

4.3.1 INTRODUCTION

Noise is usually defined as unwanted sound. It is an undesirable by-product of society's normal day-to-day activities. Generally, sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. The definition of noise as unwanted sound implies that it has an adverse effect on people and their environment. This section of the EIR addresses the potential for the proposed residential uses to impact existing land uses in the vicinity of the project site and vice versa.

4.3.2 BACKGROUND

a. Characteristics of Noise

Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). The human ear does not respond uniformly to sounds at all frequencies, being less sensitive to low and high frequencies than to medium frequencies that correspond with human speech. In response to this noise condition, the A-weighted noise level (or scale) has been developed. It corresponds with a person's subjective judgment of sound levels. This A-weighted sound level is called the "noise level" referenced in units of dB(A). As stated, noise is measured on a logarithmic scale; a doubling of sound energy results in a 3 dB(A) increase in noise levels. However, changes in a community noise level of less than 3 dB(A) are not typically noticed by the human ear.¹ Some individuals who are extremely sensitive to changes in noise may notice changes from 3 to 5 dB(A). A 5.0 dB increase is readily noticeable, while the human ear perceives a doubling of sound to be a 10.0 dB increase in sound level.

Noise sources occur in two forms: (1) point sources, such as noise from stationary equipment; and (2) line sources, such as noise along a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dB for each doubling of distance from the source at acoustically "hard" sites and 7.5 dB at acoustically "soft" sites.² Sound generated by a line source typically attenuates at a rate of 3.0 dB and 4.5 dB per doubling of distance,

¹ Federal Highway Administration, U.S. Department of Transportation: *Highway Noise Fundamentals*, p. 81. Springfield, Virginia: September 1980.

² Federal Highway Administration, U.S. Department of Transportation: *Highway Noise Fundamentals*, p. 97. A "hard" or reflective site does not provide any excess ground-effect attenuation and is characteristic of asphalt, concrete, and very hard packed soils. An acoustically "soft" or absorptive site is characteristic of normal earth and most ground with vegetation.

for hard and soft sites, respectively.³ Man-made or natural barriers, as illustrated in Figure 4.3-1 can also attenuate sound levels.

Screen walls, berms, or depressed roads typically reduce noise levels by 5.0 to 10.0 dB(A).⁴ Sound levels for a source may also be attenuated 3.0 to 5.0 dB(A) by a first row of houses and 1.5 dB(A) for each additional row of homes. Exterior to interior noise attenuation provided by typical structures in the southern United States is provided in Table 4.3-1.

**Table 4.3-1
Outside to Inside Noise Attenuation
For Structures in California**

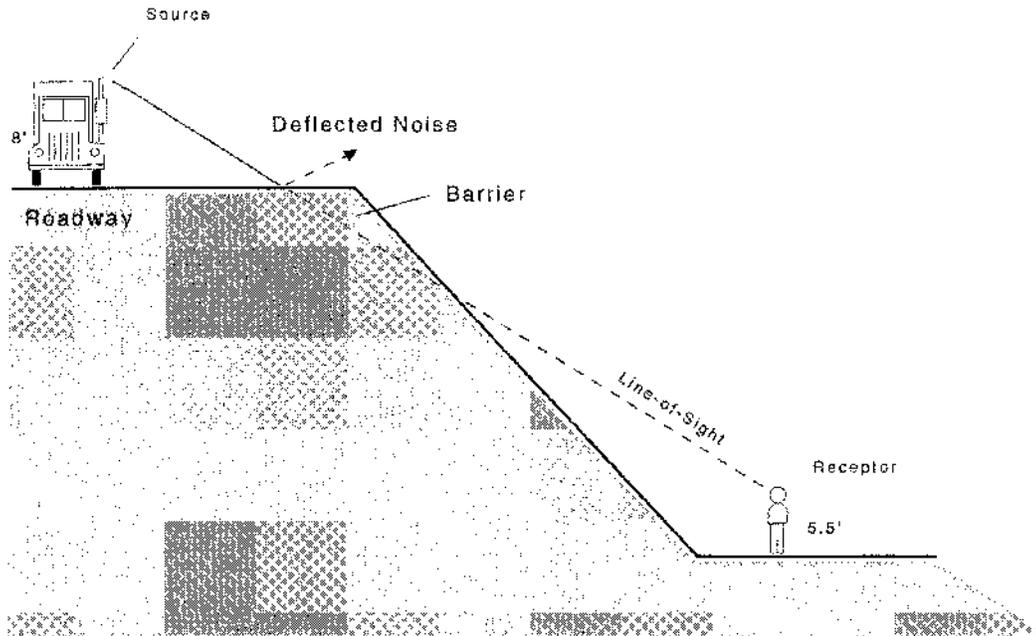
| Building Type | Noise Reduction - dB(A) | |
|------------------------------|-------------------------|---------|
| | Open | Closed |
| | Windows | Windows |
| Residences | 12 | 20 |
| Schools | 12 | 20 |
| Churches | 20 | 30 |
| Hospitals/Convalescent Homes | 17 | 25 |
| Offices | 17 | 25 |
| Theaters | 20 | 30 |
| Hotels/Motels | 17 | 25 |

Source: Highway Noise Fundamentals, (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980), p. 117.

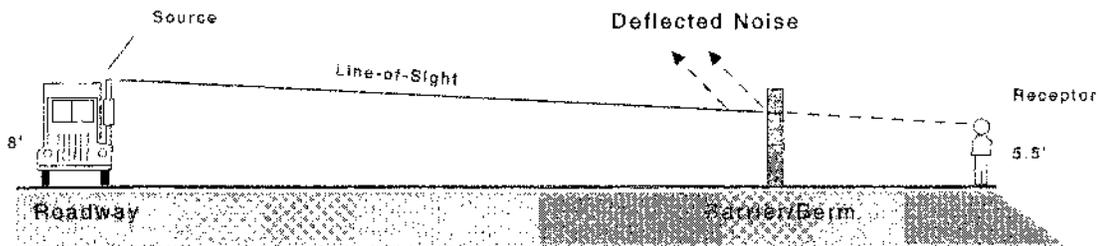
When assessing community reaction to noise, there is an obvious need for a scale, which averages noise levels over a longer time period. Several scales have been developed which address this issue. The most applicable are the equivalent noise level (L_{eq}) and the community noise equivalent level (CNEL). L_{eq} is the equivalent A-weighted sound level averaged over a given time interval. L_{eq} can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods. CNEL is the average equivalent A-weighted sound levels that occur over a 24-hour day, obtained after the addition of five decibels to sound levels occurring during the evening from 7 P.M. to 10 P.M., and the addition of ten decibels to sound levels occurring during the nighttime from 10 P.M. to 7 A.M. The five- and ten-decibel penalties are applied because people have an increased sensitivity to noise during these time periods.

³ Ibid., p. 97.

⁴ Federal Highway Administration, U.S. Department of Transportation: *Highway Noise Mitigation*, p. 18. Springfield, Virginia: September 1980.



"Barrier Effect" Resulting from Differences in Elevation.



"Barrier Effect" Resulting from Typical Soundwall.

FIGURE 4.3-1

Manmade and Natural Barrier Attenuation

b. Plans and Policies for Noise Control

In advance of presenting the existing and future noise environments and the thresholds of significance utilized in this document, plans and policies which pertain to the noise conditions affecting and affected by the proposed project are discussed below. These plans and policies include; (1) the City of San Dimas *General Plan* Noise Element; (2) the City of San Dimas Noise Ordinance Chapter 8.36; and (3) the State of California, Department of Environmental Health, Office of Noise Control *Guidelines for Noise and Land Use Compatibility*.

1. City of San Dimas General Plan

Recognizing the increasing human impacts of noise pollution and the impact that local agency land use and circulation plans have on the community's environmental quality, the California Legislature, in 1972, mandated that a noise element be included as part of the City and County general plans. Guidelines have been prepared as a result of Senate Bill 860(A) (effective January 1, 1976) by the Office of Noise Control, State Department of Health, concerning the specific requirements for a noise element which are responsive to State guidelines. Within the City of San Dimas, the Department of Community Development is responsible for the coordination of all local noise control activities.

The purpose of the Noise Element is to serve as an official guide to the City Council, the Planning Commission, City departments, individual citizens, business people, and private organizations concerned with noise pollution within the City of San Dimas. The Noise Element provides a reference to be used in connection with actions on public and private development matters as required by law, and is utilized to establish uniformity of policy and direction within the City concerning actions to minimize or eliminate excessive noise. This element also is useful in making decisions regarding proposals that may have an impact on the City's environment. The objectives and policies identified in the Noise Element of the *General Plan* regarding the noise environment that pertain to this proposed project are as follows:

Objectives

- (A) The City will consider planning guidelines, which include noise control for the exterior living space of all new residential developments within noise impact areas.
- (B) Future projects within the City will reflect a consciousness on the part of the City regarding the reduction of unnecessary noise near noise-sensitive areas.

Policies

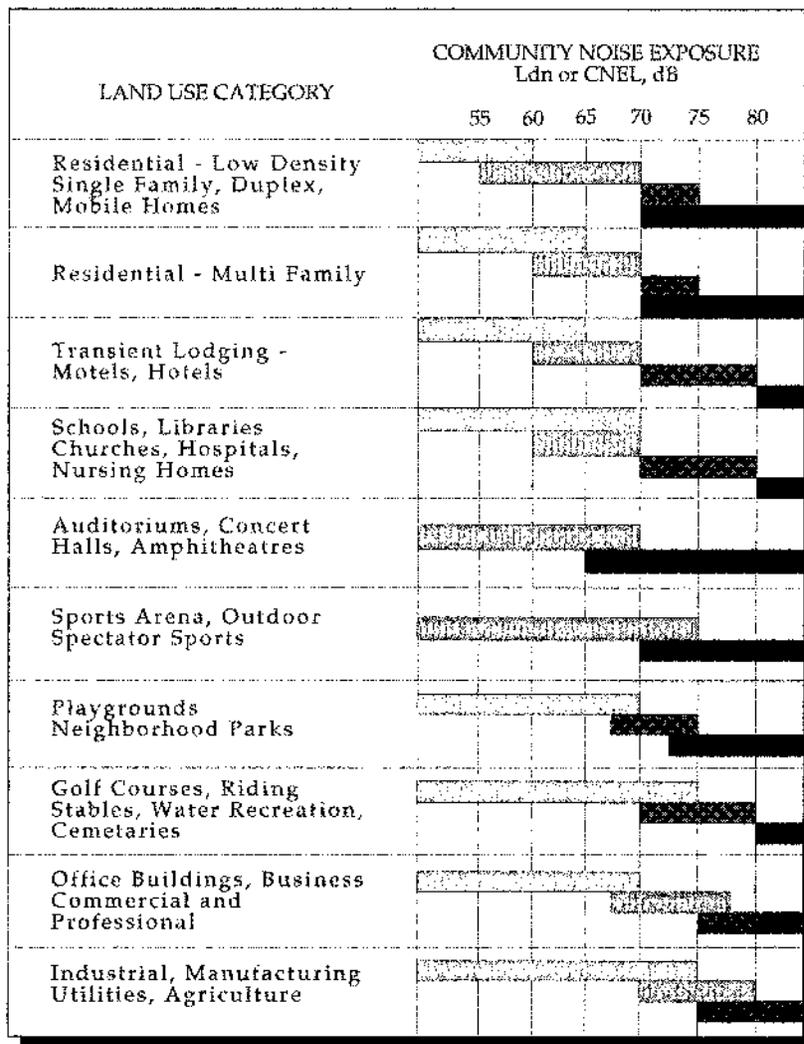
- (A) The City will adopt guidelines which consider noise as an early factor in planning future residential developments.
- (B) The City will consider planning guidelines which include noise control for the interior living space of all new residential developments within noise impact areas.
- (C) The City will require that the State noise insulation standards for exterior-to-interior noise control be applied to all new single family and multi-family structures.
- (D) The City will evaluate the noise generating characteristics of existing operations when applications are submitted concerning enlargement, expansion or change in use.
- (E) The City will review noise characteristics of applicants requesting conditional use permits, variance, zone changes and other discretionary actions.

2. *City of San Dimas Noise Ordinance*

The City of San Dimas has adopted a Noise Ordinance which limits operation of construction equipment within a residential zone or 500 feet therefrom between the hours of 8:00 P.M. of one day and 7:00 A.M. of the next day, at any time on Sunday, or at any time on any public holiday. At no time can the equipment be operated in such a manner that a reasonable person of normal sensitivity residing in the area is caused discomfort or annoyance unless a permit has been obtained (Ord. 868 § 1 (part), 1987).

3. *California Department of Environmental Health*

The State of California, Department of Health Services, Environmental Health Division has published recommended guidelines for mobile source noise and land use compatibility. Each jurisdiction is required to consider these guidelines when developing its general plan noise element and determining the acceptable noise levels within its community. The City of San Dimas defers to these guidelines when assessing a land use's compatibility with motor vehicle noise sources. These guidelines are illustrated in **Figure 4.3-2, Land Use Compatibility Guidelines for Noise**.



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise reduction features included in the design.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

SOURCE: California Department of Health, Office of Noise Control, Guidelines for the Preparation and Content of Noise Elements of The General Plan, February 1976.

FIGURE 4.3-2

Land Use Compatibility Guidelines for Noise

Based on these guidelines, the City of San Dimas typically considers an exterior noise level of 60 dB(A) CNEL to be an acceptable level for single family, duplex, and mobile homes involving normal, conventional construction, without any special noise insulation requirements (normally acceptable noise levels). Exterior noise levels up to 65 dB(A) CNEL are typically considered acceptable for multi-family units and transient lodging without any special noise insulation requirements. Between these values and 70 dB(A) CNEL, exterior noise levels are typically considered acceptable only if the buildings are conditioned to include noise insulation features (conditionally acceptable noise levels). Conventional construction of the buildings with the inclusion of fresh air supply systems or air conditioning will normally ensure that interior noise levels are acceptable (reference Table 4.3-1 for noise reduction provided by conventional construction techniques). However, detailed acoustical analyses must be conducted to identify all needed noise insulation features and confirm their effectiveness. An exterior noise level of 70 dB(A) CNEL is typically the dividing line between an acceptable and unacceptable exterior noise environment for all noise sensitive uses, including schools, libraries, churches, hospitals, day care centers, and nursing homes of conventional construction. Noise levels below 75 dB(A) CNEL are typically acceptable for office and commercial buildings, while levels up to 75 dB(A) CNEL are typically acceptable for industrial uses.

c. Existing Noise Environment

The most significant noise-producing activity within the City of San Dimas involves the transportation elements: arterials, freeways, aircraft noise, and the rail line. In addition, numerous fixed sources of noise exist within portions of the City. Dominant noise sources on and near the project site include vehicular traffic traveling along the local roadway system and common noises associated with residential development such as lawnmowers, dogs barking, people talking, etc. The project site is presently undeveloped with no improved roadways open to the public. A private driveway serves as access to one home on the site. The project site is not affected in a great degree by major sources of noise, i.e., freeways and major surface streets.

4.3.3 IMPACT ANALYSIS

a. Thresholds of Significance

The following thresholds of significance were developed for this noise impact analysis based on the plans and policies identified previously in this EIR section. These thresholds apply to both project and cumulative project impacts.

Noise thresholds consider both the Noise Compatibility Criteria (Figure 4.3-2) and community responses to changes in noise levels. Changes in a noise level of less than 3 dB(A) are not typically noticed by the human ear.⁵ Changes from 3 to 5 dB(A) may be noticed by some individuals who are sensitive to changes in noise. A 5 dB(A) increase is readily noticeable. Based on this information, the following thresholds have been developed for this analysis:

1. An increase of 5 dB(A) or greater in noise level that occurs from project-related activities would be considered noticeable, but not significant, if the resulting noise level would be within the acceptable range as identified in the *General Plan*. However, an increase of 3 dB(A) or greater in noise levels that occur from project-related activities would be significant if the resulting noise level would be greater than the acceptable range as identified in the *General Plan*.
2. As there are no formally adopted significance thresholds related to potential construction noise impacts, the City of San Dimas, for the purposes of the TTM 52717 Project, are relying on the construction noise thresholds identified below in Table 4.3-2. Additionally, the City has adopted a Noise Ordinance which regulates the permitted hours of construction. As stated in §8.36.100, construction activity is permitted between the hours of 7 A.M. and 8 P.M. Monday through Saturday. As shown, mobile construction noise sources that would exceed 75 dB(A) L_{eq} at single family residences during permitted construction hours would result in a significant impact, while stationary sources exceeding 60 dB(A) L_{eq} at single family residences would result in a significant impact.

Table 4.3-2
Construction Equipment Noise Thresholds

| Residential Structures | Single Family Residential | Multi-Family Residential | Commercial ¹ |
|--|---------------------------|--------------------------|-------------------------|
| Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days of mobile equipment): | | | |
| Daily, except Sundays and legal holidays, 7:00 A.M. to 8:00 P.M. | 75 dB(A) L_{eq} | 80 dB(A) L_{eq} | 85 dB(A) L_{eq} |
| Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays | 60 dB(A) L_{eq} | 64 dB(A) L_{eq} | 70 dB(A) L_{eq} |
| Stationary Equipment: Maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment: | | | |
| Daily, except Sundays and legal holidays, 7:00 A.M. to 8:00 P.M. | 60 dB(A) L_{eq} | 65 dB(A) L_{eq} | 70 dB(A) L_{eq} |
| Daily, 8:00 P.M. to 7:00 A.M. and all day Sunday and legal holidays | 50 dB(A) L_{eq} | 55 dB(A) L_{eq} | 60 dB(A) L_{eq} |
| Business Structures | | | |
| All Structures | | | |
| Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment: | | | |
| Daily, including Sunday and legal holidays, all hours | 85 dB(A) L_{eq} | | |

Source: County of Los Angeles Ordinance No. 11743, §12.08.440.

¹Refers to residential structures within a commercial area. This standard does not apply to commercial structures.

⁵ Federal Highway Administration, *Highway Noise Fundamentals*, 1980.

b. Construction Impacts

Project construction activities would primarily include grading, and the construction of the improvements identified in **Section 1.0, Project Description**. These activities typically involve the temporary use of heavy equipment, such as tractors, loaders, concrete mixers, and cranes. Trucks would be used to deliver equipment and building materials, and to haul away waste materials. Smaller equipment, such as jackhammers, pneumatic tools, saws, and hammers, would also be used throughout the site during construction stages. This equipment would generate both steady state and episodic noise that would be heard both on and off the project site and which could expose off-site residents to short-term noise impacts.

The U.S. Environmental Protection Agency has compiled data regarding the noise generating characteristics of specific types of construction equipment. These data are presented in **Figure 4.3-3**. As shown, noise levels generated by heavy equipment can range from approximately 68 dB(A) to noise levels in excess of 100 dB(A) when measured at 50 feet. These noise levels decrease rapidly as distance from the construction site increases. Specifically, noise levels diminish at a rate of approximately 6 dB(A) per doubling of distance. For example, a noise level of 68 dB(A) measured at 50 feet from the noise source to the receptor would reduce to 62 dB(A) at 100 feet from the source to the receptor, and further reduce by another six dB(A) to 56 dB(A) at 200 feet from the source to the receptor.

Construction noise has the potential to significantly impact both on and off-site environs. Construction activity is generally broken up into two distinct activities that typically utilize different types of construction equipment. Equipment would range from heavy machinery such as graders, scrapers, tractors, loaders and cranes during the rough grading phase, to jackhammers, pneumatic tools, saws, and hammers during tract development (Refer to **Figure 4.3-3** for noise levels associated with this equipment). This equipment would generate both steady state and episodic noise that would be heard both on and off the project site.

The off-site sensitive use that would be most susceptible to construction noise would be the residential uses directly adjacent to the west of the project site, because these homes are located at grade with the subject property and have a direct line of sight to future construction activity. Any locations with an uninterrupted line of sight to the construction noise sources could periodically be exposed to temporary noise levels which could exceed the Noise Ordinance standards for construction equipment noise levels identified in **Table 4.3-2**.

In order to reduce the potential impacts associated with construction activities, the City of San Dimas, typically limits construction activities to between the hours of 7:00 A.M. and 8:00 P.M. daily and prohibits work on Sundays and legal holidays. Given that construction noise is typically limited in

duration and restricted to daytime hours, and that all construction activity is subject to the standard City noise controls, no significant construction noise impacts to on-site or adjacent residential uses are expected with implementation of recommended mitigation.

Another aspect of construction related noise involves the use of heavy trucks to haul equipment and materials to the site, as well as transport debris. Additionally, all workers would most likely be transported to the site by automobiles utilizing the local roadway system which would in-turn generate additional noise. Truck trips required for these activities would be spread throughout the workday and represent a very small percentage increase of the approximately 2,000 Average Daily Trips that presently travel along Gainsborough Road and Valley Center Avenue and would not approach a doubling of traffic volumes. Studies have shown that a doubling of traffic volumes typically increases roadway noise by 3dB(A), which is noticeable to the human ear. Given that the truck trips would be spread throughout the day and would not generate an audible increase in noise levels presently experienced, no significant mobile noise source impacts are expected.

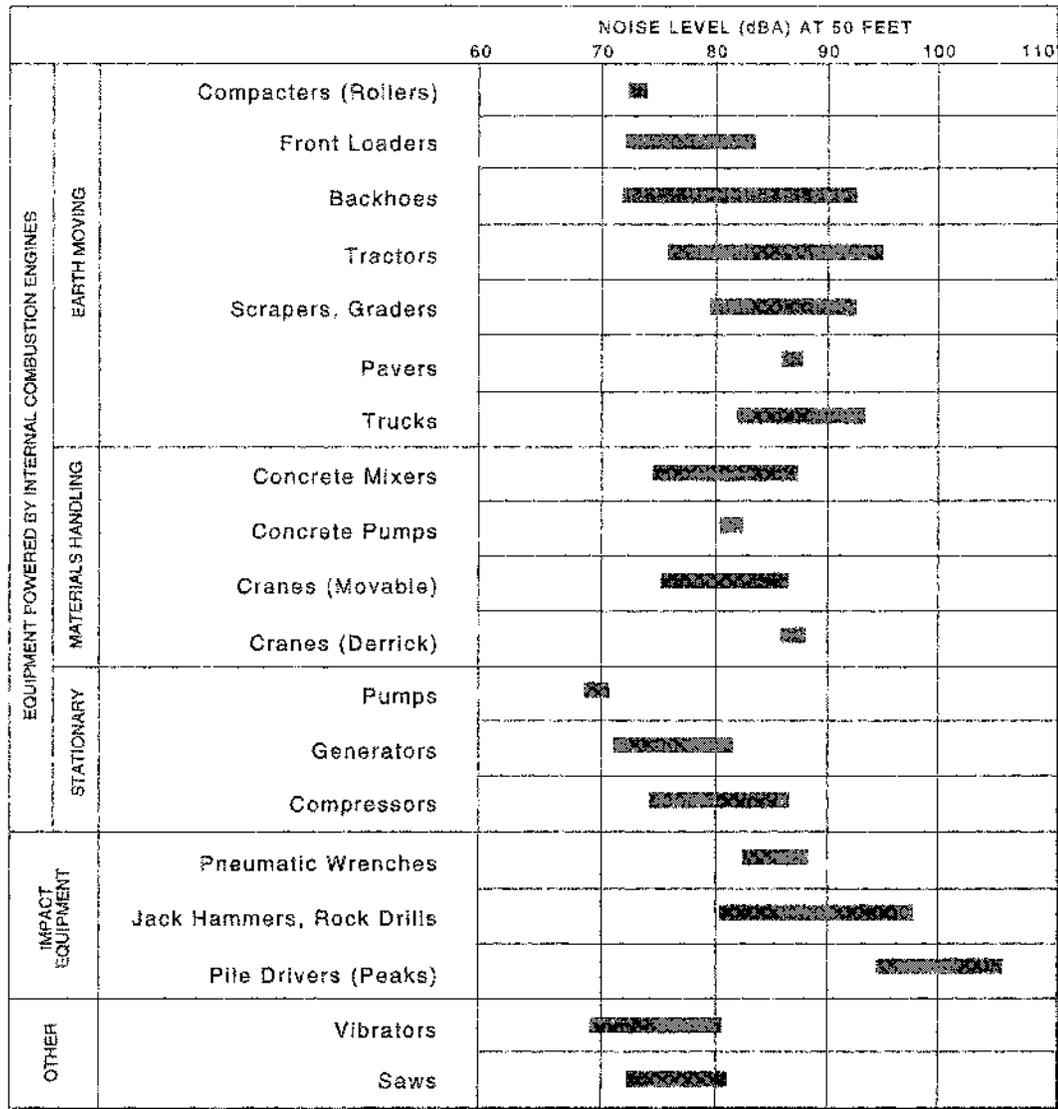
b. Operational Impacts

Potential noise impacts would also result from operational activities associated with TTM 52717. These impacts are attributable to mobile source noise, as well as stationary and human source noise. Each of these potential noise sources is described below.

1. Mobile Source Noise

Vehicle traffic generated at buildout of the proposed project would cause an increase in roadway noise. The greatest increase in ambient noise levels attributable to the project would occur along Gainsborough Road and Valley Center Avenue. However, as stated earlier, an increase of less than 3.0 dB(A) CNEL would not exceed the off-site mobile source thresholds of significance for this analysis and would hardly be perceptible to the human ear. Typically, it takes a doubling of traffic volumes along a local roadway before an audible increase occurs. Assuming a rate of 9.5 Average Daily Trips (ADT) per residential unit,⁶ buildout of the proposed project will generate 180.5 ADT. Gainsborough Road currently carries about 1,670 ADT and Valley Center Avenue approximately 2,993 ADT. The addition of 180.5 ADT from buildout of TT52717 will not double the traffic volumes along either of these local roadways. Therefore, the proposed project would not significantly increase the existing noise levels experienced on any of the affected roadway segments.

⁶ *Institute of Transportation Engineers Trip Generation Manual*, 5th ed.



Note: Based on limited available data samples.

SOURCE: United States Environmental Protection Agency, 1971, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

FIGURE 4.3-3

Noise Generating Characteristics of Specific Types of Construction Equipment

2. *Point Source Noise*

On- and off-site residents with direct lines-of-sight to the proposed on-site residential areas would detect noise associated with activities in these areas (e.g., people talking, vehicle doors slamming, auto alarms, lawn maintenance, tires squealing, etc.). These noise levels could be considered an annoyance if they occur at odd hours (i.e., between 10:00 P.M. and 7:00 A.M.); however, given the nature of these uses, their likely hours of operation outside the hours of 10:00 P.M. and 7:00 A.M., and City Noise Ordinance requirements, the noise levels are not expected to exceed the City's Land Use Compatibility Guidelines or Noise Ordinance. Consequently, these noise levels would not be considered significant at locations on or off the project site.

4.3.4 CUMULATIVE IMPACTS

Cumulative noise impacts could primarily occur as a result of increased traffic on local streets attributable to the buildout of the proposed project as well as other developments in the region. However, as stated earlier, development of the proposed project would not audibly increase noise levels along affected roadway segments. Consequently, the project would not contribute to any future increase in noise levels that may occur as a result of cumulative development. As a result, the proposed project would not cause or contribute to a significant cumulative impact.

4.3.5 MITIGATION MEASURES

a. **Legal/Regulatory Requirements**

4.3-1 In accordance with the San Dimas Municipal Code Section 8.36.100, contractor shall limit on-site construction activities to between the hours of 7:00 A.M. and 8:00 P.M., and exclude Sundays.

b. **Measures Recommended by this EIR**

4.3-2 Contractor shall provide staging areas on-site to minimize off-site transportation of heavy construction equipment. Locate these areas to maximize the distance between activity and residential areas. At a minimum, the staging areas shall be located a distance of 200 feet from the nearest residential property line. This would reduce noise levels associated with most types of idling construction equipment by roughly 12 dB(A).

- 4.3-3 All construction equipment, fixed or mobile, that is utilized on the site for more than two working days shall be in proper operating condition and fitted with standard factory silencing features. To ensure that mobile and stationary equipment is properly maintained and meets all federal, state, and local standards, the applicant shall maintain an equipment log. The log shall document the condition of equipment relative to factory specifications and identify the measures taken to ensure that all construction equipment is in proper tune and fitted with an adequate muffling device. The log shall be submitted to the City Department of Public Works for review and approval on a quarterly basis.
- 4.3-4 When construction operations occur adjacent to occupied residential areas, the contractor shall implement appropriate additional noise reduction measures to the extent practical that include, but are not limited to, changing the location of stationary construction equipment, shutting off idling equipment, notifying adjacent residences in advance of construction work, and installing temporary acoustic barriers around stationary construction noise sources.
- 4.3-5 The project applicant shall post a notice at the construction site containing information on the type of project, anticipated duration of construction activity, and provide a phone number where people can register questions and complaints. The applicant shall keep record of all complaints and take appropriate action to minimize noise generated by the offending activity where feasible. A monthly log of noise complaints shall be maintained by the applicant and submitted to the City Planning Department.

4.3.6 UNAVOIDABLE SIGNIFICANT IMPACTS

Project construction activities would generate short-term noise levels that may exceed the construction significance thresholds established in this EIR for residences with a direct line of site to construction activity. Mitigation is provided to reduce this impact to a less than significant level. No unavoidable significant noise impacts are anticipated with implementation of the proposed project.