

APPENDIX K

Noise Assessment

NOISE ASSESSMENT

**Warner Ranch Residential Development
TM 5508, GPA 06-009
County of San Diego CA**

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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 μ 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 project. The project known as "Warner Ranch" (TM 5508) envisions providing 534 Single-Family detached homes and 246 Multi-Family attached townhomes and 11.93 acres of park and recreation areas with 4.23 acres of that area opened to the public. Additionally, the Project would build parks and a fire station to serve the community. Additionally, the project would build parks and a fire station to serve the community. The project is adjacent to State Route 76 just west of Pala Temecula Road approximately five miles east of Interstate 15. The project is located in the northern portion of the unincorporated community of Pala in north San Diego County, CA.

- **On-Site Traffic Noise Analysis**

It was determined from the detailed analysis that the single family NSLU's adjacent to the roadways will not comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western portion of the site. The noise affected outdoor areas of proposed lots located closest to SR-76 or having direct line of sight to SR-76 on the of the site will require noise barriers ranging in height from six (6) to nine (9) feet. Lots 221-225 require 6-foot barriers along with Lots 321-333. Lots 319 and 320 require 7-foot barriers. Lots 219, 220 and 213 require 8-foot barriers (with a 6-foot barrier on the side yard of Lot 213). Lots 214-218 require 9-foot barriers.

The multifamily units in the center of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor private use areas. Therefore, if balconies are provided at the multifamily units no second floor impacts are anticipated since the required private use areas are all located on the ground floor. The park and recreational areas along SR-76 were found to comply with the County's 70 dBA threshold.

With the incorporation of the mitigation measures, the first floor building facades of the single family dwellings will comply with the General Plan Noise Element Standard, of 60 dBA CNEL. Exterior noise levels at the second floor building facades were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL at single family and multifamily dwellings. Therefore, an interior noise assessment is required to mitigate the exterior noise levels to an interior level of 45 dBA CNEL. All proposed sensitive uses located within 800 feet of SR-76 could exceed the 60 dBA CNEL threshold at the building façade and may need interior mitigation. The affected Lots of the project that will require an interior noise assessment consist of single family Lots 145-148, 178-230, 313-338 and 392-404. Multi-family Lots 267-270 and 278-284 will also require an interior noise assessment. Additionally, the proposed fire station is anticipated to have living quarters for on-duty staff. The exterior noise levels at the fire station building façade could be as high as 72

dBa CNEL and an interior analysis is needed to reduce interior noise levels to 45 dBA CNEL once the final design and architectural plans are available.

The interior noise assessment should be conducted prior to the issuance of building permits and would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods by providing a window condition requiring a means of mechanical ventilation (e.g. air conditioning) and providing upgraded windows at all affected lots.

- Off-Site Traffic Noise Analysis

The project does not directly create a noise level increase of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses. There are cumulative noise increases of more than 3 dBA CNEL on several roadway segments along SR-76 but the Project related cumulative increases are below 1 dBA CNEL on all cumulatively impacted roadways. Therefore, the proposed project's contributions to cumulative off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

At a distance as close as 170-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -10.6 dBA. This would result in an anticipated worst-case noise level of 75 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels will comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines.

To reduce the impulsive maximum noise levels to the County's 82 dBA threshold, the rock drills would need to be located 200 feet from the nearest occupied residential property line or only operate 25% of the hourly or daily duration when located within that distance. In the event that the rock drills are staged within 200 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. 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 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 nesting/breeding season 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.

Off-site construction would also be required for sewer line improvements and connection along SR-76. Excavation and pipeline equipment used for sewer pipeline projects would generate similar noise levels as roadway improvements and the amount of equipment utilized would be limited due to alignment and work area constraints. Based on a construction area of approximately 50 feet by 300 feet, the average hourly off site construction noise levels would be approximately 75 dBA Leq at the edge of the roadway right-a-way and 72 dBA Leq or lower at 50 feet from the edge of roadway construction. During maximum effort with several pieces of equipment operating at the same time in close proximity or during excavation, maximum noise levels of 76-80 dBA Lmax may be experienced at local residences; however, these would last for a few seconds at any specific location. The sewer line improvements are anticipated to move from the project site to the west in 200-300 foot increments. Therefore, the construction would only occur directly adjacent to the homes for one to two days. Noise levels would not exceed the County's construction noise levels limits and no impacts are anticipated.

- Operational Noise Analysis

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. Emergency operations from the proposed fire station are exempt under Section 36.405 Subsection (d) of the County Noise Ordinance. Therefore no impacts will occur and no mitigation is needed for the fire station operations. The proposed generator at the Sewer Pump/Lift Station was found to comply with the County's most restrictive nighttime standards and no impacts are anticipated and no mitigation is required. Once the facility is fully operational a Certification Test is required as part of the project conditions to demonstrate compliance with the County Noise Ordinance.

- Vibration Analysis

There are no existing or proposed frequent activities on or near the proposed project site which would cause any significant vibration levels to existing buildings near the project site and no impacts are anticipated.

1.0 INTRODUCTION

1.1 Project Description

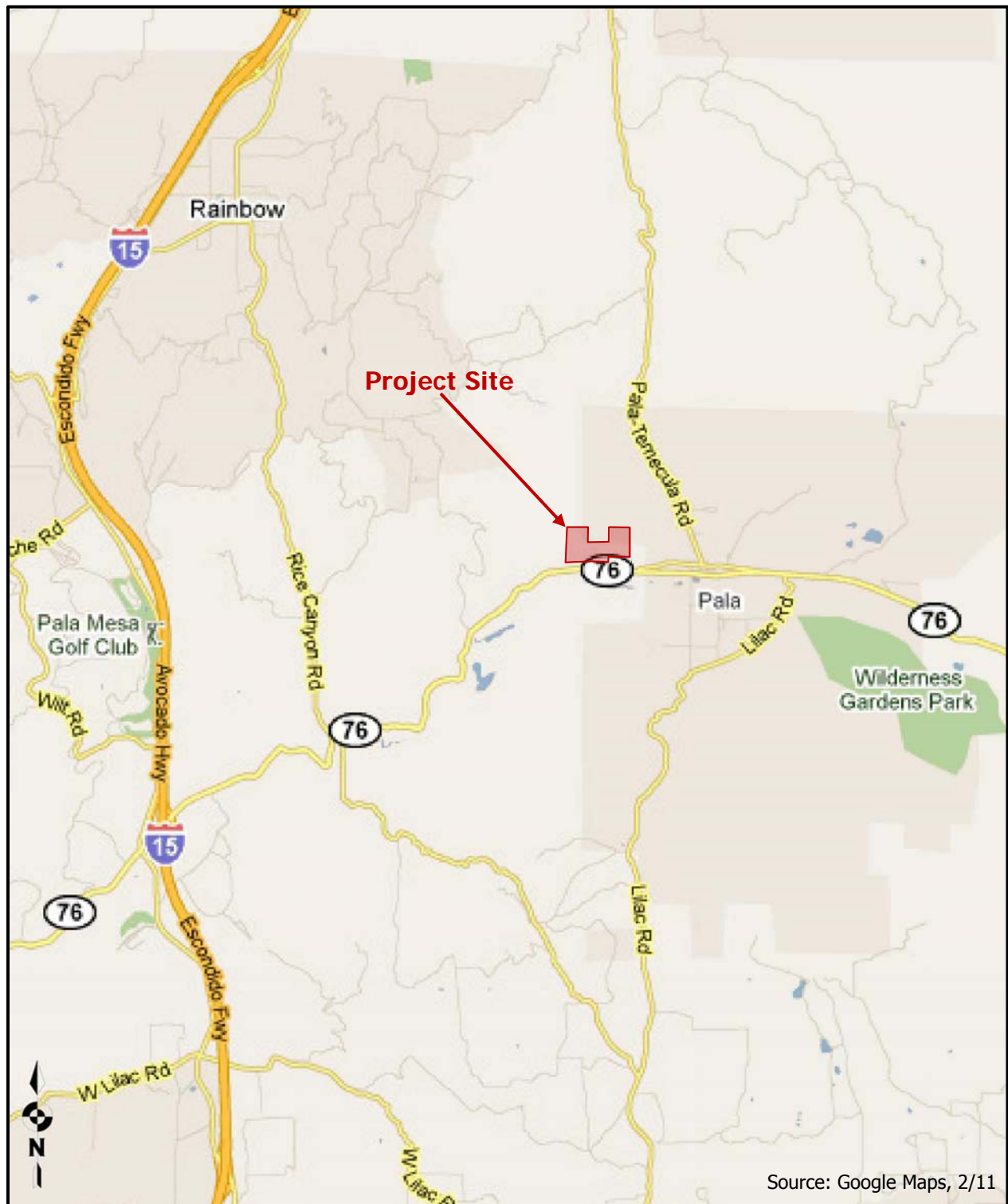
This noise study was completed to determine the noise impacts associated with the development of the proposed Warner Ranch Residential Project. The project is located at 33° 21' 57" N and 117° 5' 40" W, north of State Route 76 (SR-76) and west of Pala Temecula Road approximately five miles east of Interstate 15 in the northern portion of the unincorporated area of San Diego County CA. The general location of the project is shown on the Vicinity Map, Figure 1-A. A general project vicinity map is shown in Figure 1-A on the following page.

The proposed Warner Ranch Project is primarily envisioned to provide a range of workforce housing opportunities consistent with the Job/Housing Balance goals and policies of the San Diego County General Plan. The proposed project envisions providing 534 Single-Family detached homes and 246 Multi-Family attached townhomes and 11.93 acres of park and recreation areas with 4.23 acres of that area opened to the public. Additionally, the project would have 14.65 acres of landscaped areas around the project. Furthermore, the project would permanently create 358.77 acres of preserved open space. Also, as part of the project, a 10,000 SF fire station will be built onsite. The recently adopted General Plan and associated Pala/Pauma Community Plan provides for the implementation of this project by designating this 513-acre property as a Special Study Area (SSA).

The SSA requires preparation of specific studies relative to Job/Housing Balance, Infrastructure, and Community Compatibility as part of an upcoming General Plan Amendment to allow for higher density residential development within this SSA. Consistent with the SSA requirements, the Warner Ranch Project proposes General Plan Amendment (GPA), Specific Plan, Rezone, and Vesting Tentative Map to develop 513 acres with 780 residential units and associated public and private facilities and services.

The project area is within County Service Area (CSA) 135, and the fire station would be constructed on-site fronting SR 76. To meet fire safety requirements, two emergency access roads would be on the eastern and western site boundaries, also accessible from SR 76. Another secondary access road would link the property to Pala/Temecula Road to the east. The 28-foot wide road bed and associated fuel modification zone would be aligned along an existing dirt road which runs through the northeastern portion of the site to Pala/Temecula Road. Fuel modification zones will also be included adjacent to the development areas, outside of the biological open space to be preserved.

Figure 1-A: Project Vicinity Map



Preparation of the site for development would involve the mass grading of approximately 175 acres which would be expected to require approximately 2.3 Million Cubic Yards (CY) of onsite material movement of which approximately 1,283,423 Cubic Yards would be developed from onsite blasting. The Project grading would be expected to take approximately 27 months to complete with trenching and finish grading lasting an additional three months. After the 30-month grading period, the Project applicant would begin paving the site and building the fire station and residential units. The residential units will be phased in accordance with necessary infrastructure improvements to support the units. The entire build out of the Project would be expected no sooner than 2020. The proposed site development plan is shown in Figure 1–B on the following Page.

The project proposes to both utilize existing alternative transportation conveniences as well as implement new bike and pedestrian walkways throughout the project. North County Transit District (NCTD) provides route 389 that services the Pala community. The routes last scheduled bus stop is at the Pala Casino just across the street from the project frontage. Also, a Class II bike lane is proposed in accordance with the San Diego County General Plan Mobility Element along the project frontage.

1.2 Environmental Settings & Existing Conditions

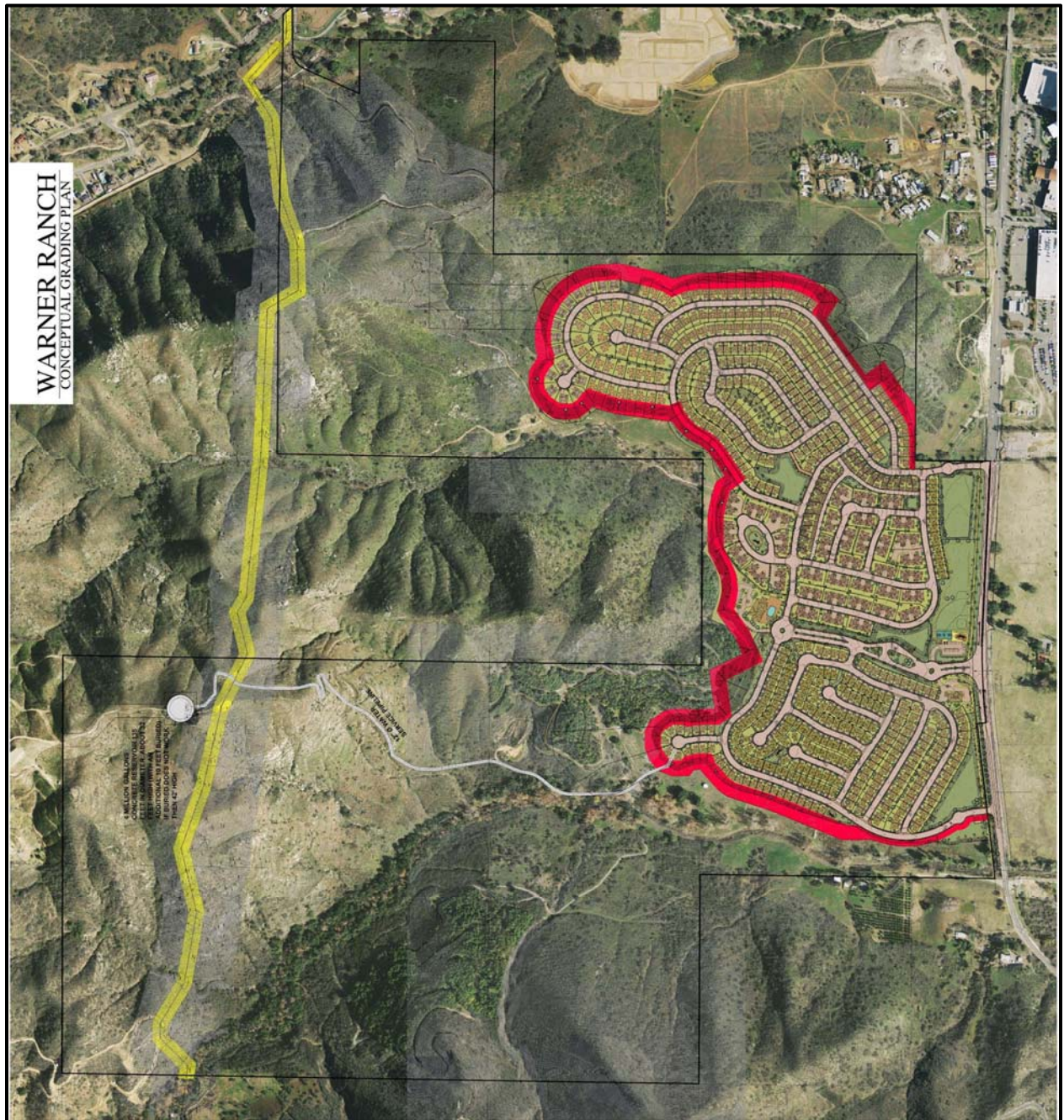
a) Settings & Locations

The project is adjacent to State Route 76 just west of Pala Temecula Road. Access to the project site is provided by State Route 76. State Route 76 and Pala Temecula Road are arterials that connect the project to other arterials. Existing land uses surrounding the site are primarily agricultural, residential and open space areas and the Pala Casino to the east.

b) Existing Noise Conditions

The project is located adjacent to SR-76 which varies in its classification from a 2 lane highway, to a 4 lane collector, to a 4 lane major roadway in the County of San Diego's Circulation Element with a posted speed limit of 55 miles per hour (MPH). Existing noise occurs mainly from traffic traveling along SR-76 and to a lesser extent from nearby agricultural operations.

Figure 1-B: Proposed Project Site Layout



Source: Shapouri & Associates, 2/13



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 two locations on the project having a direct line of site to SR-76 having a relatively flat terrain and no obstruction from trees or rock outcroppings. This was done to determine the worst case conditions at the nearest proposed NSLU. The noise measurements were recorded on May 25, 2010 by Ldn Consulting between approximately 1:40 p.m. and 2:30 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.

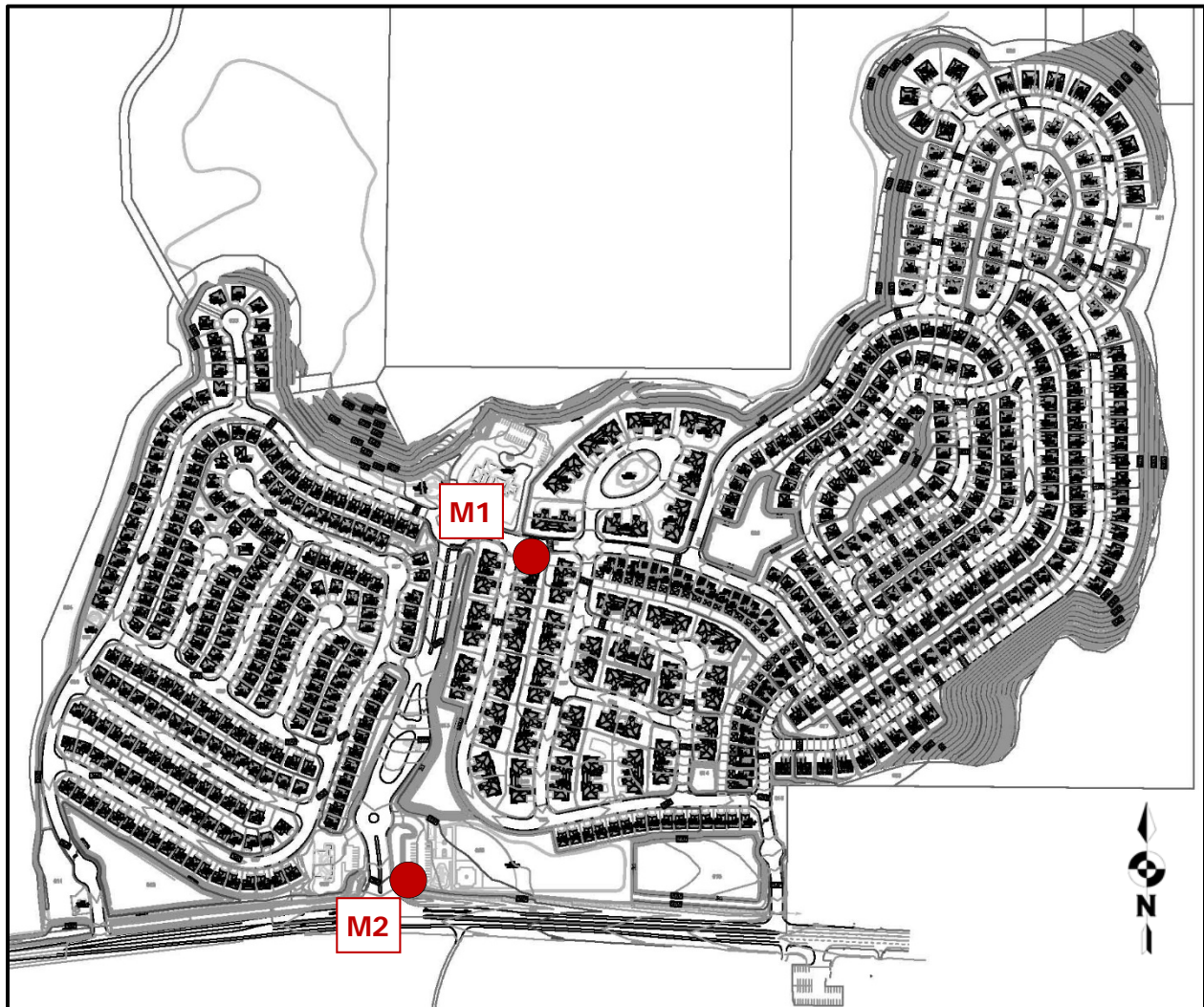
The noise measurement locations were determined based on site access and noise impact potential to the proposed sensitive uses. Monitoring location 1 (M1) was located approximately 1,200 feet from SR-76 near the center of the site and monitoring location 2 (M2) was roughly 30-feet from SR-76 near the main entrance of the project site. The noise monitoring locations are 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 at M1 were monitored for a time period of 10 minutes and at M2 for a time period of 30 minutes. The ambient Leq noise levels measured in the area of the project during the early afternoon hour were found to be roughly 68 dBA adjacent to SR-76 and 48 dBA near the center of the site. The existing noise levels in the project area consisted primarily of traffic along SR-76 and background noise from agricultural operations is the distance.

Table 1-1: Existing Noise Levels

Location	Time	One Hour Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	1:40–1:50 p.m.	47.8	40.6	62.1	49.5	46.8	44.3
M2	2:00–2:30 p.m.	68.3	48.9	83.1	72.0	64.4	53.7
Source: Ldn Consulting, Inc. May 25, 2010							

Figure 1-C: Noise Measurement Locations



b) Noise Modeling Software

The expected roadway noise levels from State Route 76 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 preliminary site plans provided by Shapouri & Associates received December, 2012. 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								
Land Use Category		Exterior Noise Level (CNEL)						
			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 ^{Note}
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 _{eq} (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 State Route 76 (SR-76). 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 96.2% Autos, 1.9% Medium Trucks and 1.9% Heavy Trucks along SR-76. 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 ¹	Observed Traffic Volume	Observed Speeds (MPH)	Vehicle Mix %		
			Auto	Medium Trucks	Heavy Trucks
State Route 76	634	50/45 ²	96.2	1.9	1.9
¹ All roadway parameters were observed during the ambient noise measurement period at M1.					
² Trucks were observed traveling at a slowing speed during the monitoring.					

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 below. The model is over predicting the noise levels from 0.8 to 4.9 dBA using hard-site conditions and is within 0.1 dBA near the roadway and 2.6 dBA under near the center of the site using soft-site conditions. This slight under prediction near the center of the site is due to variations in the vehicular speeds and agricultural activities in the distance.

Therefore, the roadways were 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	~1,200 Feet from SR-76	Hard	47.8	52.7	+4.9
		Soft		45.2	-2.6
M2	~30 Feet from SR-76	Hard	68.3	69.1	+0.8
		Soft		68.4	+0.1 ¹
¹ 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 Project's traffic study (Source: Warner Ranch Traffic Impact Study – KOA Corporation, February 2013). The future traffic along SR-76 adjacent to the project site is estimated to be 29,265 ADT in the year 2030. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-3. SR-76 is considered 4 lane major road based on the County of San Diego Department of Public Works Public Road Standards with a designed traffic speed of 55 MPH. To determine the future noise levels a speed limit of 55 MPH along SR-76 was utilized. To assess the peak hour traffic noise conditions, 10% of the ADT was utilized and a conservative vehicle mix was also utilized to predict the worst case noise levels.

Table 2-3: Buildout 2030 Traffic Parameters

Roadway	Average Daily Traffic (ADT)	Peak Hour Volume ¹	Modeled Speeds (MPH)	Vehicle Mix % ²		
				Auto	Medium Trucks	Heavy Trucks
State Route 76	29,265	2,927	55	95	3	2
¹ 10% of the ADT.						
² Conservative vehicle mix.						

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. Only the natural topography and proposed pad edges, which are elevated above the travel lanes, were incorporated in the contour model to determine the future noise levels at the proposed project site. Second floor areas were also modeled using hard site conditions based upon Caltrans Protocol. The model input parameters and results for the first and second noise contours are provided in **Attachment B**. Figure 2-A provides the location of the future first and second floor 75 and 60 dBA CNEL noise contours.

The noise contours provided in Figure 2-A show that the 75 dBA CNEL contours are all located within the right-of-way (ROW). The worst-case first floor 60 dBA CNEL contour due to the changes in elevations and top-of-slopes extends approximately 425-feet from SR-76. The second floor unshielded 60 dBA CNEL contour extends roughly 800-feet from SR-76. The contours show that noise sensitive land use (NSLU) areas will exceed the County of San Diego 60 dBA CNEL exterior noise standard. Based on these findings, additional detailed exterior noise analysis is provided below to determine the noise impacts and needed mitigation measures.

c) Detailed Analysis and Mitigation Measures

The Buildout analysis was modeled assuming future year traffic parameters as shown previously in Table 2-3. It was determined from the detailed analysis that the single family NSLU located along SR-76 will not comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. This is due to a combination of the close proximity of proposed lots to the roadways and the traffic volumes and speeds. The multifamily units proposed in the central portion of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor patios (provided private use areas). The proposed park will comply with the 70 dBA threshold of the General Plan Noise Element. Modeled observer locations for a sample of the potentially affected NSLU's are presented in Figure 2-B.

Figure 2-A: Future Noise Contour Locations

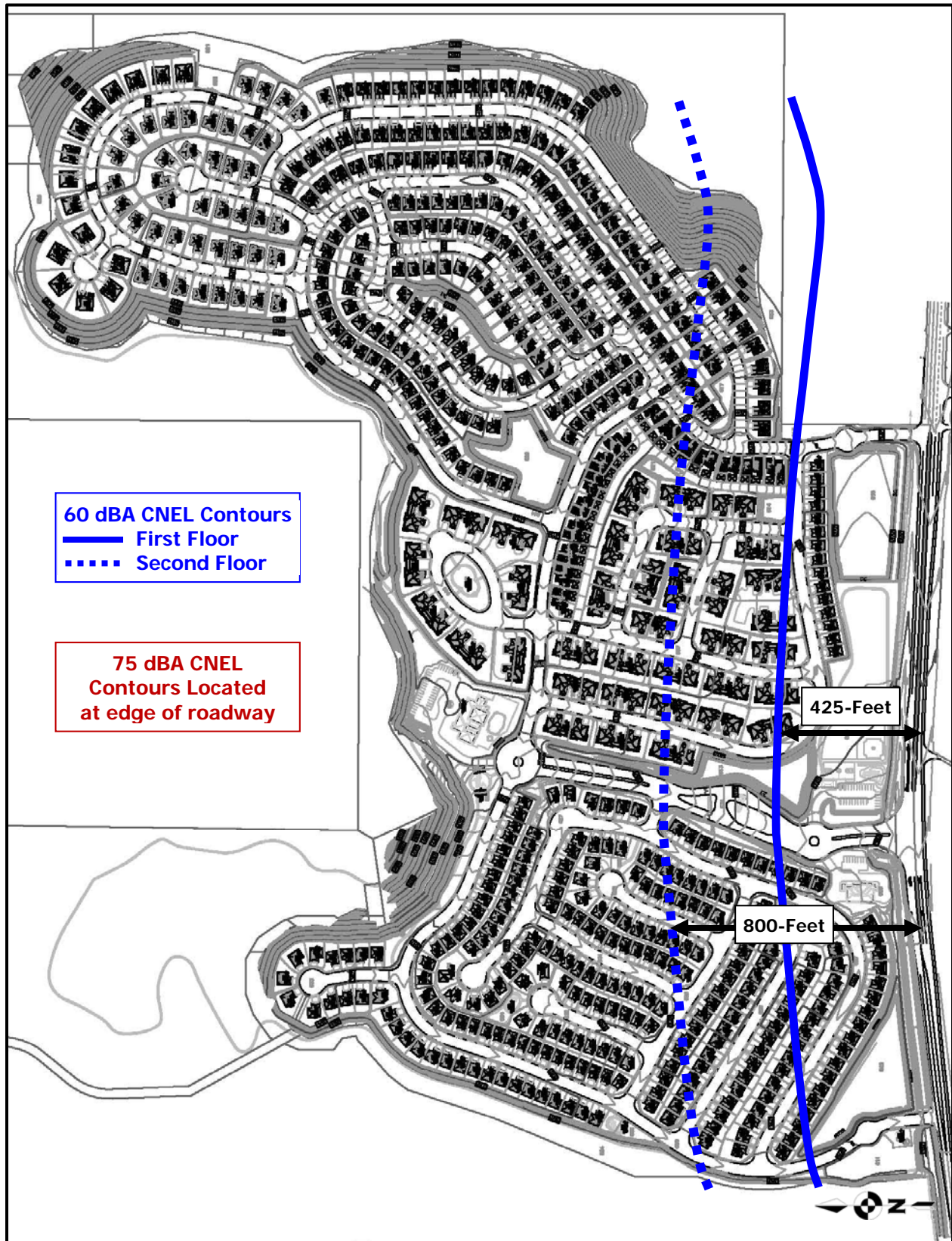
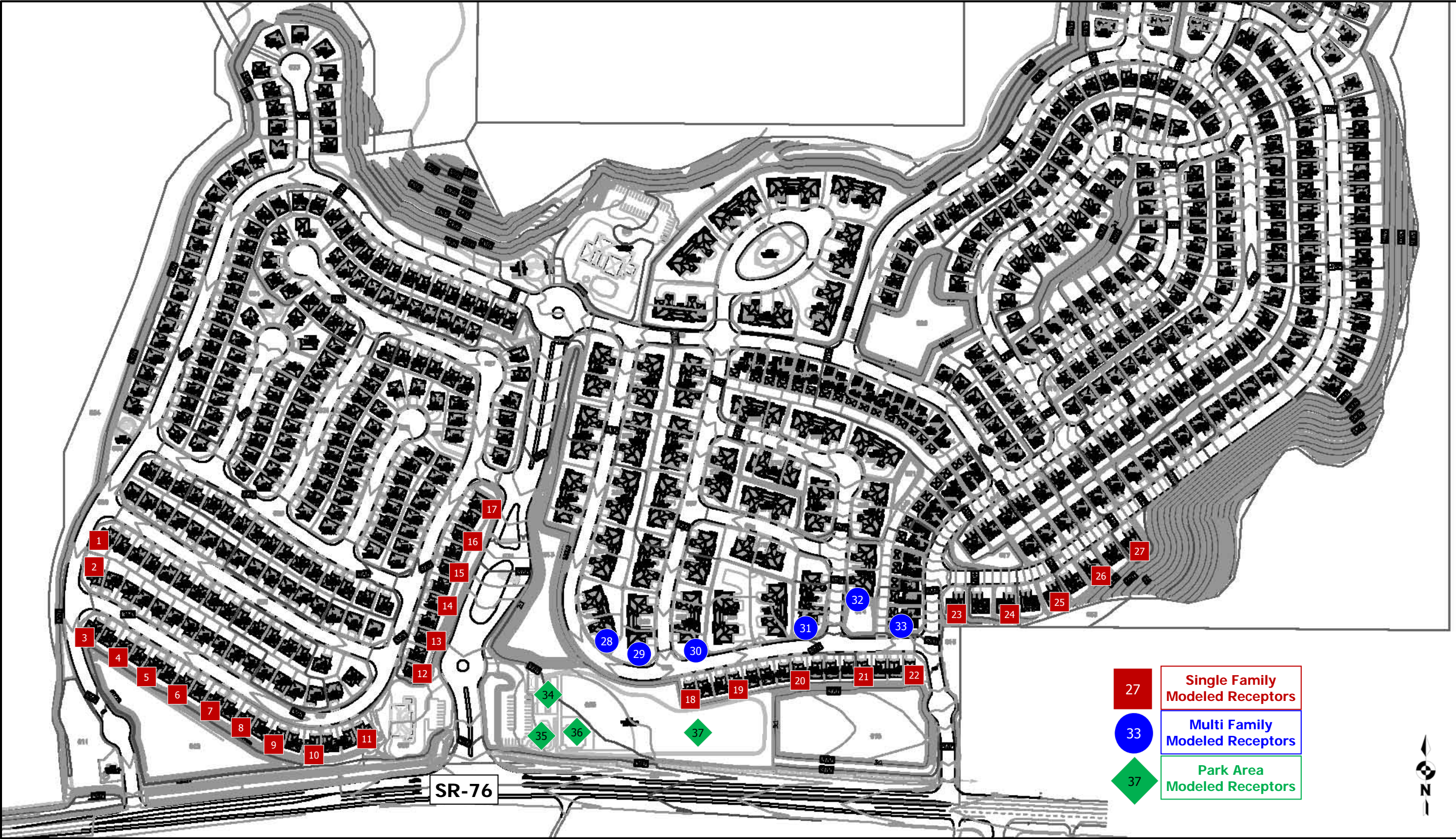


Figure 2-B: Modeled NSLU Receptor Locations



The results of the specific noise modeling for the site are provided in Table 2-4 below for both the unmitigated and mitigated scenarios. Table 2-4 also describes the type of use; for single family dwellings (SFD) multifamily dwellings (MFD) and Parks. The noise affected outdoor areas of proposed lots located closest to SR-76 or having direct line of sight to SR-76 on the of the site will require noise barriers ranging in height from six (6) to nine (9) feet. Lots 221-225 require 6-foot barriers along with Lots 321-333. Lots 319 and 320 require 7-foot barriers. Lots 219, 220 and 213 require 8-foot barriers (with a 6-foot barrier on the side yard of Lot 213). Lots 214-218 require 9-foot barriers.

The multifamily units in the center of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor private use areas. Therefore, if balconies are provided at the multifamily units no second floor impacts are anticipated since the required private use areas are all located on the ground floor. The park and recreational areas along SR-76 were found to comply with the County's 70 dBA threshold. The S32 models input and output files for the future conditions are provided in **Attachment C**.

Table 2-4: Future Exterior Noise Levels

Modeled Receptor Number	Receptor Location (Lot #)	Receptor Type or Use ¹	Receptor Elevation (Feet) ²	Unmitigated Outdoor Noise Level (dBA CNEL) ³	Barrier Height (Feet)	Mitigated Outdoor Noise Levels (dBA CNEL) ⁴	Second Floor Façade Noise Levels (dBA CNEL) ⁴
1	195	SFD	371	54.9	0	54.5	58.5
2	196	SFD	369	55.4	0	55.0	59.3
3	230	SFD	369	58.5	0	58.3	62.9
4	228	SFD	369	59.1	0	58.9	63.3
5	226	SFD	371	59.9	0	59.7	64.0
6	224	SFD	371	60.6	0	59.3	64.7
7	222	SFD	373	61.9	6	58.4	65.6
8	220	SFD	375	63.8	8	59.0	69.6
9	218	SFD	375	68.1	9	59.5	71.5
10	216	SFD	375	69.9	9	60.3	72.7
11	213	SFD	373	68.7	8	60.0	71.9
12	148	SFD	375	60.8	0	60.2	64.2
13	146	SFD	377	59.3	0	58.7	62.0
¹ Single Family Dwelling (SFD), Multifamily Dwelling (MFD) or Park Use ² Receptor Elevation is 5-feet above the Pad Elevation for ground level and 15-feet above pad for second floor. ³ Exterior Mitigation required per County Guidelines if BOLD ⁴ Interior Noise Study required per County Guidelines if BOLD							

Table 2-4 (Continued): Future Exterior Noise Levels

Modeled Receptor Number	Receptor Location (Lot #)	Receptor Type or Use ¹	Receptor Elevation (Feet) ²	Unmitigated Outdoor Noise Level (dBA CNEL) ³	Barrier Height (Feet)	Mitigated Outdoor Noise Levels (dBA CNEL) ⁴	Second Floor Façade Noise Levels (dBA CNEL) ⁴
14	144	SFD	377	57.8	0	57.2	60.4
15	142	SFD	377	56.4	0	55.8	58.9
16	140	SFD	377	55.2	0	54.7	57.9
17	138	SFD	377	54.3	0	53.8	57.4
18	319	SFD	389	61.8	7	60.4	65.4
19	322	SFD	387	60.7	6	58.0	64.2
20	326	SFD	385	59.8	6	59.8	63.1
21	330	SFD	383	60.1	6	59.9	64.0
22	333	SFD	381	60.9	6	60.0	65.2
23	396	SFD	401	59.1	0	59.1	63.9
24	398	SFD	413	59.5	0	59.5	64.4
25	400	SFD	425	59.1	0	59.1	64.4
26	402	SFD	435	58.4	0	58.4	63.9
27	404	SFD	447	57.8	0	57.8	63.6
28	268	MFD	393	59.3	0	59.3	62.8
29	269	MFD	393	59.6	0	59.7	63.0
30	280	MFD	393	59.0	0	59.1	62.3
31	283	MFD	395	58.3	0	58.2	62.0
32	284	MFD	399	57.5	0	57.4	61.8
33	318	MFD	391	58.9	0	58.9	63.4
34	605	Baseball	375	61.2	0	61.2	--
35		Play Area	373	65.6	0	65.6	--
36		Basketball	374	65.0	0	65.0	--
37		Park	376	62.2	0	62.2	--
1 Single Family Dwelling (SFD), Multifamily Dwelling (MFD) or Park Use							
2 Receptor Elevation is 5-feet above the Pad Elevation for ground level and 15-feet above pad for second floor.							
3 Exterior Mitigation required per County Guidelines if BOLD							
4 Interior Noise Study required per County Guidelines if BOLD							

Exhibit 2-C below shows the mitigation locations and barrier heights required to bring noise levels at the single family units on the southern portion of the site adjacent or near SR-76 to the County of San Diego 60 dBA CNEL exterior noise level standards for the proposed outdoor areas. The barriers must be constructed of a non-gapping material consisting of masonry, ½ inch thick glass, earthen berm or any combination of these materials.

With the incorporation of the mitigation measures, the first floor building facades of the single family dwellings will comply with the General Plan Noise Element Standard, of 60 dBA CNEL. Also included in Table 2-4 above are the resultant second floor building façade noise levels. Exterior noise levels at the building facades were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL at single family and multifamily dwellings. As was shown in Figure 2-A above, all proposed sensitive uses located within 800 feet of SR-76 could exceed the 60 dBA CNEL threshold at the building façade and may need interior mitigation. The affected Lots of the project that will require an interior noise assessment consist of single family Lots 145-148, 178-230, 313-338 and 392-404. Multi-family Lots 267-270 and 278-284 will also require an interior noise assessment. Additionally, the proposed fire station is anticipated to have living quarters for on-duty staff. The exterior noise levels at the fire station building façade could be as high as 72 dBA CNEL, similar to receptor 11, and an interior analysis is needed to reduce interior noise levels to 45 dBA CNEL once the final design and architectural plans are available.

Therefore, an interior noise assessment is required to mitigate the exterior noise levels to an interior level of 45 dBA CNEL. This report should be conducted prior to the issuance of building permits and would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods by providing a window condition requiring a means of mechanical ventilation (e.g. air conditioning) and providing upgraded windows at all affected lots.

Figure 2-C: Exterior Noise Mitigation Measures



2.3 Off-site Noise Impacts

The off-site project related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December, 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level.

A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found. For this project the 60 dBA CNEL contour was calculated based upon the County of San Diego thresholds.

Soft site conditions were used along all roadway segments to develop the worst-case noise contours and to analyze noise impacts. The future traffic noise model utilizes a conservative vehicle mix of 95% Autos, 3% Medium Trucks and 2% Heavy Trucks for all analyzed roadway segments to account for additional truck traffic. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

Direct and cumulative roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if: (1) the existing noise levels already exceed the 60 dBA CNEL residential standard, or (2) the project increases noise levels from below the 60 dBA CNEL standard to above 60 dBA CNEL in the area adjacent to the roadway segment. The County of San Diego requires that the Cumulative without Project scenario and the cumulative with project scenario be compared to determine if significant impacts occur. Project generated cumulative roadway noise impacts would be considered significant if the project raises the Cumulative without Project noise level by 1 dBA or greater.

a) Direct Noise Impacts

To determine if direct off-site noise level increases associated with the development of the proposed project will create noise impacts. The noise levels for the existing conditions were compared with the noise level increase of existing plus the proposed project. Utilizing the project's traffic assessment (Source: KOA Corporation, 02/13) noise contours were developed for the following traffic scenarios:

Existing: Current day noise conditions without construction of the proposed project.

Existing Plus Project: Current day noise conditions plus the completion of the proposed project.

Existing vs. Existing Plus Project: Comparison of the direct project related noise level increases in the vicinity of the proposed project site.

The noise levels and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 2-5 for the Existing Scenario and in Table 2-6 for the Existing plus Project Scenario. Note that the values given do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Table 2-5: Existing Roadway Noise Levels

Roadway Segment	ADT ¹	Vehicle Speeds (MPH) ¹	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
State Route 76				
E. Vista Way to N. River Road	28,805	55	76.0	582
N. River Road to Camino Del Rey	39,736	55	77.4	722
Camino Del Rey to S. Mission Road	39,316	55	77.3	717
S. Mission Road to Gird Road	26,752	55	75.7	554
Gird Road to Old Hwy 395	23,789	55	75.2	513
Old Hwy 395 to I-15 SB Ramps	29,407	55	76.1	591
I-15 SB Ramps to I-15 NB Ramps	19,359	55	74.3	447
I-15 NB Ramps to Pankey Road	11,031	55	71.8	307
Pankey Road to Horse Ranch Creek Road	11,031	55	71.8	307
Horse Ranch Creek Road to Rice Canyon Road	11,031	55	71.8	307
Rice Canyon Road to Couser Canyon Road	11,031	55	71.8	307
Couser Canyon Road to W. Pala Mission Road	10,224	55	71.5	292
W. Pala Mission Road to E. Pala Mission Road	10,329	55	71.5	294
E. Pala Mission Road to Lilac Road	8,821	55	70.9	265
Lilac Road to Adams Drive	9,456	55	71.2	277
Adams Drive to Cole Grade Road	9,090	55	71.0	270
W. Pala Mission Road				
State Route 76 and Pala Temecula Road	4,711	30	63.2	81
Pala Temecula Road				
Pala Mission Road to Trujillo Road	8,318	40	67.5	158
¹ Source: Project Traffic study prepared by Source: KOA Corporation, 02/13				

Table 2-6: Existing + Project Noise Levels

Roadway Segment	ADT ¹	Vehicle Speeds (MPH) ¹	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
State Route 76				
E. Vista Way to N. River Road	29,207	55	76.1	588
N. River Road to Camino Del Rey	40,274	55	77.4	728
Camino Del Rey to S. Mission Road	39,922	55	77.4	724
S. Mission Road to Gird Road	27,448	55	75.8	564
Gird Road to Old Hwy 395	24,577	55	75.3	524
Old Hwy 395 to I-15 SB Ramps	30,279	55	76.2	602
I-15 SB Ramps to I-15 NB Ramps	21,176	55	74.7	474
I-15 NB Ramps to Pankey Road	13,795	55	72.8	357
Pankey Road to Horse Ranch Creek Road	14,379	55	73.0	367
Horse Ranch Creek Road to Rice Canyon Road	15,179	55	73.2	380
Rice Canyon Road to Couser Canyon Road	15,543	55	73.3	386
Couser Canyon Road to W. Pala Mission Road	14,894	55	73.1	375
W. Pala Mission Road to E. Pala Mission Road	10,935	55	71.8	305
E. Pala Mission Road to Lilac Road	9,427	55	71.1	277
Lilac Road to Adams Drive	9,850	55	71.3	285
Adams Drive to Cole Grade Road	9,460	55	71.2	277
W. Pala Mission Road				
State Route 76 and Pala Temecula Road	5,929	30	64.2	95
Pala Temecula Road				
Pala Mission Road to Trujillo Road	9,264	40	68.0	170
¹ Source: Project Traffic study prepared by Source: KOA Corporation, 02/13				

Table 2-7 presents the comparison of the Existing Year with and without project related noise levels. The roadway segment noise levels will increase from 0.1 dBA CNEL to 1.6 dBA CNEL with the development of the proposed project. The project does not create a direct noise level increase of more than 3 dBA CNEL on any roadway segment as shown in Table 2-7. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any direct significant impacts to any existing or future noise sensitive land uses.

Table 2-7: Existing vs. Existing + Project Noise Levels

Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing + Project Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
State Route 76			
E. Vista Way to N. River Road	76.0	76.1	0.1
N. River Road to Camino Del Rey	77.4	77.4	0.0
Camino Del Rey to S. Mission Road	77.3	77.4	0.1
S. Mission Road to Gird Road	75.7	75.8	0.1
Gird Road to Old Hwy 395	75.2	75.3	0.1
Old Hwy 395 to 1-15 SB Ramps	76.1	76.2	0.1
I-15 SB Ramps to I-15 NB Ramps	74.3	74.7	0.4
I-15 NB Ramps to Pankey Road	71.8	72.8	1.0
Pankey Road to Horse Ranch Creek Road	71.8	73.0	1.2
Horse Ranch Creek Road to Rice Canyon Road	71.8	73.2	1.4
Rice Canyon Road to Couser Canyon Road	71.8	73.3	1.5
Couser Canyon Road to W. Pala Mission Road	71.5	73.1	1.6
W. Pala Mission Road to E. Pala Mission Road	71.5	71.8	0.3
E. Pala Mission Road to Lilac Road	70.9	71.1	0.2
Lilac Road to Adams Drive	71.2	71.3	0.1
Adams Drive to Cole Grade Road	71.0	71.2	0.2
W. Pala Mission Road			
State Route 76 and Pala Temecula Road	63.2	64.2	1.0
Pala Temecula Road			
Pala Mission Road to Trujillo Road	67.5	68.0	0.5
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

b) Cumulative Noise Impacts

To determine if cumulative off-site noise level increases associated with the development of the proposed project and other planned or permitted projects in the vicinity will create noise impacts, the noise levels for the near-term project Buildout and other planned and permitted projects were compared with the existing conditions. Utilizing the project's traffic assessment (Source: KOA Corporation, 12/10) noise contours were developed for the following traffic scenarios:

Existing Plus Cumulative Projects Plus Project: Current day noise conditions plus the completion of the project and the completion of other permitted, planned projects or approved ambient growth factors.

Existing vs. Existing Plus Cumulative Plus Project: Comparison of the existing noise levels and the related noise level increases from the combination of the proposed project and all other planned or permitted projects in the vicinity of the site.

The existing noise levels and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the Project site are given in Table 2-5 above for the Existing Scenario. The near-term cumulative noise conditions are provided in Table 2-8 below. No noise barriers or topography that may affect noise levels were incorporated in the calculations. Table 2-9 presents the comparison of the Existing Year and the Cumulative noise levels.

Table 2-8: Existing + Project + Cumulative Noise Levels

Roadway Segment	ADT ¹	Vehicle Speeds (MPH) ¹	Noise Level @ 50-Foot (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
State Route 76				
E. Vista Way to N. River Road	57,108	55	79.0	919
N. River Road to Camino Del Rey	67,438	55	79.7	1,027
Camino Del Rey to S. Mission Road	73,556	55	80.1	1,088
S. Mission Road to Gird Road	49,550	55	78.3	836
Gird Road to Old Hwy 395	43,618	55	77.8	768
Old Hwy 395 to I-15 SB Ramps	42,785	55	77.7	758
I-15 SB Ramps to I-15 NB Ramps	35,627	55	76.9	671
I-15 NB Ramps to Pankey Road	33,575	55	76.7	645
Pankey Road to Horse Ranch Creek Road	32,787	55	76.6	635
Horse Ranch Creek Road to Rice Canyon Road	33,509	55	76.7	644
Rice Canyon Road to Couser Canyon Road	33,820	55	76.7	648
Couser Canyon Road to W. Pala Mission Road	34,028	55	76.7	651
W. Pala Mission Road to E. Pala Mission Road	23,582	55	75.1	510
E. Pala Mission Road to Lilac Road	25,906	55	75.5	543
Lilac Road to Adams Drive	25,392	55	75.4	535
Adams Drive to Cole Grade Road	24,376	55	75.3	521
W. Pala Mission Road				
State Route 76 and Pala Temecula Road	7,210	30	65.0	108
Pala Temecula Road				
Pala Mission Road to Trujillo Road	10,756	40	68.6	187
¹ Source: Project Traffic study prepared by Source: KOA Corporation, 02/13				

Table 2-9: Existing vs. Existing + Project + Cumulative Noise Levels

Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing + Project + Cumulative Noise Level @ 50-Feet (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
State Route 76			
E. Vista Way to N. River Road	76.0	79.0	3.0
N. River Road to Camino Del Rey	77.4	79.7	2.3
Camino Del Rey to S. Mission Road	77.3	80.1	2.8
S. Mission Road to Gird Road	75.7	78.3	2.6
Gird Road to Old Hwy 395	75.2	77.8	2.6
Old Hwy 395 to 1-15 SB Ramps	76.1	77.7	1.6
I-15 SB Ramps to I-15 NB Ramps	74.3	76.9	2.6
I-15 NB Ramps to Pankey Road	71.8	76.7	4.9
Pankey Road to Horse Ranch Creek Road	71.8	76.6	4.8
Horse Ranch Creek Road to Rice Canyon Road	71.8	76.7	4.9
Rice Canyon Road to Couser Canyon Road	71.8	76.7	4.9
Couser Canyon Road to W. Pala Mission Road	71.5	76.7	5.2
W. Pala Mission Road to E. Pala Mission Road	71.5	75.1	3.6
E. Pala Mission Road to Lilac Road	70.9	75.5	4.6
Lilac Road to Adams Drive	71.2	75.4	4.2
Adams Drive to Cole Grade Road	71.0	75.3	4.3
W. Pala Mission Road			
State Route 76 and Pala Temecula Road	63.2	65.0	1.8
Pala Temecula Road			
Pala Mission Road to Trujillo Road	67.5	68.6	1.1
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

There are cumulative noise increases of more than 3 dBA CNEL on segments of SR-76 as can be seen in Table 2-9. To determine if the project has a cumulatively considerable noise increase (1 dBA CNEL or more) on any of these roadway segments the existing plus cumulative conditions were compared with and without the Project to establish the Project contributions. Table 2-10 shows the Project related cumulative contributions. The Project related increases are below 1 dBA CNEL on all cumulatively impacted roadways. Therefore, the proposed project's contributions to cumulative off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Table 2-10: Existing + Cumulative vs. Existing + Project + Cumulative Noise Levels

Roadway Segment	Existing + Cumulative Noise Level @ 50-Foot (dBA CNEL)	Existing + Project + Cumulative Noise Level @ 50-Foot (dBA CNEL)	Project Related Direct Noise Level Increase (dBA CNEL)
State Route 76			
E. Vista Way to N. River Road	78.9	79.0	0.1
I-15 NB Ramps to Pankey Road	76.3	76.7	0.4
Pankey Road to Horse Ranch Creek Road	76.1	76.6	0.5
Horse Ranch Creek Road to Rice Canyon Road	76.1	76.7	0.6
Rice Canyon Road to Couser Canyon Road	76.1	76.7	0.6
Couser Canyon Road to W. Pala Mission Road	76.1	76.7	0.6
W. Pala Mission Road to E. Pala Mission Road	75.0	75.1	0.1
E. Pala Mission Road to Lilac Road	75.4	75.5	0.1
Lilac Road to Adams Drive	75.4	75.4	0.0
Adams Drive to Cole Grade Road	75.2	75.3	0.1
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.			

2.4 Conclusions

It was determined from the detailed analysis that the single family NSLU's adjacent to the roadways will not comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western portion of the site. The noise affected outdoor areas of proposed lots located closest to SR-76 or having direct line of sight to SR-76 on the of the site will require noise barriers ranging in height from six (6) to nine (9) feet. Lots 221-225 require 6-foot barriers along with Lots 321-333. Lots 319 and 320 require 7-foot barriers. Lots 219, 220 and 213 require 8-foot barriers (with a 6-foot barrier on the side yard of Lot 213). Lots 214-218 require 9-foot barriers.

The multifamily units in the center of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor private use areas. Therefore, if balconies are provided at the multifamily units no second floor impacts are anticipated since the required private use areas are all located on the ground floor. The park and recreational areas along SR-76 were found to comply with the County's 70 dBA threshold.

With the incorporation of the mitigation measures, the first floor building facades of the single family dwellings will comply with the General Plan Noise Element Standard, of 60 dBA CNEL. Exterior noise levels at the second floor building facades were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL at single family and multifamily dwellings. As was shown in Figure 2-A above, all proposed sensitive uses located within 800 feet of SR-76 could exceed the 60 dBA CNEL threshold at the building façade and may need interior mitigation. The affected Lots of the project that will require an interior noise assessment consist of single family Lots 145-148, 178-230, 313-338 and 392-404. Multi-family Lots 267-270 and 278-284 will also require an interior noise assessment. Additionally, the proposed fire station is anticipated to have living quarters for on-duty staff. The exterior noise levels at the fire station building façade could be as high as 72 dBA CNEL, similar to receptor 11, and an interior analysis is needed to reduce interior noise levels to 45 dBA CNEL once the final design and architectural plans are available.

The project does not directly create a noise level increase of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses. There are cumulative noise increases of more than 3 dBA CNEL on several roadway segments along SR-76 but the Project related cumulative increases are below 1 dBA CNEL on all cumulatively impacted roadways. Therefore, the proposed project's contributions to cumulative off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

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

a) Potential Build Out Noise Conditions

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.

b) Potential Noise Impact Identification

The County's Noise Ordinance states that 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. The properties surrounding the Project site are mostly occupied with the exception of a few parcels in the northern portion of the site as can be seen in Figure 3-A below. Some properties, especially to the north east, are separated by distances over 1,000 feet and are not anticipated to be affected by the construction operations.

According to the project applicant; a total of five rubber tire dozers, four track dozers, four loaders/tractors, two water trucks and four scrapers excavators during grading activities will be required to complete the proposed grading operations. Project construction activities also include blasting that will require two rock drills. The blasting operations are anticipated to control the material size so that the excess rock and grading debris will be manageable and utilized onsite in the areas that fill material is needed and no rock crushing is anticipated. The Project grading would be expected to take approximately 27 months and would be expected to require significant blasting operations. The grading operations are expected to take up to six months long with blasting to occur on a regular basis. After rough grading is complete trenching and finish grading operations would take an additional three months. After the 30 month grading period, the Project applicant would begin paving the site and building the fire station and residential units.

[illegible]

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Table 3-1: Reference Construction Noise Levels and Equipment

Construction Phase	Construction Equipment	Quantity	Source Level @ 50 Feet (dBA) ¹
Grading and Blasting Operations	Dozer – D8	2	74
	Loader/Tractor	4	72
	Water Truck	2	70
	Rubber Tire Dozers	5	73
	Scrapers	4	75
	Rock Drill	2	85
¹ Source: EPA 1971 and Empirical Data			

Using a point-source noise prediction model with a typical 6 dBA reduction per doubling of distance, 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.

Grading Operations

The grading equipment listed in Table 3-1 will be spread out over the site working in different phases or areas as described above. Some equipment may be operating at or near the property line while the rest of the equipment may be located over 800-feet from the same property line. This would result in an acoustical center for the grading operation at approximately 400-feet to the nearest property line. As can be seen in Table 3-2 below, if all the equipment was operating in the same location, which is not physically possible, at a distance as close as 170-feet from the nearest property line the point source noise attenuation from construction activities is -10.6 dBA. This would result in an anticipated worst-case combined noise level of 75 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels will comply with the County of San Diego's 75 dBA standard at all Project property lines.

Table 3-2: Grading Operation Noise Levels

Construction Equipment	Quantity	Source Level @ 50 Feet (dBA)	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50 Feet (dBA)
Dozer – D8	2	74	8	77.0
Loader/Tractor	4	72	8	78.0
Water Truck	2	70	8	73.0
Rubber Tire Dozers	5	73	8	80.0
Scrapers	4	75	8	81.0
Cumulative Levels @ 50 Feet (dBA)				85.6
Distance To Property Line				170
Noise Reduction Due To Distance				-10.6
NEAREST PROPERTY LINE NOISE LEVEL				75.0

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. The two rock drills would be moved around the site on an as needed basis dependent upon the site characteristics. The use of two rock drills 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 rock drills were placed in the location on the site, which is not physically possible. The cumulative noise level from the equipment would be 88.0 dBA at 50 feet. Utilizing a 6 dBA reduction per doubling of distance, at distances of 225 feet from any property line, the noise levels will comply with the County of San Diego's 75 dBA standard as shown in Table 3-3.

Table 3-3: Construction Noise Levels from Rock Drills

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
Noise Reduction Needed To Comply				-13.0
Distance Required to Reduce Noise Levels				225
NEAREST PROPERTY LINE NOISE LEVEL				75.0

Rock drilling and blasting will occur on an as-needed basis on site. In the event that the rock drills are staged within 225 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 incorporate the usage of the equipment (amount of time used and/or the location in respect to the property line).

Additionally, the County Noise Ordinance Section 36.410, states that 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 of 82 dBA (at residential uses), 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. The maximum sound level and uses are shown above in Table 36.410A as described in the County Zoning Ordinance.

The rock drills that will be utilized can produce impulsive noise. Based upon normal procedures the two rock drills are anticipated to be separated but working in the same area on the site. Rock drills can produce maximum noise levels (L_{max}) of 87-91 dBA at a distance of 50 feet based on the orientation of the equipment (Source: Rancho Cielo Rock Drill Measurements, Ldn Consulting March 2011). Typically, a rock drill is not continuously operating at full power; this is referred to as the usage factor. The usage factor is the percentage of time that a piece of construction equipment is operating at full power. Since the maximum noise level from a rock drive exceeds the County's maximum noise level threshold of 82 dBA the following recommendations are presented. To reduce the maximum noise level of 94 dBA (cumulative noise level from both rock drills) to 82 dBA the rock drills would need to be located 200 feet from the nearest occupied residential property line or only operate 25% of the hourly or daily duration (15 minutes of any hour and 2 hours of a 8 hour work day) when located within that distance.

In the event that the rock drills are staged within 200 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. If construction activities occur within 925 feet or rock drilling occurs within 1,250 feet of an identified sensitive habitat location the noise levels 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 nesting/breeding season 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.

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.

Off-Site Construction

In addition to on-site construction, off-site construction would also be required for sewer line improvements and connection along SR-76. Unlike construction associated with on-site development, utility pipeline construction is linear and usually extends roughly 300 feet along a pipeline/roadway alignment. Excavation and pipeline equipment used for sewer pipeline projects would generate similar noise levels as roadway improvements and the amount of equipment utilized would be limited due to alignment and work area constraints. Based on a construction area of approximately 50 feet by 300 feet, the average hourly off site construction noise levels would be approximately 75 dBA Leq at the edge of the roadway right-of-way and 72 dBA Leq 8 hour or lower at 50 feet from the edge of roadway construction.

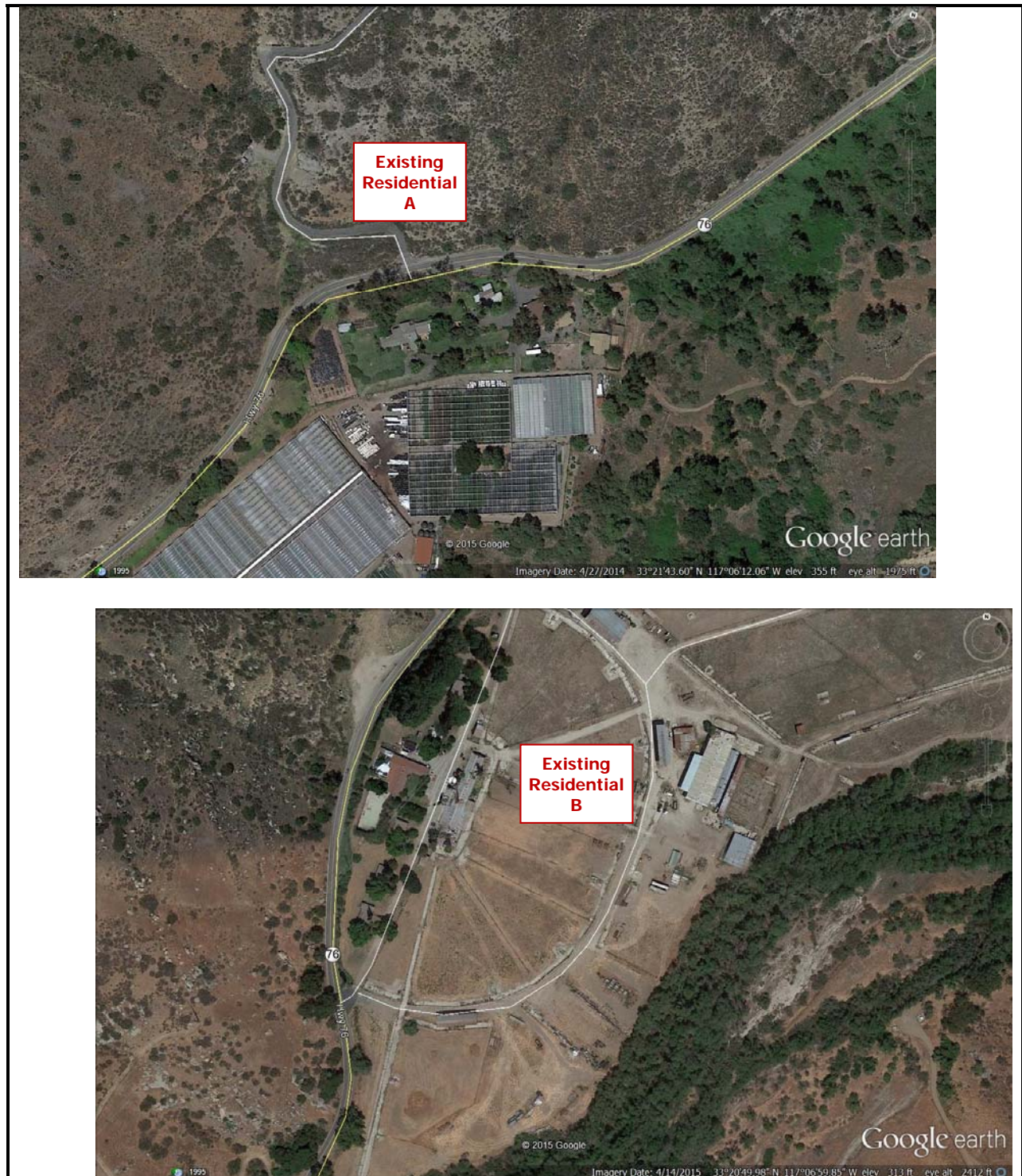
The overall sewer line improvements will follow along SR-76 from the project site to the west at an existing sewer pump station located near the intersection of Pankey Road. The overall alignment can be seen in Figure 3-B. A site-survey of the existing homes along SR-76 was conducted on June 4, 2015. It was found that a few of the homes along the roadway were unoccupied with the exception of a site with three homes located about ¼ west of the site and a home located at about the half way mark of the sewer line work. The two locations are identified on Figure 3-B. Figure 3-C provides aerials of the existing homes that could be affected by the Project's off site construction noise.

During maximum effort with several pieces of equipment operating at the same time in close proximity or during excavation, maximum noise levels of 76-80 dBA Lmax may be experienced at local residences; however, these would last for a few seconds at any specific location. As stated above, the anticipated off site construction noise levels would be approximately 72 dBA Leq over an 8 hour work day. The sewer line improvements are anticipated to move from the project site to the west in 200-300 foot increments. Therefore, the construction would only occur directly adjacent to the homes for one to two days. Noise levels would not exceed the County's construction noise levels limits and no impacts are anticipated.

Ldn Consulting, Inc. 11/10/15



Figure 3-C: Existing Residence along Off-Site Construction Activities



3.3 Conclusions

At a distance as close as 170-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -10.6 dBA. This would result in an anticipated worst-case noise level of 75 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels will comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines.

To reduce the impulsive maximum noise levels from 94 dBA to the County's 82 dBA threshold, the rock drills would need to be located 200 feet from the nearest occupied residential property line or only operate 25% of the hourly or daily duration (15 minutes of any hour and 2 hours of a 8 hour work day) when located within that distance. In the event that the rock drills are staged within 200 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. 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 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 nesting/breeding season 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.

Off-site construction would also be required for sewer line improvements and connection along SR-76. Excavation and pipeline equipment used for sewer pipeline projects would generate similar noise levels as roadway improvements and the amount of equipment utilized would be limited due to alignment and work area constraints. Based on a construction area of approximately 50 feet by 300 feet, the average hourly off site construction noise levels would be approximately 75 dBA Leq at the edge of the roadway

right-a-way and 72 dBA Leq or lower at 50 feet from the edge of roadway construction. During maximum effort with several pieces of equipment operating at the same time in close proximity or during excavation, maximum noise levels of 76-80 dBA Lmax may be experienced at local residences; however, these would last for a few seconds at any specific location. The sewer line improvements are anticipated to move from the project site to the west in 200-300 foot increments. Therefore, the construction would only occur directly adjacent to the homes for one to two days. Noise levels would not exceed the County's construction noise levels limits and no impacts are anticipated. Noise levels on this order would not exceed the County's construction noise levels limits and no impacts are anticipated.

4.0 OPERATIONAL ACTIVITIES

4.1 Guidelines for the Determination of Significance

According to Section 36.404 of the County Noise Ordinance, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property exceeds the applicable limits on Table 4-1. An impact would occur and mitigation would be needed if the project will generate airborne noise which, together with noise from all sources, will be in excess of either of the following:

Table 4-1: San Diego County Code Section 36.404

SOUND LEVEL LIMITS IN DECIBELS (dBA)

ZONE		APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
R-RO, R-C, R-M, C-30, S-86, R-V, R-U and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
S-94, V4, and all other commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
V1, V2	7 a.m. to 7 p.m.	60
V1, V2	7 p.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones.	Anytime	75

(a) If the measured ambient level exceeds the applicable limit noted above, the allowable one hour average sound level shall be the ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(b) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone which the extractive industry is actually located.

The applicant's property and all surrounding properties are zoned A-70 and A-72. According to Section 36.404 of the County of San Diego Noise Ordinance, all areas zoned A-70 and A-72 have a most restrictive property line standard of 50 dBA Leq for the daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq for the nighttime hours of 10 p.m. to 7 a.m. Onsite noise generation due to the proposed residential development project would primarily consist of normal residential activities and the fire station.

Emergency operations from the proposed fire station are exempt under Section 36.405 Subsection (d) of the County Noise Ordinance. Therefore no impacts will occur and no mitigation is needed for the fire station operations. The relevant section language is provided below:

(d) Emergency Vehicles. Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations.

4.2 Potential Noise Impacts

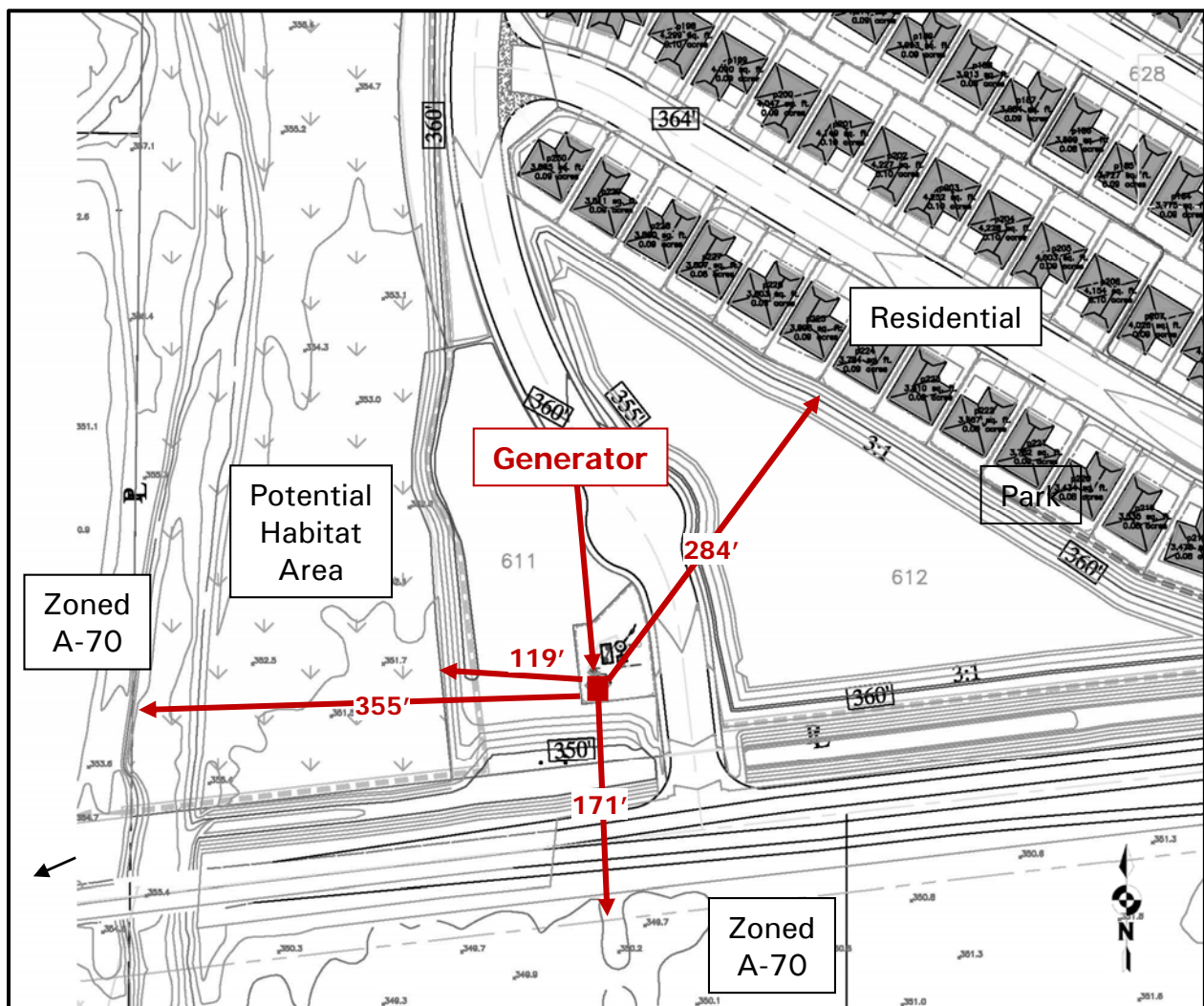
This section examines the potential stationary noise source impacts associated with the development and operation of the proposed sewer lift/pump station. According to the project applicant, the pump stations will be submersible and contain two pumps. Based on a similar underground pump station, the pumps would generate a noise level of 45 dBA at a distance of 15 feet from the access hatch and would not generate noise impacts. Pump stations typically contain backup generators, which could generate unshielded noise levels that exceed the property line standards and therefore shielding or mitigation may be required.

Sewer Pump/Lift Station typically contain backup generators, which could generate unshielded noise levels that exceed the property line standards and therefore shielding or mitigation may be required. It was determined that a back-up generator up to 80 kilowatts (KW) is needed to power two of the 30 HP motors and controls if the main power supply is lost at the pump station. To assess the generator noise levels, typical outdoor sound levels were provided by the manufacturer (Kohler, Inc.). The noise ratings provided by Kohler indicated that an 80 KW generator will produce unmitigated noise levels of 68 dBA when measured at a distance of 23-feet in all directions when equipment with the manufacture's sound enclosure. The manufactures specifications are provided as an **Attachment D** to this report.

Sound from a localized source (a point-source) radiates uniformly outward as it travels away from the source. The sound level attenuates or drops-off at a rate of 6 dBA for each doubling of distance. A drop-off rate of 6 dBA per doubling of distance was used for the

proposed equipment to the property lines using a point-source noise modeling program. The equipment noise levels were modeled to each adjacent property line and to the nearest existing residences. The site orientation, equipment locations along with the existing or proposed property uses can be seen in Figure 4-A below. The Project is proposing an 8-foot high enclosure around the generator that will further reduce noise. To determine the noise level reductions from the proposed buildings located between the generator and the property lines, the Fresnel Barrier Reduction Calculations were utilized for each noise source. No reductions from the existing topography located between the equipment and property lines were taken to determine the worst-case the noise levels. The Fresnel barrier reduction calculations are provided in **Attachment E** of this report.

Figure 4-A: Sewer Pump/Lift Station and Surrounding Land Use Orientation



Operational noise levels were propagated out to the nearest property lines/sensitive uses. The cumulative noise level results of the back-up generator at the Sewer Pump/Lift Station are provided in Table 4-2. As can be seen in Table 4-2 the proposed Sewer Pump/Lift Station operations are anticipated to comply with the County of San Diego's worst-case nighttime noise ordinance criteria at all surrounding land uses. Therefore, no impacts are anticipated and no mitigation is required.

Table 4-2: Property Line Noise Levels from Sewer Lift/Pump Station

Property Line	Source Level @ 23 Feet (dBA)	Distance to Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction from Walls (dBA)	Resultant Noise Level @ Property Line (dBA Leq)	Property Line Standard
Biological West	68.0*	119	-14.3	-5.6	46.4	60
A-70 West		355	-23.8	-6.8	37.4	45
Residential North		284	-21.8	-7.3	40.6	45
A-70 South		171	-17.4	-7.2	43.4	45

* Manufactures sound level with provided sound enclosure.

4.3 Conclusions

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. Emergency operations from the proposed fire station are exempt under Section 36.405 Subsection (d) of the County Noise Ordinance. Therefore no impacts will occur and no mitigation is needed for the fire station operations. The proposed generator at the Sewer Pump/Lift Station was found to comply with the County's most restrictive nighttime standards and no impacts are anticipated and no mitigation is required. Once the facility is fully operational a Certification Test is required as part of the project conditions to demonstrate compliance with the County Noise Ordinance.

5.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS

5.1 Guidelines for the Determination of Significance

Project implementation will expose uses to ground-borne vibration or noise levels equal to or in excess of the levels listed in Table 4 of the County of San Diego Guidelines for the Determination of Significance. For simplicity, the pertaining Table 4 is shown below.

Table 4
Guideline for Determining the Significance of
Ground-borne Vibration and Noise Impacts

Land Use Category	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events ¹	Occasional or Infrequent Events ²	Frequent Events ¹	Occasional or Infrequent Events ²
Category 1: Buildings where low ambient vibration is essential for interior operations. (research & manufacturing facilities with special vibration constraints)	0.0018 ³	0.0018 ³	Not applicable ⁴	Not applicable ⁵
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, & other sleeping facilities)	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, & quiet offices)	0.0056	0.014	40 dBA	48 dBA

Source: U.S Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

Notes to Table 4:

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Occasional or Infrequent Events" are defined as fewer than 70 vibration events per day. This combined category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.
5. There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 5 gives criteria for acceptable levels of ground-borne vibration and noise for these various types of special uses.
6. For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds one inch per second. Non-transportation vibration sources such as impact pile drivers or hydraulic breakers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in San Diego County.

5.2 Potential Impacts & Conclusions

There are no existing or proposed frequent activities on or near the proposed project site at this time which would cause any significant vibration levels to existing buildings near the project site. No vibration impacts are anticipated to or from the proposed project site. Therefore, no additional analysis or mitigation is required.

6.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

- On-Site Noise Analysis

It was determined from the detailed analysis that the single family NSLU's adjacent to the roadways will not comply with the County of San Diego 60 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western portion of the site. The noise affected outdoor areas of proposed lots located closest to SR-76 or having direct line of sight to SR-76 on the of the site will require noise barriers ranging in height from six (6) to nine (9) feet. Lots 221-225 require 6-foot barriers along with Lots 321-333. Lots 319 and 320 require 7-foot barriers. Lots 219, 220 and 213 require 8-foot barriers (with a 6-foot barrier on the side yard of Lot 213). Lots 214-218 require 9-foot barriers.

The multifamily units in the center of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor private use areas. Therefore, if balconies are provided at the multifamily units no second floor impacts are anticipated since the required private use areas are all located on the ground floor. The park and recreational areas along SR-76 were found to comply with the County's 70 dBA threshold.

With the incorporation of the mitigation measures, the first floor building facades of the single family dwellings will comply with the General Plan Noise Element Standard, of 60 dBA CNEL. Exterior noise levels at the second floor building facades were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL at single family and multifamily dwellings. Therefore, an interior noise assessment is required to mitigate the exterior noise levels to an interior level of 45 dBA CNEL. All proposed sensitive uses located within 800 feet of SR-76 could exceed the 60 dBA CNEL threshold at the building façade and may need interior mitigation. The affected Lots of the project that will require an interior noise assessment consist of single family Lots 145-148, 178-230, 313-338 and 392-404. Multi-family Lots 267-270 and 278-284 will also require an interior noise assessment. Additionally, the proposed fire station is anticipated to have living quarters for on-duty staff. The exterior noise levels at the fire station building façade could be as high as 72 dBA CNEL, similar to receptor 11, and an interior analysis is needed to reduce interior noise levels to 45 dBA CNEL once the final design and architectural plans are available.

The interior noise assessment should be conducted prior to the issuance of building permits and would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods by providing a window condition

requiring a means of mechanical ventilation (e.g. air conditioning) and providing upgraded windows at all affected lots.

- Off-Site Noise Analysis

The project does not directly create a noise level increase of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses. There are cumulative noise increases of more than 3 dBA CNEL on several roadway segments along SR-76 but the Project related cumulative increases are below 1 dBA CNEL on all cumulatively impacted roadways. Therefore, the proposed project's contributions to cumulative off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

At a distance as close as 170-feet the point source noise attenuation or reduction from construction activities and the nearest property line is -10.6 dBA. This would result in an anticipated worst-case noise level of 75 dBA at the property line. Given this and the spatial separation of the equipment, the noise levels will comply with the County of San Diego's Noise Ordinance Section 36.409 standard of 75 dBA at all Project property lines.

To reduce the impulsive maximum noise levels to the County's 82 dBA threshold, the rock drills would need to be located 200 feet from the nearest occupied residential property line or only operate 25% of the hourly or daily duration (15 minutes of any hour and 2 hours of a 8 hour work day) when located within that distance. In the event that the rock drills are staged within 200 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. 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 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 nesting/breeding season 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.

Off-site construction would also be required for sewer line improvements and connection along SR-76. Excavation and pipeline equipment used for sewer pipeline projects would generate similar noise levels as roadway improvements and the amount of equipment utilized would be limited due to alignment and work area constraints. Based on a construction area of approximately 50 feet by 300 feet, the average hourly off site construction noise levels would be approximately 75 dBA Leq at the edge of the roadway right-of-way and 72 dBA Leq or lower at 50 feet from the edge of roadway construction.

During maximum effort with several pieces of equipment operating at the same time in close proximity or during excavation, maximum noise levels of 76-80 dBA Lmax may be experienced at local residences; however, these would last for a few seconds at any specific location. The sewer line improvements are anticipated to move from the project site to the west in 200-300 foot increments. Therefore, the construction would only occur directly adjacent to the homes for one to two days. Noise levels would not exceed the County's construction noise levels limits and no impacts are anticipated.

- Operational Noise Analysis

Normal residential activities are anticipated to comply with the County's Noise Ordinance 36.404. Emergency operations from the proposed fire station are exempt under Section 36.405 Subsection (d) of the County Noise Ordinance. Therefore no impacts will occur and no mitigation is needed for the fire station operations. The proposed generator at the Sewer Pump/Lift Station was found to comply with the County's most restrictive nighttime standards and no impacts are anticipated and no mitigation is required. Once the facility is fully operational a Certification Test is required as part of the project conditions to demonstrate compliance with the County Noise Ordinance.

- Vibration Analysis

There are no existing or proposed frequent activities on or near the proposed project site which would cause any significant vibration levels to existing buildings near the project site and no impacts are anticipated.

7.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the Warner Ranch (TM 5508) development. This report was prepared utilizing the latest guidelines and reduction methodologies. This report was prepared by Jeremy Loudon; a County approved CEQA Consultant for Acoustics.

DRAFT

Jeremy Loudon, Principal
Ldn Consulting, Inc.
760-473-1253
jloudon@ldnconsulting.net

Date November 10, 2015

ATTACHMENT A

MODEL CALIBRATION INPUT AND OUTPUT FILES

WARNER RANCH EXISTING CONDITIONS - SOFT

T-SR76, 1

610 , 50 , 12 , 45 , 12 , 45

L-76, 1

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C,C

SOUND32 - RELEASE 07/30/91

TITLE:

WARNER RANCH EXISTING CONDITIONS - SOFT

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

RECEIVER	LEQ
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M1hard	52.7
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M1soft	45.2
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M2hard	69.1
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M2soft	68.4
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ATTACHMENT B

FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES

WARNER RANCH EAST - CONTOUR MODEL 1ST FLOOR

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SOUND32 - RELEASE 07/30/91

TITLE:
WARNER RANCH EAST - CONTOUR MODEL 1ST FLOOR

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WARNER RANCH EAST - CONTOUR MODEL 2ND FLOOR

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SOUND32 - RELEASE 07/30/91

TITLE:
 WARNER RANCH EAST - CONTOUR MODEL 2ND FLOOR

REC REC ID DNL PEOPLE LEQ(CAL)

1	R1	65.	10.	68.3
2	R2	65.	10.	68.7
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6	R6	65.	10.	67.7
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ATTACHMENT C

DETAILED FUTURE NOISE MODEL INPUT AND OUTPUT FILES

Warner Ranch - Ground Level Unmitigated

T-SR76, 1

3231 , 55 , 102 , 55 , 68 , 55

L-76, 1

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N,-124,-26,355,

N,-6,-9,355,

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N,426,42,354,

N,984,106,354,

N,1333,131,357,

N,1622,128,358,

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N,2916,68,368,

N,3413.,46,372,

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288.,529,364,364,

438.,431,366,366,

520.,387,366,366,

684.,289,370,370,

768.,238,370,370,

876.,204,370,370,

932.,205,370,370,

988.,210,368,368,

1088.,258,368,368,

1060.,302,368,368,

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1326.,767,372,372,

1396.,865,372,372,

B-319-333, 3 , 2 , 0 ,0

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1901.,346,384,384,

1985.,364,384,384,

2110.,389,382,382,

2195.,401,380,380,

2278.,407,380,380,

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2554.,410,376,376,

2547.,457,376,376,

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1782.,464,392,392,

2111.,521,392,392,

2194.,535,394,394,

2254.,543,394,394,

2269.,566,394,394,

B-West, 5 , 1 , 0 ,0

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319.,435,362,362,

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455.,137,360,360,

1045.,207,362,362,

1208.,218,362,362,

1278.,295,364,364,

1282.,356,364,364,

B-Park, 6 , 1 , 0 ,0

1405.,386,364,364,

1414.,232,364,364,

1531.,219,368,368,

1814.,201,368,368,

1824.,203,372,372,

2140.,180,372,372,

2146.,190,372,372,

2560.,164,372,372,

2568.,193,374,374,

R, 1 , 65 ,10

337,770,371.,195

R, 2 , 65 ,10

328,720,369.,196
R, 3 , 65 ,10
306,526,369.,230
R, 4 , 65 ,10
384,475,369.,228
R, 5 , 65 ,10
462,426,371.,226
R, 6 , 65 ,10
546,381,371.,224
R, 7 , 65 ,10
626,333,373.,222
R, 8 , 65 ,10
711,283,375.,220
R, 9 , 65 ,10
801,237,375.,218
R, 10 , 65 ,10
904,213,375.,216
R, 11 , 65 ,10
1058,250,373.,213
R, 12 , 65 ,10
1198,433,375.,148
R, 13 , 65 ,10
1229,520,377.,146
R, 14 , 65 ,10
1264,609,377.,144
R, 15 , 65 ,10
1297,703,377.,142
R, 16 , 65 ,10
1329,790,377.,140
R, 17 , 65 ,10
1377,872,377.,138
R, 18 , 65 ,10
1923,358,389.,319
R, 19 , 65 ,10
2046,380,387.,322
R, 20 , 65 ,10
2215,409,385.,326
R, 21 , 65 ,10
2385,414,383.,330
R, 22 , 65 ,10
2517,415,381.,333
R, 23 , 65 ,10
2629,585,401.,396
R, 24 , 65 ,10
2767,582,413.,398
R, 25 , 65 ,10
2905,613,425.,400
R, 26 , 65 ,10
3032,674,435.,402
R, 27 , 65 ,10
3146,720,447.,404
R, 28 , 65 ,10
1694,511,393.,268
R, 29 , 65 ,10
1775,485,393.,269
R, 30 , 65 ,10
1911,497,393.,280
R, 31 , 65 ,10
2217,548,395.,283
R, 32 , 65 ,10
2350,640,399.,284
R, 33 , 65 ,10
2477,544,391.,318
R, 34 , 65 ,10
1536,372,375.,BB
R, 35 , 65 ,10
1525,261,373.,Tot
R, 36 , 65 ,10
1609,262,374.,Base
R, 37 , 65 ,10
1933,283,376.,Park
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Warner Ranch - Ground Level Unmitigated

REC REC ID DNL PEOPLE LEQ(CAL)

1	195	65.	10.	54.9
2	196	65.	10.	55.4
3	230	65.	10.	58.5
4	228	65.	10.	59.1
5	226	65.	10.	59.9
6	224	65.	10.	60.6
7	222	65.	10.	61.9
8	220	65.	10.	63.8
9	218	65.	10.	68.1
10	216	65.	10.	69.9
11	213	65.	10.	68.7
12	148	65.	10.	60.8
13	146	65.	10.	59.3
14	144	65.	10.	57.8
15	142	65.	10.	56.4
16	140	65.	10.	55.2
17	138	65.	10.	54.3
18	319	65.	10.	61.8
19	322	65.	10.	60.7
20	326	65.	10.	59.8
21	330	65.	10.	60.1
22	333	65.	10.	60.9
23	396	65.	10.	59.1
24	398	65.	10.	59.5
25	400	65.	10.	59.1
26	402	65.	10.	58.4
27	404	65.	10.	57.8
28	268	65.	10.	59.3
29	269	65.	10.	59.6
30	280	65.	10.	59.0
31	283	65.	10.	58.3
32	284	65.	10.	57.5
33	318	65.	10.	58.9
34	BB	65.	10.	61.2
35	Tot	65.	10.	65.6
36	Base	65.	10.	65.0
37	Park	65.	10.	62.2

Warner Ranch - Ground Level Mitigated

T-SR76, 1

3231 , 55 , 102 , 55 , 68 , 55

L-76, 1

N,-269,-70,353,

N,-124,-26,355,

N,-6,-9,355,

N,210,17,354,

N,426,42,354,

N,984,106,354,

N,1333,131,357,

N,1622,128,358,

N,2107,113,362,

N,2916,68,368,

N,3413.,46,372,

N,4900.,-24,384,

B-213-230, 1 , 2 , 0 ,0

284.,561,364,364,

288.,529,364,364,

438.,431,366,366,

520.,387,366,372,

684.,289,370,378,

768.,238,370,379,

876.,204,370,379,

932.,205,370,379,

988.,210,368,377,

1088.,258,368,376,

1060.,302,368,374,

B-138-148, 2 , 2 , 0 ,0

1154.,420,370,370,

1198.,405,370,370,

1228.,495,372,372,

1326.,767,372,372,

1396.,865,372,372,

B-319-333, 3 , 2 , 0 ,0

1895.,381,384,391,

1901.,346,384,391,

1985.,364,384,391,

2110.,389,382,388,

2195.,401,380,386,

2278.,407,380,386,

2490.,410,376,382,

2554.,410,376,382,

2547.,457,376,382,

B-268-283, 4 , 2 , 0 ,0

1661.,518,390,390,

1705.,484,390,390,

1722.,481,392,392,

1782.,464,392,392,

2111.,521,392,392,

2194.,535,394,394,

2254.,543,394,394,

2269.,566,394,394,

B-West, 5 , 1 , 0 ,0

294.,522,364,364,

300.,495,362,362,

319.,435,362,362,

339.,389,360,360,

455.,137,360,360,

1045.,207,362,362,

1208.,218,362,362,

1278.,295,364,364,

1282.,356,364,364,

B-Park, 6 , 1 , 0 ,0

1405.,386,364,364,

1414.,232,364,364,

1531.,219,368,368,

1814.,201,368,368,

1824.,203,372,372,

2140.,180,372,372,

2146.,190,372,372,

2560.,164,372,372,

2568.,193,374,374,

R, 1 , 65 ,10

337,770,371.,195

R, 2 , 65 ,10

328,720,369.,196
R, 3 , 65 ,10
306,526,369.,230
R, 4 , 65 ,10
384,475,369.,228
R, 5 , 65 ,10
462,426,371.,226
R, 6 , 65 ,10
546,381,371.,224
R, 7 , 65 ,10
626,333,373.,222
R, 8 , 65 ,10
711,283,375.,220
R, 9 , 65 ,10
801,237,375.,218
R, 10 , 65 ,10
904,213,375.,216
R, 11 , 65 ,10
1058,250,373.,213
R, 12 , 65 ,10
1198,433,375.,148
R, 13 , 65 ,10
1229,520,377.,146
R, 14 , 65 ,10
1264,609,377.,144
R, 15 , 65 ,10
1297,703,377.,142
R, 16 , 65 ,10
1329,790,377.,140
R, 17 , 65 ,10
1377,872,377.,138
R, 18 , 65 ,10
1923,358,389.,319
R, 19 , 65 ,10
2046,380,387.,322
R, 20 , 65 ,10
2215,409,385.,326
R, 21 , 65 ,10
2385,414,383.,330
R, 22 , 65 ,10
2517,415,381.,333
R, 23 , 65 ,10
2629,585,401.,396
R, 24 , 65 ,10
2767,582,413.,398
R, 25 , 65 ,10
2905,613,425.,400
R, 26 , 65 ,10
3032,674,435.,402
R, 27 , 65 ,10
3146,720,447.,404
R, 28 , 65 ,10
1694,511,393.,268
R, 29 , 65 ,10
1775,485,393.,269
R, 30 , 65 ,10
1911,497,393.,280
R, 31 , 65 ,10
2217,548,395.,283
R, 32 , 65 ,10
2350,640,399.,284
R, 33 , 65 ,10
2477,544,391.,318
R, 34 , 65 ,10
1536,372,375.,BB
R, 35 , 65 ,10
1525,261,373.,Tot
R, 36 , 65 ,10
1609,262,374.,Base
R, 37 , 65 ,10
1933,283,376.,Park
D, 4.5
ALL,ALL
C,C

SOUND32 - RELEASE 07/30/91

TITLE:

Warner Ranch - Ground Level Mitigated

REC REC ID DNL PEOPLE LEQ(CAL)

1	195	65.	10.	54.5
2	196	65.	10.	55.0
3	230	65.	10.	58.3
4	228	65.	10.	58.9
5	226	65.	10.	59.7
6	224	65.	10.	59.3
7	222	65.	10.	58.4
8	220	65.	10.	59.0
9	218	65.	10.	59.5
10	216	65.	10.	60.3
11	213	65.	10.	60.0
12	148	65.	10.	60.2
13	146	65.	10.	58.7
14	144	65.	10.	57.2
15	142	65.	10.	55.8
16	140	65.	10.	54.7
17	138	65.	10.	53.8
18	319	65.	10.	60.4
19	322	65.	10.	58.0
20	326	65.	10.	59.8
21	330	65.	10.	59.9
22	333	65.	10.	60.0
23	396	65.	10.	59.1
24	398	65.	10.	59.5
25	400	65.	10.	59.1
26	402	65.	10.	58.4
27	404	65.	10.	57.8
28	268	65.	10.	59.3
29	269	65.	10.	59.7
30	280	65.	10.	59.1
31	283	65.	10.	58.2
32	284	65.	10.	57.4
33	318	65.	10.	58.9
34	BB	65.	10.	61.2
35	Tot	65.	10.	65.6
36	Base	65.	10.	65.0
37	Park	65.	10.	62.2

Warner Ranch - Second Level Facades

T-SR76, 1

3231 , 55 , 102 , 55 , 68 , 55

L-76, 1

N,-269,-,-70,353,

N,-124,-26,355,

N,-6,-9,355,

N,210,17,354,

N,426,42,354,

N,984,106,354,

N,1333,131,357,

N,1622,128,358,

N,2107,113,362,

N,2916,68,368,

N,3413,,46,372,

N,4900,-,-24,384,

B-213-230, 1 , 2 , 0 ,0

284,,561,364,364,

288,,529,364,364,

438,,431,366,366,

520,,387,366,366,

684,,289,370,370,

768,,238,370,370,

876,,204,370,370,

932,,205,370,370,

988,,210,368,368,

1088,,258,368,368,

1060,,302,368,368,

B-138-148, 2 , 2 , 0 ,0

1154,,420,370,370,

1198,,405,370,370,

1228,,495,372,372,

1326,,767,372,372,

1396,,865,372,372,

B-319-333, 3 , 2 , 0 ,0

1895,,381,384,384,

1901,,346,384,384,

1985,,364,384,384,

2110,,389,382,382,

2195,,401,380,380,

2278,,407,380,380,

2490,,410,376,376,

2554,,410,376,376,

2547,,457,376,376,

B-268-283, 4 , 2 , 0 ,0

1661,,518,390,390,

1705,,484,390,390,

1722,,481,392,392,

1782,,464,392,392,

2111,,521,392,392,

2194,,535,394,394,

2254,,543,394,394,

2269,,566,394,394,

B-West, 5 , 1 , 0 ,0

294,,522,364,364,

300,,495,362,362,

319,,435,362,362,

339,,389,360,360,

455,,137,360,360,

1045,,207,362,362,

1208,,218,362,362,

1278,,295,364,364,

1282,,356,364,364,

B-Park, 6 , 1 , 0 ,0

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1414.,232,364,364,
1531.,219,368,368,
1814.,201,368,368,
1824.,203,372,372,
2140.,180,372,372,
2146.,190,372,372,
2560.,164,372,372,
2568.,193,374,374,
R, 1 , 65 ,10
337,770,381.,195
R, 2 , 65 ,10
328,720,379.,196
R, 3 , 65 ,10
306,526,379.,230
R, 4 , 65 ,10
384,475,379.,228
R, 5 , 65 ,10
462,426,381.,226
R, 6 , 65 ,10
546,381,381.,224
R, 7 , 65 ,10
626,333,383.,222
R, 8 , 65 ,10
711,283,385.,220
R, 9 , 65 ,10
801,237,385.,218
R, 10 , 65 ,10
904,213,385.,216
R, 11 , 65 ,10
1058,250,383.,213
R, 12 , 65 ,10
1198,433,385.,148
R, 13 , 65 ,10
1229,520,387.,146
R, 14 , 65 ,10
1264,609,387.,144
R, 15 , 65 ,10
1297,703,387.,142
R, 16 , 65 ,10
1329,790,387.,140
R, 17 , 65 ,10
1377,872,387.,138
R, 18 , 65 ,10
1923,358,399.,319
R, 19 , 65 ,10
2046,380,397.,322
R, 20 , 65 ,10
2215,409,395.,326
R, 21 , 65 ,10
2385,414,393.,330
R, 22 , 65 ,10
2517,415,391.,333
R, 23 , 65 ,10
2629,585,411.,396
R, 24 , 65 ,10
2767,582,423.,398
R, 25 , 65 ,10
2905,613,435.,400
R, 26 , 65 ,10
3032,674,445.,402
R, 27 , 65 ,10
3146,720,457.,404
R, 28 , 65 ,10

1694,511,403.,268
R, 29 , 65 ,10
1775,485,403.,269
R, 30 , 65 ,10
1911,497,403.,280
R, 31 , 65 ,10
2217,548,405.,283
R, 32 , 65 ,10
2350,640,409.,284
R, 33 , 65 ,10
2477,544,401.,318
C,C

SOUND32 - RELEASE 07/30/91

TITLE:

Warner Ranch - Second Level Facades

REC REC ID DNL PEOPLE LEQ(CAL)

1 195 65. 10. 58.5
2 196 65. 10. 59.3
3 230 65. 10. 62.9
4 228 65. 10. 63.3
5 226 65. 10. 64.0
6 224 65. 10. 64.7
7 222 65. 10. 65.6
8 220 65. 10. 69.6
9 218 65. 10. 71.5
10 216 65. 10. 72.7
11 213 65. 10. 71.9
12 148 65. 10. 64.2
13 146 65. 10. 62.0
14 144 65. 10. 60.4
15 142 65. 10. 58.9
16 140 65. 10. 57.9
17 138 65. 10. 57.4
18 319 65. 10. 65.4
19 322 65. 10. 64.2
20 326 65. 10. 63.1
21 330 65. 10. 64.0
22 333 65. 10. 65.2
23 396 65. 10. 63.9
24 398 65. 10. 64.4
25 400 65. 10. 64.4
26 402 65. 10. 63.9
27 404 65. 10. 63.6
28 268 65. 10. 62.8
29 269 65. 10. 63.0
30 280 65. 10. 62.3
31 283 65. 10. 62.0
32 284 65. 10. 61.8
33 318 65. 10. 63.4

ATTACHMENT D

KOHLER 80 KW GENERATOR SPECIFICATIONS

Industrial Generator Set Accessories

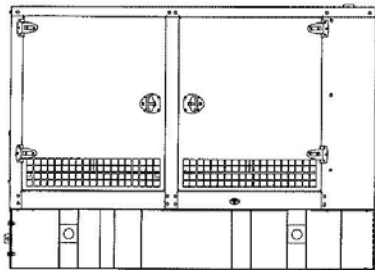
KOHLER.POWER SYSTEMS

Weather/Sound Enclosure and
Subbase Fuel Tank Package

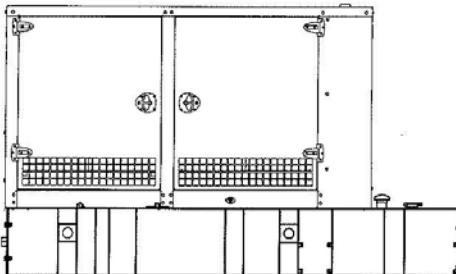


Applicable to the following:

20-60REOZJC
50/60REOZJD
80-275REOZJE
80-200REOZJF
125REOZJG
300REOZJ



Enclosure with Standard Subbase Fuel Tank



Enclosure with State Code Subbase Fuel Tank

Weather Enclosure Standard Features

- Internal-mounted critical silencer and flexible exhaust connector.
- Lift base or tank-mounted, steel construction with hinged doors.
- Fade-, scratch-, and corrosion-resistant Kohler® cream beige powder-baked finish.
- Lockable, flush-mounted door latches.
- Vertical air inlet and outlet discharge to redirect air and reduce noise.
- Certified to withstand 241 kph (150 mph) wind load rating. Available on all models, except 80-150REOZJE with steel enclosure and 125REOZJF with steel enclosure.

→ Sound Enclosure Standard Features

- Includes all of the weather enclosure features with the addition of acoustic insulation material.
- Lift base or tank-mounted, steel or aluminum construction with hinged doors. Aluminum enclosures are recommended for high humidity and/or high salt/coastal regions.
- Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.
- Sound attenuated enclosure that uses up to 51 mm (2 in.) of acoustic insulation.

Subbase Fuel Tank Features

- The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).
- Both the inner and outer tanks have emergency relief vents.
- Flexible fuel lines are provided with subbase fuel tank selection.
- The secondary containment generator set base tank meets UL 142 tank requirements. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.

Enclosure and Subbase Fuel Tank Specifications (continued)

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz w/Full Load Nominal/Actual	Enclosure and Subbase Fuel Tank					Fuel Tank Height, mm (in.)	Sound Enclosure, Sound Pressure at 7 m (23 ft.), dB(A)	
		Max. Dimensions, mm (in.)			Weight, kg (lb.)				
		Length	Width	Height	With Steel Enclosure	With Aluminum Enclosure			
80REOZJE and 80REOZJF									
Lifting Base	0	2821 (111.1)	1156 (45.5)	1525 (60)	1483 (3269)	1351 (2979)	102 (4)	68	
757 (200)	24/29			1880 (74)	1851 (4080)*	1719 (3790)*	457 (18)		
1314 (347)	48/50			2185 (86)	2108 (4647)*	1976 (4357)*	762 (30)		
80REOZJE and 80REOZJF with State Code Fuel Tank†									
815 (215)	24/31	3400 (133.9)	1156 (45.5)	1855 (73)	1996 (4400)*	1864 (4110)*	432 (17)	68	
1570 (415)	48/60			2185 (86)	2236 (4929)*	2104 (4639)*	762 (30)		
100REOZJE and 100REOZJF									
Lifting Base	0	2821 (111.1)	1156 (45.5)	1525 (60)	1592 (3510)	1461 (3220)	102 (4)	68	
757 (200)	24/24			1880 (74)	1960 (4320)*	1828 (4030)*	457 (18)		
1700 (449)	48/55			2185 (86)	2345 (5170)*	2214 (4880)*	762 (30)		
100REOZJE and 100REOZJF with State Code Fuel Tank†									
815 (215)	24/26	3400 (133.9)	1156 (45.5)	1855 (73)	2105 (4641)*	1974 (4351)*	432 (17)	68	
1570 (415)	48/50			2185 (86)	2345 (5170)*	2214 (4880)*	762 (30)		
125REOZJF and 125REOZJG									
Lifting Base	0	3532 (139.0)	1153 (45.4)	1753 (69)	1651 (3632)	1515 (3333)	0 (0)	71	
1131 (298)	24/32			2236 (88)	2400 (5280)*	2264 (4981)*	483 (19)		
2207 (583)	48/63			2667 (105)	2751 (6052)*	2615 (5753)*	914 (36)		
125REOZJF and 125REOZJG with State Code Fuel Tank†									
1198 (316)	24/34	4414 (173.8)	1153 (45.4)	2236 (88)	2382 (5240)*	2446 (4941)*	483 (19)	71	
2255 (595)	48/65			2591 (102)	2654 (5839)*	2518 (5540)*	838 (33)		
150REOZJE and 150REOZJF									
Lifting Base	0	3532 (139.0)	1153 (45.4)	1753 (69)	1860 (4101)	1724 (3800)	0 (0)	73	
1131 (298)	24/25			2236 (88)	2609 (5752)*	2473 (5452)*	483 (19)		
2207 (583)	48/50			2667 (105)	2960 (6526)*	2824 (6226)*	914 (36)		
150REOZJE and 150REOZJF with State Code Fuel Tank†									
1198 (316)	24/27	4414 (173.8)	1153 (45.4)	2236 (88)	2591 (5712)*	2455 (5412)*	483 (19)	73	
2255 (595)	48/51			2591 (102)	2863 (6311)*	2727 (6012)*	838 (33)		
180REOZJE and 180REOZJF									
Lifting Base	0	4094 (161.2)	1300 (51.2)	2128 (84)	1928 (4250)	1780 (3925)	0 (0)	72	
1514 (400)	24/29			2611 (103)	2861 (6307)*	2713 (5981)*	483 (19)		
2871 (758)	48/56			3017 (119)	3255 (7176)*	3107 (6850)*	889 (35)		
180REOZJE and 180REOZJF with State Code Fuel Tank†									
1576 (416)	24/31	5008 (197.2)	1300 (51.2)	2585 (102)	3162 (6971)*	3014 (6646)*	457 (18)	72	
2896 (765)	48/56			2890 (114)	3488 (7690)*	3340 (7363)*	762 (30)		
200REOZJE and 200REOZJF									
Lifting Base	0	4094 (161.2)	1300 (51.2)	2128 (84)	2309 (5090)	2161 (4764)	0 (0)	73	
1514 (400)	24/26			2611 (103)	3242 (7147)*	3094 (6821)*	483 (19)		
2871 (758)	48/50			3017 (119)	3636 (8016)*	3488 (7690)*	889 (35)		
200REOZJE and 200REOZJF with State Code Fuel Tank†									
1576 (416)	24/27	5008 (197.2)	1300 (51.2)	2585 (102)	3543 (7811)*	3395 (7485)*	457 (18)	73	
2896 (765)	48/50			2890 (114)	3869 (8530)*	3721 (8203)*	762 (30)		

ATTACHMENT E

Fresnel Barrier Reduction Calculations

Potential Habitat Area

Source to Receiver Horizontal Distance (ft) = 119.00
Source to Barrier Horizontal Distance (ft) = 5.00
Barrier to Receiver Horizontal Distance (ft) = 114.00
Source Height (ft) = 365.00
Receiver Height (ft) = 357.00
Barrier Height (ft) = 366.00
Distance Source to Receptor (ft) $d = 119.27$
Distance Source to Barrier top (ft) $d1 = 5.10$
Distance Barrier top to Receiver (ft) $d2 = 114.35$

Frequency (Hz) = 8000 Attenuation (db) = 17.1 Fresnel N = 2.628
Frequency (Hz) = 4000 Attenuation (db) = 14.3 Fresnel N = 1.314
Frequency (Hz) = 2000 Attenuation (db) = 12.0 Fresnel N = 0.657
Frequency (Hz) = 1000 Attenuation (db) = 10.1 Fresnel N = 0.329
Frequency (Hz) = 500 Attenuation (db) = 8.6 Fresnel N = 0.164
Frequency (Hz) = 250 Attenuation (db) = 7.3 Fresnel N = 0.082
Frequency (Hz) = 125 Attenuation (db) = 6.2 Fresnel N = 0.041
Frequency (Hz) = 63 Attenuation (db) = 5.3 Fresnel N = 0.021

Property Zoned A-70 to the West

Source to Receiver Horizontal Distance (ft) = 355.00
Source to Barrier Horizontal Distance (ft) = 5.00
Barrier to Receiver Horizontal Distance (ft) = 350.00
Source Height (ft) = 365.00
Receiver Height (ft) = 355.00
Barrier Height (ft) = 366.00
Distance Source to Receptor (ft) $d = 355.14$
Distance Source to Barrier top (ft) $d1 = 5.10$
Distance Barrier top to Receiver (ft) $d2 = 350.17$

Frequency (Hz) = 8000 Attenuation (db) = 15.6 Fresnel N = 1.860
Frequency (Hz) = 4000 Attenuation (db) = 13.1 Fresnel N = 0.930
Frequency (Hz) = 2000 Attenuation (db) = 11.0 Fresnel N = 0.465
Frequency (Hz) = 1000 Attenuation (db) = 9.3 Fresnel N = 0.233
Frequency (Hz) = 500 Attenuation (db) = 7.9 Fresnel N = 0.116
Frequency (Hz) = 250 Attenuation (db) = 6.8 Fresnel N = 0.058
Frequency (Hz) = 125 Attenuation (db) = 5.7 Fresnel N = 0.029
Frequency (Hz) = 63 Attenuation (db) = 5.1 Fresnel N = 0.015

Proposed Residential to the North

Source to Receiver Horizontal Distance (ft) = 284.00
Source to Barrier Horizontal Distance (ft) = 5.00
Barrier to Receiver Horizontal Distance (ft) = 279.00
Source Height (ft) = 365.00
Receiver Height (ft) = 378.00
Barrier Height (ft) = 366.00
Distance Source to Receptor (ft) $d = 284.30$
Distance Source to Barrier top (ft) $d1 = 5.10$
Distance Barrier top to Receiver (ft) $d2 = 279.26$

Frequency (Hz) = 8000 Attenuation (db) = 12.8 Fresnel N = 0.846
Frequency (Hz) = 4000 Attenuation (db) = 10.8 Fresnel N = 0.423
Frequency (Hz) = 2000 Attenuation (db) = 9.1 Fresnel N = 0.211
Frequency (Hz) = 1000 Attenuation (db) = 7.7 Fresnel N = 0.106
Frequency (Hz) = 500 Attenuation (db) = 6.6 Fresnel N = 0.053
Frequency (Hz) = 250 Attenuation (db) = 5.6 Fresnel N = 0.026
Frequency (Hz) = 125 Attenuation (db) = 5.0 Fresnel N = 0.013
Frequency (Hz) = 63 Attenuation (db) = 4.9 Fresnel N = 0.007

Property Zoned A-70 to the South

Source to Receiver Horizontal Distance (ft) = 171.00
Source to Barrier Horizontal Distance (ft) = 5.00
Barrier to Receiver Horizontal Distance (ft) = 166.00
Source Height (ft) = 365.00
Receiver Height (ft) = 355.00
Barrier Height (ft) = 366.00
Distance Source to Receptor (ft) $d = 171.29$
Distance Source to Barrier top (ft) $d1 = 5.10$
Distance Barrier top to Receiver (ft) $d2 = 166.36$

Frequency (Hz) = 8000 Attenuation (db) = 16.8 Fresnel N = 2.427
Frequency (Hz) = 4000 Attenuation (db) = 14.0 Fresnel N = 1.213
Frequency (Hz) = 2000 Attenuation (db) = 11.7 Fresnel N = 0.607
Frequency (Hz) = 1000 Attenuation (db) = 9.9 Fresnel N = 0.303
Frequency (Hz) = 500 Attenuation (db) = 8.4 Fresnel N = 0.152
Frequency (Hz) = 250 Attenuation (db) = 7.2 Fresnel N = 0.076
Frequency (Hz) = 125 Attenuation (db) = 6.1 Fresnel N = 0.038
Frequency (Hz) = 63 Attenuation (db) = 5.3 Fresnel N = 0.019

