to operate on public roads, with those limits contained in the Motor Vehicle Code. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

4.7.2.3 Local

City of Goleta GP/CLUP, Noise Element

The City requires that potential noise effects be evaluated in terms of either the CNEL or Ldn, and establishes maximum noise levels that are considered compatible with various land uses. The GP/CLUP (City of Goleta 2006) Noise Element has established noise standards and provides policies to ensure compatibility of land uses with noise exposure levels, and to ensure no new noise sources would be allowed that would affect existing development.

Policies included in the GP/CLUP Noise Element that would apply to the Project include those related to land use compatibility. These policies and criteria in the Noise Element establish that 60 dBA is the maximum exterior CNEL (or Ldn) that is normally compatible with residential development without a need for mitigation. This limit may be extended up to 65 dBA if noise mitigation features are included within project designs. With respect to interior noise levels in residences, the 45 dBA threshold is set forth in the above policy.

The exterior and interior noise standards are consistent with one another since normal wood frame residential construction usually provides from 12 to 18 dBA of reduction from exterior to interior areas, and well over 20 dBA is commonly achieved in modern structures that meet current energy conservation requirements. It can be reasonably predicted that an exterior Ldn of 65 dBA will be reduced to an interior Ldn of 45 dBA using basic construction techniques and materials. Additionally, the City has policies (NE 6.4) that restrict construction hours to Monday through Friday, 8:00 AM to 5:00 PM, which would apply to this Project.

City of Goleta GP/CLUP, Conservation Element

Per the Conservation Element (CE 1.9f), all new development should minimize potentially significant noise impacts on special-status species in adjacent ESHAs.

Goleta Municipal Code

The Goleta Municipal Code (GMC) Chapter 9.09 regulates noise in the City. The purpose of the Chapter is to preserve public peace and comfort of citizens of Goleta from unwarranted noise and

disturbances. The GMC prohibits loud and unreasonable noise between the hours of 10:00 p.m. and 7:00 a.m. Sunday through Thursday and between 12:00 midnight and 7:00 a.m. Friday and Saturday. Loud and unreasonable noise is defined as sound which is clearly discernible at a distance of 100 feet from the property line of the property upon which it is broadcast or sound which is above 60 dBA at the edge of the property line upon which the sound is broadcast. The City does not have any code requirements specifically related to noise from construction activities, but the GMC noise regulations would apply to construction noise.

4.7.3 Project Impacts

4.7.3.1 Thresholds of Significance

The following thresholds are based on Appendix G of the CEQA Guidelines. Impacts would be significant if the Project would result in any of the following:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.
6. For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

The Project would not result in a substantial permanent increase in ambient noise levels, and thresholds pertaining to airstrips are not relevant to this Project; therefore, Criteria 3, 5, and 6 are not analyzed further.

Based on Section 12 (Noise Thresholds) of the City of Goleta's Thresholds Manual (City of Goleta 2008), the following thresholds are used to determine whether significant noise impacts would occur:

1. A development that would generate noise levels in excess of 65 dBA CNEL and could affect sensitive receptors would generally be presumed to have a significant impact.
2. Outdoor living areas of noise sensitive uses that are subject to noise levels in excess of 65 dBA CNEL would generally be presumed to be significantly impacted by ambient noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dBA CNEL or less.
3. A project would generally have a significant effect on the environment if it would substantially increase the ambient noise levels for noise sensitive receptors in adjoining areas. Per Threshold 1 above, this may generally be presumed to occur when ambient noise levels affecting sensitive receptors are increased to 65 dBA CNEL or more. However, a significant

affect may also occur when ambient noise levels affecting sensitive receptors increase substantially but remain less than 65 dBA CNEL, as determined on a case-by-case level.

4. Noise from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. According to USEPA guidelines, the average construction noise is 95 dBA at a 50-foot distance from the source. A 6-dB drop occurs with a doubling of the distance from the source. Therefore, only locations within 1,600 feet of the construction site would be affected by noise levels over 65 dBA. Construction within 1,600 feet of sensitive receptors on weekdays outside of the hours of 8 a.m. to 5 p.m. and on weekends would generally be presumed to have a significant effect. Noise attenuation barriers and muffling of grading equipment may also be required. Construction equipment generating noise levels above 95 dBA may require additional mitigation.

Vibration Threshold

The City's Thresholds Manual does not include thresholds for vibration impacts. The CEQA Guidelines Appendix G provides a vibration threshold that was used to evaluate the significance of potential vibration impacts that would result from construction, as noted above.

This analysis uses the Federal Transit Administration's (FTA's) vibration impact thresholds to determine whether groundborne vibration would be "excessive." A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Consequently, the FTA recommends an 80 VdB threshold for infrequent events at residences and buildings where people normally sleep. In terms of groundborne vibration impacts on structures, the FTA states that groundborne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings.

4.7.3.2 Project Impacts

Impact NOI-1. Construction Noise (Short term impact)

The construction period would be approximately 6 weeks, which includes approximately 21 full work days. Construction would generally occur Monday through Friday between the hours of 8 a.m. and 5 p.m. The primary source of noise would be construction of the emergency access road, wall, and Project fire lines. Table 4.7-3 provides the typical noise levels for construction equipment measured at 50 feet from the source. The loudest equipment for this Project would be trucks, which generate 88 dBA; since the Project site is located within 50 feet of the closest residences, noise levels from the use of individual pieces of equipment would be somewhat higher than those listed in Table 4.7-3 at the nearest residences. The Project would result in noise above the 65 dBA significance threshold included in both the GP/CLUP and the GMC at the nearby residential neighborhood and within the mobile home park. This impact would be **significant but mitigable to less than significant (Class II)** through implementation of MM NOI-1, MM NOI-2, and NOI-3. These measures require that the Project conform to the daytime construction hours of 8:00 AM to 5:00 PM, provide a mechanism to address any complaints regarding construction noise, require construction equipment to have properly maintained sound-control devices and muffled exhaust systems, and require that any stationary equipment comply with the 65 dBA standard.

Impacts on recreational users of the nearby trails would be **less than significant (Class III)** because their activities would not be impeded by the noise, and they would be exposed to noise only briefly, which would diminish as they traveled farther from the Project site.

Table 4.7-3 Typical Construction Equipment Noise Levels

Land Use Category	Typical Noise Level (dBA) 50 Feet from Source
D4/D6 dozer	85
Compactor	82
Loader	85
Backhoe	80
Grader	85
Water truck	88
Pickup trucks	88

Source: Federal Highway Administration 2015

Impact NOI-2. Vibration

Residential areas adjacent to the Project would be exposed to vibration during Project construction. Table 4.7-4 provides the approximate vibration velocity level of typical construction equipment in dB (VdB). The Project site abuts the property line of the closest residences. Construction equipment would be operated within 25 feet of the closest residence’s property lines, although the actual residences are set back at least 50 feet from the area where heavy equipment would be used. For a large bulldozer, the vibration level at 50 feet is approximately 44 VdB, which is less than the FTA 80 VdB threshold for infrequent events at residences and buildings where people normally sleep. For loaded trucks at 50 feet, the vibration level is approximately 43 VdB, which also is under the threshold. Vibration impacts would be **less than significant (Class III)**.

Table 4.7-4 Representative Construction Equipment Vibration

Equipment	Approximate VdB at 25 feet	Approximate VdB at 50 feet
Large Bulldozer	87	44
Small Bulldozer	58	29
Loaded Trucks	86	43

Source: FTA 2006

4.7.4 Cumulative Impacts

Noise and vibration impacts are highly localized, and no other construction projects would occur in the immediate vicinity of the Project within the same general timeframe. Thus, no cumulative noise or vibration impacts would occur. The potential for any cumulative impacts to occur would be further reduced because the Project’s construction period would be very brief—limited to 6 weeks.

4.7.5 Mitigation Measures

The following measures have been identified to mitigate construction noise impacts identified in Impact NOI-1.

MM NOI-1: Limit Hours of Operation

All noise-generating project construction activities are limited to Monday thru Friday, 8:00 a.m. to 5:00 p.m. Construction is generally not allowed on weekends and state holidays. Exceptions to these restrictions may be made in extenuating circumstances (in the event of an emergency, for example) on a case-by-case basis at the discretion of the Director of Planning and Environmental

Review. The permittee must post the allowed hours of operation near the entrance to the site, so that workers on site are aware of this limitation.

Plan Requirements and Timing: Three signs stating these restrictions must be provided by the applicant and posted on site. Such signs must be a minimum size of 24 by 48 inches and include the contact information (name/phone number) of the on-site job manager responsible for noise complaints. All such signs must be in place prior to commencement of any grading/demolition and maintained through to occupancy clearance. Violations may result in suspension of permits.

Monitoring: City staff must monitor compliance with restrictions on construction hours and must investigate and respond to all complaints.

MM NOI-2: Shield Stationary Equipment

Stationary construction equipment that generates noise that exceeds 65 dBA measured 50 feet from the source in an unattenuated condition must be shielded to reduce such noise levels to no more than 65 dBA at project boundaries.

Plan Requirements and Timing: The permittee must submit a list of all stationary equipment to be used in Project construction for review and approval by City staff. The list must include manufactures' specifications on equipment noise levels, as well as recommendations from the project acoustical engineer for shielding such stationary equipment so that it complies with this requirement. This information must be reviewed and approved by City staff prior to building permit issuance. All City-approved noise attenuation measures for stationary equipment used in any construction and/or demolition activities must be implemented and maintained for the duration of the period when such equipment is on site.

Monitoring: City staff must periodically inspect the site to ensure compliance with all noise attenuation requirements.

MM NOI-3: Other Construction Measures

The following measures must be incorporated into grading and building plan specifications:

1. All construction equipment must have properly maintained sound-control devices, and no equipment must have an unmuffled exhaust system.
2. Contractors must implement appropriate additional noise mitigation measures including but not limited to changing the location of stationary construction equipment, shutting off idling equipment, and installing acoustic barriers around significant sources of stationary construction noise.

Plan Requirements and Timing: These requirements must be printed all plans prior to building permit issuance. Requirements must also be printed on grading and building permits.

Monitoring: City staff must periodically inspect the site to ensure compliance with all noise attenuation requirements.

4.7.6 Residual Impacts

Given the limited space available to construct the emergency access road and the need to install a fire line within and adjacent to the mobile home park, a buffer of adequate distance to reduce the noise levels to 65 dBA at the closest residences is not feasible. However, the Project would conform to the daytime construction hours of 8:00 AM to 5:00 PM and would only last

approximately 6 weeks. A mechanism also would be provided to address any complaints regarding construction noise. Additionally, construction equipment would be required to have properly maintained sound-control devices and muffled exhaust systems, and any stationary equipment would be required to comply with the 65 dBA standard. Implementation of MM NOI-1, MM NOI-2, and NOI-3 would therefore reduce Impact NOI-1 to less than significant. Impacts on recreational users of the nearby trails would be less than significant (Class III), as would vibration impacts; thus, no mitigation is required. No residual Project-specific or Project contributions to cumulative noise or vibration impacts would occur.

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