APPENDIX 6

NOISE STUDY

Noise Impact Analysis for the Casad Residential Tentative Tract Map 52905 in the County of Los Angeles, California.
Prepared by Giroux & Associates, September 29, 2005.

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NOISE IMPACT ANALYSIS

CASAD RESIDENTIAL
TENTATIVE TRACT MAP 52905

COUNTY OF LOS ANGELES, CALIFORNIA

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Project No.: P05-081

NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is commonly defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure ratioed to the level barely detectable by a young person with good auditory acuity is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter Scale for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting" written as "dB." Any further reference to decibels written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dB is mandated by multiple family dwellings in Title 24 of the California Code of Regulations. In 1988, the State Building Standards Commission recommended that the 45 dB CNEL interior standard be expanded to include all habitable rooms for all residential occupancy, including single-family. The County of Los Angeles requires a 45 dB CNEL interior standard for all residential occupancies. Since typical noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL is generally the noise/land use compatibility guideline for new residential dwellings in California. A 65 dB CNEL exterior level is also the noise threshold where noise begins to substantially interfere with enjoyment of any outdoor recreational amenity such as a yard, patio, spa/pool, etc. Mitigation of exterior noise to at least 65 dB CNEL is normally required for residential projects in Los Angeles County for any usable outdoor space. A level of 65 dB CNEL exterior and 45 dB CNEL interior is therefore the applicable noise standard for the proposed Casad Tentative Tract Map 52905 (TTM 52905) residential project.

Existing noise levels around the project site derive mainly from the surrounding arterial roadways. The distant Interstate 5 (I-5 or Golden State) freeway may create some low background "hum" in the project vicinity. The project site itself is undeveloped and vacant, except for an existing helicopter pad which is used by the Los Angeles Fire Department on an emergency-only basis. Magnolia Lane, which accesses the proposed project site, is a 64-foot interior collector street which dead-ends into a cul-de-sac within the proposed development. All other streets within the proposed residential development are also interior streets which dead-end

into cul-de-sacs within the development. The surrounding area land uses include undeveloped land to the north, east, south and west of the site; partially developed or developing residential land uses to the east, west and north of the site, and the Santa Susana Mountains located to the south of the site as shown in Figure 1. Noise constraints to the proposed project development will be minimal.

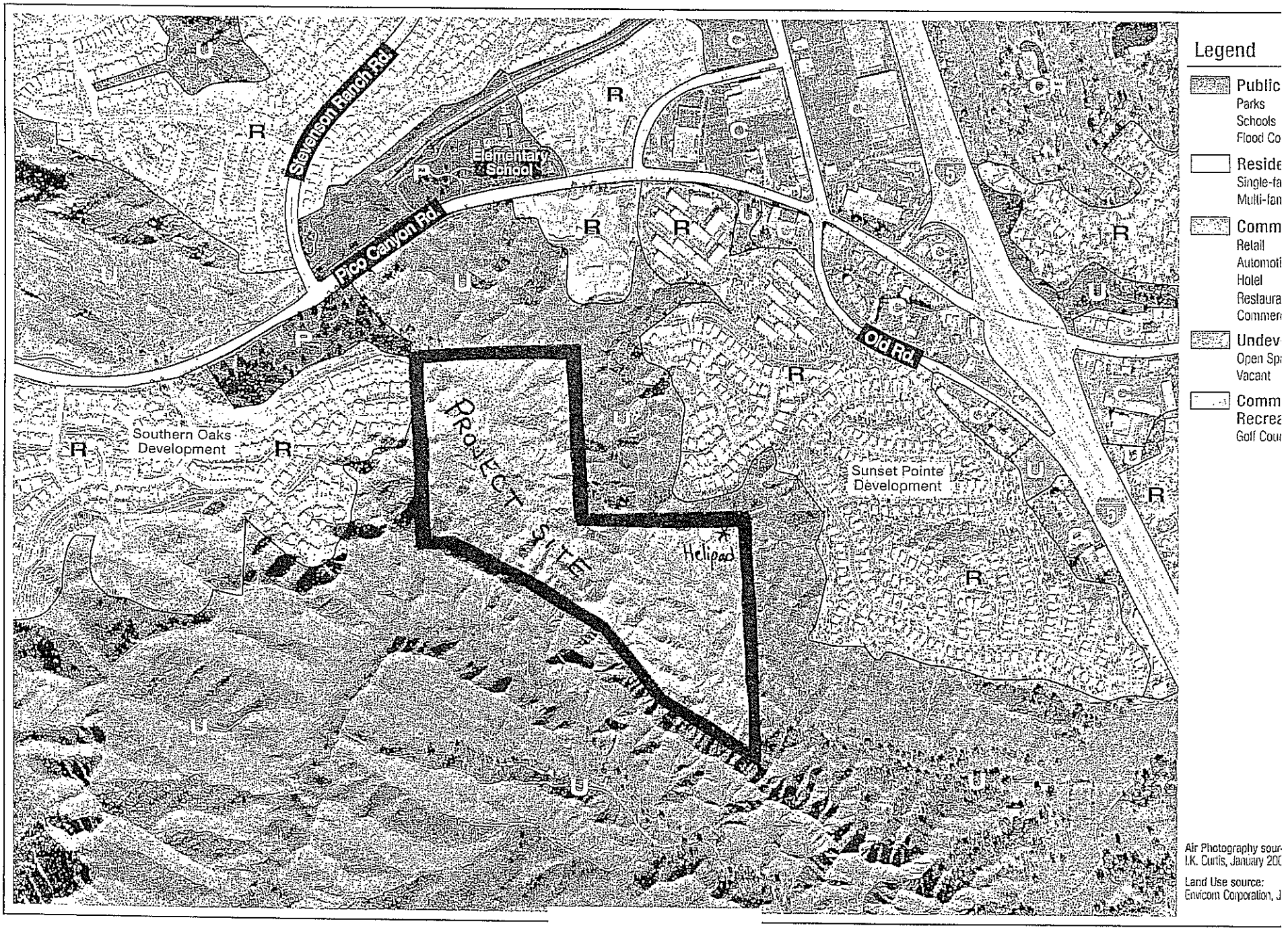

Figure 1

Surrounding Land Uses – Casad Residential

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NOISE IMPACTS

Standards of Significance

CEQA Guidelines identify significant impacts as those that cause standards to be exceeded where they are currently met. An impact is also considered significant if it substantially worsens an existing unacceptable noise environment. The tests for potential noise impact significance include the following criteria:

- 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;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; and
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

There are no airports or airstrips within the project vicinity. There is, however, an on-site helipad which is used by the Los Angeles County Fire Department for emergency uses only. Potential impacts would derive from any violation of applicable standards for noise or vibration, or for any substantial increases above background conditions.

CEQA Guidelines are considered general measures for noise. Los Angeles County has specific noise standards as discussed in following sections.

"Substantial" is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ±1 dB. This is also the human loudness difference discrimination level under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by 3 dB or less between the pre- and post-project exposure if the change occurs under ambient conditions. For the purposes of this analysis, an increase greater than +3 dB, or one that creates or worsens an area of noise/land use incompatibility, would be considered a significant degradation of noise quality.

Temporary noise sources, such as from construction, are generally allowed a greater deviation from the background in defining "substantial." Most jurisdictions limit the hours of noise generation to hours of least sensitivity. If a numerical standard is applied, it is typically a property line noise performance standard. Los Angeles County has adopted both time limits and performance standards in establishing impact significance. A violation of either criterion would be considered significant.

For construction activities, the Los Angeles County Noise Ordinance (Section 12.08.440 of the County Code) limits the hours of allowable construction activities and establishes noise performance standards at the nearest residential structures. Section 12.08.440(A) limits the allowable hours of construction activities to 7:00 a.m. to 7:00 p.m. on Monday through Saturday except in an emergency. The noise performance standards in Section 12.08.440(B) of the Code restrict noise at affected structures.

The Los Angeles County Code, Section 12.08.440(B) states as follows:

Noise Restrictions at Affected Structures. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:

1. At Residential Structures.

    a. Mobile Equipment. Maximum noise levels for non-scheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Single-Family Residential	Multi-Family Residential	Semi-Residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dB	80 dB	85 dB
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dB	65 dB	70 dB

Noise levels exceeding 75 dB would be significant at the nearest homes to the project site. Stationary emissions sources have more stringent noise performance standards. As per County definition, equipment to be used to develop building pads, construct slopes, excavate utilities, pour foundations, etc. are all considered "mobile equipment."

Types of Impact

Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are typically analyzed both to insure that a project will not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting upon the project. Typically, project-related, off-site noise impacts are evaluated as part of area-wide (community plan or specific plan) development planning. However, traffic noise impacts at levels causing noise compatibility standards to be exceeded are almost always cumulative from all overall development and not from any single project.

While individual project-related traffic noise impacts are normally less-than-significant, the impact of the ambient acoustic environment on a particular project may actually be of greater concern. The impact of the environment as a constraint on project development, rather than the project on the environment, may be the principal noise impact analysis issue for the Casad residential site.

Temporary construction noise will also result during site preparation and building assembly. Such sources are short-term and will not affect the long-term noise exposure in the project vicinity.

Construction Noise Impacts

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used, and short-term variations are strongly influenced by topographical factors that may somewhat change during the course of the project. Construction noise tends to occur in discrete phases dominated initially by earth-moving sources and later for finish construction. The heavy equipment noise typically ranges up to about 90 dB at 50 feet from the source. Figure 2 summarizes the noise generation for typical construction activities. The higher levels on the noise spectrum from each type of source tends to be the short-term maximum. The lower part of the range reflects the longer-term average.

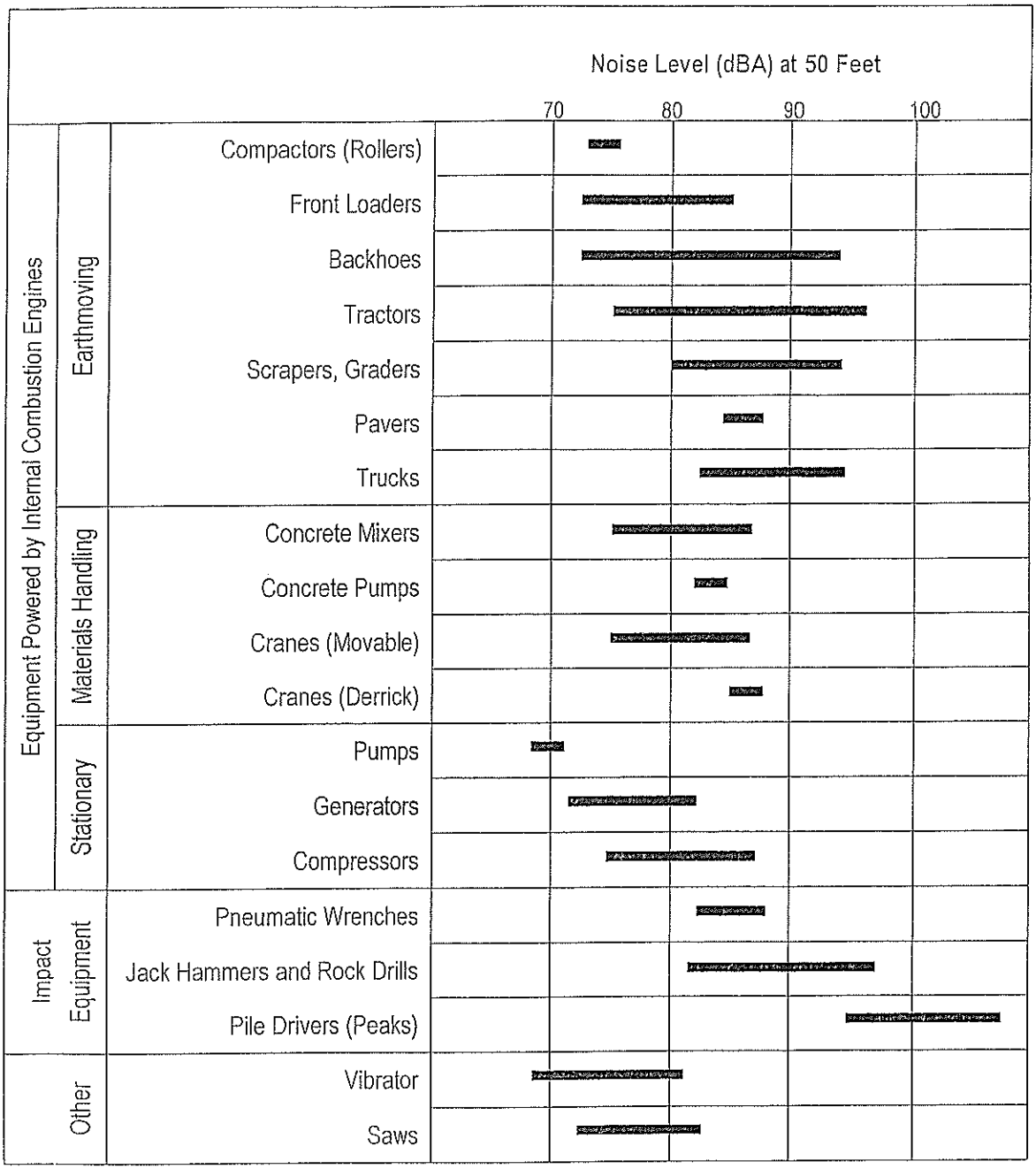
Point sources of noise emissions are atmospherically attenuated by a factor of six dB per doubling of distance. The loudest construction will require more than 1,000 feet of distance between the source and a nearby receiver to reduce the 90 dB source strength to a generally acceptable 65 dB exterior exposure level. Project construction noise could be audible at the partially developed residential tract adjacent to and west of the proposed project site. For purposes of analysis, and as a worst-case scenario, only the nearest residences were analyzed for construction noise impacts. Any mitigation required to reduce noise impacts at the nearest residential units and implemented at other residences will offer a greater benefit of noise reduction for the residences at greater distances.

The residences closest to the project site grading/construction activities are the homes located west of the proposed site. The existing residences back up to proposed residential Lot 4 and recreation Lot 50. The existing closest occupied home in the Southern Oaks development adjacent to proposed Lot 4 is approximately 30 feet from the presumed grading area of this lot. The maximum noise impact will derive from grading activities associated with Lot 4.

The noise performance/significance standard is based upon a peak noise level (Lmax). Several pieces of equipment may operate on a building pad or slope. However, only one piece at a time will typically be operating at full throttle at any location closest to any off-site homes, and only one piece can occupy a given small area at any point in time. One very loud piece of construction equipment operating at full throttle close to any outdoor residential usable space was used as a prototype noise impact source.

Figure 2

Typical Construction Equipment Noise Generation Levels



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

A bulldozer with a 90 dB noise maximum was presumed to be the peak noise generator during grading activities. The peak noise impact levels for grading activity associated with the building pads are as follows:

Peak Equipment Noise Level at 50 ft. (dB)	Distance to Residence (feet)	Peak Noise Level at Residence (dB)	Mitigation Required (dB)
Bulldozer-90	Side yard to Grading Area 30	92*	-17
*Exceeds L.A. County Noise Performance Standards.			

As indicated above, the peak noise levels associated with the grading of Lot 4 could exceed the County standards at the nearest residence. The above peak noise levels are the single loudest noise event associated with grading activities, and would typically occur only a few times per day, as single event "spikes." Grading activities next to Lot 4 may last up to one week. The setback needed to not exceed the 75 dB performance standard at the nearest residence from heavy equipment operations under direct line-of-sight conditions is 300 feet. Grading will be required within 300 feet of some off-site residences, and the 75 dB noise ordinance standard will be exceeded. Although this is a temporary event, it is a significant noise impact, unless mitigated.

Operational Noise Impacts

Local Roadway Noise Impact

The proposed development will generate 417 vehicle trips per day (Traffic Impact Analysis, Overland Traffic Consultants, Inc. November 2004). Traffic noise changes on area-wide roadways were calculated using the Federal Highway Administration (FHWA) Highway Traffic Noise Model (FHWA-RD-77-108) initialized with traffic input parameters (i.e., traffic volumes) supplied by the traffic consultant. The 24-hour CNEL for five scenarios (Existing, Existing with Ambient, Existing with Ambient with Project, Existing with Ambient with Related, and Existing with Ambient with Related with Project) in dB CNEL at 50 feet from the roadway centerline is as shown in Table 1. The corresponding distance from the roadway centerline to the residential exposure standard (65 dB CNEL) is shown in Table 2.

The proposed project will create a maximum traffic noise impact of +0.7 dB above the no project (ambient growth) contribution along Southern Oaks Drive, south of Pico Canyon Road. Noise level changes of less than 1.5 dB are undetectable by the human ear. The proposed project is too small to have a significant traffic noise impact given the baseline levels of traffic and associated noise already present in the area. Project traffic will contribute to an incremental degradation of noise quality along roadways in the area, but the project-related noise increment will be individually undetectable.

Table 1

Traffic Noise Impact Analysis
(dB CNEL at 50 feet from Roadway Centerline)

Segment	Existing	Existing w/Ambient	Existing w/Ambient w/ Project	Existing w/Ambient w/ Related	Existing w/Ambient w/ Related w/ Project
Pico Canyon Road:					
West of Southern Oaks Drive	58.7	59.1	59.1	61.7	61.7
Southern Oaks-Stevenson Ranch	63.3	63.7	64.1	65.0	65.3
Stevenson Ranch-Constitution	68.5	68.9	69.0	69.3	69.4
Constitution-The Old Road	68.6	69.0	69.1	69.6	69.7
The Old Road-Marriott Way	71.9	72.3	72.3	72.6	72.7
Marriott Way - I-5 SB Ramps	72.8	73.2	73.2	73.4	73.5
Lyons Avenue:					
I-5 SB Ramps - I-5 NB Ramps	72.7	73.1	73.1	73.3	73.4
East of I-5 NB Ramps	72.9	73.3	73.3	73.3	73.4
Southern Oaks Drive:					
South of Pico Canyon	61.4	61.8	62.5	62.2	62.9
Stevenson Ranch Parkway:					
North of Pico Canyon	67.9	68.3	68.4	68.6	68.6
Constitution Avenue:					
North of Pico Canyon	61.2	61.6	61.6	62.9	62.9
The Old Road:					
North of Pico Canyon	71.7	72.1	72.1	72.5	72.5
South of Pico Canyon	68.4	68.8	68.8	69.4	69.4
Marriott Way:					
South of Pico Canyon	62.0	62.4	62.4	62.4	62.4

Table 2

Traffic Noise Impact Analysis
(Distance to the 65 dB CNEL [feet] from Roadway Centerline)

Segment	Existing	Existing w/Ambient	Existing w/Ambient w/ Project	Existing w/Ambient w/ Related	Existing w/Ambient w/ Related w/ Project
Pico Canyon Road:					
West of Southern Oaks Drive	<50	<50	<50	<50	<50
Southern Oaks-Stevenson Ranch	<50	<50	<50	50	55
Stevenson Ranch-Constitution	85	90	90	95	100
Constitution-The Old Road	90	95	95	100	105
The Old Road-Marriott Way	145	155	155	160	165
Marriott Way - I-5 SB Ramps	165	175	175	185	185
Lyons Avenue:					
I-5 SB Ramps - I-5 NB Ramps	165	175	175	180	180
East of I-5 NB Ramps	170	180	180	180	180
Southern Oaks Drive:					
South of Pico Canyon	<50	<50	<50	<50	<50
Stevenson Ranch Parkway:					
North of Pico Canyon	80	85	85	85	85
Constitution Avenue:					
North of Pico Canyon	<50	<50	<50	<50	<50
The Old Road:					
North of Pico Canyon	140	150	150	155	160
South of Pico Canyon	95	90	90	100	100
Marriott Way:					
South of Pico Canyon	<50	<50	<50	<50	<50

Exterior Noise Standard Compliance

Usable outdoor space typically refers to backyards in residential developments. The source receiver area is usually measured at 10 feet inside the rear property line, or when there is slope, at ten feet inside the top or bottom of slope. All homes in the Casad TTM 52905 residential tract face interior residential streets that end in cul-de-sacs within the development. The rear yards do not back up to or abut any major roadways. The homes themselves shield any local traffic noise to the backyards. Therefore, there are no traffic noise impacts to usable outdoor space in homes within the Casad development and no mitigation is required.

Interior Noise Compliance

Interior noise compliance refers to habitable rooms such as bedrooms. Bedrooms are typically located on the rear façade of the residential structure. The homes in the Casad residential project do not back up to or abut any major roadway. There are no interior noise impacts associated with traffic at any residential building façade in the proposed TTM 52905 residential tract. No structural mitigation measures are required for interior noise compliance.

On-Site Noise Generation

Helicopter Landing Pad

The proposed residential development contains an existing helipad which is used by the Los Angeles Fire Department on an emergency-only basis. The helipad is located near the eastern-most boundary, on the far side of an existing water tank. Staff at the County Fire Department indicate there are two different types of helicopters used, both being similar military-style helicopters. While staff was reluctant to estimate the number of times a year the helipad is operational, they did state usage was contingent upon emergencies.

On-site noise generation from the emergency use of the helipad by fire department helicopters may be audible to residents in the proposed residential development. The existing helipad is more than 300 feet from the nearest proposed residential lot, Lot 16, and more than 400 feet from the remaining proposed homes within the development. The surrounding terrain is irregular and hilly and the helipad is located on the far side of an existing water tank.

Helicopters produce noise both from the propulsion system as well as from the rotors. In certain cases, the blades make a distinct whirling noise called "blade slap." Blade slap is somewhat a function of design. Helicopters with high blade tip speeds and a large turbulence wake, such as large military craft, are much more prone to rattling windows than smaller civilian craft.

A worst-case pad use of two flights per day was assumed as a basis for estimating noise levels from emergency helipad use. Noise from two flights of an MD500 helicopter were calculated using the FAA Helicopter Noise Model (HNM). Two flights per day are not enough to generate a noise contour exceeding 65 dB CNEL outside the landing pad area itself. Not even the most stringent 60 dB CNEL standard is violated by two flights in/out per day. Single-event levels above 65 dB will occur out to approximately 600 feet from the flight track. The nearest proposed homes are located between 300-400 feet from the existing helipad. The limited helicopter access (emergency basis only), irregular terrain, the water tank and distance will

reduce any noticeable noise from helicopter site access. It is recommended that the fire department emergency helipad location and potential for noise intrusion from emergency operations be disclosed to all potential residents.

Recreation Lot 50

The Casad residential development includes a recreational lot. Lot 50, the proposed recreational lot, is located along Magnolia Lane, at the entrance to the residential tract, between the existing homes from a partially developed residential tract and proposed Lots 1 and 4 of TTM 52905. The recreation lot will not be open after dusk nor before daylight, and only low-lighting for safety purposes will be used. Because the recreation lot will be turf only and will not host planned sports activities such as baseball and/or soccer games, and because it is proposed for daytime-use only, there will be no significant noise impacts from the recreation activities onto either existing or proposed residential uses.

CUMULATIVE NOISE IMPACTS

The maximum cumulative project noise level increase (Existing with Ambient with Related with Project), along Pico Canyon Road, west of Southern Oaks Drive, is +3.0 dB above existing conditions. An increase greater than +3.0 dB would be considered significant if the increase worsened or created an area of noise/land use incompatibility. The +3.0 dB increase does not create land use incompatibility because even with the increase, the traffic noise levels at 50 feet from the roadway centerline remain below 65 dB CNEL along this roadway segment. There are no impacts to any noise-sensitive receptors with this increase. This project noise contribution to the cumulative +3.0 dB CNEL increase is zero dB. Traffic noise impacts from the proposed project would be both individually, as well as cumulatively, less-than-significant.

MITIGATION MEASURES

Temporary construction noise could impact the nearest residence and may be excessive at homes near the project site. Construction noise impacts will be minimized by compliance with County Noise Ordinance Section 12.08.440 limiting allowable hours of construction activities and prohibiting the creation of any excessively loud, unnecessary or unusual equipment noise. However, grading within 300 feet within full view of any occupied residence will cause the short-term noise standard of 75 dB to be exceeded. Impacts will be temporary, but significant without mitigation. Mitigation measures identified as necessary to help attenuate noise impacts include:

1. Measures shall be taken by the applicant to notify adjacent homeowners of the time and dates that construction activities will occur at the project site.

2. Grading and construction equipment with the least noise output available shall be required for use on Lots 4 and 50, and grading and construction equipment used on these lots shall have enhanced mufflers for noise reduction.

3. Grading and construction on Lots 4 and 50 shall only occur from 8:00 a.m. to 5:00 p.m., Monday through Friday, except on legal holidays.

4. The applicant shall notify potential homeowners of the emergency helipad location and the potential for noise intrusion from emergency operations.

There are no operational noise impacts associated with implementation of the Casad residential project. The Los Angeles County exterior and interior standards for residential uses are met without the usage of mitigation measures.

SIGNIFICANT PROJECT IMPACTS AFTER MITIGATION

Significant noise impacts during construction activities will be reduced to less-than-significant by the above mitigation measures.