"Horizons" (Prielipp Road, APN: 380-250-023)

NOISE IMPACT ANALYSIS

CITY OF WILDOMAR

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
INCE	institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
mph	Miles per hour
NLR	Noise Level Reduction
Project	"Horizons" (Prielipp Road, APN: 380-250-023)
RCNM	Roadway Construction Noise Model
REMEL	Reference Energy Mean Emission Level
STC	Sound Transmission Class

EXECUTIVE SUMMARY

A revised noise study has been completed to determine the noise exposure and the necessary noise mitigation measures for the proposed "Horizons" (Prielipp Road, APN: 380-250-023) mixed-use development ("Project"). This noise study has been revised based on comments provided by PMC dated March 16, 2015. The response to comment letter is included in Appendix ES.1.

The Project includes the development of approximately 138 condo/townhomes, 54 assisted living units, and 32 skilled nursing units. The Project site is located within the City of Wildomar, north of Prielipp Road and west of Elizabeth Lane on a currently vacant lot. The purpose of this noise assessment is to evaluate the noise impacts for the Project study area and to recommend noise mitigation measures, if necessary, to minimize the potential Project impacts, as shown in Exhibit ES-A. In addition, this study has been prepared to satisfy the City of Wildomar exterior and interior noise standards.

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise impacts on the surrounding off-site areas, the changes in traffic noise levels on 12 roadway segments surrounding the Project site were estimated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in *"Horizons" (Prielipp Road, APN: 380-250-023) Traffic Impact Analysis* prepared by Urban Crossroad in October 2013.(1) To assess the off-site noise level impacts associated with the proposed project, noise contour boundaries were developed for Existing, Year 2017 and Year 2035 traffic conditions. The results of the off-site noise analysis show that the proposed Project will not create a substantial permanent increase in traffic-related noise levels or expose persons to noise levels in excess of the exterior noise level standards, and therefore, no off-site traffic noise mitigation is required.

ON-SITE TRAFFIC NOISE ANALYSIS

The results of this analysis indicate that the future vehicle noise from Elizabeth Lane and Prielipp Road represents the principal source of community noise that will impact the site. The Project will also experience some background traffic noise impacts from the proposed Bunny Trail roadway to the north and the Project's internal roads, however due to the distance, topography and low traffic volume/speeds, traffic noise from these roads will not make a significant contribution to the noise environment. The following on-site noise analysis has been conducted to determine if any mitigation measures are necessary to satisfy the City of Wildomar noise standards.

EXTERIOR NOISE MITIGATION

Based on the exterior noise impact analysis, exterior noise abatement measures are not required. The exterior noise analysis indicates that the unmitigated exterior noise levels will range from 48.1 to 63.0 dBA CNEL. According to the City of Wildomar's land use/noise compatibility criteria the expected exterior noise levels at the proposed assisted living and multi-family residential development are considered *conditionally acceptable.* When exterior noise levels fall within the *conditionally acceptable* category, new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design.

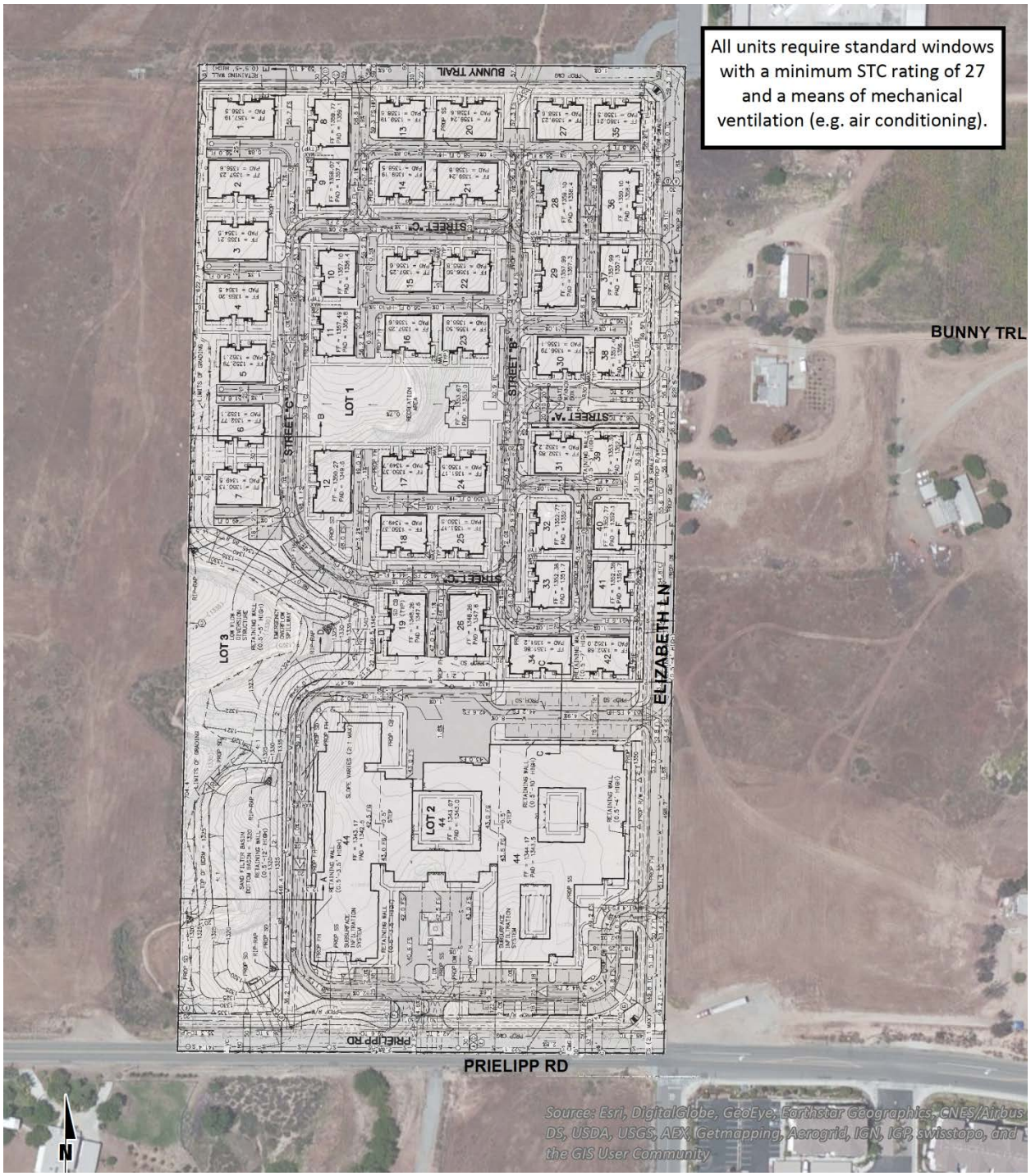
INTERIOR NOISE MITIGATION

To satisfy the City of Wildomar 45 dBA CNEL interior noise level criteria, the townhomes facing Elizabeth Lane will require a Noise Level Reduction (NLR) of up to 18.0 dBA and the assisted living units (east façade) will require a NLR of up to 19.4 dBA. The assisted living (south façade) building facing Prielipp Road will require noise level reductions of up to 19.1 dBA. Additionally, all units facing Elizabeth Lane and Prielipp Road will require a windows closed condition with a means of mechanical ventilation (e.g. air conditioning). The interior noise analysis indicates that in order to meet the City of Wildomar 45 dBA CNEL interior noise standards the Project shall provide the following noise mitigation measures:

- Windows: All windows and sliding glass doors shall be well fitted, well weather-stripped assemblies and shall have a minimum STC of 27.
- Doors: All exterior doors shall be well weather-stripped solid core assemblies at least one and three-fourths-inch thick.
- Roof: Roof sheathing of wood construction shall be well fitted or caulked plywood of at least one-half inch thick. Ceilings shall be well fitted, well sealed gypsum board of at least one-half inch thick. Insulation with at least a rating of R-19 shall be used in the attic space.
- Ventilation: Arrangements for any habitable room shall be such that any exterior door or window can be kept closed when the room is in use. A forced air circulation system (e.g. air conditioning) shall be provided which satisfy the requirements of the Uniform Mechanical Code.

With the interior noise mitigation measures provided in this study, the proposed "Horizons" (Prielipp Road, APN: 380-250-023) is expected to meet the City of Wildomar 45 dBA CNEL interior noise level standards for residential development.

EXHIBIT ES-A: SUMMARY OF RECOMMENDATIONS



CONSTRUCTION NOISE ANALYSIS

Construction noise represents a short-term impact on the ambient noise levels. Based on the five phases of construction related noise impacts, the noise impacts associated with the proposed Project are expected to create temporary high-level noise impacts at receivers surrounding the Project site when certain activities occur near the Project property line.

CONSTRUCTION NOISE ABATEMENT MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce any noise level increases produced by the construction equipment to the nearby noise sensitive residential land uses.

- A noise mitigation plan shall be prepared and submitted prior to starting all construction projects to the City. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:
    - If feasible, install temporary noise control barriers that provide a minimum noise level attenuation of 10 dBA when Project construction occurs near existing noise-sensitive structures. The noise control barrier must present a solid face from top to bottom. The noise control barrier must be high enough and long enough to block the view of the noise source. Unnecessary openings shall not be made.
        - The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
        - The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.
    - During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receivers nearest the Project site.
    - The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receivers nearest the Project site during all Project construction.
    - The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May). The contractor shall prepare a haul route exhibit and shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.
- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities shall occur between the permitted hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May

(Section 9.48.020). The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.

- The construction contractor shall post a publicly visible sign with the telephone number and person to contact regarding noise complaints. The construction manager, within seventy-two hours of receipt of a noise complaint, shall either take corrective actions or, if immediate action is not feasible, provide a plan or corrective action to address the source of the noise complaint.

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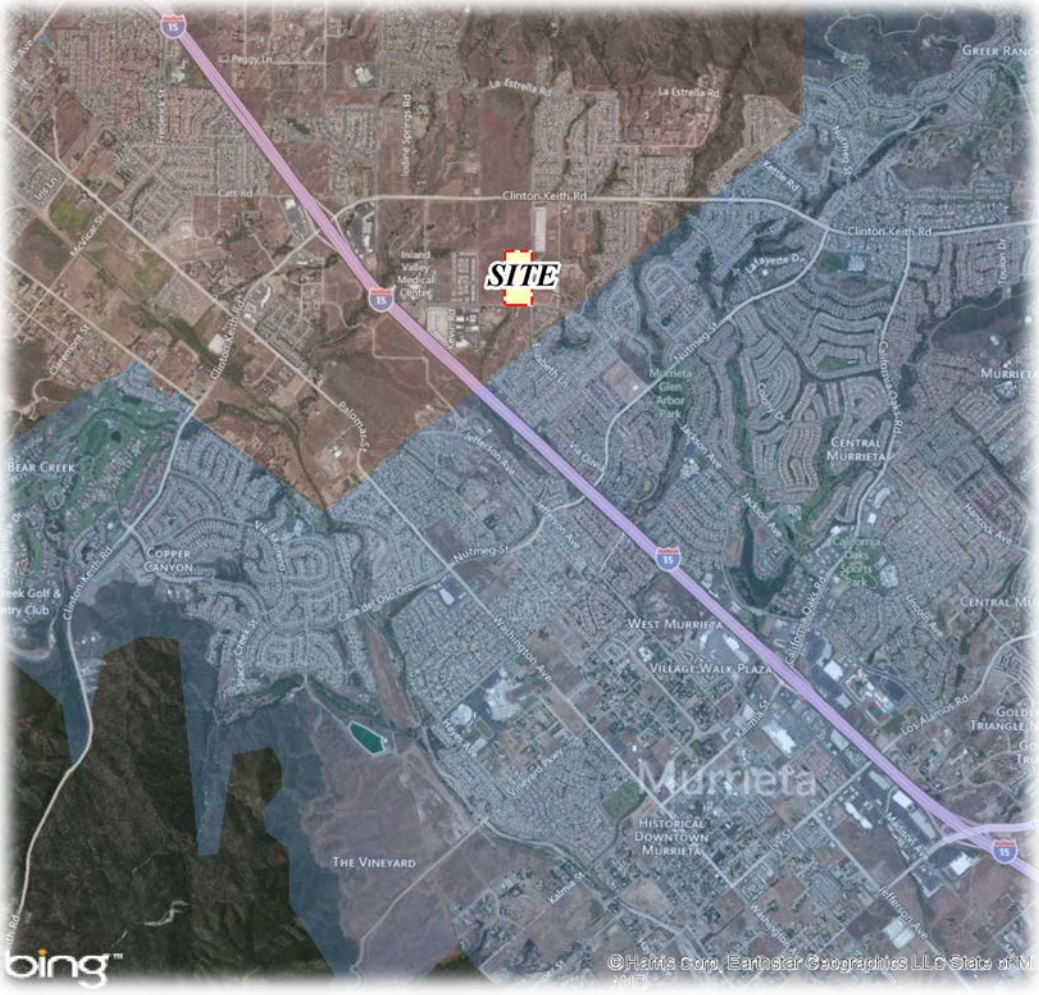
1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed "Horizons" (Prielipp Road, APN: 380-250-023) ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment.

1.1 SITE LOCATION

The proposed "Horizons" (Prielipp Road, APN: 380-250-023) development is located north of Prielipp Road and west of Elizabeth Lane in the City of Wildomar, as shown on Exhibit 1-A.

EXHIBIT 1-A: LOCATION MAP



1.2 PROJECT DESCRIPTION

The Project includes the development of approximately 138 condo/townhomes, 54 assisted living units, and 32 skilled nursing units. The site plan used to support this analysis is shown in Exhibit 1-B.

EXHIBIT 1-B: SITE PLAN

2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud.(3) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort.(4) Another

important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite twenty-four hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7 p.m. to 10 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10 p.m. and 7 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure. The City of Wildomar relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling add to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been

expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source.

2.3.3 ATMOSPHERIC EFFECTS

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 ft) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure.

2.4 TRAFFIC NOISE PREDICTION

According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance,* provided by the Federal Highway Administration, the level of traffic noise depends on three primary factors: the volume of the traffic, the speed of the traffic, and the vehicle mix within the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks.(5) A doubling of the traffic volume, assuming that the speed and vehicle mix do not change, results in a noise level increase of 3 dBA. The vehicle mix on a given roadway may also have an effect on community noise levels. As the number of medium and heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise level impacts will increase. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires on the roadway.

2.5 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.6 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of the noise source. (5)

2.7 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than are commercial or industrial activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

2.8 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level of the receptor;
- Noise receptor's perception that they are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Receptor's belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (7) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and

each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people begin complaining. Group or legal actions to stop the noise should be expected to begin at traffic noise levels near 70 dBA and aircraft noise levels near 60 dBA. (7)

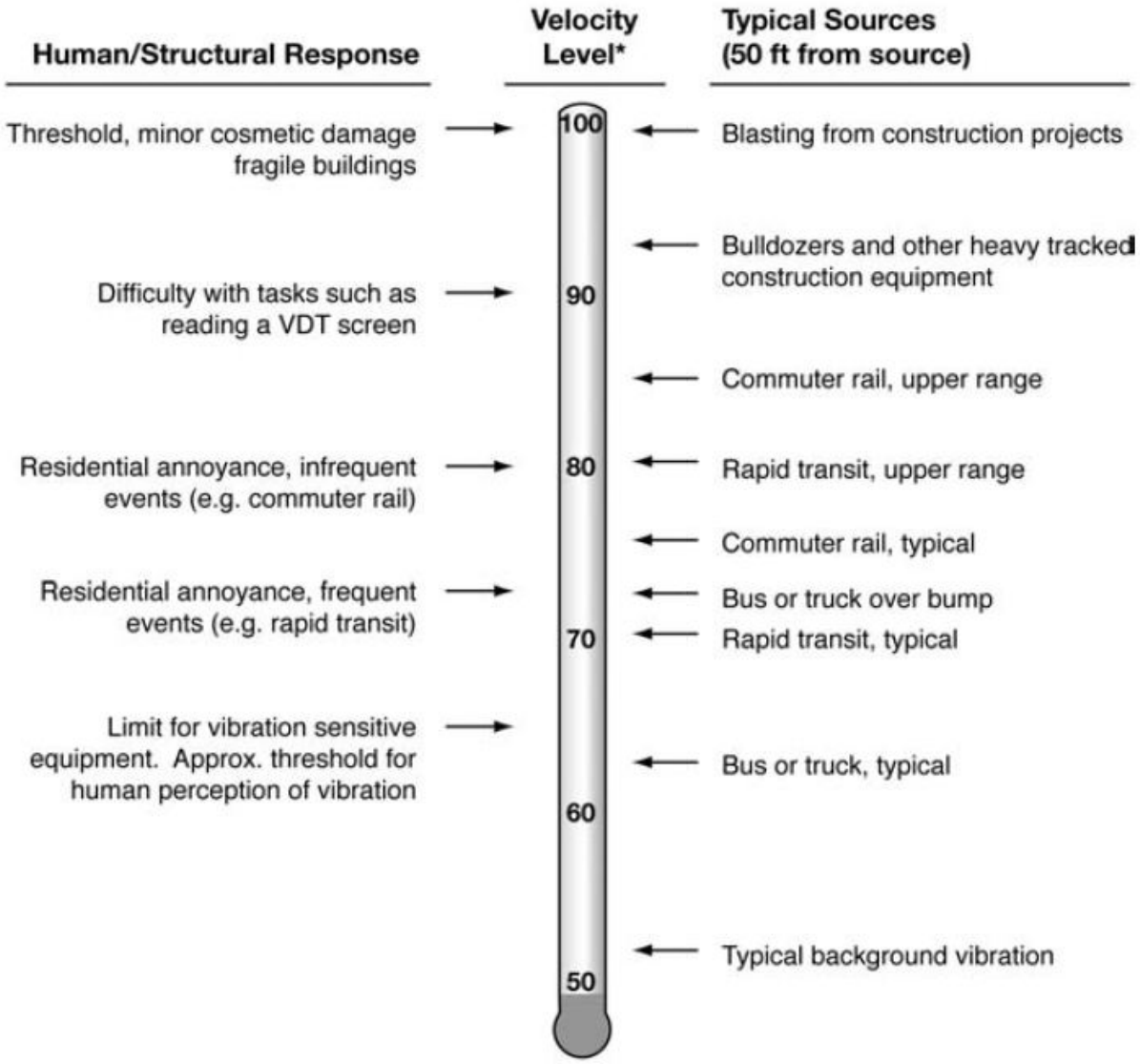
Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered "barely perceptible," and changes of 5 dBA are considered "readily perceptible." (5)

2.9 VIBRATION

According to the Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency. Vibration is often described in units of velocity (inches per second), and discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts are generally associated with activities such as train operations, construction and heavy truck movements.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-B illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-B: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. (9) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.3 CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT

The City of Wildomar was incorporated as a City in October of 2008. Through the incorporation process, the City adopted the Riverside County General Plan Noise Element to control and abate environmental noise, and to protect the citizens of the City of Wildomar from excessive exposure to noise. (10) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community, and establishes

noise level requirements for all land uses. To protect City of Wildomar residents from excessive noise, the Noise Element contains the following seven policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider residential use as noise-sensitive and discourage this use in areas in excess of 65 CNEL.

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 1.7 Require proposed land uses, affected by unacceptable high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.

N12.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N1.3) by requiring the developer to submit a construction-related noise mitigation plan to the City for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

i. Temporary noise attenuation fences;
ii. Preferential location and equipment; and
iii. Use of current noise suppression technology and equipment.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) which, when located in an area of 60 CNEL or greater, may require an acoustical analysis. To prevent and mitigate noise impacts for its residents (N 1.5), the City of Wildomar requires noise attenuation measures for any land use exposed to noise levels higher than 65 CNEL. The intent of policy N 1.7 is to require a noise analysis for land uses impacted by unacceptably high noise levels and include mitigation measures in the design. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 12.1 through 12.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses.(10)

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Wildomar Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels

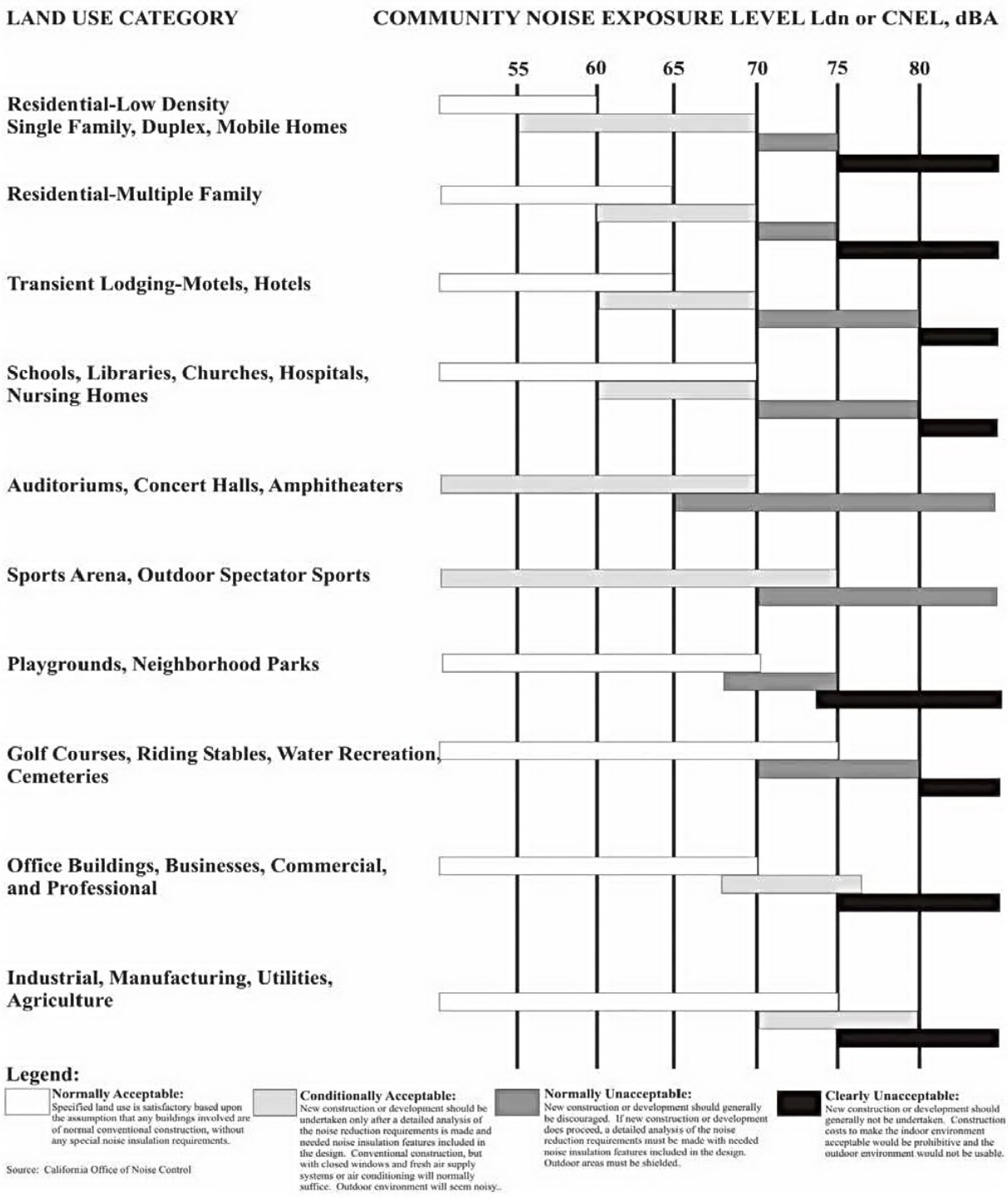
The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. The proposed "Horizons" (Prielipp Road, APN: 380-250-023) development contains multi-family residential and nursing home land uses. Multi-family residential land use is considered *normally acceptable* with unmitigated exterior levels of less than 65 dBA CNEL, while nursing home land uses are *normally acceptable* with unmitigated exterior noise levels of less than 70 dBA CNEL. For *conditionally acceptable* exterior noise levels, approaching 70 dBA CNEL for multi-family and nursing home land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.*

3.3.2 TRANSPORTATION NOISE STANDARDS

The City of Wildomar General Plan Noise Element specifies the maximum noise levels allowable for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. The transportation noise standards (mobile noise source criteria) are derived from standards contained in the *General Plan Guidelines*, a publication of the California Office of Planning and Research. (9) For noise-sensitive residential uses the exterior noise levels shall not exceed 65 dBA CNEL. In addition, the City requires that residential developments achieve an indoor noise standard of 45 dBA CNEL with windows closed, based on the California Building Code requirements.

Consistent with the residential land use noise criteria and the transportation noise standards of the Noise Element, this noise study has been prepared to satisfy an exterior noise level of less than 65 dBA CNEL and an interior noise level of less than 45 dBA CNEL. The 65 dBA CNEL exterior noise standards typically apply to outdoor areas where people congregate. In the case of residential projects, the standards typically apply to private yards of single-family homes and first-floor patio areas for multi-family units. The City of Wildomar General Plan Noise Element is included in Appendix 3.1. (10)

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



3.4 CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT EIR

The City of Wildomar General Plan Environmental Impact Report (EIR) describes the impacts and mitigation measures required as a result of the General Plan Noise Element. Three potentially significant impacts are identified that potentially apply to the Project, and the General Plan EIR recommends mitigation measures based on policies found in the Noise Element to reduce the impacts to less than significant levels. The recommended noise mitigation measures included in this analysis are consistent with those identified in the City of Wildomar General Plan Noise Element EIR, included in Appendix 3.2.

3.4.1 IMPACT 4.13.1: SHORT-TERM CONSTRUCTION NOISE IMPACTS

The General Plan EIR identifies construction noise as a potentially significant impact resulting in noise levels approaching 91 dBA L_{max} at off-site locations 50 feet from the Project site boundary.(11) In accordance with the City's Noise Ordinance, adopted from the County of Riverside Code of Ordinances, the General Plan EIR states that: *compliance with the County's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level.* To minimize the impacts of construction noise, the Noise Element identifies the following policies:

N12.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N1.3) by requiring the developer to submit a construction-related noise mitigation plan to the City for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

- *i. Temporary noise attenuation fences;*
- *ii. Preferential location and equipment; and*
- *iii. Use of current noise suppression technology and equipment.*

In addition to the policies of the Noise Element, the following mitigation measures are required by the General Plan EIR to reduce the impacts of construction noise:

4.13.1A Prior to the issuance of any grading plans, the County shall condition approval of subdivisions adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the County for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:

- *The construction contractor shall use temporary noise attenuation fences where feasible, to reduce construction noise impacts on adjacent noise-sensitive land uses.*
- *During all project site excavation and grading on site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.*
- *The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.*
- *The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.*

4.13.1B *The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by County staff.*

3.4.2 IMPACT 4.13.2: LONG-TERM VEHICULAR TRAFFIC NOISE IMPACTS

Noise-sensitive land uses along roadways in the City of Wildomar are expected to be affected by long-term vehicular traffic noise due to the General Plan.(11) All new developments require a careful review of the potential noise impacts before City approval, in accordance with policies 6.1 to 6.4 and 8.1 to 8.7 of the Noise Element. Policies 6.1 to 6.4 address mobile noise sources in relation to City owned vehicles, and restrictions on truck deliveries and motorized off-road vehicles. To reduce traffic noise, policies 8.1 to 8.7 contain noise analysis requirements and noise mitigation measures for: new roadway projects; new developments that generate increased traffic; and loading and shipping facilities.(11) The General Plan EIR identifies mitigation measures to further reduce the impacts from traffic noise to a less than significant level. The mitigation measures are as follows:

4.13.2A *All new residential developments within the County shall conform to a noise exposure standard of 65 dBA CNEL for outdoor noise in noise-sensitive outdoor activity areas and 45 dBA CNEL for indoor noise in bedrooms and living/family rooms. New development, which does not and cannot be made to conform to this standard, shall not be permitted.*

4.13.2B *Acoustical studies, describing how the exterior and interior noise standards will be met, shall be required for all new residential developments with a noise*

exposure greater than 65 dBA CNEL. The studies shall also satisfy the requirements set forth in Title 24, Part 2, or the California Administrative Code, Noise Insulation Standards, for multiple family attached homes, hotels, motels, etc., regulated by Title 24. No development permits or approval of land use applications shall be issued until an acoustic analysis is received and approved by the County Planning Department.

4.13.2C *The County shall require that proposed new commercial and industrial developments prepare acoustical studies, analyzing potential noise impacts on adjacent properties, when these developments abut noise-sensitive land uses. The County will require that all identified impacts to noise-sensitive land uses be mitigated to a less than significant level.*

4.13.2D *Ensure that all new schools, particularly in subdivisions and specific plans, are sited more than two miles away from an airport.*

With the adoption and implementation of these policies and mitigation measures, the Project would result in a less than significant impact on ambient noise relative to existing noise conditions.

3.4.3 IMPACT 4.13.4: LONG-TERM RAILROAD NOISE IMPACTS

The Project is not located within the future railroad noise contours identified in the General Plan EIR, and therefore the impacts from railroad noise would be less than significant.

3.4.4 NOISE LEVEL OF SIGNIFICANCE AFTER MITIGATION

With the mitigation measures identified in the General Plan EIR, the short-term construction, long-term mobile, and railroad noise impacts associated with the Noise Element were determined to be less than significant.

3.5 CITY OF WILDOMAR CODE OF ORDINANCES

To analyze noise impacts originating from a designated fixed location or private property such as the Project site, noise impacts such as those from construction activities are typically evaluated against standards established under the City's Code of Ordinances.(12) The City of Wildomar Code of Ordinances is included in Appendix 3.3.

3.5.1 OPERATIONAL NOISE STANDARDS

The City of Wildomar Noise Ordinance included in the Code of Ordinances (Chapter 9.48) establishes the maximum permissible noise level that may intrude into a neighbor's property. The Noise Ordinance (Section 9.48.040) establishes the exterior noise level criteria for residential properties affected by stationary noise sources. For residential properties, the exterior noise level shall not exceed 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) and shall not exceed 45 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.). However, it is important to recognize that the City of Wildomar Municipal Code noise level standards incorrectly identify maximum noise level (Lmax) standards that should instead reflect the average (Leq) noise levels. This inaccuracy was originally adopted in the Municipal Code by the

County of Riverside and subsequently adopted by the City of Wildomar at the time of incorporation. Based on several discussions with the County of Riverside Office of Industrial Hygiene, the Municipal Code stationary source noise level standards should reflect the average Leq noise levels. (13) Therefore, exterior noise levels for residential land uses located in the City of Wildomar near the Project site, may not exceed 55 dBA Leq during the daytime hours (7:00 a.m. to 10:00 p.m.), and may not exceed 45 dBA Leq during the nighttime hours (10:00 p.m. to 7:00 a.m.). The City of Wildomar Noise Ordinance is included in Appendix 3.3.

3.5.2 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the City has established limits to the hours of operation. Section 9.48.020 of the City's Noise Ordinance indicates that noise sources associated with private construction projects located within one-quarter of a mile from an inhabited dwelling, are permitted between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. The City of Wildomar has not identified or adopted any specific construction noise standards to assess the direct Project construction noise level impacts. For the purposes of this analysis, the permitted daytime operational noise standards (Section 9.48.040) for residential properties affected by stationary noise sources are used to establish the exterior construction noise level criteria. In the City of Wildomar an exterior noise level of 55 dBA Leq shall be used as the acceptable threshold for determining the impacts due to Project construction for sensitive receivers.

3.6 VIBRATION STANDARDS

The City of Wildomar has not identified or adopted vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses.(8) These guidelines allow 80 VdB for residential uses and buildings where people normally sleep.

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. While not enforceable regulations within the City of Wildomar, the FTA guidelines of 80 VdB for sensitive land uses provide the basis for determining the relative significance of potential Project related vibration impacts.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, impacts would be potentially significant if the Project is determined to result in or cause:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

While the CEQA Guidelines and the City of Wildomar General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under the first threshold, they do not define the levels at which increases are considered substantial for use under the second, third and fourth threshold. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. With this in mind, the Federal Interagency Committee on Noise (FICON) (15) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur even though the noise criteria might not be exceeded. Therefore, for the purpose of this analysis, a *readily perceptible* 5 dBA or greater project related noise level increase is considered a significant impact when nearby noise-sensitive receivers are affected. According to the FICON, in areas where the without project

noise levels range from 60 to 65 dBA a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if noise-sensitive receivers are affected, since it likely contributes to an existing noise deficiency. Table 4.1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS

Without Project Noise Level (CNEL)	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992

Based on the significance of noise impacts outlined on Table 4-1, noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development:

OFF-SITE TRAFFIC NOISE

- If the off-site traffic noise levels at nearby noise-sensitive receivers adjacent to roadways conveying Project traffic:
    - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project related noise level increase (Direct Impact); or
    - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project noise level increase (Direct Impact); or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level impact of greater than 1.5 dBA CNEL (Direct Impact).

ON-SITE TRAFFIC NOISE

- If the on-site noise levels exceed the 65 dBA CNEL exterior or the 45 dBA CNEL interior noise standards at the residential land uses within the Project site (City of Wildomar General Plan Noise Element).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities:
    - occur anytime other than between the permitted hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May (City of Wildomar Municipal Code Section 9.48.020); or
    - create noise levels at sensitive residential receivers in the City of Wildomar which exceed the maximum operational noise level limit of 55 dBA Leq (City of Wildomar Municipal Code, Section 9.48.040).

- If short-term Project generated construction source vibration levels could exceed the FTA maximum acceptable vibration standard of 80 vibration decibels (VdB) at sensitive receiver locations.

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5 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

5.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108.(16) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELS are substituted with the California Vehicle Noise (Calveno) Emission Levels.(17) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

5.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 5-1 presents the roadway parameters used to assess the off-site transportation noise impacts. Table 5-1 identifies the 12 study area roadway segments, the functional roadway classifications according to the General Plan Circulation Element, the number of lanes and the vehicle speeds for each. For the purpose of this analysis, soft site conditions were used to analyze the off-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation.

The Existing, Year 2017 and Year 2035 average daily traffic volumes used for this study as presented in Table 5-2 were provided by the *"Horizons" (Prielipp Road, APN: 380-250-023) Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) Table 5-3 presents the hourly traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 5-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Jurisdiction	Roadway Classification[1]	Lanes	Vehicle Speed (MPH)
1	George Av.	n/o Clinton Keith Road	Riverside County	Secondary	4	45
2	Inland Valley Dr.	s/o Clinton Keith Road	Riverside County	Secondary	4	45
3	Elizabeth Ln.	s/o Clinton Keith Road	Riverside County	Collector	2	40
4	Elizabeth Ln.	n/o Prelipp Rd.	Riverside County	Collector	2	40
5	Clinton Keith Rd.	w/o George Av.	Riverside County	Urban Arterial	6	50
6	Clinton Keith Rd.	e/o George Av.	Riverside County	Urban Arterial	6	50
7	Clinton Keith Rd.	e/o Inland Valley Dr.	Riverside County	Urban Arterial	6	50
8	Clinton Keith Rd.	w/o Elizabeth Ln.	Riverside County	Urban Arterial	6	50
9	Clinton Keith Rd.	e/o Elizabeth Ln.	Riverside County	Urban Arterial	6	50
10	Prelipp Rd.	e/o Inland Valley Dr.	Riverside County	Secondary	4	45
11	Prelipp Rd.	w/o Elizabeth Ln.	Riverside County	Secondary	4	45
12	Prelipp Rd.	e/o Elizabeth Ln.	Riverside County	Secondary	4	45

[1] Road Classifications based upon the General Plan Circulation Element.

TABLE 5-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic (1,000's)					
			Existing		Year 2017		Year 2035	
			No Project	With Project	No Project	With Project	No Project	With Project
1	George Av.	n/o Clinton Keith Road	3.8	3.8	5.5	5.6	8.9	9.0
2	Inland Valley Dr.	s/o Clinton Keith Road	6.3	6.3	8.7	8.7	20.9	21.0
3	Elizabeth Ln.	s/o Clinton Keith Road	0.3	1.0	7.9	8.7	6.1	6.9
4	Elizabeth Ln.	n/o Prelipp Rd.	0.1	0.3	0.4	0.6	5.7	6.0
5	Clinton Keith Rd.	w/o George Av.	20.4	21.0	34.8	35.4	53.4	54.0
6	Clinton Keith Rd.	e/o George Av.	21.4	22.1	35.4	36.1	36.4	37.0
7	Clinton Keith Rd.	e/o Inland Valley Dr.	14.5	15.2	25.9	26.5	38.4	39.0
8	Clinton Keith Rd.	w/o Elizabeth Ln.	14.9	15.5	24.6	25.2	44.4	45.0
9	Clinton Keith Rd.	e/o Elizabeth Ln.	14.2	14.3	19.6	19.8	44.8	45.0
10	Prelipp Rd.	e/o Inland Valley Dr.	6.2	6.2	8.6	8.6	17.9	18.0
11	Prelipp Rd.	w/o Elizabeth Ln.	5.4	5.5	9.3	9.4	18.9	19.0
12	Prelipp Rd.	e/o Elizabeth Ln.	5.3	5.6	9.3	9.6	24.7	25.0

Source:Prielipp Road (APN: 380-250-023) Traffic Impact Analysis, Urban Crossroads, Inc. October 2013.

TABLE 5-3: VEHICLE MIX

Vehicle Type	Daytime (7 am - 7 pm)	Evening (7 pm - 10 pm)	Nighttime (10 pm - 7 am)	Total % Traffic Flow
Automobiles	77.5%	12.9%	9.6%	97.42%
Medium Trucks	84.8%	4.9%	10.3%	1.84%
Heavy Trucks	86.5%	2.7%	10.8%	0.74%

Vehicle mix obtained from the County of Riverside General Plan Circulation Element.

5.3 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

To predict the future on-site noise environment at the Project site, the long-range General Plan Buildout (Post-2035) with project average daily traffic volumes identified in the *"Horizons" (Prielipp Road, APN: 380-250-023) Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) were utilized. The traffic volumes shown on Table 5-4 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the appropriate noise mitigation measures that address the worst-case future conditions.

TABLE 5-4: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Traffic Volume[2]	Speed (MPH)	Site Conditions
Prielipp Road	4	Secondary	20,700	45	Soft
Elizabeth Lane	2	Collector	10,400	40	Soft

[1] Road Classifications based upon the County of Riverside RCIP Roadway Classifications.

[2] Based on the County of Riverside Level of Service "C" Roadway Design Capacity.

To predict the future noise environment at individual units within the Project, coordinate information was collected to identify the noise transmission path between the noise source and receptor. The coordinate information is based on the conceptual Project grading plans prepared by RBF consulting in January 2015. The grading plans included in Appendix 5.1 were used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, the backyard receptor and at the building façade.

Consistent with the Riverside County required traffic noise modeling parameters, the exterior noise level impacts at the backyard receptors were placed five feet above the pad elevation and ten (10) feet from the proposed barrier location or at the proposed building façade, whichever is greater. All first floor receptors were placed five feet above the proposed finished floor elevation at the building façade and all second floor receptors were located fourteen feet above the proposed finished floor elevation.

5.4 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 5-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $L_{VdB}(D) = L_{VdB}(25\text{ ft}) - 30\log(D/25)$

TABLE 5-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

6 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation noise level impacts associated with development of the proposed Project, noise contours were developed based on the *"Horizons" (Prielipp Road, APN: 380-250-023) Traffic Impact Analysis* prepared by Urban Crossroads, Inc.(2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Traffic noise contour boundaries are typically calculated at distances of 100 feet from a roadway centerline. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project: This scenario refers to the existing present-day noise conditions, without the Project and with the construction of the proposed Project.
- Year (2017) Without / With Project: This scenario refers to the background noise conditions at future Year 2017 with and without the proposed Project. This scenario corresponds to 2017 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- Year (2035) Without / With Project: This scenario refers to the background noise conditions at General Plan Buildout (Post-2035) with and without the proposed Project. This scenario corresponds to 2035 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.

6.1 TRAFFIC NOISE CONTOURS

To quantify the Project's traffic noise impacts on the surrounding areas, the changes in traffic noise levels on 12 roadway segments surrounding the Project were calculated based on the changes in the average daily traffic volumes. The noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The traffic noise contour worksheets are included in Appendix 6.1. Based on the cumulative noise impact significance criteria described in Section 4, a significant off-site traffic noise level impact occurs when, the without project noise levels:

- are less than 60 dBA and the project creates a *readily perceptible* 5 dBA or greater project related noise level increase, or:
- range from 60 to 65 dBA and the project creates a *barely perceptible*3 dBA or greater project noise level increase, or;
- already exceed 65 dBA, and the project creates a community noise level impact of greater than 1.5 dBA.

Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, 60 and 55 dBA noise levels. The distance from the centerline of the roadway to the CNEL contour boundaries for roadways in the proposed Project's vicinity are presented in Tables 6-1 through 6-6. The noise contours do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. In addition, since the noise contours reflect modeling of vehicular noise along area roadways, they appropriately do not reflect noise contribution from the surrounding uses within the Project study area.

TABLE 6-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	57.9	RW	RW	72	155
2	Inland Valley Dr.	s/o Clinton Keith Road	60.0	RW	RW	101	217
3	Elizabeth Ln.	s/o Clinton Keith Road	45.5	RW	RW	RW	RW
4	Elizabeth Ln.	n/o Prelipp Rd.	40.7	RW	RW	RW	RW
5	Clinton Keith Rd.	w/o George Av.	66.5	58	126	270	583
6	Clinton Keith Rd.	e/o George Av.	66.7	60	130	279	601
7	Clinton Keith Rd.	e/o Inland Valley Dr.	65.0	RW	100	215	464
8	Clinton Keith Rd.	w/o Elizabeth Ln.	65.1	RW	102	219	472
9	Clinton Keith Rd.	e/o Elizabeth Ln.	64.9	RW	99	212	458
10	Prelipp Rd.	e/o Inland Valley Dr.	60.0	RW	RW	100	215
11	Prelipp Rd.	w/o Elizabeth Ln.	59.4	RW	RW	91	196
12	Prelipp Rd.	e/o Elizabeth Ln.	59.3	RW	RW	90	193

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 6-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	57.9	RW	RW	72	155
2	Inland Valley Dr.	s/o Clinton Keith Road	60.0	RW	RW	101	217
3	Elizabeth Ln.	s/o Clinton Keith Road	50.7	RW	RW	RW	52
4	Elizabeth Ln.	n/o Prelipp Rd.	45.5	RW	RW	RW	RW
5	Clinton Keith Rd.	w/o George Av.	66.6	59	128	276	594
6	Clinton Keith Rd.	e/o George Av.	66.8	61	132	285	614
7	Clinton Keith Rd.	e/o Inland Valley Dr.	65.2	RW	103	222	479
8	Clinton Keith Rd.	w/o Elizabeth Ln.	65.3	RW	105	225	485
9	Clinton Keith Rd.	e/o Elizabeth Ln.	64.9	RW	99	213	460
10	Prelipp Rd.	e/o Inland Valley Dr.	60.0	RW	RW	100	215
11	Prelipp Rd.	w/o Elizabeth Ln.	59.5	RW	RW	92	198
12	Prelipp Rd.	e/o Elizabeth Ln.	59.5	RW	RW	93	201

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 6-3: YEAR 2017 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	59.5	RW	RW	92	198
2	Inland Valley Dr.	s/o Clinton Keith Road	61.5	RW	58	125	269
3	Elizabeth Ln.	s/o Clinton Keith Road	59.7	RW	RW	95	205
4	Elizabeth Ln.	n/o Prelipp Rd.	46.7	RW	RW	RW	RW
5	Clinton Keith Rd.	w/o George Av.	68.8	83	179	386	832
6	Clinton Keith Rd.	e/o George Av.	68.9	84	181	390	841
7	Clinton Keith Rd.	e/o Inland Valley Dr.	67.5	68	147	317	683
8	Clinton Keith Rd.	w/o Elizabeth Ln.	67.3	66	142	306	660
9	Clinton Keith Rd.	e/o Elizabeth Ln.	66.3	57	122	263	567
10	Prelipp Rd.	e/o Inland Valley Dr.	61.4	RW	58	124	267
11	Prelipp Rd.	w/o Elizabeth Ln.	61.7	RW	61	131	281
12	Prelipp Rd.	e/o Elizabeth Ln.	61.7	RW	61	131	281

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 6-4: YEAR 2017 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	59.5	RW	RW	93	201
2	Inland Valley Dr.	s/o Clinton Keith Road	61.5	RW	58	125	269
3	Elizabeth Ln.	s/o Clinton Keith Road	60.1	RW	RW	101	218
4	Elizabeth Ln.	n/o Prelipp Rd.	48.5	RW	RW	RW	RW
5	Clinton Keith Rd.	w/o George Av.	68.9	84	181	390	841
6	Clinton Keith Rd.	e/o George Av.	69.0	85	184	396	852
7	Clinton Keith Rd.	e/o Inland Valley Dr.	67.6	69	149	322	694
8	Clinton Keith Rd.	w/o Elizabeth Ln.	67.4	67	144	311	671
9	Clinton Keith Rd.	e/o Elizabeth Ln.	66.4	57	123	265	571
10	Prelipp Rd.	e/o Inland Valley Dr.	61.4	RW	58	124	267
11	Prelipp Rd.	w/o Elizabeth Ln.	61.8	RW	61	132	283
12	Prelipp Rd.	e/o Elizabeth Ln.	61.9	RW	62	133	287

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 6-5: YEAR 2035 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	61.5	RW	59	127	273
2	Inland Valley Dr.	s/o Clinton Keith Road	65.3	RW	104	224	483
3	Elizabeth Ln.	s/o Clinton Keith Road	58.5	RW	RW	80	172
4	Elizabeth Ln.	n/o Prelipp Rd.	58.2	RW	RW	76	165
5	Clinton Keith Rd.	w/o George Av.	70.7	111	238	514	1,106
6	Clinton Keith Rd.	e/o George Av.	69.0	86	185	398	857
7	Clinton Keith Rd.	e/o Inland Valley Dr.	69.2	89	191	412	888
8	Clinton Keith Rd.	w/o Elizabeth Ln.	69.9	98	211	454	978
9	Clinton Keith Rd.	e/o Elizabeth Ln.	69.9	98	212	457	984
10	Prelipp Rd.	e/o Inland Valley Dr.	64.6	RW	94	202	435
11	Prelipp Rd.	w/o Elizabeth Ln.	64.8	RW	97	210	451
12	Prelipp Rd.	e/o Elizabeth Ln.	66.0	54	116	250	540

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 6-6: YEAR 2035 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	CNEL at 100 Feet (dBA)	Distance to Contour (Feet)			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
1	George Av.	n/o Clinton Keith Road	61.6	RW	59	128	275
2	Inland Valley Dr.	s/o Clinton Keith Road	65.3	RW	104	225	484
3	Elizabeth Ln.	s/o Clinton Keith Road	59.1	RW	RW	87	187
4	Elizabeth Ln.	n/o Prelipp Rd.	58.5	RW	RW	79	170
5	Clinton Keith Rd.	w/o George Av.	70.7	111	240	517	1,115
6	Clinton Keith Rd.	e/o George Av.	69.1	87	187	402	866
7	Clinton Keith Rd.	e/o Inland Valley Dr.	69.3	90	193	417	897
8	Clinton Keith Rd.	w/o Elizabeth Ln.	69.9	99	213	458	987
9	Clinton Keith Rd.	e/o Elizabeth Ln.	69.9	99	213	458	987
10	Prelipp Rd.	e/o Inland Valley Dr.	64.6	RW	94	203	437
11	Prelipp Rd.	w/o Elizabeth Ln.	64.8	RW	98	210	453
12	Prelipp Rd.	e/o Elizabeth Ln.	66.0	54	117	253	544

"RW" = Location of the respective noise contour falls within the right-of-way of the road.

6.2 EXISTING PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 6-7 presents a comparison of the existing without and with Project conditions noise levels. Table 6-1 shows that the unmitigated exterior noise levels are expected to range from 40.7 to 66.7 dBA CNEL at 100 feet from each roadway's centerline. Table 6-2 presents the existing with Project conditions unmitigated noise contours that are expected to range from 45.5 to 66.8 dBA CNEL at 100 feet from the roadway centerline. According to the significance criteria described in Section 4, a significant off-site traffic noise level impact occurs when, the without project noise levels are less than 60 dBA and the project creates a "readily perceptible" 5 dBA or greater project related noise level increase. As shown on Table 6-7 the Project is expected to generate an unmitigated exterior noise level increase on Elizabeth Lane south of Clinton Keith Road of up to 5.2 dBA CNEL.

Even though the expected noise level of 50.7 dBA CNEL does not exceed the noise level criteria, it does create a "readily perceptible" 5 dBA or greater project related noise level increase. It is important to recognize that the land uses adjacent to this roadway segment south of Clinton Keith Road consist of vacant land to the west of Elizabeth Lane and a storage facility to the east. Since there are no noise sensitive residential receptors impacted by the off-site traffic noise level impacts on Elizabeth Lane south of Clinton Keith Road, the Project will create a less than significant off-site traffic noise level impact on the study area roadway segments for Existing conditions.

TABLE 6-7: EXISTING OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	George Av.	n/o Clinton Keith Road	57.9	57.9	0.0	No
2	Inland Valley Dr.	s/o Clinton Keith Road	60.0	60.0	0.0	No
3	Elizabeth Ln.	s/o Clinton Keith Road	45.5	50.7	5.2	Yes
4	Elizabeth Ln.	n/o Prelipp Rd.	40.7	45.5	4.8	No
5	Clinton Keith Rd.	w/o George Av.	66.5	66.6	0.1	No
6	Clinton Keith Rd.	e/o George Av.	66.7	66.8	0.1	No
7	Clinton Keith Rd.	e/o Inland Valley Dr.	65.0	65.2	0.2	No
8	Clinton Keith Rd.	w/o Elizabeth Ln.	65.1	65.3	0.2	No
9	Clinton Keith Rd.	e/o Elizabeth Ln.	64.9	64.9	0.0	No
10	Prelipp Rd.	e/o Inland Valley Dr.	60.0	60.0	0.0	No
11	Prelipp Rd.	w/o Elizabeth Ln.	59.4	59.5	0.1	No
12	Prelipp Rd.	e/o Elizabeth Ln.	59.3	59.5	0.2	No

[1] Significance of Cumulative Impacts (Table 4-1).

6.3 YEAR 2017 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 6-8 presents a comparison of the Year 2017 without and with Project conditions CNEL noise levels. Table 6-3 shows that the Year 2017 without project unmitigated exterior noise levels are expected to range from 46.7 to 68.9 dBA CNEL at 100 feet from each roadway's centerline. Table 6-4 presents the Year 2017 with Project conditions unmitigated noise contours that are expected to range from 48.5 to 69.0 dBA CNEL at 100 feet from the roadway centerline. As shown on Table 6-8 the Project is expected to generate an unmitigated exterior noise level increase of up to 1.8 dBA CNEL. Based on the thresholds of significance, the proposed Project will not create a significant traffic noise level impact on the study area roadway segments for Year 2017 conditions.

TABLE 6-8: YEAR 2017 OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	George Av.	n/o Clinton Keith Road	59.5	59.5	0.0	No
2	Inland Valley Dr.	s/o Clinton Keith Road	61.5	61.5	0.0	No
3	Elizabeth Ln.	s/o Clinton Keith Road	59.7	60.1	0.4	No
4	Elizabeth Ln.	n/o Prelipp Rd.	46.7	48.5	1.8	No
5	Clinton Keith Rd.	w/o George Av.	68.8	68.9	0.1	No
6	Clinton Keith Rd.	e/o George Av.	68.9	69.0	0.1	No
7	Clinton Keith Rd.	e/o Inland Valley Dr.	67.5	67.6	0.1	No
8	Clinton Keith Rd.	w/o Elizabeth Ln.	67.3	67.4	0.1	No
9	Clinton Keith Rd.	e/o Elizabeth Ln.	66.3	66.4	0.1	No
10	Prelipp Rd.	e/o Inland Valley Dr.	61.4	61.4	0.0	No
11	Prelipp Rd.	w/o Elizabeth Ln.	61.7	61.8	0.1	No
12	Prelipp Rd.	e/o Elizabeth Ln.	61.7	61.9	0.2	No

[1] Significance of Cumulative Impacts (Table 4-1).

6.4 YEAR 2035 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 6-9 presents a comparison of the Year 2035 without and with Project conditions CNEL noise levels. Table 6-5 shows that the Year 2035 without project unmitigated exterior noise levels are expected to range from 58.2 to 70.7 dBA CNEL at 100 feet from each roadway's centerline. Table 6-6 presents the Year 2035 with Project conditions unmitigated noise contours that are expected to range from 58.5 to 70.7 dBA CNEL at 100 feet from the roadway centerline. As shown on Table 6-9 the Project is expected to generate an unmitigated exterior noise level increase of up to 0.6 dBA CNEL. Based on the thresholds of significance, the proposed Project will not create a significant traffic noise level impact on the study area roadway segments for Year 2035 conditions.

TABLE 6-9: YEAR 2035 OFF-SITE PROJECT RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at 100 Feet (dBA)			Potential Significant Impact?[1]
			No Project	With Project	Project Addition	
1	George Av.	n/o Clinton Keith Road	61.5	61.6	0.1	No
2	Inland Valley Dr.	s/o Clinton Keith Road	65.3	65.3	0.0	No
3	Elizabeth Ln.	s/o Clinton Keith Road	58.5	59.1	0.6	No
4	Elizabeth Ln.	n/o Prelipp Rd.	58.2	58.5	0.3	No
5	Clinton Keith Rd.	w/o George Av.	70.7	70.7	0.0	No
6	Clinton Keith Rd.	e/o George Av.	69.0	69.1	0.1	No
7	Clinton Keith Rd.	e/o Inland Valley Dr.	69.2	69.3	0.1	No
8	Clinton Keith Rd.	w/o Elizabeth Ln.	69.9	69.9	0.0	No
9	Clinton Keith Rd.	e/o Elizabeth Ln.	69.9	69.9	0.0	No
10	Prelipp Rd.	e/o Inland Valley Dr.	64.6	64.6	0.0	No
11	Prelipp Rd.	w/o Elizabeth Ln.	64.8	64.8	0.0	No
12	Prelipp Rd.	e/o Elizabeth Ln.	66.0	66.0	0.0	No

[1] Significance of Cumulative Impacts (Table 4-1).

6.5 TRANSPORTATION RELATED PROJECT NOISE IMPACTS

Applying the Thresholds of Significance discussed in Section 4 of this report, the Project's traffic noise impacts on the surrounding land uses will be less than significant. Existing traffic noise conditions on Elizabeth Lane south of Clinton Keith Road will have potential significant impacts from the Project. However, Year 2017 and 2035 projections show no significant impacts for this roadway section. This analysis shows that the Project will not create a substantial permanent increase in traffic-related noise levels or expose persons to noise levels in excess of the exterior noise level standards, and therefore, no mitigation is required.

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7 ON-SITE TRAFFIC NOISE ANALYSIS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the proposed "Horizons" (Prielipp Road, APN: 380-250-023) Project. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Prielipp Road and Elizabeth Lane. The Project will also experience some background traffic noise impacts from the proposed Bunny Trail roadway to the north and the internal Project residential streets, however, due to the distance, topography and low traffic volume/speed, traffic noise from these roads will not make a significant contribution to the noise environment.

7.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model, the parameters outlined in Tables 5-3 and 5-4, the expected future exterior noise levels were calculated. Table 7-1 presents a summary of future exterior noise level impacts. The estimated noise levels represent the worst-case exterior noise level impacts from Elizabeth Lane and Prielipp Road. The on-site traffic noise level impacts indicate that the townhomes, assisted living (east façade) and assisted living (south façade) will experience unmitigated exterior noise levels ranging from 48.1 to 63.0 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 7.1. According to the City of Wildomar *Land Use Compatibility for Community Noise Exposure (Table N-1)* provided in the General Plan Noise Element noise levels between 60 and 70 dBA CNEL are considered *conditionally acceptable*. Since the expected exterior noise levels will not exceed 70 dBA CNEL, no exterior noise mitigation is needed.

TABLE 7-1: ON-SITE EXTERIOR NOISE LEVELS (CNEL)

Building	Roadway	Unmitigated Noise Level (dBA CNEL)
39 (Townhomes)	Elizabeth Ln.	63.0
Assisted Living (East Façade)	Elizabeth Ln.	48.1
Assisted Living (South Façade)	Prielipp Rd.	48.4

7.2 ON-SITE INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Wildomar 45 dBA CNEL interior noise standards, future noise levels were calculated at the first and second floor building facades.

7.2.1 NOISE LEVEL REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Level Reduction (NLR) of approximately 12 dBA with "windows open" and a

minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise.

7.2.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Tables 7-2 and 7-3 indicate that units facing Elizabeth Lane and Prielipp Road will require a windows closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 7-2 shows that the future noise levels at the first floor building façade are expected to range from 48.1 to 63.0 dBA CNEL. The first floor interior noise level analysis shows that the City of Wildomar 45 dBA CNEL interior noise level standards can be satisfied using standard windows with a minimum STC rating of 27. Table 7-3 shows that the future noise levels at the second floor building façade are expected to range from 63.0 to 64.4 dBA CNEL, and windows with a minimum STC rating of 27 are expected to satisfy the City of Wildomar's 45 dBA CNEL interior noise level standards.

TABLE 7-2: FIRST FLOOR INTERIOR NOISE IMPACTS (CNEL)

Building	Roadway	Noise Level At Façade	Interior Noise Level For Windows		Required Interior Noise Reduction
			Open[1]	Closed[2]	
39 (Townhomes)	Elizabeth Ln.	63.0	51.0	38.0	18.0
Assisted Living (East Façade)	Elizabeth Ln.	48.1	36.1	23.1	3.1
Assisted Living (South Façade)	Prielipp Rd.	48.4	36.4	23.4	3.4

[1] A minimum of 12 dBA noise reduction is assumed with a windows open condition
[2] A minimum of 25 dBA noise reduction is assumed with windows closed and standard windows with a minimum STC of 27.

TABLE 7-3: SECOND FLOOR INTERIOR NOISE IMPACTS (CNEL)

Building	Roadway	Noise Level At Façade	Interior Noise Level For Windows		Required Interior Noise Reduction
			Open[1]	Closed[2]	
39 (Townhomes)	Elizabeth Ln.	63.0	51.0	38.0	18.0
Assisted Living (East Façade)	Elizabeth Ln.	64.4	52.4	39.4	19.4
Assisted Living (South Façade)	Prielipp Rd.	64.1	52.1	39.1	19.1

[1] A minimum of 12 dBA noise reduction is assumed with a windows open condition
[2] A minimum of 25 dBA noise reduction is assumed with windows closed and standard windows with a minimum STC of 27.

In order to meet the City of Wildomar 45 dBA CNEL interior noise level standard, rooms facing Elizabeth Lane and Prielipp Road will require windows with a minimum STC rating of 27. The interior noise analysis shows that with the recommended interior noise mitigation measures described in the Executive Summary will satisfy the City of Wildomar 45 dBA CNEL interior noise level standard for multi-family residential development.

8 RECEIVER LOCATIONS

To assess the potential for short-term construction noise impacts, the following nine receiver locations as shown on Exhibit 8-A were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Sensitive receivers in the vicinity of the Project site include the single-family residential dwellings located at receiver locations R1, R2, R4, R5, and R7 to R9. Receiver locations R3 and R6 represent existing multi-family land uses in the Project study area. The closest sensitive receiver is represented by location R1 at a distance of approximately 166 feet east of the Project site.

R1: Located approximately 166 feet east of the Project site, R1 represents existing residential homes across Elizabeth Lane.

R2: Location R2 represents residential homes located approximately 354 feet east of the Project site across Elizabeth Lane.

R3: Location R3 represents the existing multi-family residential homes located roughly 733 feet west of the Project Site along Yamas Drive.

R4: Location R4 represents the existing single-family residential homes located approximately 1,056 feet northeast of the Project site along Jana Lane.

R5: Location R5 represents an existing residential home which is situated approximately 1,633 feet northwest of the Project site boundary, at the northwest corner of Clinton Keith Road and Salida Del Sol.

R6: At a distance of approximately 202 feet southeast of the Project site, location R6 represents a noise-sensitive multi-family residential community south of Prielipp Road.

R7: At a distance of 202 feet from the Project site boundary, R7 represents the residential homes located southwest the Project site across Prielipp Road.

R8: Location R8 represents the residential homes located approximately 302 feet south of the Project site, across Prielipp Road.

R9: Located approximately 1,615 feet east of the Project site, R9 represents an existing residential community along Mustang Spirit Lane.

EXHIBIT 8-A: RECEIVER LOCATIONS

9 CONSTRUCTION NOISE IMPACTS

This section analyzes potential impacts resulting from the short-term off-site construction activities associated with the development of the Project.

9.1 CONSTRUCTION NOISE STANDARDS

Section 9.48.020 of the City's Noise Ordinance indicates that noise sources associated with private construction projects, located within one-quarter of a mile from an inhabited dwelling, may only occur between the permitted hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. While the City of Wildomar does not provide specific standards for construction noise and vibration, the following policies contained in the adopted City of Wildomar Noise Element are designed to reduce noise impacts during construction:

N12.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N1.3) by requiring the developer to submit a construction-related noise mitigation plan to the City for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

iv. Temporary noise attenuation fences;
v. Preferential location and equipment; and
vi. Use of current noise suppression technology and equipment.

For the purposes of this analysis, the maximum permitted daytime operational noise standards (Section 9.48.040) for residential properties affected by stationary noise sources are used to establish the exterior construction noise level criteria. In the City of Wildomar an exterior noise level of 55 dBA Leq shall be used as the acceptable threshold for determining the impacts due to Project construction for sensitive receivers.

9.2 CONSTRUCTION NOISE LEVELS

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment, including trucks, power tools, concrete mixers and portable generators can reach high levels. Project construction is expected to occur in the following five stages:

- Site Preparation
- Grading

- Building Construction
- Paving
- Architectural Coating

In January 2006, the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM) that includes a national database of construction equipment reference noise emission levels.(18) The RCNM equipment database, as shown in Appendix 8.1, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The usage factor is a key input variable of the RCNM noise prediction model that is used to calculate the average Leq noise levels using the Lmax noise levels measured at a distance of 50 feet.

Noise levels generated by heavy construction equipment can range from approximately 70 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 78 dBA measured at 50 feet from the noise source to the receiver would be reduced to 72 dBA at 100 feet from the source to the receiver, and would be further reduced to 66 dBA at 200 feet from the source to the receiver. The mix of construction equipment by construction phase is consistent with the data found in the *"Horizons" (Prielipp Road, APN: 380-250-023) Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (19)

9.3 CONSTRUCTION NOISE ANALYSIS

Using the stationary-source RCNM noise prediction model, calculations of the Project construction noise level impacts at the nine noise receiver locations were completed. Tables 9-1 to 9-5 present the short-term construction noise levels for each stage of construction at the nine receiver locations. The analysis shows that the highest construction noise level impacts will occur during grading construction activities at the boundaries of the Project site. As shown on Table 9-6, the unmitigated peak construction noise levels are expected to range from 56.8 to 76.7 dBA Leq.

TABLE 9-1: SITE PREPARATION EQUIPMENT NOISE LEVELS

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Rubber Tired Dozer	3	40%	3.2	79.0	79.8
Tractor/Loader/Backhoe	4	40%	3.2	78.0	80.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					82.9

Construction Noise Reference Distance	Distance To Property Line (In Feet)[4]	Distance Attenuation (Leq dBA)[5]	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	166'	-10.4	0.0	72.5
R2	354'	-17.0	0.0	65.9
R3	733'	-23.3	0.0	59.6
R4	1,056'	-26.5	0.0	56.4
R5	1,633'	-30.3	0.0	52.6
R6	202'	-12.1	0.0	70.8
R7	202'	-12.1	0.0	70.8
R8	302'	-15.6	0.0	67.3
R9	1,615'	-30.2	0.0	52.7

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

TABLE 9-2: GRADING EQUIPMENT NOISE LEVELS

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Grader	1	40%	3.2	85.0	81.0
Rubber Tired Dozer	1	40%	3.2	79.0	75.0
Excavator	2	40%	3.2	81.0	80.0
Tractor/Loader/Backhoe	2	40%	3.2	78.0	77.0
Scraper	2	40%	3.2	84.0	83.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					87.1

Construction Noise Reference Distance	Distance To Property Line (In Feet)[4]	Distance Attenuation (Leq dBA)[5]	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	166'	-10.4	0.0	76.7
R2	354'	-17.0	0.0	70.1
R3	733'	-23.3	0.0	63.8
R4	1,056'	-26.5	0.0	60.6
R5	1,633'	-30.3	0.0	56.8
R6	202'	-12.1	0.0	75.0
R7	202'	-12.1	0.0	75.0
R8	302'	-15.6	0.0	71.5
R9	1,615'	-30.2	0.0	56.9

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

TABLE 9-3: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Tractor/Loader/Backhoe	3	40%	3.2	78.0	78.8
Forklift	3	20%	1.6	75.0	72.8
Cranes	1	16%	1.3	81.0	73.0
Generator Set	1	50%	4.0	81.0	78.0
Welder	1	40%	3.2	74.0	70.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					82.7

Construction Noise Reference Distance	Distance To Property Line (In Feet)[4]	Distance Attenuation (Leq dBA)[5]	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	166'	-10.4	0.0	72.3
R2	354'	-17.0	0.0	65.7
R3	733'	-23.3	0.0	59.4
R4	1,056'	-26.5	0.0	56.2
R5	1,633'	-30.3	0.0	52.5
R6	202'	-12.1	0.0	70.6
R7	202'	-12.1	0.0	70.6
R8	302'	-15.6	0.0	67.1
R9	1,615'	-30.2	0.0	52.6

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

TABLE 9-4: PAVING EQUIPMENT NOISE LEVELS

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Pavers	2	50%	4.0	77.0	77.0
Paving Equipment	2	40%	3.2	76.0	75.0
Rollers	2	20%	1.6	80.0	76.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					80.9

Construction Noise Reference Distance	Distance To Property Line (In Feet)[4]	Distance Attenuation (Leq dBA)[5]	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	166'	-10.4	0.0	70.4
R2	354'	-17.0	0.0	63.9
R3	733'	-23.3	0.0	57.5
R4	1,056'	-26.5	0.0	54.4
R5	1,633'	-30.3	0.0	50.6
R6	202'	-12.1	0.0	68.7
R7	202'	-12.1	0.0	68.7
R8	302'	-15.6	0.0	65.2
R9	1,615'	-30.2	0.0	50.7

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

TABLE 9-5: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Air Compressor	1	40%	3.2	78.0	74.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					74.0

Construction Noise Reference Distance	Distance To Property Line (In Feet)[4]	Distance Attenuation (Leq dBA)[5]	Estimated Noise Barrier Attenuation (Leq dBA)	Construction Noise Level (Leq dBA)
R1	166'	-10.4	0.0	63.6
R2	354'	-17.0	0.0	57.0
R3	733'	-23.3	0.0	50.7
R4	1,056'	-26.5	0.0	47.5
R5	1,633'	-30.3	0.0	43.7
R6	202'	-12.1	0.0	61.9
R7	202'	-12.1	0.0	61.9
R8	302'	-15.6	0.0	58.4
R9	1,615'	-30.2	0.0	43.8

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

9.4 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise level impacts will occur during grading activities at the boundaries of the Project site. As shown on Table 9-6, the unmitigated peak construction noise levels are expected to range from 56.8 to 76.7 dBA Leq. Construction activities are estimated to occur during the permitted hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May as required by Section 9.48.020 of the City's Noise Ordinance.(12)

TABLE 9-6: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Noise Receiver[1]	Construction Phase Hourly Noise Level (dBA Leq)					
	Site Preparation	Grading	Building Construction	Paving	Architecture Coating	Peak[2]
R1	72.5	76.7	72.3	70.4	63.6	76.7
R2	65.9	70.1	65.7	63.9	57.0	70.1
R3	59.6	63.8	59.4	57.5	50.7	63.8
R4	56.4	60.6	56.2	54.4	47.5	60.6
R5	52.6	56.8	52.5	50.6	43.7	56.8
R6	70.8	75.0	70.6	68.7	61.9	75.0
R7	70.8	75.0	70.6	68.7	61.9	75.0
R8	67.3	71.5	67.1	65.2	58.4	71.5
R9	52.7	56.9	52.6	50.7	43.8	56.9

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Estimated construction noise levels during peak operating conditions.

Based on the construction noise standards described in Section 3.5, the potential short-term unmitigated construction noise level impacts are expected to exceed the acceptable stationary noise level threshold of 55 dBA Leq at nearby sensitive receiver locations during the permitted hours of construction activity near the property line. Therefore, temporary noise abatement would be needed to reduce the potential construction noise impacts. With the installation of temporary exterior noise control barriers providing a minimum attenuation of 10 dBA, construction noise levels at the nearby residential receivers would be reduced, but not eliminated. This analysis does not evaluate the feasibility of temporary noise barrier installation. If it is not feasible to install temporary barriers, construction noise levels would not be reduced, because no other measures exist to reasonably reduce peak construction noise activities near the Project site boundaries. The noise attenuation provided through temporary noise barriers depends on many factors including cost, wind loading, the location of the receiver, and the ability to place barriers such that the line-of-sight of the receiver is blocked to the noise source, among others. This analysis assumes a temporary noise barrier capable of 10 dBA of attenuation and constructed using frame-mounted materials such as vinyl acoustic curtains or quilted blankets.

While noise attenuation of greater than 10 dBA may be possible to achieve with the use of temporary barriers, the noise barrier costs are expected to increase exponentially in relation to additional attenuation provided above 10 dBA. This suggests a point of diminishing return of noise attenuation for temporary noise barriers beyond 10 dBA. While a 10 dBA reduction in sound level is considered *attainable*, a reduction of 15 dBA is *very difficult* and a 20 dBA reduction is *nearly impossible*. (5) Further noise attenuation strategies include the installation of temporary barriers or window inserts and treatments at each receiver location to reduce the noise levels and block the line of sight to the source. However, the ability to install such measures at the approval of nearby homeowners may not be feasible and will vary depending on each homeowner's willingness to allow for installation. Further, noise abatement at the receiver is usually only cost-effective if fewer residences are involved as each home may require different materials based on each home's specifications. Therefore, an *attainable* attenuation of 10 dBA through the use of temporary construction noise barriers is recommended to reduce construction noise levels at the nearby residential receivers.

Table 9-7 shows the peak construction noise levels are expected to range from 53.8 to 66.7 dBA Leq with the attenuation provided by the temporary construction noise barriers. With the temporary noise control barrier providing a minimum attenuation of 10 dBA, the construction noise levels will still exceed the City of Wildomar stationary noise level standard of 55 dBA Leq at the nearby sensitive receiver locations during peak construction activities near the Project boundaries. Therefore, the construction of the Project will result in a potentially significant short-term construction noise impact at the nearby sensitive receiver locations.

TABLE 9-7: MITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Noise Receiver[1]	Peak Const. Noise Level (dBA Leq)[2]	Const. Noise Level Criteria (dBA Leq)[3]	Compliance[4]	Temporary Noise Barrier Attenuation	Const. Noise Levels With Attenuation (dBA Leq)[5]	Compliance With Attenuation[4]
R1	76.7	55.0	No	-10.0	66.7	No
R2	70.1	55.0	No	-10.0	60.1	No
R3	63.8	55.0	No	-10.0	53.8	Yes
R4	60.6	55.0	No	-10.0	50.6	Yes
R5	56.8	55.0	No	-10.0	46.8	Yes
R6	75.0	55.0	No	-10.0	65.0	No
R7	75.0	55.0	No	-10.0	65.0	No
R8	71.5	55.0	No	-10.0	61.5	No
R9	56.9	55.0	No	-10.0	46.9	Yes

[1] Noise receiver locations as shown on Exhibit 8-A.
[2] Estimated construction noise levels during peak operating conditions, as shown on Table 9-6.
[3] Based on the maximum exterior noise level standards of the City of Wildomar (Appendix 3.3).
[4] Do the estimated Project construction noise levels meet the threshold of 55 dBA Leq at the nearby sensitive receivers?
[5] Peak construction noise levels with the recommended minimum temporary noise barrier attenuation of 10.0 dBA when operating adjacent to nearby sensitive receivers.

9.5 CONSTRUCTION NOISE ABATEMENT MEASURES

Based on the five phases of construction related noise impacts, the noise impacts associated with the proposed Project are expected to create temporary high-level noise impacts at receptors surrounding the Project site when certain activities occur near the Project property line. Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce any noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses.

- A noise mitigation plan shall be prepared and submitted prior to starting all construction projects to the City. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:
    - If feasible, install temporary noise control barriers that provide a minimum noise level attenuation of 10 dBA when Project construction occurs near existing noise-sensitive structures. The noise control barrier must present a solid face from top to bottom. The noise control barrier must be high enough and long enough to block the view of the noise source. Unnecessary openings shall not be made.
        - The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
        - The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.
    - During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receivers nearest the Project site.
    - The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receivers nearest the Project site during all Project construction.
    - The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May). The contractor shall prepare a haul route exhibit and shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise.
- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities shall occur between the permitted hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May (Section 9.48.020). The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.

- The construction contractor shall post a publicly visible sign with the telephone number and person to contact regarding noise complaints. The construction manager, within seventy-two hours of receipt of a noise complaint, shall either take corrective actions or, if immediate action is not feasible, provide a plan or corrective action to address the source of the noise complaint.

9.6 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as large bulldozers would operate close enough to any residences to cause a vibration impact.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would occur within the Project site are expected to include excavation and grading, which would have the potential to generate low levels of ground-borne vibration. Using the vibration source level of construction equipment provided on Table 5-5 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 9-8 presents the expected Project related vibration levels at each of the nine noise receiver locations.

TABLE 9-8: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Noise Receiver[1]	Distance To Property Line (In Feet)	Receiver Vibration Levels (VdB)[2]					Potential Significant Impact?[3]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Peak Vibration	
R1	166'	33.3	54.3	61.3	62.3	62.3	No
R2	354'	23.5	44.5	51.5	52.5	52.5	No
R3	733'	14.0	35.0	42.0	43.0	43.0	No
R4	1,056'	9.2	30.2	37.2	38.2	38.2	No
R5	1,633'	3.5	24.5	31.5	32.5	32.5	No
R6	202'	30.8	51.8	58.8	59.8	59.8	No
R7	202'	30.8	51.8	58.8	59.8	59.8	No
R8	302'	25.5	46.5	53.5	54.5	54.5	No
R9	1,615'	3.7	24.7	31.7	32.7	32.7	No

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 5-5.
[3] Does the Peak Vibration exceed the FTA maximum acceptable vibration standard of 80 (VdB)?

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference level of 87 VdB at a distance of 25 feet. At distances ranging from 166 to 1,633 feet from the Project site, construction vibration levels are expected to approach 62.3 VdB. Using the construction vibration assessment methods provided by the Federal Transit Administration (FTA) the proposed Project site will not include nor require equipment, facilities, or activities that would result in a perceptible human response (annoyance).

The Project construction is not expected to generate vibration levels exceeding the FTA maximum acceptable vibration standard of 80 (VdB). Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating proximate to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours. On this basis the potential for the Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is determined to be less than significant.

10 REFERENCES

1. **Urban Crossroads, Inc.** *Baxter Village Traffic Impact Analysis.* March 2015.
2. —. *"Horizons" (Prielipp Road, APN: 380-250-023) Traffic Impact Analysis.* January 2015.
3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., October 1998.
4. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March, 1974. EPA/ONAC 550/9/74-004.
5. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* June, 1995.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
9. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
10. **City of Wildomar.** *General Plan Noise Element.* October 2003.
11. —. *General Plan Environmental Impact Report.* September 2003.
12. —. *Code of Ordinances, Title 9, Chapter 9.48 - Noise Regulation.*
13. **County of Riverside Department of Environmental Health, Office of Industrial Hygiene.** *Mr. Steve Hinde, REHS, CIH, Senior Industrial Hygienist (951) 955-8982.*
14. **City of Wildomar.** *Code of Odinances, Title 17, Section 17.180.010 - Standards for Planned Residential Development.*
15. **Federal Interagency Committee on Noise.** *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.
16. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
17. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
18. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.
19. **Urban Crossroads, Inc.** *"Horizons" (Prielipp Road, APN: 380-250-023) Air Quality Impact Analysis.* January 2015.

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11 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed "Horizons" (Prielipp Road, APN: 380-250-023) Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 203.

Bill Lawson, P.E., INCE
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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX ES.1:

RESPONSE TO COMMENTS

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URBAN CROSSROADS
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March 30, 2015

Mr. Matthew Bassi
City of Wildomar
23873 Clinton Keith Road, Suite 201
Wildomar, CA 92595

SUBJECT: "HORIZONS" (PRIELIPP, APN: 380-250-023) NOISE IMPACT ANALYSIS RESPONSE TO COMMENTS

Dear Mr. Matthew Bassi:

Urban Crossroads, Inc. is pleased to submit this Response to Comments letter for the "Horizons" (Prielipp, APN: 380-250-023) Noise Impact Analysis in response to the comments provided by PMC dated March 16th, 2015.

COMMENT #5

We note that the noise impact analysis does not include a reporting of ambient noise measurements/levels. This information is essential to determining whether the project will increase noise from existing levels. Please include this analysis or provide an explanation as to why an analysis of ambient noise measurements is not required.

RESPONSE #5

The noise impact analysis only requires the use of existing noise levels to assess the off-site traffic noise analysis, and our study determines the existing traffic noise levels based on the average daily traffic volumes provided by the project traffic study. Therefore, existing noise level measurements are not needed to describe the Project's contribution to existing off-site transportation related ambient noise levels.

Further, the on-site traffic noise analysis is based on the worst-case future roadway conditions and their potential impacts to the Project site, and does not require the use of existing noise level measurements. In addition, since the City of Wildomar and the County of Riverside prescribe specific transportation noise modeling parameters, existing ambient noise level measurements are typically not needed to calibrate the traffic noise prediction model.

Lastly, the construction noise analysis is based on compliance with the City's Municipal Code noise regulations and does not rely on existing ambient conditions to determine potential Project impacts. Since the City of Wildomar does not maintain any thresholds of significance or criteria for determining whether the project will increase noise from existing levels the "Horizons" (Prielipp, APN: 380-250-023) noise impact analysis does not include ambient noise level measurements.

If you have any questions, please contact me directly at (949) 660-1994 x203.

Respectfully submitted,
URBAN CROSSROADS, INC.

Bill Lawson, P.E., INCE
Principal

Alex Wolfe
Assistant Analyst

APPENDIX 3.1:

CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT

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7. Noise Element

Chapter 7: Noise Element

Definitions

Following is a list of commonly used terms and abbreviations that may be found within this element or when discussing the topic of noise. This is an abbreviated glossary to be reviewed prior to reading the element. It is important to become familiar with the definitions listed in order to better understand the importance of the Noise Element within the County of Riverside General Plan. Since the disbanding of the State Office of Noise Control in the mid-1990, the State of California Office of Planning and Research General Plan Guidelines can offer further information on other noise-related resources.

Ambient Noise: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

dB (Decibel): The unit of measure that denotes the ratio between two quantities that are proportional to power; the number of decibels corresponding to the ratio of the two amounts of power is based on a logarithmic scale.

dBA (A-weighted decibel): The A-weighted decibel scale discriminates upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale is based on a reference pressure level of 20 micropascals.

Intrusive Noise: That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing noise level.

L_{10}: The A-weighted sound level exceeded ten percent of the sample time. Similarly, L_{50}, L_{90}, etc.

L_{eq} (Equivalent energy level): The average acoustic energy content of noise during the time it lasts. The L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure, no matter what time of day they occur. The County of Riverside uses a 10-minute L_{eq} measurement.

L_{dn} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour.

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The level of sound that impacts a property varies greatly during the day. As an example, the sound near an airport may be relatively quiet when no airplane is taking off or landing, but will be extremely loud as a plane takes off. In order to deal with these variations, several noise indices have been developed, which measure how loud each sound is, how long it lasts, and how often the sound occurs. The indices express all the sound occurring during the day as a single average level, which if it occurred all day would convey the same sound energy to the site.

Micropascal: The international unit for pressure, similar to pounds per square inch. 20 micropascals is the human hearing threshold. The scale ranges from zero for the average least perceptible sound to about 130 for the average pain level

Noise Contours: Lines drawn around a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

Introduction

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It is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare.

-Noise Control Act of 1972

Before the alarm clock sounds, the lawn mower next door begins to roar. Then, while listening to the morning news on the radio, an airplane flies overhead and deadens all sound in the neighborhood. Once outside, the neighbor's stereo can be heard a block away. And during the morning commute, car horns, rumbling mufflers, and whirring motorcycles serenade motorists on the highway. Even in the most rural areas of Riverside County, the eternal battle between the efficiency of technology, and the noise it can create cannot be avoided.

As modern transportation systems continue to develop and human dependence upon machines continues to increase, the general level of noise in our day to day living environment rises. In Riverside County, residential areas near airports, freeways, and railroads are being adversely affected by annoying or hazardous noise levels. Other activities such as construction, operation of household power tools and appliances, and industry, also contribute to increasing background noise.

Sound refers to anything that is or may be perceived by the ear. Noise is defined as "unwanted sound" because of its potential to disrupt sleep, rest, work, communication, and recreation, to interfere with speech communication, to produce physiological or psychological damage, and to damage hearing.

ADDRESSING NOISE ISSUES

The Noise Element is a mandatory component of the General Plan pursuant to the California Planning and Zoning Law, Section 65302(f). The element must recognize the guidelines adopted by the Office of Planning and Research pursuant to Section 46050.1 of the Health and Safety Code. It also can be utilized as a tool for compliance with the state's noise insulation standards.

The General Plan Noise Element provides a systematic approach to identifying and appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise. This element includes policies, standards, criteria, programs, diagrams, a reference to action items, and maps related to protecting public health and welfare from noise.

SETTING

Tinnitus: The perception of ringing, hissing, or other sound in the ears or head when no external sound is present. For some people, tinnitus is just a nuisance. For others, it is a life-altering condition. In the United States, an estimated 12 million people have tinnitus to a distressing degree.

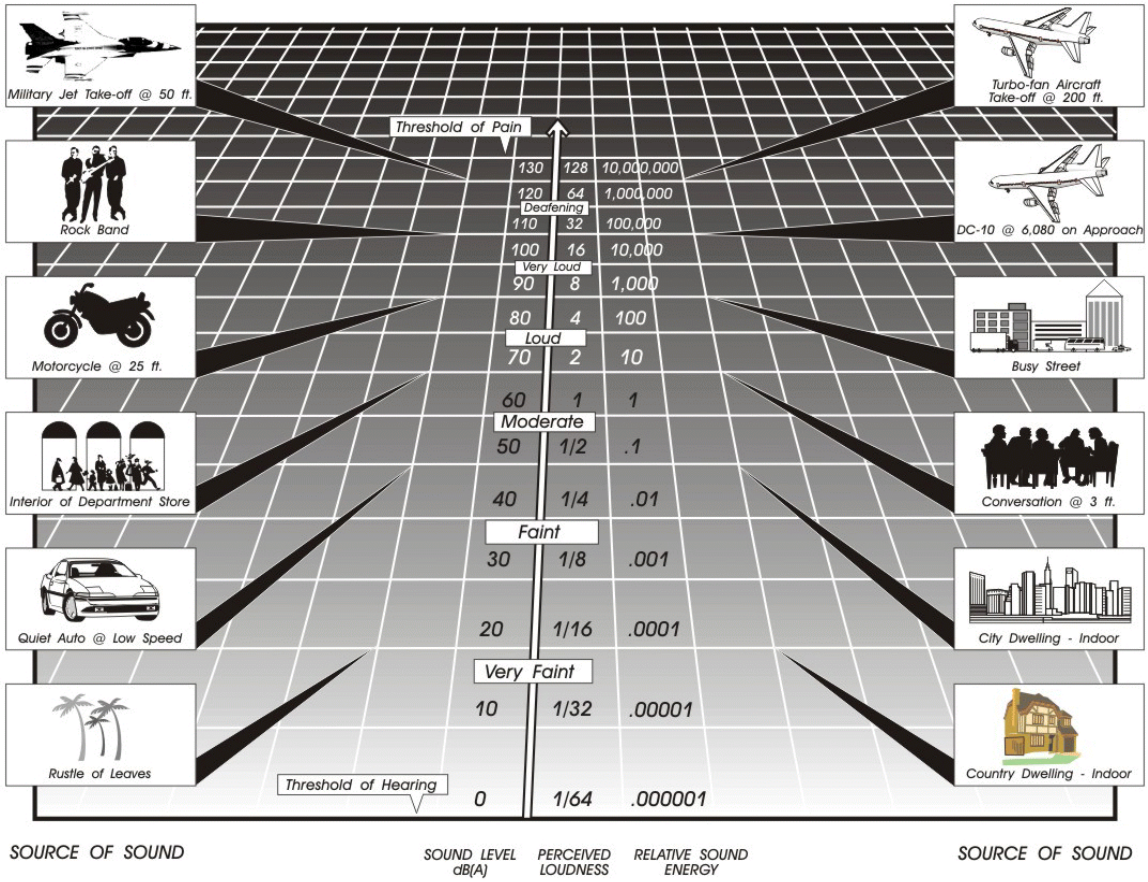
Riverside County is a continuously evolving group of communities that relies heavily upon the modern technological conveniences of American society to thrive and succeed as a pleasant and desirable place to live and work. Without such necessities as air-conditioning, heating, generators, and cars, living in an urban, suburban, rural, desert, or mountainous environment becomes difficult, if not impossible. Fortunately, these amenities are available to the residents of Riverside County and are used everyday, often all day long. Unfortunately, these technological advances can come at a high price to residents' and visitors' ears.

The philosophical view commonly held by Riverside County staff and residents is that noise, which may be perceived by some to be annoying, may not be noticed at all by others. It is also important to note that people who move into an area where a noise source already exists (such as near an existing highway) are often more tolerant of that noise source than when a new noise generator locates

itself in an established area that may be noise-sensitive (such as a stadium that is constructed near an established community).

Noise within Riverside County is generated by numerous sources found near places where people live and work. These sources are of particular concern when the noise they generate reaches levels above the prevailing background noise. There are many different types of noise, including mobile, stationary, and construction-related, that affect noise-sensitive receptors such as residences, schools, and hospitals. Figure 1, Common Noise Sources and Noise Levels, illustrates some noise producers that can be found within Riverside County, as well as their corresponding noise measurement. The following sections contain policies that address the issues of noise producers and their effects on noise-sensitive land uses.

Figure N-1: Common Noise Sources and Noise Levels



Noise Sensitive Land Uses

A series of land uses have been deemed sensitive by the State of California. These land uses require a serene environment as part of the overall facility or residential experience. Many of these facilities depend on low levels of sound to promote the well being of the occupants. These uses include, but are not necessarily limited to; schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas. Activities conducted in proximity to these facilities must consider the noise output, and ensure that they don't create unacceptable noise levels that may unduly affect the noise-sensitive uses. The following policies address issues related to noise-sensitive land uses.

NOISE COMPATIBILITY

The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan to be successful. Land uses that emit noise are measured in A-weighted decibels (dBA) or Community Noise Equivalent Level (CNEL). If existing land uses emit noise above a certain level, they are not compatible with one another, and therefore noise attenuation devices must be used to mitigate the noise to acceptable levels indoors and outdoors. In cases of new development, the placement of noise-sensitive land uses is integral to a successful community. Table 1, Land Use Compatibility for Community Noise Exposure, reveals the noise acceptability levels for different land uses. Areas around airports may have different or more restrictive noise standards than those cited in Table 1 (See Policy N 1.3 below).The following policies protect noise-sensitive land uses from noise emitted by outside sources, and prevent new projects from generating adverse noise levels on adjacent properties.

The General Plan policy and implementation item reference system:

Identifies which element contains the Policy, in this case the Land Use Element, and the sequential number.

LU 1.3
Neighborhood commercial uses should be located near residential uses.
(AI 1 and AI 4)

Reference to the relevant Action Items contained in the Implementation Program.

Policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or blockwalls shall be used. (AI 107)

N 1.2 Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports. (AI 107)

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- Schools;
- Hospitals;
- Rest Homes;
- Long Term Care Facilities;
- Mental Care Facilities;
- Residential Uses;
- Libraries;
- Passive Recreation Uses; and

- Places of worship

Unregulated noise sources such as household power tools often emit more noise than regulated noise producers.

According to the State of California Office of Planning and Research General Plan Guidelines, an acoustical study may be required in cases where these noise-sensitive land uses are located in an area of 60 CNEL or greater. Any land use that is exposed to levels higher than 65 CNEL will require noise attenuation measures.

Areas around airports may have different noise standards than those cited above. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix L and summarized in the Policy Area section of the affected Area Plan. (AI 105)

N 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys**.** (AI 106, 109)

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County. (AI 105, 106, 108)

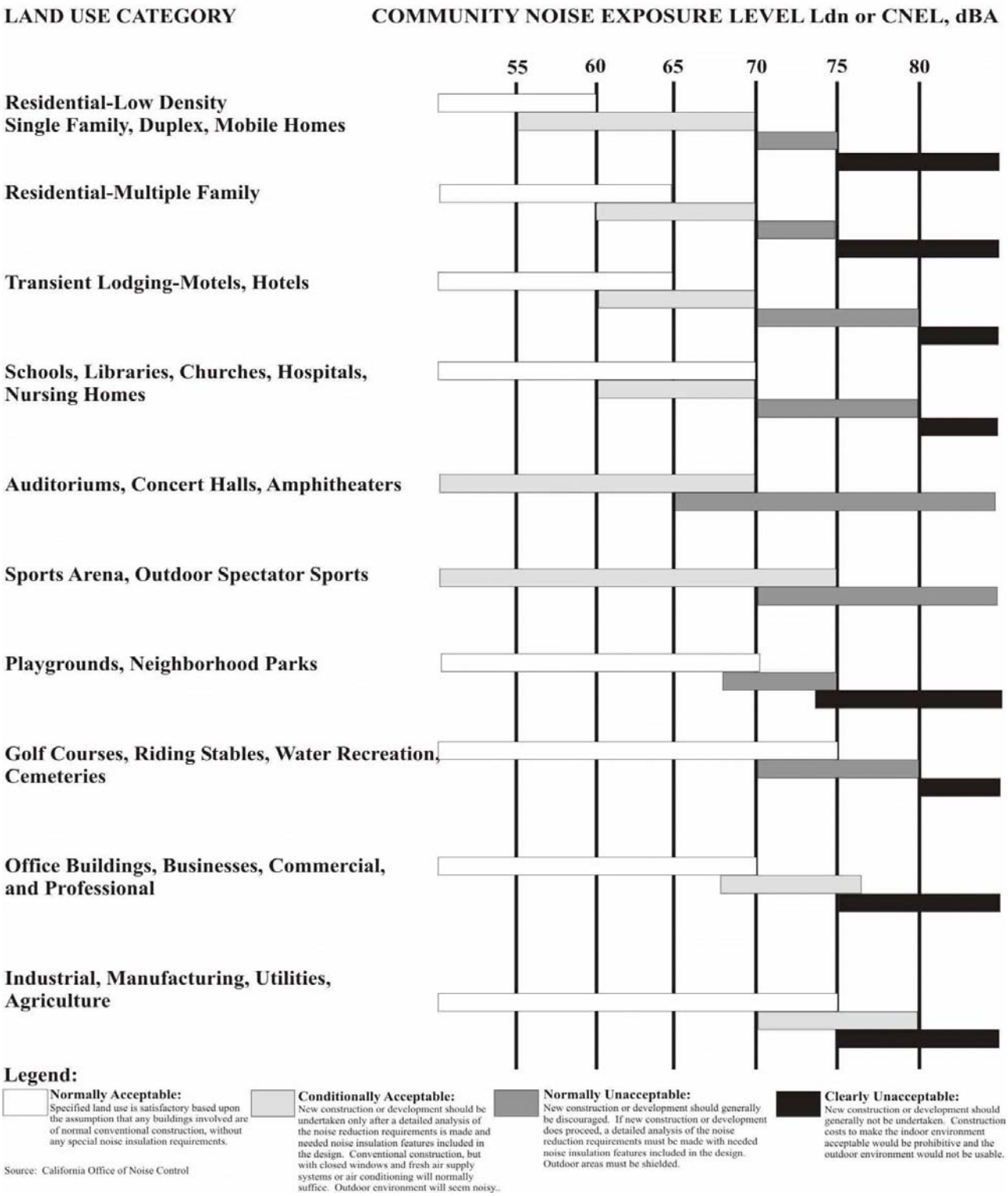
N 1.6 Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses. (AI 107)

N 1.7 Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem. (AI 106, 107)

N 1.8 Limit the maximum permitted noise levels that cross property lines and impact adjacent land uses, except when dealing with noise emissions from wind turbines. Please see the Wind Energy Conversion Systems section for more information. (AI 108)

Please contact the Office of Industrial Hygiene for more information on acoustical specialists.

Table N-1:
Land Use Compatibility for Community Noise Exposure



NOISE MITIGATION STRATEGIES

Many land uses emit noise above state-mandated acceptable levels. The noise emitted from a land use must be mitigated to acceptable levels indoors and outdoors in order for other, more noise-sensitive land uses to locate in proximity to these noise producers. There are a number of ways to mitigate noise and the following policies suggest some possible solutions to noise problems.

Policies:

N 2.1 Create a County Noise Inventory to identify major noise generators and noise-sensitive land uses, and to establish appropriate noise mitigation strategies. (AI 105)

N 2.2 Require a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects within noise impacted areas to mitigate existing noise. (AI 105, 107)

N 2.3 Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources: (AI 105)

Table N-2:
Stationary Source Land Use Noise Standards [1]

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

[1]These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Noise Producers

LOCATION OF NOISE PRODUCERS

Good neighbors keep their noise to themselves.

The communities of Riverside County need a variety of land uses in order to thrive and succeed. These land uses may provide jobs, clean water, ensure safety, ship goods, and ease transportation woes. But they may also emit high levels of noise throughout the day. These noise-producing land uses can complement a community when the noise they emit is properly mitigated. The following policies suggest a series of surveys and analyses to correctly identify the proper noise mitigating procedures in order to promote the continued success of the communities of Riverside County.

Agriculture

One of the major economic thrusts of Riverside County is the agricultural industry. The Riverside County Right-to-Farm Ordinance conserves, protects, and encourages the development, improvement, and continued viability of agricultural land and industries for the long-term production of food and other agricultural products, and for the economic well-being of the County's residents. The Right-to-Farm Ordinance also attempts to balance the rights of farmers to produce food and other agricultural products with the rights of non-farmers who own, occupy, or use land within or adjacent to agricultural areas. The Riverside County Right-to-Farm Ordinance also works to reduce the burden of the County's agricultural resources by limiting the circumstances under which agricultural operations may be deemed a nuisance. Policies within this section address the potential noise issues that may be raised in regards to agricultural production.

Policies:

N 3.1 Protect Riverside County's agricultural resources from noise complaints that may result from routine farming practices, through the enforcement of the Riverside County Right-to-Farm Ordinance. (AI 105, 107)

N 3.2 Require acoustical studies and subsequent approval by the Planning Department and the Office of Industrial Hygiene, to help determine effective noise mitigation strategies in noise-producing areas. (AI 105)

N 3.3 Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses. (AI 107)

N 3.4 Identify point-source noise producers such as manufacturing plants, truck transfer stations, and commercial development by conducting a survey of individual sites. (AI 106)

N 3.5 Require that a noise analysis be conducted by an acoustical specialist for all proposed projects that are noise producers. Include

recommendations for design mitigation if the project is to be located either within proximity of a noise-sensitive land use, or land designated for noise-sensitive land uses. (AI 109)

N 3.6 Discourage projects that are incapable of successfully mitigating excessive noise. (AI 107)

N 3.7 Encourage noise-tolerant land uses such as commercial or industrial, to locate in areas already committed to land uses that are noise-producing. (AI 107)

STATIONARY NOISE

A stationary noise producer is any entity in a fixed location that emits noise. Stationary noise producers are common in many noise-sensitive areas. Motors, appliances, air conditioners, lawn and garden equipment, power tools, and generators are often found in residential neighborhoods, as well as on or near the properties of schools, hospitals, and parks. These structures are often a permanent fixture and are required for the particular land use. Industrial and manufacturing facilities are also stationary noise producers that may affect sensitive land uses. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the County considers the use of these vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. The emitted noise from the producer can be mitigated to acceptable levels either at the source or on the adjacent property through the use of proper planning, setbacks, blockwalls, acoustic-rated windows, dense landscaping, or by changing the location of the noise producer. The following policies identify mechanisms to measure and mitigate the noise emitted from stationary noise producers.

Community Noise Inventory

The cumulative noise created by truck transfer stations can reach excessive levels when noise sensitive uses are located nearby.

There are a series of noise producers within Riverside County that bear special recognition. These uses may be important parts of the economic health of the County, but they still emit noise from time to time. Some of the special noise producers within the County include, but are not limited to the Riverside Raceway, surface mining, truck transfer stations in the Mira Loma area, manufacturing facilities, and natural gas transmission pipelines.

Three high pressure natural gas transmission pipelines are located in the community of Cabazon (within the Pass Area Plan), and a series of valve stations are placed along the pipeline throughout the community. The pipelines supply a major portion of the non-transportation energy supply for southern California. The depressurization of mainline valves at the valve stations for emergency or maintenance reasons can result in noise levels exceeding 140 dB L_{eq} at a distance of 50 feet from the source for more than an hour at a time. The pipelines are not located in heavily populated areas; however, should higher-intensity uses be approved in the area in the future, possible relocation of one or more pipelines or valves may be necessary.

Policies:

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: (AI 105)
a. 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.
b. 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 4.2 Develop measures to control non-transportation noise impacts. (AI 105)

N 4.3 Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed, and ensure that the recommended mitigation measures are implemented. (AI 105, 106, 109)

N 4.4 Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources. (AI 105)

N 4.5 Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of Conditional Use Permits or business licenses or prior to the approval and/or issuance of new Conditional Use Permits for said facilities. (AI 105, 107)

N 4.6 Establish acceptable standards for residential noise sources such as, but not limited to, leaf blowers, mobile vendors, mobile stereos and stationary noise sources such as home appliances, air conditioners, and swimming pool equipment. (AI 105)

A pure tone is a single frequency tone with no harmonic content (e.g. hum).

N 4.7 Evaluate noise producers for the possibility of pure-tone producing noises. Mitigate any pure tones that may be emitted from a noise source. (AI 106, 107)

N 4.8 Require that the parking structures, terminals, and loading docks of commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles on the site as well as on adjacent land uses. (AI 106, 107)

Wind Energy Conversion Systems (WECS)

Wind energy is a unique resource found only in a portion of Riverside County. Wind Energy Conversion Systems (WECS) are used to harness the energy found in strong gusts of wind. In order to fully capitalize on this special commodity, a large number of wind turbines have been placed in a portion of the Coachella Valley and San Gorgonio Pass within Riverside County. There are some residential areas spread throughout the County that may also capitalize on wind-generated power. Though there is minimal residential development in the immediate areas where these windmills are located, the potential for noise and ground-borne vibration in neighboring developed areas may occur. The Wind Implementation Monitoring Program, designed and implemented by Riverside County, guides the policy direction for this area.

Policies:

N 5.1 Enforce the Wind Implementation Monitoring Program (WIMP).

N 5.2 Encourage the replacement of outdated technology with more efficient technology with less noise impacts. (AI 105)

MOBILE NOISE

Please see the Circulation Element for further policies regarding transportation and noise related issues.

Mobile noise sources may be one of the most annoying noise producers in a community because they are louder than background noises and more intense than many acceptable stationary noise sources. Though the noise emitted from mobile sources is temporary, it is often more disturbing because of its abruptness, especially single noise-producing events such as vehicle backfires. Common mobile noise sources include on-road vehicles, aircraft, and trains. The policies in this section identify common mobile noise sources, and suggest mitigation techniques to reduce the annoyance and burden of mobile noise sources on noise-sensitive receptors.

Policies:

N 6.1 Consider noise reduction as a factor in the purchase of County maintenance equipment and their use by County contractors and permittees. (AI 108)

N 6.2 Investigate the feasibility of retrofitting current County-owned vehicles and mechanical equipment to comply with noise performance standards consistent with the best available noise reduction technology. (AI 108)

Commercial Airliners are mobile noise sources that contribute to noise pollution.

N 6.3 Require commercial or industrial truck delivery hours be limited when adjacent to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits. (AI 105, 107)

N 6.4 Restrict the use of motorized trail bikes, mini-bikes, and other off-road vehicles in areas of the County except where designated for that purpose. Enforce strict operating hours for these vehicles in order to minimize noise impacts on sensitive land uses adjacent to public trails and parks. (AI 105, 108)

Transportation

The most common mobile noise sources in the County are transportation-related. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a higher sustained noise level in proximity to areas sensitive to noise exposure. Rail and aircraft operations, though less frequent, may generate extremely high noise levels that can be disruptive to daily activities. Though mass transit has not yet been developed within Riverside County, it is important to consider the noise that may be generated from transit service.

The following airports are located within or have a direct effect on Riverside County. Please see Appendix I for a map with each airport's noise contours. Also see the area plans and airport land use plans for more specific airport-related policies:

- *Banning Municipal Airport*
- *Bermuda Dunes Airport*
- *Blythe Airport*
- *Chino Airport*
- *Corona Municipal Airport*
- *Chiriaco Summit Airport*
- *Desert Center Airport*
- *Desert Resorts Regional Airport*
- *Flabob Airport*
- *French Valley Airport*
- *Hemet-Ryan Airport*
- *March Inland Port*
- *Palm Springs Regional Airport*
- *Perris Valley Airport*
- *Riverside Municipal Airport*
- *Skylark Airport*

Airports

With the dynamic growth in aviation, aircraft noise will remain a challenging environmental problem and one that will affect an increasing number people as air traffic routes and procedures change in the future. Aircraft noise appears to produce the greatest community anti-noise response, although the duration of the noise from a single airplane is much less, for example, than that from a freight train. There is great economic benefit to gain from airports of any size, although living in proximity to an airport may bring about expected aircraft noise.

There are 15 (fifteen) airports that are located within or have a direct effect on Riverside County. The land under the flight paths of each airport was monitored to determine the amount of noise emitted by common aircraft taking-off and landing at any given airport. Noise contours were created based on the measurements from the monitoring program. The CNEL noise contour(s) for the following airports have been depicted in the applicable Area Plan's Airport Influence Area section:

- Banning Municipal Airport
- Bermuda Dunes Airport
- Blythe Airport
- Chino Airport
- Chiriaco Summit Airport
- Corona Municipal Airport
- Desert Center Airport
- Desert Resorts Regional Airport
- Flabob Airport
- French Valley Airport
- Hemet Ryan Airport
- Riverside Municipal Airport

An Airport Land Use Plan has been created for each airport within Riverside County, and it should be referenced for further information regarding airports. Helicopters and heliports are also potential sources of noise, but due to the relatively low frequency and short duration of their operation in most circumstances, these operations do not significantly affect average noise levels within the County. The following general policies address the noise that comes from airports and the aircraft they service.

Policies:

N 7.1 New land use development within Airport Influence Areas shall comply with airport land use noise compatibility criteria contained in the corresponding airport land use compatibility plan for the area. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix L and summarized in the Policy Area section of the affected Area Plan.

N 7.2 Adhere to applicable noise compatibility criteria when making decisions regarding land uses adjacent to airports. Refer to the Airports section of the Land Use Element (Page LU-32) and the Airport Influence Area sections of the corresponding Area Plans.

N 7.3 Prohibit new residential land uses, except construction of a single-family dwelling on a legal residential lot of record, within the current 60 dB CNEL contours of any currently operating public-use, or military airports. The applicable noise contours are as defined by the Riverside County Airport Land Use Commission and depicted in Appendix L, as well as in the applicable Area Plan's Airport Influence Area section.

N 7.4 Check each development proposal to determine if it is located within an airport noise impact area as depicted in the applicable Area Plan's Policy Area section regarding Airport Influence Areas. Development proposals within a noise impact area shall comply with applicable airport land use noise compatibility criteria.

N 7.5 Revise the Riverside County Zoning Code to reflect aircraft noise-impacted areas around the County's major airports. (AI 109)

Vehicular

Please see the Circulation Element for more in-depth information regarding Level of Service Standards, Average Daily Trips, and other information related to vehicular circulation.

Roadway traffic is one of the most pervasive sources of noise within Riverside County. Traffic noise varies in how it affects land uses depending upon the type of roadway, and the distance of the land use from that roadway. Some variables that affect the amount of noise emitted from a road are speed of traffic, flow of traffic, and type of traffic (e.g. tractor trailers versus cars). Another variable affecting the overall measure of noise is a perceived increase in sensitivity to vehicular noise at night. Appendix I contains tables and figures that illustrate existing and forecasted noise from roadways throughout the County. The existing noise measurements were obtained by measuring noise at different points adjacent to the roadway. The future noise contours along freeways and major highways, also located in Appendix I, were created from the results of traffic modeling to project the noise of major roadways in the future. The following policies address the issues of roadway traffic noise, and suggest methods to reduce the noise impact of roads on adjacent and nearby land uses.

Policies:

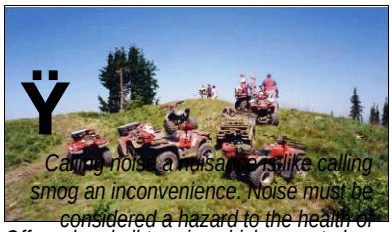
N 8.1 Enforce all noise sections of the State Motor Vehicle Code.

N 8.2 Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the County. (AI 105)

N 8.3 Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures. (AI 106)

N 8.4 Require that the loading and shipping facilities of commercial and industrial land uses, which abut residential parcels be located and designed to minimize the potential noise impacts upon residential parcels. (AI 105)

N 8.5 Employ noise mitigation practices when designing all future streets and highways, and when improvements occur along existing highway segments. These mitigation measures will emphasize the



Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere.

Off-road and all-terrain vehicles must obey strict operating hours when noise-sensitive land uses are nearby or adjacent to trails and open space.

-The Surgeon General

establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas. (AI 105)

N 8.6 Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts. (AI 106)

N 8.7 Require that field noise monitoring be performed prior to siting to any sensitive land uses along arterial roadways. Noise level measurements should be of at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels. (AI 106)

Mass Transit

Currently, the County does not participate in or provide any rail transit services though public transportation is becoming a more desirable option for many travelers and commuters in Riverside County. Transit can be an alternative to driving a car through congested Riverside County freeways. Currently, the noise generated by public transportation within Riverside County affects only a very small percentage of the total residential population. As years pass, and the need for public transportation increases, there will be a greater number of residents affected by the noise that buses, transit oases shuttles, light rail, and trains will produce. The following policies address the issues of noise related to public transit.

Please see the Circulation Element for additional policies related to transit development and rail systems.

Policies:

N 9.1 Encourage local and regional public transit providers to ensure that the equipment they operate and purchase is state-of-the-art and does not generate excessive noise impacts on the community. (AI 108)

N 9.2 Encourage the use of quieter electric-powered vehicles. (AI 108)

N 9.3 Encourage the development and use of alternative transportation modes including bicycle paths and pedestrian walkways to minimize vehicular noise within sensitive receptor areas.

N 9.4 Actively participate in the development of noise abatement plans for freeways and rapid transit. (AI 108)

Rail

The rail system within Riverside County criss-crosses its way through communities, industrial areas, rural areas, and urban centers. Trains carry passengers, freight, and cargo to local and regional destinations day and night. Rail transportation may become more popular in the future if a mass public transportation system is implemented within Riverside County. Currently, daily train traffic produces noise that may disrupt activities in proximity to railroad tracks. For instance, trains are required to sound their horns at all at-grade crossings, and they may also be required to slow their speed through residential areas. These types of noise disturbances can interfere with activities conducted on noise-sensitive land uses. Exhibits showing existing railroad noise contours can be found in Appendix I. These exhibits provide purely illustrative contours

An at-grade railroad crossing is one where the street and the rail line form an intersection, and physically cross one-another.

along rail lines throughout the County. The following policies suggest actions that could minimize the impacts of train noise on noise-sensitive land uses.

Policies:

N 10.1 Check all proposed projects for possible location within railroad noise contours using typical noise contour diagrams. (AI 106, 109)

N 10.2 Minimize the noise effect of rail transit (freight and passenger) on residential uses and other sensitive land uses through the land use planning process. (AI 106, 109)

N 10.3 Locate light rail and fixed rail routes and design rail stations in areas that are accessible to both residential and commercial areas, but also minimize noise impacts on surrounding residential and sensitive land uses. (AI 106, 109)

N 10.4 Install noise mitigation features where rail operations impact existing adjacent residential or other noise-sensitive uses. (AI 108)

N 10.5 Restrict the development of new sensitive land uses to beyond the 65 decibel CNEL contour along railroad rights-of-way. (AI 106, 109)

Building and Design

One of the most effective means of reducing noise in a sensitive area is to construct and design buildings in such a way that the noise is deflected in such a way that it does not affect the occupants. If the building has already been constructed, then landscaping and design techniques can be used to tastefully absorb the noise emitted from mobile or stationary sources. These building and design techniques should serve two purposes; to mitigate noise to acceptable indoor and outdoor levels, and to enhance the community character rather than detract from its surroundings. The following policies have been included in the Noise Element to ensure that the character of each community within Riverside County is preserved while minimizing noise to acceptable levels.

Natural Barriers and Landscaping

Policies:

N 11.1 Utilize natural barriers such as hills, berms, boulders, and dense vegetation to assist in noise reduction. (AI 108)

N 11.2 Utilize dense landscaping to effectively reduce noise. However, when there is a long initial period where the immaturity of new landscaping makes this approach only marginally effective, utilize a large number of highly dense species planted in a fairly mature state, at close intervals, in conjunction with earthen berms, setbacks, or block walls. (AI 108)

Temporary Construction

Policies:

N 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices. (AI 105, 108)

N 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas. (AI 105, 108)

N 12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as

a. Temporary noise attenuation fences;
b. Preferential location of equipment; and
c. Use of current noise suppression technology and equipment. (AI 107)

N 12.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. (AI 105, 108)

Building and Design Techniques

Policies:

N 13.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

,

Non-habitable areas within a home include:
- *kitchens*
- *bathrooms*
- *hallways*
- *garages*
- *closets*
- *utility rooms*
- *laundry rooms*

N 13.2 Continue to develop effective strategies and mitigation measures for the abatement of noise hazards reflecting effective site design approaches and state-of-the-art building technologies. (AI 108)

N 13.3 Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master-planned development, through measures which may include:
- separation of noise-sensitive buildings from noise-generating sources;
- use of natural topography and intervening structure to shield noise-sensitive land uses; and
- adequate sound proofing within the receiving structure. (AI 106)

N 13.4 Consider and, when necessary to lower noise to acceptable limits, require noise barriers and landscaped berms. (AI 108)

N 13.5 Consider the issue of adjacent residential land uses when designing and configuring all new, non-residential development. Design and configure on-site ingress and egress points that divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable. (AI 106, 107)

N 13.6 Prevent the transmission of excessive and unacceptable noise levels between individual tenants and businesses in commercial structures and between individual dwelling units in multi-family residential structures. (AI 105, 108)

N 13.7 Assist the efforts of local homeowners living in high noise areas to noise attenuate their homes through funding assistance and retrofitting program development, as feasible. (AI 105, 108)

N 13.8 Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.

N 13.9 Mitigate 600 square feet of exterior space to 65 dB CNEL when new development is proposed on residential parcels of 1 acre or greater.

Mixed Use

Policies:

N 14.1 Minimize the potential adverse noise impacts associated with the development of mixed-use structures where residential units are located above or adjacent to commercial uses. (AI 106, 107, 108)

N 14.2 Require that commercial and residential mixed-use structures minimize the transfer or transmission of noise and vibration from the commercial land use to the residential land use. (AI 105)

N 14.3 Minimize the generation of excessive noise level impacts from entertainment and restaurant/bar establishments into adjacent residential or noise-sensitive uses. (AI 105, 107)

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Vibration

Amplitude-the distance that a vibrating particle travels from a fixed point.

Frequency-the number of wave cycles that occur in 1 second.

Hertz (Hz)-the unit by which frequency is measured.

Displacement-a measure of the distance that a vibrated particle travels from its original position.

Velocity-the rate of speed at which particles move in inches per second or millimeters per second.

Acceleration-the rate of change in velocity with respect to time.

Another community annoyance related to noise is vibration. As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized by displacement, velocity, and/or acceleration. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration.

Vibration can be felt outdoors, but the perceived intensity of vibration impacts are much greater indoors, due to the shaking of the structure. Some of the most common sources of vibration come from trains and/or transit vehicles, construction equipment, airplanes, and large vehicles. Several land uses are especially sensitive to vibration, and therefore have a lower vibration threshold. These uses include, but are not limited to, concert halls, hospitals, libraries, vibration-sensitive research operations, residential areas, schools, and offices.

Table 3, Human Reaction to Typical Vibration Levels, presents the human reaction to various levels of peak particle velocity. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies. However, due to their suspension systems, city buses often generate frequencies around 30 Hz at high vehicle speeds. It is more uncommon, but possible, to measure traffic frequencies above 30 Hz.

Table N-3:
Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches/second)	Human Reaction
0.0059-0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937-0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges.

Source: Caltrans, 1992

Policies:

N 15.1 Restrict the placement of sensitive land uses in proximity to vibration-producing land uses. (AI 105)

N 15.2 Consider the following land uses sensitive to vibration:
- Hospitals;
- Residential Areas;
- Concert Halls;

- Libraries;
- Sensitive Research Operations;
- Schools; and
- Offices

N 15.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

Noise Information Management

Current and projected noise data and maps for Riverside County require constant updating and review in order for the information to remain correct as well as accurate. Currently, there is no central noise information database available for the County staff or residents to reference when noise inquiries arise. This information is necessary and should be easily accessible when reviewing potential development plans, building a new home, siting an industrial area, evaluating circulation routes, or conducting other advanced planning activities. The following policies guide the County to create a database, or central location, where up-to-date information can be accessed by County Staff or residents.

Please see Table N-1 for more information in order to determine a noise threshold necessary for creating a noise database.

Mapping

Policies:

N 16.1 Identify, quantify, and map noise producers and provide noise contour diagrams as is practical. (AI 109)

N 16.2 Identify and map noise-sensitive land uses throughout the County. (AI 109)

N 16.3 Identify and map point-source noise producers such as surface mines, wind turbines, manufacturing plants, truck transfer stations, active recreational facilities, and amphitheaters. (AI 109)

Noise Data Management

Policies:

N 17.1 Maintain baseline information, on an ongoing basis, regarding ambient and stationary noise sources. (AI 105)

N 17.2 Monitor and update available data regarding the community's existing and projected ambient stationary noise levels.

N 17.3 Assure that areas subject to noise hazards are identified, quantified, and mapped in a form that is available to decisionmakers. (AI 109)

N 17.4 Develop and maintain a detailed, comprehensive noise data base. (AI 106)

N 17.5 Develop and update County Noise Inventories using the following steps.

a. Identify Noise Sources and Noise-sensitive Land Uses
b. Continue to identify various agency responsibilities; review noise complaint files; and conduct noise surveys and monitoring as needed.

N 17.6 Identify those areas of the County affected by high noise levels. (AI 106, 107, 109)

N 17.7 Evaluate current land uses to identify potential noise conflict areas. (AI 106, 107, 109)

N 17.8 Gather activity operations' data of noise sources; prepare analytical noise exposure models to develop existing and projected noise contours around major noise sources down to 50 CNEL. (AI 109)

N 17.9 Encourage greater involvement of other County departments in the identification, measurement, and reduction of noise hazards throughout the County, including: Building and Safety Department, Aviation Department, and the Department of Public Health-Office of Industrial Hygiene.

Public Noise Information

Policies:

N 18.1 Provide information to the public regarding the health effects of high noise levels and means of mitigating such levels. (AI 109)

N 18.2 Cooperate with industry to develop public information programs on noise abatement. (AI 108)

N 18.3 Condition that prospective purchasers or end users of property be notified of overflight, sight, and sound of routine aircraft operations by all effective means, including:

a. requiring new residential subdivisions that are located within the 60 CNEL contour or are subject to overflight, sight, and sound of aircraft from any airport, to have such information included in the State of California Final Subdivision Public Report.
b. requiring that Declaration and Notification of Aircraft Noise and Environmental Impacts be recorded and made available to prospective purchasers or end users of property located within the 60 CNEL noise contour for any airport or air station or is subject to routine aircraft overflight. (AI 109)

N 18.4 Promote increased awareness concerning the effects of noise and suggest methods by which the public can be of assistance in reducing noise.

N 18.5 Require new developments that have the potential to generate significant noise impacts to inform impacted users on the effects of these impacts during the environmental review process. (AI 106, 107)

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APPENDIX 3.2:

CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT EIR

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BACK TO GENERAL PLAN HOME PAGE

RIVERSIDE COUNTY INTEGRATED PROJECT

GENERAL PLAN
FINAL PROGRAM
ENVIRONMENTAL IMPACT REPORT
VOLUME I

RIVERSIDE COUNTY, CALIFORNIA

Comprehensive General Plan Amendment No. 618 (GPA00618)
Environmental Assessment (EA) No. 38614
Environmental Impact Report (EIR) No. 441
State Clearinghouse No. 2002051143

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The County of Riverside has independently reviewed, analyzed, and exercised its judgement in the analysis contained in this
Environmental Impact Report and supporting documentation pursuant to Section 21082 of the California Environmental Quality Act (CEQA)

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Impact 4.10.9 Areas exposed during development activities would be prone to erosion and/or the loss of topsoil. The potential for substantial soil erosion of the loss of topsoil is considered potentially significant.	• Grading and development plans shall be designed in a manner which minimizes the amount of terrain modification. • Surface water shall be controlled and diverted around potential landslide areas to prevent erosion and saturation of slopes. • Structures shall not be sited on or below identified landslides unless slides are stabilized. • The extent and duration of ground disturbing activities during and immediately following periods of rain shall be limited, to avoid the potential for erosion which may be accelerated by rainfall on exposed soils. • To the extent possible, the amount of cut and fill shall be balanced. • The amount of water entering and exiting a graded site shall be limited though the placement of interceptor trenches or other erosion control devices. • Erosion and sediment control plans shall be submitted to the County for review and approval prior to the issuance of grading permits. **4.10.9C** Where required, drainage design measures shall be incorporated into the final design of individual projects on-site. These measures shall include, but will not be limited to: • Runoff entering developing areas shall be collected into surface and subsurface drains for removal to nearby drainages. • Runoff generated above steep slopes or poorly vegetated areas shall be captured and conveyed to nearby drainages. • Runoff generated on paved or covered areas shall be conveyed via swales and drains to natural drainage courses. • Disturbed areas that have been identified as highly erosive shall be (re)vegetated. • Irrigation systems shall be designed, installed, and maintained in a manner which minimizes runoff. • The landscape scheme for projects within the project site shall utilize drought-tolerant plants. • Erosion control devices such as rip-rap, gabions, small check dams, etc., may be utilized in gullies and active stream channels to reduce erosion.	Less than significant.
4.11 Hazardous Materials		
Less than Significant Impacts		
Historical Use of Hazardous Materials and Waste Implementation of the proposed General Plan would not result in impacts associated with known and/or suspected hazardous materials. However, there is a potential that previously unknown hazardous materials contamination from historical use of a property may be encountered during future development activities. Should such contamination be found or disturbance occur, existing federal, state, and local policies and procedures would require action by the designated local enforcement agency. It is unlikely that any such contamination or disturbance would be extensive beyond the capacities of typical remediation measures. Therefore, no significant impacts from former uses of properties within Riverside County are anticipated as a result of implementation of the proposed General Plan. **Generation of Hazardous Waste** Implementation of the proposed General Plan would introduce new land uses to the unincorporated areas of Riverside County that may result in the use of hazardous materials and the potential generation of hazardous waste. However, compliance with regulations, standards, and guidelines established by the EPA, State, Riverside County, and local agencies relating to the storage, use, and disposal of hazardous materials will reduce the potential risk of hazardous materials exposure to a level that is less than significant and no further mitigation is required.	**Policies:** S 6.1 S 7.1-7.3 No mitigation required. ~~Less than significant.~~	Less than significant.
4.12 Mineral Resources		
Less than Significant Impact		
The increased growth and development associated with the implementation of the proposed General Plan would not significantly impact mineral resources located within the unincorporated Riverside County.	**Policies:** LU 21.1-21.5, OS 14.1-14.6	Less than significant.
4.13 Noise		
Potentially Significant Impacts		

Impact 4.13.1 Noise levels from grading and other construction activities would potentially result in noise levels reaching 91 dBA Lmax at off-site locations 50 feet from the site boundary. This would result in potentially significant noise impacts to off-site sensitive receptors adjacent to the individual construction site. Compliance with the County's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level.	Compliance with the County's noise ordinance construction hours. **Policies:** N 12.1-12.4 **4.13.1A** Prior to the issuance of any grading plans, the County shall condition approval of subdivisions adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the County for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as: • The construction contractor shall use temporary noise attenuation fences where feasible, to reduce construction noise impacts on adjacent noise-sensitive land uses. • During all project site excavation and grading on site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site. • The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction. • The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays. **4.13.1B** The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by County staff.	Less than significant.
Impact 4.13.2 The implementation of the proposed General Plan would result in potential project-related long-term vehicular noise than would affect sensitive land uses along the roads. New development, particularly residential uses along and adjacent to major transit corridors, could be exposed to excessive traffic-related noise levels. To ensure that all new noise-sensitive proposals are carefully reviewed with respect to potential noise impacts, the County shall review new development using noise guidelines in combination with the land use compatibility standards.	**Policies:** N 6.1-6.4, N 8.1-8.7 **4.13.2A** All new residential developments within the County shall conform to a noise exposure standard of 65 dBA L_{dn} for outdoor noise in noise-sensitive outdoor activity areas and 45 dBA L_{dn} for indoor noise in bedrooms and living/family rooms. New development, which does not and cannot be made to conform to this standard, shall not be permitted. **4.13.2B** Acoustical studies, describing how the exterior and interior noise standards will be met, shall be required for all new residential developments with a noise exposure greater than 65 dBA L_{dn}. The studies shall also satisfy the requirements set forth in Title 24, Part 2, or the California Administrative Code, Noise Insulation Standards, for multiple family attached homes, hotels, motels, etc., regulated by Title 24. No development permits or approval of land use applications shall be issued until an acoustic analysis is received and approved by the County Planning Department. **4.13.2C** The County shall require that proposed new commercial and industrial developments prepare acoustical studies, analyzing potential noise impacts on adjacent properties, when these developments abut noise-sensitive land uses. The County will require that all identified impacts to noise-sensitive land uses be mitigated to a less than significant level. **4.13.2D** Ensure that all new schools, particularly in subdivisions and specific plans, are sited more than two miles away from an airport.	Less than significant.
Impact 4.13.3 New development associated with implementation of the proposed General Plan could expose existing and/or new sensitive uses to stationary noise sources, such as industrial and/or commercial uses.	**Policies:** N 1.1-1.8, N 2.1-2.3, N 3.1-3.7, N 4.1-4.8, N 11.1-11.2 **4.13.3A** Acoustical studies shall be required for all new noise-sensitive projects that may be affected by existing noise from stationary sources. **4.13.3B** To permit new development of residential and noise-sensitive land uses where existing stationary noise sources exceed the County's noise standards, effective mitigation measures shall be implemented to reduce noise exposure to or below the allowable levels of the zoning code/noise control ordinance. **4.13.3C** No industrial facilities shall be constructed within 500 feet of any commercial land uses or within 2,800 feet of any residential uses without the preparation of a noise impact analysis. This analysis shall document the nature of the industrial facility as well as "noise producing" operations associated with that facility. Furthermore, the analysis shall document the placement of any existing or proposed commercial or residential land uses situated within the noted distances. The analysis shall determine the potential noise levels that could be received at these commercial and/or residential land uses and specify measures to be employed by the industrial facility to ensure that these levels do not exceed County noise requirements. Such measures could include, but are not limited to, the use of enclosures for noisy pieces of equipment, the use of noise walls and/or berms for exterior equipment and/or on-site truck operations, and/or restrictions on hours of operations. No development permits or approval of land use applications shall be issued until an acoustic analysis is received and approved by the County staff.	Less than significant.
	Policies: N 10.1-10.5	

Impact 4.13.4 Although the proposed General Plan update would not necessarily result in potential project-related increases in railroad noise, there could be new proposed sensitive land uses along and adjacent to the railroads that would be affected by high railroad noise.	**4.13.4A** All new residential developments within the County shall conform to a noise exposure standard of 65 dBA L_{dn} for outdoor noise in noise-sensitive outdoor activity areas and 45 dBA L_{dn} for indoor noise in bedrooms and living/family rooms. New development, which does not and cannot be made to conform to this standard, shall not be permitted. **4.13.4B** Acoustical studies, describing how the exterior and interior noise standards will be met, shall be required for all new residential developments with a noise exposure greater than 65 dBA L_{dn}. The studies should also satisfy the requirements set forth in Title 24, Part 2, of the California Administrative Code, Noise Insulation Standards, for multiple family attached homes, hotels, motels, etc., regulated by Title 24.	Less than significant.
4.14 Parks and Recreation		
Potentially Significant Impacts		
Impact 4.14.1 Build out within now vacant unincorporated areas of the County will result in a substantial increase in population and residential and non-residential structures, potentially increasing the use of existing parks and recreation facilities. Based on increased population figures and current staffing levels, development associated with the proposed General Plan would require additional neighborhood or community parkland and recreational facilities. Therefore, the proposed General Plan could result in significant impacts on existing parks and recreations services and facilities and will require the expansion of existing facilities and recreation programs or the construction of new parks and recreational facilities. An increase in staff and/or equipment will be needed to maintain the new parkland and recreational facilities.	**Policies:** OS 20.3, OS 20.5-20.6, LU 19.1-19.3, LU 19.5	Less than significant.
4.15 Public Services		
Potentially Significant Impacts		
Fire Protection **Impact 4.15.1** Build out of unincorporated areas of the County will result in a substantial increase in population and residential and non-residential structures, increasing the need for fire emergency services and facilities. Based on increased population figures and current staffing levels, development associated with the proposed General Plan would require additional on-duty firefighters. Therefore, the proposed General Plan could result in significant impacts on existing fire protection services and require expansion of fire protection services.	**Policies:** S 5.2, S 5.4-~~5.9~~5.10, LU 5.2, LU 9.1No mitigation required.	Less than significant.
Sheriff Protection **Impact 4.15.2** Increases in population and employment anticipated with the proposed General Plan would increase the need for sheriff protection and sheriff services, requiring additional emergency responses and the need for additional sheriff personnel and related support facilities. This increased demand for officers and facilities is considered a significant impact.	**Policies:** LU 5.1-5.2, LU 9.1 **4.15.2A** The County shall require as a part of the development review process, proponents of new businesses, recreational, and commercial land uses such as shopping centers, health clubs, large hotels over 200 rooms, convention centers, and commercial recreational activities be required to provide on-site security. **4.15.2B** The TLMA shall inform the Riverside County Sheriff's Department of the existence of all new homeowner associations within the County. The Riverside County Sheriff's Department shall coordinate with homeowners associations to establish a Neighborhood Watch Program. **4.15.2C** Riverside County shall meet and maintain a goal of 1.5 sworn officers per 1,000 population, as recommended by the International City Managers' Association. **4.15.2D** The County shall require the development applicant to pay the County Sheriff's established development mitigation fee prior to issuance of a certificate of occupancy on any structure as they are developed. The fees are for the acquisition and construction of public facilities.	Less than significant.
Solid Waste Management **Impact 4.15.3** Increases in population and employment with the proposed General Plan could result in the incremental increase of solid waste throughout unincorporated Riverside County. This could increase the need for solid waste disposal,	**Policies:** LU 5.1, LU 5.2 **4.15.3A** Riverside County shall work with its franchise hauling companies to expand curbside and commercial recycling services throughout the unincorporated area of the County. **4.15.3B** Riverside County shall follow State regulations in implementing the goals, policies, and programs identified in the Riverside County Integrated Waste Management Plan in order to achieve and maintain a 50 percent reduction in solid waste disposal through source reduction, reuse, recycling, and composting. **4.15.3.C** In accordance with State regulations, Riverside County shall prepare an annual report of progress for the CIWMB to determine the County's progress toward meeting its diversion goals and objectives, to project the County's waste disposal needs, and to determine if any of the elements that comprise the Riverside CIWMP require revision to include additional disposal capacity, reflect new or changed local and regional solid waste management issues, or reflect new or changed goals and objectives.	Less than significant.

Future development will be reviewed to ascertain project-specific impacts to mineral resources and to ensure compliance with applicable County policies. With the projected growth and increasing pressure to develop vacant lands within unincorporated Riverside County, management of these mineral resources is necessary to protect and guide the exploitation of mineral deposits. Management strategies are contained in the proposed General Plan policies directed towards mineral resources and their conservation and extraction. Implementation of these policies will reduce or eliminate adverse impacts caused by mineral extraction and/or urbanization.

The Open Space-Mineral Resource land use designation allows for mineral extraction and processing facilities designated on the basis of the SMARA of 1975 classification. Areas held in reserve for future mining activities also fall under this designation. Ancillary structures or uses may be permitted which assist in the extraction, processing, or preservation of minerals. Actual building or structure size, siting, and design will be determined on a case-by-case basis.

Proposed General Plan Policies The proposed General Plan includes the following policies in both the Land Use and Open Space and Conservation Elements to reduce or minimize the conflicts between urban growth and development and mineral resources and their future extraction potential. The proposed policies are provided below.

Land Use Policy 21.1 Require that surface mining activities and lands containing mineral deposits of statewide or of regional significance comply with Riverside County Ordinances and the SMARA.

Land Use Policy 21.2 Protect lands designated as Open Space-Mineral Resource from encroachment of incompatible land uses through buffer zones or visual screening.

Land Use Policy 21.3 Protect road access to mining activities and prevent or mitigate traffic conflicts with surrounding properties.

Land Use Policy 21.4 Require the recycling of mineral extraction sites to open space, recreational, or other uses that are compatible with the surrounding land uses.

Land Use Policy 21.5 Require an approved reuse plan prior to the issuing of a permit to operate an extraction operation.

Open Space Policy 14.1 Require that the operation and reclamation of surface mines be consistent with the SMARA and County Development Code provisions.

Open Space Policy 14.2 Restrict incompatible land uses within the impact area of existing or potential surface mining areas.

Open Space Policy 14.3 Restrict land uses incompatible with mineral resource recovery within areas designated as Open Space-Mineral Resources.

Open Space Policy 14.5 Require that new non-mining land uses adjacent to existing mining operations be designed to provide a buffer between the new development and the mining operations. The buffer distance shall be based on an evaluation of noise, aesthetics, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.

Open Space Policy 14.6 Accept California Land Conservation (Williamson Act) contracts on land identified by the State as containing significant mineral deposits subject to the acreage limitations established by the County.

Effectiveness of Proposed General Plan Policies Implementation of the proposed General Plan policies related to mineral resources ensure that future development in the County would not have any significant adverse impacts on mineral resources nor would future mineral resource extraction have any significant adverse impacts on future development. Avoiding adverse impacts is achieved through adherence to these policies; by restricting development on land designated as MRZ-2 by the State; reviewing all development proposals adjacent to MRZs or mining activity to safeguard against incompatible land uses; providing buffer zones between urban development mining activity; and requiring that development to adhere to State mining policies and regulations.

Revised General Plan Finding Revisions to the proposed General Plan since the preparation of the Draft EIR have not altered the policies that pertain to mineral resources. Furthermore, because the policies address mineral resource impacts on a site-by-site basis, and address adjacent land use in a general way, the reconfiguration of land use designations associated with the revised proposed General Plan would not decrease the effectiveness of the policies. Therefore, the policies will reduce impacts associated with mineral resources to a less than significant level.

4.12.4 Mineral Resources Level of Significance after Mitigation

Implementation of the proposed policies would guarantee that potential impacts on mineral resources remain at a less than significant level.

4.13 Noise

Measurement of Sound

A "decibel" is a unit for describing the amplitude of sound. Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve (see Figure 4.13.1).

For example, 10 decibels are 10 times more intense than one decibel, 20 decibels are 100 times more intense and 30 decibels are 1,000 times more intense. Thirty decibels represent 1,000 times as much acoustic energy as 1 decibel. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than zero decibels. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-decibel increase in sound level is perceived by the human ear as doubling of the loudness of the sound. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sounds are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single-point source, sound levels decrease approximately six decibels for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source such as highway traffic or railroad operations, the sound decreases three decibels for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases four and one-half decibels for each doubling of distance.

Noise Abatement

Three basic mechanisms are effective at reducing excessive noise exposure: 1) reduce the strength of the noise at the source; 2) increase the distance between the source and the receiver; and 3) place an obstruction between the noise source and the receiver.

Given that vehicular noise is exempt from local control and relocation of sensitive land uses away from freeways or major streets is not practical, a noise wall is often the remaining practical solution. A properly sited wall can reduce noise levels by almost 10 dB. A decrease of 10 dB is perceived by people to be about one-half as loud as before. However, a freeway that is one-half as loud as before may still be very loud. Construction costs of noise walls are expensive at approximately $100 to $200 per linear foot, making each mile of wall cost approximately $500,000 to $1,000,000 dollars.

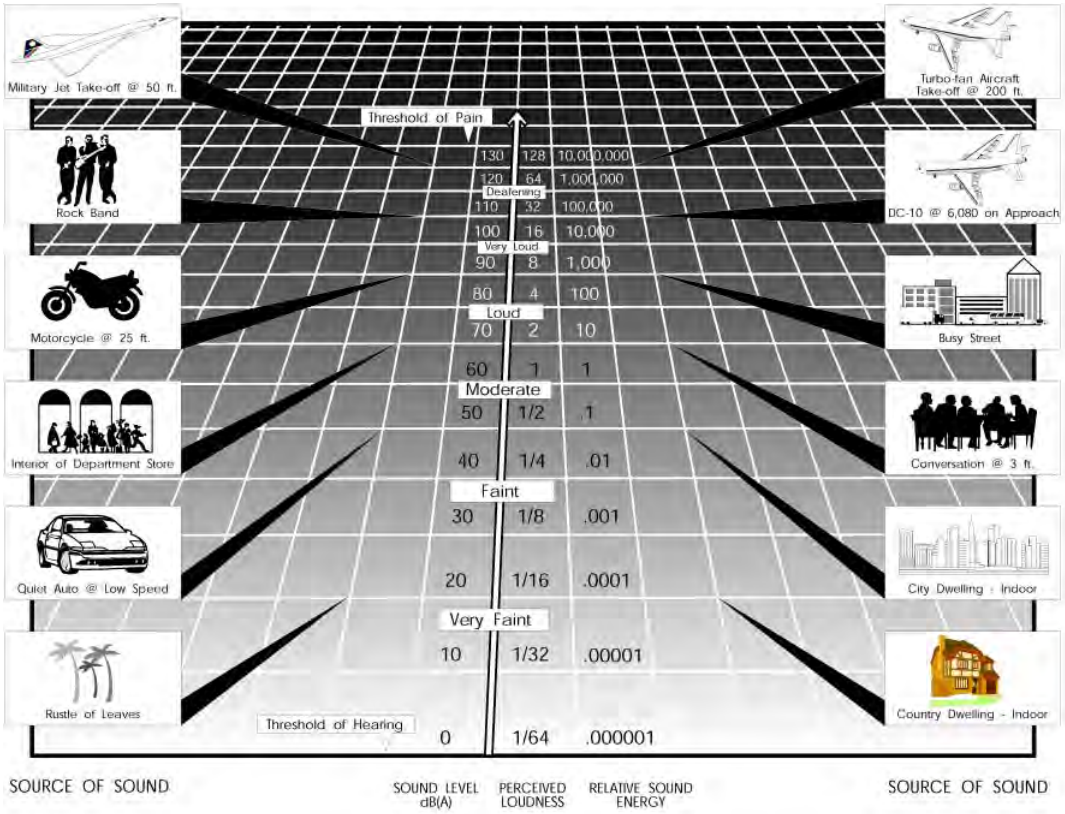


Figure 4.13.1

Source: Coffman and Associates, 1991

COMMON NOISE SOURCES AND NOISE LEVELS

R:\SVC932.RCIP General Plan\Graphics\EIR\noise.cdr (8/30/03)

All sensitive uses along freeways and highways that are or will be exposed to noise levels in excess of applicable noise standards require the consideration of mitigation measures such as sound walls or building facade upgrades. However, State highways, including freeways under the jurisdiction of Caltrans, must consider noise abatement measures when roadways are to be undergoing major changes or improvements that will result in new or continued exposure to traffic noise levels approach or exceed the noise abatement criteria (NAC). Because of the competing impact of noise or sound wall costs versus benefits, the California Department of Transportation (Caltrans) is sensitive to the wishes of the affected community regarding wall construction. When building or upgrading roadways, Caltrans will generally support design features that minimize local objections as long as their own design standards are met. Those standards include the following:

- Walls must reduce noise levels by a minimum of 5 dB.
- Walls must be able to block truck exhaust stacks that are located at 11.5 feet above the pavement.
- Walls within 15 feet of the outside of the nearest travel lane must be built upon safety-shaped concrete barriers.

The preferred wall material is concrete or masonry. The effectiveness of a material in stopping sound transmission is called the transmission loss (TL). Materials other than a heavy metal or concrete masonry unit are more typically used on a single unique project basis rather than along several miles of freeway.

Another method of obstructing noise for residential or commercial buildings involves the use of design features, site planning, or building materials to protect the users of buildings in the interior of the building. Features such as dense landscaping and the use of double-paned windows are two examples.

4.13.1 Noise Existing Setting

The primary existing noise sources within Riverside County include transportation facilities such as airports, railroads, freeways and highways; commercial, industrial/manufacturing, agricultural land uses; recreational areas; construction; and other noise sources such as shooting ranges, mining, and sand and gravel operations. Noise is also attributable to various machines, electronic amplification of music, and the sheer number of various power tools, machinery, televisions and stereos throughout the population.

Urban areas are subjected to increasingly pervasive noise. Although most major noise sources are transportation-related, disturbing levels of noise are common throughout many residential areas in the form of stereos, televisions, power mowers and other lawn care devices, shop tools, and pool and air conditioning equipment.

Commercial areas are often subjected to high levels of transportation-related noise, often precluding use of outside areas for conversation where it is necessary or desirable. Juke boxes, video games and service equipment all add another layer of noise to transportation-related noise. Industrial areas are often high noise producers with manufacturing equipment commonly adding significantly to transportation-related noise.

Agricultural operations may produce significant noise during planting and harvesting times from equipment operation. Agricultural noise may be disturbing to neighboring residential areas; a common phenomena as urban areas intrude into agricultural lands. Agricultural areas may also have noise-sensitive uses which can be disturbed by high noise levels as is the case with the raising of animals and poultry.

Recreational lands and wildlife habitat are also significantly impacted by noise. Recreational uses include those that are quiet in nature and those that are noisy by nature. Quiet in nature recreational uses include trails and picnic areas. Noisy in nature recreational uses include sports park and off-road vehicle recreational areas. ~~lands are lands where quiet is a basis for use.~~ However, ~~U~~uncontrolled use of off-road vehicles in parks and open space lands degrades recreational opportunities for the County's residents. Noise intrusion into wildlife habitat drives off wildlife and, with prolonged use, may effectively reduce the amount of land used as habitat by various species.

There are seven public use general aviation airports and a number of smaller airports and air fields within Riverside County. The most significant highway noise producers are I-10, I-215, SR-60, and SR-91. The two railroads (Union Pacific and Burlington Northern/Santa Fe) also produce significant amount of noise; however, due to relatively low volumes of traffic and the isolated nature of the current system of rail lines, they do not expose as many people to the intensity of sound as do the airports.

Ambient Noise Survey

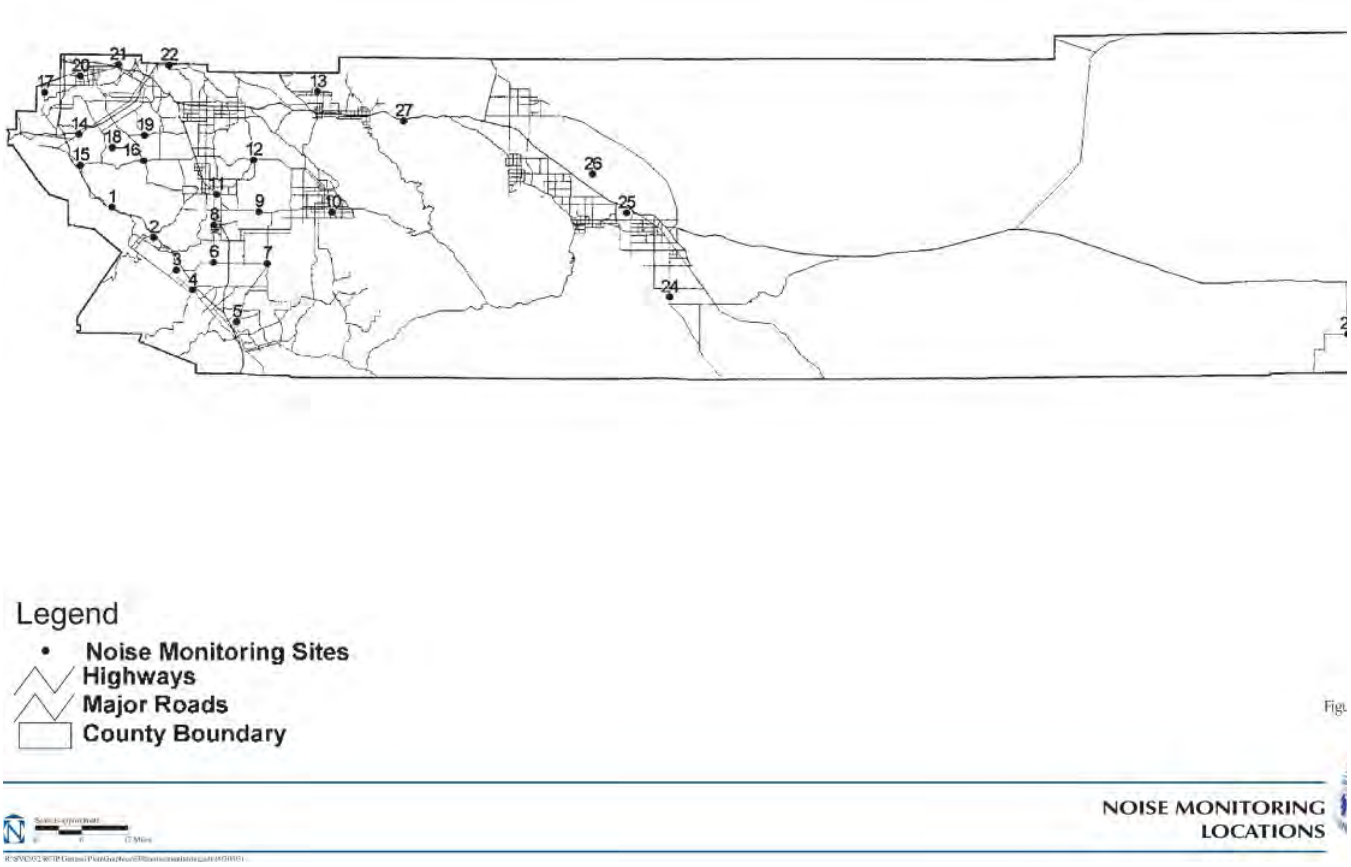
A survey of the existing noise environment was conducted on August 17, 18, and 19, 1999. Noise measurements were taken in 20-minute periods. A total of 17 locations in the project areas were monitored to represent existing ambient noise levels. All measurement locations had direct line-of-sight to traffic on existing adjacent roadways. The measured noise level ranged from 61.8 to 72.3 dBA L_{eq}. The field monitoring confirmed that most noise in the County is due to the use of motor vehicles on public roadways. Table 4.13.A summarizes noise measurement data for these monitoring locations. Figure 4.13.2 depicts these noise monitoring locations.

Table 4.13.A - Ambient Noise Monitoring Results

	Location	Start Time	L_{eq} (dBA)	Noise Sources	Remarks
1	15 feet north of Temescal Canyon Road near Lake Street.	8:35 a.m.	65.8	Traffic on Temescal Canyon Road.	Trucks made up most of the noise; overall traffic was moderate; I-15 to the south contributed to noise level.
2	20 feet southwest of Collier Road, at intersection of Central Street and Collier Road.	9:20 a.m.	64.9	Busy traffic on Collier Road plus moderate traffic on Central Street.	Traffic was continuous on Collier Road.
3	15 feet south of Bundy Canyon Road, at intersection of Bundy Canyon Road and Mission Trail.	10:00 a.m.	61.8	Traffic on Bundy Canyon Road.	Traffic was dense at times and non-existent at others.
4	15 feet east of Clinton Keith Road, near intersection of Clinton Keith Road and Palomar/Washington Street.	10:45 a.m.	67.6	Traffic on Clinton Keith Road and Palomar Street.	Traffic was continuous on Clinton Keith and Palomar Street.
5	15 feet southeast of SR-79, near intersection of Clinton Keith Road and Margarita Road.	11:40 a.m.	67.2	Traffic on SR-79 and Margarita Road; plane flying overhead.	Traffic was heavy and continuous on SR-79; moderate traffic on Margarita Road.
6	15 feet east of Murrieta Road, near intersection of Murrieta Road and Bundy Canyon/Scott Road.	12:40 p.m.	65.3	Traffic on Murrieta Road.	Traffic was moderate on Murrieta and Scott Roads.
7	15 feet west of SR-79, near intersection of SR-79 and Scott Road.	1:25 p.m.	67.1	Busy traffic on SR-79; traffic on Scott Road.	Traffic was continuous on SR-79; moderate traffic on Scott Road.
8	15 feet south of McCall Boulevard, near intersection of McCall Boulevard and Murrieta Road.	2:20 p.m.	65.1	Traffic on McCall Boulevard and Murrieta Road; plane flying overhead.	Traffic was moderate on both McCall Boulevard and Murrieta Road.
9	15 feet south of McWade Avenue, near intersection of McWade and Olson Avenues.	3:00 p.m.	65.3	Traffic on McWade and Olson Avenues.	Moderate traffic on Olson and McWade Avenues.
10	15 feet east of Cornell Street, between parallel Mayberry Avenue and McDowell Street.	3:50 p.m.	66.1	Traffic on Cornell Street, McDowell Street, and May-berry Avenue.	Moderate traffic on all three streets.
11	15 feet south of Ellis Avenue; SR-74 to the north.	2:40 p.m.	66.5	Traffic on Ellis Avenue; traffic on SR-74.	Moderate traffic level on Ellis Avenue.
	15 feet south of Reservoir Avenue, near intersection of Reservoir			Traffic on Reservoir Avenue; traffic on Davis	Moderate traffic levels on

12	Avenue and Davis Road / Hansen Avenue. Ramona Expressway to the north.	3:25 p.m.	65.1	Road / Hansen Avenue; traffic on Ramona Expressway.	Davis Road and Reservoir Avenue.
13	15 feet north of Cherry Valley Boulevard, near intersection of Beaumont Avenue and Cherry Valley Boulevard.	4:20 p.m.	65.5	Traffic on Cherry Valley Boulevard and Beaumont Avenue.	Moderate traffic levels on Cherry Valley Boulevard and Beaumont Avenue.
14	14 feet from the street, at the southwest corner of Magnolia Avenue and McKinley Street.	9:40 a.m.	71.3	Traffic on McKinley Street and Magnolia Avenue.	Both streets are major streets with heavy traffic in each direction.
15	22 feet from the street, at the southeast corner of Cajalco and Temescal Canyon Roads.	10:40 a.m.	70.9	Tractor trailer trucks on Cajalco Road; recycling equipment at Liston Aluminum Company.	Intersection is an all-way stop; Liston Aluminum Company is at the northwest corner of the intersection.
16	15 feet from the street, at the southeast corner of Cajalco Road and El Sobrante Road.	11:30 a.m.	70.0	Traffic on Cajalco and El Sobrante Roads, including tractor trailer trucks.	Three-way intersection with a stop sign on El Sobrante Road.
17	12 feet from the street, at the northwest corner of Archibald Avenue and Schleisman Road.	12:20 p.m.	73.0	High volume of trucks on Archibald Avenue.	Three-legged signalized intersection; dairy farms located at northwest and southwest corners.
18	15 feet from the street, at the northeast corner of McAllister Street and El Sobrante Road.	2:00 p.m.	71.9	Construction at the northwest corner of the intersection and traffic on El Sobrante Road.	Three-legged intersection; very little development nearby.
19	15 feet from the street, at the northwest corner of Van Buren Boulevard and Washington Street.	2:35 p.m.	72.3	High volume of traffic entering a 711 Market for gasoline; continuous barking dogs.	7-11 Market located at the northwest corner of intersection.
20	15 feet from the street at the southeast corner of Jurupa Road and 10th Street.	3:35 p.m.	69.8	Heavy tractor trailer truck traffic on 10th Street and high volume of traffic entering Circle K Market.	Across from Vanny's Auto Service located at 10596 Jurupa Road; all-way stop intersection.
21	15 feet from the street, at the northeast corner of Valley Road and 34th Street.	4:10 p.m.	69.9	Traffic on Valley Road and construction activity about 300 yards north.	Intersection is signalized.
22	15 feet from the street, at the southeast corner of Center Avenue and Mt. Vernon Avenue.	5:40 p.m.	56.6	Light traffic on Center Avenue and Mt. Vernon Avenue and a helicopter flyover a quarter mile away.	Intersection has an all-way stop sign.
23	15 feet from the street, at the southeast corner of Arrowhead Boulevard and 28th Street.	10:35 a.m.	65.2	Traffic on 28th Street and Arrowhead Boulevard and agricultural equipment nearby.	Intersection is a three-legged intersection; free-flowing traffic on 28th Street; Highway 78 is to the east.
24	15 feet from the street, at the northwest corner of Highway 86 and 62nd Avenue.	1:05 p.m.	76.1	Heavy tractor trailer traffic on Highway 86, agricultural tractors to the southwest.	Intersection is a two-way controlled stop; tractors in operation were about 70 yards from the meter.
25	15 feet from the street, at the northwest corner of Adams Street and 42nd Avenue.	2:15 p.m.	67.5	Traffic on Adams Street and 42nd Avenue.	Intersection is an all-way controlled stop; residential development in three corners.
26	15 feet from the street, at the southeast corner of Ramon Road and Via Las Palmas.	3:15 p.m.	70.5	Traffic on Ramon Road and Via Las Palmas.	Three-way intersection; free-flowing traffic on Ramon Road; many residential developments north of the intersection.
27	15 feet from the street, at the northwest corner of Broadway Road and Bonita Avenue.	4:30 p.m.	65.7	Traffic on Broadway Road and Bonita Avenue.	Free-flowing traffic on Broadway Road; residential developments at the southeast corner of the intersection.

Source: LSA Associates, Inc., 1999.



Existing Vehicular Traffic Noise

Noise from motor vehicles is generated by engine vibrations, the interaction between tires and the road, and the exhaust system. Reducing the average motor vehicle speed reduces the noise exposure of receptors adjacent to the road. Each reduction of five miles per hour reduces noise by one to two dBA. The FHWA highway traffic noise prediction model (FHWA RD-77-108), currently used throughout the United States, was used to estimate freeway and highway traffic-related noise levels in the unincorporated Riverside County area. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The average daily traffic (ADT) volumes in the area are taken from the County's traffic counts. The resultant noise levels are weighed and summed over 24-hour periods to determine the L_{dn} value. L_{dn} contours are derived through a series of computerized iterations to isolate the 60, 65, and 70 dBA L_{dn} contours for traffic noise levels.

Table 4.13.B provides the traffic noise levels adjacent to representative segments of the freeways and major roads in western Riverside County. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the highway traffic and the location where the noise contours are drawn. Table 4.13.B shows that traffic noise level measured at 50 feet from the outermost travel lane for these roadways ranges from a low of 63.2 dBA L_{dn} along Redlands Boulevard to a high of 80.1 dBA L_{dn} along I-215.

Table 4.13.B - Existing Traffic Noise Levels Table

Roadway Segment	ADT	Centerline to 70 L_{dn}, feet	Centerline to 65 L_{dn}, feet	Centerline to 60 L_{dn}, feet	Ldn (dBA) 50 feet from outermost lane
La Sierra Avenue at El Sobrante Road	12,200	< 50[1]	81	171	66.2
Van Buren Boulevard at Mockingbird Canyon Road	24,540	61	127	271	69.2
Alessandro Boulevard at West Frontage Road	21,126	56	115	246	68.6
Felspar Street at Galena Street	21,256	56	116	247	68.6
Iowa Avenue at Center Street	15,200	< 50	93	197	67.2
Market Street at Via Cerro	13,400	< 50	86	182	66.6
Mission Boulevard at Etiwanda Avenue	27,000	65	135	289	69.7
North Main Street at Placentia Lane	15,500	< 50	94	200	67.2
Riverview Drive at Mission Boulevard	12,618	< 50	83	175	66.4
Sierra Avenue at Armstrong Road	11,700	< 50	79	166	66.0
Van Buren Boulevard at Jurupa Road	22,714	58	121	258	68.9

McCall Boulevard at Sun City Boulevard	10,500	< 50	74	155	65.6
Newport Road at Murrieta Road	24,200	61	126	269	69.2
Palm Drive at Dillon Road	17,600	< 50	102	218	67.8
Murrieta Hot Springs Road at Margarita Road	11,528	< 50	78	165	66.0
McCall Boulevard at Sherman Avenue	10,252	< 50	73	152	65.5
Ramon Road at Bob Hope Drive	20,266	54	112	239	68.4
Van Buren Boulevard at I-215	24,900	62	128	274	69.3
Van Buren Boulevard at Suttles Drive	29,500	68	143	306	70.0
Green River Road at Fresno Road	13,000	< 50	84	178	66.5
Serfas Club Drive at Pinecrest Drive	10,800	< 50	75	158	65.7
Grand Avenue at Baldwin Boulevard	12,500	< 50	82	174	66.3
Limonite Avenue at Etiwanda Avenue	17,300	< 50	101	215	67.7
Stetson Avenue at Dartmouth Street	19,284	< 50	109	231	68.2
Washington Street at Fred Waring Drive	23,610	60	124	264	69.1
Indian Avenue at Dillon Road	11,890	< 50	80	168	66.1
La Sierra Avenue at Cleveland Avenue	10,190	< 50	72	152	65.4
Van Buren Boulevard at Ridgeway Avenue	34,864	76	160	342	70.8
Palm Drive at Varner Road	13,168	< 50	85	180	66.5
Van Buren Boulevard at Canyonview Drive	26,248	64	133	284	69.5
Cajalco Road at Haines Street	27,448	65	137	292	69.7
Rubidoux Boulevard at 30th Street	20,840	55	114	243	68.5
Newport Road at Avenida De Cortez	14,176	< 50	89	189	66.9
Cajalco Road at Brown Street	13,124	< 50	85	179	66.5
Mission Boulevard at Rubidoux Boulevard	25,420	62	130	278	69.4
Van Buren Boulevard at Clay Street	46,690	91	194	416	72.0
Grand Avenue at Stoneman Street	10,166	< 50	72	151	65.4
Magnolia Avenue at McKinley Street	16,548	< 50	98	209	67.5
Mission Boulevard at Valley Way	16,708	< 50	99	210	67.6
Rubidoux Boulevard at 34th Street	25,434	62	130	278	69.4
Limonite Avenue at Clay Street	15,642	< 50	95	201	67.3
Mission Boulevard at Glen Street	10,470	< 50	73	154	65.5
McCall Boulevard at Bradley Road	11,112	< 50	76	161	65.8
Limonite Avenue at Collins Street	15,746	< 50	95	202	67.3
Van Buren Boulevard at Studio Place	34,218	75	158	338	70.7
Bundy Canyon Road at Sellers Road	10,092	< 50	72	151	65.4
Magnolia Avenue at Byron Street	15,856	< 50	96	203	67.3
Limonite Avenue at Downey Avenue	24,068	60	125	268	69.0
Mission Boulevard at Avalon Street	26,022	63	132	282	69.5
Mission Boulevard at Twining Street	15,528	< 50	94	200	67.3
Stetson Avenue at Yale Street	12,702	< 50	83	175	66.4
Etiwanda Avenue at Iberia Street	18,206	< 50	105	223	67.9
El Sobrante Road at Cajalco Road	6,112	< 50	< 50	109	63.2
Wood Road at Gentian Avenue	7,004	< 50	57	119	63.8
Corydon Street at Grand Avenue	9,600	< 50	70	146	65.2
Scott Road at Murrieta Road	7,300	< 50	59	122	64.0
Archibald Avenue at River Road	6,500	< 50	55	113	63.5
Archibald Avenue at Cloverdale Road	9,100	< 50	67	141	64.9
Center Street at Commercial Street	8,100	< 50	63	131	64.4
Center Street at Stephen Avenue	7,100	< 50	58	120	63.8
Iowa Avenue at La Cadena Drive East	9,400	< 50	69	144	65.1
Mission Boulevard at Pyrite Street	7,344	< 50	59	122	64.0
Mission Boulevard at Conning Street	9,070	< 50	67	141	64.9
Mission Boulevard at Milliken Avenue	8,200	< 50	63	131	64.5
Pedley Road at Jurupa Drive	7,100	< 50	58	120	63.8

Bradley Road at Cherry Hills Boulevard	6,420	< 50	54	112	63.4
McCall Boulevard at Hillpointe Drive	6,466	< 50	55	113	63.4
Gilman Springs Road at SR-79	6,726	< 50	56	116	63.6
Simpson Road at Patterson Avenue	8,000	< 50	62	129	64.4
Beaumont Avenue at Cherry Valley Boulevard	8,500	< 50	65	135	64.6
Highland Spring Avenue at Brookside Avenue	6,700	< 50	56	115	63.6
Redlands Boulevard at San Timoteo Canyon Road	6,162	< 50	53	109	63.2
Dillon Road at Long Canyon Road	9,800	< 50	71	148	65.3
Jefferson Street at Fred Waring Drive	8,864	< 50	66	138	64.8
Central Avenue at Sycamore Canyon Boulevard	9,842	< 50	71	148	65.3
Murrieta Road at Garboni Road	7,966	< 50	62	129	64.3
Reche Canyon Road at Keissel Road	7,606	< 50	60	125	64.1
Cajalco Road at Gustin Road	8,912	< 50	66	139	64.8
Wood Road at Van Buren Boulevard	8,500	< 50	65	135	64.6
Central Street at Palomar Street	7,000	< 50	57	119	63.8
Stanford Street at Mayberry Avenue	9,300	< 50	68	143	65.0
Temescal Canyon Road at Minnesota Road	8,400	< 50	64	134	64.6
Jurupa Road at Van Buren Boulevard	9,534	< 50	69	145	65.1
Mission Boulevard at Soto Avenue	8,600	< 50	65	136	64.7
Menifee Road at SR-74	6,300	< 50	54	111	63.3
Simpson Road at Lindenberger Road	7,400	< 50	59	123	64.0
Ramona Expressway at Warren Road	9,172	< 50	68	142	65.0
Cajalco Road at Gavilin Road	9,416	< 50	69	144	65.1
Ontario Avenue at El Cerrito Road	7,114	< 50	58	120	63.9
Dillon Road at Mountain View Road	8,176	< 50	63	131	64.5
Ontario Avenue at Piute Creek	7,146	< 50	58	120	63.9
Mission Boulevard at Lindsay Street	8,526	< 50	65	135	64.6
Jurupa Road at Rigel Way	7,682	< 50	61	126	64.2
Valley Way at Jurupa Road	9,732	< 50	70	147	65.2
Murrieta Road at East Winchester Road	8,588	< 50	65	136	64.7
Murrieta Road at Ridgemoor Road	9,850	< 50	71	148	65.3
Cajalco Road at Clark Street	7,736	< 50	61	127	64.2
Rubidoux Boulevard at 28th Street	9,408	< 50	69	144	65.1
Reche Canyon Road at Reche Vista Drive	7,800	< 50	61	127	64.3
Archibald Avenue at Schleisman Road	7,278	< 50	59	122	64.0
Stetson Avenue at Columbia Avenue	9,662	< 50	70	147	65.2
Mission Boulevard at Glen Street	8,830	< 50	66	138	64.8
McCall Boulevard at Aspel Road	7,888	< 50	62	128	64.3
Wood Road at Mariposa Avenue	9,730	< 50	70	147	65.2
Pyrite Street at Mission Boulevard	8,648	< 50	64	134	64.6
Reche Canyon Road at Mercadante Lane	7,562	< 50	60	125	64.1
Mission Boulevard at Pedley Road	9,258	< 50	68	142	65.0
Stetson Avenue at Stanford Street	7,502	< 50	60	124	64.1
Market Street at Agua Mansa Road	9,796	< 50	70	148	65.2
Hamner Avenue at Mission Boulevard	8,286	< 50	64	132	64.5
SR-243 at Pinecrest Avenue	6,500	< 50	101	209	66.7
SR-79 at Auld Road	9,734	65.6	129	273	68.4
SR-60 at I-15	139,000	345	741	1,595	80.0
SR-60 at Market Street	80,000	240	513	1,104	77.6
I-215 at Fair Isle Drive	143,000	352	755	1,625	80.1
SR-60 at Jack Rabbit Trail	30,500	129	271	581	73.4

I-10 at San Timoteo Canyon Road	48,000	172	357	785	75.4
I-10 at Washington Street	44,500	164	348	747	75.0
I-15 at Magnolia Avenue	87,000	253	542	1,167	78.0
SR-74 at Briggs Road	17,612	92	189	403	71.0
Notes: [1] Traffic noise within 50 feet of the roadway centerline requires site specific analysis. Source: LSA Associates, Inc. 1999.					

Only roadway segments with traffic volumes higher than 6,000 ADT and representative of the subareas covering the majority of the unincorporated Riverside County were selected for analysis. In some subareas where several ADTs were presented at close range, only the segment with the highest ADT was analyzed. Along roadway segments with traffic volumes less than 6,000 ADT, the 70 and 65 dBA L_{dn} noise contours would be confined within the roadway right-of-way (i.e., within 50 feet of the roadway center-line). Therefore, no modeling of the traffic noise along these roadway segments was provided.

Typical noise contour diagrams for representative portions of the freeways, arterials, major and secondary roads in the unincorporated Riverside County area are shown in Figures 4.13.3 through 4.13.21.

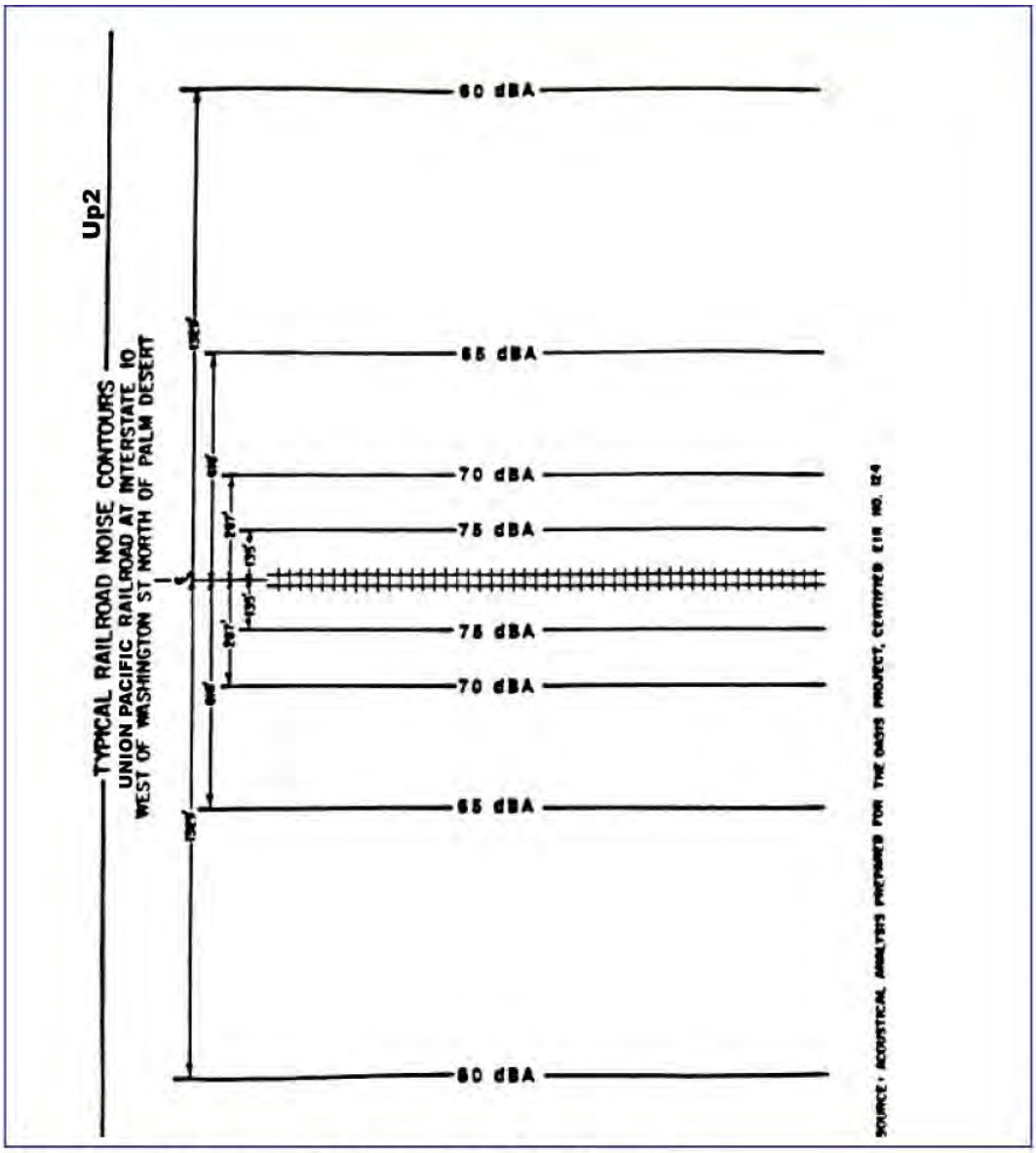
Existing Railroad Noise

Railroads are another significant noise source within the Riverside County. Currently, Union Pacific Railroad (UP) and the Burlington Northern Santa Fe (BNSF) have railroad operations in the County. Amtrak and Metrolink utilize railroad tracks owned and operated by UP and BNSF.

Discussion with railroad officials indicated that the amount of traffic along the principal railroad lines fluctuates considerably since trains (principally freight) are operated in response to demand and not on the basis of permanent schedules. Staff at the Riverside County Transportation Commission provided the following railroad operations data:

- The number of daily freight trains operating in the Riverside County is 58 in the High Grove area, 24 in Pedley, and 34 in the Green River area (southwest of Corona).
- The number of Amtrak trains is two at the High Grove area and two in the Green River area.
- Metrolink has 9 trains operating in the High Grove area, 12 in the Green River area, and 12 in the Pedley area.
- There is little data available for rail systems operating in the Coachella Valley at the current time.
- Most of the rail tracks in western Riverside County are welded.
- There are no engines that are strictly electric, however, some engines are a combination of electric and diesel.
- The average daily speeds of freight and passenger trains are not available. The size of the train along with the number of locomotives can cause the train speed to fluctuate.

Typical diagrams of railroad noise for representative sections of the major railroad lines in the County are shown in Figures 4.13.22 through 4.13.24.



Union Pacific Railroad at Interstate 10 - West of Washington St., North of Palm Desert

Figure 4.13.24

Not to Scale

TYPICAL DIAGRAM OF RAILROAD NOISE AND LINES

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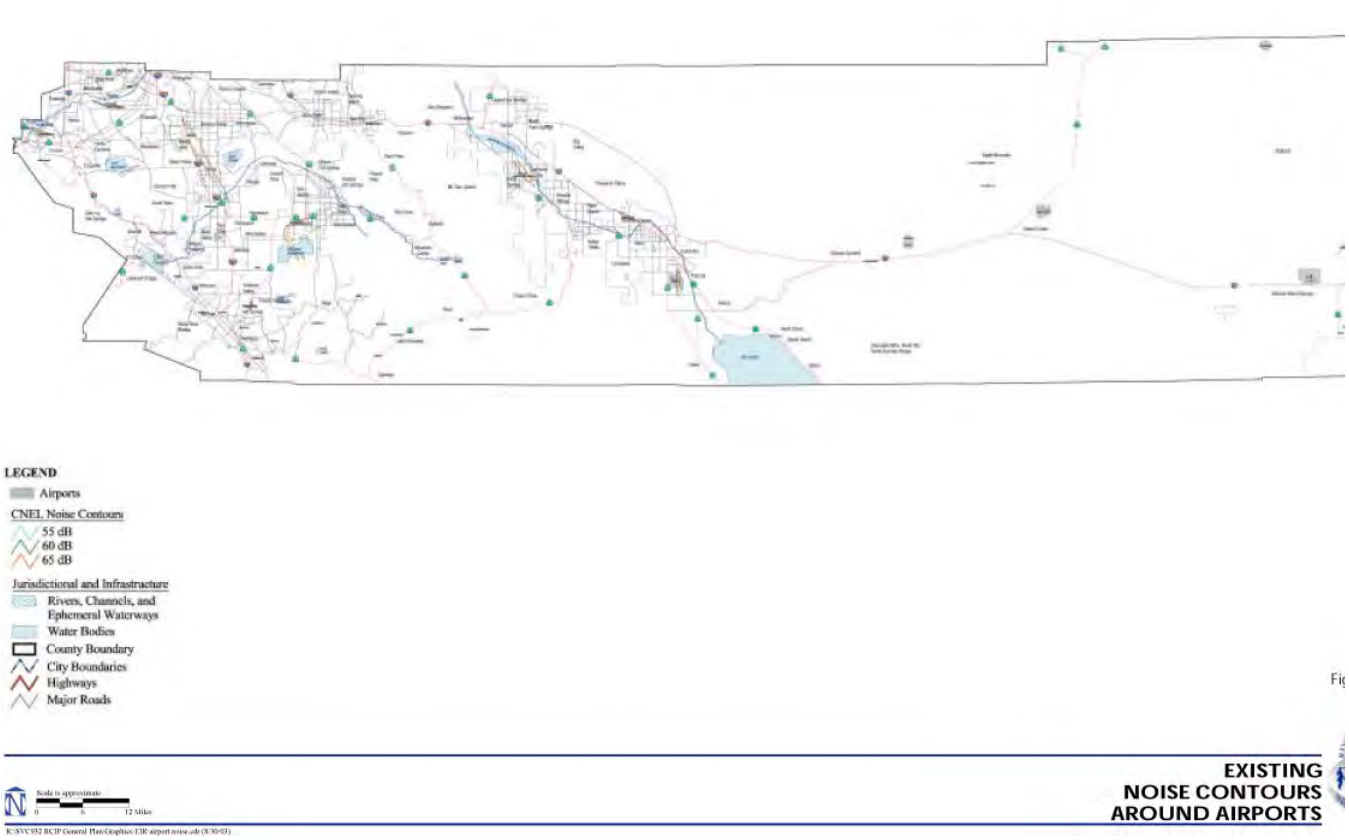
Existing and Future Airport Noise

Most of the airports in Riverside County have published airport noise contour maps as noted below.

- Banning Airport: Includes noise contours for 1990 and 2008; last updated in 1990.
- Bermuda Dunes Airport: Includes noise contours for 1986 and an unknown future year, last updated in 1986.
- Blythe Airport: Includes noise contours for 2015.
- Chiriaco Summit Airport: Includes noise contours for 2015.
- Corona Municipal Airport: Includes noise contours for 1990 and 1997, last updated in 1993.
- Desert Center Airport: Includes noise contours for 2015.
- Desert Resorts Regional Airport: Includes noise contours for 2010.

- Flabob Airport: Includes noise contours for 1985.
- French Valley Airport: Includes noise contours for 1993 and 2013, last updated in 1995.
- Hemet-Ryan Airport: Includes noise contours for 1986 and an unknown future year, last updated in 1986.
- March Air Reserve Base: Include noise contours for 1998, last updated in 1999.
- Palm Springs Regional Airport: Includes noise contours for 1999 and 2015, last updated in1995.
- Perris Valley Airport: No noise contours map available.
- Riverside Municipal Airport: Includes noise contours for 1989 and 2010, last updated in 1998.
- Skylark Airport: No noise contours map available.

Figure 4.13.25 shows existing noise contours around the airports with existing (pre2000) airport noise contours available. Figure 4.13.25 also shows the existing noise contours for the Chino Airport. Although it is not within the Riverside County Boundary, the noise contours affect areas within the County. Noise contours from LAX do not extend to the Riverside County border, and therefore are not included. Figures 4.13.26 through 4.11.38 show projected future noise contours around the airports.



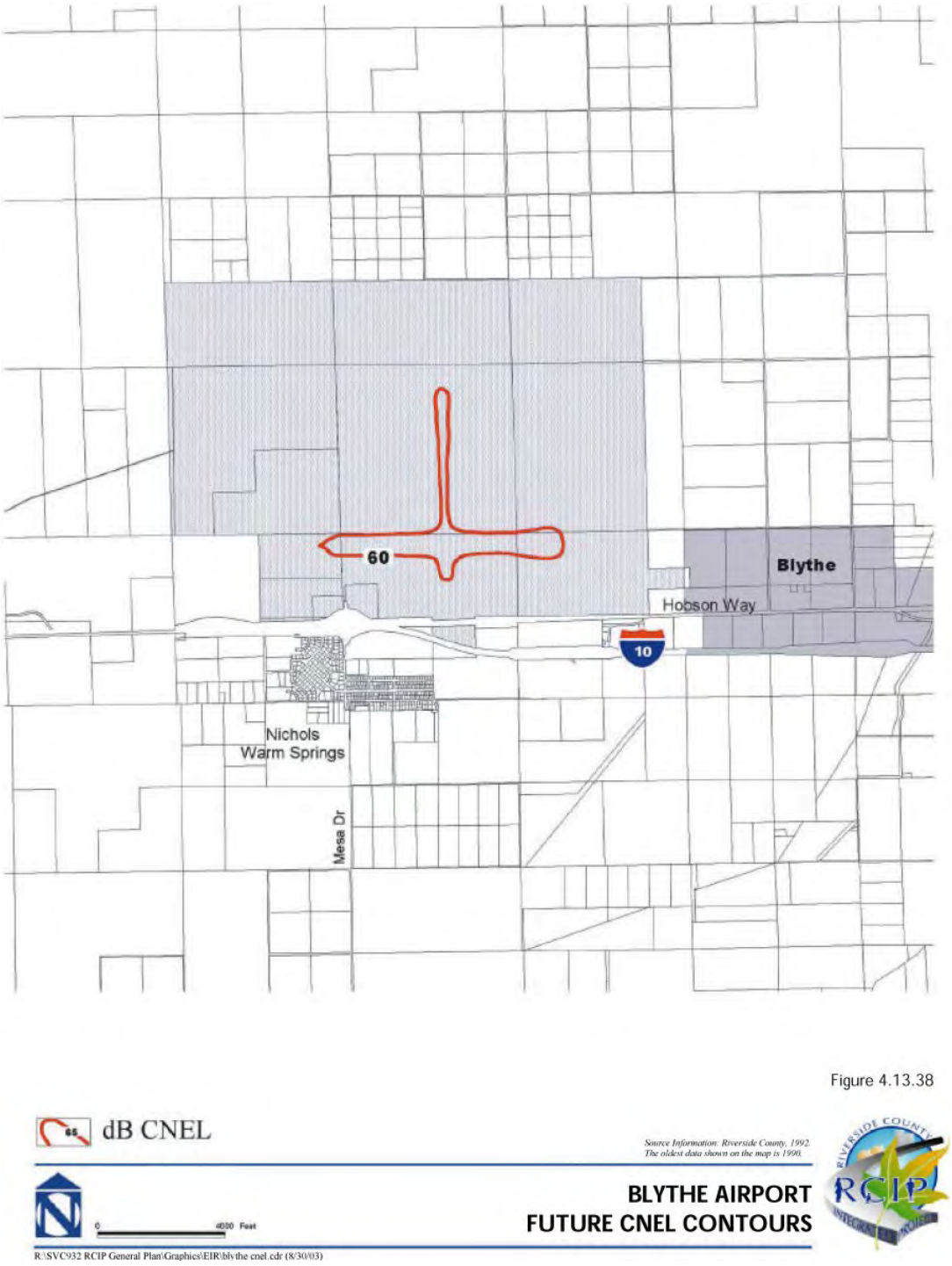


Figure 4.13.38

Existing Industrial/Commercial Noise Sources

There are several major industrial and commercial sites that generate relatively high noise levels that potentially affect their individual neighborhoods. These sources include the following:

- Numerous industrial sites in Mira Loma area.
- Desert Hills Truck Stop/Inspection Facility on I-10 in Cabazon.
- Numerous auto body shops on Mission Avenue in the Rubidoux area.
- Windmills near Palm Springs.
- Lake Elsinore Storm Stadium, located at 500 Diamond Drive in Lake Elsinore.
- El Sobrante Landfill near Corona at 10910 Dawson Canyon Road.

- All American Asphalt mining, located at 400 East 6th Street in Corona.
- 3M mining, located at 18750 Minnesota Road in Corona.

Other Existing Major Noise Sources

In addition to the noise sources described above, there are several noise sources within the unincorporated Riverside County area that are considered to have potential noise impacts to their immediate neighborhoods. These noise sources include the following:

- Mike Raahauges Shooting Range near Norco on River Road off 2nd Street, exit on I-15 .
- Rice Valley Dunes off-road vehicle park, located 5 miles south of Rice Valley, exit on Highway 62.
- Ira G. Long off-road vehicle park, in Palm Springs.
- Gas line pressure release valves in various locations.
- Water activities on the Colorado River.
- Water wells in various locations.

No specific noise information is available for these stationary noise sources. Therefore, no noise contour maps were provided for these sources.

Existing Policies and Regulations

Federal Standards

The U.S. Department of Housing and Urban Development (HUD) has set a goal of 65 dBA L_{dn} as a desirable maximum exterior standard for residential units developed under HUD funding. This level is also generally accepted within the State of California. While HUD does not specify acceptable interior noise levels, standard construction of residential dwellings constructed under Title 24 standards typically provides in excess of 20 dBA of attenuation with the windows closed. Based on this premise, the interior L_{dn} should not exceed 45 dBA L_{dn}.

State of California Standards and Guidelines

The State of California's Office of Noise Control has established standards and guidelines for acceptable community noise levels based on the CNEL and L_{dn} rating scales. The purpose of these standards and guidelines, summarized in Figure 4.13.39, is to provide a framework for setting local standards for human exposure to noise and for preparing local General Plan noise elements.

As shown in Figure 4.13.39, a normally acceptable designation indicates that a specified land use would achieve all noise reduction requirements with standard construction. By comparison, a conditionally acceptable designation implies that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use type is made, and the needed noise insulation features are incorporated by design. In general, sensitive land uses should not be exposed to noise levels indicated by normally unacceptable conditions, or clearly unacceptable conditions.

Sensitive receptors are those land uses that require serenity or are otherwise adversely affected by noise events or conditions. These land uses include, but are not limited to, schools, libraries, churches, hospitals, and residential uses. In addition, many of the open space areas within the Riverside County have been set aside to preserve their serenity, as well as to preserve significant habitat areas, and should also be considered as "sensitive receptors."

~~Single-family and multifamily residential uses, schools, libraries, and churches have a normally acceptable community noise exposure range of 60 dBA CNEL to 70 dBA CNEL. Most communities use 60 dBA CNEL or 65 dBA CNEL as their exterior residential noise standard. Office buildings are normally acceptable up to 70 dBA CNEL. Industrial and manufacturing land uses, being less sensitive to noise, are normally acceptable where the exterior noise levels are 75 dBA CNEL or less.~~

Low-density single-family, duplex, and mobile homes are normally acceptable from below 55 dBA to 60 dBA CNEL. Multifamily homes are normally acceptable from below 55 dBA to 65 dBA CNEL. Schools, libraries, churches, hospitals, and nursing homes are normally acceptable from below 55 dBA to 65 dBA.

4.13.2 Noise Thresholds of Significance

Substantial Noise Increase

Mobile sources of noise, such as truck deliveries and railroad operations are exempt from local ordinance but are still subject to CEQA and would be significant if a project generates a volume of traffic that would result in a substantial increase in mobile source-generated noise or site sensitive land uses in incompatible noise areas.

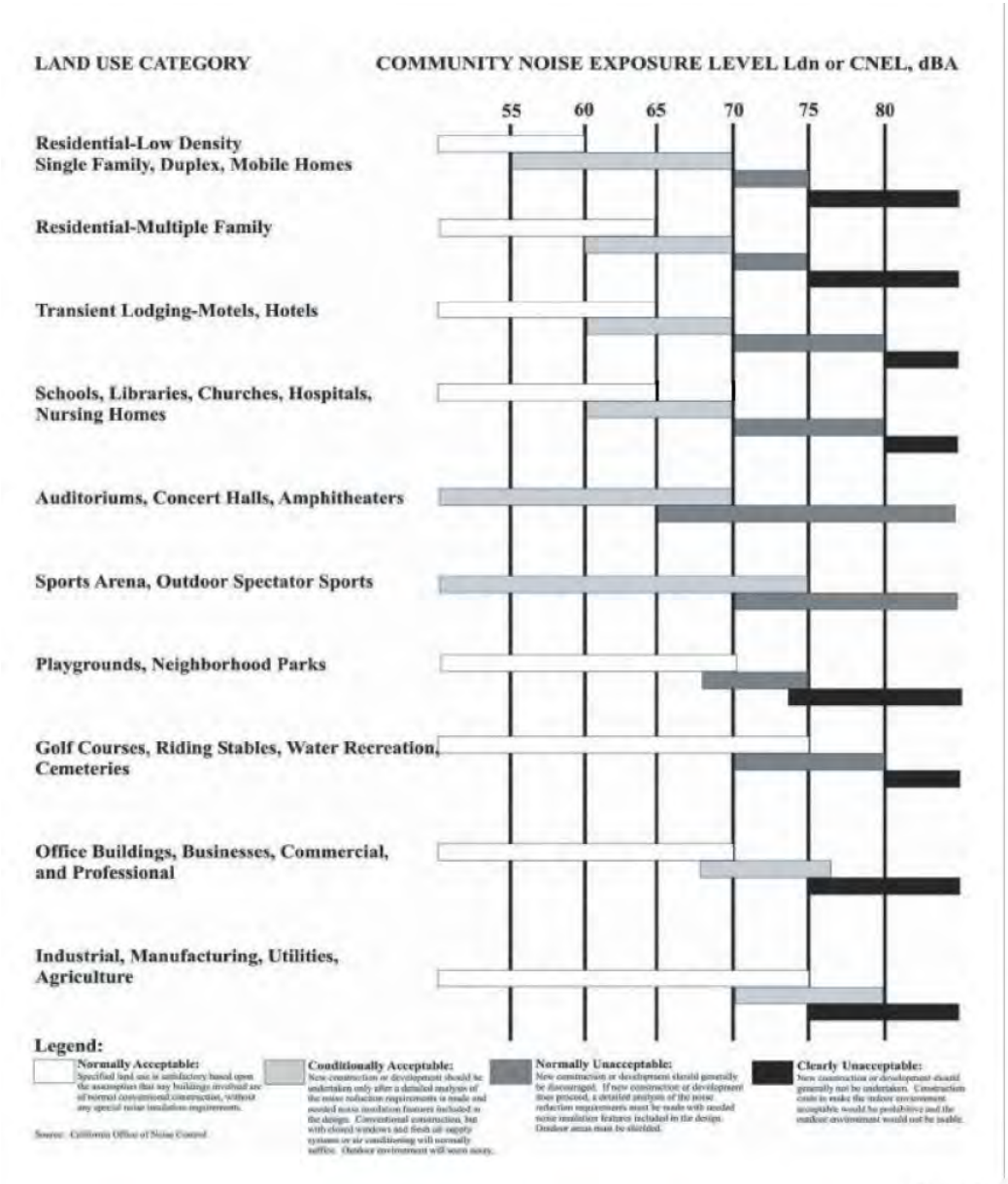


Figure 4.13.39

LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE

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CEQA does not define "substantial increase." Webster's Dictionary defines "substantial" as "considerable in quantity." As noted earlier in the discussion of noise definitions, the human ear can detect changes of 3 dBA and changes of less than 3 dBA, while audible under controlled circumstances, are not readily discernable in an outdoor environment. Thus, a change of 3 dBA is considered as a barely audible change. But CEQA uses a "substantial change" as its criterion. Because most people can readily hear a change of 5 dBA L_{dn} in an exterior environment, this value was established for the proposed General Plan as the CEQA criterion for substantial change. As a point of reference, Caltrans defines a noise increase as substantial when the predicted noise levels with the project would exceed existing noise levels by 12 dBA L_{eq}.

The proposed General Plan would have a significant effect on noise if implementation of its policies would result in:

- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels; or
- An increase in long-term ambient noise by 5 dBA L_{dn} or more.

4.13.3 Noise Impacts and Mitigation

Potentially Significant Impacts

Short-Term Construction Noise Impacts

Impact 4.13.1 *Noise levels from grading and other construction activities would potentially result in noise levels reaching 91 dBA L_{max} at off-site locations 50 feet from the site boundary. This would result in potentially significant noise impacts to off-site sensitive receptors adjacent to the individual construction site. Compliance with the County's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level.*

Analysis of Impact Short-term noise impacts would be associated with excavation, grading, and erecting buildings during construction of individual projects allowed through the implementation of the proposed General Plan. Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area today, but would no longer occur once construction of the project is completed.

Two types of short-term noise impacts would occur during construction of any individual project site. First, construction crew commute and the transport of construction equipment and materials to the specific project site would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single event noise exposure potential, i.e., up to 87 L_{max} dBA at 50 feet from passing trucks resulting in potential short-term intermittent annoyances, the effect in long-term ambient noise levels would be small when averaged over a longer period of time. In addition, truck traffic on public roads is regulated by federal and State governments, not local governments. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during excavation, grading, and building erection on the specific individual project site. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 4.13.C lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Typical noise levels range up to 91 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels, because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery, such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

Table 4.13.C - Typical Construction Equipment Noise Levels

Type of Equipment	Range of Sound Levels Measured (dBA at 50 feet)	Suggested Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81 to 96	93
Rock Drills	83 to 99	96
Jack Hammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	68 to 80	77
Dozers	85 to 90	88
Tractors	77 to 82	80
Front-End Loaders	86 to 90	88
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 86	86
Trucks	81 to 87	86
Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman, 1987.		

Construction is expected to require the use of earthmovers, bulldozers, and water and pickup trucks. This equipment would be used on the project site. As seen in Table 4.13.C, the maximum noise level generated by each earthmover is assumed to be 88 dBA at 50 feet from the earthmover. Each bulldozer would also generate 88 dBA at 50 feet. The maximum noise level generated by water and pickup trucks is approxi-mately 86 dBA at 50 feet from these vehicles. Each doubling of the sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates as an individual noise source, the worst-case combined noise level at each off-site receptor location would be 91 dBA L_{max} at a distance of 50 feet from an active construction area. Each individual project would be required to comply with the construction hours specified in the County's noise control ordinance to reduce the construction noise impacts to a less than significant level.

Proposed General Plan Policies The proposed General Plan contains policies to minimize the impacts of construction noise. Although the policies reduce the effect of construction noise on sensitive land uses, additional mitigation is provided to further lessen the impacts of construction noise. Those polices are as follows:

Noise Policy 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices.

Noise Policy 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

Noise Policy 12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as

a. Temporary noise attenuation fences;

b. Preferential location of equipment; and

c. Use of current noise suppression technology and equipment.

Noise Policy 12.4 Require that all construction equipment utilizes noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Effectiveness of Proposed General Plan Policies While the proposed General Plan policies above provide guidance and some standards for reducing noise impacts due to construction, significant impacts could remain. Additional measures are provided to further ensure that the impacts are reduced to less-than-significant levels.

Mitigation Measures

4.13.1A Prior to the issuance of any grading plans, the County shall condition approval of subdivisions adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the County for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:

• The construction contractor shall use temporary noise attenuation fences where feasible, to reduce construction noise impacts on adjacent noise sensitive land uses.

• During all project site excavation and grading on site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

• The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.

• The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

4.13.1B The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by County staff.

Revised General Plan Finding Revisions to the proposed General Plan since the preparation of the Draft EIR have not altered the policies that pertain to short-term construction noise impacts. Furthermore, because the policies and mitigation measures address noise impacts on a project-by-project basis, their effectiveness will not be reduced by the reconfiguration of land use designations associated with the revised proposed General Plan. Therefore, the policies and mitigation measures will remain effective in reducing impacts associated with short-term construction to a less than significant level.

Long-Term Vehicular Traffic Noise Impacts

Impact 4.13.2 *The implementation of the proposed General Plan update would result in potential project-related long-term vehicular noise than would affect sensitive land uses along the roads. New development, particularly residential uses along and adjacent to major transit corridors, could be exposed to excessive traffic-related noise levels. To ensure that all new noise-sensitive proposals are carefully reviewed with respect to potential noise impacts, the County shall review new development using noise guidelines in combination with the land use compatibility standards.*

Proposed General Plan Policies Policies and strategies in the proposed General Plan address existing noise issues and ways of reducing noise generation associated with new development and redevelopment, which produce both short-term impacts during construction and long-term operational impacts, such as traffic.

The goal of the Noise Element, compiled under the mandate of Section 65302(g) of the California Government Code and guidelines prepared by the California Department of Health Services (DHS), is to identify and control noise levels appropriate to specific areas consistent with mental and physical health and enjoyment of the environment.

A primary way of reducing the potential for noise impacts is to ensure separation between noise-sensitive uses Ssuch as residences, schools and churches Sand noise generators, such as manufacturing businesses and major transportation corridors. However, since such incompatibilities already exist, measures should be taken to minimize noise impacts. These include site planning, design and construction methods that absorb or deflect sound.

The proposed General Plan incorporates the standards contained in Figure 4.13.39, above, as its definition of noise compatible land use. The proposed General Plan Noise Element also contains the following specific land use standards.

• Single and multiple family residential, group homes, hospitals, schools and other learning institutions, and parks and open space where "quiet is a basis for use" are defined as noise-sensitive land uses, and are "discouraged" in areas where noise is in excess of a 65 dBA CNEL.

• Businesses and professional offices where effective communication is required are to mitigate interior noise levels to 45 dBA.

• In areas adjacent to major roadways, noise levels are to be determined based on the roadway's design capacity, rather than on existing or projected traffic volumes.

Policies that relate to vehicular traffic are as follows:

Mobile Noise Sources

Noise Policy 6.1 Consider noise reduction as a factor in the purchase of County maintenance equipment and their use by County contractors and permittees.

Noise Policy 6.2 Investigate the feasibility of retrofitting current County-owned vehicles and mechanical equipment to comply with noise performance standards consistent with the best available noise reduction technology.

Noise Policy 6.3 Require commercial or industrial truck delivery hours be limited when adjacent to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits.

Noise Policy 6.4 Restrict the use of motorized trail bikes, mini-bikes, and other off-road vehicles in areas of the County except where designated for that purpose. Enforce strict operating hours for these vehicles in order to minimize noise impacts on sensitive land uses adjacent to public trails and parks.

Vehicular Noise

Noise Policy 8.1 Enforce all noise sections of the State Motor Vehicle Code.

Noise Policy 8.2 Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the County.

Noise Policy 8.3 Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures.

Noise Policy 8.4 Require that the loading and shipping facilities of commercial and industrial land uses, which abut residential parcels be located and designed to minimize the potential noise impacts upon residential parcels.

Noise Policy 8.5 Employ noise mitigation practices when designing all future streets and highways, and when improvements occur along existing highway segments. These mitigation measures will emphasize the establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas.

Noise Policy 8.6 Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts.

Noise Policy 8.7 Require that field noise monitoring be performed prior to siting to any sensitive land uses along arterial roadways. Noise level measurements should be of at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels.

Effectiveness of Proposed General Plan Policies Although the policies reduce the effect of mobile and vehicular noise on sensitive land uses, significant impacts could still occur with regard to mobile noise sources. Additional mitigation is provided to guarantee that the impacts of mobile noise will be reduced to less than significant levels.

Mitigation Measures

4.13.2A All new residential developments within the County shall conform to a noise exposure standard of 65 dBA L_{dn} for outdoor noise in noise-sensitive outdoor activity areas and 45 dBA L_{dn} for indoor noise in bedrooms and living/family rooms. New development, which does not and cannot be made to conform to this standard, shall not be permitted.

4.13.2B Acoustical studies, describing how the exterior and interior noise standards will be met, shall be required for all new residential developments with a noise exposure greater than 65 dBA L_{dn}. The studies shall also satisfy the requirements set forth in Title 24, Part 2, or the California Administrative Code, Noise Insulation Standards, for multiple family attached homes, hotels, motels, etc., regulated by Title 24. No development permits or approval of land use applications shall be issued until an acoustic analysis is received and approved by the County Planning Department.

4.13.2C The County shall require that proposed new commercial and industrial developments prepare acoustical studies, analyzing potential noise impacts on adjacent properties, when these developments abut noise-sensitive land uses. The County will require that all ~~identified~~ direct impacts to noise-sensitive land uses be mitigated to the maximum extent practicable ~~a less than significant level~~.

4.13.2D Ensure that all new schools, particularly in subdivisions and specific plans, are sited more than 2 miles away from any airport.

Revised General Plan Finding Revisions to the proposed General Plan since the preparation of the Draft EIR have not substantially altered the policies that pertain to long-term vehicular noise impacts. Furthermore, because the policies and mitigation measures address noise impacts on a project-by-project basis, their effectiveness will not be reduced by the reconfiguration of land use designations associated with the revised proposed General Plan. Therefore, the policies and mitigation measures will remain effective in reducing impacts associated with long-term vehicular traffic to a less than significant level.

Long-Term Stationary Source Noise Impacts

Impact 4.13.3 *New development associated with implementation of the proposed General Plan could expose existing and/or new sensitive uses to stationary noise sources, such as industrial and/or commercial uses.*

Analysis of Impact New projects developed under the proposed General Plan would be subject to the County's noise ordinances and the strategies associated with the policies in the proposed General Plan. They would be the County's tool to ensure that existing residences and sensitive uses would not be exposed to excessive noise from non-traffic noise sources.

Proposed General Plan Policies Policies and strategies in the proposed General Plan address existing noise issues and ways of reducing noise generation associated with new development and redevelopment, which produce and long-term stationary noise sources. See discussion of the proposed General Plan policies under Impact 4.13.2 above.

Noise Policy 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

Noise Policy 1.2 Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports.

Noise Policy 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 dBA CNEL:

- Schools;
- Hospitals;
- Rest Homes;
- Long-term Care Facilities;
- Mental Care Facilities;
- Residential Uses;
- Libraries;
- Passive Recreation Uses; and
- Places of worship.

According to the State of California Office of Planning and Research General Plan Guidelines, an acoustical study may be required in cases where these noise-sensitive land uses are located in an area of 60 dBA CNEL or greater. Any land use that is exposed to levels higher than 65 dBA CNEL will require noise attenuation measures.

Areas around airports may have different noise standards than those cited above. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in the technical appendices of the General Plan and summarized in the Policy Area section of the affected Area Plan.

Noise Policy 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.

Noise Policy 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

Noise Policy 1.6 Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise sensitive uses.

Noise Policy 1.7 Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.

Noise Policy 1.8 Limit the maximum permitted noise levels that cross property lines and impact adjacent land uses, except when dealing with noise emissions from wind turbines.

Noise Policy 2.1 Create a County Noise Inventory to identify major noise generators and noise-sensitive land uses, and to establish appropriate noise mitigation strategies.

Noise Policy 2.2 Require a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects within noise-impacted areas to mitigate existing noise.

Noise Policy 2.3 Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources:

Land Use	Interior Standards	Exterior Standards
Residential 10:00 p.m. to 7:00 a.m. 7:00 a.m. to 10:00 p.m.	40 L_{eq} (10 minute) 55 L_{eq} (10 minute)	45 L_{eq} (10 minute) 65 L_{eq} (10 minute)

Noise Policy 3.1 Protect Riverside County's agricultural resources from noise complaints that may result from routine farming practices, through the enforcement of the Riverside County Right-to-Farm Ordinance.

Noise Policy 3.2 Require acoustical studies and subsequent approval by the Planning Department and the Office of Industrial Hygiene to help determine effective noise mitigation strategies in noise-producing areas.

Noise Policy 3.3 Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses.

Noise Policy 3.4 Identify point-source noise producers such as manufacturing plants, truck transfer stations, and commercial development by conducting a survey of individual sites.

Noise Policy 3.5 Require that a noise analysis be conducted by an acoustical specialist for all proposed projects that are noise producers. Include recommendations for design mitigation if the project is to be located either within proximity of a noise-sensitive land use, or land designated for noise-sensitive land uses.

Noise Policy 3.6 Discourage projects that are incapable of successfully mitigating excessive noise.

Noise Policy 3.7 Encourage noise-tolerant land uses, such as commercial or industrial, to locate in areas already committed to land uses that are noise-producing.

Stationary Sources

Noise Policy 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels: (AI 105)

a. 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.

b. 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

Noise Policy 4.2 Develop measures to control non-transportation noise impacts.

Noise Policy 4.3 Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed, and ensure that the recommended mitigation measures are implemented.

Noise Policy 4.4 Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources.

Noise Policy 4.5 Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of Conditional Use Permits or business licenses or prior to the approval and/or issuance of new Conditional Use Permits for said facilities.

Noise Policy 4.6 Establish acceptable standards for residential noise sources such as, but not limited to, leaf blowers, mobile vendors, mobile stereos and stationary noise sources such as home appliances, air conditioners, and swimming pool equipment.

Noise Policy 4.7 Evaluate noise producers for the possibility of pure tone-producing noises. Mitigate any pure tones that may be emitted from a noise source.

Noise Policy 4.8 Require that the parking structures, terminals, and loading docks of commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles on the site as well as on adjacent land uses.

Noise Policy 11.1 Utilize natural barriers such as hills, berms, boulders, and dense vegetation to assist in noise reduction.

Noise Policy 11.2 Utilize dense landscaping to reduce noise effectively. However, when there is a long initial period where the immaturity of new landscaping makes this approach only marginally effective, utilize a large number of highly dense species planted in a fairly mature state, at close intervals, in conjunction with earthen berms, setbacks, or block walls.

Effectiveness of General Plan Policies Although the policies would reduce the effect of stationary noise producers on sensitive land uses, additional mitigation measures are provided to guarantee that the impacts will be less than significant.

Mitigation Measures

4.13.3A Acoustical studies shall be required for all new noise-sensitive projects that may be affected by existing noise from stationary sources.

4.13.3B To permit new development of residential and noise-sensitive land uses where existing stationary noise sources exceed the County's noise standards, effective mitigation measures shall be implemented to reduce noise exposure to or below the allowable levels of the zoning code/noise control ordinance.

4.13.3C No industrial facilities shall be constructed within 500 feet of any commercial land uses or within 2,800 feet of any residential uses without the preparation of a noise impact analysis. This analysis shall document the nature of the industrial facility as well as "noise producing" operations associated with that facility. Furthermore, the analysis shall document the placement of any existing or proposed commercial or residential land uses situated within the noted distances. The analysis shall determine the potential noise levels that could be received at these commercial and/or residential land uses and specify measures to be employed by the industrial facility to ensure that these levels do not exceed County noise requirements. Such measures could include, but are not limited to, the use of enclosures for noisy pieces of equipment, the use of noise walls and/or berms for exterior equipment and/or on-site truck operations, and/or restrictions on hours of operations. No development permits or approval of land use applications shall be issued until an acoustic analysis is received and approved by the County staff.

Revised General Plan Finding Revisions to the proposed General Plan since the preparation of the Draft EIR have not altered the policies that pertain to long-term stationary noise impacts. Furthermore, because the policies and mitigation measures address noise impacts on a project-by-project basis, their effectiveness will not be reduced by the reconfiguration of land use designations associated with the revised proposed General Plan. Therefore, the policies and mitigation measures will remain effective in reducing impacts associated with long-term stationary noise sources to a less than significant level.

Long-Term Railroad Noise Impacts

Impact 4.13.4 *Although the proposed General Plan update would not necessarily result in potential project-related increases in railroad noise, there could be new proposed sensitive land uses along and adjacent to the railroads that would be affected by high railroad noise.*

Analysis of Impact New development, particularly residential uses along and adjacent to major railroad corridors, could be exposed to excessive train-related noise levels. To ensure that all new noise-sensitive proposals are carefully reviewed with respect to potential noise impacts, the County shall review new development using the following mitigation in combination with the land use compatibility standards.

Proposed General Plan Policies Policies and strategies in the proposed General Plan address existing noise issues and ways of reducing noise generation associated with new development and redevelopment, which produce and long-term stationary noise sources. See discussion of the proposed General Plan policies under Impact 4.13.1, above. Policies are as follows:

Noise Policy 10.1 Check all proposed projects for possible location within railroad noise contours using typical noise contour diagrams.

Noise Policy 10.2 Minimize the noise effect of rail transit (freight and passenger) on residential uses and other sensitive land uses through the land use planning process.

Noise Policy 10.3 Locate light rail and fixed rail routes and design rail stations in areas that are accessible to both residential and commercial areas, but also minimize noise impacts on surrounding residential and sensitive land uses.

Noise Policy 10.4 Install noise mitigation features where rail operations impact existing adjacent residential or other noise-sensitive uses.

Noise Policy 10.5 Restrict the development of new sensitive land uses to beyond the 65 dBA CNEL contour along railroad rights-of-way.

Effectiveness of Proposed General Plan Policies Although the policies reduce the effect of railroad noise on sensitive land uses, additional mitigation is provided that will further guarantee that the impacts will be mitigated to a less than significant level.

Mitigation Measures

4.13.4A All new residential developments within the County shall conform to a noise exposure standard of 65 dBA L_{dn} for outdoor noise in noise-sensitive outdoor activity areas and 45 dBA L_{dn} for indoor noise in bedrooms and living/family rooms. New development, which does not and cannot be made to conform to this standard, shall not be permitted.

4.13.4B Acoustical studies, describing how the exterior and interior noise standards will be met, shall be required for all new residential developments with a noise exposure greater than 65 dBA L_{dn}. The studies should also satisfy the requirements set forth in Title 24, Part 2, or the California Administrative Code, Noise Insulation Standards, for multiple family attached homes, hotels, motels, etc., regulated by Title 24.

Revised General Plan Finding Revisions to the proposed General Plan since the preparation of the Draft EIR have not altered the policies that pertain to long-term railroad noise impacts. Furthermore, because the policies and mitigation measures address noise impacts on a project-by-project basis, their effectiveness will not be reduced by the reconfiguration of land use designations associated with the revised proposed General Plan. Therefore, the policies and mitigation measures will remain effective in reducing impacts associated with long-term railroad traffic to a less than significant level.

4.13.4 Noise Level of Significance after Mitigation

After implementation of the proposed General Plan policies and mitigation measures identified above, short-term construction and long-term mobile, stationary, and railroad noise impacts would be reduced to less than significant levels.

4.14 Parks and Recreation

This section assesses the potential impacts on parks and recreation that could occur with the development projected under the proposed General Plan. Please note that trails are discussed in Section 4.16, Transportation and Circulation.

4.14.1 Parks and Recreation Existing Setting

APPENDIX 3.3:

CITY OF WILDOMAR NOISE ORDINANCE

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Chapter 9.48 NOISE REGULATION

9.48.010 Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of the City of Wildomar residents and degrade their quality of life. Pursuant to its police power, the City Council declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish City-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established. (Ord. 18 § 2, 2008, RCC § 9.52.010)

9.48.020 Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated “agriculture” in the City General Plan, or land zoned A-1 (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Title 17;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, and

2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of 7:00 a.m. and 8:00 p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws. (Ord. 18 § 2, 2008, RCC § 9.52.020)

9.48.030 Definitions.

As used in this chapter, the following terms shall have the following meanings:

"Audio equipment" means a television, stereo, radio, tape player, compact disc player, mp3 player, iPod or other similar device.

"Decibel (dB)" means a unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately 130 decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. "A-weighting (dBA)" means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.

2. "Maximum sound level (L_{max})" means the maximum sound level measured on a sound level meter.

"Governmental agency" means the United States, the State of California, Riverside County, any city within Riverside County, any special district within Riverside County, the City of Wildomar or any combination of these agencies.

"Land use permit" means a discretionary permit issued by the City pursuant to Title 17.

"Motor vehicle" means a vehicle that is self-propelled.

"Motor vehicle sound system" means a stereo, radio, tape player, compact disc player, mp3 player, iPod or other similar device.

"Noise" means any loud, discordant or disagreeable sound.

"Occupied property" means property upon which is located a residence, business or industrial or manufacturing use.

"Off-highway vehicle" means a motor vehicle designed to travel over any terrain.

"Public or private school" means an institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

"Public property" means property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Sensitive receptor" means a land use that is identified as sensitive to noise in the noise element of the City General Plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

"Sound-amplifying equipment" means a loudspeaker, microphone, megaphone or other similar device.

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data. (Ord. 18 § 2, 2008, RCC § 9.52.030)

9.48.040 General sound level standards.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1

Sound Level Standards (Db L_{max})

GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7 am—10 pm	10 pm—7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
	MDR	Medium Density Residential	2—5	55	45
	MHDR	Medium High Density Residential	5—8	55	45
	HDR	High Density Residential	8—14	55	45
	VHDR	Very High Density Residential	14—20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45
		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
Rural	RR	Rural Residential	5 AC	45	45
	RM	Rural Mountainous	10 AC	45	45
	RD	Rural Desert	10 AC	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45

	MR	Mineral Resources		75	45

(Ord. 18 § 2, 2008, RCC § 9.52.040)

9.48.050 Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.48.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually. (Ord. 18 § 2, 2008, RCC § 9.52.050)

9.48.060 Special sound sources standards.

The general sound level standards set forth in Section 9.48.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than 96 dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than 101 dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of 20 inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of 10:00 p.m. and 8:00 a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than 100 feet from the vehicle.

B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of 10:00 p.m. and 8:00 a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than 100 feet from the power tools or equipment.

C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of 10:00 p.m. and 8:00 a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than 100 feet from the equipment.

D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying

equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between the hours of 10:00 p.m. and 8:00 a.m.

2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than 200 feet from the equipment or music. (Ord. 18 § 2, 2008, RCC § 9.52.060)

9.48.070 Exceptions.

Exceptions may be requested from the standards set forth in Section 9.48.040 or 9.48.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

A. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the Director of Building and Safety on forms provided by the Building and Safety Department and shall be accompanied by the appropriate filing fee. No public hearing is required.

2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. No public hearing is required.

3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the Planning Director on forms provided by the Planning Department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the Planning Director shall set the matter for public hearing before the Planning Commission, notice of which shall be given as provided in Title 17. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

B. Requirements for Approval. The appropriate decision-making body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decision-making body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

C. Appeals. The Director of Building and Safety's decision on an application for a construction-related exception is considered final. The Planning Director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decision-making body or officer shall mail notice of the decision to the applicant. Within 10 calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the City Council. Upon receipt of an appeal and payment of the appropriate appeal fee, the City Clerk shall set the matter for hearing not less than five days nor more than 30 days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The City Council shall render its decision within 30 days after the appeal hearing is closed.

D. Effect of a Pending Continuous-Events Exception Application. For a period of 180 days from the effective date of the ordinance codified in this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to

sanction the sound and if a decision on the application is pending. (Ord. 18 § 2, 2008, RCC § 9.52.070)

9.48.080 Enforcement.

The Chief of Police and Code Enforcement Department shall have the primary responsibility for enforcing this chapter; provided, however, the Chief of Police and Code Enforcement Department may be assisted by the Public Health Department. Violations shall be prosecuted as described in Section 9.48.100 of this chapter, but nothing in this chapter shall prevent the Chief of Police, Code Enforcement or the Department of Public Health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs. (Ord. 18 § 2, 2008, RCC § 9.52.080)

9.48.090 Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.48.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter. (Ord. 18 § 2, 2008, RCC § 9.52.090)

9.48.100 Violations and penalties.

Any person who violates any provision of this chapter once or twice within a 180-day period shall be guilty of an infraction. Any person who violates any provision of this chapter more than twice within a 180-day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts:

A. For the first violation within a 180-day period, the minimum mandatory fine shall be $500.00.

B. For the second violation within a 180-day period, the minimum mandatory fine shall be $750.00.

C. For any further violations within a 180-day period, the minimum mandatory fine shall be $1,000.00 or imprisonment for a period not exceeding six months, or both. (Ord. 18 § 2, 2008, RCC § 9.52.100)

APPENDIX 5.1:

GRADING PLANS

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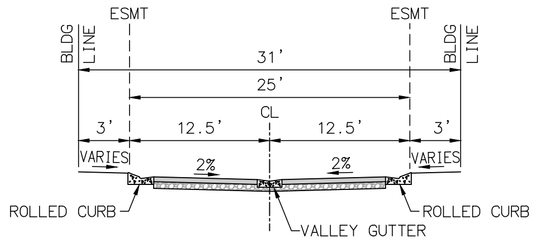
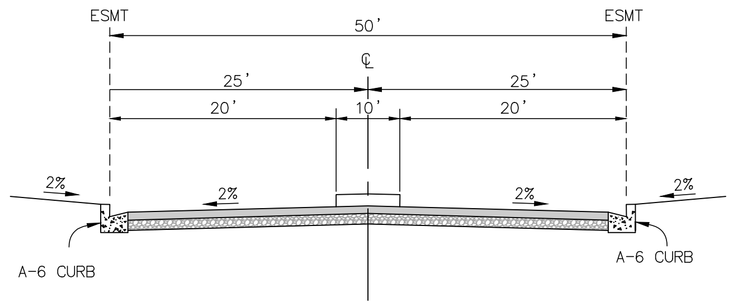
CONCEPTUAL GRADING AND SITE PLAN

FOR

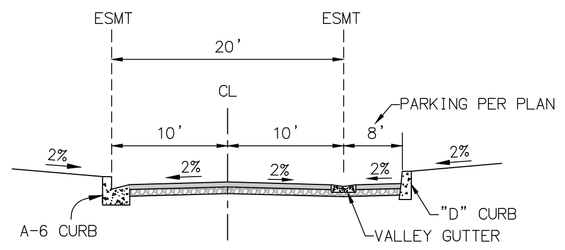
PRIELIPP ROAD PROJECT
TTM 36672
WILDOMAR, CALIFORNIA



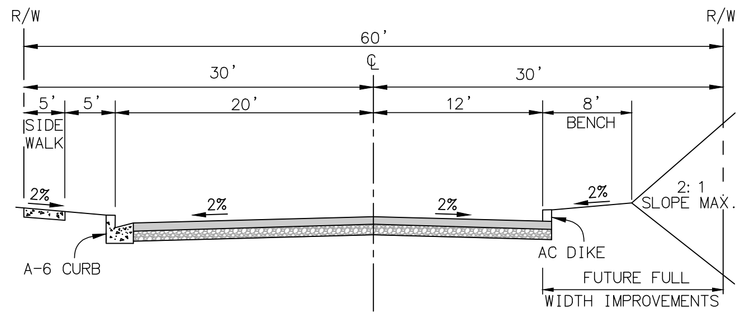
TYPICAL MOTOR COURT SECTION
(PRIVATE)
(BUILDING DRIVE AISLES)
NOT TO SCALE



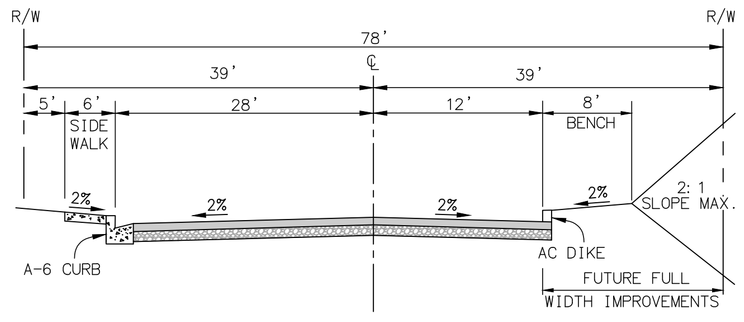
TYPICAL STREET "A"
50' ESMT (PRIVATE)
NOT TO SCALE



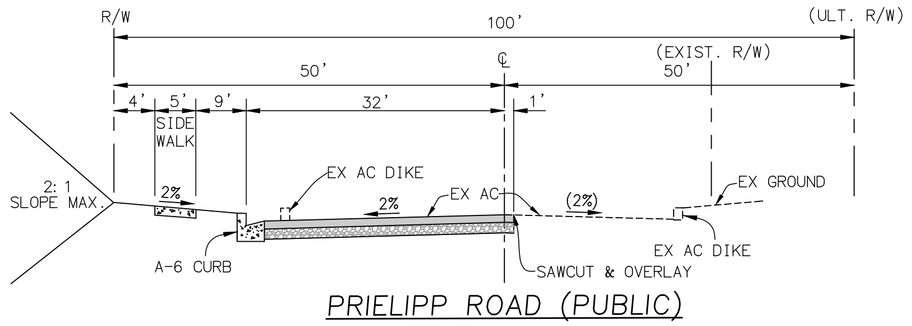
TYPICAL STREETS "B" & "C"
20' ESMT (PRIVATE)
NOT TO SCALE



BUNNY TRAIL
60' R/W (PUBLIC)
NOT TO SCALE



ELIZABETH LANE
78' R/W (PUBLIC)
CITY STANDARD NO. 111
NOT TO SCALE



PRIELIPP ROAD (PUBLIC)
CITY STANDARD NO. 94
NOT TO SCALE

PROJECT SUMMARY:

GROSS SITE AREA:	20.21 ACRES
RETENTION	1.50 ACRES
PUBLIC ROADS	2.34 ACRES
DWELLING UNITS	224 DU
DENSITY	11.1 DU/ACRE
TOWNHOMES	
AREA	11.5 ACRE (NET)
ACTIVE OPEN SPACE	
– REQUIRED	1.3 ACRES*
– PROVIDED	1.3 ACRES
SLOPE	0.81 ACRES
*ACTIVE OPEN SPACE ASSUMES 3.29 PPL/DU & 3 ACRES OPEN SPACE/1,000 PPL REQUIRED	
2 STORY TOWNHOMES	138 UNITS
PLAN–1 (2BR+2.5BA/1405 S.F.)	42 UNITS (30%)
PLAN–2 (3BR+2.5BA/1463 S.F.)	40 UNITS (30%)
PLAN–3 (3BR+2.5BA/1658 S.F.)	56 UNITS (40%)
DENSITY	11.1 DU/ACRE (NET)
PARKING REQUIRED	
2BR (2.25/DU) – 42 UNITS	95 SPACES
3BR (2.75/DU) – 96 UNITS	264 SPACES
TOTAL REQUIRED	359 SPACES
PARKING PROVIDED	359 SPACES
OPEN STALLS	83 SPACES
GARAGE STALLS	276 SPACES
SENIOR LIVING	
AREA	4.87 ACRES (NET)
RECREATION AREA	0.33 ACRES
UNITS	
– SKILLED NURSING	32 UNITS
– ASSISTED LIVING	54 UNITS
TOTAL	86 UNITS
DENSITY	17.7 DU/ACRE (NET)
PARKING REQUIRED (1.0 SPACES / UNIT)	
TOTAL PROVIDED (GUEST/EMPLOYEES)	88 SPACES (1.0 SPACES / UNIT)

OCCUPANCY CLASSIFICATION:	
TOWNHOMES	R–2
CLUBHOUSE (TOWNHOMES)	A–3
SENIOR LIVING	R2.1, SPRINKLERED
TYPE OF CONSTRUCTION:	
TOWNHOMES	TYPE VB
CLUBHOUSE (TOWNHOMES)	TYPE VB
SENIOR LIVING	TYPE V, 1 HR, SPRINKLERED
BUILDING HEIGHT:	
TOWNHOMES	30' MAX (2 STORY)
SENIOR LIVING	35' MAX (1 & 2 STORY)

GENERAL DESCRIPTION

1. EXISTING GENERAL PLAN: BP – BUSINESS PARK
2. EXISTING ZONING: R–R – RURAL RESIDENTIAL
3. PROPOSED ZONING: R–3 – GENERAL RESIDENTIAL
4. EXISTING LAND USE: VACANT
5. EXISTING SURROUNDING LAND USE: VACANT AND RESIDENTIAL
6. PROPOSED LAND USE: CR AND HDR
7. PROPOSED WATER AND SEWER SERVICE WILL BE PROVIDED BY: ELSINORE VALLEY MUNICIPAL WATER DISTRICT
8. ALL UTILITIES WILL BE UNDERGROUND
   GAS ---------- SOUTHERN CALIFORNIA GAS COMPANY
   ELECTRIC ---------- SOUTHERN CALIFORNIA EDISON
   TELEPHONE ---------- VERIZON
   CATV ---------- TIME–WARNER
9. SCHOOL DISTRICT: LAKE ELSINORE UNIFIED SCHOOL DISTRICT
10. PROPOSED NUMBER OF LOTS: 3
11. THIS TENTATIVE MAP IS EXCLUSIVELY UNDER THE OWNERSHIP OF THE SUBDIVIDER AND INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE SUBDIVIDER.
12. THOMAS BROTHER'S GUIDE – PAGE 927, H–1 (2006 EDITION)
13. THE PROJECT SITE CONTAINS: 20.21 ACRES GROSS
    17.87 ACRES NET
14. THE SUBJECT PROPERTIES ARE NOT WITHIN A FEMA FLOOD HAZARD AREA.
15. ALL UTILITIES SHOWN HEREON ARE PER RECORD UTILITY PLANS AND SHOULD BE VERIFIED BY A FIELD SURVEY PRIOR TO CONSTRUCTION.
16. SEISMIC FAULTS MAY BE PRESENT ON SITE. REFER TO GEOTECHNICAL STUDY.

LEGAL DESCRIPTION FOR APN # 380-250-023

PARCEL 4 OF PARCEL MAP NO. 9637, IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 58, PAGES 1 THROUGH 5, INCLUSIVE, OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

BENCHMARK

CITY BM. # T–58–81
ELEVATION=1215.467
DATUM=NGVD29

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE VI, NAD83 (EPOCH 2007.0) AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS OPERATING REFERENCE STATIONS (CORS) BILL AND DVLS BEING N05–05–38.82E AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) AND/OR NATIONAL GEODETIC SURVEY (NGS), RESPECTIVELY.

ASSESORS PARCEL NUMBERS

380–250–023

PROPOSED EASEMENT NOTES:

(1) INDICATES AN EASEMENT FOR ACCESS AND PUBLIC UTILITIES TO BE RESERVED ON FINAL MAP.

(2) INDICATES AN EASEMENT FOR STORM DRAIN PURPOSES TO BE DEDICATED ON FINAL MAP.

EXISTING EASEMENT NOTES

(A) ROAD EASEMENT AS SHOWN ON PARCEL MAP 9637, PMB 58/1–5.

(B) ROAD EASEMENT AS SHOWN ON PARCEL MAP 9637, PMB 58/1–5. BUNNY TRAIL WAS VACATED BY RESOLUTION 2007–045, RECORDED 10/4/2007 AS INSTRUMENT NO. 2007–0619517 O.R. THE VACATION DID RESERVE AN EASEMENT FOR ANY PUBLIC UTILITIES.

(C) EASEMENT FOR PUBLIC UTILITY PURPOSES TO SOUTHERN CALIFORNIA EDISON COMPANY RECORDED 12/13/1978 AS INSTRUMENT NO. 78–261602 O.R.

(D) EASEMENT FOR PUBLIC UTILITY PURPOSES TO GENERAL TELEPHONE COMPANY RECORDED 2/16/1979 AS INSTRUMENT NO. 79–33297 O.R.

(E) EASEMENT FOR ROAD, DRAINAGE, PUBLIC UTILITY AND PUBLIC SERVICE PURPOSES TO CALIFORNIA OAKS CO. RECORDED 5/27/1987 AS INSTRUMENT NO. 87–147796 O.R.

(F) EASEMENT FOR DRAINAGE AND FLOWAGE PURPOSES TO CALIFORNIA OAKS CO. RECORDED 5/27/1987 AS INSTRUMENT NO. 87–147797 O.R.

(G) EASEMENT FOR SLOPE AND MAINTENANCE PURPOSES TO CALIFORNIA OAKS CO. RECORDED 4/24/1989 AS INSTRUMENT NO. 89–130127 O.R.

ADJUSTED EARTHWORK QUANTITIES

RAW:	CUT :	140,307 C.Y.	FILL:	98,269 C.Y.
REMEDIAL:	CUT :	124,931 C.Y.	FILL:	124,930 C.Y.
SHRINKAGE:			FILL:	7,542 C.Y.
TOTAL:	CUT :	265,238 C.Y.	FILL:	230,741 C.Y.
NET:		34,497 C.Y. (EXPORT)		

SOURCE OF TOPOGRAPHY

ASSOCIATED DATA COMPILED FROM AERIAL PHOTOGRAPHY DATED 01–22–13 BY:

INLAND AERIAL SURVEYS, INC.
7117 ARLINGTON AVENUE, SUITE A
RIVERSIDE, CA 92503
Ph (951) 687–4252 Fx (951) 687–4120
ias@inlandaerial.com

JOB ADDRESS

THE SITE IS BORDERED BY PRIELIPP ROAD TO THE SOUTH, FUTURE BUNNY TRAIL TO THE NORTH AND FUTURE ELIZABETH LANE TO THE EAST.

OWNER / APPLICANT

STRATA KEITH, LLC
4370 LA JOLLA VILLAGE DRIVE #960
SAN DIEGO, CA 92122
(858)546–0900 (p)
(858)546–8725 (f)

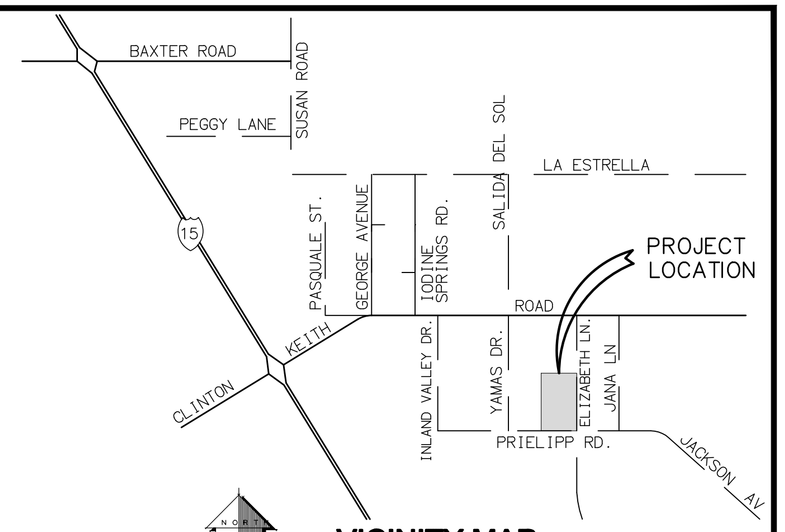
SOILS ENGINEER

GEOCON WEST, INC.
41571 CORNING PLACE, SUITE 101
MURRIETA, CA 92562–7065
TEL: (951) 304–2300
FAX: (951) 304–2392

LIGHTING REQUIREMENTS

AT A MINIMUM, THE LIGHTING IMPROVEMENTS WITHIN THIS SITE ARE TO ADHERE TO THE FOLLOWING CRITERIA:

1. APPLICABLE CITY AND COUNTY LIGHTING STANDARDS INCLUDING COUNTY OF RIVERSIDE ORDINANCE 655 (PALOMAR LIGHTING DISTRICT).
2. IN COMPLIANCE WITH TITLE 8, CHAPTER 8.64 (LIGHT POLLUTION OF THE CITY MUNICIPAL CODE) DETAILED LIGHTING PLANS AND OTHER REQUIRED ITEMS SHALL BE SUBMITTED PRIOR TO GRADING OR BUILDING PERMIT APPROVALS.
3. FOOT CANDLE LEVELS FOR EACH AREA (TRAILS, SIDEWALKS, STREETS, ETC.) SHALL BE BASED ON IES STANDARDS.
4. LIGHTING CONTROL PER CA. TITLE 24 REQUIREMENTS.



VICINITY MAP
NOT TO SCALE

TOWNSHIP 5 SOUTH, RANGE 3 WEST, SECTION 31
THOMAS GUIDE RIV CO 2008
927 H1

LEGEND

TOP OF CURB	TC
FLOW LINE	FL
HIGH POINT	HP
LOW POINT	LP
FINISHED SURFACE	FS
CURB & GUTTER	C&G
ASPHALT CONCRETE	AC
STORM DRAIN	SD
EXISTING	EX
PROPOSED	PROP
DOMESTIC WATER	DW
CATCH BASIN	CB
SANITARY SEWER	SS
FINISHED CONTOUR	1350
EXISTING CONTOUR	(1350)
TOP	
TOE	
LOT NUMBERS	LOT 1
BUILDING NUMBERS	25
FINISH FLOOR ELEVATION	FF = 1351.17
PAD ELEVATION	PAD = 1350.5
PROPOSED FINISHED GRADE	56.0
PROPOSED RATE OF GRADE	1.0%
TRACT BOUNDARY	
RIGHT OF WAY	
CENTERLINE	
PROPOSED LOT LINE	
PROPOSED EASEMENT	
EXSITING EASEMENT	
RIDGE LINE/GRADE BREAK	
DAYLIGHT LINE	
PROPOSED STORM DRAIN	
PROPOSED SEWER LINE	
PROPOSED WATER LINE	
SIDEWALK	
SIDE YARD FENCES	
RETAINING WALL	
FIRE HYDRANT	
MANHOLE	
SD CATCH BASIN	

PLANNING APPLICATION NO. 14–0040

RBF CONSULTING
A Baker Company

PRIELIPP
CONCEPTUAL GRADING PLAN
CITY OF WILDOMAR – COUNTY OF RIVERSIDE

40810 COUNTY CENTER DRIVE, SUITE 100
TEMECULA, CALIFORNIA 92591–6049
951.676.8042 ▪ FAX 951.676.7240 ▪ www.RBF.com

SHEET 1 OF 3 SHEETS

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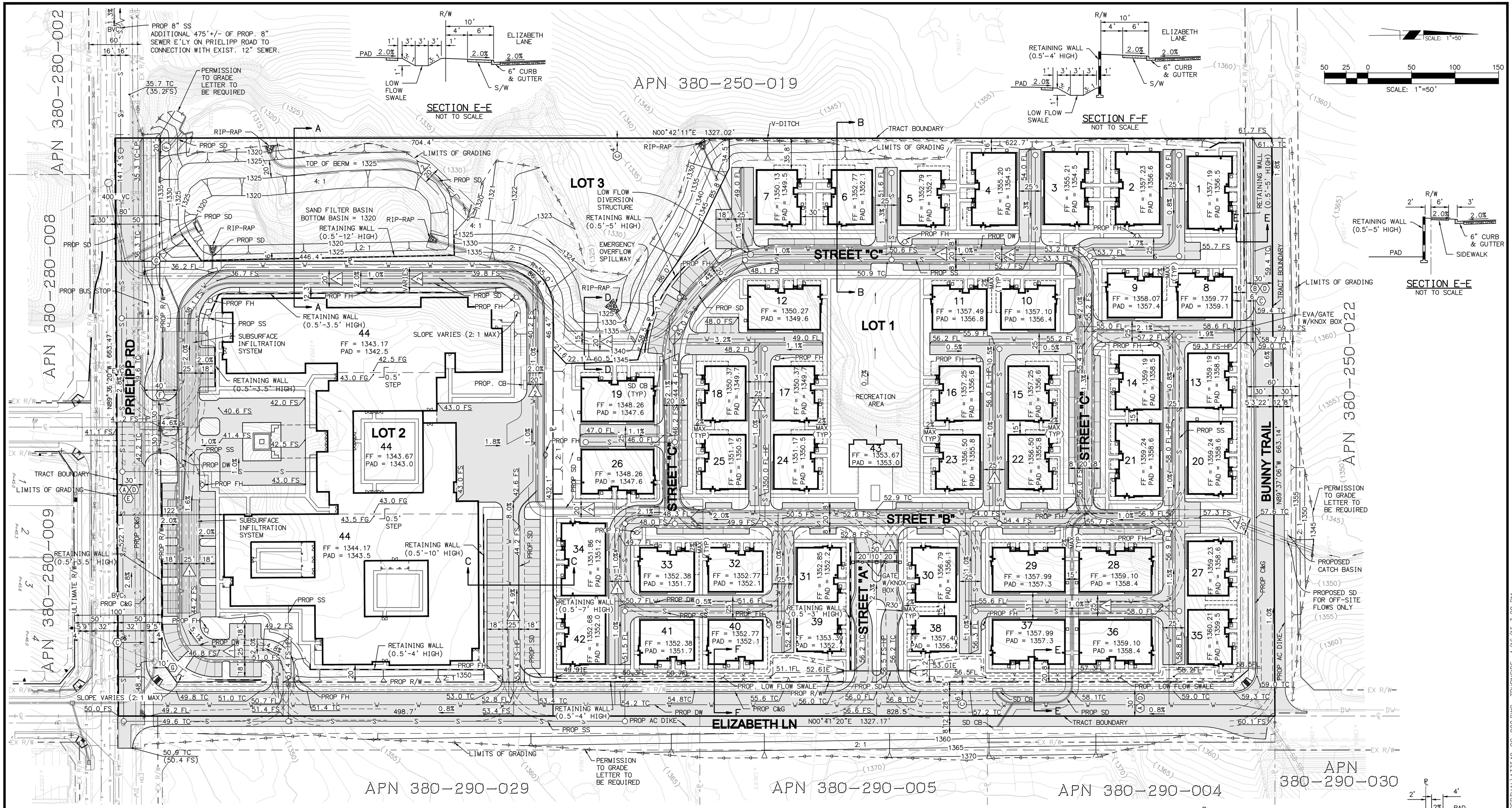

PLANNING APPLICATION NO. 14-0040

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A Baker Company

PRIELIPP
CONCEPTUAL GRADING PLAN
CITY OF WILDOMAR - COUNTY OF RIVERSIDE

40810 COUNTY CENTER DRIVE, SUITE 100
TEMECULA, CALIFORNIA 92591-6049
951.676.8042 ▪ FAX 951.676.7240 ▪ www.RBF.com

SHEET 2 OF 3 SHEETS

H:\PDATA\133549\CADD\LAND\DLV\GRADING\CONCEPTUAL\133549-CG-002.DWG TBURNSIDE 1/16/15 3:28 PM

APN 380-250-019

APN 380-280-002

APN 380-280-008

APN 380-280-009

APN 380-250-022

LOT 3

LOT 1

LOT 2

PRIELIPP RD

BUNNY TRAIL

STREET "A"

STREET "B"

STREET "C"

STREET "C"

STREET "C"

ELIZABETH LN

APN 380-290-029

APN 380-290-005

APN 380-290-004

APN 380-290-030

LEGEND

SIDEWALK

SCALE: 1"=50'

50 25 0 50 100 150

SCALE: 1"=50'

PLANNING APPLICATION NO. 14-0040

RBF CONSULTING
A Baker Company

PRIELIPP
PEDESTRIAN CIRCULATION EXHIBIT
CITY OF WILDOMAR - COUNTY OF RIVERSIDE

40810 COUNTY CENTER DRIVE, SUITE 100
TEMECULA, CALIFORNIA 92591-6049
951.676.8042 ▪ FAX 951.676.7240 ▪ www.RBF.com

SHEET 3 OF 3 SHEETS

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APPENDIX 6.1:

OFF-SITE TRAFFIC NOISE ANALYSIS WORKSHEETS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,800 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	380 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-6.15	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-23.39	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-27.35	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.3	48.8	42.5	40.9	49.4	49.6
Heavy Trucks:	51.2	49.8	40.7	42.0	50.3	50.5
Vehicle Noise:	58.4	56.7	53.5	48.9	57.4	57.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	31	67	144
CNEL:	15	33	72	155

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	630 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-3.96	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.20	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.15	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.8	56.9	55.1	49.1	57.7	58.3
Medium Trucks:	52.5	51.0	44.7	43.1	51.6	51.8
Heavy Trucks:	53.4	52.0	42.9	44.2	52.5	52.7
Vehicle Noise:	60.6	58.9	55.7	51.0	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	94	202
CNEL:	22	47	101	217

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	30 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.67	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-33.91	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-37.86	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.0	42.1	40.4	34.3	42.9	43.5
Medium Trucks:	38.0	36.5	30.1	28.6	37.0	37.3
Heavy Trucks:	39.3	37.9	28.9	30.1	38.5	38.6
Vehicle Noise:	46.0	44.3	41.0	36.5	45.0	45.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	2	5	10	22
CNEL:	2	5	11	23

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Elizabeth Ln.
Road Segment: n/o Prielipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	10 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-21.44	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-38.68	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-42.63	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	39.3	37.4	35.6	29.5	38.2	38.8
Medium Trucks:	33.2	31.7	25.4	23.8	32.3	32.5
Heavy Trucks:	34.6	33.1	24.1	25.3	33.7	33.8
Vehicle Noise:	41.3	39.5	36.3	31.7	40.2	40.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	1	2	5	10
CNEL:	1	2	5	11

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,040 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.69	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.55	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.51	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	63.5	61.7	55.6	64.3	64.9
Medium Trucks:	58.9	57.4	51.0	49.5	58.0	58.2
Heavy Trucks:	59.3	57.9	48.9	50.1	58.5	58.6
Vehicle Noise:	67.0	65.3	62.2	57.5	66.0	66.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	54	117	252	542
CNEL:	58	126	270	583

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,140 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.90	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.34	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.30	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.6	63.7	61.9	55.8	64.5	65.1
Medium Trucks:	59.1	57.6	51.3	49.7	58.2	58.4
Heavy Trucks:	59.5	58.1	49.1	50.3	58.7	58.8
Vehicle Noise:	67.3	65.5	62.5	57.7	66.2	66.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	121	260	560
CNEL:	60	130	279	601

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,450 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.79	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-18.03	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.99	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.9	62.0	60.2	54.1	62.8	63.4
Medium Trucks:	57.4	55.9	49.6	48.0	56.5	56.7
Heavy Trucks:	57.9	56.4	47.4	48.6	57.0	57.1
Vehicle Noise:	65.6	63.8	60.8	56.0	64.5	65.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	200	432
CNEL:	46	100	215	464

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,490 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.68	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.92	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.87	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.0	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	57.6	56.0	49.7	48.1	56.6	56.8
Heavy Trucks:	58.0	56.5	47.5	48.8	57.1	57.2
Vehicle Noise:	65.7	63.9	60.9	56.1	64.6	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	44	95	204	440
CNEL:	47	102	219	472

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,420 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.89	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-18.12	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.08	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	57.3	55.8	49.5	47.9	56.4	56.6
Heavy Trucks:	57.8	56.3	47.3	48.6	56.9	57.0
Vehicle Noise:	65.5	63.7	60.7	55.9	64.4	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	92	198	426
CNEL:	46	99	212	458

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	620 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.03	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.27	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.22	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	49.0	57.6	58.2
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.7
Heavy Trucks:	53.3	51.9	42.9	44.1	52.5	52.6
Vehicle Noise:	60.5	58.8	55.7	51.0	59.5	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	43	93	200
CNEL:	21	46	100	215

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	540 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.63	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.87	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.82	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.1	56.2	54.4	48.4	57.0	57.6
Medium Trucks:	51.9	50.4	44.0	42.5	50.9	51.1
Heavy Trucks:	52.7	51.3	42.3	43.5	51.9	52.0
Vehicle Noise:	59.9	58.2	55.1	50.4	58.9	59.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	85	183
CNEL:	20	42	91	196

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	530 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.71	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.95	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.90	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	56.1	54.4	48.3	56.9	57.5
Medium Trucks:	51.8	50.3	43.9	42.4	50.8	51.1
Heavy Trucks:	52.6	51.2	42.2	43.4	51.8	51.9
Vehicle Noise:	59.9	58.1	55.0	50.3	58.8	59.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	84	180
CNEL:	19	42	90	193

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	380	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-6.15	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-23.39	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-27.35	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.6	54.7	52.9	46.9	55.5	56.1
Medium Trucks:	50.3	48.8	42.5	40.9	49.4	49.6
Heavy Trucks:	51.2	49.8	40.7	42.0	50.3	50.5
Vehicle Noise:	58.4	56.7	53.5	48.9	57.4	57.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	31	67	144
CNEL:	15	33	72	155

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	630	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-3.96	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-21.20	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-25.15	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.8	56.9	55.1	49.1	57.7	58.3
Medium Trucks:	52.5	51.0	44.7	43.1	51.6	51.8
Heavy Trucks:	53.4	52.0	42.9	44.2	52.5	52.7
Vehicle Noise:	60.6	58.9	55.7	51.0	59.6	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	44	94	202
CNEL:	22	47	101	217

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	100	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-11.44	-4.62	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-28.68	-4.61	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-32.63	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	49.3	47.4	45.6	39.5	48.2	48.8
Medium Trucks:	43.2	41.7	35.4	33.8	42.3	42.5
Heavy Trucks:	44.6	43.1	34.1	35.3	43.7	43.8
Vehicle Noise:	51.3	49.5	46.3	41.7	50.2	50.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	5	10	22	48
CNEL:	5	11	24	52

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Elizabeth Ln.
Road Segment: n/o Prelipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	30	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-16.67	-4.62	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-33.91	-4.61	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-37.86	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	44.0	42.1	40.4	34.3	42.9	43.5
Medium Trucks:	38.0	36.5	30.1	28.6	37.0	37.3
Heavy Trucks:	39.3	37.9	28.9	30.1	38.5	38.6
Vehicle Noise:	46.0	44.3	41.0	36.5	45.0	45.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	2	5	10	22
CNEL:	2	5	11	23

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,100 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.81	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.42	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.38	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.5	63.6	61.8	55.8	64.4	65.0
Medium Trucks:	59.0	57.5	51.2	49.6	58.1	58.3
Heavy Trucks:	59.5	58.0	49.0	50.3	58.6	58.7
Vehicle Noise:	67.2	65.4	62.4	57.6	66.1	66.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	119	257	553
CNEL:	59	128	276	594

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,210 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.04	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.20	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.16	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	63.8	62.0	56.0	64.6	65.2
Medium Trucks:	59.3	57.8	51.4	49.8	58.3	58.5
Heavy Trucks:	59.7	58.3	49.2	50.5	58.8	59.0
Vehicle Noise:	67.4	65.6	62.6	57.8	66.4	66.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	57	123	265	572
CNEL:	61	132	285	614

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,520 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.59	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.83	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.78	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.1	62.2	60.4	54.4	63.0	63.6
Medium Trucks:	57.6	56.1	49.8	48.2	56.7	56.9
Heavy Trucks:	58.1	56.6	47.6	48.8	57.2	57.3
Vehicle Noise:	65.8	64.0	61.0	56.2	64.7	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	96	207	446
CNEL:	48	103	222	479

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,550 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.51	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-17.74	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.70	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.2	62.3	60.5	54.4	63.1	63.7
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	58.1	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	65.9	64.1	61.1	56.3	64.8	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	451
CNEL:	49	105	225	485

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,300	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,430	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	-0.86	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-18.09	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-22.05	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.8	61.9	60.1	54.1	62.7	63.3
Medium Trucks:	57.4	55.9	49.5	48.0	56.4	56.7
Heavy Trucks:	57.8	56.4	47.3	48.6	56.9	57.1
Vehicle Noise:	65.5	63.7	60.7	55.9	64.5	64.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	92	199	428
CNEL:	46	99	213	460

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,200	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	620	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-4.03	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-21.27	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-25.22	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.7	56.8	55.0	49.0	57.6	58.2
Medium Trucks:	52.5	51.0	44.6	43.1	51.5	51.7
Heavy Trucks:	53.3	51.9	42.9	44.1	52.5	52.6
Vehicle Noise:	60.5	58.8	55.7	51.0	59.5	60.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	43	93	200
CNEL:	21	46	100	215

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	550	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-4.55	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-21.79	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-25.74	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.2	56.3	54.5	48.5	57.1	57.7
Medium Trucks:	51.9	50.4	44.1	42.5	51.0	51.2
Heavy Trucks:	52.8	51.4	42.3	43.6	51.9	52.1
Vehicle Noise:	60.0	58.3	55.1	50.5	59.0	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	18	40	86	185
CNEL:	20	43	92	198

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Plus Project
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	560	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-4.47	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-21.71	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-25.66	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.3	56.4	54.6	48.6	57.2	57.8
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	52.9	51.5	42.4	43.7	52.0	52.1
Vehicle Noise:	60.1	58.4	55.2	50.5	59.1	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	19	40	87	187
CNEL:	20	43	93	201

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	550 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.55	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.79	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.74	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.2	56.3	54.5	48.5	57.1	57.7
Medium Trucks:	51.9	50.4	44.1	42.5	51.0	51.2
Heavy Trucks:	52.8	51.4	42.3	43.6	51.9	52.1
Vehicle Noise:	60.0	58.3	55.1	50.5	59.0	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	40	86	185
CNEL:	20	43	92	198

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.56	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.79	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.75	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.2	58.3	56.5	50.5	59.1	59.7
Medium Trucks:	53.9	52.4	46.1	44.5	53.0	53.2
Heavy Trucks:	54.8	53.4	44.3	45.6	53.9	54.1
Vehicle Noise:	62.0	60.3	57.1	52.5	61.0	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	116	251
CNEL:	27	58	125	269

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	790 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.46	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-19.70	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-23.66	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.2	56.3	54.6	48.5	57.1	57.7
Medium Trucks:	52.2	50.7	44.3	42.8	51.3	51.5
Heavy Trucks:	53.5	52.1	43.1	44.3	52.7	52.8
Vehicle Noise:	60.2	58.5	55.2	50.7	59.2	59.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	41	89	191
CNEL:	20	44	95	205

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Elizabeth Ln.
Road Segment: n/o Prelipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	40 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.42	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-32.66	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-36.61	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.3	43.4	41.6	35.6	44.2	44.8
Medium Trucks:	39.2	37.7	31.4	29.8	38.3	38.5
Heavy Trucks:	40.6	39.1	30.1	31.4	39.7	39.8
Vehicle Noise:	47.3	45.6	42.3	37.7	46.3	46.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	6	12	26
CNEL:	3	6	13	28

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,480	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.01	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.23	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.19	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	65.8	64.0	57.9	66.6	67.2
Medium Trucks:	61.2	59.7	53.4	51.8	60.3	60.5
Heavy Trucks:	61.7	60.2	51.2	52.4	60.8	60.9
Vehicle Noise:	69.4	67.6	64.6	59.8	68.3	68.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	77	167	359	774
CNEL:	83	179	386	832

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,540	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.08	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.16	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-18.11	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	65.8	64.1	58.0	66.6	67.3
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	61.7	60.3	51.3	52.5	60.9	61.0
Vehicle Noise:	69.4	67.7	64.6	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	78	169	363	783
CNEL:	84	181	390	841

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,590	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.72	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.51	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-19.47	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.5	62.7	56.7	65.3	65.9
Medium Trucks:	60.0	58.4	52.1	50.5	59.0	59.2
Heavy Trucks:	60.4	59.0	49.9	51.2	59.5	59.6
Vehicle Noise:	68.1	66.3	63.3	58.5	67.0	67.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	64	137	295	636
CNEL:	68	147	317	683

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,460	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	1.50	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-15.74	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-19.69	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.2	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	59.7	58.2	51.9	50.3	58.8	59.0
Heavy Trucks:	60.1	58.7	49.7	50.9	59.3	59.4
Vehicle Noise:	67.9	66.1	63.1	58.3	66.8	67.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	132	285	614
CNEL:	66	142	306	660

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,960 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	0.51	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-16.72	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.68	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	58.7	57.2	50.9	49.3	57.8	58.0
Heavy Trucks:	59.2	57.7	48.7	50.0	58.3	58.4
Vehicle Noise:	66.9	65.1	62.1	57.3	65.8	66.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	53	114	245	528
CNEL:	57	122	263	567

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	860 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.61	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.84	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.80	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.1	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	53.9	52.4	46.0	44.5	52.9	53.2
Heavy Trucks:	54.7	53.3	44.3	45.5	53.9	54.0
Vehicle Noise:	62.0	60.2	57.1	52.4	60.9	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	116	249
CNEL:	27	58	124	267

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	930 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.27	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.50	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.46	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	54.2	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	55.1	53.7	44.6	45.9	54.2	54.4
Vehicle Noise:	62.3	60.6	57.4	52.7	61.3	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	57	122	262
CNEL:	28	61	131	281

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 Without Project
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,300 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	930 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.27	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.50	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.46	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.5	58.6	56.8	50.8	59.4	60.0
Medium Trucks:	54.2	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	55.1	53.7	44.6	45.9	54.2	54.4
Vehicle Noise:	62.3	60.6	57.4	52.7	61.3	61.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	57	122	262
CNEL:	28	61	131	281

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	560 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-4.47	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-21.71	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-25.66	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.3	56.4	54.6	48.6	57.2	57.8
Medium Trucks:	52.0	50.5	44.2	42.6	51.1	51.3
Heavy Trucks:	52.9	51.5	42.4	43.7	52.0	52.1
Vehicle Noise:	60.1	58.4	55.2	50.5	59.1	59.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	19	40	87	187
CNEL:	20	43	93	201

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.56	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.79	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.75	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.2	58.3	56.5	50.5	59.1	59.7
Medium Trucks:	53.9	52.4	46.1	44.5	53.0	53.2
Heavy Trucks:	54.8	53.4	44.3	45.6	53.9	54.1
Vehicle Noise:	62.0	60.3	57.1	52.5	61.0	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	54	116	251
CNEL:	27	58	125	269

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	870 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-2.04	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-19.28	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-23.24	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	56.8	55.0	48.9	57.6	58.2
Medium Trucks:	52.6	51.1	44.8	43.2	51.7	51.9
Heavy Trucks:	53.9	52.5	43.5	44.7	53.1	53.2
Vehicle Noise:	60.7	58.9	55.7	51.1	59.6	60.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	20	44	95	204
CNEL:	22	47	101	218

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Elizabeth Ln.
Road Segment: n/o Prielipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	60 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-13.66	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-30.90	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-34.85	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.0	45.1	43.4	37.3	45.9	46.5
Medium Trucks:	41.0	39.5	33.1	31.6	40.1	40.3
Heavy Trucks:	42.3	40.9	31.9	33.1	41.5	41.6
Vehicle Noise:	49.0	47.3	44.0	39.5	48.0	48.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	16	34
CNEL:	4	8	17	37

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,540 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.08	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.16	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.11	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.7	65.8	64.1	58.0	66.6	67.3
Medium Trucks:	61.3	59.8	53.4	51.9	60.4	60.6
Heavy Trucks:	61.7	60.3	51.3	52.5	60.9	61.0
Vehicle Noise:	69.4	67.7	64.6	59.9	68.4	68.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	169	363	783
CNEL:	84	181	390	841

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,100 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,610 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.17	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-14.07	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-18.03	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.8	65.9	64.2	58.1	66.7	67.3
Medium Trucks:	61.4	59.9	53.5	52.0	60.4	60.7
Heavy Trucks:	61.8	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.5	67.8	64.7	59.9	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	171	368	793
CNEL:	85	184	396	852

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	26,500 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,650 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.82	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.41	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.37	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	60.1	58.5	52.2	50.6	59.1	59.3
Heavy Trucks:	60.5	59.1	50.0	51.3	59.6	59.7
Vehicle Noise:	68.2	66.4	63.4	58.6	67.1	67.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	139	300	646
CNEL:	69	149	322	694

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,200 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,520 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	1.61	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-15.63	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-19.59	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.3	64.4	62.6	56.5	65.2	65.8
Medium Trucks:	59.8	58.3	52.0	50.4	58.9	59.1
Heavy Trucks:	60.3	58.8	49.8	51.0	59.4	59.5
Vehicle Noise:	68.0	66.2	63.2	58.4	66.9	67.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	62	134	290	624
CNEL:	67	144	311	671

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,980	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	0.56	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-16.68	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-20.64	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.6	55.5	64.1	64.7
Medium Trucks:	58.8	57.3	50.9	49.4	57.8	58.1
Heavy Trucks:	59.2	57.8	48.7	50.0	58.4	58.5
Vehicle Noise:	66.9	65.2	62.1	57.3	65.9	66.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	53	115	247	532
CNEL:	57	123	265	571

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	860	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.61	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-19.84	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-23.80	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.5	50.4	59.0	59.6
Medium Trucks:	53.9	52.4	46.0	44.5	52.9	53.2
Heavy Trucks:	54.7	53.3	44.3	45.5	53.9	54.0
Vehicle Noise:	62.0	60.2	57.1	52.4	60.9	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	54	116	249
CNEL:	27	58	124	267

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	940	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.22	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-19.46	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-23.41	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.6	56.9	50.8	59.4	60.0
Medium Trucks:	54.3	52.8	46.4	44.9	53.3	53.6
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	62.4	60.6	57.5	52.8	61.3	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	26	57	123	264
CNEL:	28	61	132	283

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2017 With Project
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,600	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	960	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.13	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-19.37	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-23.32	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.9	50.9	59.5	60.1
Medium Trucks:	54.4	52.9	46.5	45.0	53.4	53.6
Heavy Trucks:	55.2	53.8	44.8	46.0	54.4	54.5
Vehicle Noise:	62.4	60.7	57.6	52.9	61.4	61.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	27	58	124	268
CNEL:	29	62	133	287

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	8,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	890	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	-2.46	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-19.70	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-23.65	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.3	58.4	56.6	50.6	59.2	59.8
Medium Trucks:	54.0	52.5	46.2	44.6	53.1	53.3
Heavy Trucks:	54.9	53.5	44.4	45.7	54.0	54.2
Vehicle Noise:	62.1	60.4	57.2	52.5	61.1	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	25	55	118	255
CNEL:	27	59	127	273

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,090	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.25	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-15.99	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-19.94	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.0	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	58.6	57.2	48.1	49.4	57.7	57.9
Vehicle Noise:	65.8	64.1	60.9	56.3	64.8	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	45	97	209	450
CNEL:	48	104	224	483

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,100	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	610	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-3.59	-4.62	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-20.82	-4.61	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-24.78	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.1	55.2	53.4	47.4	56.0	56.6
Medium Trucks:	51.1	49.6	43.2	41.7	50.1	50.4
Heavy Trucks:	52.4	51.0	41.9	43.2	51.6	51.7
Vehicle Noise:	59.1	57.4	54.1	49.6	58.1	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	16	35	75	161
CNEL:	17	37	80	172

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Elizabeth Ln.
Road Segment: n/o Prielipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	5,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	570	vehicles
Vehicle Speed:	40	mph
Near/Far Lane Distance:	12	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-3.88	-4.62	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-21.12	-4.61	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-25.07	-4.61	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.8	54.9	53.2	47.1	55.7	56.3
Medium Trucks:	50.8	49.3	42.9	41.4	49.8	50.1
Heavy Trucks:	52.1	50.7	41.7	42.9	51.3	51.4
Vehicle Noise:	58.8	57.1	53.8	49.3	57.8	58.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	71	154
CNEL:	16	35	76	165

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	53,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	5,340	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.87	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-12.37	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-16.33	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	69.5	67.6	65.9	59.8	68.4	69.0
Medium Trucks:	63.1	61.6	55.2	53.7	62.1	62.4
Heavy Trucks:	63.5	62.1	53.1	54.3	62.7	62.8
Vehicle Noise:	71.2	69.5	66.4	61.6	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	103	222	478	1,030
CNEL:	111	238	514	1,106

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	36,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,640	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.20	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-14.04	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.99	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.9	66.0	64.2	58.1	66.8	67.4
Medium Trucks:	61.4	59.9	53.6	52.0	60.5	60.7
Heavy Trucks:	61.9	60.4	51.4	52.6	61.0	61.1
Vehicle Noise:	69.6	67.8	64.8	60.0	68.5	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	80	172	370	798
CNEL:	86	185	398	857

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	38,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	3,840	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.43	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.80	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.76	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.1	66.2	64.4	58.4	67.0	67.6
Medium Trucks:	61.7	60.2	53.8	52.2	60.7	60.9
Heavy Trucks:	62.1	60.7	51.6	52.9	61.2	61.4
Vehicle Noise:	69.8	68.0	65.0	60.2	68.8	69.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	83	178	384	827
CNEL:	89	191	412	888

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,400	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,440	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.07	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.17	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.13	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.7	66.8	65.1	59.0	67.6	68.2
Medium Trucks:	62.3	60.8	54.4	52.9	61.3	61.6
Heavy Trucks:	62.7	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	70.4	68.7	65.6	60.8	69.4	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	91	196	423	911
CNEL:	98	211	454	978

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	44,800	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,480	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.10	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.13	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.09	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.8	66.9	65.1	59.0	67.7	68.3
Medium Trucks:	62.3	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	62.8	61.3	52.3	53.5	61.9	62.0
Vehicle Noise:	70.5	68.7	65.7	60.9	69.4	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	92	197	425	916
CNEL:	98	212	457	984

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,790	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.58	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-16.66	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.62	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.7	53.6	62.2	62.8
Medium Trucks:	57.1	55.6	49.2	47.7	56.1	56.4
Heavy Trucks:	57.9	56.5	47.5	48.7	57.1	57.2
Vehicle Noise:	65.2	63.4	60.3	55.6	64.1	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	87	188	406
CNEL:	44	94	202	435

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,900	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,890	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.81	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-16.42	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.38	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.6	61.7	59.9	53.8	62.5	63.1
Medium Trucks:	57.3	55.8	49.4	47.9	56.4	56.6
Heavy Trucks:	58.2	56.7	47.7	48.9	57.3	57.4
Vehicle Noise:	65.4	63.6	60.5	55.8	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	195	421
CNEL:	45	97	210	451

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 Without Project
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	24,700	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,470	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	1.98	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-15.26	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-19.22	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.7	62.8	61.1	55.0	63.6	64.2
Medium Trucks:	58.5	57.0	50.6	49.1	57.5	57.8
Heavy Trucks:	59.3	57.9	48.9	50.1	58.5	58.6
Vehicle Noise:	66.6	64.8	61.7	57.0	65.5	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	50	108	234	503
CNEL:	54	116	250	540

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: George Av.
Road Segment: n/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	900 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	-2.41	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-19.65	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-23.60	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.3	58.4	56.7	50.6	59.2	59.8
Medium Trucks:	54.1	52.6	46.2	44.7	53.1	53.4
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	62.2	60.4	57.3	52.6	61.1	61.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	26	55	119	257
CNEL:	28	59	128	275

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Inland Valley Dr.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,100 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	68.46	1.27	-4.52	-1.20	-4.77	0.000	0.000
Medium Trucks:	79.45	-15.97	-4.51	-1.20	-4.88	0.000	0.000
Heavy Trucks:	84.25	-19.92	-4.51	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.0	62.1	60.3	54.3	62.9	63.5
Medium Trucks:	57.8	56.3	49.9	48.4	56.8	57.0
Heavy Trucks:	58.6	57.2	48.2	49.4	57.8	57.9
Vehicle Noise:	65.8	64.1	61.0	56.3	64.8	65.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	210	452
CNEL:	48	104	225	484

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Elizabeth Ln.
Road Segment: s/o Clinton Keith Road
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,900 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	690 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.05	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-20.29	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-24.25	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.6	55.7	54.0	47.9	56.5	57.2
Medium Trucks:	51.6	50.1	43.7	42.2	50.7	50.9
Heavy Trucks:	52.9	51.5	42.5	43.7	52.1	52.2
Vehicle Noise:	59.7	57.9	54.6	50.1	58.6	59.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	17	38	81	175
CNEL:	19	40	87	187

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Elizabeth Ln.
Road Segment: n/o Prelipp Rd.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	6,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	600 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	99.945
Medium Trucks:	99.856
Heavy Trucks:	99.865

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-3.66	-4.62	-1.20	-4.77	0.000	0.000
Medium Trucks:	77.72	-20.90	-4.61	-1.20	-4.88	0.000	0.000
Heavy Trucks:	82.99	-24.85	-4.61	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.0	55.1	53.4	47.3	55.9	56.5
Medium Trucks:	51.0	49.5	43.1	41.6	50.1	50.3
Heavy Trucks:	52.3	50.9	41.9	43.1	51.5	51.6
Vehicle Noise:	59.0	57.3	54.0	49.5	58.0	58.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	159
CNEL:	17	37	79	170

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Clinton Keith Rd.
Road Segment: w/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	54,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,400 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.92	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-12.32	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-16.28	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	69.6	67.7	65.9	59.9	68.5	69.1
Medium Trucks:	63.1	61.6	55.3	53.7	62.2	62.4
Heavy Trucks:	63.6	62.1	53.1	54.4	62.7	62.8
Vehicle Noise:	71.3	69.5	66.5	61.7	70.2	70.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	104	224	482	1,038
CNEL:	111	240	517	1,115

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o George Av.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	39,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,900 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.50	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.74	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.69	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.2	66.3	64.5	58.4	67.1	67.7
Medium Trucks:	61.7	60.2	53.9	52.3	60.8	61.0
Heavy Trucks:	62.2	60.7	51.7	52.9	61.3	61.4
Vehicle Noise:	69.9	68.1	65.1	60.3	68.8	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	84	180	388	835
CNEL:	90	193	417	897

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	37,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,700 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	3.27	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.96	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.92	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.9	66.0	64.3	58.2	66.8	67.4
Medium Trucks:	61.5	60.0	53.6	52.1	60.5	60.8
Heavy Trucks:	61.9	60.5	51.5	52.7	61.1	61.2
Vehicle Noise:	69.6	67.9	64.8	60.1	68.6	69.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	81	174	374	806
CNEL:	87	187	402	866

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Clinton Keith Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,500 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	4.12	-4.34	-1.20	-4.77	0.000	0.000
Medium Trucks:	81.00	-13.11	-4.34	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-17.07	-4.34	-1.20	-5.16	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.0
Vehicle Noise:	70.5	68.7	65.7	60.9	69.4	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	92	198	426	919
CNEL:	99	213	458	987

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Clinton Keith Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	45,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	4,500	vehicles
Vehicle Speed:	50	mph
Near/Far Lane Distance:	58	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	95.833
Medium Trucks:	95.741
Heavy Trucks:	95.750

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	4.12	-4.34	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	81.00	-13.11	-4.34	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-17.07	-4.34	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.8	66.9	65.1	59.1	67.7	68.3
Medium Trucks:	62.4	60.8	54.5	52.9	61.4	61.6
Heavy Trucks:	62.8	61.4	52.3	53.6	61.9	62.0
Vehicle Noise:	70.5	68.7	65.7	60.9	69.4	69.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	92	198	426	919
CNEL:	99	213	458	987

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prelipp Rd.
Road Segment: e/o Inland Valley Dr.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,800	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.60	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-16.64	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.59	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.7	53.6	62.2	62.9
Medium Trucks:	57.1	55.6	49.2	47.7	56.1	56.4
Heavy Trucks:	57.9	56.5	47.5	48.7	57.1	57.2
Vehicle Noise:	65.2	63.4	60.3	55.6	64.2	64.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	88	189	407
CNEL:	44	94	203	437

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prelipp Rd.
Road Segment: w/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	19,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	1,900	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	0.84	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-16.40	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-20.36	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.6	61.7	59.9	53.9	62.5	63.1
Medium Trucks:	57.3	55.8	49.5	47.9	56.4	56.6
Heavy Trucks:	58.2	56.8	47.7	49.0	57.3	57.5
Vehicle Noise:	65.4	63.7	60.5	55.8	64.4	64.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	196	422
CNEL:	45	98	210	453

Wednesday, February 26, 2014

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Year 2035 With Project
Road Name: Prelipp Rd.
Road Segment: e/o Elizabeth Ln.
Project Name: Prielipp Road (APN: 380-
Job Number: 8762

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	25,000	vehicles
Peak Hour Percentage:	10%	
Peak Hour Volume:	2,500	vehicles
Vehicle Speed:	45	mph
Near/Far Lane Distance:	36	feet

Site Data

Barrier Height:	**0.0**	**feet**
Barrier Type (0-Wall, 1-Berm):	0.0	
Centerline Dist. to Barrier:	100.0	feet
Centerline Dist. to Observer:	100.0	feet
Barrier Distance to Observer:	0.0	feet
Observer Height (Above Pad):	5.0	feet
Pad Elevation:	0.0	feet
Road Elevation:	0.0	feet
Road Grade:	0.0%	
Left View:	-90.0	degrees
Right View:	90.0	degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	98.494
Medium Trucks:	98.404
Heavy Trucks:	98.413

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	2.03	-4.52	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	79.45	-15.21	-4.51	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-19.17	-4.51	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.8	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	59.4	58.0	48.9	50.2	58.5	58.6
Vehicle Noise:	66.6	64.9	61.7	57.0	65.6	66.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	51	109	235	507
CNEL:	54	117	253	544

Wednesday, February 26, 2014

APPENDIX 7.1:

ON-SITE TRAFFIC NOISE ANALYSIS WORKSHEETS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Elizabeth Ln.
Lot No: 39 (Townhomes)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	73.0 feet
Centerline Dist. to Observer:	73.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,353.4 feet
Road Elevation:	1,356.6 feet
Barrier Elevation:	1,353.4 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,356.600		
Medium Trucks:	1,358.897		
Heavy Trucks:	1,364.606	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	72.775
Medium Trucks:	72.755
Heavy Trucks:	73.017

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.55	-1.20	*-4.94*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.55	-1.20	*-5.09*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.57	-1.20	*-5.47*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.7	52.6	61.2	61.9
Medium Trucks:	54.1	52.6	46.2	44.6	53.1	53.3
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.6	61.8	59.1	54.0	62.5	63.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.7	52.6	61.2	61.9
Medium Trucks:	54.1	52.6	46.2	44.6	53.1	53.3
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.6	61.8	59.1	54.0	62.5	63.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Elizabeth Ln.
Lot No: Assisted Living (East Façade)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,343.5 feet
Road Elevation:	1,353.4 feet
Barrier Elevation:	1,343.5 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,353.400		
Medium Trucks:	1,355.697		
Heavy Trucks:	1,361.406	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	64.523
Medium Trucks:	64.948
Heavy Trucks:	66.365

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-1.76	-1.20	*5.50*	-15.600	-18.600
Medium Trucks:	76.31	-18.51	-1.81	-1.20	*5.68*	-15.708	-18.708
Heavy Trucks:	81.16	-22.46	-1.95	-1.20	*6.13*	-15.952	-18.952

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.1	61.2	59.5	53.4	62.0	62.6
Medium Trucks:	54.8	53.3	46.9	45.4	53.8	54.1
Heavy Trucks:	55.5	54.1	45.1	46.3	54.7	54.8
Vehicle Noise:	64.3	62.5	59.8	54.7	63.3	63.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	47.5	45.6	43.9	37.8	46.4	47.0
Medium Trucks:	39.1	37.6	31.2	29.7	38.1	38.4
Heavy Trucks:	39.6	38.2	29.1	30.4	38.7	38.9
Vehicle Noise:	48.7	46.9	44.2	39.1	47.6	48.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Prielipp Rd.
Lot No: Assisted Living (South Façade)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	121.0 feet
Centerline Dist. to Observer:	121.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,343.5 feet
Road Elevation:	1,350.0 feet
Barrier Elevation:	1,343.5 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,350.000		
Medium Trucks:	1,352.297		
Heavy Trucks:	1,358.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	124.830
Medium Trucks:	124.977
Heavy Trucks:	125.530

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.21	-6.06	-1.20	*5.05*	-15.330	-18.330
Medium Trucks:	77.62	-16.03	-6.07	-1.20	*5.15*	-15.390	-18.390
Heavy Trucks:	82.14	-19.99	-6.10	-1.20	*5.37*	-15.522	-18.522

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.3	61.4	59.6	53.6	62.2	62.8
Medium Trucks:	54.3	52.8	46.5	44.9	53.4	53.6
Heavy Trucks:	54.9	53.4	44.4	45.6	54.0	54.1
Vehicle Noise:	64.3	62.5	60.0	54.7	63.3	63.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	48.0	46.1	44.3	38.2	46.9	47.5
Medium Trucks:	38.9	37.4	31.1	29.5	38.0	38.2
Heavy Trucks:	39.3	37.9	28.9	30.1	38.5	38.6
Vehicle Noise:	49.0	47.2	44.6	39.3	47.9	48.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Elizabeth Ln.
Lot No: 39 (Townhomes)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	73.0 feet
Centerline Dist. to Observer:	73.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,353.4 feet
Road Elevation:	1,356.6 feet
Barrier Elevation:	1,353.4 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,356.600		
Medium Trucks:	1,358.897		
Heavy Trucks:	1,364.606	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	73.550
Medium Trucks:	73.248
Heavy Trucks:	72.807

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.62	-1.20	*-12.99*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.59	-1.20	*-13.42*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.55	-1.20	*-14.48*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	54.0	52.5	46.1	44.6	53.1	53.3
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.5	61.7	59.0	53.9	62.5	63.0

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.3	60.4	58.6	52.6	61.2	61.8
Medium Trucks:	54.0	52.5	46.1	44.6	53.1	53.3
Heavy Trucks:	54.9	53.5	44.5	45.7	54.1	54.2
Vehicle Noise:	63.5	61.7	59.0	53.9	62.5	63.0

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Elizabeth Ln.
Lot No: Assisted Living (East Façade)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,343.5 feet
Road Elevation:	1,353.4 feet
Barrier Elevation:	1,343.5 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,353.400		
Medium Trucks:	1,355.697		
Heavy Trucks:	1,361.406	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	58.837
Medium Trucks:	58.722
Heavy Trucks:	58.824

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-1.16	-1.20	*-14.37*	0.000	0.000
Medium Trucks:	76.31	-18.51	-1.15	-1.20	*-14.89*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-1.16	-1.20	*-16.17*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.7	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	55.5	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	56.3	54.9	45.9	47.1	55.5	55.6
Vehicle Noise:	65.0	63.2	60.5	55.4	63.9	64.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.7	61.8	60.1	54.0	62.6	63.2
Medium Trucks:	55.5	53.9	47.6	46.0	54.5	54.7
Heavy Trucks:	56.3	54.9	45.9	47.1	55.5	55.6
Vehicle Noise:	65.0	63.2	60.5	55.4	63.9	64.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Prielipp Rd.
Lot No: Assisted Living (South Façade)

Project Name: Horizons (APN: 380-250-023)
Job Number: 8762
Analyst: A. Wolfe

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	121.0 feet
Centerline Dist. to Observer:	121.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,343.5 feet
Road Elevation:	1,350.0 feet
Barrier Elevation:	1,343.5 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,350.000		
Medium Trucks:	1,352.297		
Heavy Trucks:	1,358.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	119.888
Medium Trucks:	119.767
Heavy Trucks:	119.655

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	69.34	1.21	-5.80	-1.20	*-13.64*	0.000	0.000
Medium Trucks:	77.62	-16.03	-5.79	-1.20	*-13.90*	0.000	0.000
Heavy Trucks:	82.14	-19.99	-5.79	-1.20	*-14.54*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.6	61.7	59.9	53.8	62.5	63.1
Medium Trucks:	54.6	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	55.2	53.7	44.7	46.0	54.3	54.4
Vehicle Noise:	64.6	62.8	60.2	55.0	63.5	64.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	63.6	61.7	59.9	53.8	62.5	63.1
Medium Trucks:	54.6	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	55.2	53.7	44.7	46.0	54.3	54.4
Vehicle Noise:	64.6	62.8	60.2	55.0	63.5	64.1

APPENDIX 9.1:

RCNM EQUIPMENT DATABASE

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U.S. Department
of Transportation

Federal Highway Administration

FHWA
Roadway Construction Noise Model
User's Guide

FHWA-HEP-05-054
DOT-VNTSC-FHWA-05-01

Final Report
January 2006

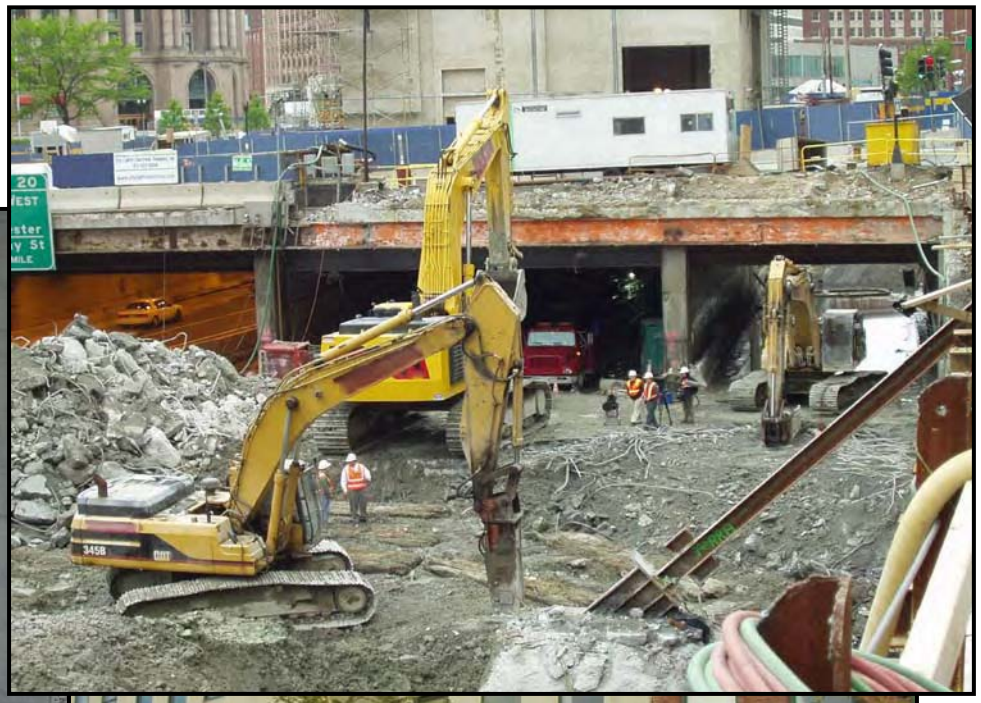

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Table 1. CA/T equipment noise emissions and acoustical usage factors database.

CA/T Noise Emission Reference Levels and Usage Factors					
filename: EQUIPLST.xls					
revised: 7/26/05		Acoustical	Spec 721.560	Actual Measured	No. of Actual
	Impact	Use Factor	Lmax @ 50ft	Lmax @ 50ft	Data Samples
Equipment Description	Device ?	(%)	(dBA, slow)	(dBA, slow)	(Count)
				(samples averaged)	
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5