

# **NOISE ASSESSMENT**

## **RANCHO CIELO MADURA TM 5456 RPL2**

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## **GLOSSARY OF TERMS**

**Sound Pressure Level (SPL):** a ratio of one sound pressure to a reference pressure ( $L_{ref}$ ) of 20  $\mu$ Pa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by  $20 \log (L/L_{ref})$ .

**A-weighted Sound Pressure Level (dBA):** Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

**Minimum Sound Level ( $L_{min}$ ):** Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

**Maximum Sound Level ( $L_{max}$ ):** Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

**Equivalent sound level ( $L_{eq}$ ):** the true equivalent sound level measured over the run time.  $L_{eq}$  is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

**Day Night Sound Level (LDN):** Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB “Penalty” for night time noise. Typically LDN’s are measured using A weighting.

**Community Noise Exposure Level (CNEL):** The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

**Octave Band:** An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

**Third-Octave Band:** A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

**Response Time (F,S,I):** The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

## **EXECUTIVE SUMMARY**

This noise study has been completed to determine the noise impacts associated with the development of the proposed residential project and consolidated alternative. The project known as "Rancho Cielo Madura" consists of a tentative map (TM 5456 RPL2). The project proposes a subdivision that will create 18 single family lots of 1-acre minimum lot size and 19 condominium units on three parcels (APN 265-300-02, 03 & 05) totaling approximately 270 acres. Access would be provided by extending Via Dora to serve the three single family residential lots proposed in the west; and the condominium lot and fifteen single family lots would take access off Cerro Del Sol proposed in the northern area. The project is located west of the City of Escondido and north of Del Dios Highway in the Rancho Cielo Specific Plan in the northern portion of San Diego County, CA.

The results of this analysis indicate that future vehicle noise from Del Dios Highway is the principal source of community noise that could impact the site. The future noise contours for both the proposed project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas at the single-family lots or the 65 dBA CNEL standard at the multi-family units. Based on this finding, no additional exterior noise analysis is required and no mitigation measures are required.

It is the understanding that development of the three project areas were originally analyzed in the Rancho Cielo Specific Plan and EIR for 46 single-family estate dwelling units and 19 multi-family dwelling units using 8 vehicle trip ends per dwelling unit. This resulted in 550 daily vehicles being generated ( $8 \times 65 = 550$ ). Comparison of the 550 daily trips generated by the approved project traffic to the proposed projects traffic results in 152 ( $550 - 368 = 152$ ) fewer vehicles being generated by the proposed development in areas 1, 2 and 3. Additionally, the trip generation is so low no impacts are anticipated and the traffic study does not provide cumulative details (Source: Rancho Cielo Madura (TM 5456, RPL2) Combined Project Traffic Assessment, Darnell and Associated, 2013.).

The project or the project alternative do not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

The grading activities will consist of the preparation of the proposed internal roadways and the finished pads. The nearest property line with an existing residence on Via Dora is located approximately 550 feet from the construction activities and no impacts are anticipated due to distance. Potential residential structures could be built as close as 140 feet from the grading operations near Lot 19. It was determined that grading operations would be below the County standards at a distance of 140 feet and no impacts are anticipated.

Based on the unshielded 75 dBA Leq contours from the rock crusher, which extends 225 feet, the rock crushing operation would not exceed the County standard and no noise impacts will occur from any rock crushing activities. If rock crushing is still needed once Lots 16-18 or Lot 19 are occupied no impacts are anticipated and occupancy is not dependent on the rock crushing activities.

Blasting will occur on an as-needed basis across the site. Currently no blasting is anticipated within 275 feet of any occupied noise sensitive land uses; therefore no noise or vibration impacts are anticipated. If residential units are built and occupied while blasting is occurring within 275 feet then noise mitigation would be required and the blasting contractor should conduct a pre-blast survey to determine if any sensitive uses need to be monitored during blasting operations.

If drilling and blasting equipment is staged within 275 feet of any occupied noise sensitive land use, it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. If impacts are anticipated, a mitigation plan should be developed that may include a temporary noise barrier along any property line where the impacts could occur. The mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The height of this noise barrier can range from 8 to 12 feet in height. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also limit the usage of the equipment (amount of time used and/or the location in respect to the property line). Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 of the establishing permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the period of February 1 to August 31 of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: A County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

## **1.0 INTRODUCTION**

### 1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed Rancho Cielo Madura (TM 5456 RPL2) Residential Project. The project is located at 33° 02' 57" N and 117° 08' 35" W, north of Del Dios Highway and west of the City of Escondido. The Project is within the northern portion of the unincorporated area or San Diego County CA. The general location of the project is shown on the Vicinity Map, Figure 1-A.

The project proposes a residential subdivision that will create 18 lots of 1-acre minimum lot size and 19 condominium units one a single lot (Lot 19). Open Space for the protection of sensitive biological and cultural resources is proposed. The site plans for the proposed project used for this analysis is shown on Figure 1-B.

### 1.2 Environmental Settings & Existing Conditions

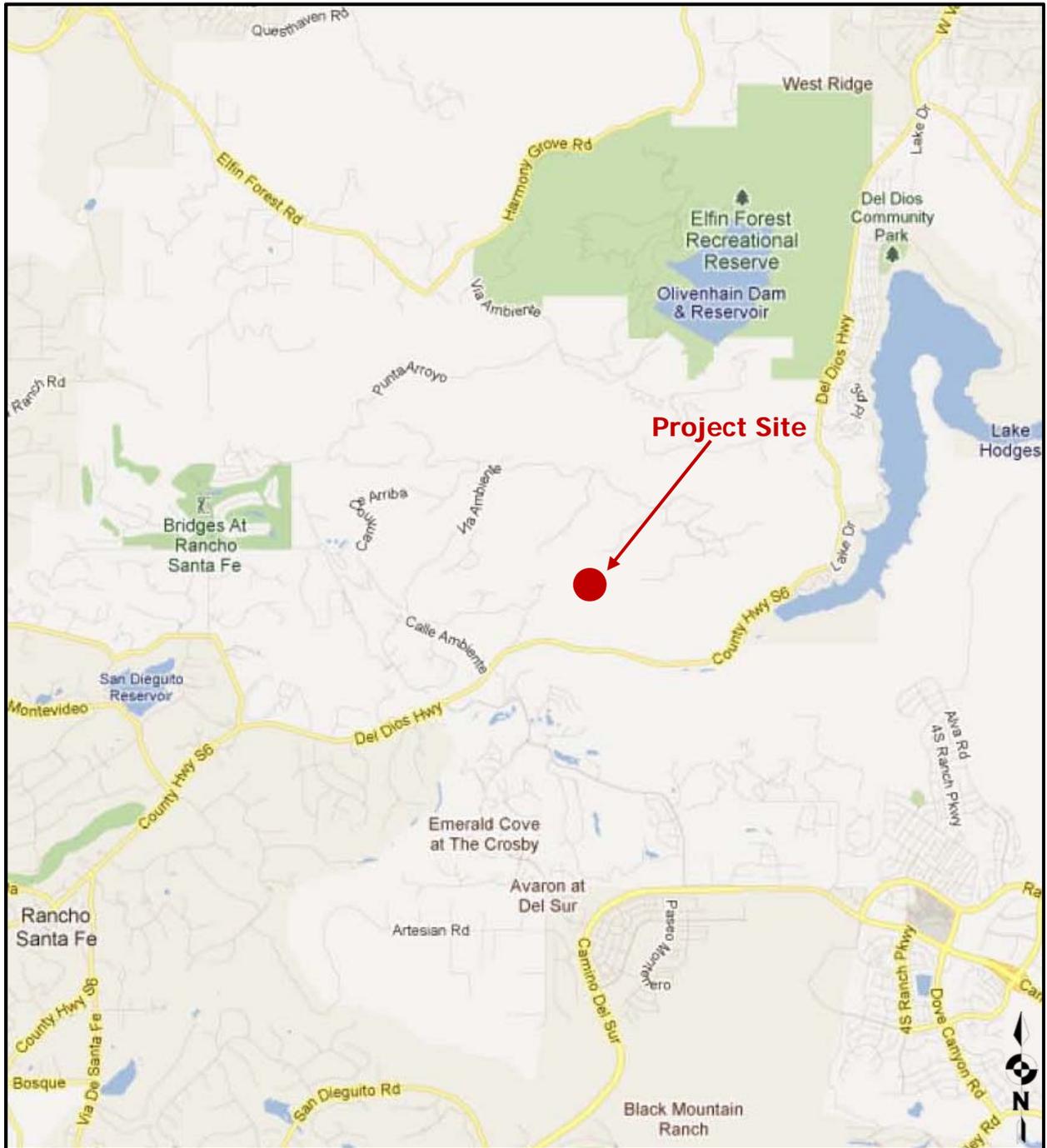
#### a) Settings & Locations

Access would be provided by extending Via Dora to serve the three single family homes residential lots proposed in the west; and the condominium lot and fifteen single family lots would in the northern area would take access off Cerro Del Sol. The project site includes mountainous terrains with great views of the surround communities. Befitting the overall rural setting, the community is served by one major roadway connecting Interstate 15 to the coastal area and Interstate 5. Existing land uses surrounding the site are primarily, residential and open space areas.

#### b) Existing Noise Conditions

The project is located near Del Dios Highway described as a community collector (2.2D) roadway in the County of San Diego's Circulation Element. Existing noise occurs mainly from traffic traveling along Del Dios Highway.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 8/11



### 1.3 Methodology and Equipment

#### a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, measurements were taken at a single location on the project having a limited view of Del Dios Highway because of the mountainous terrain and vertical offset of over 400 feet from the roadway. The noise measurements were recorded on August 30, 2011 by Ldn Consulting, Inc. between approximately 3:00 p.m. and 3:30 p.m.

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

The noise measurement locations were determined based on site access and noise impact potential to the proposed residences. Monitoring location 1 (M1) was located roughly 600-feet from Del Dios Highway near the boundaries of proposed Lot 16. The noise monitoring location is provided graphically in Figure 1-C on the following page.

The results of the noise level measurements are presented in Table 1-1. The noise measurements were monitored for a time period of 30 minutes. The ambient Leq noise levels measured in the area of the project during the afternoon were found to be roughly 52 dBA Leq. The existing noise levels in the project area consisted primarily of traffic along Del Dios Highway and to a lesser extent from minimal traffic along local roadways.

**Table 1-1: Existing Noise Levels**

Location	Time	Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	3:00–3:33 p.m.	51.9	38.4	71.4	49.2	44.0	41.6

Source: Ldn Consulting, Inc. August 30, 2011



## b) Noise Modeling Software

The expected roadway noise levels from were projected using Caltrans Sound32 Traffic Noise Prediction Model. Sound32 is a peak hour based traffic noise prediction model. The results of this analysis are based on the California Vehicle Noise Emission Levels (CALVENO). The Sound 32 model was calibrated in accordance with the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) and in accordance with Caltrans Technical Noise Supplement (TeNS) section N-5400. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volume.

The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes. The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the site plans provided by Excel Engineering and USGS data received on August 31, 2011. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the NSLU areas. Traffic was consolidated into a single lane located along the centerline of each roadway. Longer roadway segments were subdivided into a series of adjoining segments for analysis. For this analysis, the roadway segments were extended a minimum of 300 feet beyond the observer locations. No grade correction or calibration factor (according to Caltrans Policy TAN-02-01 dated January 17, 2002) was included as part of the Sound32 traffic noise prediction model analysis.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in NSLU areas and placed five feet above the pad elevation and near the center of the rear yard a minimum of ten feet from the top/bottom of slope. All second floor observers were located fifteen feet above the proposed pad elevation at the anticipated building facades.

## c) Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for

evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as sound travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

## 2.0 NOISE SENSITIVE LAND USES (NSLU)

### 2.1 Guidelines for the Determination of Significance

The County's General Plan Chapter 8 Noise Element uses the Noise Compatibility Guidelines listed in Table N-1 of the General Plan Noise Element (provided below) to determine the compatibility of land use when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

**TABLE N-1: NOISE COMPATIBILITY GUIDELINES (CNEL)**

Table N-1 Noise Compatibility Guidelines		Exterior Noise Level (CNEL)					
Land Use Category		55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior housing, convalescent homes						
B	Residential—multi-family residences, mixed-use (commercial/residential)						
C	Transient lodging—motels, hotels, resorts						
D*	Schools, churches, hospitals, nursing homes, child care facilities						
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries						
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation						
G*	Office/professional, government, medical/dental, commercial, retail, laboratories						
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair						
	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.						
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.						
	UNACCEPTABLE—New construction or development shall not be undertaken.						

\* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

*Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.*

A land use located in an area identified as “acceptable” indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the “conditionally acceptable” noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as “conditionally acceptable,” structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 of the General Plan Noise Element (provided below). For land uses where the exterior noise levels fall within the “unacceptable” range, new construction generally should not be undertaken.

**TABLE N-2: NOISE STANDARDS**

Table N-2	Noise Standards <sup>Note</sup>
1.	The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2.	The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3.	The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L <sub>eq</sub> (one hour average).
4.	For single-family detached dwelling units, “exterior noise level” is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: (i) for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; (iii) for lots over 10 acres in area, the exterior area shall include 1 acre.
5.	For all other residential land uses, “exterior noise level” is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. “Private Usable Open Space” is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. “Group Usable Open Space” is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6.	For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7.	For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8.	The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9.	For Categories E and F the exterior noise level standard shall not exceed the limit defined as “Acceptable” in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

## 2.2 Potential Noise Impacts

It is expected that the primary source of potential noise impacts to the project site will occur from traffic noise along Del Dios Highway. To determine the future noise environment and impact potentials the Sound32 model first needs to be calibrated using the ambient noise measurements results. The existing conditions were modeled to compare against the noise measurements described in Section 1.3.a of this report. Section N-5440 of the Caltrans Technical Noise Supplement provides detailed procedures for calibrating the Sound32 traffic noise prediction model. The comparison is made to ensure that predicted traffic noise levels accurately reflect the actual measured noise levels. Section N-5460 suggests that model calibration should not be performed when calculated and measured noise levels are within 1 dBA. Differences of 3 to 4 dBA are routinely calibrated to adjust for site conditions the Sound32 model did not account for including topographic features, soft site conditions and existing structures or barriers.

During the aforementioned ambient noise measurements, traffic counts were taken to determine the existing vehicle mix for the model calibration. Based on the results, the existing traffic noise model utilizes a vehicle mix of 98.3% Autos, 1.4% Medium Trucks and 0.3% Heavy Trucks along Del Dios Highway. Table 2-1 presents the roadway parameters used in the analysis including the calculated hourly traffic volumes, vehicle speeds and the traffic flow distribution (vehicle mix) for the existing conditions. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the Sound32 Model.

**Table 2-1: Existing Traffic Parameters**

Roadway <sup>1</sup>	Observed Traffic Volume	Observed Speeds (MPH)	Vehicle Mix %		
			Auto	Medium Trucks	Heavy Trucks
Del Dios Highway	1,304	50	96.4	2.8	0.8

<sup>1</sup> All roadway parameters were observed during the ambient noise measurement period.

The ambient measurement location was modeled in Sound32 to compare with the noise monitoring locations presented previously in Table 1-1. The modeled existing noise level comparison is provided in Table 2-2. The model is over predicting the noise levels 7.1 dBA using hard-site conditions and is within 0.4 dBA using soft-site conditions. These variations in the model prediction are due to the immense variations in the topography and natural shielding from the mountainous terrain. The roadway was modeled using soft site conditions

for the future noise environment and no calibration factor was applied to predict the first/ground floor areas. Second floor areas were modeled using hard site conditions based upon Caltrans Protocol. The existing model input parameters for calibration and output file are provided as Attachment A to this report.

**Table 2-2: Noise Model Calibration**

Receptor	Location	Site Conditions	Calibration Results (dBA)		
			Measured Noise Levels	Modeled Noise Levels	Difference
M1	~1,100-Feet from Del Dios Highway	Hard	48.9	56.0	+7.1
		Soft		48.5	-0.4 <sup>1</sup>

<sup>1</sup> Model is within 1 dBA and no calibration is needed.

a) Potential Build Out Noise Conditions

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by the County’s General Plan Update for 2030. The future traffic along Del Dios Highway near the project site is estimated to be 25,600 ADT. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-3. To assess the peak hour traffic noise conditions for both roadways, 10% of the ADT was utilized and the observed vehicle mix was also utilized.

**Table 2-3: Buildout 2030 Traffic Parameters**

Roadway	Average Daily Traffic (ADT)	Peak Hour Volume <sup>1</sup>	Modeled Speeds (MPH)	Vehicle Mix % <sup>2</sup>		
				Auto	Medium Trucks	Heavy Trucks
Del Dios Highway	25,600	2,560	55	95	3	2

<sup>1</sup> 10% of the ADT.  
<sup>2</sup> Conservative vehicle mix.

Del Dios Highway is considered Community Collector based on the County of San Diego Department of Public Works Public Road Standards with a designed traffic speed of 45-50 MPH. To determine the worst case future noise levels a speed limit of 55 MPH along Del Dios Highway was utilized to be conservative. The future traffic noise model also utilizes a conservative vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks along Del Dios Highway.

## b) Potential Noise Impact Identification

Noise contours are lines that when drawn from a noise source indicate a continuous or equivalent level of noise exposure. Noise contour lines are generally used as a planning tool to assess potential impacts and the need for additional analysis. The noise contour lines that may affect the project site were developed for the unshielded future Buildout conditions. No barriers or structures were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate the noise contours perpendicular to the roadways. No natural topography or road edges were incorporated in the contour model to determine the worst-case future noise levels. The model input parameters and results for the first and second noise contours are provided in Attachment B.

The 75 dBA CNEL contours are all located within the right-of-way (ROW) along the road edges. The worst-case first floor 60 dBA CNEL contour extends approximately 570-feet along Del Dios Highway. The second floor unshielded 60 dBA CNEL contour extends 1,270-feet from Del Dios Highway.

Figure 2-A provides the location of the future first and second floor 75 and 60 dBA CNEL noise contours for the proposed project layout. The noise contours provided in Figure 2-A show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard at the single-family lots or the 65 dBA CNEL standard at the multi-family units. Based on the findings, no additional exterior noise analysis is required for the proposed project and no mitigation measures that are required. Additionally, no first or second floor areas were found to be above the 60 dBA CNEL. Therefore an interior noise assessment will not be required for this project prior to the approval of building plan permits.

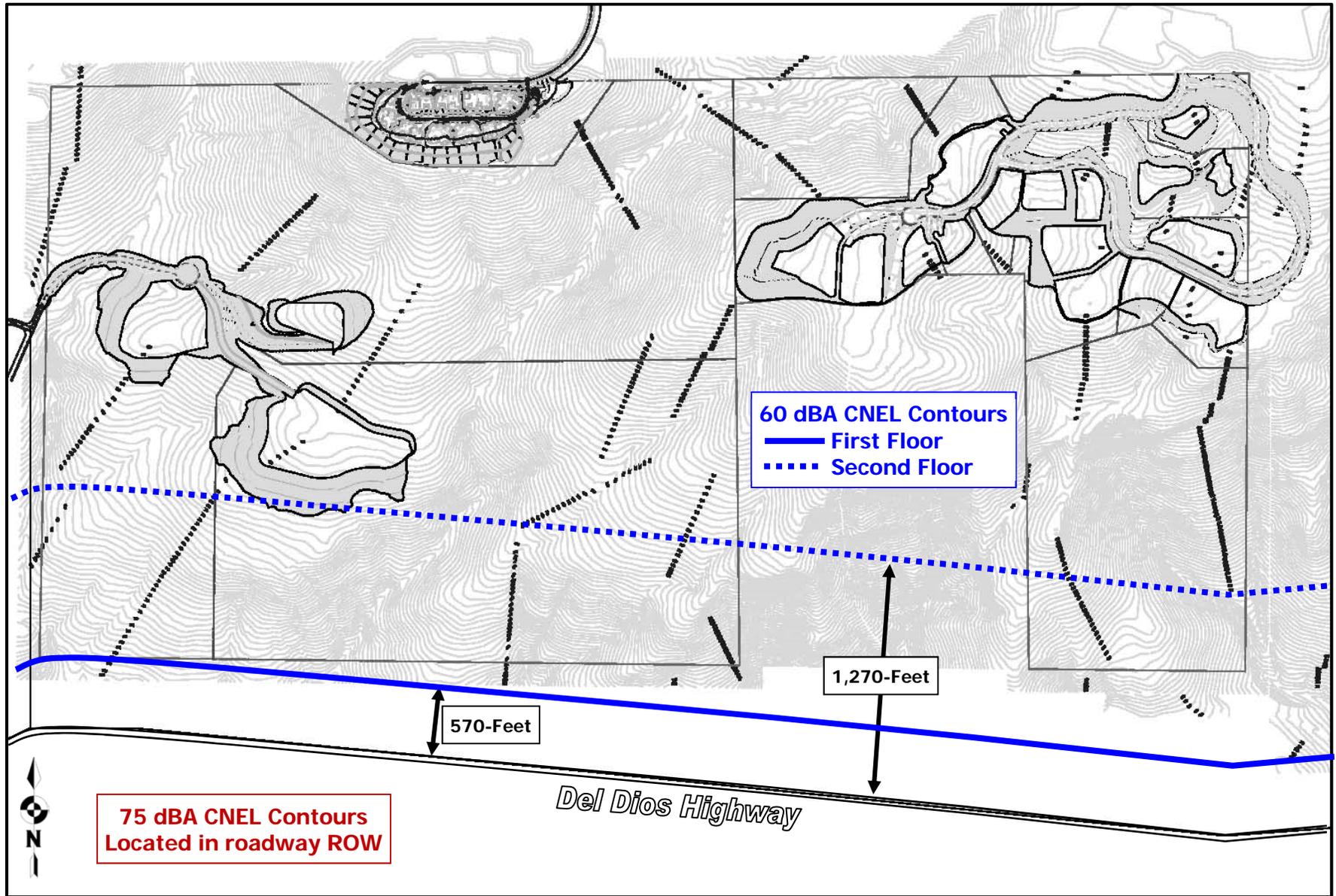
## 2.3 Off-site Noise Impacts

It is the understanding that development of the three project areas were originally analyzed in the Rancho Cielo Specific Plan and EIR for 46 single-family estate dwelling units and 19 multi-family dwelling units using 8 vehicle trip ends per dwelling unit. This resulted in 550 daily vehicles being generated ( $8 \times 65 = 550$ ). Comparison of the 550 daily trips generated by the approved project traffic to the proposed projects traffic results in 152 ( $550 - 368 = 152$ ) fewer vehicles being generated by the proposed development in areas 1, 2 and 3. Additionally, the trip generation is so low no impacts are anticipated and the traffic study does not provide cumulative details (Source: Rancho Cielo Madura (TM 5456, RPL2) Combined Project Traffic Assessment, Darnell and Associated, 2013.).

## 2.4 Conclusions

The noise contours show that the 75 dBA CNEL contours are all located within the right-of-way (ROW) along the road edges. The worst-case first floor 60 dBA CNEL contour extends approximately 570-feet along Del Dios Highway. The second floor unshielded 60 dBA CNEL contour extends 1,270-feet from Del Dios Highway. The noise contours for both the proposed project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas at the single-family lots or the 65 dBA CNEL standard at the multi-family units. Based on this finding, no additional exterior noise analysis is required and no mitigation measures are required. Additionally, an interior noise assessment will not be required for this project prior to the approval of building plan permits.

Figure 2-A: Future Noise Contour Locations



### **3.0 CONSTRUCTION ACTIVITIES**

#### 3.1 Guidelines for the Determination of Significance

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Sections as follows.

##### **SEC. 36.408: HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT**

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

- a. Between 7 p.m. and 7 a.m.
- b. On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections 36.409 and 36.410.

##### **SEC. 36.409: SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT**

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

##### **SEC. 36.410: SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE**

In addition to the general limitations on sound levels in section 36.404 and the limitations on construction equipment in section 36.409, the following additional sound level limitations shall apply:

- (a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410A (provided below), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410A are as described in the County Zoning Ordinance.

**TABLE 36.410A: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)**

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in Table 36.410B, when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in Table 36.410B are as described in the County Zoning Ordinance.

**TABLE 36.410B: MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA) FOR PUBLIC ROAD PROJECTS**

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

### 3.2 Potential Property Line Noise Impacts

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels 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 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day (also referred to as the duty-cycle) and any transmission loss from topography or barriers.

The project site is divided in three Units (single family Lots 1-15 & Lots 16-18 and the condominiums in Lot 19). The grading operations for Lots 1-15 & 19 are anticipated to last roughly 6 months but will be intermittent due to material demands. The project needs to export material from Lot 19 (condominiums) and haul the material to the location of Lots 1-15 on the northwestern portion of the site prior to the construction of the residential units. Lots 16-18 on the southwestern portion of the site balances and will essentially be its own grading operation due to access and separation from the other two portions of the site. Grading of Lots 16-19 is anticipated to take 2-3 months to complete. The single family units may most likely be developed on a lot-by-lot basis, which may result in some lots undergoing building construction simultaneously but all grading activities and internal roadways will be graded prior to the occupancy of any proposed Lots at each independent unit area.

According to the project applicant, a total of three dozers, a loader, three water trucks and two excavators during grading activities will be required to complete the proposed grading operations. Project construction activities also include blasting and rock crushing that will require one hoe ram, two rock drills and a small crushing facility to be utilized along with three haul trucks to transport material from Lot 19 to Lots 1-15 as described above. Excess rock and grading debris will be utilized on-site in the areas that fill material is needed. The anticipated equipment will be spread out over the three unit areas. For example: a single water truck and a single dozer will be utilized at each of the sites, not three at each. The list of equipment and the associated noise levels utilized in this analysis are shown in Table 3-1. The worst case anticipated construction noise levels during construction of the three unit areas are characterized below.

**Table 3-1: Reference Noise Levels for Construction**

Construction Phase	Construction Equipment	Quantity	Source Level @ 50 Feet (dBA) <sup>1</sup>
Grading and Base Operations	Dozer – D8	3	75
	Loader	1	70
	Water Truck	3	70
	Excavator	2	74
	Rock Drill	2	85
	Hoe Ram	1	85

<sup>1</sup> Source: EPA 1971 and Empirical Data

Grading Operations

The grading equipment listed in Table 3-1 will be spread out over the three unit areas as described above. The nearest residential property lines for each of the three unit areas is provided below in Table 3-2. It should be noted: currently no legal residential dwellings exist adjacent to Lots 1-15 or Lot 19 only graded Lots. To be conservative it was assumed that residential units could be occupied prior to or during the construction of this Project.

**Table 3-2: Distance from Construction Operations to Property Lines**

Unit Area	Nearest Property Line Description	Average Distance to the Property Line (Feet)
Lots 1-15	Directly to the North	450
Lots 16-18	Directly to the North	550
Lot 19	West across Via Dora	140

The amount of grading equipment that might be operating at the same time in a unit area is listed below in Table 3-3. These operations may be duplicated and occur simultaneously at each unit area. If all the equipment were placed in one location at each unit area, it would have a cumulative noise level of 78.9 dBA at 50 feet. Utilizing a typical 6 dBA reduction per doubling and the closest distance of 140 feet to the nearest residential property line, the noise levels will comply with the County of San Diego’s 75 dBA standard as shown in Table 3-3. The distance separation between the proposed unit areas is at least 900 feet. Therefore, if one unit area is built and occupied prior to the completion of another unit area, no impacts are anticipated because of the distance separation.

**Table 3-3: Grading Operation Noise Levels at each Unit Area**

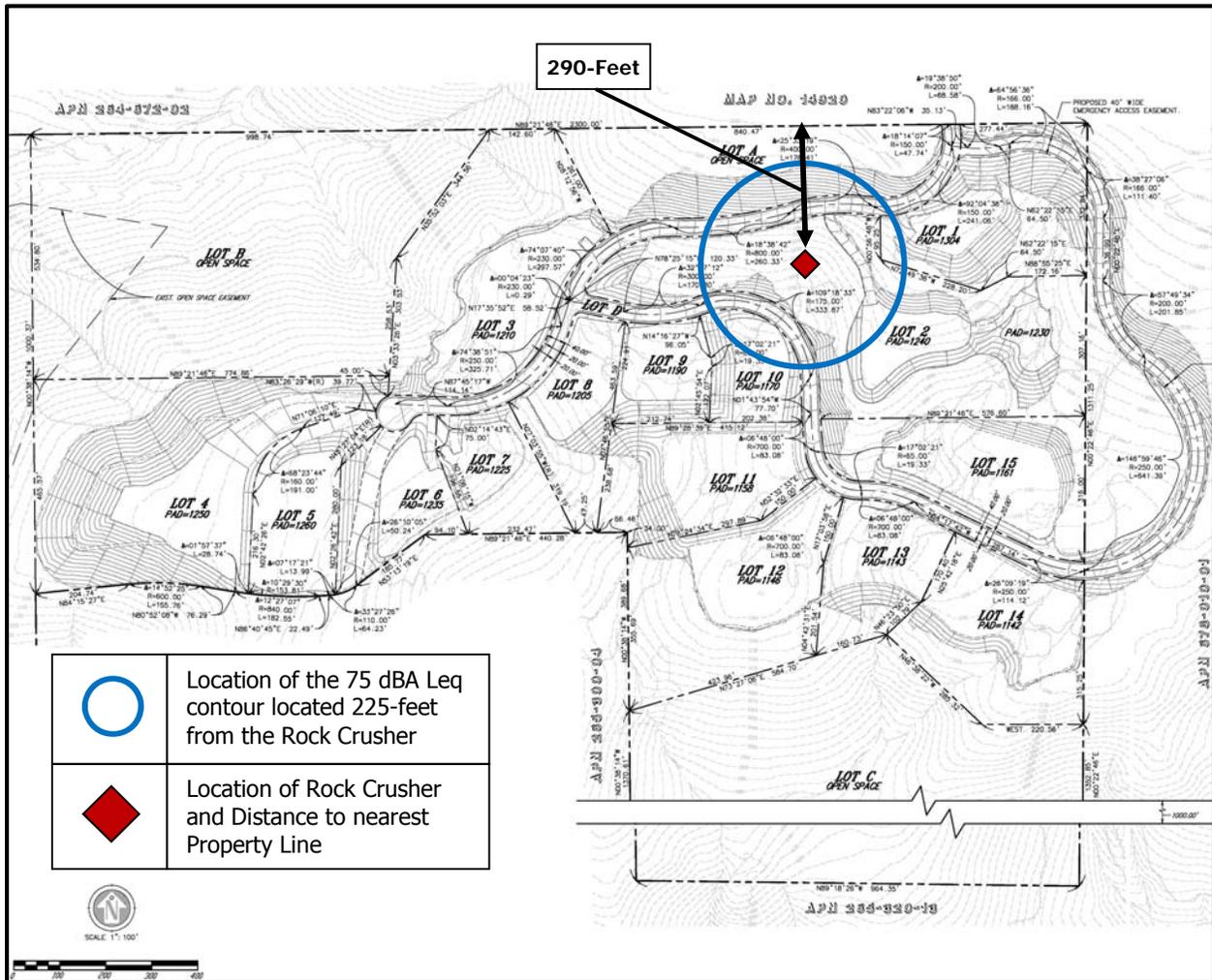
Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Dozer - D8 Cat	1	75	8	75.0
Loader	1	70	8	70.0
Water Truck	1	70	8	70.0
Excavator	1	74	8	74.0
Cumulative Levels @ 50 Feet (dBA)				78.9
Distance To Property Line				140
Noise Reduction Due To Distance				-8.9
<b>NEAREST PROPERTY LINE NOISE LEVEL</b>				<b>69.9</b>

Rock Crushing

Excess rock and grading debris will be crushed on site with the rock crushing operation and rock crusher to be located at one fixed location (central portion of Lots 1-15) for the duration of grading/rock crushing activities. The location of the rock crushers is provided in Figure 3-A. The project is proposing the use of a Pegson Model 4242 rock crusher or similar unit. The typical noise emission levels from a rock crusher of this size range between 85 and 88 dBA at 50 feet based upon previous analysis conducted by Ldn Consulting, Inc. The worst-case noise level of 88 dBA at 50 feet will be used in this analysis. In an unshielded condition, the required distance needed to attenuate the rock crushing activities by 13.0 decibels (88 minus the 75 dBA CNEL standard) is 225 feet. The 225 foot affected area is also shown on Figure 3-B for the rock crusher site, denoted as the 75 dBA Leq contour. Based on the 75 dBA Leq contours shown on Figure 3-B for the proposed rock crusher will not exceed the County standard.

The rock material is collected and crushed during the initial or "heavy" grading stage when the most significant amount of dirt and rock is moved. It is anticipated that the rock crusher will only be on site and operational once the stock piled material has been collected. The rock crushing operations are anticipated to last for approximately 2-4 weeks depending on weather conditions and final material quantities. When an adequate amount of crushed material has been generated, the rock crushing activities will cease and the equipment disassembled and moved offsite. This process takes place prior to the construction of homes and, therefore, no homes will be in place in Lots 1-15 during this time. It should be noted that the rock crushing activities are temporary and permitted with an approved grading plan. The rock crushing activities are permitted for on-site uses only. No off-site impacts will occur from any rock crushing activities. If rock crushing is still needed once Lots 16-18 or Lot 19 are occupied no impacts are anticipated and occupancy is not dependent on the rock crushing activities.

Figure 3-A: Rock Crusher Activities and Property Lines



### Blasting Operations

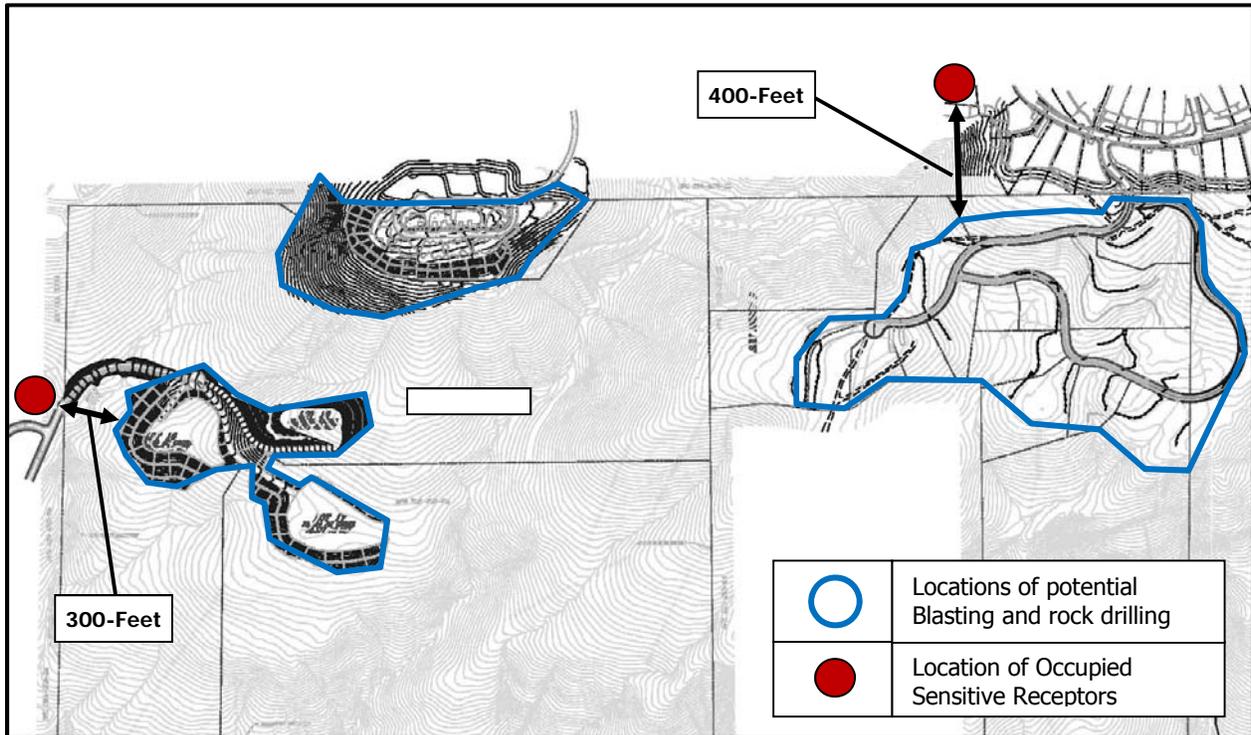
Areas of the project site that require deeper cuts and where the native material is not easily ripable (graded) may require blasting and the use of rock drills and a hoe ram to prepare the finish grading. The two rock drills and single hoe ram would be moved around the site on an as needed basis dependent upon the site characteristics. The use of two rock drills and a hoe ram would occur independently of all other proposed equipment. The drilling and blasting operation would occur then the grading equipment would relocate or remove the debris. To determine the worst-case noise levels from the drilling operations both drills and the hoe ram equipment was placed in a centroid location on the site, which is not physically possible. The cumulative noise level for all pieces of equipment would be 89.8 dBA at 50 feet. Utilizing a 6 dBA reduction per doubling of distance, at distances of 275 feet from any property line, the noise levels will comply with the County of San Diego's 75 dBA standard as shown in Table 3-4.

**Table 3-4: Construction Noise Levels with Blasting**

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Rock Drill	2	85	8	88.0
Hoe Ram	1	85	8	85.0
Cumulative Levels @ 50 Feet (dBA)				89.8
Distance To Property Line				275
Noise Reduction Due To Distance				-14.8
<b>NEAREST PROPERTY LINE NOISE LEVEL</b>				<b>75.0</b>

Blasting will occur on an as-needed basis across the site. Currently no blasting is anticipated within 275 feet of any occupied noise sensitive land uses; therefore no noise or vibration impacts are anticipated. If residential units are built and occupied while blasting is occurring within 275 feet then noise mitigation would be required and the blasting contractor should conduct a pre-blast survey to determine if any sensitive uses need to be monitored during blasting operations. The potential blasting areas and distances to the nearest occupied sensitive residential uses is shown graphically in Figure 3-B below.

**Figure 3-B: Potential Blasting Activities and Occupied Property Lines**



In the unlikely event that all grading, drilling and blasting equipment is staged within 275 feet of any occupied noise sensitive land use, it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. If impacts are anticipated, a mitigation plan should be developed that may include a temporary noise barrier along any property line where the impacts could occur. The mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The height of this noise barrier can range from 8 to 12 feet in height. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold.

The mitigation plan can also limit the usage of the equipment (amount of time used and/or the location in respect to the property line). Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 of the establishing permitting and notification procedures.

### Biological Impacts

In 1991, the U.S. Fish and Wildlife Service (USFWS) recommended that hourly noise levels not exceed 60 dBA Leq or ambient conditions, whichever is greater, to protect the California Gnatcatcher and other bird species. The County of San Diego has adopted this standard for all sensitive species. Therefore, the 60 dBA Leq or ambient was used as the noise criteria to assess noise impacts on sensitive wildlife both on-site and off-site. Construction activities may occur during a sensitive habitat nesting/breeding season for both Units. If construction activities occur during any of the Unit development within 450 feet of an identified sensitive habitat location, unshielded noise levels may be above 60 dBA Leq and impacts could occur. If construction activities along with drilling and blasting activities occur during any of the Unit development within 1,500 feet of an identified sensitive habitat location the noise level may be above 60 dBA Leq and impacts could occur.

This is a worst-case scenario that does not take into account topography, duty-cycles or the separation of the anticipated equipment. As a design measure during the nesting/breeding season the proposed project applicant may be required to install a temporary noise barrier if a sensitive habitat or nest is found by the project's biologist and construction equipment is located within aforementioned distances. The temporary barrier would need to be installed between the identified sensitive habitat or nest site and the current grading operations. The proposed noise barrier will need to be of solid non-gapping wood construction to comply with the County of San Diego's standard for sensitive habitats.

If clearing, grubbing, and grading activities are proposed during the period of February 1 to August 31 of any year, and the Biological Monitor has determined that there are sensitive bird

nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: A County approved acoustical consultant shall perform noise measurements to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed the 60 dBA Leq or ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

Periodic monitoring during the breeding season of noise levels at nest sites shall be performed to verify that construction noise levels are maintained at acceptable levels. The Project's Biological Monitor shall notify the County Department of Public Works Construction Inspector if noise measurements exceed the standard at any nest. These recommendations should be placed on the face of the grading or improvement plans.

### 3.3 Conclusions

The grading activities will consist of the preparation of the proposed internal roadways and the finished pads. The nearest property line with an existing residence on Via Dora is located approximately 550 feet from the construction activities and no impacts are anticipated due to distance. Potential residential structures could be built as close as 140 feet from the grading operations near Lot 19. It was determined that grading operations would be below the County standards at a distance of 140 feet and no impacts are anticipated.

Based on the unshielded 75 dBA Leq contours from the rock crusher, which extends 225 feet, the rock crushing operation would not exceed the County standard and no noise impacts will occur from any rock crushing activities. If rock crushing is still needed once Lots 16-18 or Lot 19 are occupied no impacts are anticipated and occupancy is not dependent on the rock crushing activities.

Blasting will occur on an as-needed basis across the site. Currently no blasting is anticipated within 275 feet of any occupied noise sensitive land uses; therefore no noise or vibration impacts are anticipated. If residential units are built and occupied while blasting is occurring within 275 feet then noise mitigation would be required and the blasting contractor should conduct a pre-blast survey to determine if any sensitive uses need to be monitored during blasting operations.

If drilling and blasting equipment is staged within 275 feet of any occupied noise sensitive land use, it is recommended that a specific mitigation plan based upon the location of the

construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. If impacts are anticipated, a mitigation plan should be developed that may include a temporary noise barrier along any property line where the impacts could occur. The mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The height of this noise barrier can range from 8 to 12 feet in height. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also limit the usage of the equipment (amount of time used and/or the location in respect to the property line). Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 of the establishing permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the period of February 1 to August 31 of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: A County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

#### **4.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS**

- On-Site Noise Analysis

The future noise contours for both the proposed project show that noise sensitive land use (NSLU) areas will not exceed the County of San Diego 60 dBA CNEL exterior noise standard for more than 10% of the entire pad or lot areas at the single-family lots or the 65 dBA CNEL standard at the multi-family units. Based on this finding, no additional exterior noise analysis is required and no mitigation measures are required. Additionally, an interior noise assessment will not be required for this project prior to the approval of building plan permits.

- Off-Site Noise Analysis

It is the understanding that development of the three project areas were originally analyzed in the Rancho Cielo Specific Plan and EIR for 46 single-family estate dwelling units and 19 multi-family dwelling units using 8 vehicle trip ends per dwelling unit. This resulted in 550 daily vehicles being generated ( $8 \times 65 = 550$ ). Comparison of the 550 daily trips generated by the approved project traffic to the proposed projects traffic results in 152 ( $550 - 368 = 152$ ) fewer vehicles being generated by the proposed development in areas 1, 2 and 3. Additionally, the trip generation is so low no impacts are anticipated and the traffic study does not provide cumulative details (Source: Rancho Cielo Madura (TM 5456, RPL2) Combined Project Traffic Assessment, Darnell and Associated, 2013.).

The project or the project alternative do not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

The grading activities will consist of the preparation of the proposed internal roadways and the finished pads. The nearest property line with an existing residence on Aquilla Drive is located approximately 150 feet from any construction activities and no impacts are anticipated due to distance. The distance from the nearest property line of Unit One to Unit Two is at least 485 feet. Therefore if Unit One is built and occupied prior to the development of Unit Two, or if Unit Two is built and occupied before Unit One, no impacts are anticipated because of the distance separation.

Based on the unshielded 75 dBA Leq contours from the rock crusher, which extends 225 feet, the only on-site lots that would exceed the County standard are Lots 97 and 98 when the rock

crusher is located at Lot 126. Lots 97 and 98 cannot be occupied prior to the conclusion of rock crushing activities at Unit Two unless a site specific noise assessment has been conducted to reduce rock crushing noise levels below the 75 dBA threshold. No off-site impacts will occur from any rock crushing activities. All other proposed Lots will comply with the 75 dBA Leq standard and occupancy is not dependent on the rock crushing activities.

If drilling and blasting equipment is staged within 275 feet of any occupied noise sensitive land use, it is recommended that a specific mitigation plan based upon the location of the construction equipment, topography and construction schedule be identified by a County certified acoustical engineer. If impacts are anticipated, a mitigation plan should be developed that may include a temporary noise barrier along any property line where the impacts could occur. The mitigation plan would determine the height and location of a temporary barrier, if one is necessary. The height of this noise barrier can range from 8 to 12 feet in height. The proposed noise barrier will need to be of solid non-gapping material to adequately reduce construction noise levels below the County's threshold. The mitigation plan can also limit the usage of the equipment (amount of time used and/or the location in respect to the property line). Blasting operations must comply with the County's Consolidated Fire Code (2011) Section 3301.2 of the establishing permitting and notification procedures.

If clearing, grubbing, and grading activities are proposed during the period of February 1 to August 31 of any year, and the biological monitor has determined that there are sensitive bird nests within the projected 60 dBA Leq construction noise contour, the following recommendations would apply: A County approved acoustical consultant shall perform noise measurements within the projected contour to assess the ambient noise levels in the absence of construction activities. The intent of these measurements is to establish baseline noise levels in the occupied habitat without construction. If the construction noise levels at nest sites during the breeding season are anticipated to exceed 60 dBA Leq or the ambient condition, whichever is higher, noise attenuation measures including, but not limited to, noise barriers and noise reducing features on construction equipment shall be implemented as necessary to maintain construction noise at acceptable levels at nest sites.

## **5.0 CERTIFICATIONS**

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the Rancho Cielo Madura (TM 5456RPL2) residential development. The report was prepared by Jeremy Loudon; a County approved CEQA Consultant for Acoustics.

**DRAFT**

\_\_\_\_\_  
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Date May 17, 2013

**ATTACHMENT A**

MODEL CALIBRATION INPUT AND OUTPUT FILES

Rancho Cielo Madura - Existing Conditions

T-PEAK HOUR TRAFFIC CONDITIONS, 1

1308 , 50 , 36 , 50 , 12 , 50

L-Del Dios Highway, 1

N,-2856,-1048,170,

N,-1620,-788,148,

N,0.,0,128,

N,469.,0,132,

N,5326,-477,158,

N,7104,-346,180,

R, 1 , 67 ,500

-365,946,420.,Hard

R, 2 , 67 ,500

-365,946,420.,Soft

D, 4.5

1 ,2

C,C

SOUND32 - RELEASE 07/30/91

TITLE:

Rancho Cielo Madura - Existing Conditions

BASED ON FHWA-RD-108 AND  
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER LEQ

-----  
Hard 56.0

Soft 48.5

**ATTACHMENT B**

FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES

Rancho Cielo Madura - Future Ground Level Contours

T-PEAK HOUR TRAFFIC CONDITIONS, 1

2432 , 55 , 77 , 55 , 51 , 55

L-Del Dios Highway, 1

N,-2856,-1048,170,

N,-1620,-788,148,

N,0.,0,128,

N,469.,0,132,

N,5326,-477,158,

N,7104,-346,180,

R, 1 , 67 ,500

100,100,180.,

R, 2 , 67 ,500

2344,-78,250.,

R, 3 , 67 ,500

4308,-270,280.,

R, 4 , 67 ,500

6120,-318,230.,

R, 5 , 67 ,500

6120,-120,265.,

R, 6 , 67 ,500

4308,-78,470.,

R, 7 , 67 ,500

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R, 8 , 67 ,500

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R, 9 , 67 ,500

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R, 10 , 67 ,500

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R, 11 , 67 ,500

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R, 12 , 67 ,500

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R, 13 , 67 ,500

6120,280,345.,

R, 14 , 67 ,500

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R, 15 , 67 ,500

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R, 16 , 67 ,500

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R, 17 , 67 ,500

900,860,555.,

R, 18 , 67 ,500

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R, 19 , 67 ,500

4308,530,755.,

R, 20 , 67 ,500

6120,481,425.,

R, 21 , 67 ,500

6120,682,435.,

R, 22 , 67 ,500

4308,730,800.,

R, 23 , 67 ,500

2344,926,710.,

R, 24 , 67 ,500

1100,1040,635.,

D, 4.5

1 ,ALL

C,C

SOUND32 - RELEASE 07/30/91

TITLE:  
Rancho Cielo Madura - Future Ground Level Contours

BASED ON FHWA-RD-108 AND  
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
R-1	68.9
R-2	67.1
R-3	66.4
R-4	68.7
R-5	62.0
R-6	59.9
R-7	60.3
R-8	61.7
R-9	58.1
R-10	57.8
R-11	56.5
R-12	58.3
R-13	55.9
R-14	54.7
R-15	55.5
R-16	55.7
R-17	53.9
R-18	52.4
R-19	53.3
R-20	53.8
R-21	52.3
R-22	52.1
R-23	52.3
R-24	52.5

Rancho Cielo Madura - Future Second Level Contours

T-PEAK HOUR TRAFFIC CONDITIONS, 1

2432 , 55 , 77 , 55 , 51 , 55

L-Del Dios Highway, 1

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N,-1620,-788,148,

N,0.,0,128,

N,469.,0,132,

N,5326.,-477,158,

N,7104.,-346,180,

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R, 2 , 67 ,500

2344,-78,260.,

R, 3 , 67 ,500

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R, 4 , 67 ,500

6120,-318,240.,

R, 5 , 67 ,500

6120,-120,275.,

R, 6 , 67 ,500

4308,-78,480.,

R, 7 , 67 ,500

2344,122,435.,

R, 8 , 67 ,500

300,300,275.,

R, 9 , 67 ,500

500,500,365.,

R, 10 , 67 ,500

2344,324,460.,

R, 11 , 67 ,500

4308,127,655.,

R, 12 , 67 ,500

6120,80,340.,

R, 13 , 67 ,500

6120,280,355.,

R, 14 , 67 ,500

4308,328,735.,

R, 15 , 67 ,500

2344,523,555.,

R, 16 , 67 ,500

700,680,475.,

R, 17 , 67 ,500

900,860,565.,

R, 18 , 67 ,500

2344,725,985.,

R, 19 , 67 ,500

4308,530,765.,

R, 20 , 67 ,500

6120,481,435.,

R, 21 , 67 ,500

6120,682,445.,

R, 22 , 67 ,500

4308,730,810.,

R, 23 , 67 ,500

2344,926,720.,

R, 24 , 67 ,500

1100,1040,645.,

C,C

SOUND32 - RELEASE 07/30/91

TITLE:  
Rancho Cielo Madura - Future Second Level Contours

BASED ON FHWA-RD-108 AND  
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
R-1	71.6
R-2	70.3
R-3	69.9
R-4	71.3
R-5	66.8
R-6	65.5
R-7	65.7
R-8	66.7
R-9	64.2
R-10	64.0
R-11	63.1
R-12	64.1
R-13	62.4
R-14	61.7
R-15	62.4
R-16	62.5
R-17	61.2
R-18	60.1
R-19	60.7
R-20	60.8
R-21	59.7
R-22	59.8
R-23	60.0
R-24	60.1