APPENDIX J
Noise Impact Analysis

ENVIRONMENTAL NOISE ANALYSIS

Mancara at Robinson Ranch

Prepared for:
City of Santa Clarita

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Environmental Planning and Research

November 2008

ENVIRONMENTAL NOISE ANALYSIS
MANCARA AT ROBINSON RANCH
SANTA CLARITA, CALIFORNIA

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INTRODUCTION

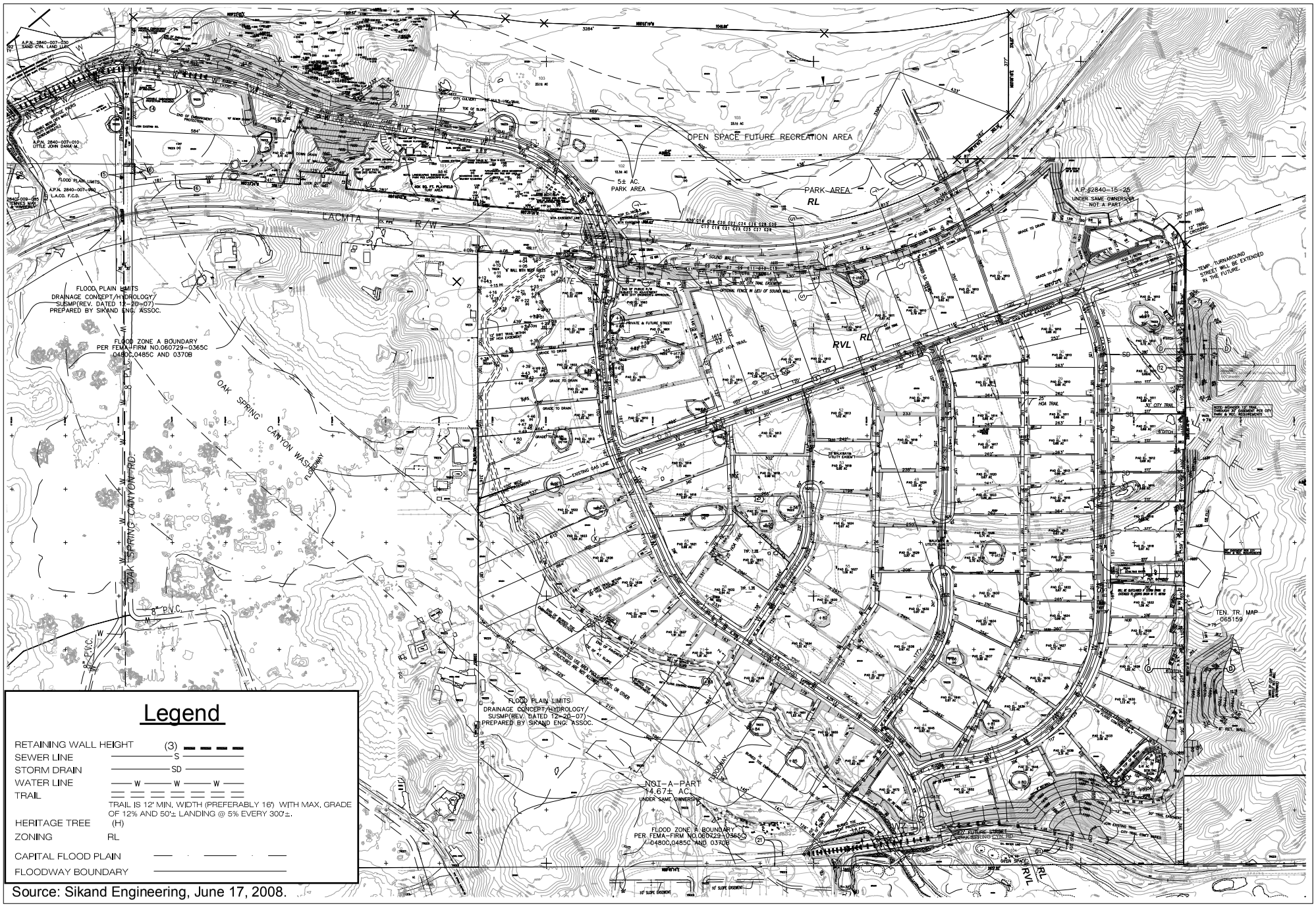
This Environmental Noise Analysis has been prepared by Christopher A. Joseph & Associates for the City of Santa Clarita at the direction of Robinson Ranch Residential, LP to evaluate environmental noise impacts associated with the proposed Mancara at Robinson Ranch residential development project (Project). The purpose of this analysis is twofold: (1) to evaluate the Project in terms of its design to ensure that noise levels at the Project site will not exceed standards adopted by the City of Santa Clarita; and (2) to evaluate the noise impact of the Project on the surrounding (off-site) areas.

Project Description

The 185-acre Project site is located in the Sand Canyon area of the City of Santa Clarita. It is bordered on the north by the Santa Clara River floodway and Metrolink/Union Pacific railroad tracks, on the south by Oak Springs Canyon Road, on the east by undeveloped land, and on the west by the rural Whitewater Canyon Road neighborhood. North of the Santa Clara River is the Antelope Valley Freeway (State Route 14). South of Oak Springs Canyon Road is a large equestrian estate and the Robinson Ranch Golf Course. Four residential properties are located along the western Project site boundary. The Project site is transected by Oak Spring Canyon Wash and several dirt tracks, but is otherwise vacant and undeveloped.

Based on the Tentative Tract Map dated June 17, 2008 and illustrated in Figure 1, the Project involves the subdivision of the site for the development of up to 99 single family residential units, a five-acre city park, and 30 acres of open space. Two of the residential lots and the city park would be located north of the Metrolink/Union Pacific railroad tracks and the remaining 97 residential lots would be located south of the railroad tracks. The size of the individual lots would range from 0.7 acre to over 2.0 acres. The primary access to the Project site would be from an eastward and southward extension of Lost Canyon Road from its existing terminus just east of Oak Springs Canyon Road. This roadway is expected to serve approximately 70 percent of the traffic generated by the Project.[1] A second point of access would be provided by a new access road along Oak Spring Canyon Road, immediately west of the Robinson Ranch Golf Course, and extending southward to Robinson Ranch Road. This entrance is expected to be utilized

[1] *Iteris, Inc., Mancara at Robinson Ranch Residential Development Traffic Impact Study, City of Santa Clarita, October 2008, p. 26.*



Source: Sikand Engineering, June 17, 2008.

CHRISTOPHER A. JOSEPH & ASSOCIATES
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NORTH

Figure 1
Proposed Site Plan

by approximately 20 percent of the Project-generated traffic.[2] A third entrance is proposed along Oak Springs Canyon Road and is expected accommodate the remaining 10 percent of Project-related traffic.[3] All three roadways would be classified as local residential streets and consist of one through traffic lane in each direction with parking allowed along both sides of the roadway.

Fundamentals of Sound and Environmental Noise

Sound

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.

Environmental Noise

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" 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 1 lists representative noise levels for the environment.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since 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. Those that are applicable to this analysis are as follows:

- 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.

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[2] *Iteris, Inc., Mancara at Robinson Ranch Residential Development Traffic Impact Study, City of Santa Clarita, October 2008, p. 26.*

[3] *Ibid.*

Table 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_{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.
- CNEL – The Community Noise Equivalent Level is a 24-hour average L_{eq} with a 10 dBA "penalty" added to noise during the hours of 10:00 P.M. to 7:00 A.M., and an additional 5 dBA penalty during the hours of 7:00 P.M. to 10:00 P.M. to account for noise sensitivity in the evening and nighttime. 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.

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 below 60 dBA are

generally considered low, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated natural settings that can provide noise levels as low as 20 dBA, and quiet suburban residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of low-moderate level noise environments are urban residential or semi-commercial areas (typically 55 to 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 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

Under controlled conditions, in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dBA, when exposed to steady, single frequency "pure tone" signals in the mid-frequency range. Outside of such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. Changes from three to five dBA may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dBA increase is readily noticeable, while the human ear perceives a 10 dBA increase as a doubling of sound.

Noise levels from a particular source generally 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 normal 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 are also generally reduced by 1 dBA for each 1,000 feet of distance due to air absorption. 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 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more with closed windows.

Fundamentals of Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the 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 approximately 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, and 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 2.

Table 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: California Department of Transportation, 1998.	

Regulatory Setting

City of Santa Clarita General Plan

The California Government Code requires that a noise element be included in the general plan of each county and city in the state. Each local government's goals, objectives, and policies for noise control are established by the noise element of the general plan and the passage of specific noise ordinances.

The Noise Element of the City of Santa Clarita General Plan establishes policies for the compatibility of new land uses with various noise levels. These policies have been used to set and adopt exterior and interior noise compatibility criteria for various land uses within the City. The purpose of these criteria is to reduce the various potential effects of noise on people, including sleep disturbance, reduced physical and mental performance, annoyance, and interference with speech communication.

The Noise Element identifies 65 dBA and 55 dBA as the established exterior noise standards for residential uses during daytime and nighttime hours, respectively. When averaged over a 24-hour period,

these noise levels average to approximately 65 dBA CNEL. The established exterior noise standard for schools, childcare centers, senior housing and other sensitive uses is also 65 dBA during the daytime hours when these uses would be occupied. The exterior noise standard for commercial and industrial uses is 80 dBA during the day and 70 dBA during nighttime hours. These levels average out to approximately 80 dBA CNEL over a 24-hour period.

City of Santa Clarita Municipal Code

The City of Santa Clarita has also adopted a Noise Ordinance (Chapter 11.44 of the Santa Clarita Municipal Code), which identifies noise standards for various sources, specific noise restrictions, exemptions, and variances for sources of noise within the city. The Noise Ordinance applies to all noise sources with the exception of any vehicle that is operated upon any public highway, street or right-of-way, or to the operation of any off-highway vehicle, to the extent that it is regulated in the State Vehicle Code, and all other sources of noise that are specifically exempted.

Section 11.44.040, Noise Limits, codifies the noise standards for various land uses that were established in the City of Santa Clarita General Plan (see the previous discussion of the City of Santa Clarita General Plan). The residential standards apply wherever a residential zone shares a common boundary with a commercial or industrial zone.

Section 11.44.080 of the Noise Ordinance limits construction activity within 300 feet of a residential zone to the hours of 7:00 A.M. through 7:00 P.M. Monday through Friday and 8:00 A.M. through 6:00 P.M. on Saturday. Construction activities are prohibited on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day, and Labor Day. The noise levels associated with construction activities are exempt from the noise standards established in the Noise Ordinance.

Noise Analysis Methodology

The analysis of the existing and future noise environments presented in this analysis is based on noise level measurements, noise prediction modeling, and empirical observations. Existing noise levels were measured at the Project site using a Larson-Davis Model 824 precision sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Noise modeling procedures involved the calculation of existing and future vehicular noise levels along individual roadway segments in the site vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Noise Prediction Model (FHWA-RD-77-108). The FHWA Model was used to evaluate future noise levels at the proposed land uses within the Project site and to evaluate existing and future noise levels along roadway segments in the Project vicinity that would be primarily affected by traffic generated by the Project. This 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. Traffic volumes utilized as data inputs in the noise prediction model were provided by the Project traffic engineer. Average rail noise levels were calculated using a methodology provided by the Federal Transit Administration and information provided by the U.S. Department of Housing and Urban Development.

EXISTING NOISE LEVELS

Existing daytime noise levels were measured at three locations within the Project site on January 11, 2006 and September 27, 2006. These locations are identified in Figure 2 and individually discussed below:

- **Location 1** is in the northwestern area of the Project site just south of the railroad tracks and a non-gated railroad crossing. The primary source of ambient noise at this location is the hum of vehicular traffic on the Antelope Valley Freeway. Railway traffic is the source of the highest noise levels at this location. According to the Metrolink website, 18 commuter trains pass by the Project site during the week and eight commuter trains pass by on Saturdays.[4] Freight trains also pass by the Project site, but do so on an irregular basis. All trains are required to use horns when approaching the non-gated railroad crossing near this location. Secondary sources of noise at this location include aircraft overflights, barking dogs, and vehicles driving on the Project site.

- **Location 2** is in the northeastern area of the Project site just south of the railroad tracks. The primary source of ambient noise at this location is the hum of vehicular traffic on the Antelope Valley Freeway. Railway traffic is the source of the highest noise levels at this location. Secondary sources of noise at this location include aircraft overflights and birdsong.

- **Location 3** is in the southern area of the Project site near Oak Springs Canyon Road. The primary sources of noise at this location are vehicular traffic on Oak Springs Canyon Road and the hum of vehicular traffic on the Antelope Valley Freeway. Secondary sources of noise at this location include aircraft overflights and animal sounds.

- **Location 4** is in the northwestern area of the Project site just north of the railroad tracks and the non-gated railroad crossing. As with Location 1, the primary source of ambient noise at this location is the hum of vehicular traffic on the Antelope Valley Freeway and railway traffic is the source of the highest noise levels at this location. Secondary sources of noise at this location include aircraft overflights, barking dogs, and vehicles driving on the Project site.

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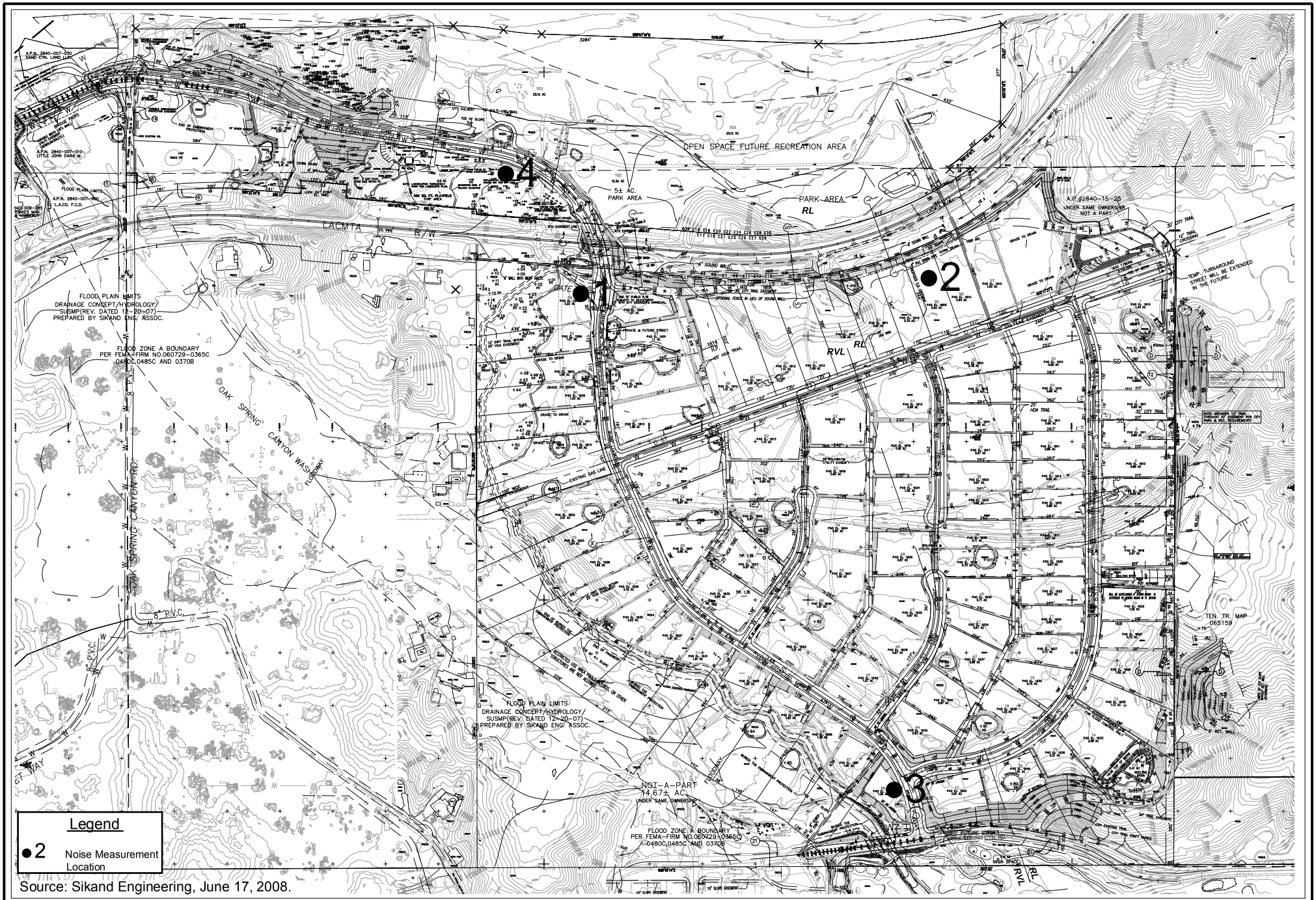
[4] *Metrolink, Schedules, website: http://www.metrolinktrains.com/lines/schedules/#, January 19, 2006.*



Source: Sikand Engineering, June 17, 2008.

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Figure 2
Noise Measurement Locations

The 15-minute average noise levels measured at each of these locations are identified in Table 3. With the exception of the maximum noise levels associated with train operations in the northern area of the Project site, these noise levels are characteristic of a relatively quiet rural environment.

Existing roadway noise levels were also calculated for existing residential units located along roadways in the Project vicinity. The average 24-hour hour noise levels in these areas are presented in Table 4.

Table 3
Existing Noise Levels Measured at the Project Site

Noise Measurement Location	Primary Noise Sources	Noise Level Statistics		
		L_{eq}	L_{min}	L_{max}
1. Northwestern Area	Traffic on Antelope Valley Freeway. This measurement includes one Metrolink train pass-by with horn.	65.9	46.8	90.3
	Traffic on Antelope Valley Freeway. This measurement includes one pickup truck driving by the noise measurement equipment.	51.0	46.5	64.6
2. Northeastern Area	Traffic on Antelope Valley Freeway. This measurement did not include any train pass-bys.	45.4	37.6	54.6
3. Southern Area	Traffic on Oak Springs Canyon Road and the Antelope Valley Freeway.	47.9	39.5	65.5
4. Northwestern Area	Traffic on Antelope Valley Freeway. This measurement includes one Metrolink train pass-by with horn.	63.1	45.2	93.6
	Traffic on Antelope Valley Freeway. This measurement includes two Metrolink train pass-bys with horns.	65.1	51.4	86.9
	Traffic on Antelope Valley Freeway. This measurement includes one pickup truck driving fast by the noise measurement equipment.	64.3	48.7	90.9
	Traffic on Antelope Valley Freeway. No trains or trucks.	56.8	54.1	60.3

Source: Christopher A. Joseph & Associates, 2006. Noise level measurement data is provided in Appendix A.

Table 4
Existing Roadway Noise Levels at Locations Off Site

Roadway	Roadway Segment	Noise Sensitive Uses	dBA CNEL
Lost Canyon Road	Sand Canyon Road to Oak Springs Canyon Road	Residential	55.3
Oak Springs Canyon Road	Whitewater Canyon Road to Holt Avenue	Residential	47.7

Source: Christopher A. Joseph & Associates, 2008. Noise level measurement data is provided in Appendix B.

NOISE IMPACT ANALYSIS

Thresholds of Significance

In accordance with Appendix G to the State *CEQA Guidelines*, a project may be deemed to have a significant adverse noise impact if it would result in:

- 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?
- 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?

The noise standards adopted by the City are discussed previously in this report. These standards would apply to the land uses that would be constructed within the Project site.

The *CEQA Guidelines* do not define the levels at which groundborne vibration is considered "excessive." This analysis uses the Federal Transit Administration's vibration impact thresholds for sensitive buildings such as residential land uses. The threshold for infrequent activity (fewer than 70 events per day) is 80 VdB at residences and buildings where people normally sleep. The threshold for frequent activity (more than 70 events per day) is 72 VdB at residences and buildings where people normally sleep.

The *CEQA Guidelines* also do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this report, a noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness.

Based on this information, temporary increases in noise levels of 10 dBA or more due to construction activities would be substantial and, therefore, significant.

The following thresholds would apply to permanent increases in noise due to the operational characteristics of the Project:

- Less than 3 dBA: not discernable: not significant.
- Between 3 dBA and 5 dBA: not significant if noise levels remain below the City of Santa Clarita General Plan noise level standards; significant if the noise increase would meet or exceed the City of Santa Clarita General Plan noise level standards.
- 5 dBA or greater: significant.

Project Evaluation

Construction-Related Noise Impacts

Project development would require the use of heavy equipment for ground clearing, site grading, roadway construction, and building construction. 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 U.S. Environmental Protection Agency (EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 5 and Table 6 for a reference distance of 50 feet from the source. 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 measured at 50 feet from the noise source to the receptor would reduce to 78 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA to 72 dBA at 200 feet from the source to the receptor.

Construction-related noise would primarily affect the four residential properties located along the western Project site boundary, and the equestrian estate and Robinson Ranch Golf Course located south of Oak Springs Canyon Road. The residential properties are located in close proximity to Lots 75, 78, 79, and 83 as shown in the June, 2008 Tentative Tract Map. No other sensitive uses are located in close proximity of the Project site. Assuming that daytime noise levels average around 51 dBA L_{eq} in the northwestern area of the site and 48 dBA L_{eq} in the southern part of the site (reference Table 3) and that these noise levels would be applicable to the offsite areas near these locations, the noise levels identified in Table 6 would represent an increase of more than 10 dBA L_{eq} during the day at each location.

As discussed previously in this report, construction activities that would occur within 300 feet of a residential zone would be limited to the hours of 7:00 A.M. through 7:00 P.M. Monday through Friday and 8:00 A.M. through 6:00 P.M. on Saturday. Construction activities are also prohibited on New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day, and Labor Day. Therefore, they would not occur during recognized sleep hours for residences or days that residents are most sensitive to exterior noise. However, the daytime noise levels would exceed City daytime noise standards for

residential uses and would continue to constitute a substantial increase in ambient noise levels in the Project vicinity above levels existing without the Project. This is a significant noise impact.

Table 5
Noise Range of Typical Construction Equipment

Construction Equipment	Noise Levels in dBA L_{eq} at 50 feet[1]
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68–82
Saws	72–82
Pneumatic Impact Equipment	83–88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

[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.*

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

Table 6
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet (dBA L_{eq})	Noise Levels at 50 Feet with Mufflers (dBA L_{eq})
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

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

Construction-Related Groundborne Vibration

Construction activities that would occur at the Project site have the potential to generate low levels of groundborne vibration. Table 7 identifies various vibration velocity levels for the types of construction equipment that would operate at the Project site during construction.

Table 7
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	75 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46
Source: Federal Railroad Administration, 1998 and Christopher A. Joseph & Associates 2008.					

Site clearing and grading activities for the 25-foot HOA trail along the western site boundary would occur within 40 feet of the existing residence located near Lot 78. Based on the information in Table 7, these homes could be exposed to vibration levels that exceed the 80 VdB threshold for residences and buildings where people normally sleep. As discussed previously, however, construction activities that would occur within 300 feet of a residential zone would be limited to the hours of 7:00 A.M. through 7:00 P.M. Monday through Friday and 8:00 A.M. through 6:00 P.M. on Saturday. Construction activities are also prohibited on New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day, and Labor Day. Therefore, they would not occur during recognized sleep hours for residences. With these limitations, the magnitude of this impact would be reduced to a less than significant level.

Site clearing and grading activities would occur no closer than 150 feet from the other existing residential structures located near the Project site. As such, groundborne vibrations levels would not approach the 80 VdB threshold at these residences. This would be a less-than-significant impact regarding the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Operational Noise Levels – Locations On Site

Future noise levels within the Project site would be dominated by internal roadway traffic and railway traffic. Other sources of noise would include new stationary sources (such as outdoor ventilation and air conditioning equipment) and increased activity throughout the site. As demonstrated previously, the noise levels associated with traffic on the Antelope Valley freeway are very low at the Project site and generate a background hum rather than a distinct source of high noise levels.

Railway traffic currently generates the highest noise levels at the site, with the maximum noise levels generated by train horns. As part of the Project, the new extension of Lost Canyon Road would be constructed under the Metrolink/Union Pacific railroad tracks; thus eliminating the non-gated railroad crossing at this location and the need for trains to blow their horns when approaching this location. The average 24-hour noise level for trains without the use of horns was calculated to be approximately 52 dBA CNEL at 150 feet from the railroad centerline, which is estimated to be the closest distance that any of the proposed residential units would be constructed in proximity to the railroad centerline. Three freight train operations per day would generate an average noise level of approximately 56 dBA CNEL at 150 feet,[5] for an average of approximately 57 dB CNEL for all rail activity. Railway noise levels at all other locations within the site would be lower due to increased distance from the railroad tracks.

The proposed residential units would not be constructed along any major roadways that would be a potential source of high noise levels. In the absence of future internal traffic volumes from the Project traffic engineer, the average noise levels within the Project site have been calculated assuming that 70 percent of the vehicle trip generated by the Project as well as all of the trips generated by the adjacent Robinson Ranch Estates project would pass by the homes along the new extension of Los Canyon Road in the northwestern part of the Project site; no other future projects are anticipated in the local vicinity that would increase these traffic volumes within the Project site. These vehicle trips would generate an average exterior noise level of approximately 55.0 dBA CNEL at a distance of 50 feet from the centerline of Lost Hills Canyon Road, which is the minimum distance that any of the homes would be constructed from this or any other internal roadway. Roadway noise levels at all other location within the Project site would be lower due to lower roadway traffic volumes.

Air conditioning systems would be installed for the new buildings within the Project site. Residential air conditioning systems installed outdoors result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment.

When combined, the cumulative exterior noise levels at the homes located in the northwestern part of the site adjacent to both Lost Canyon Road and the Metrolink/Union Pacific railroad tracks would average up to 59.5 dBA CNEL as shown in Table 8. Noise levels at all other locations within the Project site would be lower as discussed in the preceding paragraphs. As shown, these noise levels would not exceed the City's 65.0 dBA CNEL exterior noise standard.

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[5] *U.S. Department of Housing and Urban Development, The Noise Guidebook, p. 21.*

Table 8
Predicted Future Noise Levels at the Project Site

Source of Noise	Noise Levels in dBA CNEL				
	Future Exterior Noise Level	City Exterior Noise Standard	Assumed Exterior to Interior Noise Reduction	Future Interior Noise Levels	City Exterior Noise Standard
Traffic on Lost Canyon Road	54.9				
Commuter Rail	52.0				
Freight Trains	56.0				
Exterior Air Conditioning Units	45.0				
Total Average Noise Levels	59.5	65.0	-30.0	29.5	45.0

Source: Christopher A. Joseph & Associates, 2008. Noise level measurement data is provided in Appendix B.

Also shown in Table 8 are the cumulative interior noise levels at the homes located in the northwestern part of the site adjacent to both Lost Canyon Road and the Metrolink/Union Pacific railroad tracks. As discussed previously, exterior-to-interior reduction of newer residential units is generally 30 dBA or more. With this assumption, interior noise levels associated with exterior sources would not exceed City standards at the Project site.

Based on this information, future residents of the Project site would not be exposed to exterior noise levels that exceed City standards. This would be a less-than-significant noise impact regarding exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies.

Operational Noise Levels – Locations Off Site

Locations in the vicinity of the Project site could experience slight changes in noise levels as a result of an increase in the on-site population and resulting increase in motor vehicle trips. The changes in future noise levels along the study-area roadway segments in the Project vicinity are identified in Table 9. As shown, the Project would increase local noise levels by a maximum of 3.2 dBA CNEL, which would not exceed the identified thresholds of significance. This would be a less-than-significant noise impact regarding a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.

Table 9
Project Roadway Noise Level Impacts at Locations Off Site

Roadway	Roadway Segment	24-Hour dBA CNEL		
		Existing Traffic Volumes	Existing + Project Traffic	Increase
Lost Canyon Road	Sand Canyon Road to Oak Springs Canyon Road	55.3	58.5	3.2
Oak Springs Canyon Road	Whitewater Canyon Road to Holt Avenue	47.7	50.2	2.5

Source: Christopher A. Joseph & Associates, 2008. Noise level measurement data is provided in Appendix B.

As discussed previously, the new extension of Lost Canyon Road would be constructed under the Metrolink/Union Pacific railroad tracks; thus eliminating the non-gated railroad crossing at this location and the need for trains to blow their horns when approaching this location. This would reduce train noise at the residential property located immediately west of the Project site.

Operational Groundborne Vibration

The proposed residential uses could be exposed to groundborne vibration levels generated by railroad operations. According to the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* guidance manual, locomotive powered passenger and fright trains traveling at 50 miles per hour generate approximately 74 VdB at a distance of 150 feet from the track centerline.[6] Even as a screening estimate for the Project, this would be well below the Federal Transit Administration's vibration infrequent activity impact threshold of VdB at residences and buildings where people normally sleep. This would be a less-than-significant impact regarding the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Cumulative Impacts

In addition to the potential environmental impacts that would be associated with the Project, this Environmental Noise Analysis also evaluates "cumulative impacts." Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts may be analyzed by considering a list of past, present, and probable future projects producing related or cumulative impacts.

At the present time, the 50-residential-unit Robinson Ranch Estates project is the only other development project proposed for the same general vicinity as the Project. The Robinson Ranch Estates project is

[6] *Federal Transit Administration, Transit Noise and Vibration Impact Assessment, April 1995, p. 10-3.*

proposed to be located to the immediate east of the Project. This related project would utilize the same roadway network as the Project for vehicular access. As such, it would contribute to cumulative noise level impacts along these roadways. The Robinson Ranch Estates project is also expected to obtain vehicular access directly through the Project site and, therefore, would not begin construction until the roadway network is developed within the Project site.

Development of the Project along with the Robinson Ranch Estates project would result in intermittent, short-term noise and impacts throughout the local area. Construction activities could result in potentially significant short-term noise impacts on sensitive land uses in the vicinity of the two individual project sites. Construction of the Robinson Ranch Estates project would primarily impact residential units within the Project site since there are no existing sensitive uses in close proximity to that site. The same condition would apply to the exposure of people to or the generation of excessive groundborne vibration in the vicinity of the Project site during Project construction. Therefore, construction of the Robinson Ranch Estates project in conjunction with the Project would not cause an increased significant impact at the existing land uses that would be significantly impacted by the Project; nor would the contribution of the Project to any cumulative construction-related noise or groundborne vibration impacts near the Robinson Ranch Estates project site be considerable.

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the Project and other projects within the study area. Therefore, cumulative traffic-generated noise impacts have been assessed for existing land uses in Santa Clarita based on the change in noise levels from existing conditions to the future with cumulative development. The noise levels associated with existing traffic volumes and future traffic volumes with the Project are identified in Table 10.

Table 10
Cumulative Roadway Noise Level Impacts at Locations Off Site

Roadway	Roadway Segment	24-Hour dBA CNEL		
		Existing Traffic Volumes	Cumulative + Project Traffic	Increase
Lost Canyon Road	Sand Canyon Rd. to Oak Springs Canyon Rd.	55.3	59.5	4.2
Oak Springs Canyon Road	Whitewater Canyon Road to Holt Avenue	47.6	51.1	3.5

Source: Christopher A. Joseph & Associates, 2008. Noise level measurement data is provided in Appendix B.

As shown, cumulative development along with the Project would increase local noise levels by a maximum of 4.2 dBA CNEL. This maximum increase would occur at the residential uses along Oak Springs Road between Whitewater Canyon Road and Holt Avenue. Because the resulting noise levels would be well below the City standard for residential uses, the resulting increase of 4.2 dBA CNEL would not be considered substantial and, therefore, would not constitute a significant cumulative impact.

The cumulative increase in noise levels along Lost Canyon Road would not exceed the identified thresholds and, therefore, would not be significant.

MITIGATION MEASURES

The following measure is recommended to reduce to the maximum extent feasible the potential noise levels associated with construction activities.

1 The Applicant should implement measures to reduce the noise levels generated by construction equipment operating at the Project site during Project grading and construction phases. The Applicant should include in construction contracts the following requirements or measures shown to be equally effective:

- All construction equipment shall be equipped with improved noise muffling, and have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine isolators in good working condition.

- Stationary construction equipment that generates noise levels in excess of 65 dBA L_{eq} shall be located as far away from existing residential areas as possible. If required to minimize potential noise conflicts, the equipment shall be shielded from noise sensitive receptors by using temporary walls, sound curtains, or other similar devices.

- Heavy-duty vehicle storage and start-up areas shall be located a minimum of 150 feet from occupied residences where feasible.

- All equipment shall be turned off if not in use for more than five minutes.

- An information sign shall be posted at the entrance to each construction site that identifies the permitted construction hours and provides a telephone number to call and receive information about the construction project or to report complaints regarding excessive noise levels. Any reasonable complaints shall be rectified within 24 hours of their receipt.

LEVEL OF SIGNIFICANCE AFTER MITIGATIOIN

With the successful implementation of the mitigation measure recommended in this report, the noise levels associated with Project-related construction activities would be reduced although they would continue to either exceed City standards and/or cause an increase of at least 10 dBA L_{eq} at the nearby residential areas. Therefore, this impact would continue to be significant and unavoidable regarding the exposure persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies, and the creation of a substantial

temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.

PREPARED BY

Michael Brown
Principal
Christopher A. Joseph & Associates

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APPENDIX A

Noise Level Measurement Data

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - No Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Revs: 4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 Without Train
Note1:
Note2:

Overall Measurement		Current Measurement	
Start Time:	11-Jan-2006 16:55:08	Start Time:	11-Jan-2006 16:55:08
Elapsed Time:	00:15:00.0	Elapsed Time:	00:15:00.0
Leq:	51.0 dBA	Leq:	51.0 dBA
SEL:	80.6 dBA	SEL:	80.6 dBA
Dose: (8 hr)	0.0 %	Dose: (8 hr)	0.0 %
Proj. Dose:	0.0 %	Proj. Dose:	0.0 %
Threshold:	0 dB	Threshold:	0 dB
Criterion:	90 dB	Criterion:	90 dB
Exchange Rate:	3 dB	Exchange Rate:	3 dB

Min:	46.5 dBA	11-Jan-2006 17:03:26	Min:	46.5 dBA	11-Jan-2006 17:03:26
Max:	64.6 dBA	11-Jan-2006 17:08:30	Max:	64.6 dBA	11-Jan-2006 17:08:30
Peak-1:	91.4 dBF	11-Jan-2006 17:08:30	Peak-1:	91.4 dBF	11-Jan-2006 17:08:30
Peak-2:	84.7 dBA	11-Jan-2006 17:08:40	Peak-2:	84.7 dBA	11-Jan-2006 17:08:40

Ln Start Level: 15 dB

L1.00	58.4 dBA	L90.00	47.6 dBA	LDN:	51.0 dBA
L5.00	54.0 dBA	L95.00	47.3 dBA	CNEL:	51.0 dBA
L50.00	49.7 dBA	L99.00	46.8 dBA	Overall Leq:	51.0 dBA

Detector: Slow
Weighting: A

SPL Exceedance Level 1:	115.0	Exceeded:	0 times
SPL Exceedance level 2:	120	Exceeded:	0 times
Peak-1 Exceedance Level:	140	Exceeded:	0 times
Peak-2 Exceedance Level:	140	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Calibrated:	30-Sep-2005 10:48:13	Offset:	-45.8 dB
Checked:	11-Jan-2006 16:22:24	Level:	114.0 dB
Calibrator	4259	Level:	114.0 dB
Cal Records Count:	0		

Interval Records:	Enabled	Number Interval Records:	1
History Records:	Enabled	Number History Records:	62
Exceedance Records:	Disabled	Number Exceedance Records:	0
Daily Records:	Disabled	Number Daily Records:	0
Run/Stop Records:		Number Run/Stop Records:	2

824 Memory: 2097152 bytes

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - No Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 Without Train
Note1:
Note2:

Overall Any Data
Start Time: 11-Jan-2006 16:55:08
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	51.0 dBA		64.5 dBC		65.4 dBF
SEL:	80.6 dBA		94.0 dBC		94.9 dBF
Peak:	84.7 dBA		91.1 dBC		91.4 dBF
	11-Jan-2006 17:08:40	11-Jan-2006 17:08:30		11-Jan-2006 17:08:30	
Lmax (slow):	64.6 dBA		82.6 dBC		82.9 dBF
	11-Jan-2006 17:08:30	11-Jan-2006 17:08:30		11-Jan-2006 17:08:30	
Lmin (slow):	46.5 dBA		57.5 dBC		58.9 dBF
	11-Jan-2006 17:03:26	11-Jan-2006 17:03:36		11-Jan-2006 16:55:08	
Lmax (fast):	66.7 dBA		84.5 dBC		84.8 dBF
	11-Jan-2006 17:08:30	11-Jan-2006 17:08:30		11-Jan-2006 17:08:30	
Lmin (fast):	45.7 dBA		56.0 dBC		57.5 dBF
	11-Jan-2006 17:03:21	11-Jan-2006 17:03:19		11-Jan-2006 16:59:17	
Lmax (impulse):	67.7 dBA		85.3 dBC		85.6 dBF
	11-Jan-2006 17:08:30	11-Jan-2006 17:08:30		11-Jan-2006 17:08:30	
Lmin (impulse):	46.4 dBA		56.4 dBC		57.0 dBF
	11-Jan-2006 17:03:26	11-Jan-2006 16:55:08		11-Jan-2006 16:55:08	

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - No Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 Without Train
Note1:
Note2:

Current Any Data
Start Time: 11-Jan-2006 16:55:08
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	51.0 dBA		64.5 dBC		65.4 dBF
SEL:	80.6 dBA		94.0 dBC		94.9 dBF
Peak:	84.7 dBA		91.1 dBC		91.4 dBF
	11-Jan-2006 17:08:40	11-Jan-2006	17:08:30	11-Jan-2006	17:08:30
Lmax (slow):	64.6 dBA		82.6 dBC		82.9 dBF
	11-Jan-2006 17:08:30	11-Jan-2006	17:08:30	11-Jan-2006	17:08:30
Lmin (slow):	46.5 dBA		57.5 dBC		58.9 dBF
	11-Jan-2006 17:03:26	11-Jan-2006	17:03:36	11-Jan-2006	16:55:08
Lmax (fast):	66.7 dBA		84.5 dBC		84.8 dBF
	11-Jan-2006 17:08:30	11-Jan-2006	17:08:30	11-Jan-2006	17:08:30
Lmin (fast):	45.7 dBA		56.0 dBC		57.5 dBF
	11-Jan-2006 17:03:21	11-Jan-2006	17:03:19	11-Jan-2006	16:59:17
Lmax (impulse):	67.7 dBA		85.3 dBC		85.6 dBF
	11-Jan-2006 17:08:30	11-Jan-2006	17:08:30	11-Jan-2006	17:08:30
Lmin (impulse):	46.4 dBA		56.4 dBC		57.0 dBF
	11-Jan-2006 17:03:26	11-Jan-2006	16:55:08	11-Jan-2006	16:55:08

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Revs: 4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 With Train
Note1:
Note2:

Overall Measurement		Current Measurement	
Start Time:	11-Jan-2006 16:39:13	Start Time:	11-Jan-2006 16:39:13
Elapsed Time:	00:15:00.0	Elapsed Time:	00:15:00.0
Leq:	65.9 dBA	Leq:	65.9 dBA
SEL:	95.5 dBA	SEL:	95.5 dBA
Dose: (8 hr)	0.0 %	Dose: (8 hr)	0.0 %
Proj. Dose:	0.4 %	Proj. Dose:	0.4 %
Threshold:	0 dB	Threshold:	0 dB
Criterion:	90 dB	Criterion:	90 dB
Exchange Rate:	3 dB	Exchange Rate:	3 dB

Min:	46.8 dBA	11-Jan-2006 16:44:02	Min:	46.8 dBA	11-Jan-2006 16:44:02
Max:	90.3 dBA	11-Jan-2006 16:47:40	Max:	90.3 dBA	11-Jan-2006 16:47:40
Peak-1:	107.7 dBF	11-Jan-2006 16:47:40	Peak-1:	107.7 dBF	11-Jan-2006 16:47:40
Peak-2:	103.0 dBA	11-Jan-2006 16:47:40	Peak-2:	103.0 dBA	11-Jan-2006 16:47:40

Ln Start Level: 15 dB

L1.00	77.6 dBA	L90.00	48.4 dBA	LDN:	65.9 dBA
L5.00	56.6 dBA	L95.00	47.7 dBA	CNEL:	65.9 dBA
L50.00	50.6 dBA	L99.00	47.2 dBA	Overall Leq:	65.9 dBA

Detector: Slow
Weighting: A

SPL Exceedance Level 1:	115.0	Exceeded:	0 times
SPL Exceedance level 2:	120	Exceeded:	0 times
Peak-1 Exceedance Level:	140	Exceeded:	0 times
Peak-2 Exceedance Level:	140	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Calibrated:	30-Sep-2005 10:48:13	Offset:	-45.8 dB
Checked:	11-Jan-2006 16:22:24	Level:	114.0 dB
Calibrator	4259	Level:	114.0 dB
Cal Records Count:	0		

Interval Records:	Enabled	Number Interval Records:	1
History Records:	Enabled	Number History Records:	62
Exceedance Records:	Disabled	Number Exceedance Records:	0
Daily Records:	Disabled	Number Daily Records:	0
Run/Stop Records:		Number Run/Stop Records:	2

824 Memory: 2097152 bytes

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 With Train
Note1:
Note2:

Overall Any Data
Start Time: 11-Jan-2006 16:39:13
Elapsed Time: 00:15:00.0

	A Weight	C Weight	Flat
Leq:	65.9 dBA	76.1 dBC	76.5 dBF
SEL:	95.5 dBA	105.6 dBC	106.0 dBF
Peak:	103.0 dBA	108.0 dBC	107.7 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmax (slow):	90.3 dBA	96.6 dBC	96.9 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (slow):	46.8 dBA	57.3 dBC	58.7 dBF
	11-Jan-2006 16:44:02	11-Jan-2006 16:44:02	11-Jan-2006 16:44:02
Lmax (fast):	92.7 dBA	98.5 dBC	98.7 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (fast):	46.1 dBA	55.5 dBC	56.8 dBF
	11-Jan-2006 16:44:13	11-Jan-2006 16:44:08	11-Jan-2006 16:44:08
Lmax (impulse):	93.3 dBA	99.3 dBC	99.6 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (impulse):	46.1 dBA	57.5 dBC	58.6 dBF
	11-Jan-2006 16:39:13	11-Jan-2006 16:39:13	11-Jan-2006 16:39:13

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 1 - Train.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 1 With Train
Note1:
Note2:

Current Any Data
Start Time: 11-Jan-2006 16:39:13
Elapsed Time: 00:15:00.0

	A Weight	C Weight	Flat
Leq:	65.9 dBA	76.1 dBC	76.5 dBF
SEL:	95.5 dBA	105.6 dBC	106.0 dBF
Peak:	103.0 dBA	108.0 dBC	107.7 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmax (slow):	90.3 dBA	96.6 dBC	96.9 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (slow):	46.8 dBA	57.3 dBC	58.7 dBF
	11-Jan-2006 16:44:02	11-Jan-2006 16:44:02	11-Jan-2006 16:44:02
Lmax (fast):	92.7 dBA	98.5 dBC	98.7 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (fast):	46.1 dBA	55.5 dBC	56.8 dBF
	11-Jan-2006 16:44:13	11-Jan-2006 16:44:08	11-Jan-2006 16:44:08
Lmax (impulse):	93.3 dBA	99.3 dBC	99.6 dBF
	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40	11-Jan-2006 16:47:40
Lmin (impulse):	46.1 dBA	57.5 dBC	58.6 dBF
	11-Jan-2006 16:39:13	11-Jan-2006 16:39:13	11-Jan-2006 16:39:13

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 2.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Revs: 4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 2
Note1:
Note2:

Overall Measurement		Current Measurement	
Start Time:	11-Jan-2006 17:26:00	Start Time:	11-Jan-2006 17:26:00
Elapsed Time:	00:15:00.0	Elapsed Time:	00:15:00.0
Leq:	45.4 dBA	Leq:	45.4 dBA
SEL:	75.0 dBA	SEL:	75.0 dBA
Dose: (8 hr)	0.0 %	Dose: (8 hr)	0.0 %
Proj. Dose:	0.0 %	Proj. Dose:	0.0 %
Threshold:	0 dB	Threshold:	0 dB
Criterion:	90 dB	Criterion:	90 dB
Exchange Rate:	3 dB	Exchange Rate:	3 dB

Min:	37.6 dBA	11-Jan-2006 17:39:32	Min:	37.6 dBA	11-Jan-2006 17:39:32
Max:	54.6 dBA	11-Jan-2006 17:38:08	Max:	54.6 dBA	11-Jan-2006 17:38:08
Peak-1:	79.1 dBF	11-Jan-2006 17:37:55	Peak-1:	79.1 dBF	11-Jan-2006 17:37:55
Peak-2:	73.9 dBA	11-Jan-2006 17:31:39	Peak-2:	73.9 dBA	11-Jan-2006 17:31:39

Ln Start Level: 15 dB

L1.00	52.3 dBA	L90.00	39.4 dBA	LDN:	45.4 dBA
L5.00	48.7 dBA	L95.00	39.0 dBA	CNEL:	45.4 dBA
L50.00	44.1 dBA	L99.00	38.1 dBA	Overall Leq:	45.4 dBA

Detector: Slow
Weighting: A

SPL Exceedance Level 1:	115.0	Exceeded:	0 times
SPL Exceedance level 2:	120	Exceeded:	0 times
Peak-1 Exceedance Level:	140	Exceeded:	0 times
Peak-2 Exceedance Level:	140	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Calibrated:	30-Sep-2005 10:48:13	Offset:	-45.8 dB
Checked:	11-Jan-2006 16:22:24	Level:	114.0 dB
Calibrator	4259	Level:	114.0 dB
Cal Records Count:	0		

Interval Records:	Enabled	Number Interval Records:	1
History Records:	Enabled	Number History Records:	62
Exceedance Records:	Disabled	Number Exceedance Records:	0
Daily Records:	Disabled	Number Daily Records:	0
Run/Stop Records:		Number Run/Stop Records:	2

824 Memory: 2097152 bytes

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 2.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 2
Note1:
Note2:

Overall Any Data
Start Time: 11-Jan-2006 17:26:00
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	45.4 dBA		57.8 dBC		59.9 dBF
SEL:	75.0 dBA		87.3 dBC		89.4 dBF
Peak:	73.9 dBA		78.2 dBC		79.1 dBF
	11-Jan-2006 17:31:39	11-Jan-2006 17:37:45		11-Jan-2006 17:37:55	
Lmax (slow):	54.6 dBA		68.2 dBC		68.7 dBF
	11-Jan-2006 17:38:08	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (slow):	37.6 dBA		54.5 dBC		56.4 dBF
	11-Jan-2006 17:39:32	11-Jan-2006 17:33:33		11-Jan-2006 17:33:13	
Lmax (fast):	57.8 dBA		71.1 dBC		71.5 dBF
	11-Jan-2006 17:37:45	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (fast):	36.9 dBA		52.5 dBC		54.3 dBF
	11-Jan-2006 17:39:31	11-Jan-2006 17:32:58		11-Jan-2006 17:32:58	
Lmax (impulse):	59.0 dBA		71.5 dBC		71.9 dBF
	11-Jan-2006 17:37:45	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (impulse):	37.1 dBA		55.2 dBC		57.5 dBF
	11-Jan-2006 17:39:31	11-Jan-2006 17:33:15		11-Jan-2006 17:33:13	

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 2.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 2
Note1:
Note2:

Current Any Data
Start Time: 11-Jan-2006 17:26:00
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	45.4 dBA		57.8 dBC		59.9 dBF
SEL:	75.0 dBA		87.3 dBC		89.4 dBF
Peak:	73.9 dBA		78.2 dBC		79.1 dBF
	11-Jan-2006 17:31:39	11-Jan-2006 17:37:45		11-Jan-2006 17:37:55	
Lmax (slow):	54.6 dBA		68.2 dBC		68.7 dBF
	11-Jan-2006 17:38:08	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (slow):	37.6 dBA		54.5 dBC		56.4 dBF
	11-Jan-2006 17:39:32	11-Jan-2006 17:33:33		11-Jan-2006 17:33:13	
Lmax (fast):	57.8 dBA		71.1 dBC		71.5 dBF
	11-Jan-2006 17:37:45	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (fast):	36.9 dBA		52.5 dBC		54.3 dBF
	11-Jan-2006 17:39:31	11-Jan-2006 17:32:58		11-Jan-2006 17:32:58	
Lmax (impulse):	59.0 dBA		71.5 dBC		71.9 dBF
	11-Jan-2006 17:37:45	11-Jan-2006 17:37:55		11-Jan-2006 17:37:55	
Lmin (impulse):	37.1 dBA		55.2 dBC		57.5 dBF
	11-Jan-2006 17:39:31	11-Jan-2006 17:33:15		11-Jan-2006 17:33:13	

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 3.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Revs: 4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 3
Note1:
Note2:

Overall Measurement		Current Measurement	
Start Time:	11-Jan-2006 17:56:56	Start Time:	11-Jan-2006 17:56:56
Elapsed Time:	00:15:00.0	Elapsed Time:	00:15:00.0
Leq:	47.9 dBA	Leq:	47.9 dBA
SEL:	77.5 dBA	SEL:	77.5 dBA
Dose: (8 hr)	0.0 %	Dose: (8 hr)	0.0 %
Proj. Dose:	0.0 %	Proj. Dose:	0.0 %
Threshold:	0 dB	Threshold:	0 dB
Criterion:	90 dB	Criterion:	90 dB
Exchange Rate:	3 dB	Exchange Rate:	3 dB

Min:	39.5 dBA	11-Jan-2006 18:10:29	Min:	39.5 dBA	11-Jan-2006 18:10:29
Max:	65.5 dBA	11-Jan-2006 17:58:50	Max:	65.5 dBA	11-Jan-2006 17:58:50
Peak-1:	91.4 dBF	11-Jan-2006 17:58:50	Peak-1:	91.4 dBF	11-Jan-2006 17:58:50
Peak-2:	83.4 dBA	11-Jan-2006 17:58:50	Peak-2:	83.4 dBA	11-Jan-2006 17:58:50

Ln Start Level: 15 dB

L1.00	58.8 dBA	L90.00	41.5 dBA	LDN:	47.9 dBA
L5.00	52.3 dBA	L95.00	40.5 dBA	CNEL:	47.9 dBA
L50.00	43.6 dBA	L99.00	39.8 dBA	Overall Leq:	47.9 dBA

Detector: Slow
Weighting: A

SPL Exceedance Level 1:	115.0	Exceeded:	0 times
SPL Exceedance level 2:	120	Exceeded:	0 times
Peak-1 Exceedance Level:	140	Exceeded:	0 times
Peak-2 Exceedance Level:	140	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Calibrated:	30-Sep-2005 10:48:13	Offset:	-45.8 dB
Checked:	11-Jan-2006 16:22:24	Level:	114.0 dB
Calibrator	4259	Level:	114.0 dB
Cal Records Count:	0		

Interval Records:	Enabled	Number Interval Records:	1
History Records:	Enabled	Number History Records:	62
Exceedance Records:	Disabled	Number Exceedance Records:	0
Daily Records:	Disabled	Number Daily Records:	0
Run/Stop Records:		Number Run/Stop Records:	2

824 Memory: 2097152 bytes

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 3.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 3
Note1:
Note2:

Overall Any Data
Start Time: 11-Jan-2006 17:56:56
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	47.9 dBA		59.9 dBC		60.9 dBF
SEL:	77.5 dBA		89.5 dBC		90.5 dBF
Peak:	83.4 dBA		91.8 dBC		91.4 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmax (slow):	65.5 dBA		74.9 dBC		75.5 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmin (slow):	39.5 dBA		53.0 dBC		54.8 dBF
	11-Jan-2006 18:10:29	11-Jan-2006 18:11:22		11-Jan-2006 18:10:43	
Lmax (fast):	68.9 dBA		78.1 dBC		78.6 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmin (fast):	38.6 dBA		51.6 dBC		52.9 dBF
	11-Jan-2006 18:10:28	11-Jan-2006 18:11:21		11-Jan-2006 18:10:18	
Lmax (impulse):	71.5 dBA		80.6 dBC		81.1 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:57:15	
Lmin (impulse):	39.1 dBA		53.8 dBC		54.3 dBF
	11-Jan-2006 18:10:28	11-Jan-2006 17:56:56		11-Jan-2006 17:56:56	

File Translated: C:\Documents and Settings\Administrator\Desktop\Location 3.slmdl
Model/Serial Number: 824 / A3050
Firmware/Software Rev4.230 / 3.120
Name: Christopher A. Joseph & Assoc.
Descr1: Enter Address Line 1
Descr2: Enter Address Line 2
Setup/Setup Descr: 15_minut.log / 15 Minute
Location: Robinson Ranch - Location 3
Note1:
Note2:

Current Any Data
Start Time: 11-Jan-2006 17:56:56
Elapsed Time: 00:15:00.0

	A Weight		C Weight		Flat
Leq:	47.9 dBA		59.9 dBC		60.9 dBF
SEL:	77.5 dBA		89.5 dBC		90.5 dBF
Peak:	83.4 dBA		91.8 dBC		91.4 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmax (slow):	65.5 dBA		74.9 dBC		75.5 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmin (slow):	39.5 dBA		53.0 dBC		54.8 dBF
	11-Jan-2006 18:10:29	11-Jan-2006 18:11:22		11-Jan-2006 18:10:43	
Lmax (fast):	68.9 dBA		78.1 dBC		78.6 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:58:50	
Lmin (fast):	38.6 dBA		51.6 dBC		52.9 dBF
	11-Jan-2006 18:10:28	11-Jan-2006 18:11:21		11-Jan-2006 18:10:18	
Lmax (impulse):	71.5 dBA		80.6 dBC		81.1 dBF
	11-Jan-2006 17:58:50	11-Jan-2006 17:58:50		11-Jan-2006 17:57:15	
Lmin (impulse):	39.1 dBA		53.8 dBC		54.3 dBF
	11-Jan-2006 18:10:28	11-Jan-2006 17:56:56		11-Jan-2006 17:56:56	

APPENDIX B

Noise Level Calculation Data

OFF SITE TRAFFIC NOISE LEVELS

Project Name: Mancara at Robinson Ranch

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	Existing Traffic Volumes
Source of Traffic Volumes:	Iteris, Inc., October 2008
Community Noise Descriptor:	L_{dn}: ____ CNEL: X

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	65.00%	25.00%	10.00%
Medium-Duty Trucks	90.00%	9.00%	1.00%
Heavy-Duty Trucks	95.00%	4.00%	1.00%

Traffic Noise Levels

Analysis Condition / Roadway Name / Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) CNEL
Existing Traffic Volumes													
Lost Canyon Road													
Sand Cyn. to Oak Springs Cyn.	Single Family Residential	2	0	0	711	30	35	0	0	8.0%	2.0%	0.0	55.3
Oak Springs Canyon Road													
Whitewater Cyn. to Holt Ave.	Single Family Residential	2	0	0	123	30	35	0	0	8.0%	2.0%	0.0	47.7
Existing Plus Project Traffic Volumes													
Lost Canyon Road													
Sand Cyn. to Oak Springs Cyn.	Single Family Residential	2	0	0	1,469	30	35	0	0	8.0%	2.0%	0.0	58.5
Oak Springs Canyon Road													
Whitewater Cyn. to Holt Ave.	Single Family Residential	2	0	0	218	30	35	0	0	8.0%	2.0%	0.0	50.2
Cumulative Plus Project Traffic Volumes													
Lost Canyon Road													
Sand Cyn. to Oak Springs Cyn.	Single Family Residential	2	0	0	1,852	30	35	0	0	8.0%	2.0%	0.0	59.5
Oak Springs Canyon Road													
Whitewater Cyn. to Holt Ave.	Single Family Residential	2	0	0	266	30	35	0	0	8.0%	2.0%	0.0	51.0

[1] Distance is from the centerline of the roadway segment to the receptor location.

ON SITE NOISE LEVELS

Project Name: Mancara at Robinson Ranch

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	Existing Traffic Volumes
Source of Traffic Volumes:	Iteris, Inc., October 2008
Community Noise Descriptor:	L_{dn}: ____ CNEL: X

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	65.00%	25.00%	10.00%
Medium-Duty Trucks	90.00%	9.00%	1.00%
Heavy-Duty Trucks	95.00%	4.00%	1.00%

Traffic Noise Levels

Analysis Condition Roadway Name Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) CNEL
Cumulative Plus Project Traffic Volumes													
Lost Canyon Road													
east of Oak Springs Cyn.	Single Family Residential	2	0	0	1,142	30	50	0	0	8.0%	0.7%	0.0	54.9
Commuter Rail (see Commuter Rail sheet)													52.0
Freight Trains (based on HUD's The Noise Guidebook)													56.0
Air Conditioning Equipment													45.0
										Total Average Noise Levels:			59.5

[1] Distance is from the centerline of the roadway segment to the receptor location.

Federal Transit Adminstration
General Transit Noise Assessment, 5/1/2000
Case: Example

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	52	51	44
Source 1	51	49	42
Source 2	47	45	38
Source 3	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for each noise source below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Diesel Loco.	2	Comm. Rail Cars	3		
Dist. to receiver	distance (ft)	150	distance (ft)	150		
Daytime Hours	speed (mph)	50	speed (mph)	50		
(7 AM - 10 PM)	trains/hour	1	trains/hour	1		
	locos/train	1	cars/train	4		
Nighttime Hours	speed (mph)	50	speed (mph)	50		
(10 PM - 7 AM)	trains/hour	0.2	trains/hour	0.2		
	locos/train	1	cars/train	4		
Jointed Track?	Y/N	N	Y/N	N		
Embedded Track?	Y/N	N	Y/N	N		
Aerial Structure?	Y/N	N	Y/N	N		
Barrier Present?	Y/N	N	Y/N	N		
Intervening Rows of Buildings	number	0	number	0		

SOURCE REFERENCE LIST	
Source	**Number**
Electric Loco.	1
Diesel Loco.	2
Comm. Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Automobiles	9
City Buses	10
Commuter Buses	11
Rail Yard or Shop	12
Layover Tracks	13
Bus Storage Yard	14
Bus Op. Facility	15
Bus Transit Center	16
Parking Garage	17
Park & Ride Lot	18

CALCULATIONS			
Term	**Sou 1**	**Sou 2**	**Sou 3**
SELref	92.0	82.0	0.0
C1 - Coef	-10.0	20.0	0.0
C1 - Denom	50.0	50.0	0.0
C1 - Day Num	50.0	50.0	0.0
C1 - Night Num	50.0	50.0	0.0
C1 - Day	0.0	0.0	0.0
C1 - Night	0.0	0.0	0.0
C2 - Coef	10.0	10.0	0.0
C2 - Denom	1.0	1.0	0.0
C2 - Day Num	1.0	1.0	0.0
C2 - Night Num	0.2	0.2	0.0
C2 - Day	0.0	0.0	0.0
C2 - Night	-7.0	-7.0	0.0
C3 - Coef	10.0	10.0	0.0
C3 - Denom	1.0	1.0	0.0
C3 - Day Num	1.0	4.0	0.0
C3 - Night Num	1.0	4.0	0.0
C3 - Day	0.0	6.0	0.0
C3 - Night	0.0	6.0	0.0
Leq50ft - Day	56.4	52.4	
Leq50ft - Night	49.4	45.4	
Ldn50ft	57.8	53.8	#VALUE!
Dist Coef	15.0	15.0	0.0
Adj. Dist	-7.2	-7.2	
Adj. Jointed	0.0	0.0	0.0
Adj. Embed	0.0	0.0	0.0
Adj. Aerial	0.0	0.0	0.0
Adj. Shield	0.0	0.0	0.0
Leq - Day	49.2	45.3	0.0
Leq - Night	42.3	38.3	0.0
Ldn	50.6	46.6	0.0
Need Land Use			0
Calc Leq			0

-7.2

#REF!