IV. ENVIRONMENTAL IMPACT ANALYSIS
J. NOISE

INTRODUCTION

This section evaluates the potential for noise and groundborne vibration impacts to occur as a result of implementation of the proposed project. This includes the potential for the proposed project to result in impacts associated with a substantial temporary and/or permanent increase in ambient noise levels in the vicinity of the project site; exposure of people in the vicinity of the project site to excessive noise levels, groundborne vibration, or groundborne noise levels; and whether this exposure is in excess of standards established in the local general plan or noise ordinance. Finally, mitigation measures intended to reduce impacts are proposed, where appropriate, to avoid or reduce significant impacts of the proposed project.

Data used to prepare this analysis were obtained from the City of Los Angeles General Plan Noise Element, the City Municipal Code (LAMC), and by measuring and modeling existing and future noise levels at the project site and the surrounding land uses. Traffic information contained in the traffic study prepared for the proposed project was used to prepare the noise modeling for vehicular sources.

ENVIRONMENTAL SETTING

Fundamentals of Sound and Environmental Noise

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

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

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

Table IV.J-1
Representative Environmental Noise Levels

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

Source: California Department of Transportation, 1998.

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

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

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

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

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70 dBA. Noise levels greater than 85 dBA can cause temporary or permanent hearing loss. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet suburban residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA).

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

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

Fundamentals of Environmental Groundborne Vibration

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 U.S., is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational 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 IV.J-2, Human Response to Different Levels of Groundborne Vibration.

Table IV.J-2
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 that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.
Source: Harris Miller Miller & Hanson Inc., Transit Noise and Vibration Impact Assessment, May 2006.	

Regulatory Framework

Federal

The City of Los Angeles has not adopted any thresholds for groundborne vibration impacts. Therefore, this analysis uses the Federal Transit Administration's vibration impact thresholds during construction and operation for sensitive buildings. The Federal Transit Administration methodology and thresholds for measuring groundborne vibration was primarily developed for measuring the vibration impacts of railways on noise-sensitive buildings, residences, and institutional land uses. These thresholds are 80 VdB at residences and buildings where people normally sleep (e.g., nearby residences and daycare facility) and 83 VdB at institutional buildings (e.g., schools and churches). These thresholds apply to conditions where there are an infrequent number of noise-causing events per day and impact uses where quiet activities can be disturbed by vibration—such as during sleeping hours in residences, schools, churches, and daycare facilities.[1]

[1] *"Infrequent events" is defined by the Federal Railroad Administration as being fewer than 30 vibration events per day.*

State

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

Local

City of Los Angeles Noise Regulation

The City of Los Angeles is the local agency responsible for adopting and implementing policies as they relate to noise levels and its affect on land uses within its jurisdiction. Both acceptable and unacceptable noise levels associated with construction activities, roadway noise levels and ambient noise levels must all be defined and quantified. The City of Los Angeles has numerous ordinances and enforcement practices that apply to intrusive noise as well as ones that guide new construction. The City's comprehensive noise ordinance (Chapter XI of the LAMC) sets forth sound measurement and criteria, maximum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain uses, standards for determining when noise is deemed to be a disturbance to the peace, and legal remedies for violations.

In particular, Section 41.40 of the LAMC prohibits construction activity (including demolition) and repair work, where the use of any power tool, device, or equipment would disturb persons occupying sleeping quarters in any dwelling hotel, apartment, or other place of residence, between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, and between 6:00 p.m. and 8:00 a.m. on Saturday. All such activities are also prohibited on Sundays and all federal holidays.

City of Los Angeles General Plan Noise Element

The California Government Code Section 65302(g) requires that a noise element be included in the General Plan of each county and city in the State. The Noise Element of the City of Los Angeles General Plan is intended to identify sources of noise and provide objectives and policies that ensure that noise from various sources does not create an unacceptable noise environment. Overall, the City's Noise Element describes the noise environment (including noise sources) in the City, addresses noise mitigation regulations, strategies, and programs as well as delineating federal, State, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise. It is a tool that City planners use to achieve and maintain compatible land uses with environmental noise levels.

The City's noise standards are correlated with land use types in order to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a

specified land use. Table IV.J-3, Community Noise Exposure (CNEL), lists the noise/land use compatibility guidelines for land uses within the City of Los Angeles.[2]

Table IV.J-3
Community Noise Exposure (CNEL)

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

[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

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

In accordance with the Noise Element of the City of Los Angeles General Plan, a noise exposure of up to 60 dB CNEL exposure is considered to be the most desirable target for the exterior of noise-sensitive land uses, or sensitive receptors, such as single-family homes. In addition a noise exposure of up to 65 dB CNEL exposure is considered to be the most desirable target for the exterior of motels and hotels. It is also recognized that such a level may not always be possible in areas of substantial traffic noise intrusion. Exposures up to 70 dB CNEL for noise-sensitive uses are considered conditionally acceptable if all measures to reduce such exposure have been taken. Noise levels above 70 dB CNEL are normally unacceptable for sensitive receptors except in unusual circumstances.

---

[2] *The City's noise/land use compatibility guidelines for land uses are derived from the guidelines prepared by the California Department of Health Services (DHS), Office of Noise Control.*

Existing Ambient Daytime Noise Levels

To establish baseline noise conditions within the vicinity of the project site, existing daytime noise levels were monitored at four locations within the project vicinity in order to identify representative noise levels on July 1, 2008 between the hours of 11:00 a.m. and 1:00 p.m. The noise survey was conducted using the Larson-Davis 820 precision noise meter, which meets and exceeds the minimum industry standard performance requirements for "Type 1" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. This instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of approximately five feet above the local grade.

At the noise measurement locations, listed in Table IV.J-4, Existing Daytime Noise Levels, the sound level meter was programmed to record the average sound level (L_{eq}) over a cumulative period of 15 minutes. The average noise levels and sources of noise monitored at each location are shown in Table IV.J-4, with the locations identified in Figure IV.J-1, Noise Monitoring Locations Map. The daytime noise levels listed in Table IV.J-4 are characteristic of a typical urban environment.

Table IV.J-4
Existing Daytime Noise Levels

Noise Measurement Location	Primary Noise Sources	Noise Level Statistics		
		L_{eq}	L_{min}	L_{max}
1) Tujunga Canyon Boulevard, in front of Oakview Convalescent Hospital, facing project site	Consistent traffic on Tujunga Canyon Boulevard, including large trucks	72.5	52.1	88.1
2) Tujunga Canyon Boulevard, in front of single-family homes, facing project site	Consistent traffic on Tujunga Canyon Boulevard	69.4	52.3	84.2
3) Verdugo Hills Golf Course, in the middle of southern section, 500 feet from the clubhouse	Distant traffic on 210 Freeway	62.1	56.3	66.9
4) Verdugo Hills Golf Course, in the southwestern section, 800 feet from the clubhouse	Distant traffic on 210 Freeway	63.1	56.9	69.4
Source: Christopher A. Joseph and Associates, 2008. Noise measurement data are provided in Appendix L.				

Existing On-Site Operations

The project site is an approximately 58-gross acre irregularly shaped parcel of land consisting primarily of seven parcels of land located at the intersection of Tujunga Canyon Boulevard and La Tuna Canyon Road. The property is commonly known as the Verdugo Golf Course. Since 1959, the Verdugo Hills Golf Course has served the residents of Los Angeles, Glendale, unincorporated La Crescenta and other surrounding communities. It is a three-par course, catering to families as well as beginning and casual golfers.

Source: Google Earth Pro, 2008.

CHRISTOPHER A. JOSEPH & ASSOCIATES
Environmental Planning and Research

Figure IV.J-1
Noise Monitoring Location

Existing Roadway Noise Levels Offsite

Existing roadway noise levels were calculated for the roadway links in the project vicinity that have noise-sensitive uses facing the roadways. This task was accomplished using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108) and traffic volumes from the project traffic analysis. The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans. The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The average daily noise levels along these roadway segments are presented in Table IV.J-5, Existing Roadway Noise Levels Offsite.

Existing Groundborne Vibration Levels

Aside from seismic events, the greatest regular source of groundborne vibration at the project site and immediate vicinity is from roadway truck and bus traffic. Heavy trucks currently transport materials along Olympic Boulevard. Trucks and buses typically generate groundborne vibration velocity levels of around 63 VdB, and these levels could reach 72 VdB where trucks and buses pass over bumps in the road.[3]

ENVIRONMENTAL IMPACTS

Methodology

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

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

[3] *Harris Miller Miller & Hanson Inc., Transit Noise and Vibration Impact Assessment, May 2006.*

Table IV.J-5
Existing Roadway Noise Levels Offsite

Roadway	Roadway Segment	Land Use	dBA CNEL
Foothill Boulevard	West of Tujunga Canyon Boulevard	Commercial	67.4
	East of Tujunga Canyon Boulevard	Commercial	66.3
	West of Lowell Avenue	Commercial	66.7
	East of Lowell Avenue	Commercial	65.9
	West of Pennsylvania Avenue	Commercial	66.4
	East of Pennsylvania Avenue	Commercial	66.0
Tujunga Canyon Boulevard	North of Foothill Boulevard	Residential	61.8
	South of Foothill Boulevard	Residential	63.8
	North of Pali Avenue	Residential	64.1
	South of Pali Avenue	Residential	64.3
	North of la Tuna Canyon Road	Residential	65.0
Pali Avenue	North of Tujunga Canyon Boulevard	Residential	50.2
Lowell Avenue	North of Foothill Boulevard	Residential	56.7
	South of Foothill Boulevard	Commercial	61.4
	North of Honolulu Avenue	Residential	62.5
	South of Honolulu Avenue	Commercial	61.5
Honolulu Avenue	South of La Tuna Canyon Road	Residential	65.8
	West of Lowell Avenue	Church	69.0
	East of Lowell Avenue	Residential	69.1
	West of Pennsylvania Avenue	Residential	60.4
La Tuna Canyon Road	West of Tujunga Canyon Boulevard	Open Space	63.6
Pennsylvania Avenue	North of Foothill Boulevard	Commercial	62.9
	South of Foothill Boulevard	Commercial	64.7
	North of Honolulu Avenue	Residential	60.6
	South of Honolulu Avenue	Residential	62.9

Source: Christopher A Joseph and Associates, 2008. Calculation data and results are provided in Appendix L.
Traffic Information Source: Linscott, Law & Greenspan, engineers. 2008.

Construction Noise Levels

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

Roadway Noise Levels

Roadway noise levels have been calculated for selected study intersection locations around the project site. The noise levels were calculated using the FHWA-RD-77-108 model and traffic volumes from the project traffic analysis. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by the State Department of Transportation (Caltrans).

Groundborne Vibration Associated with Construction Equipment

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

Thresholds of Significance

In accordance with Appendix G to the State CEQA Guidelines, a significant noise impact may occur if the proposed project would result in any of the following conditions:

(a) 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;

(b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

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

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

(e) 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 airstrip, expose people residing or working in the project area to excessive noise levels; or

(f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

As discussed in Section IV.A (Impacts Found to be Less Than Significant), the proposed project would have no impact with respect to Thresholds (e) and (f) listed above and no further analysis of these topics is required. As such, this section contains an analysis of Thresholds (a) through (d).

Construction Noise

The State CEQA Guidelines do not define the levels at which permanent and temporary increases in ambient noise are considered "substantial." Therefore, for the purposes of this analysis, noise impacts are subject to the L.A. CEQA Thresholds Guide,[4] which states that a project would normally have a significant impact on noise from construction if:

(a) Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA [CNEL]or more at a noise sensitive use;

(b) Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA [CNEL] or more at a noise sensitive use; or

(c) Construction activities would exceed the ambient noise level by 5 dBA {CNEL] at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

Section 112.05 of the LAMC specifies the maximum noise level for powered equipment or powered hand tools. Any powered equipment or powered hand tool that produces a maximum noise level exceeding 75 dBA within 500 feet of a residential zone, when measured at a distance of 50 feet from the source, is prohibited. However, the above noise limitation does not apply where compliance is technically infeasible (Section 112.05 of the LAMC). Technically infeasible means that the above noise limitation cannot be complied with despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment. An inability to reduce construction equipment noise exposure to 75 dBA or less at any off-site, noise-sensitive use would be considered a significant temporary noise impact.

Construction Groundborne Vibration

The State CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." This analysis uses the Federal Transit Administration's (FTA) vibration impact thresholds for sensitive buildings, residences, and institutional land uses under conditions where there are an infrequent number of events per day. However, as previously stated, the FTA significance thresholds were devised to measure the impact of vibration during expected quiet periods of time at sensitive uses—such as during typical sleeping hours at residential uses. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 80 VdB at residences and buildings where and when people normally sleep, and 83 VdB at other institutional buildings.[5] The 65 VdB threshold applies to typical land uses where vibration would interfere with

---

[4] *City of Los Angeles L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4 (Note: This document is a guidance manual and has not been formally adopted by the City of Los Angeles).*

[5] *Harris Miller Miller & Hanson Inc., Transit Noise and Vibration Impact Assessment, May 2006.*

interior operations, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. The 80 VdB threshold applies to all residential land uses and any buildings where people sleep, such as hotels and hospitals. The 83 VdB threshold applies to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

Operational Noise

Based upon the criteria established in the City of Los Angeles L.A. CEQA Thresholds Guide, a project would normally have a significant impact on noise levels from project operations if the project would increase the ambient noise levels by 3 dBA CNEL at the property line of residential uses where the resulting noise level would be at least 70 dBA CNEL or at the property line of commercial buildings where the resulting noise level is at least 75 dBA CNEL. In addition, any long-term increase of 5 dBA CNEL or more is considered to cause a significant impact.

Although not specified in the City of Los Angeles L.A. CEQA Thresholds Guide, a project would typically have a significant operational noise impact if the proposed land uses would be exposed to noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The noise standards adopted by the City are discussed previously in this EIR section.

Project Impacts

Construction Noise

The project proposes to subdivide and subsequently develop 229 homes on the 53.8-acre project site (approximately 3.93 units per acre). The proposed 229 homes will be built in two locations. Most of the homes (211 units) will be built in the southeast corner of the project site on the portion of the site currently occupied by the Verdugo Hills Golf Course. A further 18 homes will be built farther to the north, between the Verdugo Wash right-of-way on the west and Tujunga Canyon Road on the east. As currently designed, this smaller enclave will be accessed via a northerly extension of Street "A"; however, full access from Tujunga Canyon Road is also under consideration.

Construction of the proposed project would require the use of heavy equipment for site clearing and grading, installation of utilities, paving, and building fabrication. Development activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment in operation and the location of the activity. The range for noise levels generated by typical, individual pieces of construction equipment is provided in Table IV.J-6, Noise Levels of Typical Construction Equipment.

Table IV.J-6
Noise Levels of Typical Construction Equipment [a]

Construction Equipment	Noise Levels in dBA CNEL at 50 feet [b]
Loader	85
Trucks	88
Cranes (moveable)	83
Cranes (derrick)	88
Concrete Vibrator	76
Excavator	85
Saws	76
Pneumatic Tool	85
Jackhammers	88
Pumps	76
Generators	81
Air Compressors	81
Concrete Mixers	85
Concrete Pumps	82
Back Hoe	80
Pile Driving (Impact)	101
Pile Driving (Sonic)	96
Dozer	85
Scraper	89
Grader	85
Paver	89

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

[b] *The L_{eq} noise levels for each piece of construction equipment represent noise levels generated over a time period of one hour under free-field conditions (i.e., topography and ground effects are ignored).*

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

The USEPA has also compiled data regarding the noise generating characteristics of typical construction activities, both with and without the use of equipment mufflers. These data, which represent composite construction noise, are presented in Table IV.J-7, Typical Outdoor Construction Noise Levels. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA L_{eq} to 72 dBA L_{eq} at 200 feet from the source to the receptor.

Following City approvals and the issuance of building construction permits, it would take approximately three to four years to complete the proposed project. Project buildout is project to occur in 2012. The first phase would consist of the demolition of the existing golf course facilities. There are nine structures to be demolished (approximately 9,650 square feet total area). Site preparation, consisting of tree and vegetation removals and the removal of existing utility systems (including the golf course's night lighting

system) would follow after the demolition. Building and paving rubble, as well as all vegetative material, would be hauled away to an approved dumpsite or to a recycling center. Grading activities, building construction and finish work (i.e., application of architectural coatings and asphalt work) would then follow in sequence.

Table IV.J-7
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet dBA CNEL[a]	
	Standard	With Mufflers
Ground Clearing	79	77
Excavation & Grading	84	81
Foundations	73	72
Structural	80	78
Finishing	84	81

[a] *Based on eight hours of daytime construction activities.*

Source: U.S. EPA, 1971, as shown in City of Los Angeles, 1998.

The properties generally north of the subject property are developed as single family homes with an underlying zoning of RE-11-H within a General Plan designation of Very Low II Residential. The properties to the west of the subject property are largely hillside terrain, undeveloped with an underlying zoning designation of A1-1 and a corresponding General Plan designation of Minimum Low Density Residential. The properties to the south of the subject property, across La Tuna Canyon, are undeveloped or additional parking for the golf course with an underlying zoning of A1-1 and a General Plan designation of Limited Commercial. The Foothill Freeway (210) runs just south of these properties.

The properties directly east of the subject property, across Tujunga Canyon Blvd., are within the General Plan designation of Low Medium I Residential. One property is developed as a house of worship and is in an underlying zone of A2-1. Another property is developed as multi-family condominiums with an underlying zoning of RD3-1 with frontage on both Tujunga Canyon. A third property is currently developed as a convalescent hospital with an underlying zone of RD3-1 with a recent action (APCNV 2005-8574-ZC-ZAA-ZAD) to allow the construction of 25 condominium units. Properties beyond these that front Tujunga Canyon are zoned RD3-1 and are developed as multi-family condominiums.

In general, building construction activities at the project site, which would involve the use of loaders, excavators and other medium sized equipment such as generators, would generate the loudest noise levels during construction of the proposed project. As shown above in Table IV.J-7, excavation activities could generate a maximum noise level of 81 dBA CNEL at 50 feet, during construction.

Construction activities would primarily affect the existing residences located to the north and northeast of the project site, on the east side of Tujunga Canyon Boulevard. The closest residences are located approximately 100 feet to the northeast of the project boundary. Due to the close proximity of these residential uses, and based on the information presented in Table IV.J-7, temporary construction noise levels could periodically exceed 75 dBA CNEL. As shown previously in Table IV.J-5, existing noise levels at these homes average approximately 64.1 dBA CNEL due to traffic. Therefore, construction activities would not increase noise levels at these homes by more than five dBA CNEL for 10 days in a three month period as the proposed project would be expected to take approximately three to four years to complete. This is a potentially significant impact.

Construction-Related Groundborne Vibration

Construction activities that would occur within the project site may have the potential to generate low levels of groundborne vibration. Table IV.J-8, Vibration Source Levels for Construction Equipment[6], identifies various vibration velocity levels for the types of construction equipment that may operate during the construction of the proposed project.

Table IV.J-8
Vibration Source Levels for Construction Equipment

Construction Equipment		Approximate VdB at 25 feet
Pile Driver (impact)	Upper Range	112
	Typical	104
Pile Drive (sonic)	Upper Range	105
	Typical	93
Large Bulldozer		87
Caisson Drilling		87
Loaded Trucks		86
Pneumatic Tools		80
Jackhammer		79
Small Bulldozer		58

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

Construction activities may have the potential to impact the single-family residences to the northeast. As discussed under Thresholds of Significance above, the FTA has established vibration impact thresholds for sensitive buildings, residences, and institutional land uses. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 80 VdB at residences and buildings where people normally sleep, and 83 VdB at other institutional buildings. The 65 VdB threshold applies to

[6] *These projected vibration levels represent the amount of construction related vibration that would be experienced at these locations when equipment is operating at the property line of the affected sensitive receptor.*

typical land uses where vibration would interfere with interior operations, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, recording equipment and normal optical microscopes. The 80 VdB threshold applies to all residential land uses and any buildings where people sleep, such as hotels and hospitals. The 83 VdB threshold applies to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

As shown in Table IV.J-9, Groundborne Vibration Levels at Off-site Sensitive Uses From Project Construction, these vibration levels would be approximately 75.5 VdB at the closest portions of the single-family residences. Overall, the single-family residences would not be exposed to vibration levels that exceed FTA's threshold of 80 VdB for buildings where people would normally sleep[7]. This would result in less than significant impact.

Table IV.J-9
Groundborne Vibration Levels at Off-site Sensitive Uses From Project Construction

Off-site Sensitive Land Uses	Location	Distance to Project Site (feet)	Groundborne Vibration Levels (VdB) [a]
Single-Family Residential	100 feet to the northeast of the project site.	100	75.5

[a] *The vibration levels at the off-site sensitive uses are determined with the following equation from Harris Miller Miller & Hanson Inc.'s (HMMH) Transit Noise and Vibration Impact Assessment, Final Report: Lv(D)=Lv(25 ft) – 30log(D/25), where Lv = vibration level of equipment, D = distance from the equipment to the receiver, Lv(25 ft) = vibration level of equipment at 25 feet.*

Source: Christopher A. Joseph and Associates, 2008.

Off-Site Vehicular Noise

An increase in traffic resulting from implementation of the proposed project may increase the ambient noise levels at sensitive off-site locations in the project vicinity. These concerns were addressed using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), which calculates the CNEL noise level for a particular reference set of input conditions, based on site-specific traffic volumes, distances, speeds and/or noise barriers. Based on the traffic report prepared for the proposed project, included as Appendix M-1 to this Draft EIR, in combination with an analysis of the surrounding land uses, roadway noise levels were forecasted to determine if the proposed project's vehicular traffic would result in a significant impact at off-site noise-sensitive receptor locations.

[7] *Pile driving is not an anticipated activity which would be required in order to develop the proposed project.*

Off-site locations in the project vicinity would experience a slight increase in noise resulting from the additional traffic generated by the proposed project. The increases in noise levels at noise-sensitive locations along the study-area roadway segments in the vicinity of the project site are identified in Table IV.J-10, Predicted Future (2012) Roadway Noise Levels Offsite.

Table IV.J-10
Predicted Future (2012) Roadway Noise Levels Offsite

Roadway	Roadway Segment	Noise Levels in dBA CNEL			
		Future without Project Traffic Volumes	Future Plus Project Traffic	Increase	Significance Threshold
Foothill Boulevard	West of Tujunga Canyon Boulevard	67.9	67.9	0.0	3.0
	East of Tujunga Canyon Boulevard	66.9	66.9	0.0	3.0
	West of Lowell Avenue	67.2	67.2	0.0	3.0
	East of Lowell Avenue	66.4	665	0.1	3.0
	West of Pennsylvania Avenue	66.9	66.9	0.0	3.0
	East of Pennsylvania Avenue	66.4	66.4	0.0	3.0
Tujunga Canyon Boulevard	North of Foothill Boulevard	62.3	62.3	0.0	3.0
	South of Foothill Boulevard	64.3	64.3	0.0	3.0
	North of Pali Avenue	64.6	64.6	0.0	3.0
	South of Pali Avenue	64.8	64.8	0.0	3.0
	North of la Tuna Canyon Road	65.5	65.6	0.0	3.0
Pali Avenue	North of Tujunga Canyon Boulevard	50.6	50.6	0.0	5.0
Lowell Avenue	North of Foothill Boulevard	57.2	57.2	0.0	5.0
	South of Foothill Boulevard	61.9	61.9	0.0	3.0
	North of Honolulu Avenue	62.9	62.9	0.0	3.0
	South of Honolulu Avenue	61.9	62.0	0.1	3.0
Honolulu Avenue	South of La Tuna Canyon Road	66.3	66.4	0.1	3.0
	West of Lowell Avenue	69.4	69.5	0.1	3.0
	East of Lowell Avenue	695	69.6	0.1	3.0
	West of Pennsylvania Avenue	60.9	60.9	0.0	3.0
La Tuna Canyon Road	West of Tujunga Canyon Boulevard	64.5	65.0	0.5	5.0
Pennsylvania Avenue	North of Foothill Boulevard	63.3	63.3	0.0	5.0
	South of Foothill Boulevard	65.1	65.1	0.0	5.0
	North of Honolulu Avenue	60.9	60.9	0.0	5.0
	South of Honolulu Avenue	63.3	63.3	0.0	3.0

Source: Christopher A. Joseph and Associates, 2008.
Traffic Information Source: Hirsch/Green Transportation Consulting, Inc.

As shown in Table IV.J-10, the proposed project would increase local noise levels by a maximum of 0.5 dBA CNEL for La Tuna Canyon Road; west of Tujunga Canyon Boulevard. It should be noted that several of the analyzed roadway segments would not experience an increase in roadway noise as a result of the proposed project. Because the increase in local noise levels at all of the analyzed roadway segments resulting from implementation of the proposed project would not exceed the thresholds in the L.A. CEQA Thresholds Guide, they would not represent a substantial permanent increase in ambient noise levels. Therefore, this impact would be less than significant.

HVAC Systems

Upon buildout of the proposed project, new sources of noise would include stationary sources, such as heating, ventilation, and air conditioning (HVAC). The HVAC systems that would be installed for the proposed project would typically result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment. As discussed previously, 24-hour CNEL noise levels are about 6.7 dBA greater than 24-hour L_{eq} measurements. As such, the HVAC equipment associated with the proposed residences could generate noise levels that average between 47 to 57 dBA CNEL at 50 feet from the source when the equipment is operating continuously over 24-hour period. These noise levels would not exceed the City's exterior noise level standard of 60 dBA CNEL for the nearby single-family residences. Therefore, this impact would be less than significant.

CUMULATIVE IMPACTS

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

Cumulative Construction Noise and Vibration

Development of the proposed project in conjunction with the related projects would result in an increase in construction-related noise and vibration in this already urbanized area of the City of Los Angeles. However, each of the related projects would be subject to the LAMC Section 112.05, which reduces construction noise and vibration impacts to the maximum extent feasible by prohibiting loud, unnecessary, and unusual construction activities within 500 feet from any residential zone, and LAMC Section 41.40, which limits the hours of allowable construction activities. Conformance with these City regulations would reduce construction-related noise and vibration for the related projects. As such the proposed project would not contribute to a cumulatively considerable noise and vibration impact due to construction and impacts would be less than significant.

Cumulative Operational Noise

Cumulative mobile source noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and related projects within the study area. The predicted future year (2012) ambient noise levels presented in the analysis with and without the proposed project are based on cumulative traffic conditions, which already take into account expected development of related projects identified in the surrounding area. As shown above in Table IV.J-10, none of the study roadway segments in the project vicinity would experience a substantial permanent increase in ambient noise levels resulting from future ambient growth with the proposed project (as compared to cumulative conditions without the proposed project). Therefore, cumulative traffic-related noise impacts to the surrounding environment would be less than significant.

With respect to stationary sources, all related projects would be required to comply with the regulations under Section 112.02 of the LAMC, which prohibits noise from air conditioning, refrigeration, heating, pumping, and filtering equipment from exceeding the ambient noise level on the premises of other occupied properties by more than 5 dB. In addition, all related projects would require exterior walls to be constructed to provide a Sound Transmission Class of 50 or greater as defined in UBC No. 35-1, 1979 edition or any amendment thereto, or to mitigate interior noise levels below a CNEL of 45 dBA in any habitable room. Consequently, all on-site equipment would be designed such that they would be shielded and appropriate noise muffling devices would be installed on the equipment to reduce noise levels that affect nearby noise-sensitive uses. Thus, with conformance with LAMC Section 112.02 and UBC No. 35-1, 1979 edition, the cumulative noise impact associated with stationary sources would be less than significant.

MITIGATION MEASURES

Construction Noise

The following mitigation measures are recommended to address construction-related noise impacts:

J-1 The project shall comply with the City of Los Angeles Noise Ordinance No. 41.40 which restricts construction and demolition activities to the hours of 7:00 a.m. to 9:00 p.m. Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturday.

J-2 Construction and demolition activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously, which causes high noise levels.

J-3 The use of those pieces of construction equipment or construction methods with the greatest peak noise generation potential shall be minimized to the extent feasible. Examples include the use of drills, jackhammers, and pile drivers.

J-4 Noise construction activities whose specific location on the site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) shall be conducted as far as

possible from the nearest noise-sensitive land uses, and natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such activities towards these land uses to the maximum extent possible.

J-5 Equipment warm-up areas, water tanks, and equipment storage areas shall be located as far as possible from the surrounding residential uses..

J-6 The project contractor shall use power construction equipment with state-of-the-are noise shielding and muffling devices.

J-7 Flexible sound control curtains shall be placed around drilling apparatuses and drill rigs used within the project site, if sensitive receptors are located at, or within, 50 feet.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measures J-1 through J-7 would serve to reduce noise levels associated with construction at the project upon the adjacent singly-family residences. With implementation of the Mitigation Measures outlined above, noise levels would be reduced to less than significant.