Noise Study Report

Yucca Loma Road / Yates Road / Green Tree Boulevard
Transportation Improvement Project

Town of Apple Valley, City of Victorville,
and County of San Bernardino, California

STPL 5453 (011)

March 2009

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Prepared By:  Date: May 21, 2009

Jason Mirise, Vice-President
Bollard Acoustical Consultants, Inc.
455 Main Street, Suite 3
Newcastle, CA 95658

Yucca Loma/Yates/Green Tree Project Noise Study Report Review
STPL 5453 (011) – June 30, 2009

Environmental Engineering Oversight has reviewed the Noise Study Report dated March 2009 for the above referenced project.

All previous comments have been addressed. There are no further comments.

If there are any questions, please call Mike Goodhue at (909) 383-5991.

Summary

The purpose of this noise study report (NSR) is to evaluate noise impacts and abatement under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise." 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards.

No east-west connector between Apple Valley and Victorville currently exists in the vicinity of the project. Traffic must currently use Bear Valley Road, approximately two miles to the south, or take a northern route over Mojave Narrows Regional Park. The purpose of the Yucca Loma Road/Yates Road/Green Tree Boulevard Transportation Improvement Project ("the Project") is to link these two regions with an alternate route, which passes just south of the Park. The project Build Alternatives would provide a more direct route for Apple Valley traffic accessing Interstate 15, whereas the No-Build alternative would leave the area in its existing state. The eastern limit of the project is in the Town of Apple Valley, at the intersection of Yucca Loma Road and Apple Valley Road. The western limit is in the City of Victorville, at the intersection of Green Tree Boulevard and Hesperia Road.

The project area is generally divided into three portions, a rural section on the west, an older single-family residential section in the center, and a newer single-family residential section on the east side with sound attenuation construction already in place. Land use in the project area is primarily residential. Terrain is generally flat, though punctuated by hills surrounding the railroad tracks and other portions of the western section. The Mojave River separates the east and central sections, while the Burlington Northern Santa Fe (BNSF) railroad tracks separate the central and west sections.

Existing noise levels in the project vicinity are low. Current traffic volumes are minimal (approximately 3,300 vehicles per day on the east side and 1,000 per day in the central area), as there is no contiguous path through the project area. Noise levels near the River run as low as 40 dBA L_{eq}, while those in other parts of the project are on the order of 45-55 dBA L_{eq}. The prominent exception to this is at locations near the railroad tracks. Residences with a direct view of the tracks experience average noise levels as high as 64 dBA $L_{eq}(h)$ due to train operations (receiver "West - S3").

Two Build Alternatives ("A" and "B") and the No-Build alternative were considered in this NSR. The applicable noise abatement criterion for residential properties is 67 dBA (L_{eq}[h]), which includes all sensitive receivers except for the 24-hour fire station whose interior abatement threshold is 52 dBA L_{eq}(h).

Project-Build Alternatives "A" and "B" are very similar, with Alternative "B" shifting the roadway slightly north between receivers West - N15 and West - N29 through West - N40. The conclusions regarding impacts and barrier performance are nearly identical between the two Build Alternatives. Build Alternative "B" includes three receivers (West - S1 through West - S3) that would be removed under Build Alternative "A."

Noise levels at build-out are predicted to range between 60-70 dBA L_{eq}(h) for most receivers, with about 20% of receivers experiencing future levels of 70 dBA L_{eq}(h) or greater. More than 70% of modeled receivers would experience noise impacts, necessitating consideration of noise abatement. These are primarily due to substantial increases over existing levels (+12 dB) rather than breach of the NAC. Of those receivers with impacts, roughly 44% meet both noise criteria. Train noise would become marginal at build-out for all but a few receivers.

Noise abatement in the form of sound walls was evaluated for all impacted receivers except the fire station. New walls on private property were modeled on the west side of the project, new walls within the right-of-way were considered in the central section, and existing walls on the east side were considered at their current and raised heights. Sound walls were not modeled where existing terrain would adequately mitigate traffic noise. Overall predicted insertion losses for project noise barriers vary between 0-15 dB depending on wall height, geography, and impact of train noise. Impacted receivers on the west side would benefit from sound walls as low as 6 feet in height, though these must be placed on private property in order to be effective. Wall heights in the central section must generally be on the order of 10-14 feet high to shield the elevated residences in this area. Existing sound walls on the east side must be raised 4-6 feet above their current heights in order to achieve the necessary 5 dB noise reduction improvement.

A sound wall is not feasible in front of the fire station because of access requirements. Predicted interior noise exposure within that use is below the 52 dBA L_{eq}(h) noise abatement criterion.

A sound wall was also determined to be infeasible for the three residences on the south side of the Yucca Loma Extension that would remain under Build Alternative "B" but be removed with Build Alternative "A" (receivers West - S1 through West - S3). At two of

these three residences, the NAC would not be exceeded, and at the third (West - S3), the barrier would not provide a 5 dB overall noise reduction improvement.

No impacts due to construction noise are anticipated. The contractor would be required to comply with all local ordinances regarding construction noise production.

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List of Abbreviated Terms

CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
dB Decibels	
FHWA	Federal Highway Administration
Hz Hertz	
kHz Kilohertz	
L_{dn} Day	-Night Level
L_{eq}	Equivalent Sound Level
$L_{eq}(h)$	Equivalent Sound Level over one hour
L_{max}	Maximum Sound Level
LOS	Level of Service
L_n	Percentile-Exceeded Sound Level
µPa micro-Pas	cals
mph	miles per hour
NAC	noise abatement criteria
NADR	Noise Abatement Decision Report
NEPA	National Environmental Policy Act
NSR	noise study report
Protocol	Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects
SPL sound	pressure level
TeNS	Caltrans' Technical Noise Supplement
TNM 2.5	FHWA Traffic Noise Model Version 2.5

Chapter 1. Introduction

The Town of Apple Valley proposes to construct a highway across the northern portion of Spring Valley Lake, connecting Hesperia Road to Apple Valley Road. The new corridor would incorporate sections of the existing Yates Road and Yucca Loma Road, and alter the existing Ridge Crest Road and Chinquapin Drive.

A study was completed to assess the potential traffic noise impacts from the project on existing residences in the area, and determine the feasibility and reasonableness of noise-abating walls. This noise study report (NSR) documents the findings of that study. It has been prepared in accordance with the format set forth by the Caltrans template of February 2008.

1.1. Purpose of the Noise Study Report

The purpose of this NSR is to evaluate noise impacts and abatement under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise." 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards. Noise impacts associated with this project under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) are evaluated in this NSR. The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2006) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing NSR's.

1.2. Project Purpose and Need

No east-west connector between Apple Valley and Victorville currently exists in the vicinity of the project. Traffic must currently use Bear Valley Road, approximately two miles to the south, or take a northern route over Mojave Narrows Regional Park. The Yucca Loma Road/Yates Road/Green Tree Boulevard Transportation Improvement project ("the Project") would link these two regions with an alternate route which passes just south of the Park, and provide a more direct route for Apple Valley traffic accessing Interstate 15.

Chapter 2. Project Description

2.1. Existing Roadway Configuration / No-Build Alternative

Figure 2-1 shows the project area in its existing configuration, which is also the project No-Build condition. It comprises three isolated areas, herein referred to as "west," "central," and "east." The west and central areas are separated by the Burlington Northern Santa Fe (BNSF) railroad tracks, while the east and central areas are separated by the Mojave River. No path currently connects any of these areas in the vicinity of the project.

The west side of the project, between Hesperia Road and the railroad tracks, is currently rural. It is sparsely populated by isolated residences and commercial/industrial operations. The residences in this area are served primarily by a small lane, Coad Road. Some of the existing residences have been abandoned, and all are slated for demolition under Build Alternative "A" described below.[1] Under Build Alternative "B," also described below, four of the existing residential parcels (containing 3 existing residences), would remain. Future residential development is planned on the north side of the alignment.

The central area is populated by single-family residences surrounding the northern end of Spring Valley Lake. These residences lie along the existing Yates Road, which would be incorporated into the project alignment. Mojave Narrows Regional Park also lies in the central area, bordering the north side of Yates Road. Because recreational areas of the park lie at least 500 feet from the proposed alignment, the park was not included in this noise study.[2]

The east area of the project, between the Mojave River and Apple Valley Road, is also primarily residential, with newer single-family residences lining both the north and south sides of the existing Yucca Loma Road. This area includes an existing school at the corner of Havasu Road, and a fire station with sleeping quarters near the Apple Valley Road intersection.[3] Commercial properties sit on the intersection of Yucca Loma Road and Apple Valley Road, but were not included in this study due to lack of any outdoor recreational areas.

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[1] Per September 29, 2008 phone call between Medlin & Associates, Inc. and Dokken Engineering (Hossenion)
[2] Per April 3, 2008 Medlin & Associates, Inc. meeting with Caltrans
[3] Rio Vista Elementary School, 13590 Havasu Road

Under the No-Build Alternative, no changes would be made to existing roads in the project vicinity, leaving the project area in its existing state. The year 2035 No-Build condition would be essentially the same as the existing condition, with a predicted increase in traffic volume on Yucca Loma Road and Yates Road of only 20% and 10%, respectively. These increases would result in less than a 1 dB increase in traffic noise exposure.

2.2. Proposed Project

The proposed project would provide a new route between the Town of Apple Valley, County of San Bernardino, and City of Victorville (see Figure 2-2). The eastern limit of the project is at the intersection of Yucca Loma Road and Apple Valley Road, while the western limit is at the intersection of Green Tree Boulevard and Hesperia Road.

2.2.1. Project Components Shared by Both Build Alternatives

Both Build Alternatives ("A" and "B" – described below) would widen Yucca Loma Road from two to four lanes from Apple Valley Road to its current terminus east of Kasanka Trail. A new bridge crossing of the Mojave River would be constructed extending the roadway to Yates Road. This bridge would be built wide enough for an ultimate build-out use of six lanes but would be striped initially for four lanes. The bridge would also have shoulders and sidewalks. Space for sidewalk would be allowed on both sides of Yucca Loma Road; however, it is anticipated that sidewalk would only be built on one side of the street as part of this project. A new signal with crosswalks is planned at Havasu Road.

Yates Road would be widened from two lanes to four lanes. From Fortuna Lane to Park Road, roadway widening is necessary. From Park Road to Ridgecrest Road, Yates Road is currently built wide enough for four lanes, but has been striped and used for two lanes of traffic. Pavement rehabilitation and restriping would be needed in this area. Yates Road as it connects to Ridgecrest Road would be realigned to the east to allow connection to an extension of Green Tree Boulevard. A pedestrian path is planned along the north side of Yates Road, connecting from the bridge over the Mojave River to Ridgecrest Road and Green Tree Boulevard.

Ridgecrest Road would be realigned, at its current width, from approximately 500 feet south of Chinquapin Drive to the new intersection of Yates Road and the extension of Green Tree Boulevard. Signals are planned at the new intersection, and sidewalks would

connect the three streets. Various utility relocations and realignments would be necessary throughout the project area.

Since the project is located in three different jurisdictions, its anticipated construction would occur under multiple construction contracts and during different construction seasons. Construction may begin as early as 2010.

2.2.2. Build Alternative "A"

Under Build Alternative "A," Green Tree Boulevard would be extended from the new Ridgecrest Road/Yates Road intersection to Hesperia Road along the existing property Section Line boundary. This alignment would eliminate all single-family residential parcels on the south side of the project in the west section (on existing Coad Road).

2.2.3. Build Alternative "B"

Under Build Alternative "B," the Green Tree North alignment, Green Tree Boulevard would shift the alignment approximately 150 feet to the north in the west section of the project area, as indicated in Figure 2.3. As a result of the roadway shift, four single-family residential parcels toward the end of the existing Coad Road would be avoided. New access roads would maintain access to these four parcels.

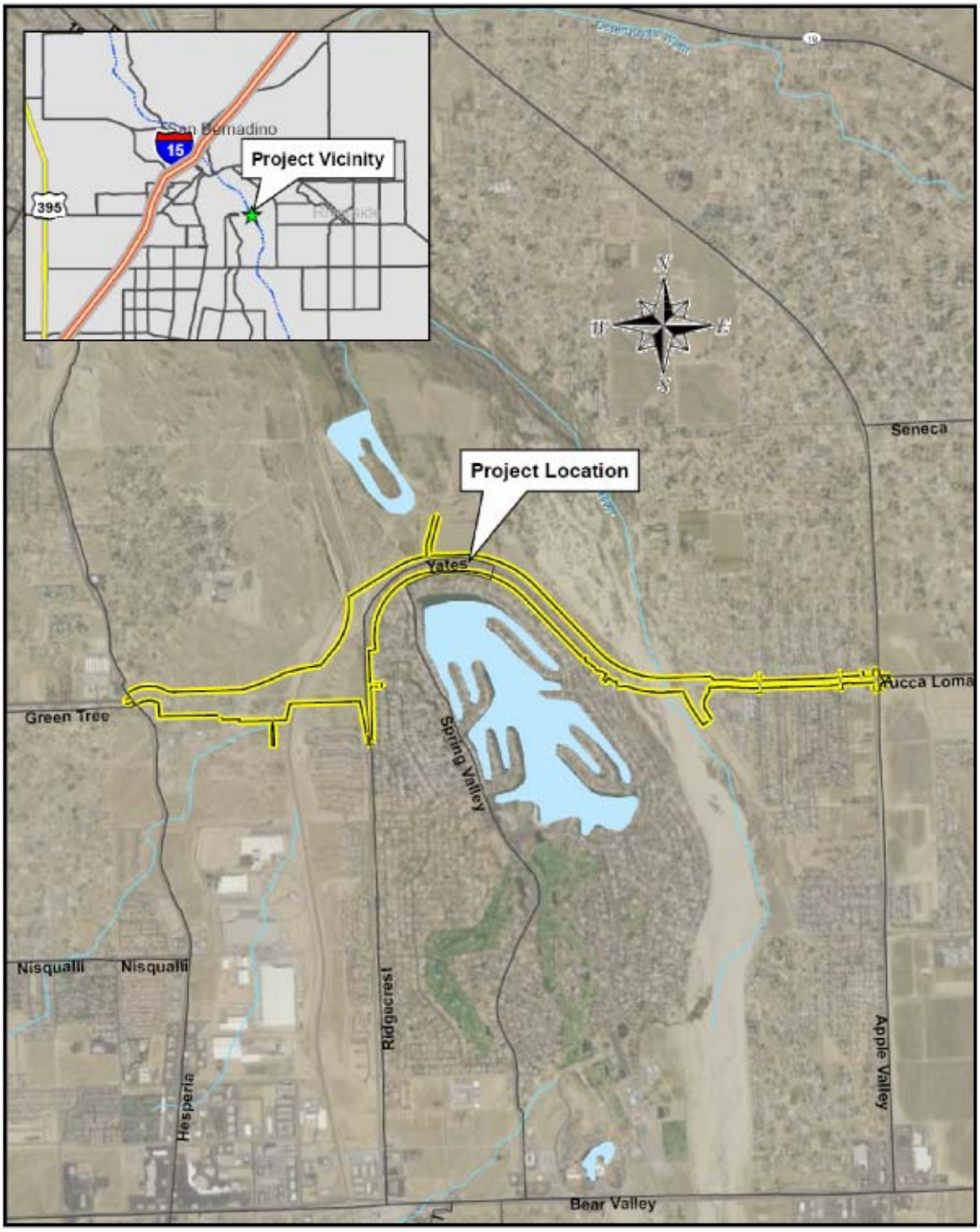

Figure 2-1: Vicinity Map

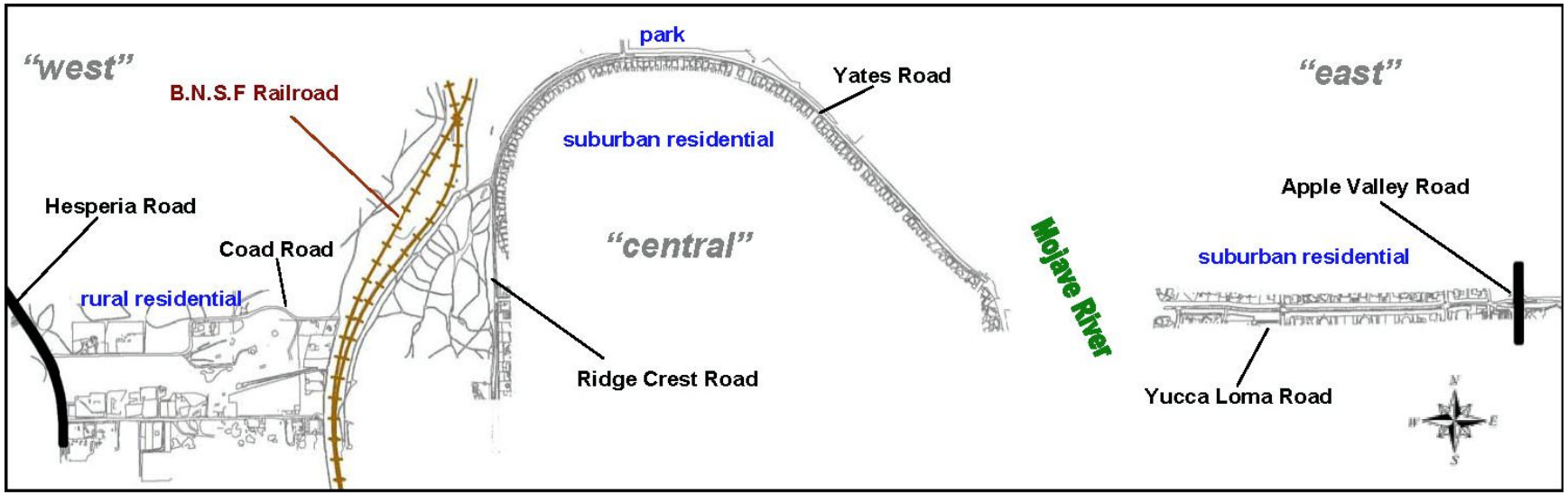

Figure 2-2: Project area – existing configuration

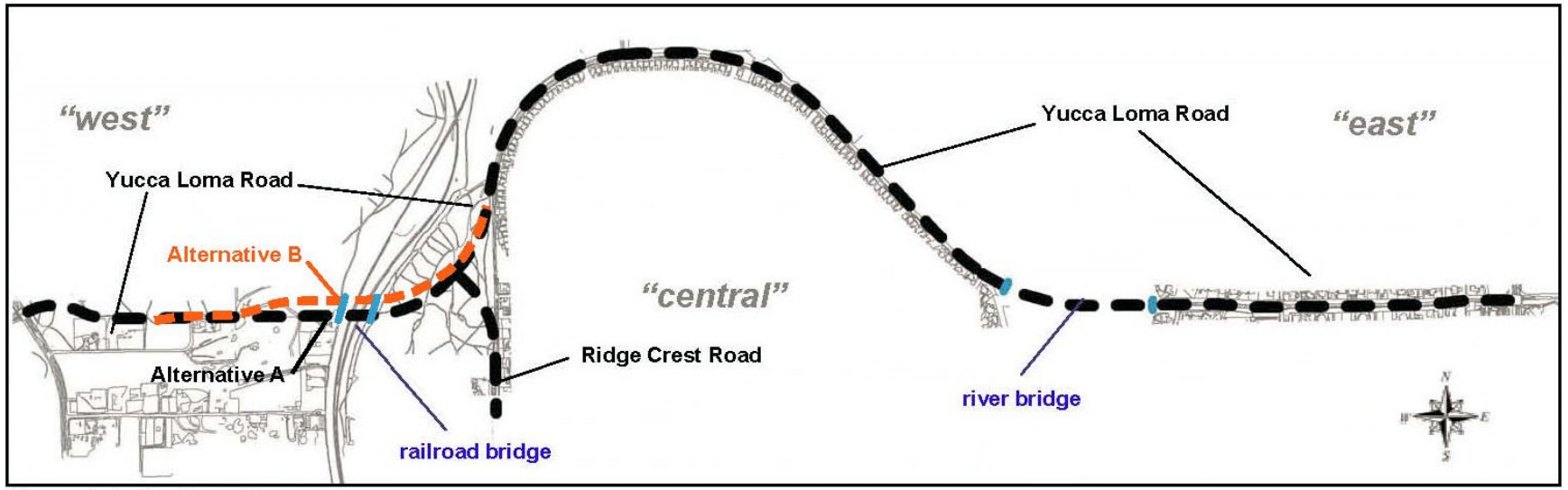

Figure 2-3: Project alignments

Chapter 3. Fundamentals of Traffic Noise

The following is a brief discussion of fundamental traffic noise concepts. For a detailed discussion, please refer to the Caltrans Technical Noise Supplement (TeNS) (Caltrans 1998), a technical supplement to the Protocol that is available on the Caltrans Web site (http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf).

3.1. Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path between the source and receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

3.2. Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for human hearing is generally between 20 Hz and 20,000 Hz.

3.3. Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (μPa). One μPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 μPa. Because of this huge range of values, sound is rarely expressed in terms of μPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for many is about 0 dB, which corresponds to a pressure level of 20 μPa.

3.4. Addition of Decibels

Because the decibel is a logarithmic unit, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same condition. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB – rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than a single source.

3.5. A-Weighted Decibels

The decibel scale alone does not adequately characterize how we (humans) perceive noise. The dominant frequencies of a sound have a substantial effect on our response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness of the sound is determined by the characteristics of hearing.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude at higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on our sensitivity to those frequencies. An "A-weighted" sound level (expressed in units of dBA) is then computed based on this information.

The A-weighting network approximates the frequency response of average human hearing when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments tend to correlate well with A-weighted levels. Other weighting networks have been devised to address high noise levels or other special characteristics (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway-traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels (dBA). Table 3-1 describes typical A-weighted noise levels for various noise sources.

Table 3-1. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	**— 70 —**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing

Source: Caltrans 1998.

3.6. Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3 dB increase. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured.

Under controlled conditions in an acoustical laboratory, trained, healthy human hearing is able to discern 1 dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency range (1,000 Hz–8,000 Hz). In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in level, would generally be perceived as barely detectable.

3.7. Noise Descriptors

Noise in our daily environments fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. The temporal distribution of some noise levels vary widely, while others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$) is the energy average of A-weighted sound levels occurring during a one-hour period, and is the basis for the noise abatement criteria (NAC) used by Caltrans and FHWA.

- **Percentile-Exceeded Sound Level (L_n):** L_n represents the sound level exceeded "n" percent of the time (e.g., L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time).

- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.

- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period with a 10 dB penalty applied to sound levels occurring during nighttime hours (10 p.m.-7 a.m.).

- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period with a 10 dB penalty applied to sound levels occurring during the nighttime hours (10 p.m.-7 a.m.) and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours (7 p.m.-10 p.m.).

3.8. Sound Propagation

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

3.8.1. Geometric Spreading

Sound from a localized source (i.e., a 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, which approximates a line source. 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.

3.8.2. Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds 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 feet. For acoustically hard sites (i.e., sites with a reflective ground surface between the source and the receiver, 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 receiver; 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 attenuation rate of 4.5 dB per doubling of distance.

3.8.3. 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 feet) from the highway 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.

3.8.4. Shielding by Natural or Man-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and man-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5

dB of noise reduction or insertion loss. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

Chapter 4. Federal Regulations, State & Local Policies

This report focuses on the requirements of 23 CFR 772, as discussed below.

4.1. Federal Regulations

4.1.1. 23 CFR 772

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I or Type II projects. FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.

Type I projects include those that create a completely new noise source, as well as those that increase the volume or speed of traffic or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway; or the widening of an existing ramp by a full lane width for its entire length. Projects unrelated to increased noise levels – such as striping, lighting, signing, and landscaping projects – are not considered Type I projects.

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project sponsor "consider" noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the ambient noise level (a "substantial" noise increase). 23 CFR 772 does not specifically define the terms "substantial increase" or "approach." These criteria are defined in the Protocol as presented below.

Table 4-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Table 4-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA-L_{eq}[h])	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in categories A or B above
D	—	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

In identifying noise impacts, primary consideration is given to exterior areas of frequent human use. In situations where there are no exterior activities, or where the exterior activities are far from the roadway or physically shielded in a manner that prevents an impact on exterior activities, the interior criterion (Activity Category E) is used as the basis for determining a noise impact.

4.2. State Regulations and Policies

4.2.1. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The NAC specified in the Protocol are the same as those specified in 23 CFR 772. The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA. The Protocol also states that a sound level is considered to approach a NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

The TeNS to the Protocol provides detailed technical guidance for the evaluation of highway traffic noise. This includes field measurement methods, noise modeling methods, and report preparation guidance.

4.2.2. Section 216 of the California Streets and Highways Code

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact would occur if, as a result of a proposed freeway project, noise levels exceed 52 dBA $L_{eq}(h)$ in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or other noise-sensitive spaces. This requirement does not replace the "approach or exceed" NAC criterion for FHWA Activity Category E for classroom interiors, but it is a requirement that must be addressed in addition to the requirements of 23 CFR 772.

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA $L_{eq}(h)$. If the ambient noise exposure exceeds 52 dBA $L_{eq}(h)$ prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the cumulative noise exposure to the level that existed prior to construction of the project.

4.3. Local Regulations and Policies

4.3.1. General

Federal and state regulations and policies regarding highway noise generally preempt local noise ordinances. Local general plans, however, provide guidance regarding compatibility of highway noise with various land uses (e.g., residential), and actions that can be taken within and by the local jurisdiction. Below are excerpts from Noise Elements of General Plans applicable to this project.

4.3.2. Town of Apple Valley

The Noise Element of the Town of Apple Valley General Plan recognizes that future highway development will increase noise levels within the Town.

> Due to the lack of other constraints in Apple Valley, many of the major streets are very wide or will ultimately be very wide. This configuration permits improved traffic circulation but at the expense of residential properties nearby. Because of the wide, high-volume configuration of the major streets, development standards will need to be provided to mitigate these roadways.

The Noise Element further recognizes that implementation of the land use policy will further increase noise levels within the Town.

> The implementation of the land use policy outlined in the Land Use Element and detailed on the Land Use Policy Map will have an impact on the future noise environment in several ways. First, future development identified in the Land Use Element will result in increased traffic on the local system of roadways resulting in an incremental increase in noise.

The noise element has further quantified projected noise levels on major roads within the town, estimating that the CNEL 70 contour will lie 63 feet away from Yucca Loma Road, with the CNEL 65 contour following at 135 feet from the road.

The town has established the following goals and policies in pursuit of mitigating highway noise:

> GOAL N-1: The Town will incorporate noise considerations into its various decisions in order to mitigate existing adverse noise conditions and establish noise-compatible land use for future developments.
>
> Policy N-1.3: The Town will include noise-mitigation measures in the design of new roadway projects.
>
> Policy N-1.4: Coordination among Town and County agencies involved in noise abatement will be established and maintained.

4.3.3. City of Victorville

The Noise Element of the City of Victorville General Plan identifies four major noise-related issues, one of which recognizes the impact of increased traffic:

> Increased development will result in corresponding increases in vehicular traffic on the arterial roads, and as a result intra-city traffic will continue to be the predominant source of noise in the planning area.

Most of the policies set forth in the noise element address compatibility of new development; however, three policies specifically address highway noise:

> POLICY 1.3: The City will include noise mitigation measures in the design and use of new roadway projects.
>
> Imp. 1: The City will continue to use special paving materials.
>
> Imp. 2: The City will continue to assess appropriate truck routes.

> POLICY 1.4: Establish and maintain coordination, where applicable, among local, State and Federal agencies involved in noise abatement.
>
> Imp. 2: The City will continue to review and comment, when appropriate, upon discretionary projects from adjacent local jurisdictions.

Policy 1.3 is repeated as policy 2.3. Note that both of these policies address the use of special paving materials.

4.3.4. San Bernardino County

Goal N-1 of the San Bernardino County Noise Element of the General Plan sets forth a broad objective regarding noise abatement, and reads as follows:

> The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.

The policies set forth in pursuit of this goal focus primarily on limiting new residential and commercial development so as to avoid incompatible adjacent land uses. The only policy which specifically addresses highway noise, N-1 .5, reads as follows:

> Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.

Goal N-2 sets forth an even wider ranging objective, and reads simply as follows:

> The County will strive to preserve and maintain the quiet environment of mountain, desert and other rural areas.

The two policies set forth in pursuit of this goal are as follows:

> N 2.1: The County will require appropriate and feasible on- site noise attenuating measures that may include noise walls, enclosure of noise generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.
>
> N 2.2: The County will continue to work aggressively with federal agencies, including the branches of the military, the U.S. Forest Service, BLM, and other agencies to identify and work cooperatively to reduce potential conflicts arising from noise generated on federal lands and facilities affecting nearby land uses in unincorporated County areas.

Chapter 5. Study Methods and Procedures

5.1. Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed project. Land uses in the project area were categorized by land use type (Activity Category) as defined in Table 4-1, and the extent of frequent human use. As stated in the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Therefore, vacant lands, commercial establishments without any exterior recreational or eating areas, and any other such land uses were not considered in this study.

Short-duration measurement locations were selected to represent each major developed area within the project area and to serve as representative modeling locations.

5.2. Field Measurement Procedures

A field noise study was conducted in accordance with recommended procedures in TeNS. The following is a summary of the procedures used to collect data on the existing noise environment.

5.2.1. Short-Term Noise Measurements Conducted by Medlin & Associates, Inc.

Short-duration ambient noise monitoring was conducted by Medlin & Associates, Inc. on March 5, April 10, and June 11, 2008, at the twenty locations identified in Figure 6-4 as Sites A-D and H-W. These locations were primarily on residential properties (Category B), and were constrained by availability of access permission. Measurement locations on the west side were not strictly on residential property, but adequately represent ambient noise at the few existing residences there. Similarly, other measurements were also taken which do not strictly correspond to a modeled receiver. The purpose of those measurements was to better define the ambient noise environment in the area or approximate a modeled receiver. These nonspecific measurements are identified with the "MX" nomenclature in Table 6-1 below, while all other measurements are identified with their modeled receiver name. One measurement taken in front of the fire house (on the east side) was for the purposes of estimating interior noise (Category E). Ambient measurements were not conducted on any commercial property due to the lack of any exterior area of frequent human use.

Measurements were taken using Larson Davis 824 Type 1 integrating sound level meters and spectral analyzers – fitted with wind screens, and calibration-checked before and after each measurement set. Microphones were set 5 feet above ground. Measurements were nominally 15 minutes in duration – with some extended-duration, special-purpose measurements.[4]

Noise level data were automatically recorded as 1-minute L_{eq} values. Field staff attended each meter, noting extraneous noise sources and other pertinent data. Significant extraneous noises were deleted from the measurement results. Where appropriate and feasible, concurrent traffic counts were collected using manual counting devices. Vehicles were classified according to their type, with school buses and recreational vehicles being classified as medium trucks.

Sample weather data were collected for each measurement set using an Extech 45158 hand-held weather instrument. On March 5 at 11:00 a.m., the temperature was 60 degrees, relative humidity 24%, and winds at 10 mph, gusting occasionally to 15 mph. On April 10 at 12:40 p.m., the temperature was 69 degrees, relative humidity 29%, and winds 4-8 mph. On June 11 at 8:40 a.m., the temperature was 68 degrees, relative humidity 30%, and winds at 5 mph; at 5:25 p.m. the temperature was 90 degrees, relative humidity 18%, and winds still at 5 mph. As mentioned above, extraneous noises (e.g., microphone rumble from wind gusts) were removed from the collected measurement data to present an accurate depiction of ambient noise exposure.

5.2.2. Short-Term Noise Measurements Conducted by Bollard Acoustical Consultants, Inc.

Additional short-term (15 minute) noise level measurements were completed by Bollard Acoustical Consultants, Inc. between 7-10 a.m. on January 29, 2009. Ambient noise level measurements were completed on existing residential property at Sites E-G as shown in Figure 6-4. The measurements were completed to supplement that data collected by Medlin & Associates, Inc.

Measurements were taken using a Larson Davis Laboratory (LDL) Model 820 Type 1 integrating sound level meter fitted with an LDL Model 2560 ½" microphone. The measurement microphone was placed 5 feet above the ground and fitted with a wind screen.

[4] Primarily train noise

Long-term (24 hour) noise measurements were deemed unnecessary for this project.[5]

5.3. Traffic Noise Level Prediction Methods

Projected traffic noise levels were modeled for the build-out (year 2035) configurations (Alternatives "A" and "B") using the FHWA TNM 2.5 traffic noise modeling software. Schematic diagrams of the modeled configurations (without abatement) are shown in Figure 5-1 through Figure 5-3 below. Blue dots represent modeled receiver locations, green lines represent modeled terrain, and red lines represent existing walls. Traffic signals were modeled where indicated. More detailed diagrams are provided in Appendix F. Key inputs to the traffic noise model are the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receivers. The specific parameters modeled for this project are discussed below.

The build-out configurations were modeled according to the 1688 series drawings provided by Dokken Engineering.[6] Traffic data were obtained from the draft traffic report or other methods as detailed below.[7] Table A-1 in Appendix A summarizes the traffic volumes and assumptions used for modeling the project build-out configurations. It should be noted that the traffic data is identical for both project alternatives. A formal no-build/existing model was not developed, as existing traffic volumes are too low and traffic conditions too varying to reliably model. However, an existing-condition noise model was developed in order to establish ambient noise levels at non-measured receivers, and is discussed in Section 6.3.

5.3.1. Traffic Parameters

Build-out traffic volumes were obtained from peak-hour intersection analyses in the draft traffic report. The p.m. peak hour was modeled, as it is projected to have overall higher traffic volumes throughout the project than the a.m. peak. Two modeling assumptions were:

1. The full volume from the Hesperia Road intersection would carry all the way across the railroad tracks to the Ridge Crest Road intersection, ignoring future intersections on the west side of the project;

2 The full volume from the Apple Valley Road intersection would carry all the way across the River to the Fortuna Lane intersection, ignoring existing residential

[5] Per April 3, 2008 meeting with Caltrans (Goodhue, et al)
[6] Dokken Engineering. 2008a
[7] Urban Crossroads. 2008

intersections along Yucca Loma Road; this assumption results in about 16% greater westbound traffic, and 8% greater eastbound traffic crossing the River than is predicted in the traffic report.

Vehicle speeds for all vehicle types were assumed to be 45 mph for the entire length of Yucca Loma Road.[8] This value is based upon a "special speed limit" as determined by the Apple Valley Town Council.[9] Ridge Crest Road, Hesperia Road, and Apple Valley Road were modeled at their current posted speed limits of 55 mph, 45 mph, and 55 mph, respectively.[10] Note that no speed limits are currently posted on either Yates Road or Yucca Loma Road.

Modeled vehicle type mix assumed 96% automobiles, 3% medium trucks, and 1% heavy trucks. This distribution was based on analyzing existing conditions at the two intersections terminating the project, as current traffic on existing Yates Road and Yucca Loma Road was assumed to provide a poor indicator of future type mixes.[11] Between the two intersections, the p.m. peak-hour type-mix was roughly the same on Hesperia Road and Apple Valley Road (~1-2% medium trucks and ~0-0.25% heavy trucks). Green Tree Boulevard (which accesses Interstate 15) experienced an eastbound mix of approximately 3% medium trucks and 1% heavy trucks. As overall traffic volume on this road is on the same order of magnitude as the two above, these were considered valid comparative values. Considering the conservative nature of these values, and that the project would essentially be an extension of Green Tree Boulevard, the 96%-3%-1% type mix was used in modeling Yucca Loma Road. This mix was also used to model Ridge Crest Road, as it was assumed that a large percentage of recreational vehicle traffic would continue to access Mojave Narrows Regional Park via this route. One final assumption is that the completed project would not be a designated truck route, and no allowance was therefore made for additional heavy-truck traffic.

5.3.2. Road Configurations

Yucca Loma Road and Ridge Crest Road were both modeled with four lanes and a 16-foot wide median. Apple Valley Road (in the vicinity of the project) was modeled as four lanes separated by an 8-foot wide median. Hesperia Road was similarly modeled, but with a 14-foot wide median. Small access roads into the residential areas were not

[8] Lowering heavy-truck speeds to 45 mph on all roads resulted in less than a 1 dB decrease in predicted noise levels at all receivers (0.6 dB maximum noise level reduction).
[9] Apple Valley. 2007
[10] Apple Valley Road is currently undergoing construction near the project, and has a reduced speed limit of 35 mph.
[11] See pages B202 and B268 in the draft traffic report.

modeled (including the modified Chinquapin Drive). All lanes were modeled 12-feet wide with a pavement type of "average." Sections of Yucca Loma Road on the bridges over the railroad tracks and River were modeled "on structure."

5.3.3. Traffic Control Devices

In accordance with the traffic report, signals were modeled at the intersections of Hesperia Road, Ridge Crest Road, and Apple Valley Road.[12] It was assumed that 40% of Yucca Loma Road traffic would be stopped by the signals at Hesperia Road and Apple Valley Road. Similarly, it was assumed that 40% of traffic on Hesperia Road and Apple Valley Road would be stopped at these two intersections. For the smaller intersection at Ridge Crest Road it was assumed that only 20% of Yucca Loma Road traffic would be stopped by this signal. On Ridge Crest Road, it was assumed that 100% of all southbound traffic would be stopped by the signal at the intersection with Yucca Loma Road.

5.3.4. Terrain Lines

Terrain lines were modeled where 1) ground elevation was required or, 2) there are rapid physical terrain undulations exceeding five feet in elevation. As shown in Figure 5-1 through Figure 5-3, terrain lines were only modeled where a potentially affected receiver was nearby. Terrain lines were primarily modeled on the west side of the project and around the railroad tracks where existing terrain is severe and the new roads would require substantial cutting or filling. Sufficient terrain lines were also modeled along existing Ridge Crest Road to define yard elevations with respect to the road (particularly the stair-stepped yards north of Chinquapin Drive) and along Yates Road for the same reason. Ancillary terrain lines were modeled on the riverbanks, the riverbed, and in two yards on existing Yucca Loma Road.

5.3.5. Existing Barriers

Existing walls were modeled according to their current configuration, as shown in Figure 5-1 through Figure 5-3. These walls lie along the existing Ridge Crest Road, Yates Road, and Yucca Loma Road. Only those walls were modeled which may have an impact on future traffic noise, comprising in general only those walls exterior to a property and facing an existing or proposed roaway. Walls interior to a property (behind an exterior wall) were typically not modeled. The exceptions to this rule include those which form a

[12] Signals originally called for at Tahoe Lane and Fortuna Lane have been subsequently discarded; see Dokken Engineering 2008b.

substantially shallow angle with respect to an exterior wall, those which define a significant terrain undulation, and those which cap the end of an exterior wall.

Similarly, existing buildings were generally not modeled as barriers. This rule is particularly relevant along Yates Road where nearby houses partially shield portions of small yards. In order to obtain overall consistent and useful results for these areas along Yates Road, these houses were not included in modeling as they would represent unique and isolated instances and provided no useful information. Ignoring the barrier effects of these houses provided more uniform, comparative results. Significant deviation from this rule did occur along existing Yucca Loma Road where houses at intersections form an integral part of shielding provided to rear yards. In these cases, the house was included as a noise barrier in the model, and conservatively modeled as 10 feet in height. Likewise, the fire station and existing shops at the intersection of Yucca Loma Road and Apple Valley Road were modeled as noise barriers (at their estimated heights), as they offer some protection for nearby residences against Apple Valley Road noise.

5.3.6. Abatement Barriers

Abatement barriers were modeled as necessary and appropriate along the entire length of the project alignments. Barriers were modeled on private property if their placement within the right of way would provide no benefit. Existing walls incorporated into noise abatement were modeled beginning at their existing height, with subsequent heights ranging from eight to sixteen feet in 2-foot increments. New barriers were modeled in heights ranging from 6-16 feet in 2-foot increments.

On the west side, sound walls were modeled primarily along the edges of private properties. Only one wall was modeled in the right of way; however, results indicate that it would provide no benefit.

In the central area, no new noise abatement was considered along Ridge Crest Road as the existing sound wall here in conjunction with the depressed yard elevations was considered adequate mitigation. Along the Yates Road portion of the alignments, a new sound wall was modeled at the edge of the pavement, lying approximately 8 feet beyond the existing wall. This modeled wall affords shielding to the residential backyards which the shorter existing wall cannot provide. This wall was extended across the Mojave River bridge, terminating on the east bank of the River.

On the east side, existing sound walls were modeled as noise abatement, raising their heights in 2-foot increments. No new sound walls were modeled with the exception of a roadside wall in front of the school playground, and extensions of two walls fronting the riverbank.

5.3.7. Receivers

One-hundred and thirty-five receivers were modeled for the assessment of Build Alternative "A," with an additional three receivers included in the assessment of Build Alternative "B." These receivers correspond primarily to residential land uses, and incorporated most of the ambient noise monitoring locations. Receiver placement was based on the nature of the site, taking into account existing barriers and terrain. All receivers were modeled 5 feet above ground.

Modeled receiver positions are shown in Figure 5-1 through Figure 5-3. Nomenclature is based on receiver location, with a sequential suffix attached which increases from west to east. Receivers also have an "N" or "S" identifier depending on whether they lie north or south of the project alignment, respectively. Receivers with unique names are those representing the tennis courts on Ridge Crest Road, the school playground, and the fire station. Detailed views of receiver positions and names are provided in Appendix F.

Modeled receivers on the west side of the project consist of proposed new development north of the project alignments and existing residences on the end of existing Coad Road. The land north of the alignments is currently undeveloped, but was planned, designed, and programmed before the date of public knowledge.[13] Existing residences on the south side of the alignment would be removed for Alternative "A."[14] Three residences at the end of existing Coad Road would remain under Alternative "B." The existing residential development lying to the south and west of the tennis court was not modeled, as houses here are at least 650 feet from the Yucca Loma Road alignments, and at least 500 feet from the point where Ridge Crest Road diverges from its current alignment.

Receivers in the central area of the project (along existing Ridge Crest Road and Yates Road) were modeled at approximately every fourth house. This approach allowed observation of changes to the noise environment with varying terrain along this segment, particularly near the Ridge Crest area. It also showed the effect as the relative elevation of the residences changes with respect to the road, and as the distance varies between the residences and the road. Particular attention was given to residences near the existing railroad bridge. In areas further along Yates Road, the relative configuration of the residences to the road becomes uniform. Here the receivers were randomly placed in the backyards to vary their distance from the road and the existing wall in an attempt to gauge the effects of this wall. In some cases, multiple receivers were modeled in one

[13] Per September 29, 2008 phone call with Dokken Engineering (Hossenion)
[14] Ibid.

yard for this specific reason. Receivers were also modeled at all points where ambient measurements were conducted on residential property. Finally, one unique receiver was modeled at the tennis court on the west side of Ridge Crest Road.

A similar approach was used to model receivers on the east side of the project, along the existing Yucca Loma Road. Multiple receivers were modeled in some yards which have non-uniform exposure to the road or which have significantly varying terrain or other unique configuration attributes. Multiple receivers were also modeled for the two properties immediately adjacent to the alignment which front the River, as they would have greater exposure to the roadway than other residences in this section. Three receivers were used to model the school playground, providing adequate coverage of its breadth and depth. One receiver was used to model the front exposure of the firehouse – at the location where ambient noise measurement was conducted. This receiver does not represent an exterior area of frequent human use, but was used instead to estimate interior noise exposure.

Inspection of the commercial shops on the southwest corner of Yucca Loma Road and Apple Valley Road revealed no exterior eating or recreational areas. Therefore, these shops do not qualify for noise abatement and were not considered sensitive receivers for this study.

For reasons discussed in section 6.3, calibration of modeled receivers was not performed.

5.3.8. Miscellaneous

The default ground was modeled as "hard soil," representing the ground type found throughout the project site.[15] Weather conditions were modeled according to the TNM defaults of 68° and 50% relative humidity. Noise model outputs represent one-hour averages (L_{eq}[h]). An origin was assigned at (6700000, 2000000) in the state plane.

[15] Per April 3, 2008 meeting with Caltrans (Goodhue, et al).

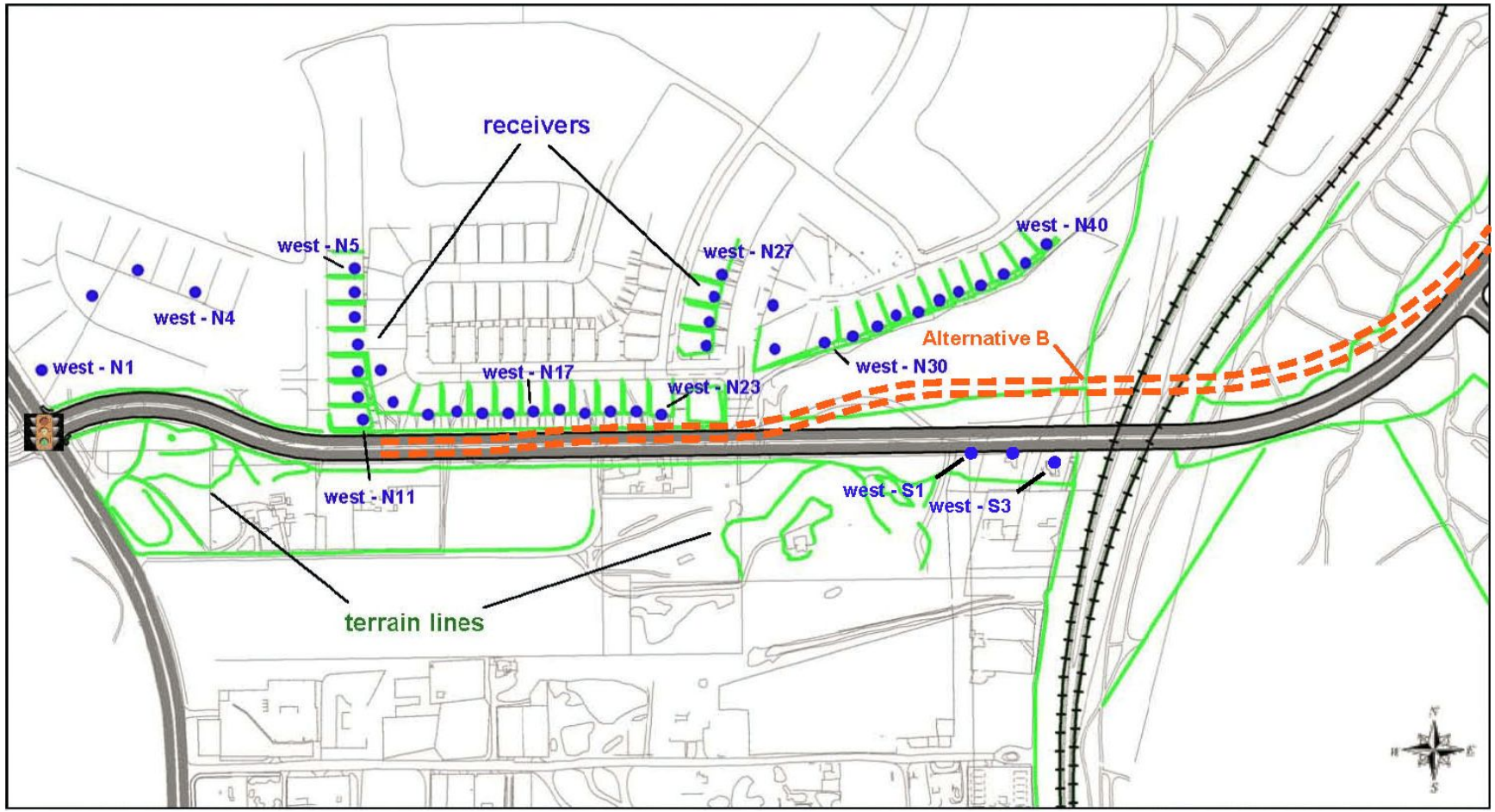

Figure 5-1: Modeled configuration – west side

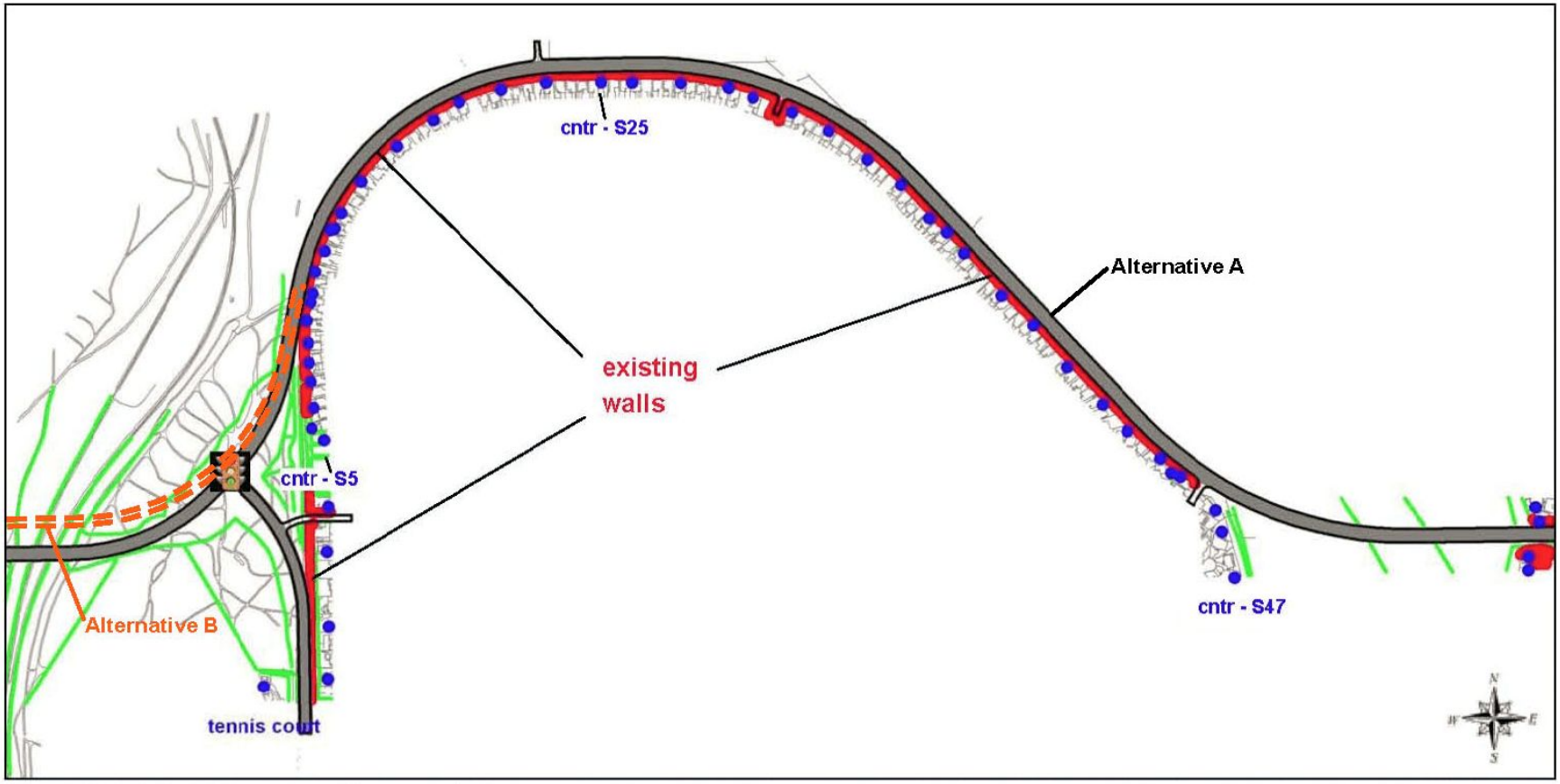

Figure 5-2: Modeled configuration – central

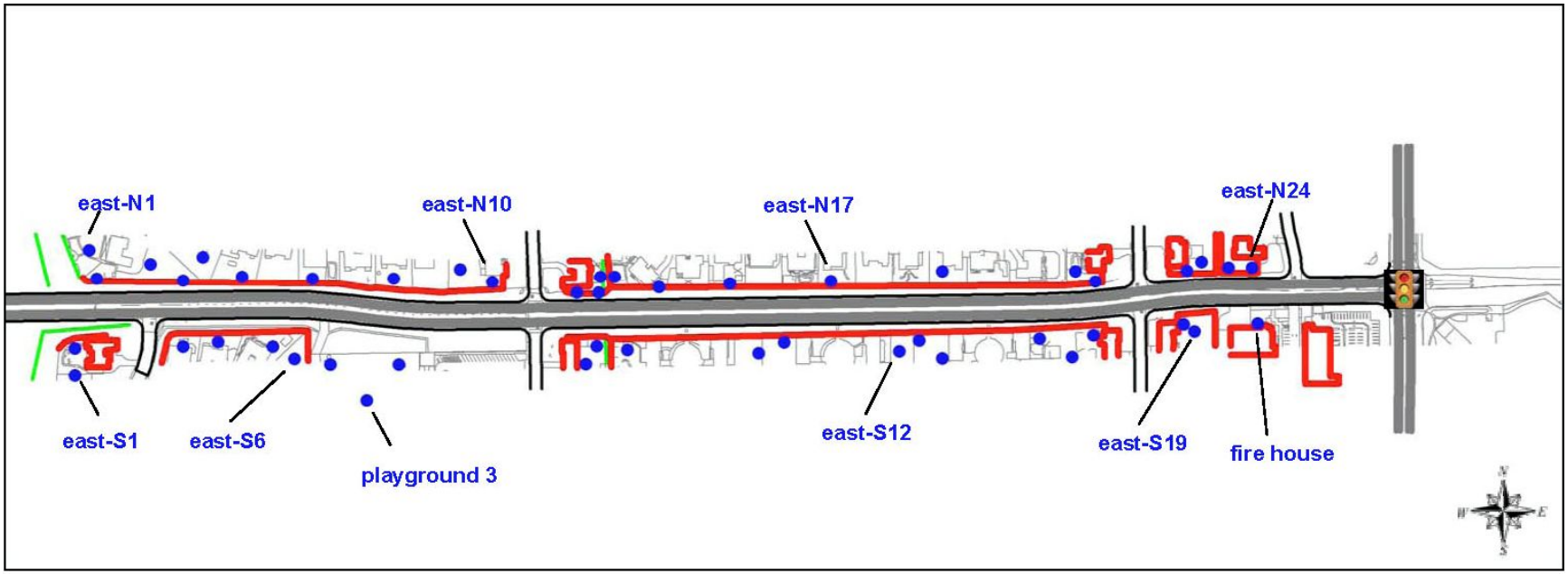

Figure 5-3: Modeled configuration – east side

5.4. Train Noise Prediction Methods

A heavily used railroad line runs through the project area, necessitating the inclusion of rail operations in noise projections. As shown in Figure 5-4, trains were modeled as line-arrays, with a 50-foot separation between sources. The arrays were only modeled where the tracks are in view of nearby receivers (the west track south of the bridge is obscured from receivers along Yates Road. See Figure 6-11 in Section 6.2.2 below). Barriers consist of existing walls and pertinent terrain lines, and were modeled using simple Fresnel diffraction over the most effective barrier. No allowance for ground absorption was included.

Each modeled point source emits the spectrum shown in Figure 5-5, representing actual train noise measured on-site. It is equivalent to 60.9 dBA at 50 feet. This value is derived from the adjusted $L_{eq}(h)$ ambient measurement at 13960 Hidden Valley Road (receiver "Cntr - S17"), as described in Section 6.2.2 below. The measured value represents the $L_{eq}(h)$ produced by four trains per hour at this location, and has a value of 60.5 dBA. Thus, summing all of the array sources together produces a train-only noise level of 60.5 dBA $L_{eq}(h)$ at this particular receiver. This same source spectrum produces a combined level of 63.6 dBA $L_{eq}(h)$ at the ambient measurement point on the east end of Coad Road, which is in excellent agreement with actual measurements (see Section 6.2.2 below).

This line-array model was then used to predict train-only noise levels at all receivers in the vicinity of the railroad tracks, with the results presented in Table 6-2 in Section 6.2.2 below. For the most part, the only receivers affected by train noise are those on the west side, and those between the Ridge Crest/Yates merge and Park Road in the central section. Substantial terrain blocks the sound path between the train and receivers along existing Ridge Crest Road, while distance and intervening structures diminish train-noise impacts at receivers east of Park Road. All receivers east of Park Road are considered unaffected by railroad activity.

The modeled train-only levels were then used to establish existing noise levels in Section 6.3, and also added to predicted traffic noise levels in Chapter 7 to obtain a composite projected noise level at build-out.

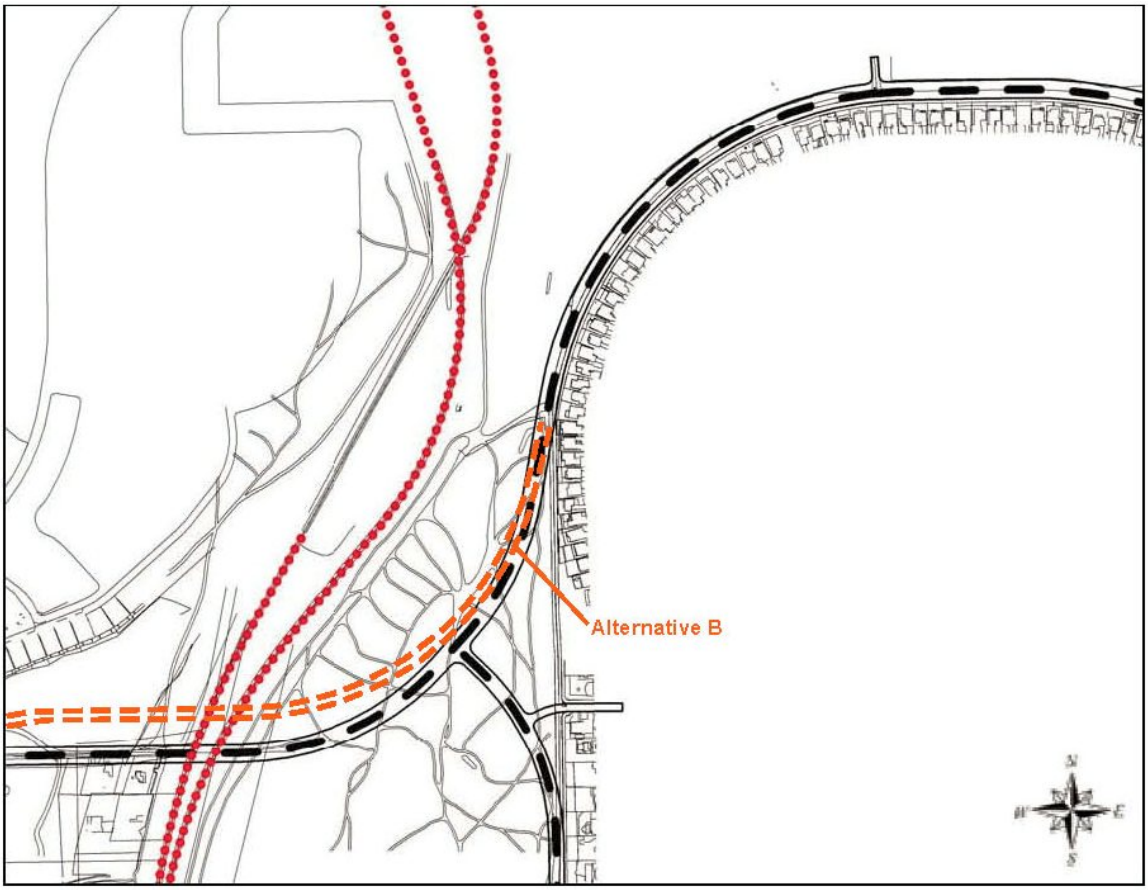

Figure 5-4: Railroad operations modeled as line-arrays (red dots)

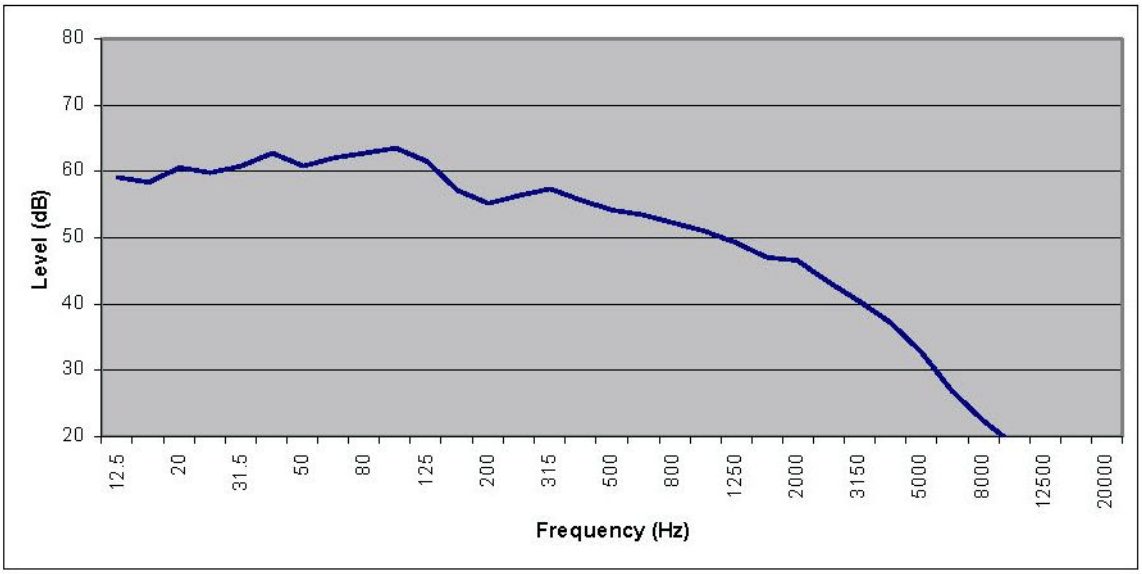

Figure 5-5: Modeled train-noise spectrum

5.5. Methods for Identifying Traffic Noise Impacts and Consideration of Abatement

Traffic noise impacts are considered to occur at receiver locations where predicted project build noise levels are at least 12 dB greater than no-build noise levels, or where predicted project build noise levels approach or exceed the NAC for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 CFR 772 and the Protocol.

According to the Protocol, abatement measures are considered acoustically feasible if a minimum noise reduction of 5 dB at impacted receiver locations is predicted with implementation of the abatement measures. In addition, barriers should be designed to intercept the line-of-sight from the exhaust stack of a truck to the first tier of receivers, as required by the Highway Design Manual, Chapter 1100. Other factors that affect feasibility include topography, access requirements for driveways and ramps, presence of local cross streets, utility conflicts, other noise sources in the area, and safety considerations. The overall reasonableness of noise abatement is determined by considering factors such as cost; absolute predicted noise levels; predicted future increase in noise levels; expected noise abatement benefits; build date of surrounding residential development along the highway, or if the highway project involves new construction; environmental impacts of abatement construction; opinions of affected residents; input from the public and local agencies; and social, legal, and technological factors.

The Protocol defines the procedure for assessing reasonableness of noise barriers from a cost perspective. A cost-per-residence allowance is calculated for each benefited residence (i.e., residences that receive at least 5 dB of noise reduction from a noise barrier). The 2007 base allowance is $36,000.[16] Additional allowance dollars are added to the base allowance based on absolute noise levels, the increase in noise levels resulting from the project, achievable noise reduction, the date of building construction in the area, or if the highway project involves new construction. Total allowances are calculated by multiplying the cost-per-residence by the number of benefited residences. If the total allowance for all evaluated noise barriers is more than 50% of the estimated construction cost, the allowance per residence is modified to a reduced value.

[16] Per April 3, 2008 meeting with Caltrans (Goodhue, et al).

Chapter 6. Existing Noise Environment

6.1. Existing Land Uses

As described in Section 2.2 above, the project area is naturally divided into three major sections, herein called "west," "central," and "east." These sections are physically isolated from each other, in that there is no existing conduit for vehicle traffic between them.[17] The west and central sections are divided by the BNSF railroad tracks, while the central and east sections are divided by the Mojave River. Each section is described below. Additional descriptive photographs are found in Appendix E.

6.1.1. West Side

The west side comprises everything west of the BNSF railroad tracks out to the project termination at Hesperia Road (see Figure 2-2 above). It is currently a rural area, with a few scattered residences (Category B) and commercial/industrial facilities along the existing Coad Road. At least one of the residences is presently abandoned. All of the existing residences on existing Coad Road would be removed under Build Alternative "A."[18] Four residential properties at the end of existing Coad Road would remain under Build Alternative "B." Land north of the alignment is currently undeveloped, but is the site of a future residential project, and is considered in this assessment. An existing residential development lies above the extreme west end of the project (near the future intersection with Hesperia Road), with the nearest residence lying about 250 feet away from the future road edge. No road currently exists on the west side of the project. Traffic on the existing Coad Road is sparse.

6.1.2. Central

The central section comprises the area between the BNSF railroad tracks and the River (see Figure 2-2 above). The existing Yates Road defines the approximate alignment of the future Yucca Loma Road up to the point where it meets the existing Ridge Crest Road. This area is densely populated with residences (Category B) surrounding Spring Valley Lake. The Mojave Narrows Regional Park lies to the north; however, recreational park uses are sufficiently removed from the proposed alignment that the park is excluded from this study. Existing traffic on these roads is sparse, particularly on Yates Road, as local residents appear to prefer use of the roads interior to the housing development. Traffic volume on Ridge Crest Road appears slightly higher due to vehicles accessing the

[17] The exception is an occasional four-wheel drive vehicle, which crosses the riverbed.
[18] Per September 29, 2008 phone call with Dokken Engineering (Hossenion)

Park. Yates Road currently dead-ends at the River, just past the intersection of Fortuna Lane.

As shown in Figure 6-1, the majority of homes in the central section of the project are elevated above Yates Road and have a direct line-of-sight to the existing and future alignments. An existing masonry wall of 5-6 feet high runs along the entire length of Yates Road. The top of this wall lies below the grading of the rear yards, providing minimal traffic noise attenuation.[19] Where Yates Road merges into Ridge Crest Road, the elevations of adjacent yards falls to approximately the same level as the road alignment, and relative elevations of adjacent yards continue to fall as Ridge Crest Road rises to the south. The roadside wall along Ridge Crest Road is irregular in its configuration, varying randomly in height and at some points not existing at all. Where the wall does exist, its effect in conjunction with the depressed lots is to provide satisfactory attenuation of traffic noise. Near the Mojave River, homes along Yates Road again fall to approximately the same elevation as the roadway. Homes along the River have no existing noise abatement, and would be fully exposed to the new road alignment.

Figure 6-1: Residential yards are elevated above top of wall for most of Yates Road

[19] Traffic noise levels will vary by position within a yard depending upon whether the line-of-sight to the roadway is blocked.

An existing residential development is located on the southwest corner of the central area. This development was not included in this study since houses here lie at least 650 feet from the new Yucca Loma Road alignments and at least 500 feet from the point where the modified Ridge Crest Road diverges from its current alignment.

6.1.3. East Side

The east side of the project lies beyond the Mojave River, extending to its terminus at Apple Valley Road (see Figure 2-2 above). The existing Yucca Loma Road would be incorporated into the new alignment, being widened and extended beyond its current terminus at the River.

The east side is primarily residential (Category B). A school with a playground (Category B) is situated along Yucca Loma Road west of Havasu Road (Figure 6-2). There is no existing noise abatement shielding this playground. A fire station lies along the south side of Yucca Loma Road near the intersection with Apple Valley Road. Though it has no exterior areas of frequent human use, it does have interior sleeping quarters and a recreation room. As such, the fire station falls under NAC Category E for interior noise. Commercial shops stand on the southwest corner of Yucca Loma Road and Apple Valley Road. These shops have no exterior eating or recreational areas, and are excluded from consideration for noise abatement. Vacant land standing on the northwest corner of this intersection is also excluded from consideration.

Traffic on the existing Yucca Loma Road is minimal, particularly near the River. There is a brief spike in traffic volumes at the beginning and end of the school day; however, its duration and intensity are insufficient to qualify these times as peak-hours.[20]

Yucca Loma Road is depressed below the grade of adjacent residences at all points west of Cochise Road, and approximately at the same grade with those beyond. Existing walls of 5-6 feet high shield all noise-sensitive locations along this corridor except the school playground and the fire station (Figure 6-3). Similar to the central area, residences along the River on the east side have no existing noise abatement overlooking the River, and would be exposed to traffic noise from this aspect.

[20] Observation of traffic accessing the school at dismissal on June 4, 2008 revealed 155 vehicles (including school buses) over a 35-minute interval, after which traffic volume quickly diminished.

Figure 6-2: School with playground (no existing noise abatement)

Figure 6-3: Existing walls shield homes on both sides of Yucca Loma Road

6.1.4. Railroad Intersection

One area of particular concern is the vicinity of the railroad tracks on both the west and central sections of the project. The frequency with which freight trains pass through here has a substantial impact on ambient noise in this area. It is further unlikely that any noise barriers constructed for mitigation of highway noise would have any appreciable impact on railroad noise. Therefore, extra measurements were taken to better define the existing impact of rail noise in this location, as described below.

6.2. Noise Measurement Results

The existing noise environment at the project site was characterized by multiple short-duration measurements. Particular attention was paid to train noise in the vicinity of the railroad tracks. Due to the low-intensity nature of the existing noise environment, 24-hour noise measurements were deemed unnecessary.

6.2.1. Short Duration Noise Monitoring

Short-duration ambient noise monitoring was conducted at the locations shown in Figure 6-4, with the results summarized in Table 6-1. For clarity of illustration, measurement locations are identified in Figure 6-4 by a single-letter label rather than by their full name. Ambient monitoring locations which correspond directly to modeled receivers are named accordingly, whereas monitoring locations which approximate modeled receivers, or otherwise help to establish the noise environment, are labeled with the "MX" nomenclature. Monitoring locations representing undeveloped land (category "D") were not included in traffic noise modeling.

Figure 6-5 provides a composite view of the overall noise environment in the project vicinity, while Figure 6-6 through Figure 6-8 provide a detailed view of monitoring locations and their respective noise levels.

Overall noise exposure levels in the project area are generally low, a consequence of the minimal existing traffic volumes. No significant air traffic or other non-road noise sources other than the trains were observed during ambient noise monitoring. Because of the low traffic volumes, it would be impractical to try to identify a peak hour for traffic on existing roads. There are brief drop-off and pick-up periods in the morning and afternoon at the elementary school on Yucca Loma Road; however, these intervals are too brief to be considered genuine peak hours. Consequently, no time-of-day adjustment has been made using measured ambient noise levels.

Observed vehicle speeds varied widely, due partly to the lack of posted speed limits on Yates Road and Yucca Loma Road. On Yates Road in particular, vehicles were observed traveling between approximately 30 mph and 60 mph, causing significant variation in measured traffic noise levels. Additionally, traffic volumes on all existing roads were considered too low to provide a reliable average noise level; therefore, modeling the existing noise environment based on existing traffic conditions was considered impractical.[21] An existing-condition noise model was developed in order to establish ambient noise levels at non-measured receivers, as discussed in Section 6.3 below.

For locations near the railroad tracks, measurement results are provided both with and without train-noise. The first value represents the raw measurement including noise from any passing trains, while the value in parentheses represents ambient noise with the trains

[21] Where appropriate, traffic counts were conducted concurrently with noise measurements, with the results provided in Table 6-1. Many counts revealed traffic volumes on the order of one vehicle per minute or less.

deleted. Train noise measurements are discussed further below. A few comments are in order regarding certain monitored locations:

1. The noise measurement and traffic count for receiver "MX-1" (A) was to establish conditions on Hesperia Road. Noise levels at this receiver are higher than would be measured at the nearby residence to the east due to the elevated point at which measurements were taken; the residence lies below and beyond a hill which blocks the line of sight to Hesperia Road. Traffic on Coad Road was not counted during this measurement, as this road would not be part of the project alignment and was not included in modeling.

2. The measured noise level for receiver "Cntr - S35" (J) is inordinately high due to vehicles moving at excessive speeds, and consequently does not correlate well with the traffic count. This value was also skewed by the proximity of ATV's and other extraneous noises which could not reasonably be deleted from the measurements.

3. Noise from two ATV's running across Park land was deleted from the measurement for receiver "Cntr - S41" (K). This measurement does not correlate well with the counted traffic volume, though it does accurately represent the ambient noise level at this location.

4. The ambient noise measurement at the fire station (T) includes some nearby construction activity and a minimal additional contribution from traffic on Apple Valley Road. Therefore, it is slightly higher than what would normally register due to traffic on Yucca Loma Road alone.

Table 6-1: Summary of Short Duration Measurements

Graph Label	Receiver Name	Address	Area	Land Use	Start Time	Duration (mins)	Measured L_{eq}	Autos	Medium Trucks	Heavy Trucks	Observed Speed (mph)
A	MX – 1	--	west	residential (B)	12:29	15	59.1	674	14	12	~45
B	MX – 2	--	west	residential (B)	11:57	15	45.7	--	--	--	--
C	MX – 3	--	west	residential (B)	11:31	16	43.4	--	--	--	--
D	MX – 4	13685 Coad	west	residential (B)	17:11	75	65.3 (a)(42.5)	--	--	--	--
E	West – N23	Lot 51	west	residential (B)	7:39	15	47.7(d)	--	--	--	--
F	West – N31	Lot 183	west	residential (B)	8:00	15	44.4(d)	--	--	--	--
G	West – N38	Lot 190	west	residential (B)	8:18	15	44.6(d)	--	--	--	--
H	Cntr – S2	13640 Hidden Valley	central	residential (B)	17:17	15	41.1(c)	--	--	--	--
I	Cntr – S5	13790 Hidden Valley	central	residential (B)	16:50	15	49.0	23	0	0	~50
J	Cntr – S16	13960 Hidden Valley	central	residential (B)	11:04	116	60.2 (a)(56.4)	173	42	0	40-50
K	Cntr – S17	13960 Hidden Valley	central	residential (B)	11:04	116	58.4 (a)(51.3)	173	42	0	40-50
L	Cntr – S25	14061 Driftwood	central	residential (B)	15:52	15	53.0	19	0	0	~40
M	Cntr – S35	13955 Driftwood	central	residential (B)	15:2 1	15	59.9	10	0	0	30-60
N	Cntr – S41	18350 Mead	central	residential (B)	14:24	15	45.5 (b)	5	1	0	30-50
O	Cntr – S45	18455 Fortuna	central	residential (B)	14:52	15	42.4	--	--	--	--
P	MX – 5	--	central	residential (B)	14:18	15	39.6	--	--	--	--
Q	MX – 6	--	east	undeveloped (D)	13:56	15	39.9	--	--	--	--
R	East – S4	18766 Kitom	east	residential (B)	11:22	10	39.4	2	0	0	~30
S	MX – 7	School Playground	east	school (B)	10:39	15	48.6	2	0	0	~30
T	East – N15	18989 Sahale	east	residential (B)	10:04	15	47.9	17	1	0	30-50
U	East – N16	19013 Sahale	east	residential (B)	10:04	15	42.9	17	1	0	30-50
V	East – N17	19063 Sahale	east	residential (B)	12:02	15	47.9	33	1	0	30-50
W	Fire House	Fire Station	east	residential (E)	12:36	15	55.2	39	0	0	30-40

(a) Noise levels inside parentheses indicate measured values with train noise deleted
(b) Noise levels do not correspond to counted traffic volumes due to deletion of extraneous noises; traffic volumes are reported for information only
(c) Traffic not visible from measurement position.
(d) Noise level measurements completed by Bollard Acoustical Consultants, Inc.

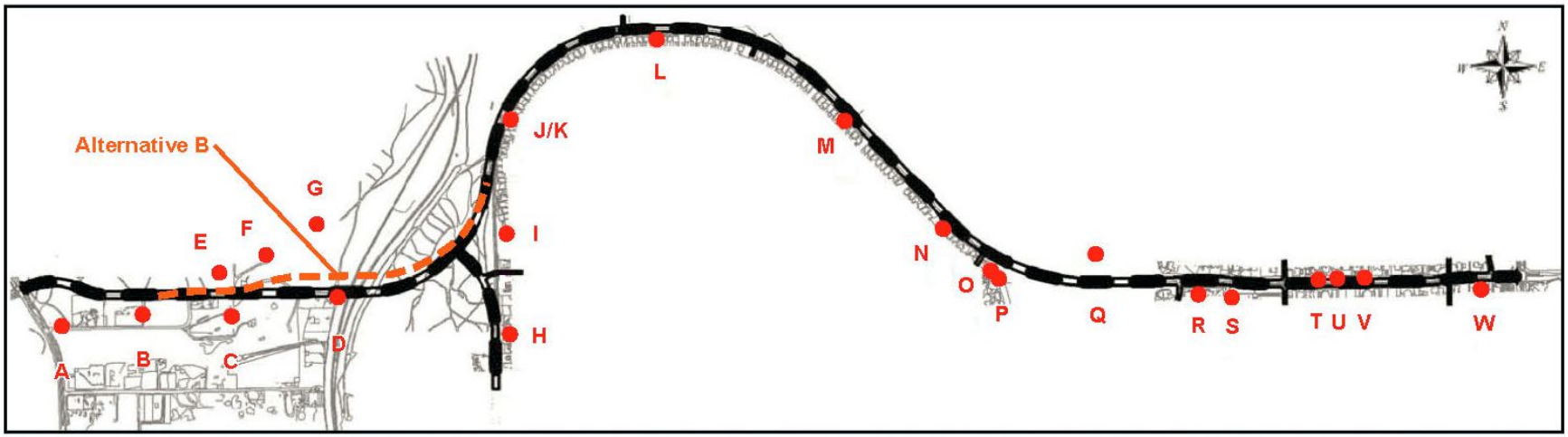

Figure 6-4: Short-duration ambient noise monitoring locations

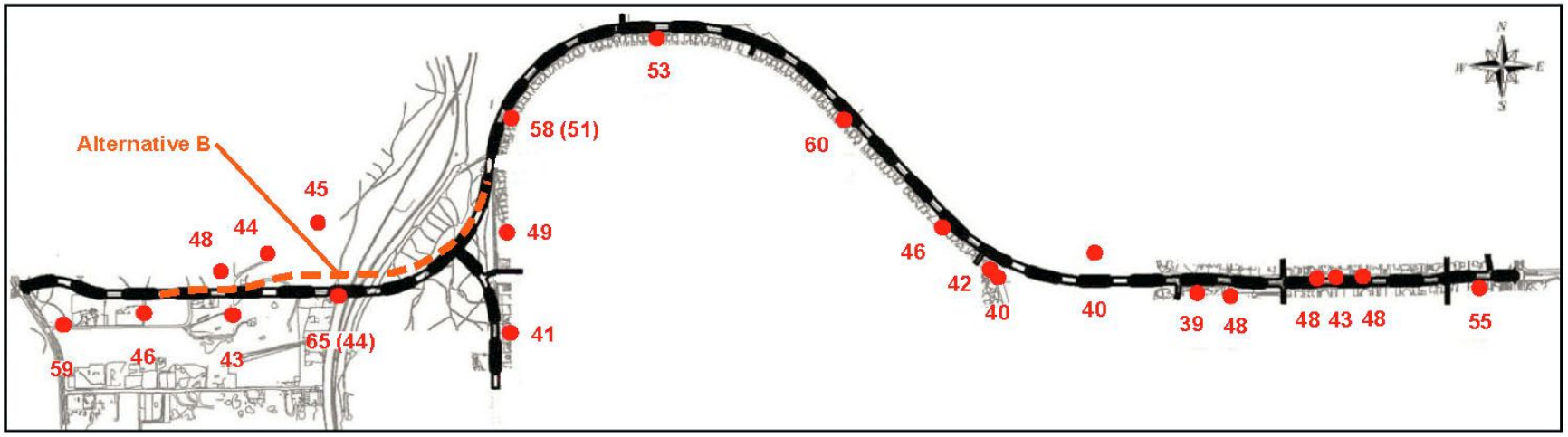

Figure 6-5: Overview of short-duration ambient noise monitoring results (dBA)

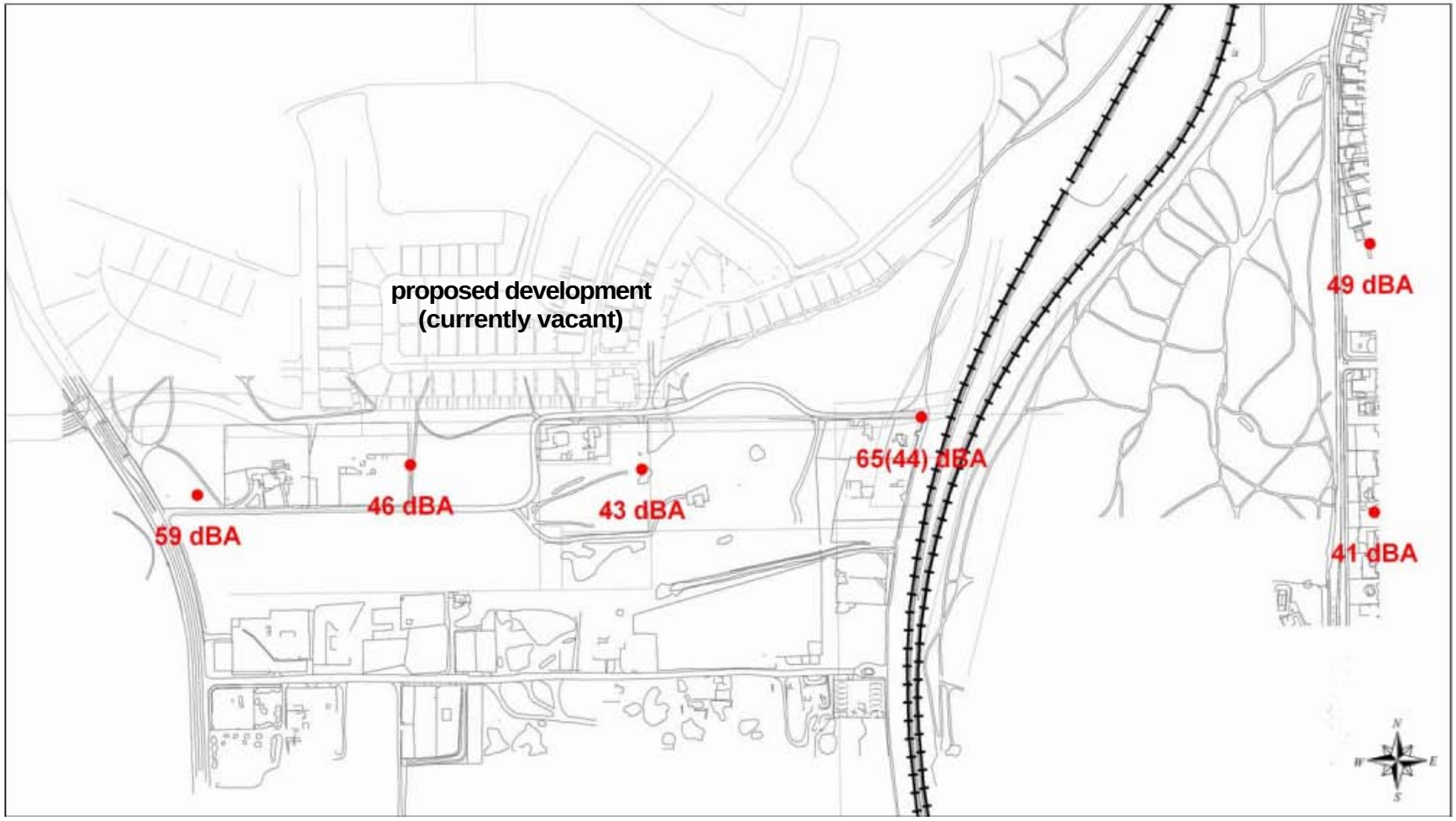

Figure 6-6: West side ambient noise monitoring results - values in parentheses are with train noise deleted

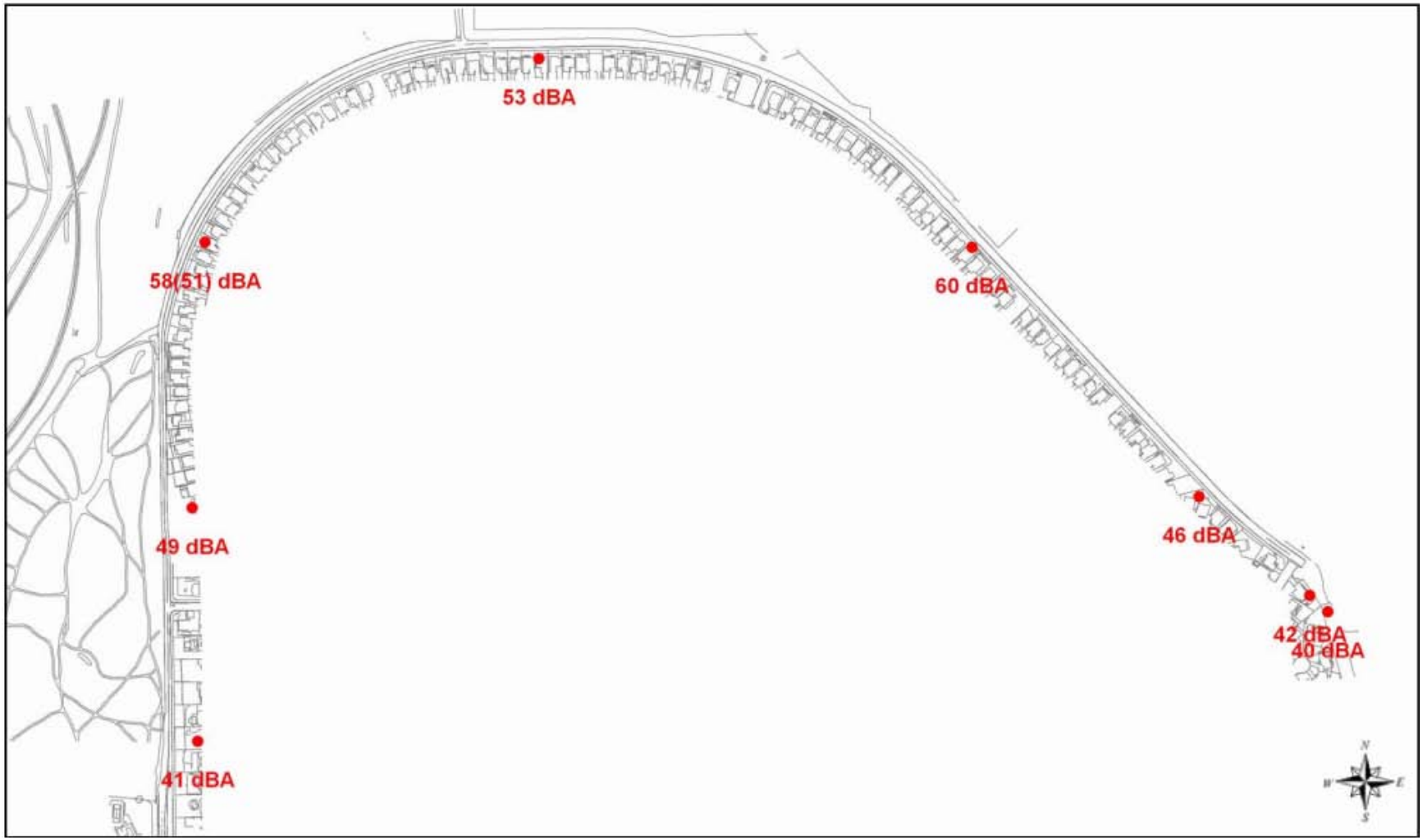

Figure 6-7: Central area ambient noise monitoring results - values in parentheses are with train noise deleted

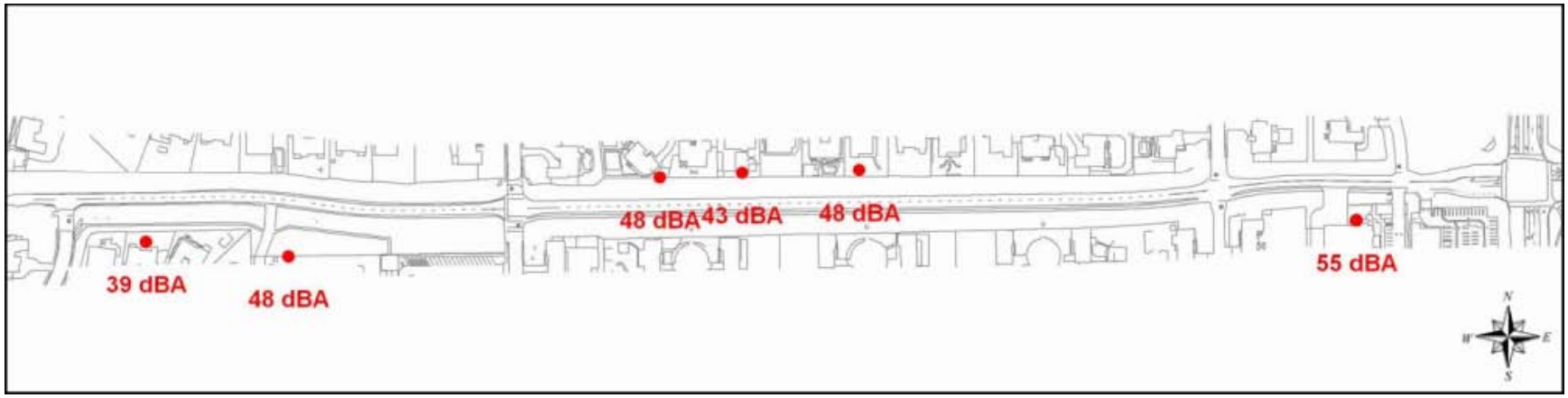

Figure 6-8: East side ambient noise monitoring results

In order to establish train noise impacts and determine the effect of the existing walls along Yates Road, a special two-hour noise monitoring session was conducted in the backyard of 13960 Hidden Valley Road.

Concurrent measurements were conducted at receivers "Cntr - S16" (G) and "Cntr - S17" (H) as shown in Figure 6-9 below (note that the receiver which appears to lie next to the house is actually at the edge of a covered patio, with 18 feet remaining to the house proper). As with most of Yates Road, the wall here lies below the elevation of the backyard, providing varying sight lines to the roadway depending upon the location of the receiver in the yard (Figure 6-10).

As shown by the values in parentheses, a 5 dB difference was observed between the two measurements due solely to microphone placement. A value of 56 dBA was obtained at the receiver located 19 feet from the road wall, whereas a value of 51 dBA was obtained at the receiver lying 34 feet from this road wall. Though it is possible that some road noise was shielded by the north property-line wall, most of this difference is attributable to the different sight lines that the two receivers had relative to the roadway. This variable shielding effect was anticipated in developing the noise model, and receivers were positioned at random locations in the backyards along Yates Road in order to obtain a range of likely noise levels. The measurements at 13960 Hidden Valley Road were also performed to establish the impact of railroad operations in this area, as discussed below.

Figure 6-9: Receiver locations in the backyard of 13960 Hidden Valley Road

Figure 6-10: Elevated yards along Yates Road have varying views of roadway

6.2.2. Railroad Noise

Particular attention was paid to railroad noise impacts in the vicinity of Ridge Crest Road/Yates Road and the east end of Coad Road. A number of residences in these areas lie close to the railroad tracks, and have unshielded views of passing trains. As such, ambient noise levels on these properties are skewed by BNSF freight trains which use this corridor. Approximately four freight trains per hour were observed using this corridor, each taking 1-4 minutes to pass depending upon their lengths and speeds. Train noise here is due to engines and wheels; no warning horns are used in this area.

Measurements were conducted at two locations specifically to assess the impact of train noise along this corridor. The first location was the backyard of 13960 Hidden Valley Road, discussed in Section 6.2.1, which faces onto Yates Road (receivers "Cntr - S16" and "Cntr - S17"). This is approximately the closest property on the central part of the project having an unconstrained view of passing trains (Figure 6-1 1). It lies about 550 feet away from the nearest track. The second location was on the corner of the property at the end of Coad Road (APN 3090-491-04), approximately 120 feet from the nearest track (Figure 6-12).

Figure 6-13 shows the noise created by four trains passing in a 2-hour interval as measured at the Hidden Valley Road location; specifically receiver "Cntr - S17."[22] The overall average level (L_{eq}) of this measurement was 58.4 dBA. Removing train noise from the measurement reduced this level to 51.3 dBA L_{eq}, which primarily represents Yates Road traffic. Train noise for this measurement equates to approximately 57.5 dBA L_{eq} for the four trains passing over a 2-hour interval. Normalizing this to an average of

[22] Measurement made around noon on June 11, 2008.

four trains per hour results in an ambient noise level of 60.5 dBA $L_{eq}(h)$ at this location due solely to freight train operations, and 61.0 dBA $L_{eq}(h)$ combined traffic and train noise.

Figure 6-14 shows train noise measured later the same day at the end of Coad Road. The overall average for the entire measurement (75 minutes) was 65.3 dBA L_{eq}. Deleting the trains resulted in an overall level of 42.5 dBA L_{eq}. Using the same method as above, train noise represents an average level of 65.3 dBA L_{eq} for the measurement duration, indicating that train noise completely dominates the ambient environment at this location. Truncating the measurement of Figure 6-14 to the first hour produces an average level of 63.8 dBA representing four trains. This level is therefore taken to be the $L_{eq}(h)$ value for four trains per hour at this location.

Figure 6-11: Railroad viewed from backyard of 13960 Hidden Valley Road

Figure 6-12: Railroad viewed from end of Coad Road

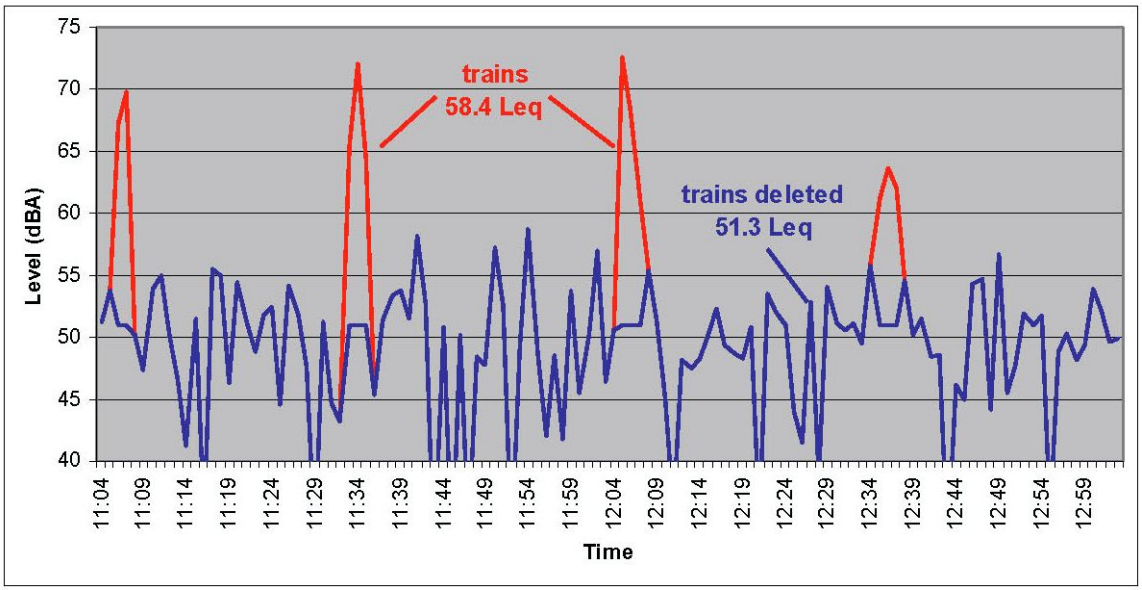

Figure 6-13: Railroad noise measured in backyard of 13960 Hidden Valley Road

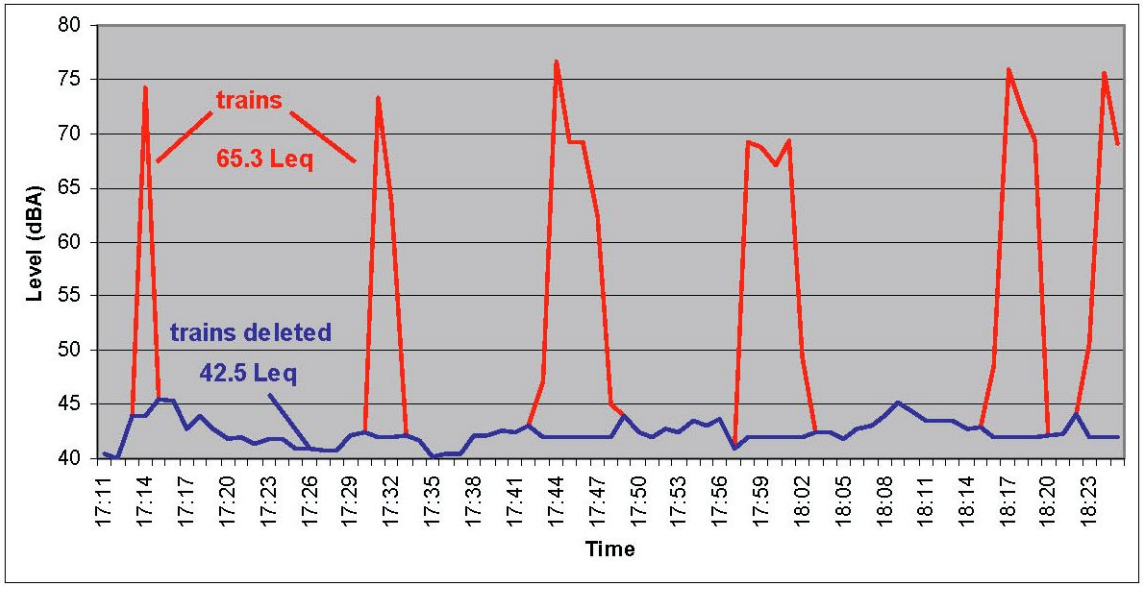

Figure 6-14: Railroad noise measured at end of Coad Road

As described in Section 5.4 above, the derived 1-hour average train noise levels were used to estimate train-noise levels at other pertinent receivers near the railroad tracks. Pertinent receivers are considered those on the west side, and everything between the rising hills and Park Road in the central area (receivers "Cntr - S8" through "Cntr - S24"). Table 6-2 lists the modeled train noise levels, while Figure 6-15 provides a summary view of these levels. Widely varying levels along the current Ridge Crest Road depend on whether a yard wall is present.

Table 6-2: Modeled Train Noise Impacts at Pertinent Receivers (4 trains / hr)

Receiver Name	Address	Area	Land Use	Modeled $L_{eq}(h)$	Measured L_{eq}
West - N1	Lot 20	west	residential (B)	45.4	--
West - N2	Lot 21	west	residential (B)	45.8	--
West - N3	Lot 24	west	residential (B)	46.1	--
West - N4	Lot 26	west	residential (B)	46.5	--
West - N5	Lot 7	west	residential (B)	47.8	--
West - N6	Lot 6	west	residential (B)	47.8	--
West - N7	Lot 5	west	residential (B)	47.8	--
West - N8	Lot 4	west	residential (B)	47.9	--
West - N9	Lot 3	west	residential (B)	47.9	--
West - N10	Lot 2	west	residential (B)	47.9	--
West - N1 1	Lot 1	west	residential (B)	47.9	--
West - N12	Lot 40	west	residential (B)	48.1	--
West - N13	Lot 41	west	residential (B)	48.2	--
West - N14	Lot 42	west	residential (B)	48.5	--
West - N15	Lot 43	west	residential (B)	48.8	--
West - N16	Lot 44	west	residential (B)	49.1	--
West - N17	Lot 45	west	residential (B)	49.4	--
West - N18	Lot 46	west	residential (B)	49.7	--
West - N19	Lot 47	west	residential (B)	50.0	--
West - N20	Lot 48	west	residential (B)	50.3	--
West - N21	Lot 49	west	residential (B)	50.6	--
West - N22	Lot 50	west	residential (B)	50.9	--
West - N23	Lot 51	west	residential (B)	51 .3	--
West - N24	Lot 52	west	residential (B)	51 .8	--
West - N25	Lot 53	west	residential (B)	51 .7	--
West - N26	Lot 54	west	residential (B)	51 .7	--
West - N27	Lot 55	west	residential (B)	51 .7	--
West - N28	Lot 180	west	residential (B)	52.6	--
West - N29	Lot 181	west	residential (B)	52.8	--
West - N30	Lot 182	west	residential (B)	53.6	--
West - N31	Lot 183	west	residential (B)	54.1	--
West - N32	Lot 184	west	residential (B)	54.5	--
West - N33	Lot 185	west	residential (B)	54.8	--
West - N34	Lot 186	west	residential (B)	55.3	--
West - N35	Lot 187	west	residential (B)	55.6	--
West - N36	Lot 188	west	residential (B)	56.0	--
West - N37	Lot 189	west	residential (B)	56.5	--
West - N38	Lot 190	west	residential (B)	56.9	--
West - N39	Lot 191	west	residential (B)	57.3	--

West - N40	Lot 192	west	residential (B)	57.6	--
West - S1	Coad Road	west	residential (B)	58.1	--
West - S2	13600 Coad Road	west	residential (B)	60.3	--
West - S3	13685 Coad Road	west	residential (B)	63.8	65.3 [(a)](42.5)
Cntr - S8	13840 Hidden Valley	central	residential (B)	48.9	--
Cntr - S9	13860 Hidden Valley	central	residential (B)	46.6	--
Cntr - S10	13880 Hidden Valley	central	residential (B)	48.1	--
Cntr - S1 1	13898 Hidden Valley	central	residential (B)	46.7	--
Cntr - S12	13900 Hidden Valley	central	residential (B)	57.7	--
Cntr - S13	13904 Hidden Valley	central	residential (B)	49.7	--
Cntr - S14	13920 Hidden Valley	central	residential (B)	59.1	--
Cntr - S15	13940 Hidden Valley	central	residential (B)	60.6	--
Cntr - S16	13960 Hidden Valley	central	residential (B)	60.7	60.2 [(a)](56.4)
Cntr - S17	13960 Hidden Valley	central	residential (B)	60.5	58.4 [(a)](51.3)
Cntr - S18	13980 Hidden Valley	central	residential (B)	60.4	--
Cntr - S19	14000 Hidden Valley	central	residential (B)	59.7	--
Cntr - S20	14030 Hidden Valley	central	residential (B)	58.4	--
Cntr - S21	14070 Hidden Valley	central	residential (B)	57.3	--
Cntr - S22	14087 Driftwood	central	residential (B)	56.0	--
Cntr - S23	14079 Driftwood	central	residential (B)	55.2	--
Cntr - S24	14071 Driftwood	central	residential (B)	53.9	--

[(a)] *Noise levels inside parentheses indicate measured values with train noise deleted*

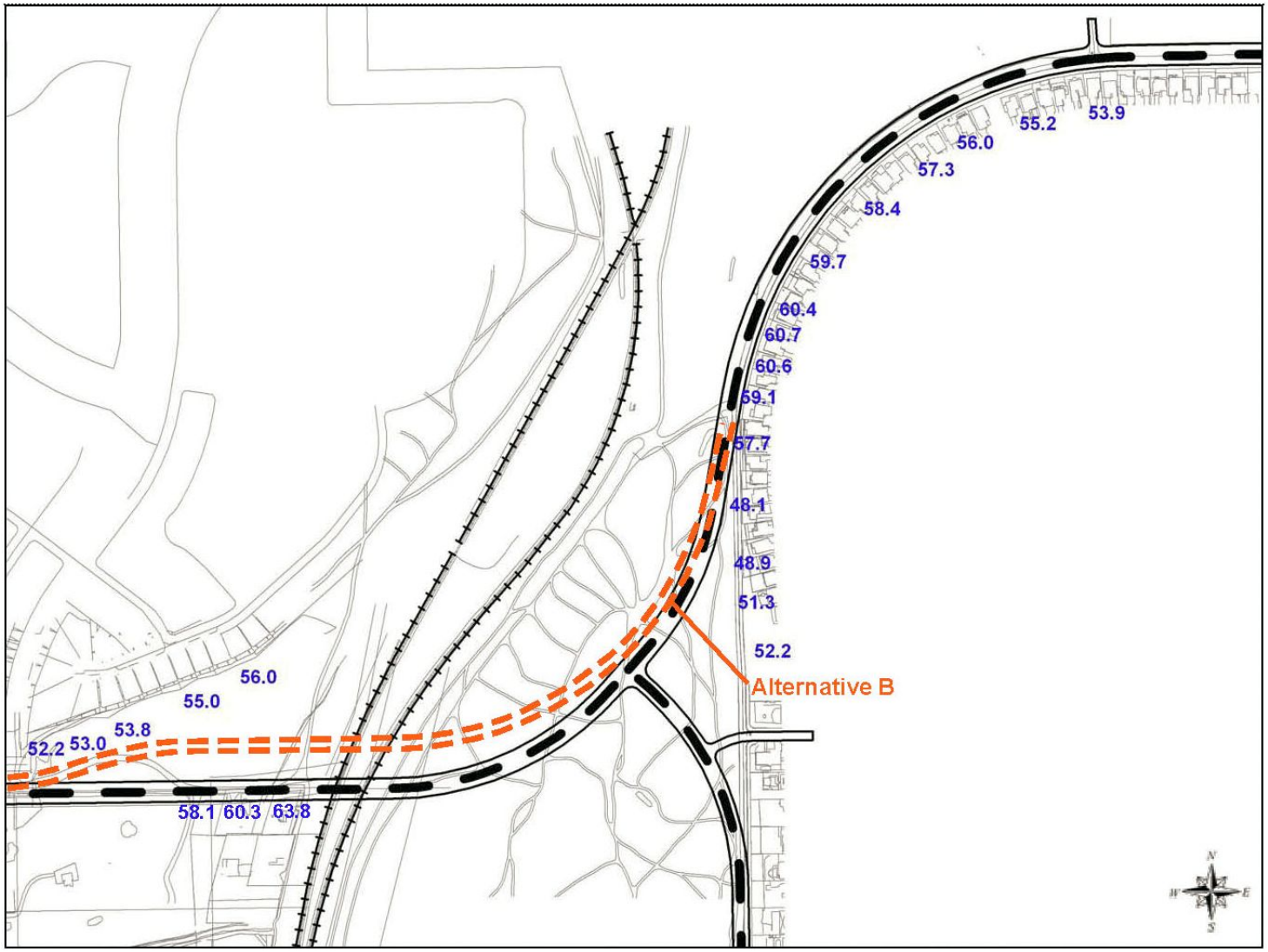

Figure 6-15: Modeled train noise impacts assuming four trains per hour (L_{eq}[h])

6.3. Traffic Model Development Based on Measurement Results

The nature of the existing project environment does not lend itself to developing a model for the purpose of calibrating receivers. The entire west side of the project is devoid of any existing road along the project alignment, while traffic volumes in the central and east sides are too low to provide a reliable average noise level, often falling below one vehicle per minute. Furthermore, existing traffic speeds are highly variable, particularly on Yates Road, and thus are not suitable for modeling. Finally, existing roadways that would be incorporated into the project would have their alignments significantly altered, particularly along Yates Road where noise levels are highly sensitive to receiver locations relative to the roadway. Consequently, no calibration of the modeled receivers was performed.

A model of existing conditions was developed in order to aid in establishing existing ambient noise levels for all modeled receivers based on ambient noise measurements. This model was not based on traffic counts; rather, traffic conditions in the model were adjusted so that noise levels at modeled receivers reasonably matched actual ambient measurements from Figure 6-5. Thus, established existing ambient noise levels are based on actual measurements while accounting for site conditions unique to each receiver. In all cases, good engineering judgment was also applied; as a baseline assumption, no existing ambient level was allowed to fall below 40 dBA.[23]

The seventh column in Table 6-3 summarizes the established existing ambient noise levels for all modeled receivers. It is seen in that in most cases the established noise levels closely approximate actual measured noise level for applicable receivers, with variation occurring only in cases where the ambient measurement was skewed by spurious noises or other factors (e.g., receiver "Cntr - S35").

To account for railroad noise impacts, the values from Table 6-2 above were combined with established ambient noise levels to provide composite ambient noise levels for pertinent receivers, as shown in the eighth column of Table 6-3. In most cases, train noise dominates or contributes substantially to the composite ambient noise level for pertinent receivers. Values for receivers unaffected by train noise are transferred to the

[23] Most predicted build-out noise levels computed in section 7 below are well in excess of 12dB above existing ambient levels, rendering minor variations in existing levels inconsequential.

eighth column at their established existing ambient levels. The values in this column are rounded to the nearest decibel.

Given that the future No-Build condition would be essentially the same as the existing condition, the values in Table 6-3 also represent the No-Build scenario.

In order to achieve consistent and comparable results, traffic noise levels for the future Build-Out alternatives, as modeled in Chapter 7 below, were also combined with railroad noise to compute composite noise levels at these receivers.

Table 6-3: Established Existing Ambient Noise Levels (Including Train Noise)

Receiver Name	Address	Area	Land Use	Train L_{eq}(h)	Measured L_{eq}	Established L_{eq}(h)	Established + Train L_{eq}(h)
West - N1	Lot 20	west	residential (B)	45.4	--	62.6	63
West - N2	Lot 21	west	residential (B)	45.8	--	52.4	53
West - N3	Lot 24	west	residential (B)	46.1	--	49.3	51
West - N4	Lot 26	west	residential (B)	46.5	--	48.3	51
West - N5	Lot 7	west	residential (B)	47.8	--	45.2	50
West - N6	Lot 6	west	residential (B)	47.8	--	45.7	50
West - N7	Lot 5	west	residential (B)	47.8	--	46.0	50
West - N8	Lot 4	west	residential (B)	47.9	--	46.4	50
West - N9	Lot 3	west	residential (B)	47.9	--	46.8	50
West - N10	Lot 2	west	residential (B)	47.9	--	47.1	51
West - N11	Lot 1	west	residential (B)	47.9	--	47.3	51
West - N12	Lot 40	west	residential (B)	48.1	--	46.5	50
West - N13	Lot 41	west	residential (B)	48.2	--	46.6	50
West - N14	Lot 42	west	residential (B)	48.5	--	45.8	50
West - N15	Lot 43	west	residential (B)	48.8	--	45.0	50
West - N16	Lot 44	west	residential (B)	49.1	--	44.3	50
West - N17	Lot 45	west	residential (B)	49.4	--	44.0	51
West - N18	Lot 46	west	residential (B)	49.7	--	44.0	51
West - N19	Lot 47	west	residential (B)	50.0	--	44.0	51
West - N20	Lot 48	west	residential (B)	50.3	--	44.0	51
West - N21	Lot 49	west	residential (B)	50.6	--	44.0	51
West - N22	Lot 50	west	residential (B)	50.9	--	44.0	52
West - N23	Lot 51	west	residential (B)	51.3	47.7	44.0	52
West - N24	Lot 52	west	residential (B)	51.8	--	44.0	52
West - N25	Lot 53	west	residential (B)	51.7	--	44.0	52
West - N26	Lot 54	west	residential (B)	51.7	--	44.0	52
West - N27	Lot 55	west	residential (B)	51.7	--	44.0	52
West - N28	Lot 180	west	residential (B)	52.6	--	44.0	53
West - N29	Lot 181	west	residential (B)	52.8	--	44.0	53

West - N30	Lot 182	west	residential (B)	53.6	--	44.0	54
West - N31	Lot 183	west	residential (B)	54.1	44.4	44.0	55
West - N32	Lot 184	west	residential (B)	54.5	--	44.0	55
West - N33	Lot 185	west	residential (B)	54.8	--	44.0	55
West - N34	Lot 186	west	residential (B)	55.3	--	44.0	56
West - N35	Lot 187	west	residential (B)	55.6	--	44.0	56
West - N36	Lot 188	west	residential (B)	56.0	--	44.0	56
West - N37	Lot 189	west	residential (B)	56.5	--	44.0	57
West - N38	Lot 190	west	residential (B)	56.9	44.6	44.0	57
West - N39	Lot 191	west	residential (B)	57.3	--	44.0	57
West - N40	Lot 192	west	residential (B)	57.6	--	44.0	58
West - S1	Coad Road	west	residential (B)	58.1	--	44.0	58
West - S2	13600 Coad Road	west	residential (B)	60.3	--	44.0	60
West - S3	13685 Coad Road	west	residential (B)	63.8	42.5	44.0	64
Tennis Court	--	central	recreation (B)	--	--	48.0	48
Cntr - S1	13590 Hidden Valley	central	residential (B)	--	--	40.4	40
Cntr - S2	13640 Hidden Valley	central	residential (B)	--	41.1	41.1	41
Cntr - S3	13700 Hidden Valley	central	residential (B)	--	--	43.6	44
Cntr - S4	13740 Hidden Valley	central	residential (B)	--	--	46.0	46
Cntr - S5	13790 Hidden Valley	central	residential (B)	--	49.0	49.0	49
Cntr - S6	13800 Hidden Valley	central	residential (B)	--	--	50.4	50
Cntr - S7	13820 Hidden Valley	central	residential (B)	--	--	48.4	48
Cntr - S8	13840 Hidden Valley	central	residential (B)	48.9	--	50.7	53
Cntr - S9	13860 Hidden Valley	central	residential (B)	46.6	--	50.2	52
Cntr - S10	13880 Hidden Valley	central	residential (B)	48.1	--	51.0	53
Cntr - S11	13898 Hidden Valley	central	residential (B)	46.7	--	48.8	51
Cntr - S12	13900 Hidden Valley	central	residential (B)	57.7	--	54.3	59
Cntr - S13	13904 Hidden Valley	central	residential (B)	49.7	--	48.8	52
Cntr - S14	13920 Hidden Valley	central	residential (B)	59.1	--	50.0	60
Cntr - S15	13940 Hidden Valley	central	residential (B)	60.6	--	51.7	61
Cntr - S16	13960 Hidden Valley	central	residential (B)	60.7	56.4	56.4	62
Cntr - S17	13960 Hidden Valley	central	residential (B)	60.5	51.3	53.4	61
Cntr - S18	13980 Hidden Valley	central	residential (B)	60.4	--	55.2	62
Cntr - S19	14000 Hidden Valley	central	residential (B)	59.7	--	54.5	61
Cntr - S20	14030 Hidden Valley	central	residential (B)	58.4	--	53.6	60
Cntr - S21	14070 Hidden Valley	central	residential (B)	57.3	--	55.3	59
Cntr - S22	14087 Driftwood	central	residential (B)	56.0	--	57.6	60
Cntr - S23	14079 Driftwood	central	residential (B)	55.2	--	56.6	59
Cntr - S24	14071 Driftwood	central	residential (B)	53.9	--	54.6	57
Cntr - S25	14061 Driftwood	central	residential (B)	--	53.0	53.0	53
Cntr - S26	14053 Driftwood	central	residential (B)	--	--	52.3	52
Cntr - S27	14043 Driftwood	central	residential (B)	--	--	52.8	53
Cntr - S28	14035 Driftwood	central	residential (B)	--	--	54.5	55
Cntr - S29	14029 Driftwood	central	residential (B)	--	--	52.6	53

Cntr - S30	14025 Driftwood	central	residential (B)	--	--	52.7	53
Cntr - S31	14017 Driftwood	central	residential (B)	--	--	49.8	50
Cntr - S32	13999 Driftwood	central	residential (B)	--	--	48.5	49
Cntr - S33	13981 Driftwood	central	residential (B)	--	--	51.3	51
Cntr - S34	13965 Driftwood	central	residential (B)	--	--	50.1	50
Cntr - S35	13955 Driftwood	central	residential (B)	--	59.9	51.8	52
Cntr - S36	13925 Driftwood	central	residential (B)	--	--	50.7	51
Cntr - S37	13885 Driftwood	central	residential (B)	--	--	50.1	50
Cntr - S38	13865 Driftwood	central	residential (B)	--	--	51.6	52
Cntr - S39	13825 Driftwood	central	residential (B)	--	--	49.5	50
Cntr - S40	13799 Driftwood	central	residential (B)	--	--	47.6	48
Cntr - S41	18350 Mead	central	residential (B)	--	45.5	45.5	46
Cntr - S42	18380 Mead	central	residential (B)	--	--	49.5	50
Cntr - S43	18390 Mead	central	residential (B)	--	--	43.4	43
Cntr - S44	18460 Fortuna	central	residential (B)	--	--	42.9	43
Cntr - S45	18455 Fortuna	central	residential (B)	--	42.4	42.4	42
Cntr - S46	18490 Tarpon	central	residential (B)	--	--	40.0	40
Cntr - S47	18475 Tarpon	central	residential (B)	--	--	40.0	40
East - N1	18785 Sahale	east	residential (B)	--	--	40.0	40
East - N2	18785 Sahale	east	residential (B)	--	--	40.0	40
East - N3	18785 Sahale	east	residential (B)	--	--	40.0	40
East - N4	18785 Sahale	east	residential (B)	--	--	40.0	40
East - N5	18795 Sahale	east	residential (B)	--	--	40.0	40
East - N6	18815 Sahale	east	residential (B)	--	--	40.0	40
East - N7	18845 Sahale	east	residential (B)	--	--	40.0	40
East - N8	18873 Sahale	east	residential (B)	--	--	40.0	40
East - N9	13708 Havasu	east	residential (B)	--	--	40.0	40
East - N10	13708 Havasu	east	residential (B)	--	--	40.0	40
East - N11	13707 Havasu	east	residential (B)	--	--	49.0	49
East - N12	13707 Havasu	east	residential (B)	--	--	46.9	47
East - N13	13707 Havasu	east	residential (B)	--	--	42.0	42
East - N14	18989 Sahale	east	residential (B)	--	--	44.0	44
East - N15	18989 Sahale	east	residential (B)	--	47.9	45.9	46
East - N16	19013 Sahale	east	residential (B)	--	42.9	46.4	46
East - N17	19063 Sahale	east	residential (B)	--	47.9	47.1	47
East - N18	19111 Sahale	east	residential (B)	--	--	45.3	45
East - N19	13714 Cochise	east	residential (B)	--	--	45.7	46
East - N20	13714 Cochise	east	residential (B)	--	--	48.7	49
East - N21	13717 Cochise	east	residential (B)	--	--	50.3	50
East - N22	13717 Cochise	east	residential (B)	--	--	46.7	47
East - N23	13720 Wawona	east	residential (B)	--	--	48.9	49
East - N24	13720 Wawona	east	residential (B)	--	--	49.2	49
East - S1	13697 Kasanka	east	residential (B)	--	--	40.0	40
East - S2	13697 Kasanka	east	residential (B)	--	--	40.0	40

East - S3	18744 Kitom	east	residential (B)	--	--	40.0	40
East - S4	18766 Kitom	east	residential (B)	--	39.4	40.0	40
East - S5	18782 Kitom	east	residential (B)	--	--	40.0	40
East - S6	18774 Kitom	east	residential (B)	--	--	40.0	40
playground 1	13590 Havasu	east	residential (B)	--	--	42.6	43
playground 2	13590 Havasu	east	residential (B)	--	--	44.3	44
playground 3	13590 Havasu	east	residential (B)	--	--	40.6	41
East - S7	13677 Havasu	east	residential (B)	--	--	40.9	41
East - S8	13677 Havasu	east	residential (B)	--	--	45.2	45
East - S9	13676 Ivanpah	east	residential (B)	--	--	45.8	46
East - S10	13677 Ivanpah	east	residential (B)	--	--	45.0	45
East - S11	13676 Cuyamaca	east	residential (B)	--	--	48.2	48
East - S12	13677 Cuyamaca	east	residential (B)	--	--	45.7	46
East - S13	13676 Coachella	east	residential (B)	--	--	48.8	49
East - S14	13676 Coachella	east	residential (B)	--	--	45.3	45
East - S15	13677 Coachella	east	residential (B)	--	--	49.2	49
East - S16	13678 Cochise	east	residential (B)	--	--	45.8	46
East - S17	13678 Cochise	east	residential (B)	--	--	50.2	50
East - S18	13679 Cochise	east	residential (B)	--	--	50.6	51
East - S19	13679 Cochise	east	residential (B)	--	--	49.0	49
Fire House	fire station	east	residential (E)	--	55.2	55.2	55

Chapter 7. Future Noise Environment, Impacts, and Considered Abatement

7.1. Future Noise Environment and Impacts

The results of modeling future noise impacts due to the project are discussed below, with detailed results summarized in Appendix B. Appendix B compares noise levels for existing conditions to predicted Build-Out conditions in order to identify traffic noise impacts under 23 CFR 772. As stated in the TeNS, modeling results are rounded to the nearest decibel before comparisons are made. In some cases, this can result in relative changes that may not appear intuitive. An example would be a comparison between sound levels of 64.4 and 64.5 dBA. The difference between these two values is 0.1 dB. However, after rounding, the difference is reported as 1 dB.

Traffic noise impacts are predicted to occur under both build alternatives at most modeled receivers throughout the project area, primarily due to substantial noise increases (+12dB) over existing levels. Many of these receivers would also exceed the NAC of 67 dBA L_{eq} (h) for Activity Category B land uses. The exceptions lie along the existing Ridge Crest Road where severe terrain and realignment of this road would minimize noise impacts to nearby residences, and portions of the new development on the west side where residences would lie at sufficient distances from the roadway. As traffic noise impacts are predicted to occur at Activity Category B land uses within the project area, noise abatement must be considered.

It is pointed out here that receivers on the east side of the project would be impacted even though they are shielded by existing walls. These impacts would result from a substantial noise increase (+12dB) as described in the Protocol, rather than a breach of the NAC. This increase is due solely to future traffic volumes, and is irrespective of existing wall heights. Thus, all receivers on the east side would be impacted according to the "substantial noise increase" criterion, even though most would experience future noise levels less than the NAC. Consequently, these receivers must be considered for noise abatement.

7.2. Preliminary Noise Abatement Analysis

7.2.1. Noise Abatement Considerations

In accordance with 23 CFR 772, noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Potential noise abatement measures identified in the Protocol include the following:

- Avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project;
- Constructing noise barriers;
- Acquiring property to serve as a buffer zone;
- Using traffic management measures to regulate types of vehicles and speeds; and
- Acoustically insulating public-use or nonprofit institutional structures.

The scope of this study, however, focused on the use of sound walls for noise abatement. It is neither the purpose nor the intent of this report to recommend any particular noise abatement. Rather, it is the purpose of this study to consider the effectiveness of various sound wall configurations, and make first-order calculations regarding their cost reasonableness. Conclusions regarding what noise abatement would be installed, if any, will be subsequently documented in the Noise Abatement Decision Report (NADR).

For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier; such as traffic control, drainage modification, and retaining walls. Construction cost estimates are not provided in this Noise Study Report (NSR), but are presented in the NADR. The NADR is a design responsibility and is prepared to compile information from the NSR, other relevant environmental studies, and design considerations into a single, comprehensive document before public review of the project. The NADR is prepared by the project engineer after completion of the NSR and prior to publication of the draft environmental document. The NADR includes noise abatement construction cost estimates that have been prepared and signed by the project engineer based on site-specific conditions. Construction cost estimates are compared to reasonableness allowances in the NADR to identify which wall configurations are reasonable from a cost perspective.

The design of noise barriers presented in this report is preliminary and has been conducted at a level appropriate for environmental review but not for final design of the project. Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during the final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of the noise abatement will be made upon completion of the project design.

7.2.2. Build Alternative "A"

7.2.2.1. MODELED NOISE-ABATEMENT BARRIERS

Figure 7-1 through Figure 7-3 show the noise-abatement sound walls considered in this study for project Build Alternative "A." Red lines indicate new construction walls, blue lines indicate existing sound walls whose heights would be modified, and brown lines indicate existing walls which would be left unchanged. Sound walls were modeled in heights ranging from 6 feet to 16 feet, in 2-foot increments. Existing walls to be modified were modeled at their current height in the 6-foot scenario.

Figure 7-1 shows the noise walls on the west side of the project. Five new-construction sound walls were modeled here. The barrier labeled "west wall 1" (dashed line) extends along the pavement edge on the north side of the project alignment from Hesperia Road to the future Cherryhill Drive, a residential access road. The barriers "west wall 2," "west wall 3," and "west wall 4" are situated on the edges of private yards which ascend above the roadway in a staircase fashion. Barrier "west wall 5" is also on private property, with its base approximately 15 feet above the roadway elevation. No wall was modeled on the south side of the project alignment here, as all existing residences would be removed under Build Alternative "A".

Figure 7-2 shows noise abatement barriers considered for the central section of the project. Barriers labeled "central wall 1" and "central wall 2" are situated on the pavement edge along the Yates Road portion of the alignment, being interrupted by entrances at Tahoe Lane and Fortuna Lane. These barriers are separate from, and would not modify the existing wall along Yates Road. Instead, they would be freestanding walls located in the public right-of-way separated from the existing wall.

The barrier "central wall 3" veers off along the west side of the Mojave River, fronting the first few residences there. No sound wall was modeled along the realigned Ridge Crest Road, as existing walls here perform adequately in mitigating traffic noise. Receivers along the existing Ridge Crest Road alignment north of Chinquapin Drive

would benefit from existing terrain in blocking noise from the new Yucca Loma Road alignment.

As shown in Figure 7-3, considered noise abatement on the east side the project primarily consisted of modifying heights of existing sound walls. Only three new-construction walls were considered here. One was a pavement-edge wall in front of the school playground, named "roadside playground wall." Directly in front of the playground on school property would also be an appropriate location for a barrier; however, only a sound wall in the right-of-way was considered in this study. The other two, "Yucca north 1a" and "Yucca south 1a," are extensions of existing walls facing the River. Sensitivity analysis indicates that these two barriers are substantial contributors to noise abatement for nearby receivers, and are treated as continuous extensions of existing "Yucca north 1" and "Yucca south 1" below.

Each noise barrier evaluated has been evaluated for feasibility based on achievable noise reduction. A minimum reduction of 5 dB is required in order for a barrier to be considered acoustically feasible. For each noise barrier found to be so feasible, reasonable cost allowances were calculated based on the most recent base-allowance of $36,000 provided by Caltrans. Tables 7-1 through 7-18 summarize the reasonable cost allowance calculations at each critical design receiver based on the allowance calculation procedure identified in the Protocol.[24] Worksheets in Appendix C provide detailed allowance calculations for each barrier at various heights, while tables in Appendix D summarize achievable noise reductions at all receivers. Table 7-19 summarizes the approximate barrier locations and lengths which may be used to assist in the initial cost estimates for the NADR.

The following is a discussion of noise abatement considered for each evaluation area where traffic noise impacts are predicted.

7.2.2.2. WEST SIDE

On the west side of the project, future noise impacts are predicted at receivers in the immediate vicinity of the roadway; namely, "West - N13" through "West - N23," which front the alignment, and receivers to their left, "West - N9" through "West - N11," which rise in a staircase fashion away from the roadway. Most of these receivers are subject to impacts according to both the NAC and the "substantial noise increase" (+12 dB) criteria.

[24] Refer to the Protocol for the definition of the critical design receiver.

These impacts are due solely to the new highway, and are essentially uninfluenced by the presence of train noise.

Sound walls considered to shield these receivers were modeled on private property, as the depressed elevation of the roadway in relation to the residences would cause any wall in the right-of-way to be ineffective. In particular, placement of "west wall 2" through "west wall 4" on private property was necessary due to the staircase configuration of these residences which rise above the alignment. While it is recognized that residences on these properties would offer some measure of shielding for receivers behind them, it was assumed that sufficient open space would still remain which necessitates formal shielding from the highway.

Other receivers on the west side lie 200 feet or more away from the proposed roadway alignment, and fail to meet either impact criteria. The one exception was receiver "West - N1," which would experience a predicted future noise level of approximately 70 dBA. This level, however, is due primarily to traffic on Hesperia Road. Attempts to provide abatement with "west wall 1" proved ineffective, and this wall is therefore shown as a dashed line in Figure 7-1 and given no further consideration.

In accordance with the Protocol, receiver "West - N11" was chosen as the critical design receiver for barrier "west wall 2," representing the single residence behind it. Similarly, receivers "West - N10" and "West - N9" are the critical design receivers for barriers "west wall 3" and "west wall 4," respectively. Receiver "West - N16" represents the twelve receivers shielded by barrier "west wall 5."

Table 7-1: Reasonable Allowances - West Wall 2

Barrier ID:	west wall 2					
Barrier Length:	120 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	West - N11					
Design Year Noise Level, dBA Leq(h):	69 dBA					
Design Year Noise Level Minus Existing Noise Level:	18 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	4 dB	4 dB	4 dB	5 dB	5 dB	5 dB
Number of Benefited Residences	N/A	N/A	N/A	1	1	1
New Hwy Construction or Pre 1978 Residences	N/A	N/A	N/A	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	N/A	N/A	$54 ,000	$54 ,000	$54 ,000
Total Reasonable Allowance	N/A	N/A	N/A	$54,000	$54,000	$54,000

Table 7-2: Reasonable Allowances - West Wall 3

Barrier ID:	west wall 3					
Barrier Length:	130 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	West - N10					
Design Year Noise Level, dBA Leq(h):	65 dBA					
Design Year Noise Level Minus Existing Noise Level:	14 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	7 dB	8 dB	9 dB	10 dB	11 dB	12 dB
Number of Benefited Residences	1	1	1	1	1	1
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$56,000	$56,000	$58,000	$58,000	$58,000	$60,000
Total Reasonable Allowance	$56,000	$56,000	$58,000	$58,000	$58,000	$60,000

Table 7-3: Reasonable Allowances – West Wall 4

Barrier ID:	west wall 4					
Barrier Length:	120 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	West - N9					
Design Year Noise Level, dBA Leq(h):	62 dBA					
Design Year Noise Level Minus Existing Noise Level:	12 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	5 dB	6 dB	7 dB	8 dB	9 dB	9 dB
Number of Benefited Residences	1	1	1	1	1	1
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$54,000	$56,000	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	$54,000	$56,000	$56,000	$56,000	$58,000	$58,000

Table 7-4: Reasonable Allowances - West Wall 5

Barrier ID:	west wall 5					
Barrier Length:	1170 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	West - N16					
Design Year Noise Level, dBA Leq(h):	69 dBA					
Design Year Noise Level Minus Existing Noise Level:	19 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	9 dB	11 dB	12 dB	13 dB	14 dB	15 dB
Number of Benefited Residences	12	12	12	12	12	12
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$58,000	$58,000	$60,000	$60,000	$60,000	$60,000
Total Reasonable Allowance	$696,000	$696,000	$720,000	$720,000	$720,000	$720,000

7.2.2.3. CENTRAL

No noise impacts of either type are predicted for receivers around existing Ridgecrest Road in the central area of the project. This is due to both realignment of Ridgecrest Road as well as the sharp terrain and existing sound walls which shield these receivers. Only where the new alignment merges with the existing road are noise impacts predicted, starting approximately at the location of receiver "Cntr - S12" and continuing for all receivers throughout the rest of the central part of the project.

With few exceptions, train noise contributes little to overall future noise impacts in the central area. As predicted, future traffic noise levels are generally on the order of 70 dBA. Most of the impacts are due to substantial traffic noise increases, even when considering contributions from railroad operations. Impacts at all other receivers are of the "approach/exceed" type, and would be so even if train noise were ignored.

Because of the elevated locations of receivers in this area, modeled sound walls do not have any substantial effect until their heights reach approximately 10 feet, and 12-foot high walls are required to meet a minimum 5 dB reduction for the majority of modeled receivers. Conversely, the unique geography of the central area would produce decreases in traffic noise exposure with minor increases in wall height, depending upon the receiver location.

In accordance with the Protocol, receiver "Cntr - S22" was chosen as the critical design receiver for barrier "central wall 1," representing the 55 residences which stand behind this sound wall. Receiver "Cntr - S33" was selected to represent barrier "central wall 2" and its 44 residences, and receiver "Cntr - S45" is the critical design receiver representing approximately 6 residences shielded by "central wall 3."

Table 7-5: Reasonable Allowances - Central Wall 1

Barrier ID:	central wall 1					
Barrier Length:	3180 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	Cntr - S22					
Design Year Noise Level, dBA Leq(h):	73 dBA					
Design Year Noise Level Minus Existing Noise Level:	13 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	2 dB	7 dB	9 dB	11 dB	12 dB	13 dB
Number of Benefited Residences	N/A	55	55	55	55	55
New Hwy Construction or Pre 1978 Residences	N/A	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	$58,000	$60,000	$60,000	$62,000	$62,000
Total Reasonable Allowance	N/A	$3,190,000	$3,300,000	$3,300,000	$3,410,000	$3,410,000

Table 7-6: Reasonable Allowances - Central Wall 2

Barrier ID:	central wall 2					
Barrier Length:	1110 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	Cntr - S33					
Design Year Noise Level, dBA Leq(h):	72 dBA					
Design Year Noise Level Minus Existing Noise Level:	21 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	1 dB	4 dB	8 dB	11 dB	13 dB
Number of Benefited Residences	N/A	N/A	N/A	44	44	44
New Hwy Construction or Pre 1978 Residences	N/A	N/A	N/A	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	N/A	N/A	$58,000	$60,000	$62,000
Total Reasonable Allowance	N/A	N/A	N/A	$2,552,000	$2,640,000	$2,728,000

Table 7-7: Reasonable Allowances - Central Wall 3

Barrier ID:	central wall 3					
Barrier Length:	470 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	Cntr - S45					
Design Year Noise Level, dBA Leq(h):	68 dBA					
Design Year Noise Level Minus Existing Noise Level:	26 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	8 dB	10 dB	12 dB	13 dB	14 dB	15 dB
Number of Benefited Residences	6	6	6	6	6	6
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$56,000	$58,000	$60,000	$60,000	$60,000	$60,000
Total Reasonable Allowance	$336,000	$348,000	$360,000	$360,000	$360,000	$360,000

7.2.2.4. EAST SIDE

Because of shielding offered by existing sound walls, impacts at all receivers on the east side of the project are due to substantial traffic noise increases. Only a few of these receivers approach the NAC (67 dBA L_{eq}[h]) under future traffic volume conditions, though all are well above existing ambient noise levels.

As stated above, receivers on the east side of the project would be impacted even though they are shielded by existing walls. These impacts would result from a substantial noise increase (+12dB) as described in the Protocol, rather than a breach of the NAC. This increase is due solely to future project traffic volumes, and is irrespective of existing wall heights. Thus, all receivers on the east side would be impacted according to the "substantial noise increase" criterion, even though most would experience future noise

levels less than the NAC. Consequently, east receivers must be considered for noise abatement.

Raising the heights of existing walls would create additional noise insulation benefit; however, a height of 12 feet is necessary in order to obtain the minimum 5 dB reduction at a majority of modeled receivers. The exceptions to this are the school playground which would see a significant benefit with an 8-foot high wall, and receivers facing the River which would benefit from wrap-around extensions of existing walls.

In accordance with the Protocol, unique receivers not acoustically representative of others in the area were ignored as potential critical design receivers; an example being "East - N11," which lies below an abrupt grade change. Therefore, the following receivers were selected as critical design receivers for the barriers and number of dwellings listed:

- "East - N7" represents "Yucca north 1" and its extension "Yucca north 1a," 9 dwellings
- "East - N17" represents "Yucca north 3," 13 dwellings
- "East - N21" represents "Yucca north 6," 1 dwelling
- "East - N24" represents "Yucca north 7," 1 dwelling
- "East - S1" represents "Yucca south 1" and its extension "Yucca south 1 a," 1 dwelling
- "East - S5" represents "Yucca south 3," 4 dwellings
- "Playground 1" represents "roadside playground wall," 0 dwellings
- "East - S17" represents "Yucca south 5," 8 dwellings
- "East - S18" represents "Yucca south 8," 1 dwelling

Table 7-8: Reasonable Allowances - Yucca North 1 & Yucca North 1a

Barrier ID:	Yucca north 1 & 1a					
Barrier Length:	1360 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - N7					
Design Year Noise Level, dBA Leq(h):	64 dBA					
Design Year Noise Level Minus Existing Noise Level:	24 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	3 dB	5 dB	6 dB	7 dB	8 dB
Number of Benefited Residences	N/A	N/A	9	9	9	9
Number of Benefited Residences	N/A	N/A	Yes	Yes	Yes	Yes

New Hwy Construction or Pre 1978 Residences	N/A	N/A	$54,000	$56,000	$56,000	$56,000
Total Reasonable Allowance	N/A	N/A	$486,000	$504,000	$504,000	$504,000

Table 7-9: Reasonable Allowances - Yucca North 3

Barrier ID:	Yucca north 3					
Barrier Length:	1530 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - N17					
Design Year Noise Level, dBA Leq(h):	63 dBA					
Design Year Noise Level Minus Existing Noise Level:	16 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	3 dB	4 dB	5 dB	6 dB	7 dB
Number of Benefited Residences	N/A	N/A	N/A	13	13	13
New Hwy Construction or Pre 1978 Residences	N/A	N/A	N/A	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	N/A	N/A	$54 ,000	$56 ,000	$56 ,000
Total Reasonable Allowance	N/A	N/A	N/A	$702,000	$728,000	$728,000

Table 7-10: Reasonable Allowances - Yucca North 6

Barrier ID:	Yucca north 6					
Barrier Length:	260 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - N21					
Design Year Noise Level, dBA Leq(h):	66 dBA					
Design Year Noise Level Minus Existing Noise Level:	16 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	4 dB	6 dB	7 dB	9 dB	10 dB
Number of Benefited Residences	N/A	N/A	1	1	1	1
New Hwy Construction or Pre 1978 Residences	N/A	N/A	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	N/A	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	N/A	N/A	$56,000	$56,000	$58,000	$58,000

Table 7-11: Reasonable Allowances - Yucca North 7

Barrier ID:	Yucca north 7					
Barrier Length:	250 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - N24					
Design Year Noise Level, dBA Leq(h):	66 dBA					
Design Year Noise Level Minus Existing Noise Level:	17 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	4 dB	6 dB	8 dB	9 dB	10 dB
Number of Benefited Residences	N/A	N/A	1	1	1	1

New Hwy Construction or Pre 1978 Residences	N/A	N/A	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	N/A	$56 ,000	$56 ,000	$58 ,000	$58 ,000
Total Reasonable Allowance	N/A	N/A	$56,000	$56,000	$58,000	$58,000

Table 7-12: Reasonable Allowances - Yucca South 1 & Yucca South 1a

Barrier ID:	Yucca south 1 & 1a					
Barrier Length:	220 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - S1					
Design Year Noise Level, dBA Leq(h):	61 dBA					
Design Year Noise Level Minus Existing Noise Level:	21 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	5 dB	7 dB	8 dB	8 dB	9 dB	10 dB
Number of Benefited Residences	1	1	1	1	1	1
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$54,000	$56,000	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	$54,000	$56,000	$56,000	$56,000	$58,000	$58,000

Table 7-13: Reasonable Allowances - Yucca South 3

Barrier ID:	Yucca south 3					
Barrier Length:	540 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - S5					
Design Year Noise Level, dBA Leq(h):	63 dBA					
Design Year Noise Level Minus Existing Noise Level:	23 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	1 dB	5 dB	7 dB	8 dB	9 dB	10 dB
Number of Benefited Residences	N/A	4	4	4	4	4
New Hwy Construction or Pre 1978 Residences	N/A	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	$54,000	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	N/A	$216,000	$224,000	$224,000	$232,000	$232,000

Table 7-14: Reasonable Allowances - Yucca South 5

Barrier ID:	Yucca south 5					
Barrier Length:	1520 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - S17					
Design Year Noise Level, dBA Leq(h):	66 dBA					
Design Year Noise Level Minus Existing Noise Level:	16 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	5 dB	6 dB	8 dB	9 dB	10 dB
Number of Benefited Residences	N/A	8	8	8	8	8

New Hwy Construction or Pre 1978 Residences	N/A	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	$54,000	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	N/A	$432,000	$448,000	$448,000	$464,000	$464,000

Table 7-15: Reasonable Allowances - Yucca South 8

Barrier ID:	Yucca south 8					
Barrier Length:	220 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	East - S18					
Design Year Noise Level, dBA Leq(h):	66 dBA					
Design Year Noise Level Minus Existing Noise Level:	15 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	0 dB	5 dB	7 dB	8 dB	9 dB	11 dB
Number of Benefited Residences	N/A	1	1	1	1	1
New Hwy Construction or Pre 1978 Residences	N/A	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	$54,000	$56,000	$56,000	$58,000	$58,000
Total Reasonable Allowance	N/A	$54,000	$56,000	$56,000	$58,000	$58,000

Because of its large access requirements, no sound wall was modeled in front of the fire station. Future noise levels at this location are predicted to reach 71 dBA. A rule of thumb assumes a 20 dB exterior-to-interior noise reduction for standard residential construction. Given the minimal fenestration and apparent construction of the fire house, exterior-to-interior noise reduction is expected to be more on the order of 25 to 30 dB. This would place noise levels within the fire station below the 52 dBA criterion for Category E receivers. Thus, no impact is predicted for the fire station.

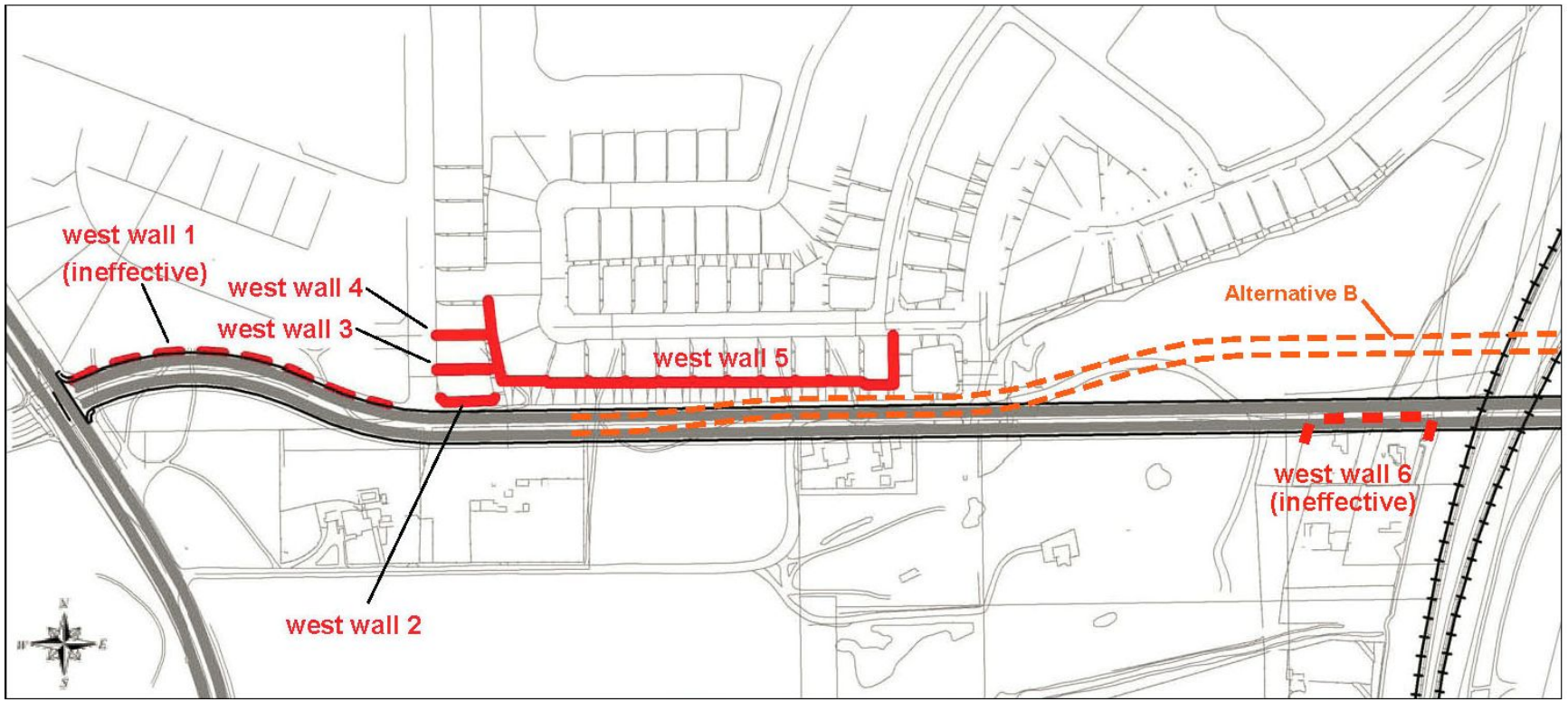

Figure 7-1: Considered sound barriers – west side

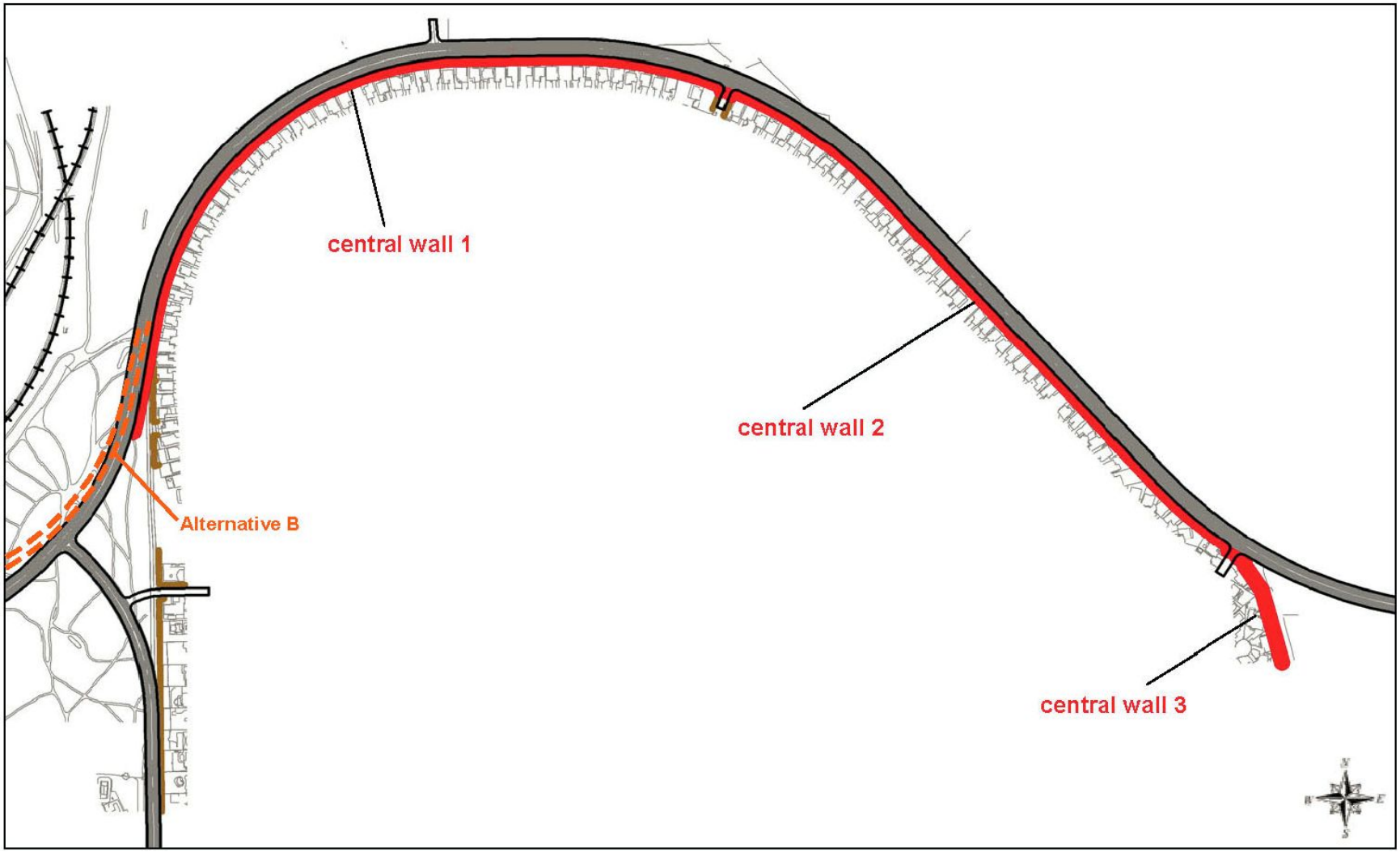

Figure 7-2: Considered sound barriers – central

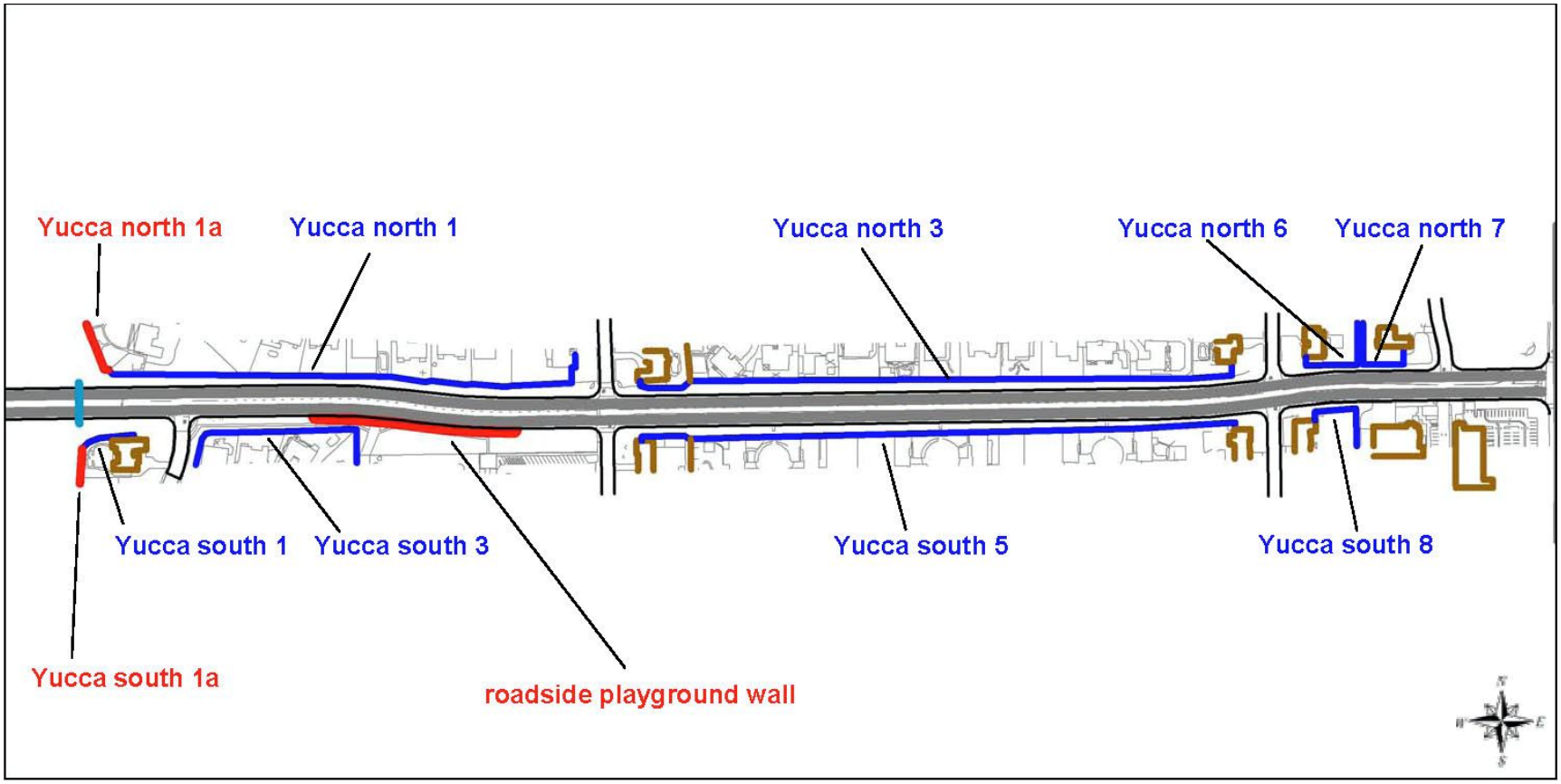

Figure 7-3: Considered sound barriers – east side

7.2.3. Alternative "B"

7.2.3.1. MODELED NOISE-ABATEMENT BARRIERS

As mentioned above for the project Build Alternative "A," Figure 7-1 through Figure 7-3 show the noise-abatement sound walls considered in this study for project Build Alternative "B." Red lines indicate new construction walls, blue lines indicate existing sound walls whose heights would be modified, and brown lines indicate existing walls which would be left unchanged. Sound walls were modeled in heights ranging from 6 feet to 16 feet, in 2-foot increments. Existing walls to be modified were modeled at their current height in the 6-foot scenario.

Only barriers (and associated receivers) affected by the Alternative "B" alignment (relative to Alternative "A") are discussed below, as the results for the receivers not immediately near the roadway shift identified in Alternative "B" are identical. These barriers include "west wall 2," "west wall 3," "west wall 4," "west wall 5," "west wall 6," and "central wall1." Barriers and receivers in the eastern portion of the project would not be affected relative to Alternative "A" by the Alternative "B" alignment, and are not discussed below.

Figure 7-1 shows the noise walls on the west side of the project, which is the project area most affected by Alternative "B" relative to Alternative "A." The barriers "west wall 2," "west wall 3," and "west wall 4" are situated on the edges of private yards which ascend above the roadway in a staircase fashion. Barrier "west wall 5" is also on private property, with its base approximately 15 feet above the roadway elevation. Barrier "west wall 6" is located on the south side of the Alternative "B" alignment, on private residential properties, to shield the four single-family residential uses to remain (at the end of existing Coad Road).

Figure 7-2 shows the noise abatement barriers considered for the central section of the project. Barrier "central wall 1" is situated on the pavement edge along the Yates Road portion of the alignment, being interrupted by entrances at Tahoe Lane and Fortuna Lane. This barrier would be separate from, and would not modify the existing wall along Yates Road. It would be a freestanding wall located in the right-of-way.

Each noise barrier described above has been evaluated for feasibility based on achievable noise reduction. A minimum reduction of 5 dB is required in order for a barrier to be considered acoustically feasible.

For each noise barrier found to be so feasible, reasonable cost allowances were calculated based on the most recent base-allowance of $36,000 provided by Caltrans. The tables below summarize the reasonable cost allowance calculations at each critical design receiver based on the allowance calculation procedure identified in the Protocol.[25] Worksheets in Appendix C provide detailed allowance calculations for each barrier at various heights, while tables in Appendix D summarize achievable noise reductions at all receivers.

The following is a discussion of noise abatement considered for each evaluation area where traffic noise impacts are predicted. Again, only the portions of these areas affected by the Alternative "B" alignment (relative to Alternative "A") are discussed.

7.2.3.2. WEST SIDE

On the west side of the project, future noise impacts are predicted at receivers in the immediate vicinity of the roadway; namely, "West - N13" through "West - N23," which front the alignment. Most of these receivers are subject to impacts according to the NAC and "substantial noise increase" (+12 dB) criteria. These impacts are due solely to the new highway, and are essentially uninfluenced by the presence of train noise.

Future residential receivers directly north of the Alternative "B" alignment change (receivers West - N29 through West - N40) would not be significantly impacted by project Build Alternative "B."

The sound wall considered to shield the impacted receivers to the north of the alignment (west wall 5) was positioned on private property, as the depressed elevation of the roadway in relation to the residences would cause any wall in the right-of-way to be ineffective. In accordance with the Protocol, receiver "West - N16" represents the 12 receivers shielded by barrier "west wall 5."

Existing residential uses to the south of this alignment (West - S1 through West - S3) would be expected to experience total noise exposure from traffic and railroad combined of approximately 66 dB $L_{eq}(h)$, which approaches the NAC threshold of 67 dB. As a result, the feasibility of construction of a solid noise barrier at this location was considered.

[25] Refer to the Protocol for the definition of the critical design receiver.

The sound wall considered to shield the impacted receivers to the south of the alignment (west wall 6) was also positioned on private property. The performance of this wall would be relatively poor due to the elevation of the roadway in this area resulting from the elevated crossing of the BNSF railroad tracks.

This analysis concludes that "west wall 6," which would shield the 3 residences remaining under Alternative "B" but which would be removed under Alternative "A" (West - S1 through West - S3), would not meet the 5 dB minimum reduction requirement. As a result, "west wall 6" was not considered to be feasible, and no additional computations of noise barrier reasonableness were performed for this barrier.

Table 7-16: Reasonable Allowances - West Wall 5

Barrier ID:	west wall 5					
Barrier Length:	1170 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	West - N16					
Design Year Noise Level, dBA Leq(h):	69 dBA					
Design Year Noise Level Minus Existing Noise Level:	19 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	9 dB	11 dB	12 dB	13 dB	14 dB	15 dB
Number of Benefited Residences	12	12	12	12	12	12
New Hwy Construction or Pre 1978 Residences	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	$58,000	$58,000	$60,000	$60,000	$60,000	$60,000
Total Reasonable Allowance	$696,000	$696,000	$720,000	$720,000	$720,000	$720,000

7.2.3.3. CENTRAL

No noise impacts of either type are predicted for receivers around existing Ridgecrest Road in the central area of the project. This is due to both realignment of Ridgecrest Road as well as the sharp terrain and existing sound walls which shield these receivers. Only where the new alignment merges with the existing road are noise impacts predicted, starting approximately at the location of receiver "Cntr - S13" and continuing for all receivers throughout the rest of the central part of the project. Under Alternative "B," impact at receiver "Cntr - S12" is eliminated.

Because of the elevated locations of receivers in this area, modeled sound walls do not have any substantial effect until their heights reach approximately 10 feet, and 12-foot high walls are required to meet a minimum 5 dB reduction for the majority of modeled receivers. Conversely, the unique geography of the central area would produce decreases in traffic noise exposure with minor increases in wall height, depending upon the receiver location.

In accordance with the Protocol, receiver "Cntr - S22" was chosen as the critical design receiver for barrier "central wall 1," representing the 55 residences which stand behind this sound wall.

Table 7-18: Reasonable Allowances - Central Wall 1

Barrier ID:	central wall 1					
Barrier Length:	3180 feet					
PREDICTED SOUND LEVEL WITHOUT BARRIER						
Critical Design Receiver:	Cntr - S22					
Design Year Noise Level, dBA Leq(h):	73 dBA					
Design Year Noise Level Minus Existing Noise Level:	13 dB					
DESIGN YEAR WITH BARRIER	**H = 6 ft**	**H = 8 ft**	**H = 10 ft**	**H = 12 ft**	**H = 14 ft**	**H = 16 ft**
Barrier Noise Reduction, dB	2 dB	7 dB	9 dB	11 dB	12 dB	13 dB
Number of Benefited Residences	N/A	55	55	55	55	55
New Hwy Construction or Pre 1978 Residences	N/A	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance per Benefited Residence	N/A	$58,000	$60,000	$60,000	$62,000	$62,000
Total Reasonable Allowance	N/A	$3,190,000	$3,300,000	$3,300,000	$3,410,000	$3,410,000

Table 7-19: Description of Modeled Noise Barriers

Barrier ID	Coordinates (State Plane)			Length (feet)	Benefited Receivers
	X	Y	Z		
West wall 2	6775435	2005185	2877	120	West - N11
	6775563	2005185	2877		
West wall 3	6775426	2005250	2879	130	West - N10
	6775553	2005252	2879		
West wall 4	6775425	2005330	2886	120	West - N9
	6775548	2005332	2886		
West wall 5	6775547	2005412	2890	1170	"West - N12" through "West - N23"
	6776504	2005330	2850		
Central wall 1	6779307	2006081	2838	3180	"Cntr - S8" through "Cntr - S29"
	6782023	2007662	2777		
Central wall 2	6782063	2007645	2777	1110	"Cntr - S30" through "Cntr - S44"
	6784351	2005530	2778		
Central wall 3	6784392	2005499	2778	470	"Cntr - S45" through "Cntr - S47"
	6784598	2005016	2781		
Yucca north 1	6786211	2005333	2808	1240	"East - N1" through "East - N10"
	6787387	2005370	2828		
Yucca north 1a	6786211	2005333	2808	120	
	6786155	2005450	2806		
Yucca north 3	6789042	2005353	2830	1530	"East - N11" through "East - N20"
	6787552	2005304	2824		
Yucca north 6	6789230	2005363	2830	260	"East - N21" & "East - N22"
	6789359	2005452	2835		
Yucca north 7	6789373	2005452	2835	250	"East - N23" & "East - N24"
	6789474	2005389	2831		
Yucca south 1	6786275	2005158	2808	130	"East - S1" & "East - S2"
	6786144	2005135	2808		
Yucca south 1a	6786144	2005135	2808	90	
	6786138	2005048	2808		
Yucca south 3	6786836	2005100	2812	540	"East - S3" through "East - S6"
	6786430	2005096	2809		
Roadside Playground Wall	6786734	2005218	2807	500	"playground 1" through "playground 3"
	6787232	2005184	2816		
Yucca south 5	6789051	2005183	2829	1520	"East - S7" through "East - S17"
	6787555	2005155	2825		
Yucca south 8	6789252	2005206	2829	220	"East - S18" & "East - S19"
	6789357	2005141	2831		

Chapter 8. Construction Noise

8.1. Construction Noise Emissions

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Table 8-1 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 8-1: Construction Equipment Noise Levels

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Concrete Pump	82

Source: Federal Transit Administration 1995.

8.2. Caltrans Noise Regulations

As part of the standard specifications for construction contracts, Caltrans requires two clauses relating to construction noise emissions. The Standard Specification 7-1.011 (January 1988) Sound Control Requirements, states the following:

The contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract.

Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

Additionally, the Standard Special Provision for sound control reads as follows:

Sound control shall conform to the provisions in Section 7-1.01I, "Sound Control Requirements," of the Standard Specifications and these special provisions. The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m.,

shall not exceed 86 dBA at a distance of 50 feet. This requirement shall not relieve the Contractor from responsibility for complying with local ordinances regulating noise level. The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel. Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved, and no additional compensation will be allowed.

8.3. Local Ordinances

In accordance with the above Caltrans regulations, the construction contractor would be required to comply with the following local ordinances.

8.3.1. Town of Apple Valley Development Code

Section 9.73.060 of the Apple Valley development code ("Prohibited Noise and Vibration") regulates construction and demolition noise. It reads, in part, as follows:

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7 p.m. and 7 a.m., or at any time on weekends or holidays, such that the sound creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the Town.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties would not exceed those listed in the following schedule:

AT RESIDENTIAL PROPERTIES			
Mobile Equipment: Maximum noise levels for nonscheduled intermittent, short-term operation (less than 10 days) of mobile equipment:			
	TYPE I AREAS SINGLE-FAMILY RESIDENTIAL	**TYPE II AREAS MULTI-FAMILY RESIDENTIAL**	**TYPE III AREAS SEMI-RESIDENTIAL/ COMMERCIAL**
Daily, except Sundays and Legal Holidays, 7a.m. to 7 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7 p.m. to 7 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA
Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:			
	TYPE I AREAS SINGLE FAMILY RESIDENTIAL	**TYPE II AREAS MULTI-FAMILY RESIDENTIAL**	**TYPE III AREAS SEMI-RESIDENTIAL/ COMMERCIAL**
Daily, except Sundays and Legal Holidays, 7 a.m. to 7. p.m.	60 dBA	65 dBA	70 dBA
Daily, 7 p.m. to 7 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA
AT BUSINESS PROPERTIES			
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment: Daily, including Sundays and legal holidays, all hours: maximum of 85 dBA.			
Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment:			
Daily, including Sundays and legal holidays, all hours: maximum of 75 dBA.			

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

This section further regulates vibration, stating the following:

Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty (150) feet (46 meters) from the source if on a public space or public right-of- way.

8.3.2. City of Victorville Municipal Code

Chapter 13.01 of the City of Victorville municipal code regulates noise emissions within the city. Paragraph 13.01.060(2), however, appears to exempt noise from infrastructure construction projects. It reads:

The provisions of this regulation shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation projects, public works projects or essential public works services and facilities, including those utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.

8.3.3. San Bernardino County Code of Ordinances

A search of the San Bernardino County Code of Ordinances reveals no specific language regulating construction noise.

8.4. Construction Noise Impacts

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with applicable regulations and applicable local noise standards. Construction noise would be short-term and intermittent. Further, implementing the following measures would minimize the temporary noise impacts from construction:

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.

- As directed by the Town, the contractor will implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

Chapter 9. References

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Appendix A Traffic Data

Table A: Modeled Traffic Data For Project Build (Data Applicable to Project-Build Alternatives "A" and "B")

Road	Segment	Number of Lanes	Total Volume PM Peak Hour Volume	Auto		Medium Trucks		Heavy Trucks		Speed
				%	Volume	%	Volume	%	Volume	
Hesperia NB	north of Yucca Loma	2	2031	96%	1950	3%	61	1%	20	45
Hesperia NB	south of Yucca Loma	2	2385	96%	2290	3%	72	1%	24	45
Hesperia SB	north of Yucca Loma	2	1994	96%	1914	3%	60	1%	20	45
Hesperia SB	south of Yucca Loma	2	2700	96%	2592	3%	81	1%	27	45
Ridge Crest NB	all	2	152	96%	146	3%	5	1%	2	55
Ridge Crest SB	all	2	172	96%	165	3%	5	1%	2	55
Apple Valley NB	north of Yucca Loma	2	1783	96%	1712	3%	53	1%	18	55
Apple Valley NB	south of Yucca Loma	2	1888	96%	1812	3%	57	1%	19	55
Apple Valley SB	north of Yucca Loma	2	2023	96%	1942	3%	61	1%	20	55
Apple Valley SB	south of Yucca Loma	2	1898	96%	1822	3%	57	1%	19	55
Yucca Loma EB	Hesperia to Ridge Crest	2	1746	96%	1676	3%	52	1%	17	55
Yucca Loma EB	Ridge Crest to Park	2	1547	96%	1485	3%	46	1%	15	55
Yucca Loma EB	Park to Tahoe	2	1443	96%	1385	3%	43	1%	14	55
Yucca Loma EB	Tahoe to Fortuna	2	1404	96%	1348	3%	42	1%	14	55
Yucca Loma EB	Fortuna to Apple Valley	2	1514	96%	1453	3%	45	1%	15	55
Yucca Loma WB	Hesperia to Ridge Crest	2	1567	96%	1504	3%	47	1%	16	55
Yucca Loma WB	Ridge Crest to Park	2	1414	96%	1357	3%	42	1%	14	55
Yucca Loma WB	Park to Tahoe	2	1430	96%	1373	3%	43	1%	14	55
Yucca Loma WB	Tahoe to Fortuna	2	1413	96%	1356	3%	42	1%	14	55
Yucca Loma WB	Fortuna to Apple Valley	2	1645	96%	1579	3%	49	1%	16	55

Appendix B Predicted Future Noise Levels

Table B-1: Predicted Traffic Noise Impacts (Project-Build Alternative "A")

Receiver I.D.	Location or Address	Land Use	Number of Dwellings Represented	NAC[1]	Existing & No-Build Noise Level, L_{eq}[2]	Design Year Noise Level With Project L_{eq}[2]	Increase, dB	Impact Type[3]
West - N1	Lot 20	residential	1	(B) 67	63	**70**	7	A/E
West - N2	Lot 21	residential	1	(B) 67	53	61	8	
West - N3	Lot 24	residential	1	(B) 67	51	59	8	
West - N4	Lot 26	residential	1	(B) 67	51	60	9	
West - N5	Lot 7	residential	1	(B) 67	50	58	8	
West - N6	Lot 6	residential	1	(B) 67	50	59	9	
West - N7	Lot 5	residential	1	(B) 67	50	60	10	
West - N8	Lot 4	residential	1	(B) 67	50	61	11	
West - N9	Lot 3	residential	1	(B) 67	50	**62**	12	+12
West - N10	Lot 2	residential	1	(B) 67	51	**65**	14	+12
West - N11	Lot 1	residential	1	(B) 67	51	**69**	18	+12
West - N12	Lot 40	residential	1	(B) 67	50	61	11	
West - N13	Lot 41	residential	1	(B) 67	50	**63**	13	+12
West - N14	Lot 42	residential	1	(B) 67	50	**69**	19	+12
West - N15	Lot 43	residential	1	(B) 67	50	**68**	18	+12
West - N16	Lot 44	residential	1	(B) 67	50	**69**	19	+12
West - N17	Lot 45	residential	1	(B) 67	51	**69**	18	+12
West - N18	Lot 46	residential	1	(B) 67	51	**68**	17	+12
West - N19	Lot 47	residential	1	(B) 67	51	**68**	17	+12
West - N20	Lot 48	residential	1	(B) 67	51	**69**	18	+12
West - N21	Lot 49	residential	1	(B) 67	51	**69**	18	+12
West - N22	Lot 50	residential	1	(B) 67	52	**69**	17	+12
West - N23	Lot 51	residential	1	(B) 67	52	**69**	17	+12
West - N24	Lot 52	residential	1	(B) 67	52	62	10	
West - N25	Lot 53	residential	1	(B) 67	52	61	9	
West - N26	Lot 54	residential	1	(B) 67	52	60	8	
West - N27	Lot 55	residential	1	(B) 67	52	59	7	
West - N28	Lot 180	residential	1	(B) 67	53	61	8	
West - N29	Lot 181	residential	1	(B) 67	53	63	10	

West - N30	Lot 182	residential	1	(B) 67	54	63	9	
West - N31	Lot 183	residential	1	(B) 67	55	62	7	
West - N32	Lot 184	residential	1	(B) 67	55	61	6	
West - N33	Lot 185	residential	1	(B) 67	55	61	6	
West - N34	Lot 186	residential	1	(B) 67	56	61	5	
West - N35	Lot 187	residential	1	(B) 67	56	61	5	
West - N36	Lot 188	residential	1	(B) 67	56	60	4	
West - N37	Lot 189	residential	1	(B) 67	57	60	3	
West - N38	Lot 190	residential	1	(B) 67	57	60	3	
West - N39	Lot 191	residential	1	(B) 67	57	60	3	
West - N40	Lot 192	residential	1	(B) 67	58	60	2	
tennis court	--	recreational	--	(B) 67	48	55	7	
Cntr - S1	13590 Hidden Valley	residential	3	(B) 67	40	49	9	
Cntr - S2	13640 Hidden Valley	residential	4	(B) 67	41	47	6	
Cntr - S3	13700 Hidden Valley	residential	3	(B) 67	44	49	5	
Cntr - S4	13740 Hidden Valley	residential	3	(B) 67	46	51	5	
Cntr - S5	13790 Hidden Valley	residential	2	(B) 67	49	55	6	
Cntr - S6	13800 Hidden Valley	residential	2	(B) 67	50	53	3	
Cntr - S7	13820 Hidden Valley	residential	2	(B) 67	48	56	8	
Cntr - S8	13840 Hidden Valley	residential	1	(B) 67	53	59	6	
Cntr - S9	13860 Hidden Valley	residential	3	(B) 67	52	59	7	
Cntr - S10	13880 Hidden Valley	residential	2	(B) 67	53	64	11	
Cntr - S11	13898 Hidden Valley	residential	1	(B) 67	51	62	11	
Cntr - S12	13900 Hidden Valley	residential	1	(B) 67	59	**66**	7	A/E
Cntr - S13	13904 Hidden Valley	residential	1	(B) 67	52	**65**	13	+12
Cntr - S14	13920 Hidden Valley	residential	2	(B) 67	60	**69**	9	A/E
Cntr - S15	13940 Hidden Valley	residential	2	(B) 67	61	**69**	8	A/E
Cntr - S16	13960 Hidden Valley	residential	2	(B) 67	62	**72**	10	A/E
Cntr - S17	13960 Hidden Valley	residential	2	(B) 67	61	**70**	9	A/E
Cntr - S18	13980 Hidden Valley	residential	3	(B) 67	62	**70**	8	A/E
Cntr - S19	14000 Hidden Valley	residential	4	(B) 67	61	**70**	9	A/E
Cntr - S20	14030 Hidden Valley	residential	3	(B) 67	60	**69**	9	A/E
Cntr - S21	14070 Hidden Valley	residential	4	(B) 67	59	**71**	12	+12
Cntr - S22	14087 Driftwood	residential	2	(B) 67	60	**73**	13	+12
Cntr - S23	14079 Driftwood	residential	5	(B) 67	59	**72**	13	+12
Cntr - S24	14071 Driftwood	residential	3	(B) 67	57	**72**	15	+12
Cntr - S25	14061 Driftwood	residential	5	(B) 67	53	**71**	18	+12

Cntr - S26	14053 Driftwood	residential	2	(B) 67	52	**70**	18	+12
Cntr - S27	14043 Driftwood	residential	6	(B) 67	53	**71**	18	+12
Cntr - S28	14035 Driftwood	residential	1	(B) 67	55	**73**	18	+12
Cntr - S29	14029 Driftwood	residential	2	(B) 67	53	**71**	18	+12
Cntr - S30	14025 Driftwood	residential	2	(B) 67	53	**71**	18	+12
Cntr - S31	14017 Driftwood	residential	3	(B) 67	50	**71**	21	+12
Cntr - S32	13999 Driftwood	residential	6	(B) 67	49	**69**	20	+12
Cntr - S33	13981 Driftwood	residential	1	(B) 67	51	**72**	21	+12
Cntr - S34	13965 Driftwood	residential	5	(B) 67	50	**71**	21	+12
Cntr - S35	13955 Driftwood	residential	1	(B) 67	52	**73**	21	+12
Cntr - S36	13925 Driftwood	residential	4	(B) 67	51	**72**	21	+12
Cntr - S37	13885 Driftwood	residential	4	(B) 67	50	**71**	21	+12
Cntr - S38	13865 Driftwood	residential	5	(B) 67	52	**73**	21	+12
Cntr - S39	13825 Driftwood	residential	4	(B) 67	50	**70**	20	+12
Cntr - S40	13799 Driftwood	residential	3	(B) 67	48	**69**	21	+12
Cntr - S41	18350 Mead	residential	2	(B) 67	46	**68**	22	+12
Cntr - S42	18380 Mead	residential	2	(B) 67	50	**71**	21	+12
Cntr - S43	18390 Mead	residential	1	(B) 67	43	**67**	24	+12
Cntr - S44	18460 Fortuna	residential	1	(B) 67	43	**67**	24	+12
Cntr - S45	18455 Fortuna	residential	1	(B) 67	42	**68**	26	+12
Cntr - S46	18490 Tarpon	residential	1	(B) 67	40	**64**	24	+12
Cntr - S47	18475 Tarpon	residential	2	(B) 67	40	**58**	18	+12
East - N1	18785 Sahale	residential	1	(B) 67	40	**62**	22	+12
East - N2	18785 Sahale	residential	1	(B) 67	40	**61**	21	+12
East - N3	18785 Sahale	residential	1	(B) 67	40	**59**	19	+12
East - N4	18785 Sahale	residential	1	(B) 67	40	**62**	22	+12
East - N5	18795 Sahale	residential	1	(B) 67	40	**59**	19	+12
East - N6	18815 Sahale	residential	2	(B) 67	40	**60**	20	+12
East - N7	18845 Sahale	residential	2	(B) 67	40	**64**	24	+12
East - N8	18873 Sahale	residential	2	(B) 67	40	**63**	23	+12
East - N9	13708 Havasu	residential	1	(B) 67	40	**60**	20	+12
East - N10	13708 Havasu	residential	1	(B) 67	40	**61**	21	+12
East - N11	13707 Havasu	residential	1	(B) 67	49	**66**	17	+12
East - N12	13707 Havasu	residential	1	(B) 67	47	**63**	16	+12
East - N13	13707 Havasu	residential	1	(B) 67	42	**58**	16	+12
East - N14	18989 Sahale	residential	1	(B) 67	44	**59**	15	+12
East - N15	18989 Sahale	residential	2	(B) 67	46	**61**	15	+12

East - N16	19013 Sahale	residential	6	(B) 67	46	**62**	16	+12
East - N17	19063 Sahale	residential	3	(B) 67	47	**63**	16	+12
East - N18	19111 Sahale	residential	3	(B) 67	45	**62**	17	+12
East - N19	13714 Cochise	residential	2	(B) 67	46	**61**	15	+12
East - N20	13714 Cochise	residential	2	(B) 67	49	**64**	15	+12
East - N21	13717 Cochise	residential	1	(B) 67	50	**66**	16	+12
East - N22	13717 Cochise	residential	1	(B) 67	47	**63**	16	+12
East - N23	13720 Wawona	residential	1	(B) 67	49	**65**	16	+12
East - N24	13720 Wawona	residential	1	(B) 67	49	**66**	17	+12
East - S1	13697 Kasanka	residential	1	(B) 67	40	**61**	21	+12
East - S2	13697 Kasanka	residential	1	(B) 67	40	**61**	21	+12
East - S3	18744 Kitom	residential	1	(B) 67	40	**61**	21	+12
East - S4	18766 Kitom	residential	1	(B) 67	40	**63**	23	+12
East - S5	18782 Kitom	residential	1	(B) 67	40	**63**	23	+12
East - S6	18774 Kitom	residential	1	(B) 67	40	**60**	20	+12
playground 1	13590 Havasu	school	--	(B) 67	43	**66**	23	+12
playground 2	13590 Havasu	school	--	(B) 67	44	**68**	24	+12
playground 3	13590 Havasu	school	--	(B) 67	41	**64**	23	+12
East - S7	13677 Havasu	residential	1	(B) 67	41	**57**	16	+12
East - S8	13677 Havasu	residential	1	(B) 67	45	**61**	16	+12
East - S9	13676 Ivanpah	residential	1	(B) 67	46	**61**	15	+12
East - S10	13677 Ivanpah	residential	1	(B) 67	45	**61**	16	+12
East - S11	13676 Cuyamaca	residential	1	(B) 67	48	**63**	15	+12
East - S12	13677 Cuyamaca	residential	1	(B) 67	46	**62**	16	+12
East - S13	13676 Coachella	residential	1	(B) 67	49	**65**	16	+12
East - S14	13676 Coachella	residential	1	(B) 67	45	**61**	16	+12
East - S15	13677 Coachella	residential	1	(B) 67	49	**65**	16	+12
East - S16	13678 Cochise	residential	1	(B) 67	46	**61**	15	+12
East - S17	13678 Cochise	residential	1	(B) 67	50	**66**	16	+12
East - S18	13679 Cochise	residential	1	(B) 67	51	**66**	15	+12
East - S19	13679 Cochise	residential	1	(B) 67	49	**65**	16	+12
fire house	fire station	residential	1	(E) 52	55[4]	71[4]	16[4]	

1 - NAC - Noise Abatement Criterion; 2 - Includes train noise as applicable; 3 - A/E = approach/exceed NAC, +12dB = substantial noise increase; 4 - Exterior fire house noise levels – no interior noise impact predicted

Table B-2: Predicted Traffic Noise Impacts (Project Build Alternative "B")

Receiver I.D.	Location or Address	Land Use	Number of Dwellings Represented	NAC[1]	Existing & No-Build Noise Level, L_{eq}[2]	Design Year Noise Level With Project L_{eq}[2]	Increase, dB	Impact Type[3]
West - N1	Lot 20	residential	1	(B) 67	63	**70**	7	A/E
West - N2	Lot 21	residential	1	(B) 67	53	61	8	
West - N3	Lot 24	residential	1	(B) 67	51	59	8	
West - N4	Lot 26	residential	1	(B) 67	51	59	8	
West - N5	Lot 7	residential	1	(B) 67	50	57	7	
West - N6	Lot 6	residential	1	(B) 67	50	58	8	
West - N7	Lot 5	residential	1	(B) 67	50	59	9	
West - N8	Lot 4	residential	1	(B) 67	50	60	10	
West - N9	Lot 3	residential	1	(B) 67	50	61	11	
West - N10	Lot 2	residential	1	(B) 67	51	**64**	13	+12
West - N11	Lot 1	residential	1	(B) 67	51	**68**	17	+12
West - N12	Lot 40	residential	1	(B) 67	50	60	10	
West - N13	Lot 41	residential	1	(B) 67	50	**62**	12	+12
West - N14	Lot 42	residential	1	(B) 67	50	**69**	19	+12
West - N15	Lot 43	residential	1	(B) 67	50	**67**	17	+12
West - N16	Lot 44	residential	1	(B) 67	50	**69**	19	+12
West - N17	Lot 45	residential	1	(B) 67	51	**69**	18	+12
West - N18	Lot 46	residential	1	(B) 67	51	**68**	17	+12
West - N19	Lot 47	residential	1	(B) 67	51	**67**	16	+12
West - N20	Lot 48	residential	1	(B) 67	51	**70**	19	+12
West - N21	Lot 49	residential	1	(B) 67	51	**69**	18	+12
West - N22	Lot 50	residential	1	(B) 67	52	**70**	18	+12
West - N23	Lot 51	residential	1	(B) 67	52	**72**	20	+12
West - N24	Lot 52	residential	1	(B) 67	52	63	11	
West - N25	Lot 53	residential	1	(B) 67	52	62	10	
West - N26	Lot 54	residential	1	(B) 67	52	60	8	
West - N27	Lot 55	residential	1	(B) 67	52	60	8	
West - N28	Lot 180	residential	1	(B) 67	53	62	9	
West - N29	Lot 181	residential	1	(B) 67	53	64	11	
West - N30	Lot 182	residential	1	(B) 67	54	65	11	
West - N31	Lot 183	residential	1	(B) 67	55	64	9	

West - N32	Lot 184	residential	1	(B) 67	55	64	9	
West - N33	Lot 185	residential	1	(B) 67	55	63	8	
West - N34	Lot 186	residential	1	(B) 67	56	63	7	
West - N35	Lot 187	residential	1	(B) 67	56	63	7	
West - N36	Lot 188	residential	1	(B) 67	56	62	6	
West - N37	Lot 189	residential	1	(B) 67	57	62	5	
West - N38	Lot 190	residential	1	(B) 67	57	62	5	
West - N39	Lot 191	residential	1	(B) 67	57	62	5	
West - N40	Lot 192	residential	1	(B) 67	58	62	4	
West - S1	Coad Road	residential	1	(B) 67	58	64	6	
West - S2	13600 Coad Road	residential	1	(B) 67	60	64	4	
West - S3	13685 Coad Road	residential	1	(B) 67	64	66	2	A/E
tennis court	--	recreational	--	(B) 67	48	55	7	
Cntr - S1	13590 Hidden Valley	residential	3	(B) 67	40	49	9	
Cntr - S2	13640 Hidden Valley	residential	4	(B) 67	41	47	6	
Cntr - S3	13700 Hidden Valley	residential	3	(B) 67	44	49	5	
Cntr - S4	13740 Hidden Valley	residential	3	(B) 67	46	51	5	
Cntr - S5	13790 Hidden Valley	residential	2	(B) 67	49	54	5	
Cntr - S6	13800 Hidden Valley	residential	2	(B) 67	50	53	3	
Cntr - S7	13820 Hidden Valley	residential	2	(B) 67	48	55	7	
Cntr - S8	13840 Hidden Valley	residential	1	(B) 67	53	58	5	
Cntr - S9	13860 Hidden Valley	residential	3	(B) 67	52	58	6	
Cntr - S10	13880 Hidden Valley	residential	2	(B) 67	53	62	9	
Cntr - S11	13898 Hidden Valley	residential	1	(B) 67	51	61	10	
Cntr - S12	13900 Hidden Valley	residential	1	(B) 67	59	65	6	
Cntr - S13	13904 Hidden Valley	residential	1	(B) 67	52	**65**	13	+12
Cntr - S14	13920 Hidden Valley	residential	2	(B) 67	60	**69**	9	A/E
Cntr - S15	13940 Hidden Valley	residential	2	(B) 67	61	**69**	8	A/E
Cntr - S16	13960 Hidden Valley	residential	2	(B) 67	62	**72**	10	A/E
Cntr - S17	13960 Hidden Valley	residential	2	(B) 67	61	**70**	9	A/E
Cntr - S18	13980 Hidden Valley	residential	3	(B) 67	62	**70**	8	A/E
Cntr - S19	14000 Hidden Valley	residential	4	(B) 67	61	**70**	9	A/E
Cntr - S20	14030 Hidden Valley	residential	3	(B) 67	60	**69**	9	A/E
Cntr - S21	14070 Hidden Valley	residential	4	(B) 67	59	**71**	12	+12
Cntr - S22	14087 Driftwood	residential	2	(B) 67	60	**73**	13	+12
Cntr - S23	14079 Driftwood	residential	5	(B) 67	59	**72**	13	+12
Cntr - S24	14071 Driftwood	residential	3	(B) 67	57	**72**	15	+12

Cntr - S25	14061 Driftwood	residential	5	(B) 67	53	**71**	18	+12
Cntr - S26	14053 Driftwood	residential	2	(B) 67	52	**70**	18	+12
Cntr - S27	14043 Driftwood	residential	6	(B) 67	53	**71**	18	+12
Cntr - S28	14035 Driftwood	residential	1	(B) 67	55	**73**	18	+12
Cntr - S29	14029 Driftwood	residential	2	(B) 67	53	**71**	18	+12
Cntr - S30	14025 Driftwood	residential	2	(B) 67	53	**71**	18	+12
Cntr - S31	14017 Driftwood	residential	3	(B) 67	50	**71**	21	+12
Cntr - S32	13999 Driftwood	residential	6	(B) 67	49	**69**	20	+12
Cntr - S33	13981 Driftwood	residential	1	(B) 67	51	**72**	21	+12
Cntr - S34	13965 Driftwood	residential	5	(B) 67	50	**71**	21	+12
Cntr - S35	13955 Driftwood	residential	1	(B) 67	52	**73**	21	+12
Cntr - S36	13925 Driftwood	residential	4	(B) 67	51	**72**	21	+12
Cntr - S37	13885 Driftwood	residential	4	(B) 67	50	**71**	21	+12
Cntr - S38	13865 Driftwood	residential	5	(B) 67	52	**73**	21	+12
Cntr - S39	13825 Driftwood	residential	4	(B) 67	50	**70**	20	+12
Cntr - S40	13799 Driftwood	residential	3	(B) 67	48	**69**	21	+12
Cntr - S41	18350 Mead	residential	2	(B) 67	46	**68**	22	+12
Cntr - S42	18380 Mead	residential	2	(B) 67	50	**71**	21	+12
Cntr - S43	18390 Mead	residential	1	(B) 67	43	**67**	24	+12
Cntr - S44	18460 Fortuna	residential	1	(B) 67	43	**67**	24	+12
Cntr - S45	18455 Fortuna	residential	1	(B) 67	42	**68**	26	+12
Cntr - S46	18490 Tarpon	residential	1	(B) 67	40	**64**	24	+12
Cntr - S47	18475 Tarpon	residential	2	(B) 67	40	**58**	18	+12
East - N1	18785 Sahale	residential	1	(B) 67	40	**62**	22	+12
East - N2	18785 Sahale	residential	1	(B) 67	40	**61**	21	+12
East - N3	18785 Sahale	residential	1	(B) 67	40	**59**	19	+12
East - N4	18785 Sahale	residential	1	(B) 67	40	**62**	22	+12
East - N5	18795 Sahale	residential	1	(B) 67	40	**59**	19	+12
East - N6	18815 Sahale	residential	2	(B) 67	40	**60**	20	+12
East - N7	18845 Sahale	residential	2	(B) 67	40	**64**	24	+12
East - N8	18873 Sahale	residential	2	(B) 67	40	**63**	23	+12
East - N9	13708 Havasu	residential	1	(B) 67	40	**60**	20	+12
East - N10	13708 Havasu	residential	1	(B) 67	40	**61**	21	+12
East - N11	13707 Havasu	residential	1	(B) 67	49	**66**	17	+12
East - N12	13707 Havasu	residential	1	(B) 67	47	**63**	16	+12
East - N13	13707 Havasu	residential	1	(B) 67	42	**58**	16	+12
East - N14	18989 Sahale	residential	1	(B) 67	44	**59**	15	+12

East - N15	18989 Sahale	residential	2	(B) 67	46	**61**	15	+12
East - N16	19013 Sahale	residential	6	(B) 67	46	**62**	16	+12
East - N17	19063 Sahale	residential	3	(B) 67	47	**63**	16	+12
East - N18	19111 Sahale	residential	3	(B) 67	45	**62**	17	+12
East - N19	13714 Cochise	residential	2	(B) 67	46	**61**	15	+12
East - N20	13714 Cochise	residential	2	(B) 67	49	**64**	15	+12
East - N21	13717 Cochise	residential	1	(B) 67	50	**66**	16	+12
East - N22	13717 Cochise	residential	1	(B) 67	47	**63**	16	+12
East - N23	13720 Wawona	residential	1	(B) 67	49	**65**	16	+12
East - N24	13720 Wawona	residential	1	(B) 67	49	**66**	17	+12
East - S1	13697 Kasanka	residential	1	(B) 67	40	**61**	21	+12
East - S2	13697 Kasanka	residential	1	(B) 67	40	**61**	21	+12
East - S3	18744 Kitom	residential	1	(B) 67	40	**61**	21	+12
East - S4	18766 Kitom	residential	1	(B) 67	40	**63**	23	+12
East - S5	18782 Kitom	residential	1	(B) 67	40	**63**	23	+12
East - S6	18774 Kitom	residential	1	(B) 67	40	**60**	20	+12
playground 1	13590 Havasu	school	--	(B) 67	43	**66**	23	+12
playground 2	13590 Havasu	school	--	(B) 67	44	**68**	24	+12
playground 3	13590 Havasu	school	--	(B) 67	41	**64**	23	+12
East - S7	13677 Havasu	residential	1	(B) 67	41	**57**	16	+12
East - S8	13677 Havasu	residential	1	(B) 67	45	**61**	16	+12
East - S9	13676 Ivanpah	residential	1	(B) 67	46	**61**	15	+12
East - S10	13677 Ivanpah	residential	1	(B) 67	45	**61**	16	+12
East - S11	13676 Cuyamaca	residential	1	(B) 67	48	**63**	15	+12
East - S12	13677 Cuyamaca	residential	1	(B) 67	46	**62**	16	+12
East - S13	13676 Coachella	residential	1	(B) 67	49	**65**	16	+12
East - S14	13676 Coachella	residential	1	(B) 67	45	**61**	16	+12
East - S15	13677 Coachella	residential	1	(B) 67	49	**65**	16	+12
East - S16	13678 Cochise	residential	1	(B) 67	46	**61**	15	+12
East - S17	13678 Cochise	residential	1	(B) 67	50	**66**	16	+12
East - S18	13679 Cochise	residential	1	(B) 67	51	**66**	15	+12
East - S19	13679 Cochise	residential	1	(B) 67	49	**65**	16	+12
fire house	fire station	residential	1	(E) 52	55[4]	71[4]	16[4]	

1 - NAC - Noise Abatement Criterion; 2 - Includes train noise as applicable; 3 - A/E = approach/exceed NAC, +12dB = substantial noise increase; 4 - Exterior fire house noise levels – no interior noise impact predicted

Appendix C Noise Barrier Reasonableness Analysis Worksheets

Build Alternative "A"

Table C - 1

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			2008
Base allowance year / amount			$ 36,000
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	$ 2,000
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise L		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	$ 6,000
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Reside		check one	
YES on either one	Add $10,000	X	$ 10,000
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			n/a
Number of Benefited Residences			n/a
Total Unmodified Reasonable Allowance			n/a

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	6-Mar-09
Analyst	Medlin & Assoc.
Barrier Name or ID	West Wall 2
Barrier Height (ft)	6
Critical Design Receiver	West - N11
# Benefited Residences	1
New Highway Const or Pre-1978 Residences	Yes
Existing Noise Level	51
Design Year + Project Level	69
Change in Noise Level	18
Noise Level W/ Abatement	65
Barrier Insertion Loss	4

Table C - 2

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			2008
Base allowance year / amount			$ 36,000
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	$ 2,000
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise L		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	$ 6,000
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Reside		check one	
YES on either one	Add $10,000	X	$ 10,000
NO on both	Add $0		
nmodified Reasonable Allowance Per Residence			n/a
Number of Benefited Residences			n/a
Total Unmodified Reasonable Allowance			n/a

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	6-Mar-09
Analyst	Medlin & Assoc.
Barrier ID	West Wall 2
Barrier Height (ft)	8
Critical Design Receiver	West - N11
# Benefited Residences	1
New Highway Const. Pre-1978 Residences	Yes
Existing Noise Level	51
Design Year + Project Level	69
Change in Noise Level	18
Noise Level W/ Abatement	65
Barrier Insertion Loss	4

Table C - 3

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 2**
Barrier Height (ft)	**10**
Critical Design Receiver	**West - N11**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**69**
Change in Noise Level	**18**
Noise Level W/ Abatement	**65**
Barrier Insertion Loss	**4**

Table C - 4

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 2**
Barrier Height (ft)	**12**
Critical Design Receiver	**West - N11**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**69**
Change in Noise Level	**18**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**5**

Table C - 5

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 2**
Barrier Height (ft)	**14**
Critical Design Receiver	**West - N11**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**69**
Change in Noise Level	**18**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**5**

Table C - 6

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 2**
Barrier Height (ft)	**16**
Critical Design Receiver	**West - N11**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**69**
Change in Noise Level	**18**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**5**

Table C - 7

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 3**
Barrier Height (ft)	**6**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**7**

Table C - 8

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 3**
Barrier Height (ft)	**8**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**8**

Table C - 9

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 3**
Barrier Height (ft)	**10**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**9**

Table C - 10

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 3**
Barrier Height (ft)	**12**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**10**

Table C - 11

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 3**
Barrier Height (ft)	**14**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**11**

Table C - 12

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 60,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 3**
Barrier Height (ft)	**16**
Critical Design Receiver	**West - N10**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**65**
Change in Noise Level	**14**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**12**

Table C - 13

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	X	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 4**
Barrier Height (ft)	**6**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**5**

Table C - 14

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 4**
Barrier Height (ft)	**8**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**6**

Table C - 15

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 4**
Barrier Height (ft)	**10**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**7**

Table C - 16

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 4**
Barrier Height (ft)	**12**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**8**

Table C - 17

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 4**
Barrier Height (ft)	**14**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**9**

Table C - 18

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 4**
Barrier Height (ft)	**16**
Critical Design Receiver	**West - N9**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**62**
Change in Noise Level	**12**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**9**

Table C - 19

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 696,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 5**
Barrier Height (ft)	**6**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**9**

Table C - 20

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 696,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 5**
Barrier Height (ft)	**8**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**11**

Table C - 21

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 5**
Barrier Height (ft)	**10**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**12**

Table C - 22

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 5**
Barrier Height (ft)	**12**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**13**

Table C - 23

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 5**
Barrier Height (ft)	**14**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**14**

Table C - 24

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 5**
Barrier Height (ft)	**16**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**15**

Table C - 25

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**6**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**71**
Barrier Insertion Loss	**2**

Table C - 26

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,190,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**8**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**7**

Table C - 27

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,300,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**10**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**9**

Table C - 28

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,300,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**12**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**62**
Barrier Insertion Loss	**11**

Table C - 29

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 62,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,410,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**14**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**12**

Table C - 30

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 62,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,410,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**16**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**13**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 2**
Barrier Height (ft)	**6**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**72**
Barrier Insertion Loss	**0**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 2**
Barrier Height (ft)	**8**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**71**
Barrier Insertion Loss	**1**

Table C - 33

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 2**
Barrier Height (ft)	**10**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**68**
Barrier Insertion Loss	**4**

Table C - 34

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**44**
Total Unmodified Reasonable Allowance			**$ 2,552,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 2**
Barrier Height (ft)	**12**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**8**

Table C - 35

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**44**
Total Unmodified Reasonable Allowance			**$ 2,640,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 2**
Barrier Height (ft)	**14**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**11**

Table C - 36

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 62,000**
Number of Benefited Residences			**44**
Total Unmodified Reasonable Allowance			**$ 2,728,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 2**
Barrier Height (ft)	**16**
Critical Design Receiver	**Cntr - S33**
# Benefited Residences	**44**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**72**
Change in Noise Level	**21**
Noise Level W/ Abatement	**59**
Barrier Insertion Loss	**13**

Table C - 37

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 336,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 3**
Barrier Height (ft)	**6**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**8**

Table C - 38

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	X	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 348,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 3**
Barrier Height (ft)	**8**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**10**

Table C - 39

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 360,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 3**
Barrier Height (ft)	**10**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**12**

Table C - 40

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 360,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 3**
Barrier Height (ft)	**12**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**13**

Table C - 41

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 360,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 3**
Barrier Height (ft)	**14**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**14**

Table C - 42

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**6**
Total Unmodified Reasonable Allowance			**$ 360,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 3**
Barrier Height (ft)	**16**
Critical Design Receiver	**Cntr - S45**
# Benefited Residences	**6**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**42**
Design Year + Project Level	**68**
Change in Noise Level	**26**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**15**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**0**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**3**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**9**
Total Unmodified Reasonable Allowance			**$ 486,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**59**
Barrier Insertion Loss	**5**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**9**
Total Unmodified Reasonable Allowance			**$ 504,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**6**

Table C - 47

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**9**
Total Unmodified Reasonable Allowance			**$ 504,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**7**

Table C - 48

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**9**
Total Unmodified Reasonable Allowance			**$ 504,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca north 1 & 1a**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - N7**
# Benefited Residences	**9**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**64**
Change in Noise Level	**24**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**8**

Table C - 49

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 3**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**63**
Barrier Insertion Loss	**0**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 3**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**3**

Table C - 51

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 3**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**59**
Barrier Insertion Loss	**4**

Table C - 52

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**13**
Total Unmodified Reasonable Allowance			**$ 702,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 3**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**5**

Table C - 53

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**13**
Total Unmodified Reasonable Allowance			**$ 728,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 3**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**6**

Table C - 54

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**13**
Total Unmodified Reasonable Allowance			**$ 728,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 3**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - N17**
# Benefited Residences	**13**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**47**
Design Year + Project Level	**63**
Change in Noise Level	**16**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**7**

Table C - 55

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 6**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**0**

Table C - 56

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 6**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**62**
Barrier Insertion Loss	**4**

Table C - 57

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 6**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**6**

Table C - 58

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 6**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**59**
Barrier Insertion Loss	**7**

Table C - 59

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 6**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**9**

Table C - 60

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 6**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - N21**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**10**

Table C - 61

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 7**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**0**

Table C - 62

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 7**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**62**
Barrier Insertion Loss	**4**

Table C - 63

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 7**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**6**

Table C - 64

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 7**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**8**

Table C - 65

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca North 7**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**9**

Table C - 66

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca North 7**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - N24**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**49**
Design Year + Project Level	**66**
Change in Noise Level	**17**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**10**

Table C - 67

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	X	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**5**

Table C - 68

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**7**

Table C - 69

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**8**

Table C - 70

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**8**

Table C - 71

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**52**
Barrier Insertion Loss	**9**

Table C - 72

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 1 & 1a**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - S1**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**61**
Change in Noise Level	**21**
Noise Level W/ Abatement	**51**
Barrier Insertion Loss	**10**

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 3**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**62**
Barrier Insertion Loss	**1**

Table C - 74

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**4**
Total Unmodified Reasonable Allowance			**$ 216,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 3**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**5**

Table C - 75

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**4**
Total Unmodified Reasonable Allowance			**$ 224,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 3**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**7**

Table C - 76

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	X	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	X	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**4**
Total Unmodified Reasonable Allowance			**$ 224,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 3**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**8**

Table C - 77

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**4**
Total Unmodified Reasonable Allowance			**$ 232,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 3**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**9**

Table C - 78

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**4**
Total Unmodified Reasonable Allowance			**$ 232,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 3**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - S5**
# Benefited Residences	**4**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**40**
Design Year + Project Level	**63**
Change in Noise Level	**23**
Noise Level W/ Abatement	**53**
Barrier Insertion Loss	**10**

Table C - 79

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 5**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**0**

Table C - 80

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**8**
Total Unmodified Reasonable Allowance			**$ 432,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 5**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**5**

Table C - 81

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**8**
Total Unmodified Reasonable Allowance			**$ 448,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 5**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**6**

Table C - 82

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**8**
Total Unmodified Reasonable Allowance			**$ 448,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 5**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**8**

Table C - 83

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**8**
Total Unmodified Reasonable Allowance			**$ 464,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 5**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**9**

Table C - 84

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**8**
Total Unmodified Reasonable Allowance			**$ 464,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 5**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - S17**
# Benefited Residences	**8**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**66**
Change in Noise Level	**16**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**10**

Table C - 85

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 8**
Barrier Height (ft)	**6**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**0**

Table C - 86

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0	**X**	**$0**
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 54,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 54,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 8**
Barrier Height (ft)	**8**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**5**

Table C - 87

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 8**
Barrier Height (ft)	**10**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**59**
Barrier Insertion Loss	**7**

Table C - 88

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 56,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 56,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 8**
Barrier Height (ft)	**12**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**58**
Barrier Insertion Loss	**8**

Table C - 89

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Yucca south 8**
Barrier Height (ft)	**14**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**9**

Table C - 90

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**1**
Total Unmodified Reasonable Allowance			**$ 58,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Yucca south 8**
Barrier Height (ft)	**16**
Critical Design Receiver	**East - S18**
# Benefited Residences	**1**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**51**
Design Year + Project Level	**66**
Change in Noise Level	**15**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**11**

Build Alternative B

(Only barrier worksheets which differ from Alt. A are shown. All others barrier reasonableness worksheets are identical for Build Alternatives A & B)

Table C - 91

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			2008
Base allowance year / amount			$ 36,000
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	$ 2,000
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise L		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	$ 6,000
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	X	$ 4,000
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Reside		check one	
YES on either one	Add $10,000	X	$ 10,000
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			$ 58,000
Number of Benefited Residences			12
Total Unmodified Reasonable Allowance			$ 696,000

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	6-Mar-09
Analyst	Medlin & Assoc.
Barrier Name or ID	West Wall 5
Barrier Height (ft)	6
Critical Design Receiver	West - N16
# Benefited Residences	12
New Highway Const or Pre-1978 Residences	Yes
Existing Noise Level	50
Design Year + Project Level	69
Change in Noise Level	19
Noise Level W/ Abatement	60
Barrier Insertion Loss	9

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Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			2008
Base allowance year / amount			$ 36,000
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	X	$ 2,000
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise L		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	X	$ 6,000
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	X	$ 4,000
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Reside		check one	
YES on either one	Add $10,000	X	$ 10,000
NO on both	Add $0		
nmodified Reasonable Allowance Per Residence			$ 58,000
Number of Benefited Residences			12
Total Unmodified Reasonable Allowance			$ 696,000

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	6-Mar-09
Analyst	Medlin & Assoc.
Barrier ID	West Wall 5
Barrier Height (ft)	8
Critical Design Receiver	West - N16
# Benefited Residences	12
New Highway Const. Pre-1978 Residences	Yes
Existing Noise Level	50
Design Year + Project Level	69
Change in Noise Level	19
Noise Level W/ Abatement	58
Barrier Insertion Loss	11

Table C - 93

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 5**
Barrier Height (ft)	**10**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**57**
Barrier Insertion Loss	**12**

Table C - 94

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 5**
Barrier Height (ft)	**12**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**56**
Barrier Insertion Loss	**13**

Table C - 95

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**West Wall 5**
Barrier Height (ft)	**14**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**55**
Barrier Insertion Loss	**14**

Table C - 96

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000	**X**	**$ 2,000**
70 - 74 dBA	Add $4,000		
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**12**
Total Unmodified Reasonable Allowance			**$ 720,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**West Wall 5**
Barrier Height (ft)	**16**
Critical Design Receiver	**West - N16**
# Benefited Residences	**12**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**50**
Design Year + Project Level	**69**
Change in Noise Level	**19**
Noise Level W/ Abatement	**54**
Barrier Insertion Loss	**15**

Table C - 97

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**n/a**
Number of Benefited Residences			**n/a**
Total Unmodified Reasonable Allowance			**n/a**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**6**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**71**
Barrier Insertion Loss	**2**

Table C - 98

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000	**X**	**$ 2,000**
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 58,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,190,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**8**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**66**
Barrier Insertion Loss	**7**

Table C - 99

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,300,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**10**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**64**
Barrier Insertion Loss	**9**

Table C - 100

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000	**X**	**$ 4,000**
12 dBA or more	Add $6,000		
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 60,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,300,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**12**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**62**
Barrier Insertion Loss	**11**

Table C - 101

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 62,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,410,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier Name or ID	**Central Wall 1**
Barrier Height (ft)	**14**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const or Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**61**
Barrier Insertion Loss	**12**

Table C - 102

Worksheet A

Reasonableness Allowance Calculation for Noise Abatement at Critical Design Receiver

Base Allowance Year			**2008**
Base allowance year / amount			**$ 36,000**
1. Absolute Noise Levels		check one	
69 dBA or less	Add $2,000		
70 - 74 dBA	Add $4,000	**X**	**$ 4,000**
75 - 78 dBA	Add $6,000		
More than 78 dBA	Add $8,000		
2. Design Year Increase over Existing Noise Levels		check one	
Less than 3 dBA	Add $0		
3 - 7 dBA	Add $2,000		
8 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
3. Achievable Noise Reduction		check one	
5 dBA	Add $0		
6 - 8 dBA	Add $2,000		
9 - 11 dBA	Add $4,000		
12 dBA or more	Add $6,000	**X**	**$ 6,000**
4. New Hwy Construction or Pre-1978 Residences?		check one	
YES on either one	Add $10,000	**X**	**$ 10,000**
NO on both	Add $0		
Unmodified Reasonable Allowance Per Residence			**$ 62,000**
Number of Benefited Residences			**55**
Total Unmodified Reasonable Allowance			**$ 3,410,000**

Bollard Acoustical Consultants, Inc.

Project Name:	
Yucca Loma Widening Project	
Project Location:	
San Bernardino County	
Analysis Date	**6-Mar-09**
Analyst	**Medlin & Assoc.**
Barrier ID	**Central Wall 1**
Barrier Height (ft)	**16**
Critical Design Receiver	**Cntr - S22**
# Benefited Residences	**55**
New Highway Const. Pre-1978 Residences	**Yes**
Existing Noise Level	**60**
Design Year + Project Level	**73**
Change in Noise Level	**13**
Noise Level W/ Abatement	**60**
Barrier Insertion Loss	**13**

Appendix D Noise Barrier Analysis

Build Alternative "A" Noise Barrier Insertion Loss Tables

Table D-1: Insertion Loss Data for Barrier "West Wall 2"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
West - N11	69	65	4	65	4	65	4	64	**5**	64	**5**	64	**5**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-2: Insertion Loss Data for Barrier "West Wall 3"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
West - N10	65	58	**7**	57	**8**	56	9	55	**10**	54	**11**	53	**12**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-3: Insertion Loss Data for Barrier "West Wall 4"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
West - N9	62	57	**5**	56	**6**	55	7	54	**8**	53	**9**	53	**9**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-4: Insertion Loss Data for Barrier "West Wall 5"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
West - N12	61	56	**5**	55	**6**	54	**7**	54	**7**	53	**8**	53	**8**
West - N13	63	58	**5**	57	**6**	56	**7**	55	**8**	55	**8**	54	**9**
West - N14	69	60	**9**	58	**11**	57	**12**	55	**14**	54	**15**	54	**15**
West - N15	68	59	**9**	58	**10**	57	**11**	56	**12**	55	**13**	55	**13**
West - N16	69	60	**9**	58	**11**	57	**12**	56	**13**	55	**14**	54	**15**
West - N17	69	60	**9**	58	**11**	57	**12**	56	**13**	55	**14**	55	**14**
West - N18	68	60	**8**	59	**9**	57	**11**	57	**11**	56	**12**	55	**13**
West - N19	68	60	**8**	58	**10**	58	**10**	57	**11**	56	**12**	56	**12**
West - N20	69	61	**8**	59	**10**	58	**11**	57	**12**	56	**13**	55	**14**
West - N21	69	61	**8**	59	**10**	58	**11**	57	**12**	56	**13**	55	**14**
West - N22	69	61	**8**	60	**9**	58	**11**	57	**12**	56	**13**	55	**14**
West - N23	69	61	**8**	60	**9**	58	**11**	57	**12**	56	**13**	56	**13**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-5: Insertion Loss Data for Barrier "Central Wall 1"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
Cntr - S8	59	56	3	56	3	55	4	55	4	55	4	54	**5**
Cntr - S9	59	56	3	56	3	55	4	54	**5**	54	**5**	53	**6**
Cntr - S10	64	58	**6**	57	**7**	56	**8**	55	**9**	55	**9**	54	**10**
Cntr - S11	62	59	3	58	4	57	**5**	56	**6**	56	**6**	55	**7**
Cntr - S12	66	62	4	61	**5**	61	**5**	60	**6**	60	**6**	59	**7**
Cntr - S13	65	62	3	60	**5**	59	**6**	58	**7**	57	**8**	56	**9**
Cntr - S14	69	65	4	64	**5**	63	**6**	62	**7**	61	**8**	61	**8**
Cntr - S15	69	69	0	67	2	65	4	64	**5**	63	**6**	62	**7**
Cntr - S16	72	71	1	70	2	67	**5**	65	**7**	64	**8**	63	**9**
Cntr - S17	70	69	1	68	2	66	4	64	**6**	63	**7**	62	**8**
Cntr - S18	70	70	0	69	1	66	4	64	**6**	63	**7**	62	**8**
Cntr - S19	70	70	0	69	1	66	4	64	**6**	63	**7**	62	**8**
Cntr - S20	69	69	0	66	3	64	**5**	63	**6**	61	**8**	61	**8**
Cntr - S21	71	69	2	68	3	65	**6**	63	**8**	61	**10**	61	**10**
Cntr - S22	73	71	2	66	**7**	64	**9**	62	**11**	61	**12**	60	**13**
Cntr - S23	72	71	1	70	2	67	**5**	64	**8**	61	**11**	60	**12**
Cntr - S24	72	71	1	69	3	66	**6**	63	**9**	60	**12**	59	**13**
Cntr - S25	71	70	1	69	2	65	**6**	63	**8**	60	**11**	58	**13**
Cntr - S26	70	69	1	68	2	64	**6**	62	**8**	59	**11**	57	**13**
Cntr - S27	71	70	1	69	2	66	**5**	63	**8**	61	**10**	59	**12**
Cntr - S28	73	72	1	71	2	68	**5**	64	**9**	61	**12**	59	**14**
Cntr - S29	71	70	1	68	3	64	**7**	62	**9**	59	**12**	58	**13**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-6: Insertion Loss Data for Barrier "Central Wall 2"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
Cntr - S30	71	70	1	68	3	65	**6**	62	**9**	59	**12**	58	**13**
Cntr - S31	71	70	1	69	2	67	4	63	**8**	61	**10**	59	**12**
Cntr - S32	69	68	1	66	3	63	**6**	61	**8**	58	**11**	57	**12**
Cntr - S33	72	72	0	71	1	68	4	64	**8**	61	**11**	59	**13**
Cntr - S34	71	70	1	69	2	66	**5**	63	**8**	60	**11**	59	**12**
Cntr - S35	73	73	0	72	1	71	2	67	**6**	62	**11**	60	**13**
Cntr - S36	72	72	0	71	1	69	3	65	**7**	62	**10**	60	**12**
Cntr - S37	71	71	0	70	1	68	3	66	**5**	63	**8**	60	**11**
Cntr - S38	73	73	0	71	2	67	**6**	64	**9**	60	**13**	58	**15**
Cntr - S39	70	70	0	68	2	65	**5**	63	**7**	60	**10**	59	**11**
Cntr - S40	69	69	0	68	1	65	4	62	**7**	59	**10**	57	**12**
Cntr - S41	68	68	0	68	0	65	3	63	**5**	60	**8**	58	**10**
Cntr - S42	71	71	0	71	0	70	1	68	3	64	**7**	60	**11**
Cntr - S43	67	67	0	67	0	65	2	63	4	60	**7**	58	**9**
Cntr - S44	67	67	0	66	1	64	3	61	**6**	58	**9**	57	**10**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-7: Insertion Loss Data for (Combined) Barrier "Central Wall 3"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
Cntr - S45	68	60	**8**	58	**10**	56	**12**	55	**13**	54	**14**	53	**15**
Cntr - S46	64	60	4	58	**6**	56	**8**	55	**9**	54	**10**	54	**10**
Cntr - S47	58	54	4	53	**5**	52	**6**	51	**7**	50	**8**	50	**8**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-8: Insertion Loss Data for (Combined) Barrier "Yucca North 1" & "Yucca North 1a"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - N1	62	57	**5**	56	**6**	55	**7**	54	**8**	53	**9**	53	**9**
East - N2	61	60	1	59	2	57	4	56	**5**	55	**6**	54	**7**
East - N3	59	59	0	57	2	56	3	55	4	55	4	54	**5**
East - N4	62	62	0	60	2	58	4	57	**5**	56	**6**	55	**7**
East - N5	59	58	1	57	2	56	3	55	4	54	**5**	54	**5**
East - N6	60	60	0	58	2	57	3	56	4	56	4	55	**5**
East - N7	64	64	0	61	3	59	**5**	58	**6**	57	**7**	56	**8**
East - N8	63	63	0	60	3	58	**5**	57	**6**	56	**7**	56	**7**
East - N9	60	60	0	58	2	57	3	56	4	55	**5**	55	**5**
East - N10	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-9: Insertion Loss Data for Barrier "Yucca North 3"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - N11	66	66	0	61	**5**	60	**6**	58	**8**	57	**9**	55	**11**
East - N12	63	63	0	60	3	58	**5**	57	**6**	56	**7**	55	**8**
East - N13	58	58	0	56	2	55	3	54	4	53	**5**	52	**6**
East - N14	59	59	0	58	1	57	2	56	3	55	4	55	4
East - N15	61	61	0	59	2	57	4	56	**5**	55	**6**	54	**7**
East - N16	62	62	0	60	2	58	4	57	**5**	56	**6**	55	**7**
East - N17	63	63	0	60	3	59	4	58	**5**	57	**6**	56	**7**
East - N18	62	62	0	59	3	58	4	57	**5**	56	**6**	56	**6**
East - N19	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**
East - N20	64	64	0	61	3	59	**5**	57	**7**	56	**8**	55	**9**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-10: Insertion Loss Data for Barrier "Yucca North 6"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - N21	66	66	0	62	4	60	**6**	59	**7**	57	**9**	56	**10**
East - N22	63	63	0	60	3	58	**5**	57	**6**	56	**7**	55	**8**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-11: Insertion Loss Data for Barrier "Yucca North 7"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - N23	65	65	0	62	3	60	**5**	58	**7**	57	**8**	56	**9**
East - N24	66	66	0	62	4	60	**6**	58	**8**	57	**9**	56	**10**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-12: Insertion Loss Data for (Combined) Barrier "Yucca South 1" & "Yucca South 1a"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - S1	61	56	**5**	54	**7**	53	**8**	53	**8**	52	**9**	51	**10**
East - S2	61	61	0	58	3	56	**5**	55	**6**	53	**8**	52	**9**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-13: Insertion Loss Data for Barrier "Yucca South 3"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - S3	61	60	1	58	3	57	4	56	**5**	55	**6**	54	**7**
East - S4	63	63	0	60	3	58	**5**	56	**7**	55	**8**	54	**9**
East - S5	63	62	1	58	**5**	56	**7**	55	**8**	54	**9**	53	**10**
East - S6	60	59	1	56	4	54	**6**	53	**7**	52	**8**	51	**9**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-14: Insertion Loss Data for Barrier "Roadside Playground Wall"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
playground 1	66	61	**5**	60	**6**	59	**7**	57	**9**	57	**9**	56	**10**
playground 2	68	63	**5**	62	**6**	61	**7**	60	**8**	60	**8**	60	**8**
playground 3	64	60	4	59	**5**	58	**6**	58	**6**	57	**7**	57	**7**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-15: Insertion Loss Data for Barrier "Yucca South 5"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - S7	57	57	0	55	2	54	3	53	4	53	4	53	4
East - S8	61	61	0	59	2	58	3	57	4	55	**6**	54	**7**
East - S9	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**
East - S10	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**
East - S11	63	63	0	60	3	58	**5**	57	**6**	56	**7**	55	**8**
East - S12	62	62	0	59	3	58	4	57	**5**	56	**6**	56	**6**
East - S13	65	65	0	61	4	59	**6**	58	**7**	57	**8**	55	**10**
East - S14	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**
East - S15	65	65	0	61	4	60	**5**	58	**7**	57	**8**	56	**9**
East - S16	61	61	0	59	2	58	3	57	4	56	**5**	55	**6**
East - S17	66	66	0	61	**5**	60	**6**	58	**8**	57	**9**	56	**10**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-16: Insertion Loss Data for Barrier "Yucca South 8"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
East - S18	66	66	0	61	**5**	59	**7**	58	**8**	57	**9**	55	**11**
East - S19	65	65	0	61	4	59	**6**	58	**7**	57	**8**	56	**9**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Build Alternative "B" Noise Barrier Insertion Loss Tables

Table D-17: Insertion Loss Data for Barrier "West Wall 5"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
West - N12	60	57	3	56	4	55	**5**	54	**6**	53	**7**	52	**8**
West - N13	62	57	**5**	56	**6**	56	**6**	55	**7**	54	**8**	53	**9**
West - N14	69	60	**9**	58	**11**	56	**13**	55	**14**	54	**15**	54	**15**
West - N15	67	59	**8**	58	**9**	57	**10**	56	**11**	55	**12**	54	**13**
West - N16	69	60	**9**	58	**11**	57	**12**	56	**13**	55	**14**	54	**15**
West - N17	69	60	**9**	58	**11**	57	**12**	56	**13**	55	**14**	55	**14**
West - N18	68	60	**8**	59	**9**	58	**10**	57	**11**	56	**12**	55	**13**
West - N19	67	60	**7**	59	**8**	58	**9**	57	**10**	56	**11**	55	**12**
West - N20	70	61	**9**	60	**10**	59	**11**	57	**13**	56	**14**	55	**15**
West - N21	69	62	**7**	60	**9**	59	**10**	57	**12**	56	**13**	55	**14**
West - N22	70	62	**8**	60	**10**	59	**11**	57	**13**	56	**14**	55	**15**
West - N23	72	62	**10**	60	**12**	59	**13**	57	**15**	56	**16**	55	**17**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Table D-18: Insertion Loss Data for Barrier "Central Wall 1"

Receiver I.D.	Future Noise Level, w/o Wall dBA L_{eq}	Wall height = 6 feet		Wall height = 8 feet		Wall height = 10 feet		Wall height = 12 feet		Wall height = 14 feet		Wall height = 16 feet	
		NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA	NL dBA L_{eq}	IL dBA
Cntr - S8	58	55	3	54	4	54	4	53	**5**	53	**5**	52	**6**
Cntr - S9	58	55	3	54	4	53	**5**	52	**6**	52	**6**	51	**7**
Cntr - S10	62	57	**5**	56	**6**	55	**7**	54	**8**	53	**9**	52	**10**
Cntr - S11	61	58	3	57	4	56	**5**	55	**6**	55	**6**	54	**7**
Cntr - S12	65	60	**5**	58	**7**	57	**8**	56	**9**	55	**10**	54	**11**
Cntr - S13	65	62	3	60	**5**	59	**6**	58	**7**	57	**8**	56	**9**
Cntr - S14	69	65	4	64	**5**	63	**6**	62	**7**	61	**8**	61	**8**
Cntr - S15	69	69	0	67	2	65	4	64	**5**	63	**6**	62	**7**
Cntr - S16	72	71	1	70	2	67	**5**	65	**7**	64	**8**	63	**9**
Cntr - S17	70	69	1	68	2	66	4	64	**6**	63	**7**	62	**8**
Cntr - S18	70	70	0	69	1	66	4	64	**6**	63	**7**	62	**8**
Cntr - S19	70	70	0	69	1	66	4	64	**6**	63	**7**	62	**8**
Cntr - S20	69	69	0	66	3	64	**5**	63	**6**	61	**8**	61	**8**
Cntr - S21	71	69	2	68	3	65	**6**	63	**8**	61	**10**	61	**10**
Cntr - S22	73	71	2	66	**7**	64	**9**	62	**11**	61	**12**	60	**13**
Cntr - S23	72	71	1	70	2	67	**5**	64	**8**	61	**11**	60	**12**
Cntr - S24	72	71	1	69	3	66	**6**	63	**9**	60	**12**	59	**13**
Cntr - S25	71	70	1	69	2	65	**6**	63	**8**	60	**11**	58	**13**
Cntr - S26	70	69	1	68	2	64	**6**	62	**8**	59	**11**	57	**13**
Cntr - S27	71	70	1	69	2	66	**5**	63	**8**	61	**10**	59	**12**
Cntr - S28	73	72	1	71	2	68	**5**	64	**9**	61	**12**	59	**14**
Cntr - S29	71	70	1	68	3	64	**7**	62	**9**	59	**12**	58	**13**

Bold = Benefited receiver (insertion loss of 5 dBA or more)

Appendix E Supplemental Data

The following series of photographs provides a visual description of the entire project site, moving from west to east, and is intended to supplement the project description in Section 6.1 above. Pertinent information regarding local geography or other characteristics is provided.

This is Hesperia Road (facing south), which terminates the project on the west side. A residence lies below this knoll (represented by receivers "West - N1" and "West - N2").

The west side of the project is rural, with only a few scattered residences. Coad Road, shown in the photo, has negligible traffic.

This southwest-facing view at the east end of Coad Road shows the sharp terrain which shields receivers along Ridge Crest Road (opposite the hills) from train noise. These tracks separate the east and central sections of the project.

Existing Ridge Crest Road descends steeply from the south as it moves into the project area. This north-facing view shows the Mojave Narrows Regional Park in the background. A high percentage of traffic on this road comprises RV's accessing the park.

This view of Ridge Crest Road (also facing north) shows terrain on the left side which buffers railroad noise, and would also shield portions of the future alignment. The residences here are situated well beneath the road grade, providing them an additional measure of noise protection. Some of these residences have existing sound walls, while others do not.

This is where existing Ridge Crest Road turns into Yates Road. This north-facing view shows where the project alignment would merge with the existing alignment of Yates Road. Topography flattens out here, and the elevation of adjacent residences rises to meet that of the roadway. The railroad tracks and residences are in their closest proximity along this stretch.

West of Park Road, traffic on Yates Road is scarce--beyond that it is almost nonexistent. This east-facing view at receiver "Cntr - S35" shows a vacant Yates Road, with the park on the left. Residences here are elevated well above the roadway. Without sufficient noise abatement, they would have a direct and close line of sight to future traffic.

This is a south-facing view near receiver "Cntr - S47". These residences front the west bank of the River, and would be exposed to noise from the bridge if no abatement is installed. Similar receivers overlook the project alignment on the east bank as well, again with no existing noise abatement in place.

Like its counterpart on the west side of the River, the existing Yucca Loma Road is sparsely traveled, particularly beyond the school. This west-facing view shows the road dead-ending at the River, 500 feet away. As shown here and in Figure 6-3 above, sound walls have already been installed along this portion of the alignment, apparently in anticipation of a future road improvement.

This south-facing view from receiver "East - N17" is typical of interior scenes along existing Yucca Loma Road. Backyards here are well shielded from the road, which is depressed below residential level for most of the east side of the project. As a result, projected noise levels here do not exceed the NAC in many cases; however, they would be substantially above existing levels, resulting in an impact nonetheless. For the same reason, these existing walls must be raised well above their current heights in order to achieve a 5 dB reduction.

The fire station sits near the east project terminus at Apple Valley Road. It has no exterior areas of frequent human use; however, it does have interiors sleeping quarters and recreational spaces. Its access requirements preclude construction of a sound wall here. Predicted future noise levels, however, require consideration of interior noise abatement.

This shopping center on the southwest corner of Apple Valley Road and Yucca Loma Road has no exterior eating or recreational areas. It was therefore not included in this noise study. The commercial site across the street (to the north) is vacant, and was consequently also excluded from this study.

Appendix F Detailed Schematic Diagrams of Noise Model

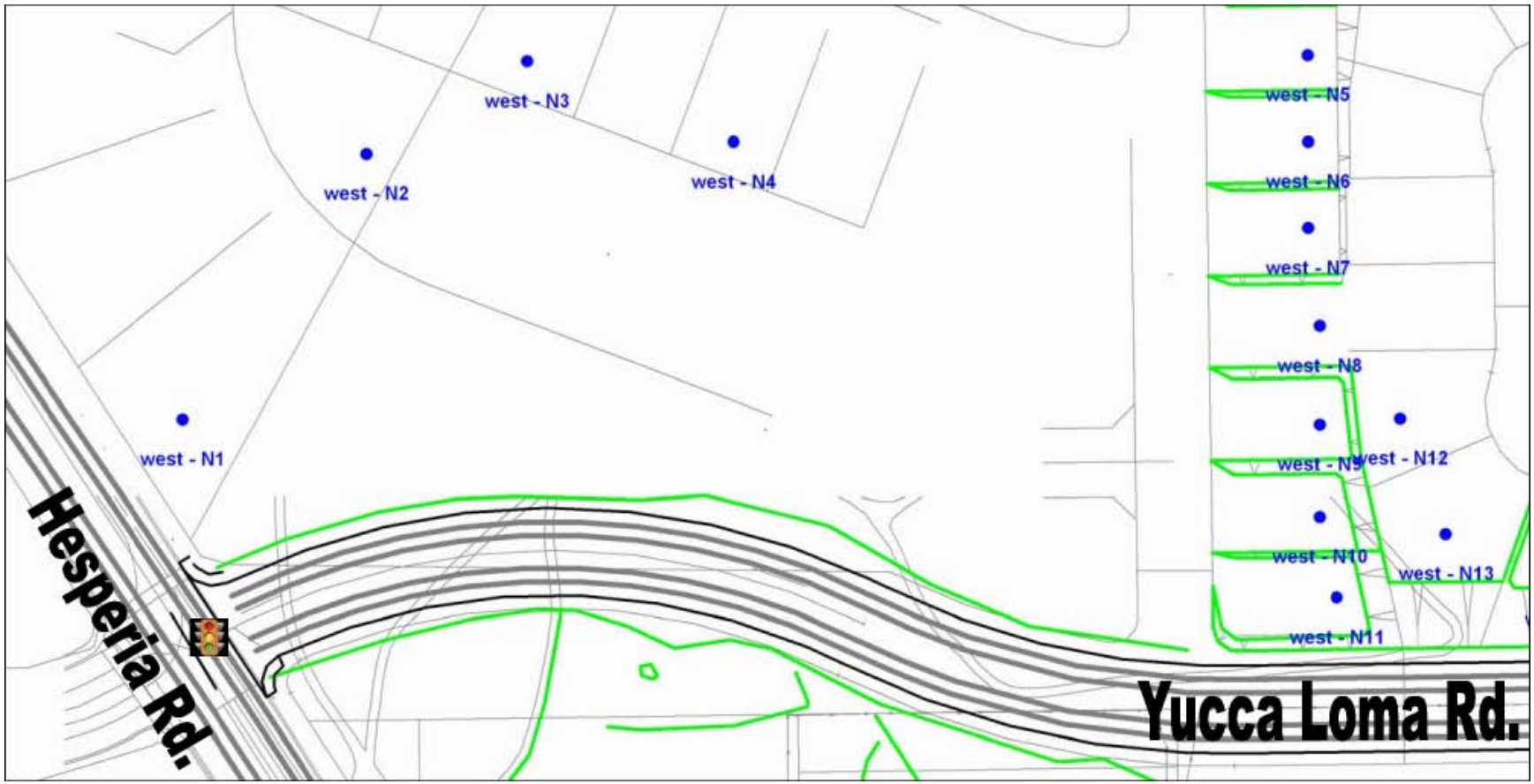

Figure F-1


west - N5
west - N6
west - N7
west - N8
west - N9
west - N10
west - N11
west - N12
west - N13
west - N14
west - N15
west - N16
west - N17
west - N18
west - N19
west - N20
west - N21
west - N22
west - N23
west - N24
west - N25
west - N26
west - N27
Alternative B
Yucca Loma Rd.

Figure F-2

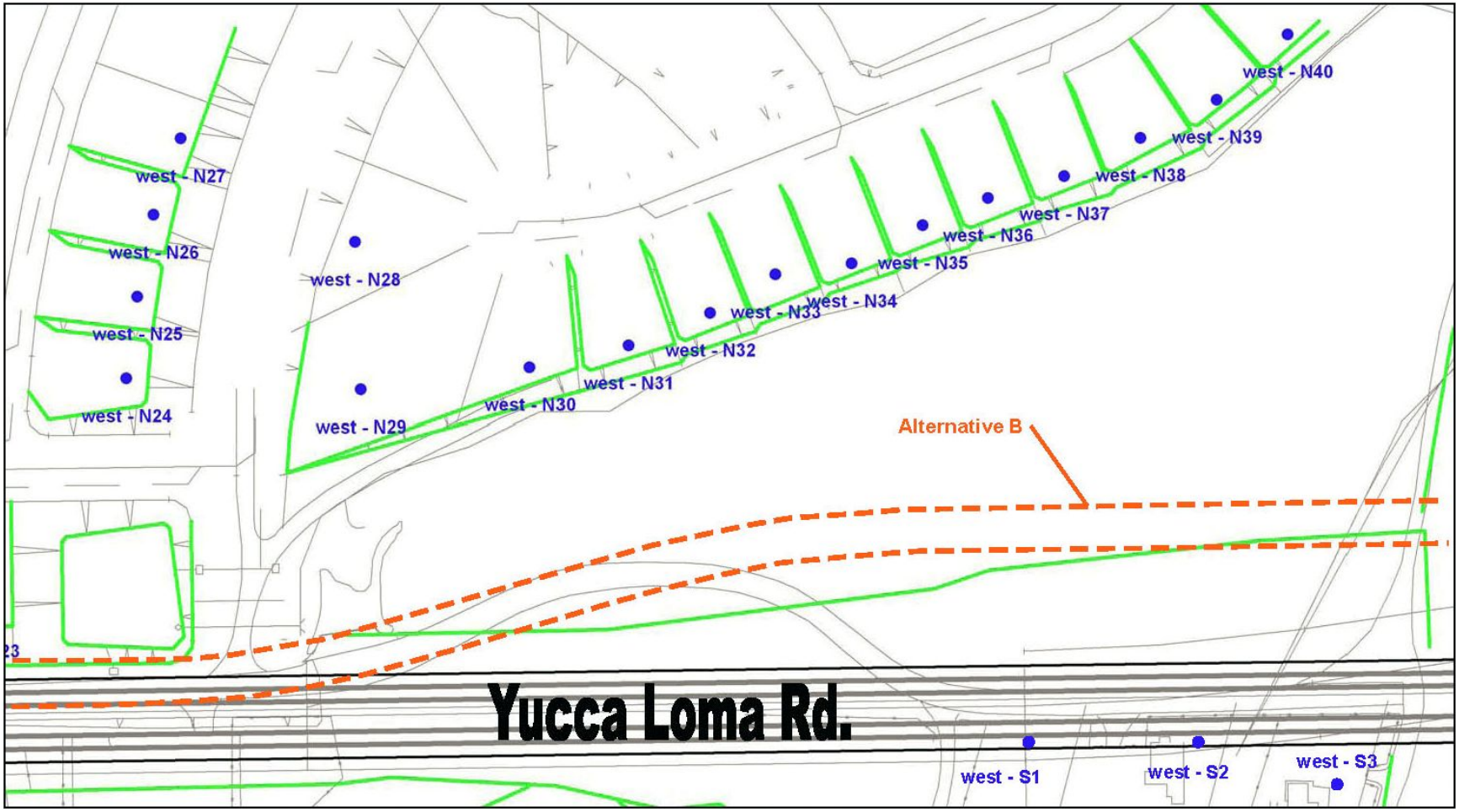
west - N40
west - N39
west - N38
west - N37
west - N36
west - N35
west - N34
west - N33
west - N32
west - N31
west - N30
west - N29
west - N28
west - N27
west - N26
west - N25
west - N24
Alternative B
Yucca Loma Rd.
west - S1
west - S2
west - S3

Figure F-3

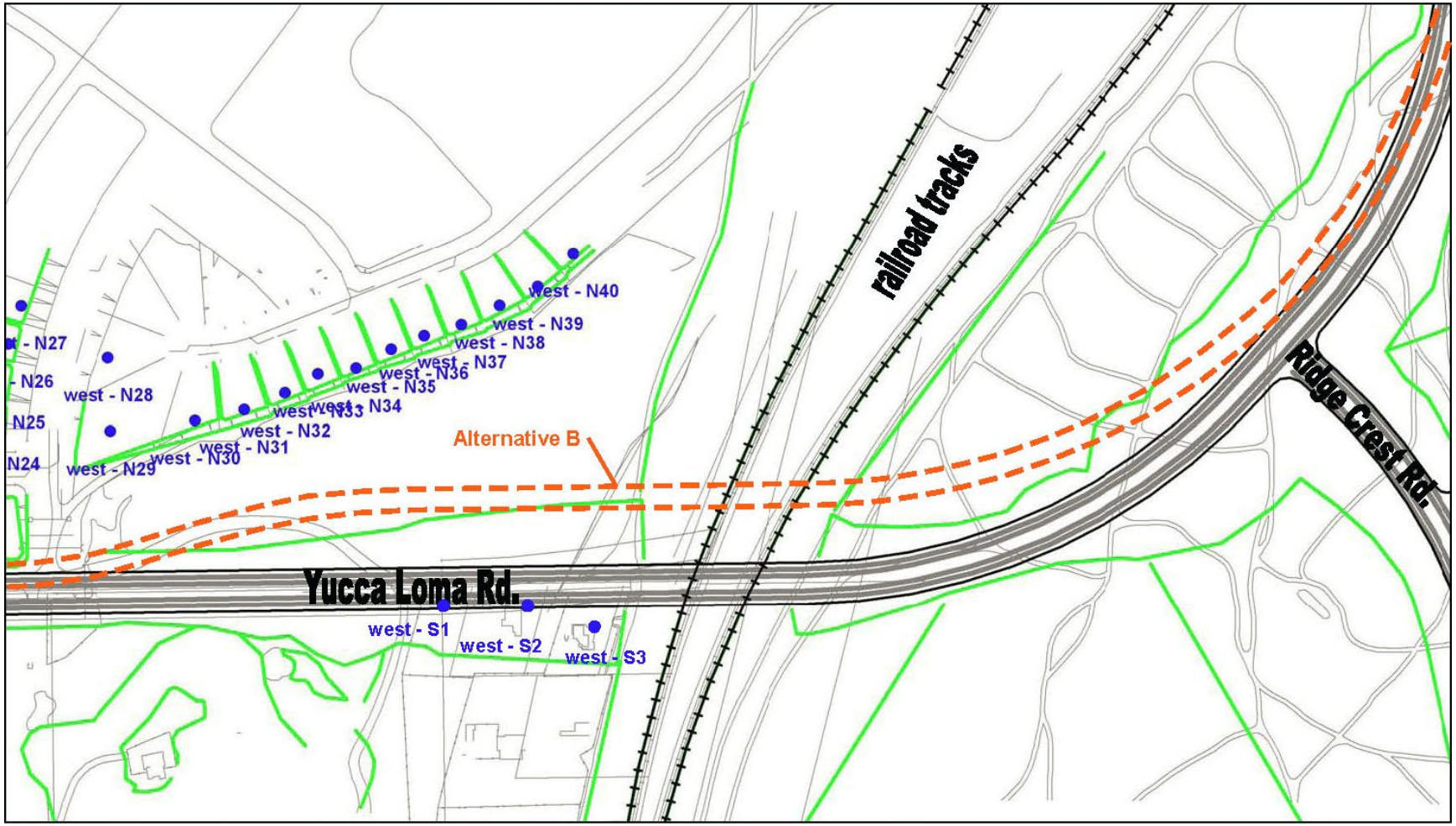
railroad tracks
Ridge Crest Rd.
Alternative B
Yucca Loma Rd.
west - N40
west - N39
west - N38
west - N37
west - N36
west - N35
west - N34
west - N33
west - N32
west - N31
west - N30
west - N29
west - N28
west - N27
- N26
N25
N24
west - S1
west - S2
west - S3

Figure F-4

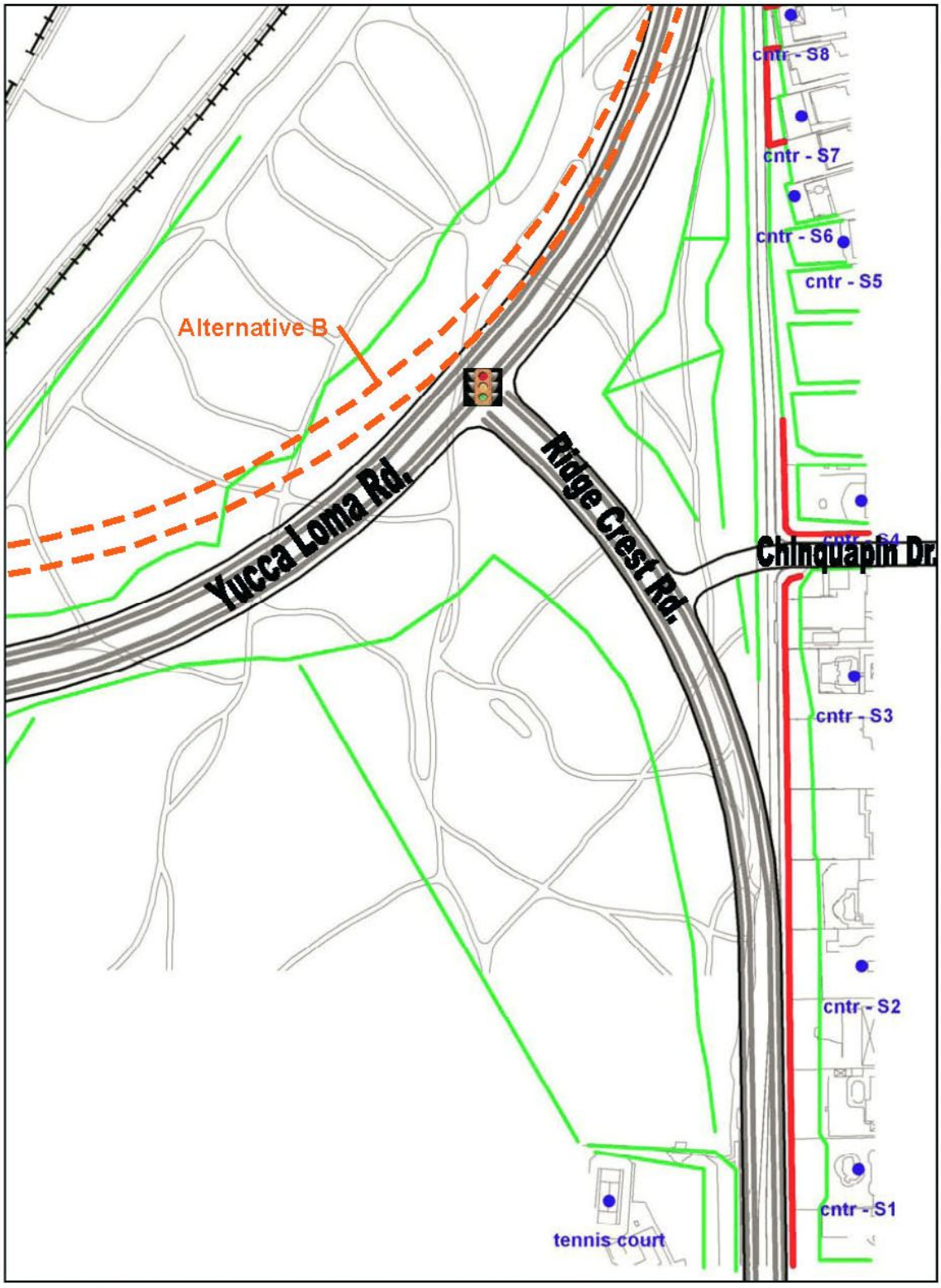
cntr - S8
cntr - S7
cntr - S6
cntr - S5
Alternative B
Yucca Loma Rd.
Ridge Crest Rd.
Chinquapin Dr.
cntr - S3
cntr - S2
cntr - S1
tennis court

Figure F-5

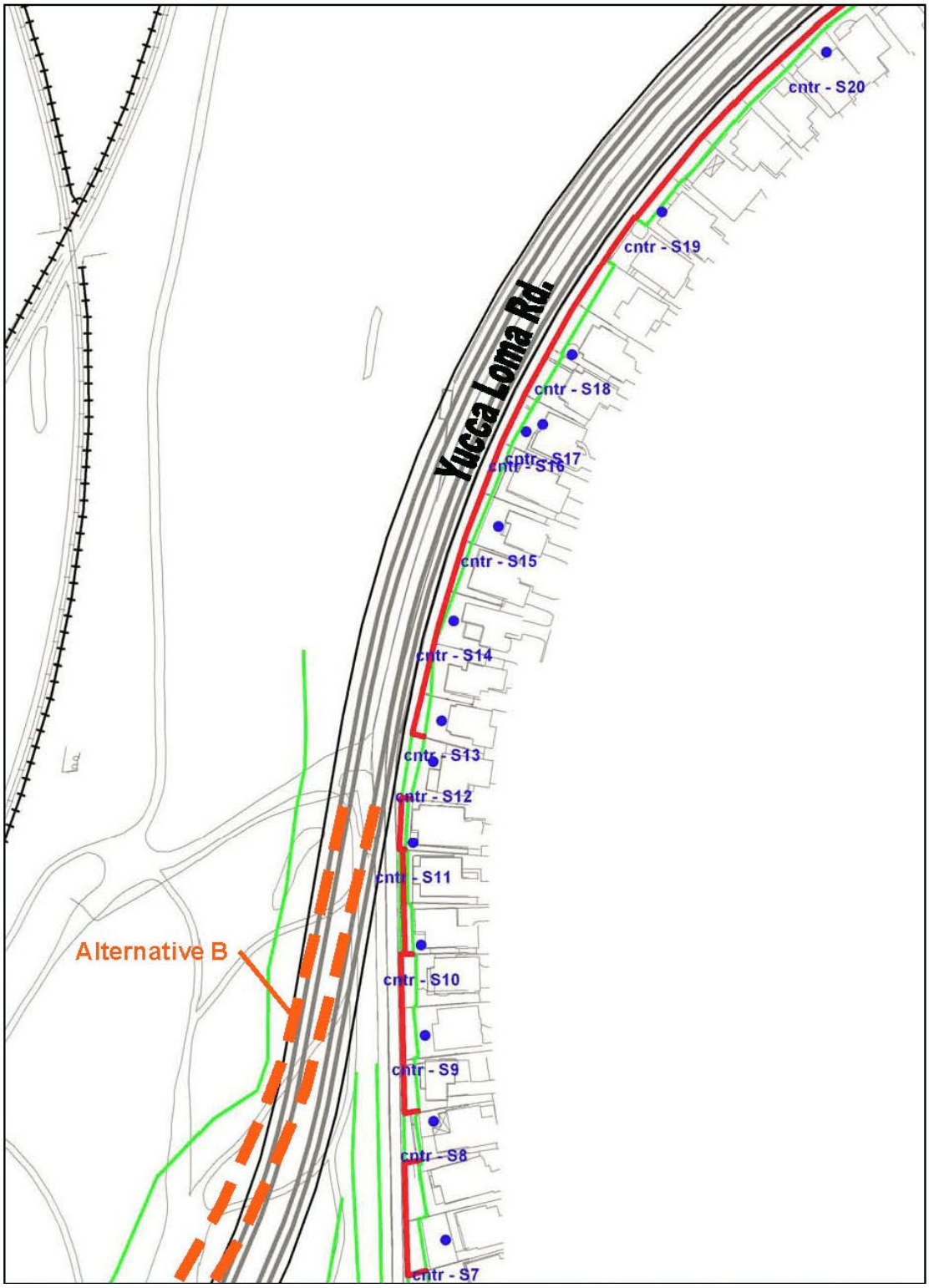
Yucca Loma Rd.
cntr - S20
cntr - S19
cntr - S18
cntr - S17
cntr - S16
cntr - S15
cntr - S14
cntr - S13
cntr - S12
cntr - S11
cntr - S10
cntr - S9
cntr - S8
cntr - S7
Alternative B

Figure F-6

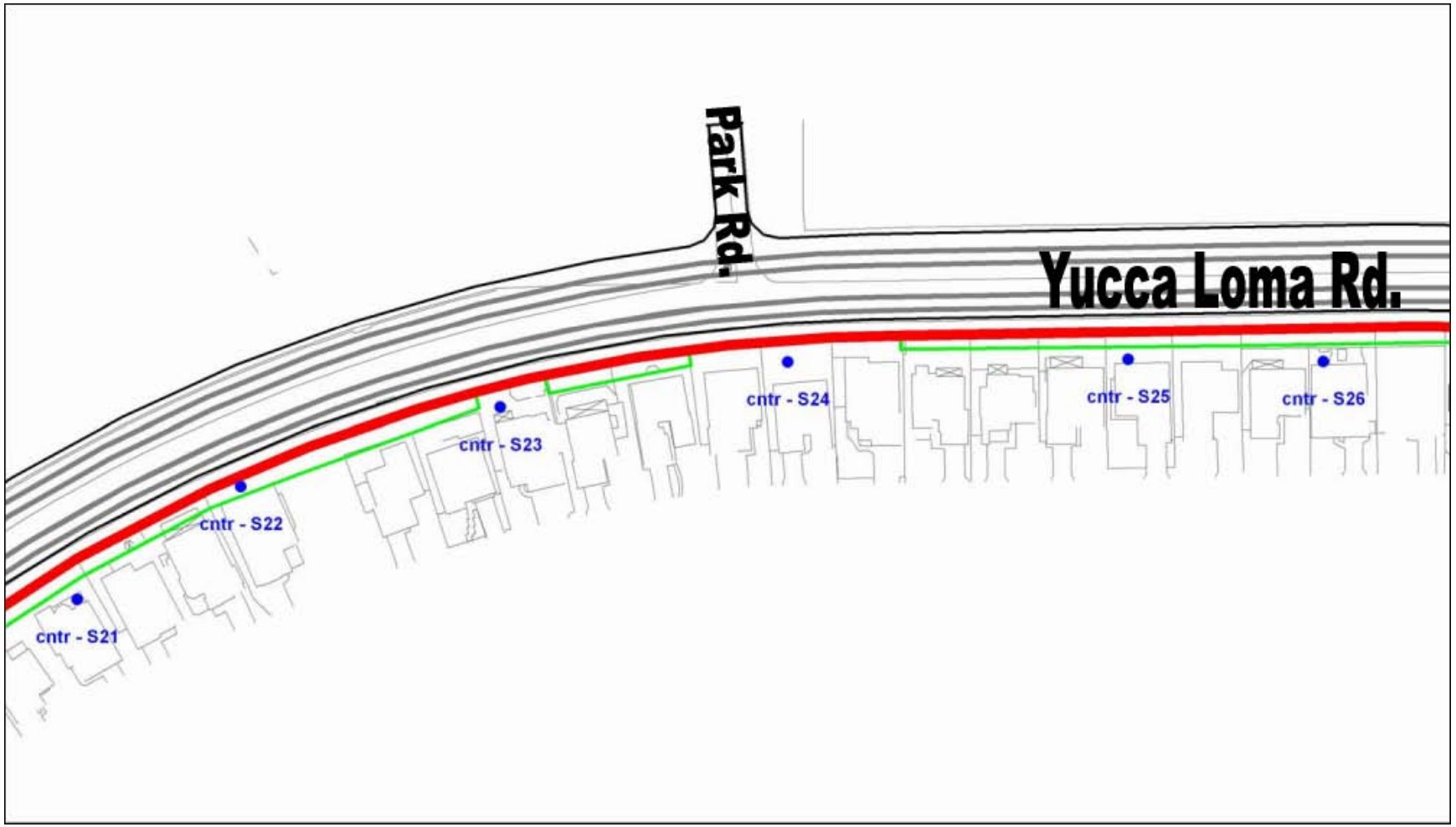
Park Rd.
Yucca Loma Rd.
cntr - S21
cntr - S22
cntr - S23
cntr - S24
cntr - S25
cntr - S26

Figure F-7

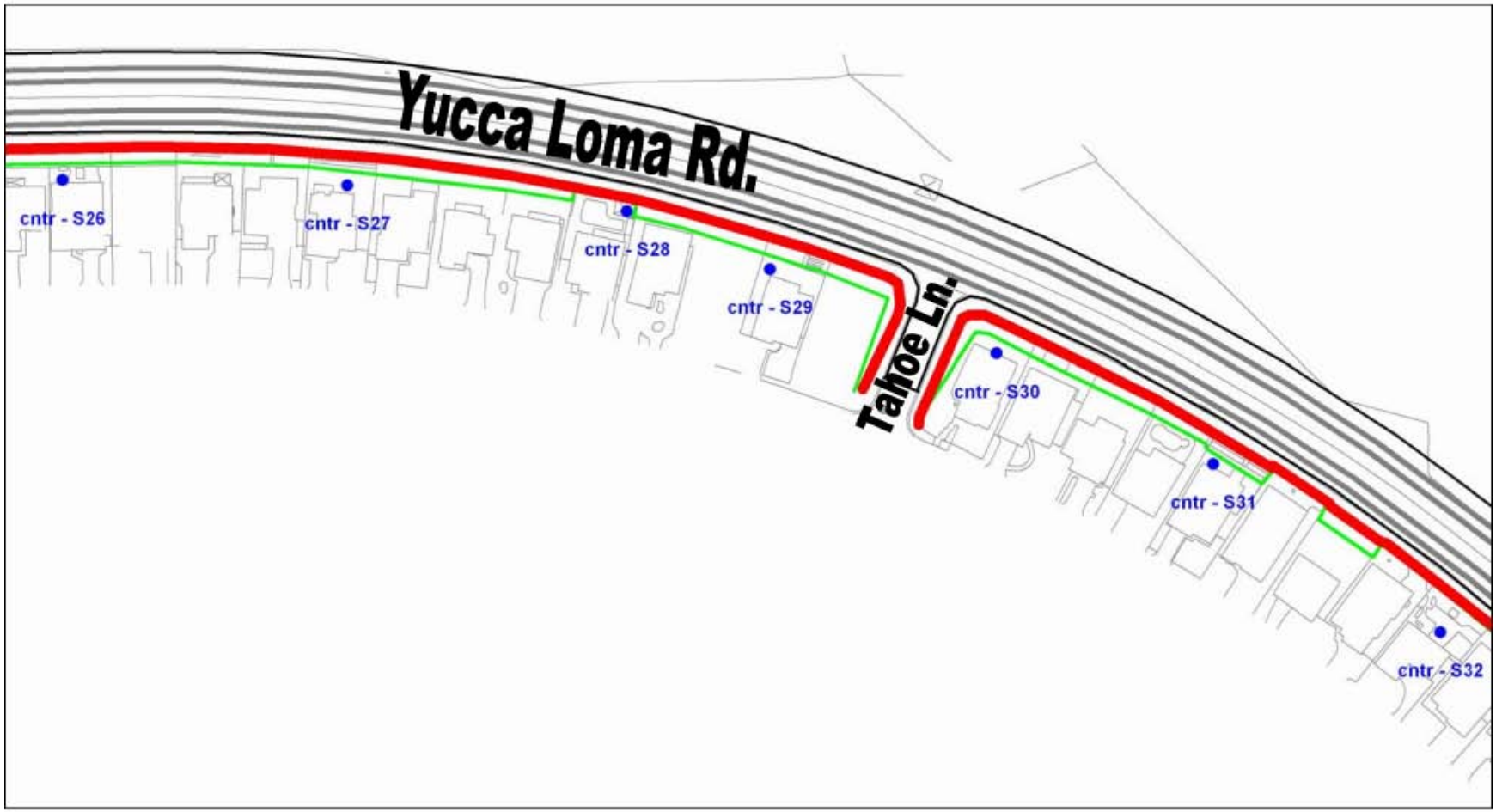
Yucca Loma Rd.
Talhoe Ln.
cntr - S26
cntr - S27
cntr - S28
cntr - S29
cntr - S30
cntr - S31
cntr - S32

Figure F-8

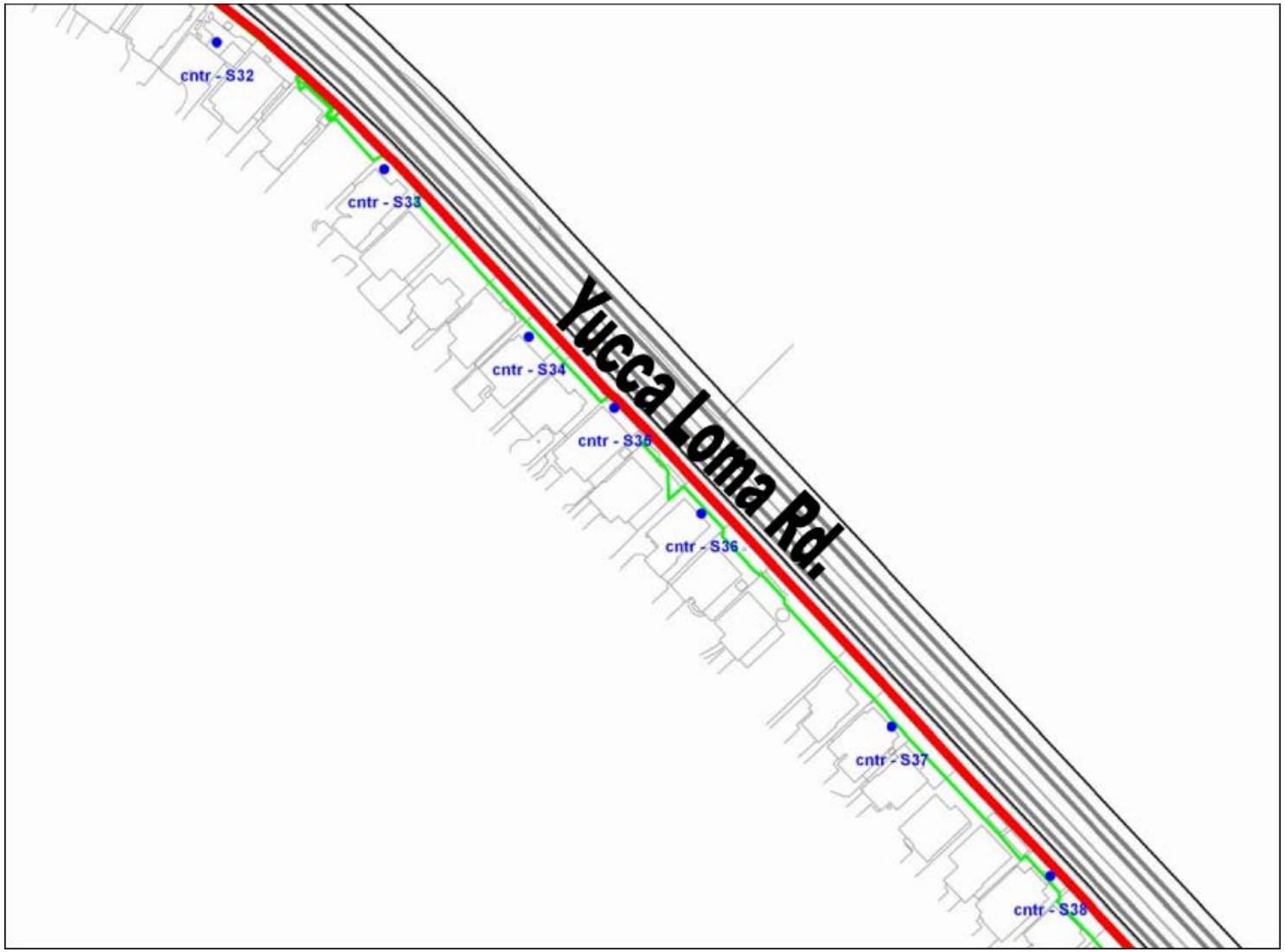
cntr - S32
cntr - S33
cntr - S34
cntr - S35
cntr - S36
cntr - S37
cntr - S38
Yucca Loma Rd.

Figure F-9

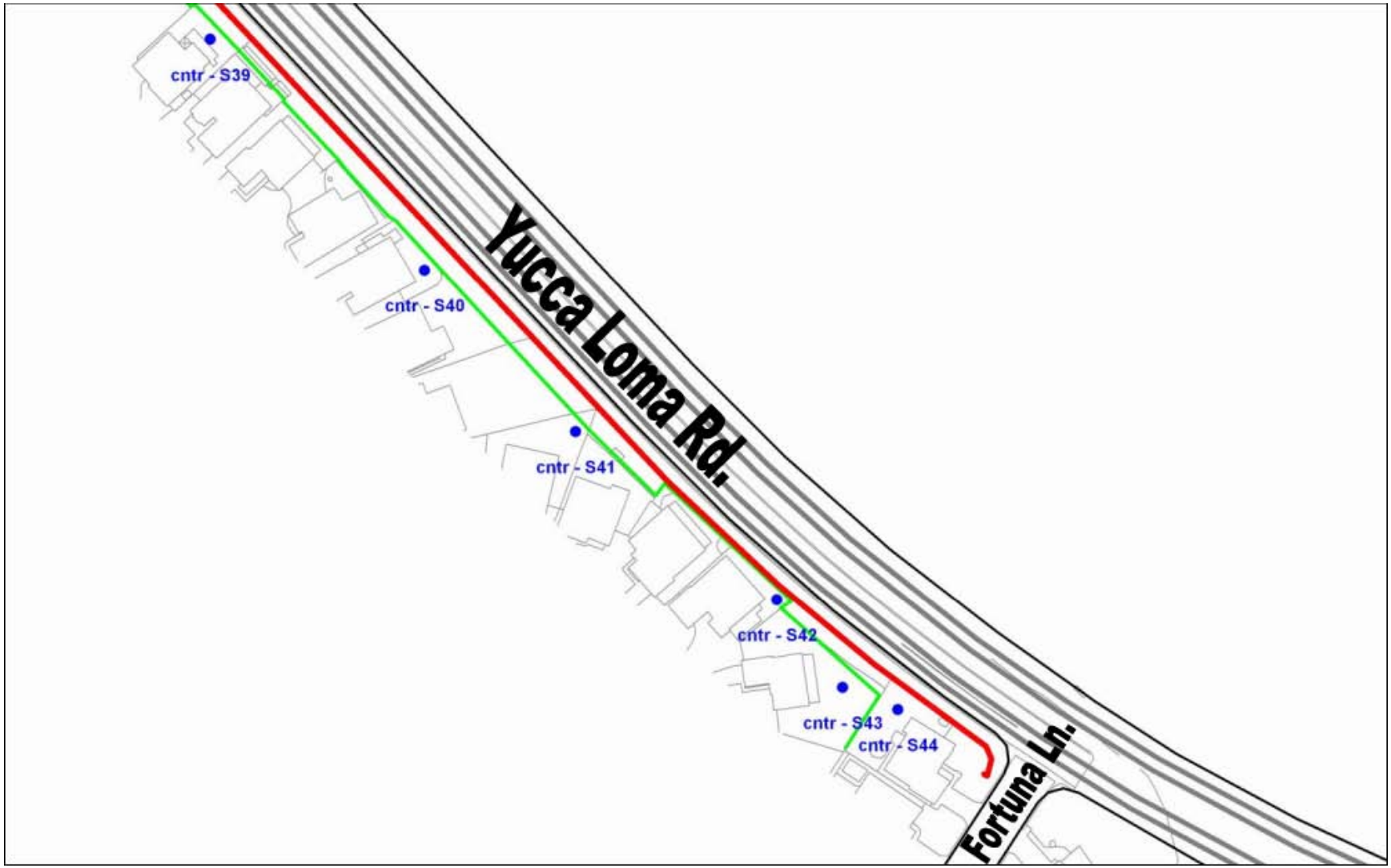
cntr - S39
cntr - S40
cntr - S41
cntr - S42
cntr - S43
cntr - S44
Yucca Loma Rd.
Fortuna Ln.

Figure F-10

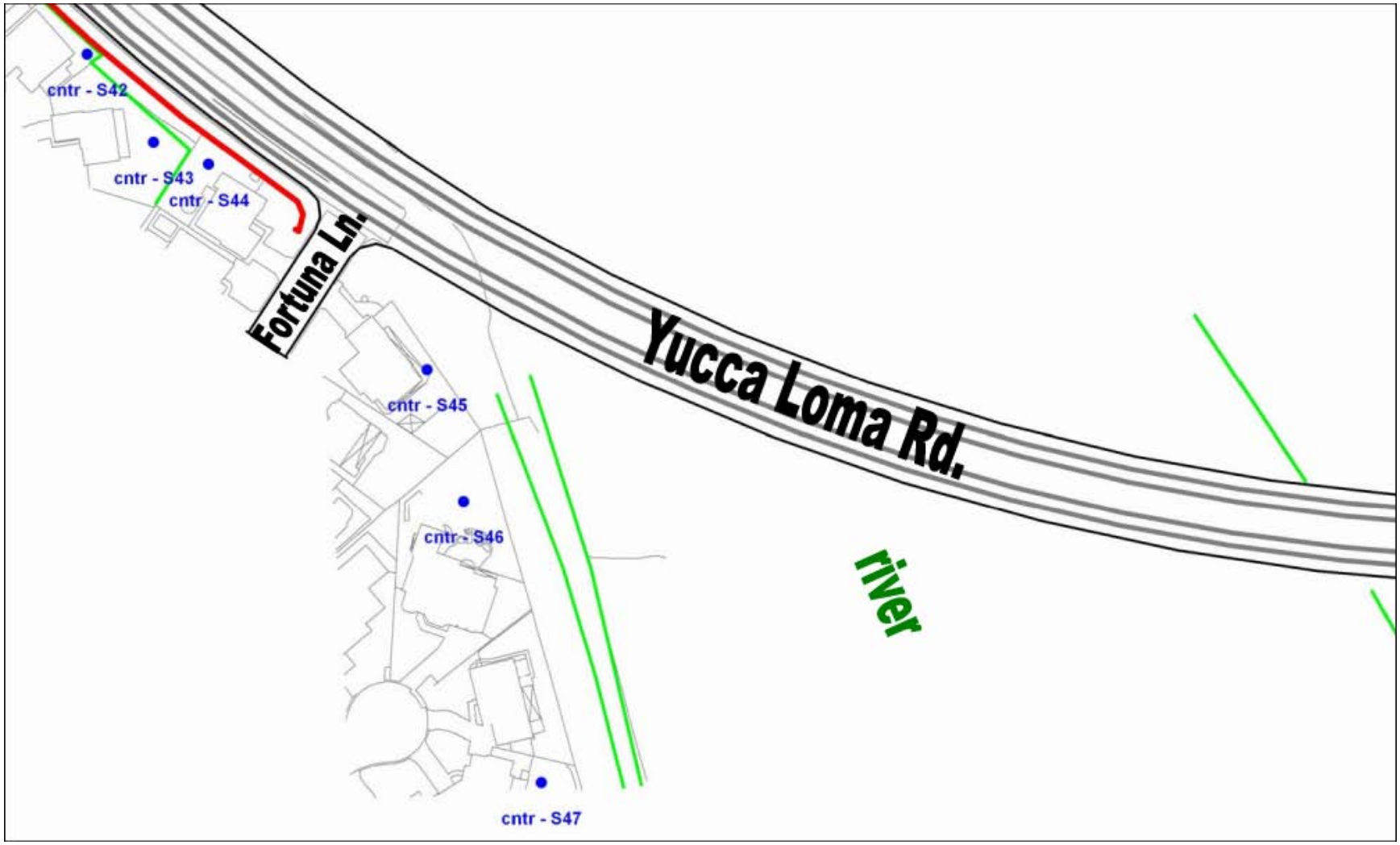
cntr - S42
cntr - S43
cntr - S44
Fortuna Ln.
Yucca Loma Rd.
cntr - S45
cntr - S46
river
cntr - S47

Figure F-11

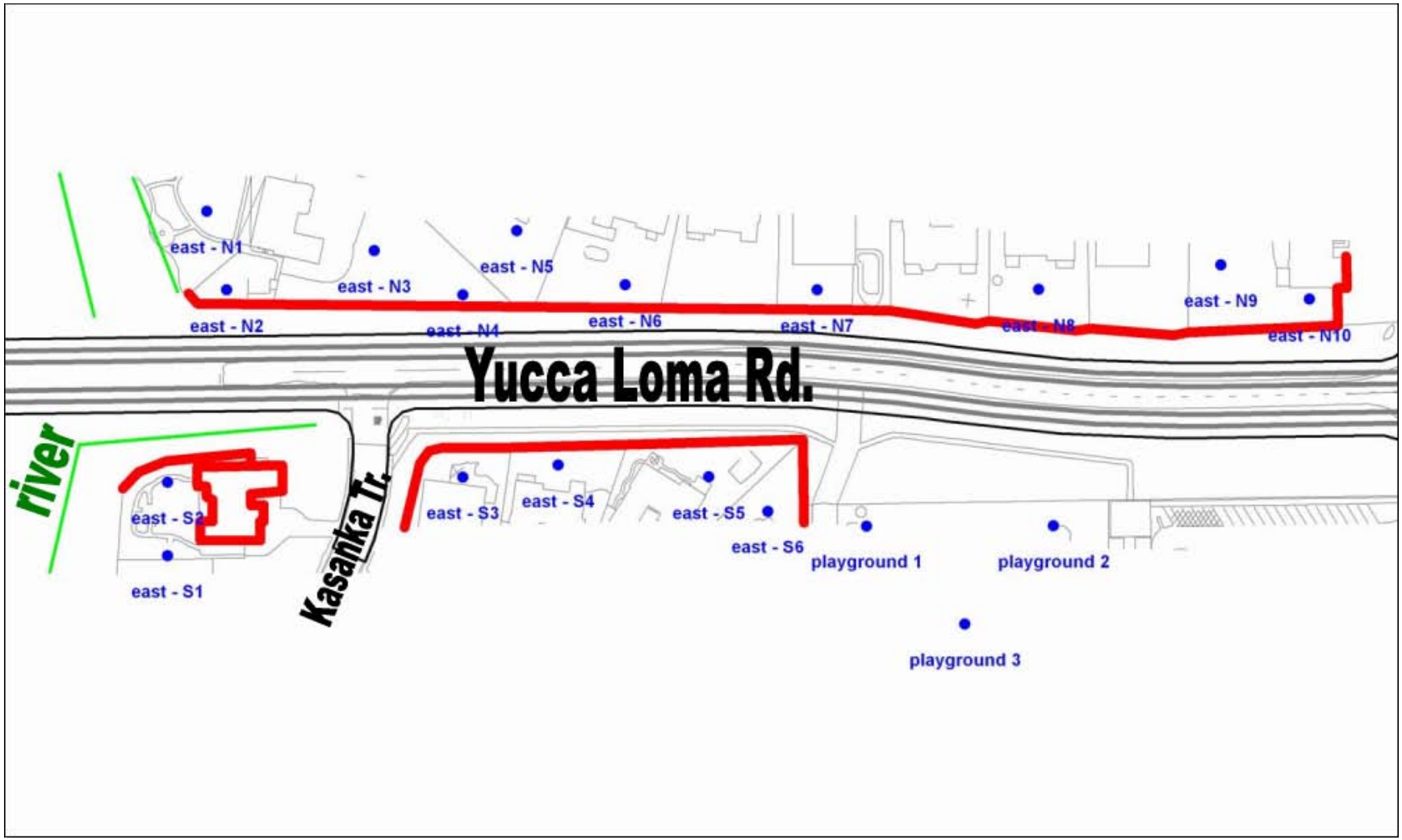
east - N1
east - N2
east - N3
east - N4
east - N5
east - N6
east - N7
east - N8
east - N9
east - N10
Yucca Loma Rd.
river
Kasanka Tr.
east - S1
east - S2
east - S3
east - S4
east - S5
east - S6
playground 1
playground 2
playground 3

Figure F-12

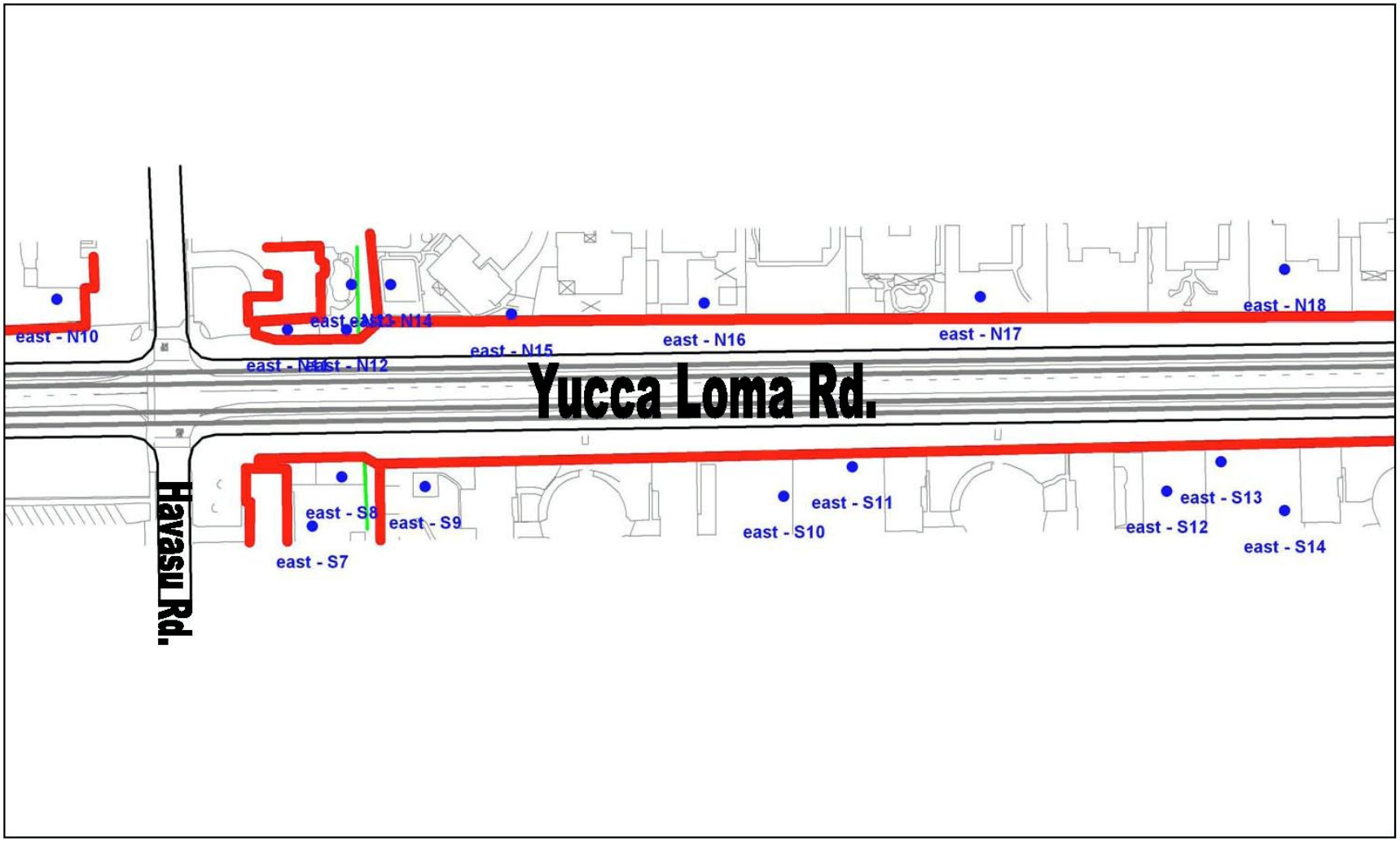
Yucca Loma Rd.
Havasu Rd.
east - N10
east - N12
east - N15
east - N16
east - N17
east - N18
east - S7
east - S8
east - S9
east - S10
east - S11
east - S12
east - S13
east - S14

Figure F-13

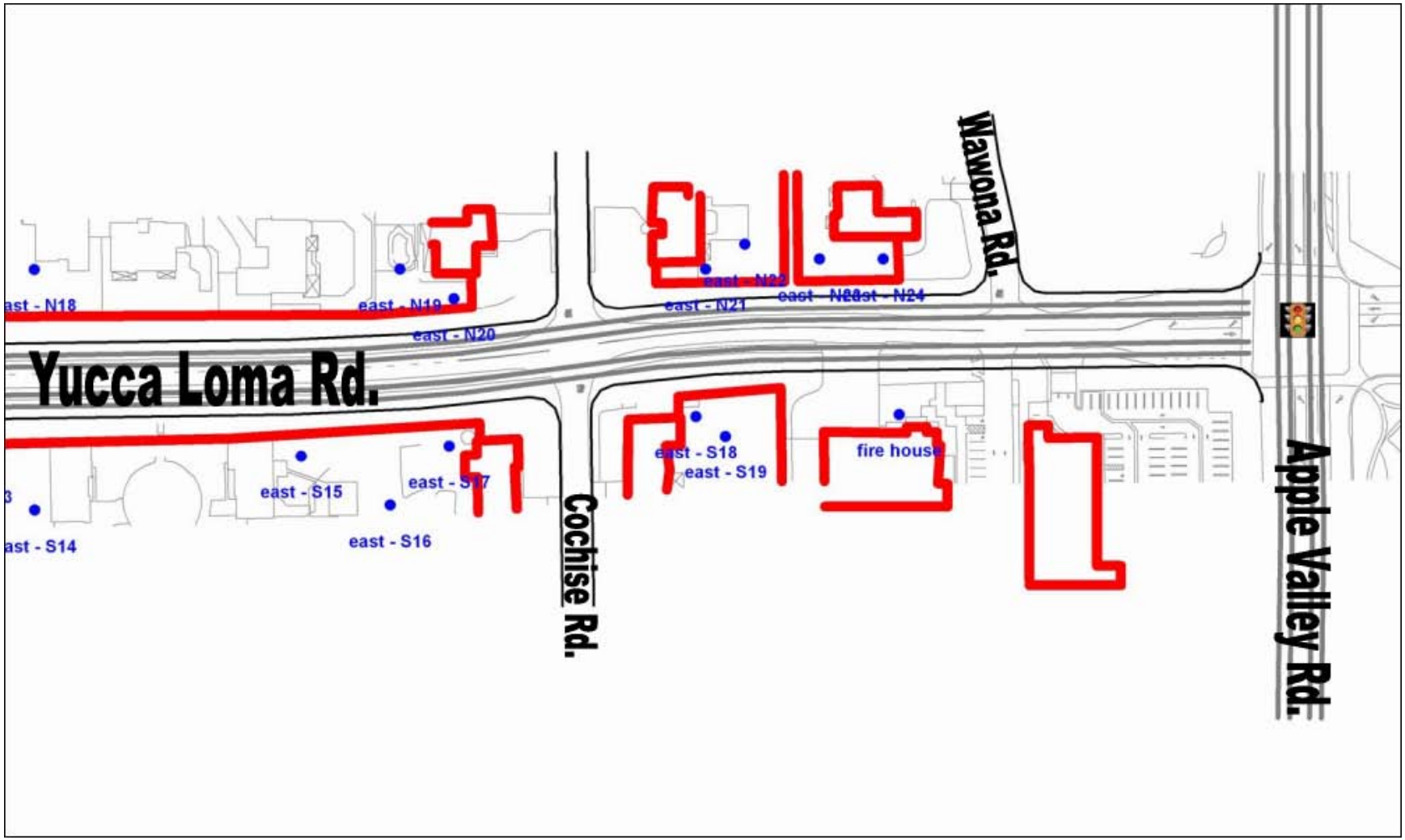
Yucca Loma Rd.
Wawona Rd.
Cochise Rd.
Apple Valley Rd.
east - N18
east - N19
east - N20
east - N21
east - N22
east - N24
east - S14
east - S15
east - S16
east - S17
east - S18
east - S19
fire house

Figure F-14

13

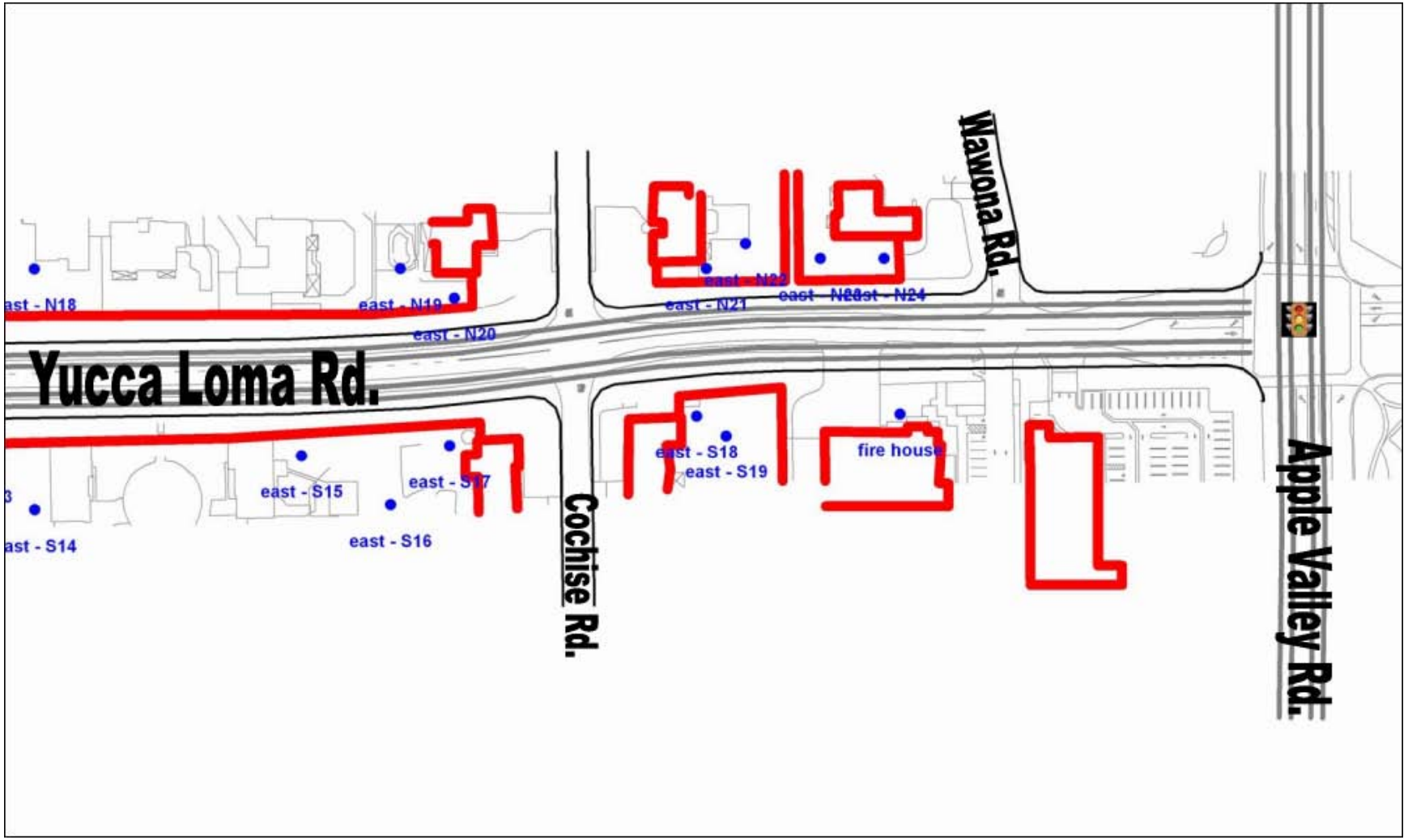

Figure F-14