Appendix H
Noise Study

Perris Ethanac Travel Center

Noise Impact Study

City of Perris, CA

Prepared for:

Starla Barker
De Novo Planning Group
180 East Main Street # 108
Tustin, CA 92780

Prepared by:

MD Acoustics, LLC
Claire Pincock, INCE-USA
Rachel Edelman
1197 Los Angeles Ave, Ste C-256
Simi Valley, CA 93065

Date: 9/5/2023

MD ACOUSTICS
Sound Solutions for Planning and Design

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

This noise assessment was prepared to evaluate the potential noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential noise impacts. The assessment was conducted and compared to the noise standards set-forth by the Federal, State and Local agencies. Consistent with the City's Noise Guidelines, the project must demonstrate compliance to the applicable noise criterion as outlined within the City of Perris Noise Element and Municipal Code.

The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- A description of the local noise guidelines and standards;
- An analysis of traffic noise impacts to the sensitive receptors and the project site; and
- An analysis of construction noise impacts.

1.2 Site Location and Study Area

The Perris Ethanac Travel Center (Project) site is located on the northwest corner of Ethanac Road and Trumble Road, in the City of Perris, CA. See Exhibit A for the location.

Land uses directly surrounding the Project site include:

- North: Future commercial
- East: Trumble Road and future commercial
- South: Ethanac Road, car wash and gas station and future commercial
- West: I-215 freeway and existing commercial

There is a BSNF freight railroad 2000 feet northeast of the site. There are existing residential uses 395 feet to the northeast in the City of Menifee.

1.3 Proposed Project Description

The proposed project consists of the construction and operation of an Ethanac Travel Center. The proposed travel center would provide fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators, as described below; refer to Exhibit B, Site Plan.

The Project includes 7 diesel fueling lanes/stations and 8 gas islands with 16 fueling positions. The proposed travel center building consists of a retail shop and drive-thru restaurant will be 13,980 square feet. The proposed shop building will be 8,452 square feet. The Project will provide 203 parking spaces (87 automobile and 116 truck). Primary access to the project site will be from Trumble Road.

Exhibit A

Location Map

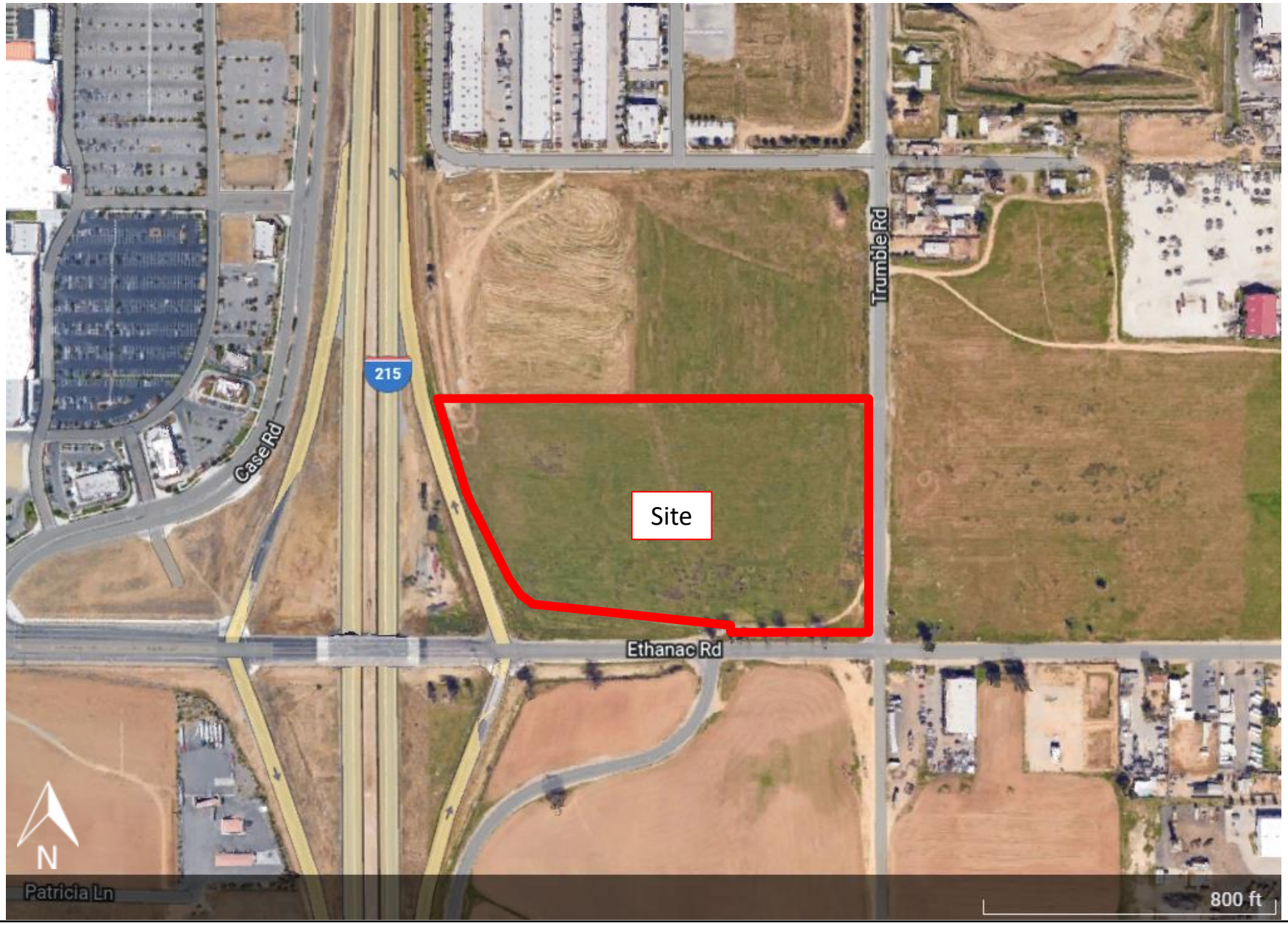
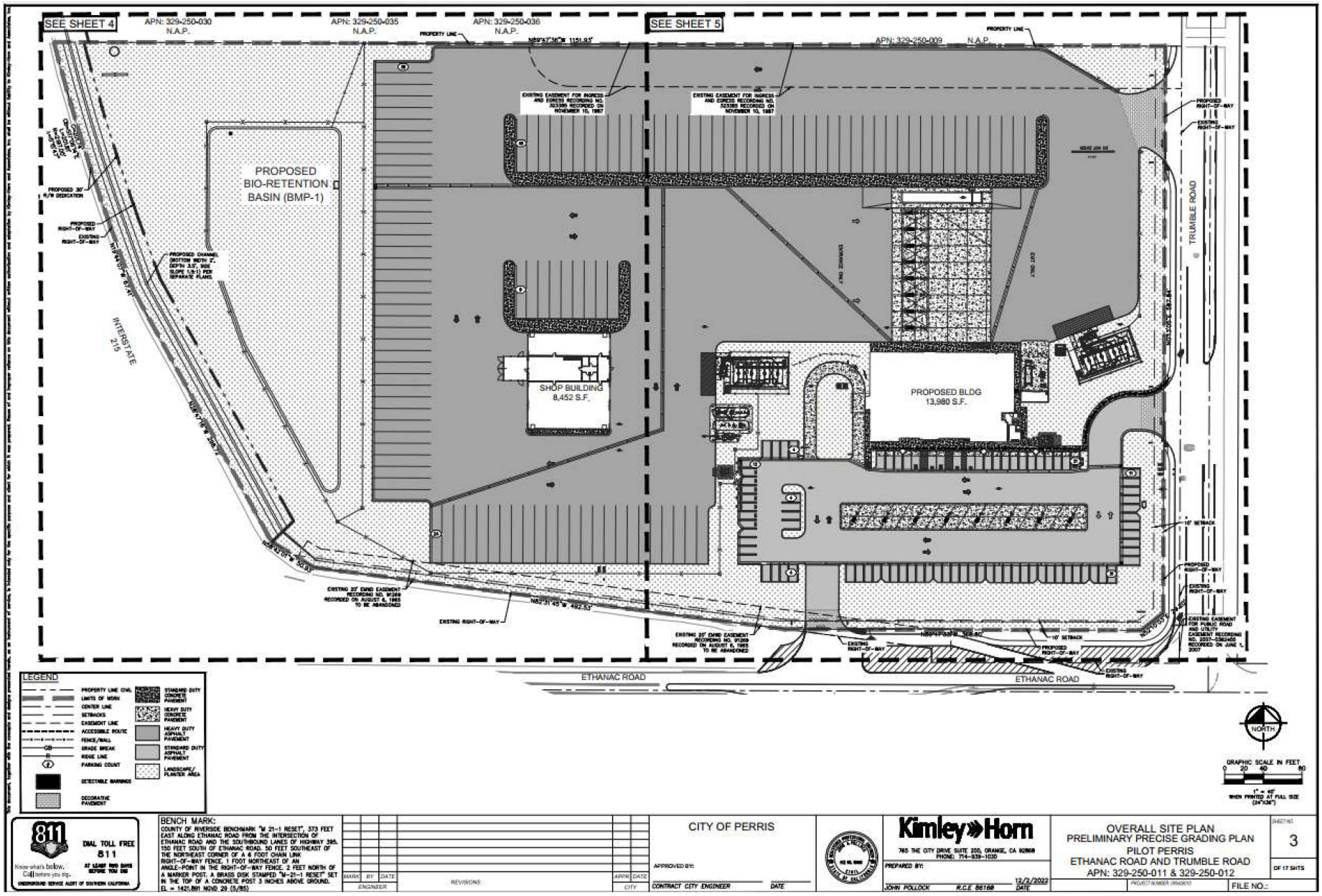


Exhibit B

Site Plan



2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used within the report.

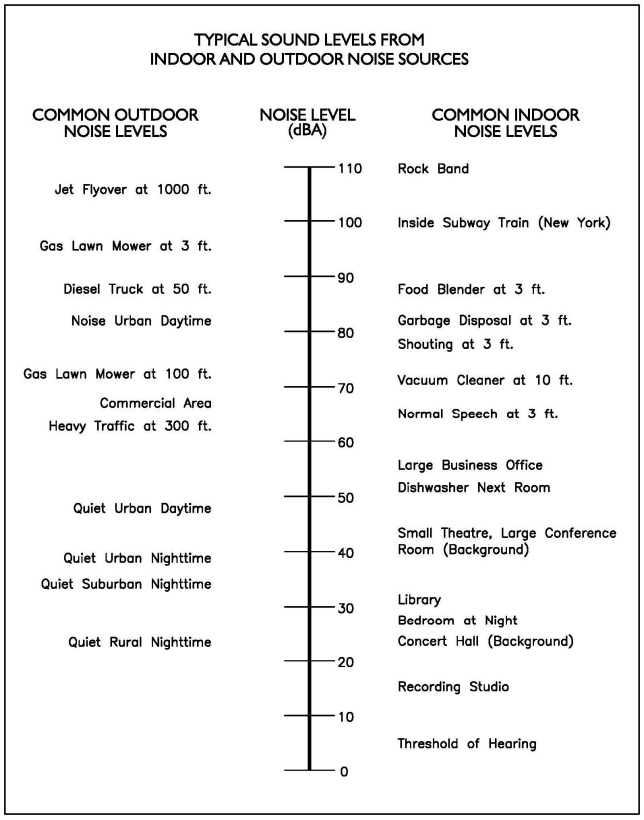
2.1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic, or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

Exhibit C: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines it loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measure in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Sensitive Receptors

Noise-sensitive land uses include residential (single and multi-family dwellings, mobile home parks, dormitories, and similar uses); transient lodging (including hotels, motels, and similar uses); hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care; public or private educational facilities, libraries, churches, and places of public assembly.

2.6 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

Table 1: Decibel Changes and Loudness

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud
Source: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm	

2.7 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

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

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00

PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90 and L99, etc.

Maximum Sound Level (Lmax): The sound level corresponding to a maximum root mean squared noise level over a given sample period.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.8 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2 axle) and heavy truck percentage (3 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.9 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity and turbulence can further impact have far sound can travel.

3.0 Ground-Bourne Vibration Fundamentals

3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation. As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 Regulatory Setting

The proposed project site is located in the City of Perris and noise regulations are addressed through the efforts of various federal, state and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible to regulate noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible to regulate noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers.

The federal government advocates that local jurisdiction use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being constructed adjacent to a highway or, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement Codes and land use planning.

4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix.” The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan.

The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable as illustrated in Exhibit D.

4.3 City of Perris Noise Regulations

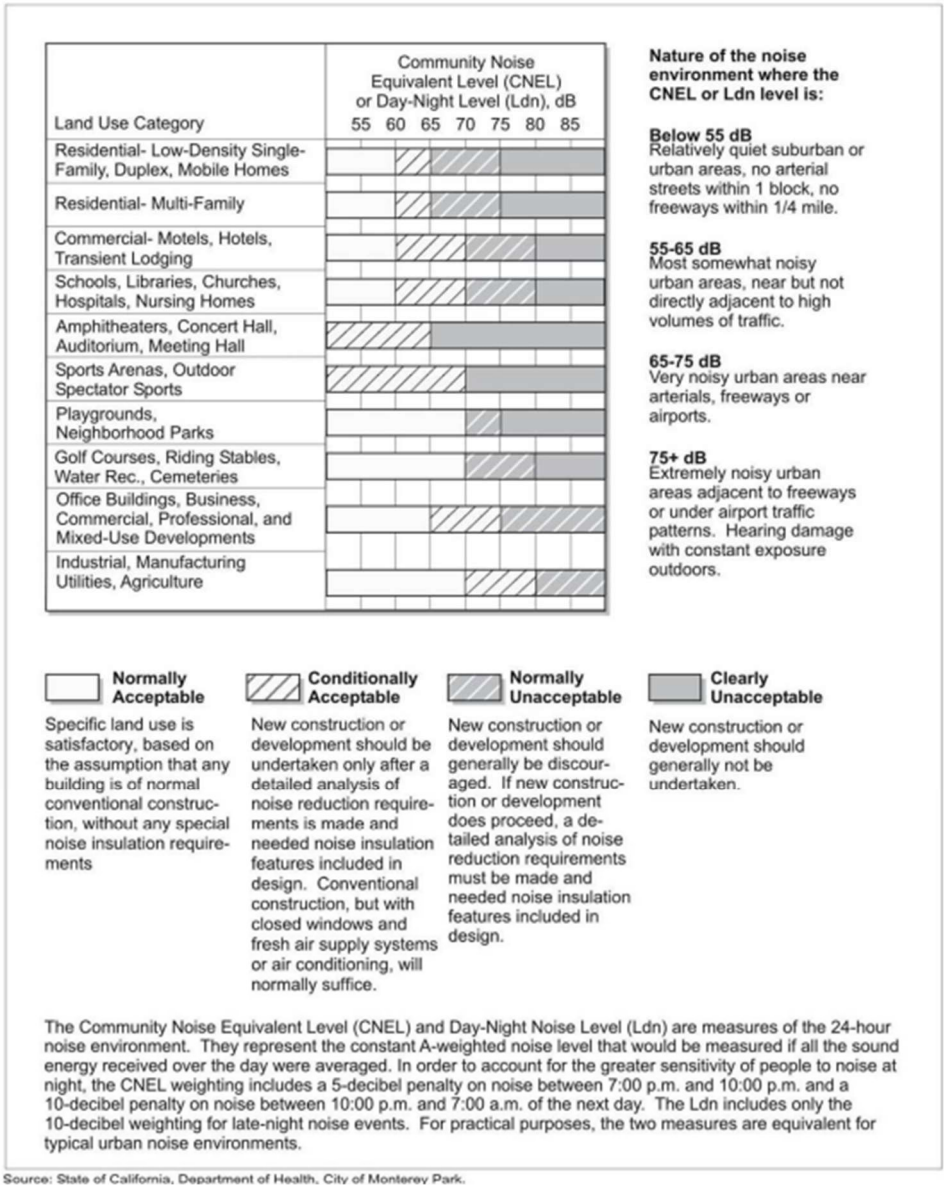
The City of Perris outlines its noise regulations and standards within the Noise Element from the General Plan and the Noise Ordinance from the Municipal Code.

City of Perris General Plan

The City of Perris adopted its General Plan in 2005. Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Noise Element. The land use compatibility guidelines are shown in Exhibit D.

<Exhibit D, next page>

Exhibit D: Land Use Compatibility Guidelines



Source: State of California, Department of Health, City of Monterey Park.

In addition to the noise standards, the City has outlined goals, policies and implementation measures to reduce potential noise impacts and are presented below:

Goals, Policies, and Implementation Measures

The City utilizes the following General Plan Noise Element goal, policies and implementation measures to assess evaluate the project's suitability in light of noise impacts.

Goal-1: Land Use Siting Protect those living, working, and visiting the community from exposure to excessive noise.

Policy I.A:

The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development.

Implementation Measures

I.A.1 All new development proposals will be evaluated with respect to the State Noise/ Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the "Normally Unacceptable" range and prohibited within areas exposed to "Clearly Unacceptable" noise ranges.

I.A.2 Site plans for new residential development near roadway and train noise sources shall incorporate increased building setbacks and/or provide for sufficient noise barriers for useable exterior yard areas so that noise exposure in those areas does not exceed the levels considered "Normally Acceptable" in the The State of California Noise/Land Use Compatibility Criteria.

I.A.3 Acoustical studies shall be prepared for all new development proposals involving noise sensitive land uses, as defined in Section 16.22.020J of the Perris Municipal Code, where such projects are adjacent to roadways and within existing or projected roadway CNEL levels of 60 dBA or greater.

I.A.4 As part of any approvals of noise sensitive projects where reduction of exterior noise to 65 dBA is not reasonably feasible, the City will require the developer to issue disclosure statements to be identified on all real estate transfers associated with the affected property that identifies regular exposure to roadway noise.

Goal-2: Existing Sensitive Receptors Roadway improvements compatible with existing noise sensitive land uses.

Policy II.A:

Appropriate measures shall be taken in the design phase of future roadway widening projects to minimize impacts on existing sensitive noise receptors.

Implementation Measures

II.A.1 In the design of future roadway widening projects adjacent to existing sensitive land uses, first priority will be given to widening on the opposite side of the street where no sensitive land uses occur.

City of Perris Municipal Code

Section 16.22 of the City's municipal ordinance establishes standards as it relates to insulation against noise for areas in the vicinity of arterials, railroads and airports and is briefly discussed below:

16.22.030 Noise Impacted Projects

Residential projects, or portions thereof, which are exposed to a community noise equivalent level (CNEL) of sixty dB or greater are considered to be impacted by excessive noise. Such projects shall be required to include noise isolation design and construction such that the exterior and interior noise standards of the city's noise element of its general plan are not exceeded. Year 2000 CNEL contour maps maintained by the city's planning department shall be used to identify those areas in proximity to arterials, railroads, and/or airfields that are impacted by a CNEL which is sixty dB or greater.

16.22.050 Acoustical Analysis and Design Report

An analysis and design report signed by and prepared under the supervision of a qualified architect or engineer shall be submitted with the application for building permits. The report shall comply with the requirements of Section 16.22.070 and shall identify the noise sources and characteristics, provide the predicted noise spectra, indicate the basis for the prediction (measured or obtained from published data), and quantify the effectiveness of the proposed building construction to ensure that the CNEL standard of forty-five dB is met within the interior living spaces. In the event that the analysis and design report includes a challenge of the AICUZ noise contours for March Air Force Base, it shall also comply with the requirements and procedures for a challenge study, as established by resolution of the city council.

Sec. 7.34.040 Sound amplification.

No person shall amplify sound using sound amplifying equipment contrary to any of the following:

(1)The only amplified sound permitted shall be either music or the human voice, or both.(2)The volume of amplified sound shall not exceed the noise levels set forth in this subsection when measured outdoors at or beyond the property line of the property from which the sound emanates.

Time Period	Maximum Noise Level
10:01 p.m.—7:00 a.m.	60 dBA
7:01 a.m.—10:00 p.m.	80 dBA

Sec. 7.34.050. - General prohibition.

(a)It unlawful for any person to willfully make, cause or suffer, or permit to be made or caused, any loud excessive or offensive noises or sounds which unreasonably disturb the peace and quiet of any residential neighborhood or which are physically annoying to persons of ordinary sensitivity or which are so harsh, prolonged or unnatural or unusual in their use, time or place as to occasion physical discomfort

to the inhabitants of the city, or any section thereof. The standards for dBA noise level in section 7.34.040 shall apply to this section. To the extent that the noise created causes the noise level at the property line to exceed the ambient noise level by more than 1.0 decibels, it shall be presumed that the noise being created also is in violation of this section.

(b)The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists should include, but not be limited to, the following:

(1)The level of the noise;
(2)Whether the nature of the noise is usual or unusual;
(3)Whether the origin of the noise is natural or unnatural;
(4)The level of the ambient noise;
(5)The proximity of the noise to sleeping facilities;
(6)The nature and zoning of the area from which the noise emanates and the area where it is received;
(7)The time of day or night the noise occurs;
(8)The duration of the noise; and
(9)Whether the noise is recurrent, intermittent or constant.

7.34.060 Hours of Construction

It is unlawful for any person between the hours of seven p.m. of any day and seven a.m. of the following day, or on a legal holiday, with the exception of Columbus Day and Washington's birthday, or on Sundays to erect, construct, demolish, excavate, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. Construction activity shall not exceed eighty dBA in residential zones in the city.

4.4 City of Menifee Noise Regulations

Sensitive receptors east of the project site are in the City of Menifee. Thus, the project must meet the City's standards at these receptors. The City of Menifee outlines their noise regulations and standards within the Noise Element from its General Plan.

City of Menifee General Plan

Applicable goals, policies and implementation measures to reduce potential noise impacts are presented below:

Goals, Policies, and Implementation Measures

Goal N-1: Noise-sensitive Land Uses. Noise-sensitive land uses are protected from excessive noise and vibration exposure.

Goal N-2: Minimal Noise Spillover. Minimal noise spillover from noise-generating uses, such as agriculture, commercial, and industrial uses into adjoining noise-sensitive uses.

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

MD conducted the sound level measurements in accordance to the City of Perris and the Caltrans TeNS manual. All measurements equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). MD noise measurement procedures are presented below:

- Microphones for sound level meters were placed 5-feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a wind screen was placed over the microphone
- Frequency weighting was set on “A” and slow response
- Results of the noise measurements were recorded on field data sheets
- During any short-term noise measurements any noise contaminations such as barking dogs, local traffic, lawn mowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Location

The noise monitoring location was selected to obtain a baseline of the existing noise environment. One long-term noise measurement was conducted at the project site. Appendix A includes photos, field sheet, and measured noise data. Exhibit D illustrates the location of the measurement.

5.3 SoundPLAN Noise Model (Operational Noise)

SoundPLAN acoustical modeling software was utilized to model project operational noise at nearby sensitive receptors. The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. It allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. It also calculates noise level increases due to the reflection of noise from hard surfaces.

Measured and referenced sound level data was utilized to model the various stationary on-site noise sources associated with project operation, (i.e. idling trucks and parking movements).

Noise associated with proposed truck and automobile parking areas was modeled using the SoundPLAN parking tool. The fueling areas were modeled by a point noise source representative of an idling truck at each fueling station. For trucks, the parking lots were modelled with a lot-wide average of 1 movement per space per hour. For cars, the parking lots were modelled with a lot-wide average of 3 movements per space per hour. Drive-thru operations were found to be significantly quieter than the idling trucks and parking lot uses, and so they were not included in the model. Modeling assumptions are summarized in Table 2. SoundPLAN noise modeling input and results are provided in Appendix B.

Table 2: SoundPLAN Modeling Assumptions

Noise Source	Source Type	Reference Sound Power Level (dBA, Lmax)	Distance to Reference Source (ft)
Idling Truck	Point Source	73.8	10
Source: See Appendix **B**.			

5.4 Traffic Noise Prediction Modeling

The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) was utilized to model future traffic noise levels on the project site and existing and existing plus project traffic noise volumes along roadways affected by project generated vehicle traffic. The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL).

Project-generated vehicle traffic will result in an incremental increase in ambient noise levels. To determine the project's noise impact to the surrounding land uses, MD generated noise contours for existing ADT, and existing plus project conditions. Table 3 indicates the roadway parameters and vehicle distribution utilized for the modeling. ADT data was taken from Kimley-Horn and Associates, Inc. Transportation Analysis for Perris Travel Center. The transportation study indicates that Ethanac Road, Trumble Road at the project site, and I-215 are the only roadways with project trips. The only segment with sensitive uses and project trips is Ethanac Road east of Trumble Road. Noise contours are used to provide a characterization of sound levels experienced at a set distance from the centerline of a subject roadway. They are intended to represent a worst-case scenario and do not take into account structures, sound walls, topography, and/or other sound attenuating features which may further reduce the actual noise level. Noise contours are developed for comparative purposes and are used to demonstrate potential increases/decreases along subject roadways as a result of a project. The referenced traffic data and traffic noise calculation worksheets outputs are located in Appendix C.

- Roadway classification – (e.g. freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway Active Width – (distance between the center of the outer most travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Speeds, Percentages of autos, medium and heavy trucks

- Roadway grade and angle of view
- Site Conditions (e.g. soft vs. hard)
- Percentage of total ADT which flows each hour through-out a 24-hour period

Table 3: Roadway Parameters and Vehicle Distribution

Roadway	Existing ADT[1]	Existing + Project ADT[2]	Speed (MPH)	Site Conditions
Ethanac Rd East of Trumble	10,200	10,522	40	Soft
Motor-Vehicle Type[3]	**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**
Automobiles	75.5	14	10.5	97.42
Medium Trucks	48.9	2.2	48.9	1.84
Heavy Trucks	47.3	5.4	47.3	0.74

Notes:
[1] Kimley-Horn Perris Travel Center Transportation Analysis, Oct. 2022 Appendix B-2.
[2] Kimley-Horn Perris Travel Center Transportation Analysis, Figure 6 and Table 2.
[3] Riverside County Vehicle Mix

5.5 Construction Noise Modeling

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction activities are anticipated to include four phases site preparation, grading, building construction, and paving.

Construction noise levels were calculated for each phase based on CalEEMod Air Quality Model assumptions provided by the project proponent. All equipment was assumed to be situated at the edge of the Project site closest to the sensitive receptor. Construction equipment typically moves back and forth across the site, so this is a conservative assumption. Construction worksheets are provided in Appendix D.

6.0 Existing Noise Environment

One (1) 24-hour noise measurements was conducted at the project site in order to document the existing noise environment. The measurements include the 1-hour Leq, Lmin, Lmax and other statistical data (e.g. L2, L8). The results of the noise measurement are presented in Table 5. Noise measurement field sheets are provided in Appendix A.

Table 4: Long-Term Noise Measurement Data for (LT1) (dBA)[1]

Date	Start	Stop	1-Hour dB(A)							
			L_{EQ}	L_{MAX}	L_{MIN}	L_2	L_8	L_{25}	L_{50}	L_{90}
7/2/2021	1:29 PM	2:29 PM	70.4	95.8	48.2	77.0	74.8	72.7	68.6	65.7
7/2/2021	2:29 PM	3:29 PM	70.2	96.7	47.2	75.9	75.1	73.1	68.4	64.7
7/2/2021	3:29 PM	4:29 PM	71.9	97.3	49.0	77.7	75.9	75.3	69.1	66.2
7/2/2021	4:29 PM	5:29 PM	71.0	81.6	74.9	77.4	74.8	73.3	68.5	66.1
7/2/2021	5:29 PM	6:29 PM	71.1	97.0	48.1	78.5	75.2	73.6	68.3	65.2
7/2/2021	6:29 PM	7:29 PM	68.6	90.2	48.1	73.6	72.1	71.1	67.6	64.7
7/2/2021	7:29 PM	8:29 PM	68.5	94.0	48.8	73.1	72.0	71.3	67.1	63.9
7/2/2021	8:29 PM	9:29 PM	70.2	102.5	46.6	79.3	72.5	70.7	66.6	60.9
7/2/2021	9:29 PM	10:29 PM	69.5	97.5	46.3	77.6	71.1	70.4	65.2	61.0
7/2/2021	10:29 PM	11:29 PM	65.7	96.7	44.2	73.2	69.0	67.8	62.3	55.1
7/2/2021	11:29 PM	12:29 AM	61.6	87.2	40.3	69.0	68.2	65.8	57.0	45.7
7/2/2021	12:29 AM	1:29 AM	63.7	96.9	40.7	71.2	70.0	66.7	56.2	47.8
7/2/2021	1:29 AM	2:29 AM	61.5	92.1	37.7	70.2	67.9	64.3	53.0	43.7
7/3/2021	2:29 AM	3:29 AM	65.1	95.5	38.5	73.2	72.4	69.9	56.4	48.3
7/3/2021	3:29 AM	4:29 AM	69.7	94.3	44.3	77.6	76.7	74.2	65.1	53.4
7/3/2021	4:29 AM	5:29 AM	71.8	96.5	49.2	78.8	77.6	75.7	68.0	64.2
7/3/2021	5:29 AM	6:29 AM	71.9	96.9	50.2	78.5	78.0	74.9	70.0	64.5
7/3/2021	6:29 AM	7:29 AM	72.8	95.0	51.7	78.2	78.0	76.7	71.1	66.8
7/3/2021	7:29 AM	8:29 AM	73.2	99.5	49.8	80.4	77.1	76.7	70.0	68.3
7/3/2021	8:29 AM	9:29 AM	72.6	97.2	46.7	78.1	77.9	75.8	70.9	66.5
7/3/2021	9:29 AM	10:29 AM	71.8	96.2	45.7	77.5	76.6	75.5	69.9	64.9
7/3/2021	10:29 AM	11:29 AM	71.3	93.3	47.8	77.3	76.8	75.2	68.9	64.6
7/3/2021	11:29 AM	12:29 PM	73.6	105.4	46.9	80.9	79.4	77.7	69.3	65.6
7/3/2021	12:29 PM	1:29 PM	69.5	90.4	47.5	74.6	74.4	71.6	68.3	65.7
CNEL			75.4							

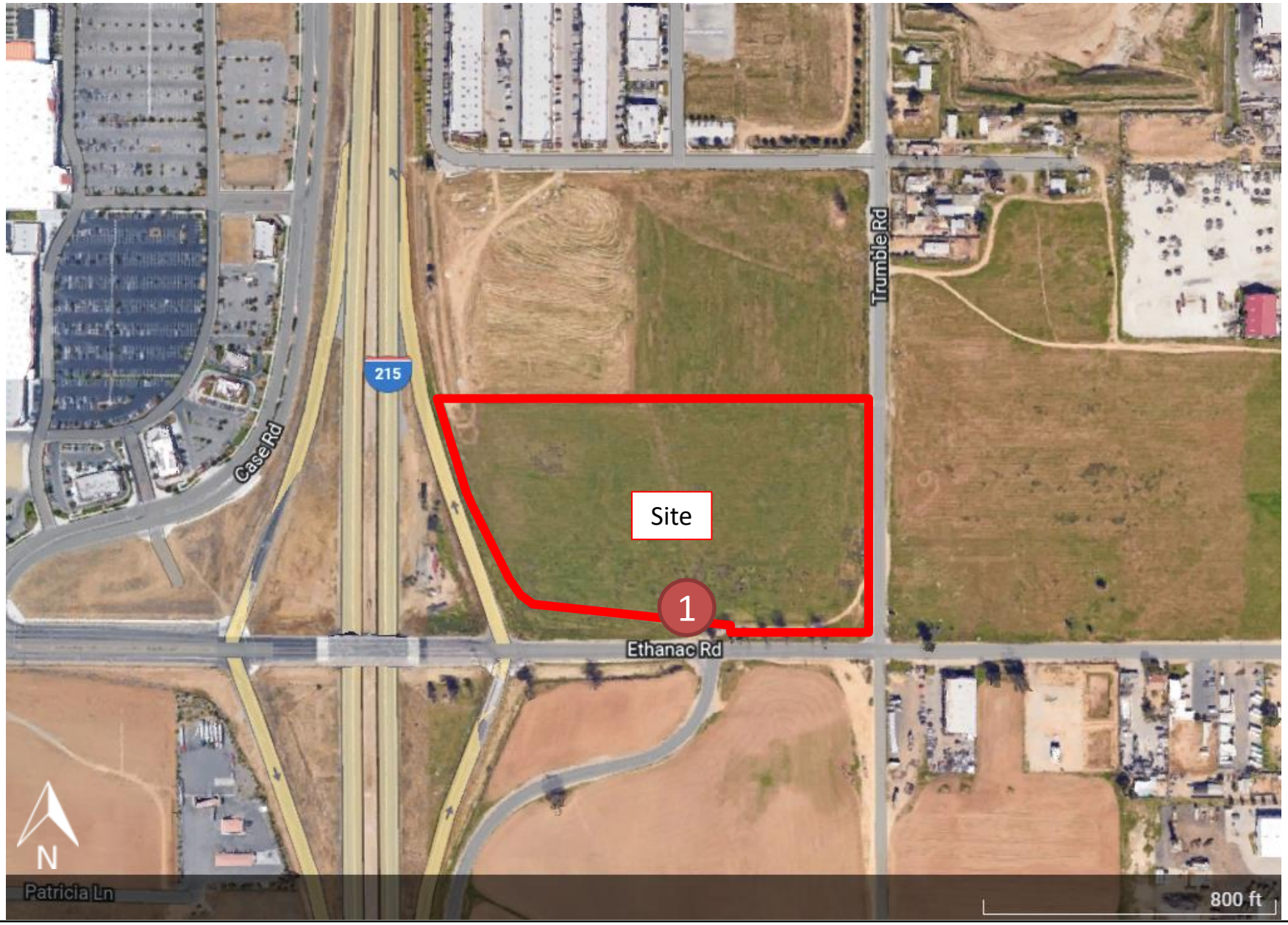
Notes:
[1.] Long-term noise monitoring location (LT1) is illustrated in Exhibit E.

The data presented in Table 4 and the field notes provided in Appendix A, indicate that ambient noise levels in the project vicinity range between 61.6 and 73.6 dBA Leq. The overall CNEL was 75.4 dBA CNEL. The field data indicates that the freeway is the dominant noise source. This analysis will use the quietest hour of 61.5 dBA Leq as the comparative ambient level as a worst-case scenario.

Exhibit D

Measurement Locations

X = Measurement location



7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts to sensitive receptors and to the project and compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels associated with traffic from adjacent roadway sources. The City has established different significance thresholds for different types of noise impacts.

7.1 Off-Site Traffic Noise Impact

The potential off-site noise impacts caused by the increase in vehicular traffic as a result of the project were calculated at a distance of 50 feet from affected road segments. Ethanac Road east of Trumble Road is the only roadway segment with sensitive receptors and anticipated project trips. All trucks are anticipated to come and go from I-215. The noise level at 50 feet both with and without project generated vehicle traffic was compared and the increase calculated. The distance to the 55, 60, 65, and 70 dBA CNEL noise contours are also provided for reference (Appendix C). Noise contours were calculated for the following scenarios and conditions:

- Existing Condition: This scenario refers to the existing year traffic noise condition and is demonstrated in Table 5.

- Existing + Project Condition: This scenario refers to the existing year plus project traffic noise condition and is demonstrated in Table 5.

As shown in Table 5, the addition of project generated vehicle traffic to Ethanac Road would result in negligible increases in ambient noise levels and would not be significant.

Table 5: Change in Existing Noise Levels as a Result of Project Generated Traffic

Roadway	Segment	Modeled Noise Levels (dBA CNEL) at 50 feet from the Centerline			
		Existing without Project	Existing with Project	Change in Noise Level	Increase of 1.5 dB or more[2]
Ethanac Rd	East of Trumble	67.0	67.1	0.1	No

Notes:
[1] FHWA roadway noise modeling worksheets provided in Appendix C.
[2] Typical significance threshold for existing levels greater than 65 dBA.

7.2 On-Site Traffic Noise Impact

Future noise levels associated with traffic were measured as shown in Table 4 in order to evaluate the project in light of the City's land use compatibility guidelines presented in Exhibit D of this report as they apply to future traffic noise impacts to the proposed project. The Project is currently within normally unacceptable for commercial uses. It will not change due to the increase in traffic levels due to the

project. The proposed use is not noise sensitive as there are no proposed outdoor uses for employees or patrons. The impact is less than significant.

7.3 Noise Impacts to Off-Site Receptors Due to Stationary Noise Sources

Worst-case operational noise was modeled using SoundPLAN acoustical modeling software. Four (4) receptors representing adjacent commercial uses and one (1) receptor representing northeast residential uses were modeled using the SoundPLAN noise model to evaluate the proposed project's operational impact. The model assumes that every fueling position is occupied with an idling truck. A receptor is denoted by a yellow dot. All yellow dots represent either an existing building, a property line, or a sensitive receptor. The results are in Table 6.

Project Operational Noise Levels

Worst-case "project only" exterior operational noise is presented on Exhibit E. Operational noise levels are expected to be 56 to 64 dBA at commercial receptors and 53 dBA at the residential receptor, R2. This is below the residential nighttime limit of 60 dBA presented in section 7.34.050 and 7.34.040 of the Perris Municipal Code.

Project Plus Ambient Operational Noise Levels

Existing plus project noise level projections are anticipated to be 63 to 66 dBA Lmax at commercial receptors and 63 dBA at the residential receptor. Project generated operational noise is expected to result in a 1 dB increase in ambient noise levels at the northeast residential uses (more specifically a 0.5 dB increase) and a 1-4 dB increase at the property lines of the project site. A change in 1 dB is not perceptible, and a change of 3 dB is just perceptible (see Table 1). This meets the less than 1.0 increase requirement at residential properties presented in section 7.34.050 of the Perris Municipal Code. Thus, this impact would be less than significant. No mitigation is required.

Table 6: Operational Noise Levels (dBA Lmax)

Receptor[1]	Existing Ambient Noise Level (dBA Leq)[2]	Project Noise Level (dBA Lmax)[3]	Total Combined Noise Level (dBA Lmax)	Change in Noise Level as Result of Project
R1	62	64	66	4
R2	62	53	63	1
R3	62	63	66	4
R4	62	60	64	2
R5	62	56	63	1

Notes:
1. Receptors 1, 3-5 are commerical and Receptor 2 is residential.
2. See Appendix A for noise measurement field sheet.
3. See Exhibit E for the operational noise level projections at said receptors.

Exhibit E

Project Operational Noise Levels (CNEL)

8.0 Construction Noise and Vibration Impacts

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Project construction will occur in four phases, site preparation, grading, building construction and paving. This section summarizes discusses noise and ground-borne vibration modeling efforts, impact analysis, and mitigation, if necessary.

8.1 Construction Noise

Typical construction equipment noise levels are presented in Table 7.

Table 7: Typical Construction Equipment Noise Levels[1]

EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Rollers)	73 - 76
Front Loaders	73 - 84
Backhoes	73 - 92
Tractors	75 - 95
Scrapers, Graders	78 - 92
Pavers	85 - 87
Trucks	81 - 94
Materials Handling	
Concrete Mixers	72 - 87
Concrete Pumps	81 - 83
Cranes (Movable)	72 - 86
Cranes (Derrick)	85 - 87
Stationary	
Pumps	68 - 71
Generators	71 - 83
Compressors	75 – 86

IMPACT EQUIPMENT

Type	Noise Levels (dBA) at 50 Feet
Saws	71 - 82
Vibrators	68 - 82

Notes:
[1] Referenced Noise Levels from the Environmental Protection Agency (EPA)

Construction noise associated with each phase of the project was calculated at the residences to the south utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters

including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction equipment typically moves back and forth across the site; and it is an industry standard to use the acoustical center of the site to model average construction noise levels.

Construction activities are anticipated to include four phases site preparation, grading, building construction, and architectural coating. Noise levels associated with each phase are shown in Table 8. The construction noise calculation output worksheet is located in Appendix D.

Table 8: Construction Noise Level by Phase (dBA)

Activity	Noise Levels at Nearest Sensitive Receptor	
	Leq	Lmax
Site Preparation	49	60
Grading	56	61
Building Construction	42	57
Paving	47	56
Notes: Construction Modeling Worksheets are provided in Appendix D.		

As shown in Table 8, project construction noise will range between 42 to 56 dBA Leq and 56 to 60 dBA Lmax at the nearest sensitive receptor.

Section 7.34.060 of the City of Perris Municipal Code states that construction cannot exceed 80 dBA in residential zones. The calculated noise levels due to construction at the nearest residential property reaches a maximum of 61 dBA Lmax and will thus meet the standard. The Project will be required to adhere to the allowed times for construction outlined in the Municipal Code. This impact is less than significant. No mitigation is required.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bull dozer. A large bull dozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^{n}$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 9 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 9: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.		
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		

Table 10 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 10: Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Large bulldozer	0.089	87
Loaded trucks	0.076	86
Small bulldozer	0.003	58
Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2018.		

The nearest existing building is 180 feet south of the project site. At this distance, a large bulldozer would yield a worst-case 0.010 PPV (in/sec) which would not be perceptible or result in architectural damage. The impact is not significant. No mitigation is required. The ground-borne vibration worksheet is provided in Appendix E.

9.0 References

City of Perris
2005 General Plan
2021 Municipal Code

City of Menifee
2013 General Plan

California Department of Transportation (Caltrans)
2013 Transportation and Construction Induced Vibration Guidance Manual.
2018 Technical Noise Supplement to the Traffic Noise Analysis Protocol. Sept.

Federal Highway Administration (FHWA)
2010 Highway Traffic Noise Analysis and Abatement Policy and Guidance.
https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

Federal Transit Administration (FTA)
2018 Transit Noise and Vibration Impact Assessment Manual

Governor's Office of Planning and Research
State of California General Plan Guidelines, 1998

Kimley-Horn and Associates
Traffic Study Trip Generation

SoundPLAN International, LLC
2016 SoundPLAN Essential 4.0 Manual. May.

Appendix A:

Field Measurement Data

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet

Project:	Pilot Perris	**Site Observations:**	Sunny skies, winds 1-3 mph, temps from 70-79F during the day and 63F at night
Site Address/Location:	Ethanac Rd & Trumble Rd		
Date:	04/02/21-07/03/21		
Field Tech/Engineer:	Jason Schuyler		

General Location:

Sound Meter:	Piccolo 2	**SN:** P02QC2019080206	
Settings:	A-weighted, slow, 1-min, 24-hour duration		
Meteorological Con.:	72F Winds 0-5 mph		
Site ID:	LT1		

Site Topo: Flat
Ground Type: Sandy soil and clay

Noise Source(s) w/ Distance:
C/L of rd is 40ft from meter

Figure 1: LT-1 Monitoring Location

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: Pilot Perris **Day:** 1 of 1
Site Address/Location: Ethanac Rd & Trumble Rd
Site ID: LT1

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
7/2/2021	1:29 PM	2:29 PM	70.4	95.8	48.2	77.0	74.8	72.7	68.6	65.7
7/2/2021	2:29 PM	3:29 PM	70.2	96.7	47.2	75.9	75.1	73.1	68.4	64.7
7/2/2021	3:29 PM	4:29 PM	71.9	97.3	49.0	77.7	75.9	75.3	69.1	66.2
7/2/2021	4:29 PM	5:29 PM	71.0	81.6	74.9	77.4	74.8	73.3	68.5	66.1
7/2/2021	5:29 PM	6:29 PM	71.1	97.0	48.1	78.5	75.2	73.6	68.3	65.2
7/2/2021	6:29 PM	7:29 PM	68.6	90.2	48.1	73.6	72.1	71.1	67.6	64.7
7/2/2021	7:29 PM	8:29 PM	68.5	94.0	48.8	73.1	72.0	71.3	67.1	63.9
7/2/2021	8:29 PM	9:29 PM	70.2	102.5	46.6	79.3	72.5	70.7	66.6	60.9
7/2/2021	9:29 PM	10:29 PM	69.5	97.5	46.3	77.6	71.1	70.4	65.2	61.0
7/2/2021	10:29 PM	11:29 PM	65.7	96.7	44.2	73.2	69.0	67.8	62.3	55.1
7/2/2021	11:29 PM	12:29 AM	61.6	87.2	40.3	69.0	68.2	65.8	57.0	45.7
7/2/2021	12:29 AM	1:29 AM	63.7	96.9	40.7	71.2	70.0	66.7	56.2	47.8
7/2/2021	1:29 AM	2:29 AM	61.5	92.1	37.7	70.2	67.9	64.3	53.0	43.7
7/3/2021	2:29 AM	3:29 AM	65.1	95.5	38.5	73.2	72.4	69.9	56.4	48.3
7/3/2021	3:29 AM	4:29 AM	69.7	94.3	44.3	77.6	76.7	74.2	65.1	53.4
7/3/2021	4:29 AM	5:29 AM	71.8	96.5	49.2	78.8	77.6	75.7	68.0	64.2
7/3/2021	5:29 AM	6:29 AM	71.9	96.9	50.2	78.5	78.0	74.9	70.0	64.5
7/3/2021	6:29 AM	7:29 AM	72.8	95.0	51.7	78.2	78.0	76.7	71.1	66.8
7/3/2021	7:29 AM	8:29 AM	73.2	99.5	49.8	80.4	77.1	76.7	70.0	68.3
7/3/2021	8:29 AM	9:29 AM	72.6	97.2	46.7	78.1	77.9	75.8	70.9	66.5
7/3/2021	9:29 AM	10:29 AM	71.8	96.2	45.7	77.5	76.6	75.5	69.9	64.9
7/3/2021	10:29 AM	11:29 AM	71.3	93.3	47.8	77.3	76.8	75.2	68.9	64.6
7/3/2021	11:29 AM	12:29 PM	73.6	105.4	46.9	80.9	79.4	77.7	69.3	65.6
7/3/2021	12:29 PM	1:29 PM	69.5	90.4	47.5	74.6	74.4	71.6	68.3	65.7

CNEL: 75.4

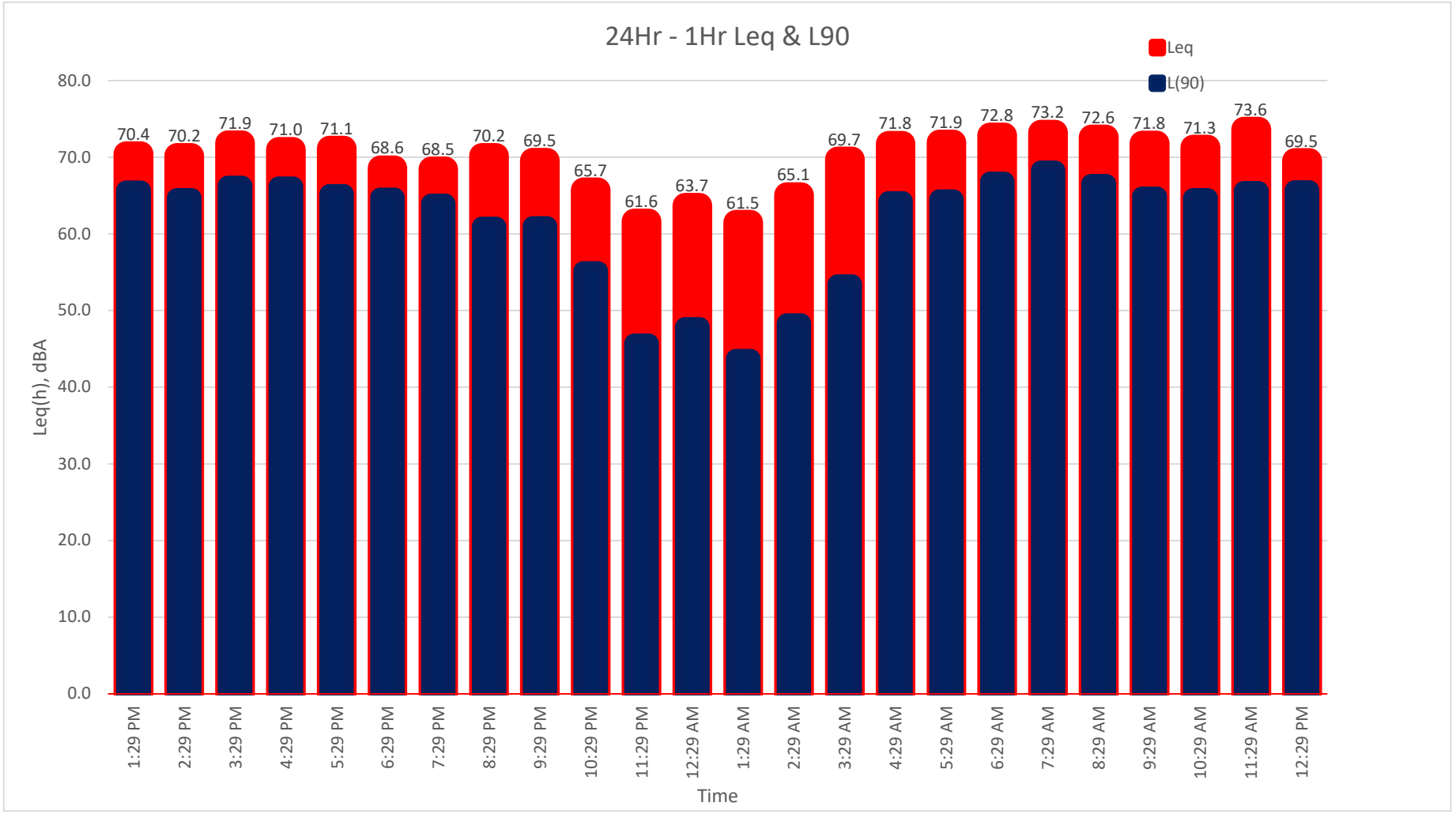
MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet - Cont.

Project: Pilot Perris
Day: 1 of 1
Site Address/Location: Ethanac Rd & Trumble Rd
Site ID: LT1



MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

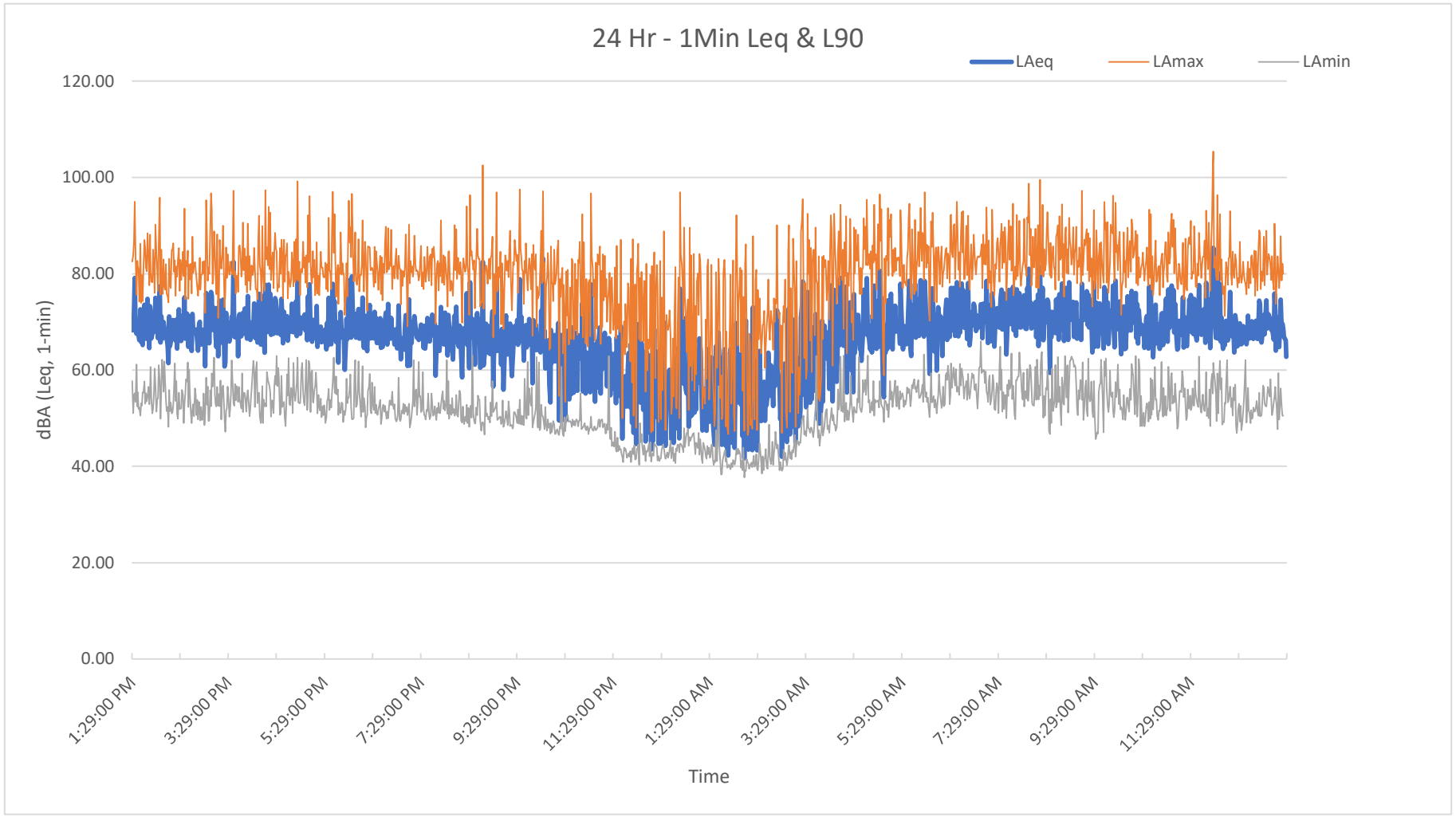
CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet - Cont.

Project: Pilot Perris **Day:** 1 of 1

Site Address/Location: Ethanac Rd & Trumble Rd

Site ID: LT1



Appendix B:

SoundPLAN Noise Modeling Data

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249
p. (602) 774-1950

CA Office
1197 Los Angeles Ave, Ste C-256
Simi Valley, CA 93065
p. (805) 426-4477

Project: N/A
Site Location: MD Acoustics and Labs 170 S. William Dillard Dr. Suite 103
Date: 8/11/2020
Field Tech/Engineer: Shon Baldwin
Source/System: Semi Truck

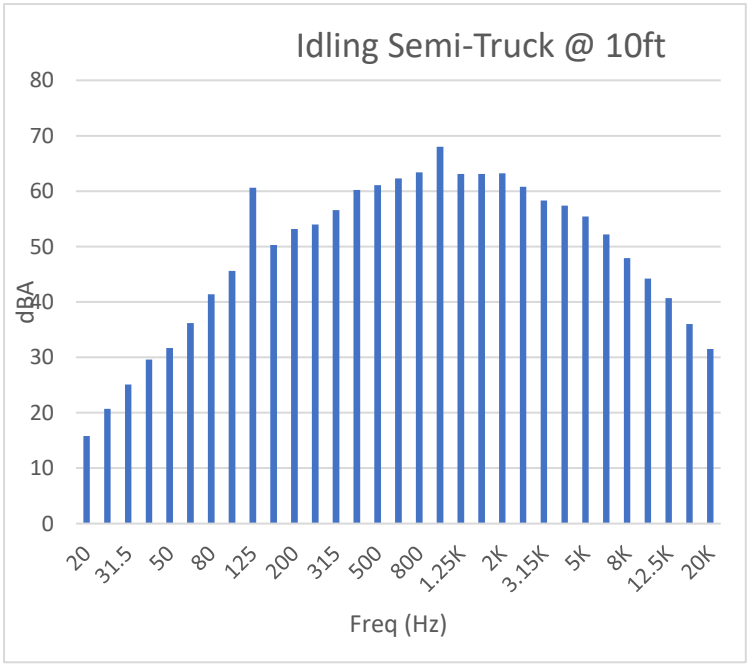
Site Observations:
Clear sky, 95 degrees, F

Location: Loading dock
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, fast, 1-sec, 30-sec duration
Meteorological Cond.: N/A

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																																
			20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Semi-Truck Idle	Semi-Truck	73.8	16	21	25	30	32	36	41	46	61	50	53	54	57	60	61	62	63	68	63.1	63	63	61	58	57	55	52	48	44	41	36	32

Figure 1: Semi Truck



Pilot Perris
Octave spectra of the sources in dB(A) - 001 - Ourdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Auto Fuel Pump 1	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 2	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 3	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 4	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 5	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 6	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 7	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Auto Fuel Pump 8	Point				94.7	94.7	0.0	0.0		0	002 - Auto Gas Pump - E/h	Car start up	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
Truck Fuel Pump 1	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 2	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 3	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 4	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 5	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 6	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 7	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Truck Fuel Pump 8	Point				91.4	91.4	0.0	0.0		0	004 - Truck Gas Pump - E/h	Idiling Heavy Diesel Truck	59.0	78.3	77.0	83.5	88.1	84.8	79.8	71.3	58.6
Auto Fuel Pump Parking	PLot	606.47			57.6	85.5	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	68.8	80.4	72.9	77.4	77.5	77.9	75.2	69.0	56.2
Parking	PLot	73.27			54.4	73.0	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	56.4	68.0	60.5	65.0	65.1	65.5	62.8	56.6	43.8
Parking	PLot	204.91			55.9	79.0	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	62.3	73.9	66.4	70.9	71.0	71.4	68.7	62.5	49.7
Parking	PLot	67.20			54.7	73.0	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	56.4	68.0	60.5	65.0	65.1	65.5	62.8	56.6	43.8
Parking	PLot	74.96			54.3	73.0	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	56.4	68.0	60.5	65.0	65.1	65.5	62.8	56.6	43.8
Parking	PLot	495.87			58.3	85.3	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	68.6	80.2	72.7	77.2	77.3	77.7	75.0	68.8	56.0
Parking	PLot	383.41			57.1	82.9	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	66.3	77.9	70.4	74.9	75.0	75.4	72.7	66.5	53.7

Pilot Perris
Octave spectra of the sources in dB(A) - 001 - Ourdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Parking	PLot	187.66			55.4	78.2	0.0	0.0		0	001 - Auto Parking - E/h	Typical spectrum	61.5	73.1	65.6	70.1	70.2	70.6	67.9	61.7	48.9
Truck Parking	PLot	611.13			61.7	89.5	0.0	0.0		0	003 - Truck Parking - E/h	Idiling Heavy Diesel Truck	57.1	76.4	75.1	81.6	86.2	82.9	77.9	69.4	56.7
Truck Parking	PLot	1359.14			58.2	89.5	0.0	0.0		0	003 - Truck Parking - E/h	Idiling Heavy Diesel Truck	57.1	76.4	75.1	81.6	86.2	82.9	77.9	69.4	56.7
Truck Parking	PLot	1682.34			64.5	96.7	0.0	0.0		0	003 - Truck Parking - E/h	Idiling Heavy Diesel Truck	64.3	83.6	82.3	88.8	93.4	90.1	85.1	76.6	63.9
Truck Parking	PLot	2565.72			65.4	99.5	0.0	0.0		0	003 - Truck Parking - E/h	Idiling Heavy Diesel Truck	67.0	86.3	85.0	91.6	96.1	92.8	87.8	79.4	66.6
Truck Parking	PLot	3050.10			65.6	100.4	0.0	0.0		0	003 - Truck Parking - E/h	Idiling Heavy Diesel Truck	68.0	87.2	85.9	92.5	97.1	93.8	88.7	80.3	67.6

Source	Source group	Source type	Tr. lane	LrD dB(A)	A dB	
Receiver -137,319 Fl G LrD,lim dB(A) LrD 63.9 dB(A)						
Parking	Default parking lot noise	PLot		22.4	0.0	
Parking	Default parking lot noise	PLot		40.6	0.0	
Parking	Default parking lot noise	PLot		40.2	0.0	
Parking	Default parking lot noise	PLot		38.0	0.0	
Parking	Default parking lot noise	PLot		22.8	0.0	
Parking	Default parking lot noise	PLot		28.0	0.0	
Parking	Default parking lot noise	PLot		22.5	0.0	
Auto Fuel Pump Parking	Default parking lot noise	PLot		40.3	0.0	
Auto Fuel Pump 1	Default industrial noise	Point		50.8	0.0	
Auto Fuel Pump 2	Default industrial noise	Point		51.6	0.0	
Auto Fuel Pump 3	Default industrial noise	Point		52.4	0.0	
Auto Fuel Pump 4	Default industrial noise	Point		53.2	0.0	
Auto Fuel Pump 5	Default industrial noise	Point		54.2	0.0	
Auto Fuel Pump 6	Default industrial noise	Point		55.2	0.0	
Auto Fuel Pump 7	Default industrial noise	Point		56.4	0.0	
Auto Fuel Pump 8	Default industrial noise	Point		57.8	0.0	
Truck Parking	Default parking lot noise	PLot		42.9	0.0	
Truck Parking	Default parking lot noise	PLot		34.8	0.0	
Truck Parking	Default parking lot noise	PLot		38.6	0.0	
Truck Parking	Default parking lot noise	PLot		20.5	0.0	
Truck Parking	Default parking lot noise	PLot		35.0	0.0	
Truck Fuel Pump 1	Default industrial noise	Point		29.8	0.0	
Truck Fuel Pump 2	Default industrial noise	Point		32.9	0.0	
Truck Fuel Pump 3	Default industrial noise	Point		38.2	0.0	
Truck Fuel Pump 4	Default industrial noise	Point		43.8	0.0	
Truck Fuel Pump 5	Default industrial noise	Point		43.6	0.0	
Truck Fuel Pump 6	Default industrial noise	Point		43.4	0.0	
Truck Fuel Pump 7	Default industrial noise	Point		43.2	0.0	
Truck Fuel Pump 8	Default industrial noise	Point		43.0	0.0	
Receiver -139,590 Fl G LrD,lim dB(A) LrD 52.6 dB(A)						
Parking	Default parking lot noise	PLot		10.4	0.0	
Parking	Default parking lot noise	PLot		25.9	0.0	
Parking	Default parking lot noise	PLot		21.6	0.0	
Parking	Default parking lot noise	PLot		23.3	0.0	
Parking	Default parking lot noise	PLot		12.9	0.0	
Parking	Default parking lot noise	PLot		21.1	0.0	
Parking	Default parking lot noise	PLot		15.9	0.0	
Auto Fuel Pump Parking	Default parking lot noise	PLot		25.8	0.0	
Auto Fuel Pump 1	Default industrial noise	Point		33.1	0.0	
Auto Fuel Pump 2	Default industrial noise	Point		32.8	0.0	
Auto Fuel Pump 3	Default industrial noise	Point		33.0	0.0	
Auto Fuel Pump 4	Default industrial noise	Point		33.4	0.0	
Auto Fuel Pump 5	Default industrial noise	Point		36.7	0.0	

Source	Source group	Source type	Tr. lane	LrD dB(A)	A dB	
Auto Fuel Pump 6	Default industrial noise	Point		42.8	0.0	
Auto Fuel Pump 7	Default industrial noise	Point		42.9	0.0	
Auto Fuel Pump 8	Default industrial noise	Point		43.0	0.0	
Truck Parking	Default parking lot noise	PLot		42.2	0.0	
Truck Parking	Default parking lot noise	PLot		36.6	0.0	
Truck Parking	Default parking lot noise	PLot		33.1	0.0	
Truck Parking	Default parking lot noise	PLot		28.8	0.0	
Truck Parking	Default parking lot noise	PLot		32.5	0.0	
Truck Fuel Pump 1	Default industrial noise	Point		40.3	0.0	
Truck Fuel Pump 2	Default industrial noise	Point		40.3	0.0	
Truck Fuel Pump 3	Default industrial noise	Point		40.4	0.0	
Truck Fuel Pump 4	Default industrial noise	Point		40.4	0.0	
Truck Fuel Pump 5	Default industrial noise	Point		40.4	0.0	
Truck Fuel Pump 6	Default industrial noise	Point		40.5	0.0	
Truck Fuel Pump 7	Default industrial noise	Point		40.6	0.0	
Truck Fuel Pump 8	Default industrial noise	Point		39.5	0.0	
Receiver -220,225 Fl G LrD,lim dB(A) LrD 63.2 dB(A)						
Parking	Default parking lot noise	PLot		26.3	0.0	
Parking	Default parking lot noise	PLot		41.0	0.0	
Parking	Default parking lot noise	PLot		31.3	0.0	
Parking	Default parking lot noise	PLot		36.4	0.0	
Parking	Default parking lot noise	PLot		25.3	0.0	
Parking	Default parking lot noise	PLot		30.6	0.0	
Parking	Default parking lot noise	PLot		23.8	0.0	
Auto Fuel Pump Parking	Default parking lot noise	PLot		39.7	0.0	
Auto Fuel Pump 1	Default industrial noise	Point		53.6	0.0	
Auto Fuel Pump 2	Default industrial noise	Point		53.9	0.0	
Auto Fuel Pump 3	Default industrial noise	Point		54.2	0.0	
Auto Fuel Pump 4	Default industrial noise	Point		54.4	0.0	
Auto Fuel Pump 5	Default industrial noise	Point		54.5	0.0	
Auto Fuel Pump 6	Default industrial noise	Point		54.4	0.0	
Auto Fuel Pump 7	Default industrial noise	Point		53.7	0.0	
Auto Fuel Pump 8	Default industrial noise	Point		53.5	0.0	
Truck Parking	Default parking lot noise	PLot		38.8	0.0	
Truck Parking	Default parking lot noise	PLot		38.6	0.0	
Truck Parking	Default parking lot noise	PLot		41.5	0.0	
Truck Parking	Default parking lot noise	PLot		29.8	0.0	
Truck Parking	Default parking lot noise	PLot		18.4	0.0	
Truck Fuel Pump 1	Default industrial noise	Point		22.7	0.0	
Truck Fuel Pump 2	Default industrial noise	Point		24.2	0.0	
Truck Fuel Pump 3	Default industrial noise	Point		25.2	0.0	
Truck Fuel Pump 4	Default industrial noise	Point		25.9	0.0	
Truck Fuel Pump 5	Default industrial noise	Point		26.4	0.0	
Truck Fuel Pump 6	Default industrial noise	Point		26.8	0.0	
Truck Fuel Pump 7	Default industrial noise	Point		27.2	0.0	

Source	Source group	Source type	Tr. lane	LrD dB(A)	A dB	
Truck Fuel Pump 8	Default industrial noise	Point		27.4	0.0	
Receiver -338,465 Fl G LrD,lim dB(A) LrD 59.8 dB(A)						
Parking	Default parking lot noise	PLot		21.5	0.0	
Parking	Default parking lot noise	PLot		29.4	0.0	
Parking	Default parking lot noise	PLot		16.7	0.0	
Parking	Default parking lot noise	PLot		21.1	0.0	
Parking	Default parking lot noise	PLot		22.3	0.0	
Parking	Default parking lot noise	PLot		28.6	0.0	
Parking	Default parking lot noise	PLot		23.4	0.0	
Auto Fuel Pump Parking	Default parking lot noise	PLot		29.6	0.0	
Auto Fuel Pump 1	Default industrial noise	Point		48.1	0.0	
Auto Fuel Pump 2	Default industrial noise	Point		47.8	0.0	
Auto Fuel Pump 3	Default industrial noise	Point		47.5	0.0	
Auto Fuel Pump 4	Default industrial noise	Point		39.5	0.0	
Auto Fuel Pump 5	Default industrial noise	Point		37.7	0.0	
Auto Fuel Pump 6	Default industrial noise	Point		36.7	0.0	
Auto Fuel Pump 7	Default industrial noise	Point		36.5	0.0	
Auto Fuel Pump 8	Default industrial noise	Point		36.3	0.0	
Truck Parking	Default parking lot noise	PLot		56.0	0.0	
Truck Parking	Default parking lot noise	PLot		48.5	0.0	
Truck Parking	Default parking lot noise	PLot		37.7	0.0	
Truck Parking	Default parking lot noise	PLot		41.2	0.0	
Truck Parking	Default parking lot noise	PLot		37.0	0.0	
Truck Fuel Pump 1	Default industrial noise	Point		45.9	0.0	
Truck Fuel Pump 2	Default industrial noise	Point		45.9	0.0	
Truck Fuel Pump 3	Default industrial noise	Point		44.2	0.0	
Truck Fuel Pump 4	Default industrial noise	Point		44.5	0.0	
Truck Fuel Pump 5	Default industrial noise	Point		44.7	0.0	
Truck Fuel Pump 6	Default industrial noise	Point		45.0	0.0	
Truck Fuel Pump 7	Default industrial noise	Point		45.2	0.0	
Truck Fuel Pump 8	Default industrial noise	Point		45.4	0.0	
Receiver -488,374 Fl G LrD,lim dB(A) LrD 55.5 dB(A)						
Parking	Default parking lot noise	PLot		19.0	0.0	
Parking	Default parking lot noise	PLot		28.9	0.0	
Parking	Default parking lot noise	PLot		19.8	0.0	
Parking	Default parking lot noise	PLot		25.6	0.0	
Parking	Default parking lot noise	PLot		19.1	0.0	
Parking	Default parking lot noise	PLot		25.7	0.0	
Parking	Default parking lot noise	PLot		19.8	0.0	
Auto Fuel Pump Parking	Default parking lot noise	PLot		29.4	0.0	
Auto Fuel Pump 1	Default industrial noise	Point		44.9	0.0	
Auto Fuel Pump 2	Default industrial noise	Point		44.5	0.0	
Auto Fuel Pump 3	Default industrial noise	Point		44.1	0.0	
Auto Fuel Pump 4	Default industrial noise	Point		43.7	0.0	

Source	Source group	Source type	Tr. lane	LrD dB(A)	A dB	
Auto Fuel Pump 5	Default industrial noise	Point		43.3	0.0	
Auto Fuel Pump 6	Default industrial noise	Point		42.9	0.0	
Auto Fuel Pump 7	Default industrial noise	Point		42.6	0.0	
Auto Fuel Pump 8	Default industrial noise	Point		42.3	0.0	
Truck Parking	Default parking lot noise	PLot		43.0	0.0	
Truck Parking	Default parking lot noise	PLot		49.0	0.0	
Truck Parking	Default parking lot noise	PLot		41.9	0.0	
Truck Parking	Default parking lot noise	PLot		35.5	0.0	
Truck Parking	Default parking lot noise	PLot		29.6	0.0	
Truck Fuel Pump 1	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 2	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 3	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 4	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 5	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 6	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 7	Default industrial noise	Point		37.9	0.0	
Truck Fuel Pump 8	Default industrial noise	Point		37.8	0.0	

Pilot Perris
Contribution spectra - 001 - Ourdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver -137,319 Fl G LrD,lim dB(A) LrD 63.9 dB(A)																													
Auto Fuel Pump 1	LrD	50.8					39.3			47.3			32.1			35.4			42.3			44.5			38.9			22.1	
Auto Fuel Pump 2	LrD	51.6					39.9			48.1			32.9			36.3			43.0			45.2			39.9			24.0	
Auto Fuel Pump 3	LrD	52.4					40.5			48.8			33.9			37.2			43.8			46.0			40.9			25.8	
Auto Fuel Pump 4	LrD	53.2					41.2			49.6			34.9			38.3			44.7			46.9			42.0			27.7	
Auto Fuel Pump 5	LrD	54.2					41.9			50.6			36.1			39.5			45.7			47.9			43.2			29.8	
Auto Fuel Pump 6	LrD	55.2					42.7			51.6			37.4			40.9			46.8			48.9			44.5			31.8	
Auto Fuel Pump 7	LrD	56.4					43.5			52.7			38.9			42.5			48.0			50.1			45.8			34.0	
Auto Fuel Pump 8	LrD	57.8					44.7			54.0			40.7			44.4			49.5			51.4			47.5			36.5	
Truck Fuel Pump 1	LrD	29.8	-7.8	-3.3	0.4	1.5	5.9	10.5	10.1	24.1	13.3	12.2	11.9	13.8	16.5	16.9	16.5	19.9	23.0	17.4	16.4	14.9	11.3	7.5	3.8	-0.3	-7.3	-16.6	-27.6
Truck Fuel Pump 2	LrD	32.9	-7.1	-2.5	1.4	2.8	7.4	12.3	12.2	26.6	16.0	14.8	14.6	16.5	19.4	19.9	19.5	23.5	26.7	21.0	20.1	18.6	15.1	11.2	7.1	2.5	-4.9	-14.5	-26.0
Truck Fuel Pump 3	LrD	38.2	-6.8	-2.1	2.0	3.5	8.3	13.4	13.6	28.3	18.3	17.0	17.3	19.7	23.4	24.3	24.3	29.4	33.0	27.8	27.4	26.2	23.1	19.6	15.7	11.3	3.8	-6.1	-17.8
Truck Fuel Pump 4	LrD	43.8	-4.9	-0.1	4.0	5.6	10.6	15.9	16.2	31.1	21.2	17.0	17.8	20.7	26.2	27.6	28.2	34.8	38.9	34.1	34.2	33.6	31.0	28.1	24.9	21.1	14.3	5.1	-6.1
Truck Fuel Pump 5	LrD	43.6	-5.1	-0.3	3.9	5.5	10.4	15.7	16.0	30.9	21.0	16.8	17.6	20.5	26.0	27.4	28.0	34.6	38.7	33.9	34.0	33.4	30.7	27.8	24.6	20.7	13.8	4.5	-6.8
Truck Fuel Pump 6	LrD	43.4	-5.2	-0.4	3.7	5.3	10.2	15.6	15.8	30.7	20.8	16.6	17.4	20.3	25.8	27.2	27.8	34.4	38.5	33.7	33.8	33.2	30.5	27.6	24.3	20.4	13.4	4.0	-7.5
Truck Fuel Pump 7	LrD	43.2	-5.4	-0.6	3.6	5.2	10.1	15.4	15.6	30.5	20.6	16.3	17.1	20.0	25.6	27.0	27.5	34.2	38.3	33.5	33.6	32.9	30.3	27.3	24.0	20.0	13.0	3.4	-8.3
Truck Fuel Pump 8	LrD	43.0	-5.5	-0.8	3.4	5.0	9.9	15.2	15.4	30.2	20.4	16.1	16.9	19.8	25.3	26.8	27.3	34.0	38.1	33.3	33.4	32.7	30.0	27.1	23.7	19.7	12.5	2.8	-9.1
Auto Fuel Pump Parking	LrD	40.3					27.4			36.4			22.6			27.5			32.6			33.8			29.3			16.9	
Parking	LrD	22.8					11.1			19.0			4.0			9.0			15.1			16.2			10.5			-8.0	
Parking	LrD	28.0					16.4			24.2			9.1			14.1			20.3			21.6			15.7			-4.0	
Parking	LrD	22.5					10.9			18.7			3.7			8.7			14.9			15.9			9.7			-8.6	
Parking	LrD	22.4					10.9			18.7			3.6			8.7			14.8			15.8			9.6			-9.3	
Parking	LrD	40.6					27.6			36.6			23.0			27.9			32.9			34.0			29.6			17.7	
Parking	LrD	38.0					25.0			33.9			20.1			25.1			30.2			31.8			27.2			14.6	
Parking	LrD	40.2					26.5			35.9			24.0			28.9			32.4			33.4			29.8			20.5	
Truck Parking	LrD	20.5	-19.9	-15.4	-11.6	-10.3	-5.8	-0.9	-2.2	12.2	1.8	2.9	3.2	5.5	8.2	8.9	8.7	11.4	14.6	8.9	7.6	5.8	1.8	-2.7	-8.0	-14.5	-24.9	-39.0	-56.8
Truck Parking	LrD	35.0	-13.7	-8.9	-4.8	-3.2	1.7	6.9	7.3	22.2	12.3	9.2	9.8	12.7	18.8	20.2	20.8	26.0	30.1	25.3	25.1	24.5	21.9	19.0	15.9	12.2	5.7	-3.2	-13.7
Truck Parking	LrD	38.6	-9.6	-4.9	-0.7	0.9	5.8	11.1	10.5	25.3	15.5	12.0	12.7	15.6	22.3	23.6	24.2	29.7	33.7	28.9	28.7	28.3	25.3	21.8	18.3	13.4	4.5	-7.6	-22.7
Truck Parking	LrD	34.8	-10.5	-5.8	-1.8	-0.4	4.4	9.6	8.2	22.9	12.9	11.9	12.5	15.1	19.9	21.1	21.4	26.2	30.0	25.0	24.4	23.3	19.9	15.9	11.0	4.6	-6.0	-21.0	-40.4
Truck Parking	LrD	42.9	-5.3	-0.5	3.7	5.2	10.1	15.4	15.2	30.0	20.2	17.1	17.8	20.7	26.8	28.2	28.7	34.1	38.1	33.2	33.0	32.2	29.4	26.3	22.7	18.3	10.7	0.5	-12.0
Receiver -139,590 Fl G LrD,lim dB(A) LrD 52.6 dB(A)																													
Auto Fuel Pump 1	LrD	33.1					27.0			31.0			19.2			20.6			18.2			16.2			3.5			-29.9	
Auto Fuel Pump 2	LrD	32.8					26.7			30.6			19.4			20.8			17.8			15.7			3.2			-29.9	
Auto Fuel Pump 3	LrD	33.0					26.8			30.8			19.4			20.8			18.0			15.9			3.5			-29.3	
Auto Fuel Pump 4	LrD	33.4					27.3			31.3			19.4			20.6			18.4			16.4			4.0			-28.2	
Auto Fuel Pump 5	LrD	36.7					29.7			34.8			21.5			22.4			23.3			21.8			9.6			-23.3	

Pilot Perris
Contribution spectra - 001 - Ourdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Auto Fuel Pump 6	LrD	42.8					32.9			39.4			24.4			27.5			34.6			36.1			26.8			-3.4	
Auto Fuel Pump 7	LrD	42.9					33.0			39.5			24.5			27.6			34.7			36.2			27.0			-3.1	
Auto Fuel Pump 8	LrD	43.0					33.1			39.6			24.5			27.6			34.8			36.3			27.1			-2.8	
Truck Fuel Pump 1	LrD	40.3	-9.3	-4.6	-0.4	1.2	6.1	11.4	10.5	25.4	15.6	13.7	14.4	17.3	23.0	24.3	24.9	31.8	35.7	30.8	30.8	29.8	26.6	22.9	18.4	12.5	2.6	-11.2	-29.0
Truck Fuel Pump 2	LrD	40.3	-9.2	-4.4	-0.2	1.4	6.3	11.6	10.7	25.6	15.8	11.5	12.3	17.4	23.0	24.4	24.9	31.8	35.8	30.9	30.8	29.8	26.7	23.0	18.5	12.7	2.8	-10.9	-28.5
Truck Fuel Pump 3	LrD	40.4	-9.0	-4.2	-0.1	1.5	6.4	11.7	10.9	25.8	16.0	11.7	12.5	15.4	23.0	24.4	24.9	31.8	35.8	30.9	30.9	29.9	26.7	23.0	18.6	12.8	3.1	-10.5	-27.8
Truck Fuel Pump 4	LrD	40.4	-8.9	-4.1	0.1	1.7	6.6	11.9	11.1	26.0	16.2	11.9	12.7	15.6	21.2	24.5	25.0	31.9	35.9	31.0	30.9	30.0	26.8	23.1	18.7	13.0	3.4	-10.0	-27.1
Truck Fuel Pump 5	LrD	40.4	-8.7	-3.9	0.2	1.8	6.7	12.1	11.3	26.2	16.4	12.1	12.8	15.7	21.4	22.7	25.1	32.0	35.9	31.1	31.0	30.1	26.9	23.3	18.9	13.2	3.7	-9.5	-26.2
Truck Fuel Pump 6	LrD	40.5	-8.6	-3.8	0.4	2.0	6.9	12.2	11.5	26.4	16.6	12.3	13.0	15.9	21.5	22.9	25.1	32.0	36.0	31.1	31.1	30.1	27.0	23.4	19.0	13.4	4.0	-8.9	-25.4
Truck Fuel Pump 7	LrD	40.6	-8.4	-3.6	0.6	2.1	7.1	12.4	11.7	26.6	16.8	12.5	13.2	16.1	21.7	23.1	23.7	32.1	36.1	31.2	31.2	30.2	27.1	23.5	19.2	13.7	4.4	-8.3	-24.4
Truck Fuel Pump 8	LrD	39.5	-8.2	-3.5	0.7	2.3	7.2	12.5	11.9	26.8	17.0	12.6	13.4	16.3	21.9	23.3	23.9	30.7	34.7	29.9	29.9	29.0	26.0	22.6	18.5	13.3	4.4	-7.9	-23.6
Auto Fuel Pump Parking	LrD	25.8					16.1			22.0			8.3			12.2			18.5			18.7			9.4			-20.7	
Parking	LrD	12.9					3.9			9.9			-2.9			1.2			4.4			3.8			-6.6			-39.0	
Parking	LrD	21.1					11.2			17.4			2.9			7.9			14.0			14.1			4.1			-28.6	
Parking	LrD	15.9					5.8			12.2			-2.4			2.5			8.7			8.9			-0.5			-31.5	
Parking	LrD	10.4					2.3			7.9			-3.5			0.3			0.0			-2.3			-15.2			-51.9	
Parking	LrD	25.9					16.3			22.4			9.0			13.0			18.2			18.3			8.5			-23.0	
Parking	LrD	23.3					13.0			19.2			4.6			10.3			16.3			16.7			7.8			-20.8	
Parking	LrD	21.6					11.4			17.9			3.2			8.2			14.4			14.7			5.6			-24.0	
Truck Parking	LrD	28.8	-19.3	-14.5	-10.3	-8.8	-3.8	1.5	0.0	14.9	5.0	1.9	2.6	5.5	12.2	14.3	14.8	20.4	24.3	19.4	18.9	17.7	14.3	10.2	5.0	-1.8	-13.1	-29.0	-49.9
Truck Parking	LrD	32.5	-17.1	-12.3	-8.1	-6.5	-1.6	3.7	2.9	17.8	8.0	4.5	5.2	9.2	15.9	17.2	18.4	24.0	28.0	23.1	22.7	21.8	18.7	15.1	10.7	5.1	-4.3	-17.3	-33.7
Truck Parking	LrD	33.1	-13.7	-8.9	-4.8	-3.2	1.7	7.0	5.1	19.9	10.0	7.6	8.3	11.2	17.5	18.8	19.3	24.7	28.5	23.5	22.9	21.6	17.9	13.5	7.8	0.1	-12.5	-30.3	-54.1
Truck Parking	LrD	36.5	-10.4	-5.6	-1.5	0.1	5.0	10.3	8.5	23.4	13.5	10.8	11.5	14.4	20.8	22.1	22.6	28.1	32.0	27.0	26.5	25.3	21.7	17.4	12.0	4.7	-7.3	-24.1	-46.2
Truck Parking	LrD	42.2	-6.0	-1.2	3.0	4.6	9.5	14.8	14.2	29.1	19.2	15.7	16.5	19.4	26.0	27.4	27.9	33.5	37.4	32.6	32.3	31.4	28.5	25.0	21.0	15.9	7.3	-4.5	-19.1
Receiver -220,225 Fl G LrD,lim dB(A) LrD 63.2 dB(A)																													
Auto Fuel Pump 1	LrD	53.6					41.0			49.4			34.6			39.2			45.8			48.0			42.8			27.6	
Auto Fuel Pump 2	LrD	53.9					41.3			49.7			35.0			39.5			46.1			48.2			43.1			28.3	
Auto Fuel Pump 3	LrD	54.2					41.5			50.0			35.3			39.8			46.3			48.5			43.4			28.9	
Auto Fuel Pump 4	LrD	54.4					41.6			50.2			35.5			40.0			46.5			48.6			43.6			29.3	
Auto Fuel Pump 5	LrD	54.5					41.7			50.2			35.7			40.2			46.6			48.7			43.8			29.5	
Auto Fuel Pump 6	LrD	54.4					41.6			50.2			35.6			40.1			46.6			48.7			43.7			29.4	
Auto Fuel Pump 7	LrD	53.7					41.5			50.1			35.5			38.9			45.2			47.4			42.6			28.8	
Auto Fuel Pump 8	LrD	53.5					41.4			49.9			35.2			38.6			45.0			47.2			42.3			28.3	
Truck Fuel Pump 1	LrD	22.7	-11.5	-7.3	-4.0	-3.2	0.7	4.8	3.6	17.3	6.1	6.4	6.1	7.9	10.1	10.5	10.0	12.1	15.2	9.5	8.5	7.6	4.7	1.6	-1.9	-6.2	-13.6	-23.8	-36.3
Truck Fuel Pump 2	LrD	24.2	-11.1	-6.8	-3.3	-2.4	1.7	5.9	4.8	18.6	7.5	8.0	7.7	9.6	11.8	12.2	11.7	13.8	16.9	11.1	10.1	8.5	4.7	1.3	-2.3	-6.7	-14.3	-24.6	-37.5
Truck Fuel Pump 3	LrD	25.2	-10.9	-6.6	-3.0	-2.0	2.2	6.6	5.5	19.4	8.4	9.0	8.8	10.6	12.8	13.3	12.8	14.9	18.0	12.2	11.2	9.6	5.8	1.7	-2.7	-7.2	-14.9	-25.5	-38.6

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Truck Fuel Pump 4	LrD	25.9	-10.9	-6.5	-2.9	-1.8	2.4	7.0	5.9	19.9	9.0	9.7	9.5	11.4	13.6	14.1	13.7	15.7	18.8	13.1	12.1	10.4	6.6	2.5	-2.2	-7.6	-15.5	-26.3	-39.7
Truck Fuel Pump 5	LrD	26.4	-10.9	-6.5	-2.8	-1.7	2.6	7.2	6.2	20.2	9.4	10.2	10.0	12.0	14.2	14.7	14.3	16.4	19.4	13.7	12.7	11.0	7.2	3.1	-1.7	-7.2	-16.2	-27.2	-40.9
Truck Fuel Pump 6	LrD	26.8	-11.0	-6.5	-2.8	-1.7	2.7	7.3	6.3	20.4	9.6	10.5	10.4	12.4	14.7	15.2	14.8	16.9	20.0	14.2	13.2	11.5	7.7	3.5	-1.3	-6.9	-16.0	-28.0	-42.0
Truck Fuel Pump 7	LrD	27.2	-11.0	-6.6	-2.9	-1.7	2.7	7.4	6.4	20.5	9.8	10.8	10.7	12.8	15.0	15.6	15.2	17.3	20.4	14.7	13.7	12.0	8.2	3.9	-0.9	-6.6	-15.9	-28.2	-43.2
Truck Fuel Pump 8	LrD	27.4	-11.1	-6.7	-3.0	-1.8	2.7	7.4	6.4	20.6	10.0	11.0	11.0	13.0	15.3	15.9	15.5	17.6	20.8	15.1	14.1	12.4	8.5	4.2	-0.7	-6.4	-15.8	-28.4	-44.0
Auto Fuel Pump Parking	LrD	39.7					26.6			35.4			21.0			26.9			32.5			33.6			28.6			14.3	
Parking	LrD	25.3					13.1			21.5			6.8			11.8			17.6			18.7			13.5			-2.0	
Parking	LrD	30.6					18.5			26.8			12.0			17.1			22.9			24.1			18.6			2.6	
Parking	LrD	23.8					12.0			20.1			5.2			10.2			16.2			17.3			11.6			-5.5	
Parking	LrD	26.4					13.9			22.5			8.1			13.1			18.7			19.8			14.9			0.6	
Parking	LrD	41.0					27.7			36.9			23.0			28.0			33.6			34.8			30.2			17.4	
Parking	LrD	36.4					23.0			32.2			18.3			23.3			29.1			30.3			24.9			9.3	
Parking	LrD	31.3					18.8			27.4			13.0			18.0			23.6			24.8			19.8			5.3	
Truck Parking	LrD	29.8	-17.4	-12.6	-8.5	-7.0	-2.1	3.1	2.4	17.3	7.4	4.5	5.1	7.8	13.9	15.2	15.7	21.1	25.1	20.2	19.8	19.0	15.9	12.5	8.4	3.2	-5.7	-18.1	-33.8
Truck Parking	LrD	18.4	-19.3	-14.9	-11.3	-10.2	-5.9	-1.3	-2.3	11.7	0.9	2.0	1.9	3.9	6.2	6.7	6.4	8.6	11.7	6.0	4.7	3.1	-0.6	-4.7	-9.2	-14.4	-22.9	-33.9	-47.2
Truck Parking	LrD	41.5	-7.4	-2.7	1.5	3.1	8.0	13.3	13.4	28.2	18.4	14.9	15.6	18.6	25.1	26.5	27.0	32.5	36.7	32.0	31.7	31.0	28.3	25.2	21.7	17.6	10.2	0.5	-11.4
Truck Parking	LrD	38.6	-8.6	-3.9	0.2	1.8	6.6	11.9	10.9	25.7	15.8	13.3	14.0	16.8	22.7	23.9	24.4	30.0	33.9	29.0	28.5	27.6	24.4	20.7	16.3	10.7	1.1	-12.0	-28.8
Truck Parking	LrD	38.8	-7.6	-2.9	1.2	2.7	7.5	12.7	11.8	26.5	16.6	14.7	15.3	17.9	23.3	24.5	24.9	30.0	33.9	29.0	28.8	27.8	24.6	20.9	16.5	10.8	1.1	-12.3	-29.5
Receiver -338,465 Fl G LrD,lim dB(A) LrD 59.8 dB(A)																													
Auto Fuel Pump 1	LrD	48.1					37.1			44.7			29.2			32.5			39.6			41.6			35.1			14.7	
Auto Fuel Pump 2	LrD	47.8					36.9			44.4			29.0			32.2			39.3			41.4			34.7			13.9	
Auto Fuel Pump 3	LrD	47.5					36.7			44.1			28.7			32.0			39.1			41.1			34.3			13.1	
Auto Fuel Pump 4	LrD	39.5					32.3			37.8			24.2			25.2			24.6			23.4			13.5			-10.0	
Auto Fuel Pump 5	LrD	37.7					30.8			35.8			23.3			24.6			22.5			21.0			11.0			-12.7	
Auto Fuel Pump 6	LrD	36.7					29.9			34.8			22.7			24.2			21.7			20.2			10.0			-14.1	
Auto Fuel Pump 7	LrD	36.5					29.7			34.6			22.6			24.1			21.6			20.1			9.7			-15.1	
Auto Fuel Pump 8	LrD	36.2					29.5			34.3			22.3			23.8			21.4			19.8			9.3			-16.1	
Truck Fuel Pump 1	LrD	45.9	-5.0	-0.2	4.0	5.6	10.5	15.8	16.1	31.0	21.2	19.2	19.9	22.9	28.4	29.8	30.4	37.0	41.0	36.3	36.4	35.7	33.1	30.1	26.9	23.0	16.0	6.7	-4.7
Truck Fuel Pump 2	LrD	45.9	-4.8	0.0	4.2	5.8	10.7	16.0	16.4	31.2	21.4	17.2	18.0	22.9	28.5	29.9	30.5	37.1	41.1	36.4	36.4	35.8	33.1	30.2	27.0	23.1	16.2	6.9	-4.3
Truck Fuel Pump 3	LrD	44.2	-4.6	0.2	4.3	5.9	10.9	16.2	16.6	31.5	21.7	17.5	18.3	21.2	26.7	28.1	28.7	35.2	39.3	34.6	34.6	34.0	31.4	28.6	25.5	21.8	15.1	6.2	-4.6
Truck Fuel Pump 4	LrD	44.5	-4.4	0.4	4.5	6.1	11.0	16.4	16.8	31.7	21.9	17.8	18.6	21.5	27.0	28.4	29.0	35.5	39.5	34.8	34.9	34.3	31.7	28.9	25.8	22.1	15.6	6.8	-3.8
Truck Fuel Pump 5	LrD	44.7	-4.2	0.5	4.7	6.3	11.2	16.5	17.0	31.9	22.1	18.0	18.8	21.8	27.3	28.7	29.2	35.7	39.8	35.0	35.1	34.5	32.0	29.2	26.1	22.5	16.1	7.4	-3.0
Truck Fuel Pump 6	LrD	45.0	-4.1	0.7	4.9	6.5	11.4	16.7	17.3	32.2	22.4	18.3	19.1	22.0	27.5	28.9	29.5	35.9	40.0	35.3	35.3	34.8	32.2	29.4	26.4	22.9	16.5	8.0	-2.3
Truck Fuel Pump 7	LrD	45.2	-3.9	0.9	5.0	6.6	11.6	16.9	17.5	32.4	22.6	18.6	19.4	22.3	27.7	29.2	29.7	36.1	40.2	35.5	35.6	35.0	32.4	29.7	26.7	23.2	16.9	8.5	-1.5
Truck Fuel Pump 8	LrD	45.4	-3.8	1.0	5.2	6.8	11.7	17.0	17.7	32.6	22.8	18.8	19.6	22.5	28.0	29.4	30.0	36.3	40.4	35.7	35.8	35.2	32.7	29.9	27.0	23.6	17.3	9.0	-0.9
Auto Fuel Pump Parking	LrD	29.6					19.3			26.3			12.2			16.2			21.4			22.2			15.4			-5.3	

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Parking	LrD	22.3					10.5			18.2			3.2			8.3			15.0			15.9			10.3			-9.7	
Parking	LrD	28.6					16.7			24.5			9.4			14.5			21.6			22.5			16.1			-3.4	
Parking	LrD	23.4					11.4			19.4			4.5			9.6			16.0			17.0			11.1			-7.0	
Parking	LrD	21.5					9.7			17.3			2.2			7.3			14.7			15.6			8.6			-12.9	
Parking	LrD	29.4					19.1			26.1			12.3			16.3			21.3			22.0			14.8			-7.5	
Parking	LrD	21.1					13.1			18.7			4.8			7.3			10.6			11.0			4.4			-15.3	
Parking	LrD	16.7					9.1			14.7			3.3			5.1			3.5			1.3			-9.4			-37.2	
Truck Parking	LrD	41.2	-9.8	-5.0	-0.8	0.8	5.7	11.0	11.9	26.8	17.0	14.3	15.1	18.6	24.7	26.5	27.1	32.1	36.2	31.5	31.3	30.8	28.3	25.8	23.0	20.0	14.3	7.0	-1.4
Truck Parking	LrD	37.0	-13.3	-8.6	-4.4	-2.8	2.1	7.4	7.9	22.8	12.9	9.6	10.8	13.8	20.3	22.0	22.7	28.1	32.1	27.4	27.2	26.5	23.9	21.0	17.8	13.9	7.1	-2.0	-12.9
Truck Parking	LrD	37.7	-8.9	-4.2	-0.1	1.3	6.2	11.3	11.1	25.9	15.9	14.0	14.5	17.0	22.2	23.4	23.8	28.8	32.7	27.9	27.6	26.8	24.0	20.9	17.3	13.0	5.4	-4.9	-17.7
Truck Parking	LrD	48.5	-1.3	3.4	7.6	9.2	14.1	19.5	20.3	35.2	25.3	22.5	23.3	26.2	32.3	33.7	34.3	39.3	43.5	38.8	38.6	38.1	35.6	33.0	30.2	27.1	21.5	14.2	5.9
Truck Parking	LrD	56.0	5.6	10.4	14.5	16.1	21.1	26.4	27.6	42.6	32.7	31.8	32.6	35.5	40.6	42.0	42.6	46.6	50.7	46.0	45.8	45.5	43.2	41.0	38.8	36.5	32.2	26.7	21.0
Receiver -488,374 Fl G LrD,lim dB(A) LrD 55.5 dB(A)																													
Auto Fuel Pump 1	LrD	44.9					34.6			41.5			26.2			29.4			36.6			38.3			30.2			4.4	
Auto Fuel Pump 2	LrD	44.5					34.2			41.1			25.8			29.0			36.2			37.9			29.6			2.9	
Auto Fuel Pump 3	LrD	44.1					33.9			40.7			25.5			28.7			35.8			37.5			29.0			1.5	
Auto Fuel Pump 4	LrD	43.7					33.6			40.3			25.2			28.4			35.5			37.0			28.3			0.1	
Auto Fuel Pump 5	LrD	43.3					33.3			39.9			24.8			28.0			35.1			36.6			27.7			-1.4	
Auto Fuel Pump 6	LrD	42.9					33.1			39.6			24.5			27.7			34.8			36.3			27.1			-2.8	
Auto Fuel Pump 7	LrD	42.6					32.8			39.2			24.2			27.4			34.5			35.9			26.5			-4.2	
Auto Fuel Pump 8	LrD	42.3					32.5			38.9			24.0			27.1			34.2			35.5			25.9			-5.6	
Truck Fuel Pump 1	LrD	37.9	-9.5	-4.7	-0.5	1.1	6.0	11.3	10.3	25.2	15.4	11.2	12.0	14.9	20.6	21.9	22.5	29.3	33.3	28.4	28.3	27.4	24.2	20.5	16.0	10.2	2.8	-11.0	-28.8
Truck Fuel Pump 2	LrD	37.9	-9.5	-4.7	-0.5	1.1	6.0	11.3	10.3	25.2	15.4	11.2	12.0	14.9	20.6	21.9	22.5	29.3	33.3	28.4	28.3	27.4	24.2	20.5	16.0	10.2	0.3	-13.4	-31.3
Truck Fuel Pump 3	LrD	37.9	-9.5	-4.7	-0.5	1.1	6.0	11.3	10.3	25.2	15.4	11.2	12.0	14.9	20.6	21.9	22.5	29.3	33.3	28.4	28.3	27.3	24.2	20.5	16.0	10.2	0.3	-13.5	-31.3
Truck Fuel Pump 4	LrD	37.9	-9.5	-4.7	-0.5	1.1	6.0	11.3	10.3	25.2	15.4	11.2	12.0	14.9	20.6	21.9	22.5	29.3	33.3	28.4	28.3	27.3	24.2	20.4	16.0	10.1	0.3	-13.5	-31.4
Truck Fuel Pump 5	LrD	37.9	-9.5	-4.7	-0.5	1.1	6.0	11.3	10.3	25.2	15.3	11.2	12.0	14.9	20.5	21.9	22.4	29.3	33.2	28.4	28.3	27.3	24.1	20.4	15.9	10.1	0.2	-13.6	-31.5
Truck Fuel Pump 6	LrD	37.9	-9.5	-4.7	-0.5	1.0	6.0	11.3	10.3	25.2	15.3	11.2	12.0	14.8	20.5	21.9	22.4	29.3	33.2	28.3	28.3	27.3	24.1	20.4	15.9	10.1	0.2	-13.6	-31.6
Truck Fuel Pump 7	LrD	37.9	-9.5	-4.7	-0.6	1.0	5.9	11.2	10.3	25.1	15.3	11.2	11.9	14.8	20.5	21.9	22.4	29.2	33.2	28.3	28.2	27.3	24.1	20.4	15.9	10.0	0.1	-13.8	-31.7
Truck Fuel Pump 8	LrD	37.8	-9.5	-4.8	-0.6	1.0	5.9	11.2	10.2	25.1	15.3	11.1	11.9	14.8	20.5	21.8	22.4	29.2	33.2	28.3	28.2	27.2	24.1	20.3	15.8	9.9	0.0	-13.9	-31.9
Auto Fuel Pump Parking	LrD	29.4					19.0			25.8			11.0			16.0			22.2			22.6			13.8			-14.0	
Parking	LrD	19.1					8.3			15.5			0.5			5.5			11.7			12.4			4.7			-19.4	
Parking	LrD	25.7					14.7			22.0			7.0			12.1			18.3			19.0			11.7			-11.4	
Parking	LrD	19.8					8.6			15.9			0.8			7.1			12.6			13.2			5.6			-18.0	
Parking	LrD	19.0					8.2			15.3			0.3			5.4			11.6			12.2			4.5			-19.9	
Parking	LrD	28.9					18.6			25.2			10.5			15.5			21.7			22.0			13.1			-15.4	
Parking	LrD	25.6					15.6			22.2			7.9			12.5			18.1			18.4			9.7			-17.9	

Pilot Perris
Contribution spectra - 001 - Ourdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Parking	LrD	19.8					10.0			16.2			2.0			6.8			12.6			12.6			2.5			-30.7	
Truck Parking	LrD	35.5	-13.7	-8.9	-4.7	-3.2	1.8	7.1	7.4	22.3	12.4	8.9	9.7	12.7	19.2	20.6	21.2	26.5	30.5	25.8	25.6	24.9	22.3	19.4	16.1	12.3	5.4	-3.9	-15.1
Truck Parking	LrD	29.6	-18.1	-13.4	-9.2	-7.6	-2.7	2.6	1.5	16.4	6.6	3.2	4.0	6.9	13.6	15.0	15.5	21.0	24.9	20.1	19.6	18.7	15.4	11.7	7.1	1.1	-9.0	-22.8	-41.1
Truck Parking	LrD	41.9	-7.1	-2.3	1.9	3.5	8.4	13.7	13.8	28.7	18.9	15.4	16.2	19.1	25.7	27.1	27.6	33.0	37.0	32.3	32.0	31.4	28.7	25.7	22.4	18.4	11.4	2.0	-9.3
Truck Parking	LrD	49.0	-0.9	3.9	8.0	9.6	14.5	19.9	20.7	35.6	25.8	22.9	23.7	26.6	32.8	34.3	34.9	39.9	44.0	39.3	39.1	38.6	36.1	33.5	30.8	27.7	21.9	14.4	5.8
Truck Parking	LrD	43.0	-5.4	-0.7	3.5	5.1	10.0	15.3	14.9	29.8	20.0	16.4	17.2	20.1	26.8	28.2	28.7	34.2	38.2	33.4	33.0	32.3	29.4	26.1	22.3	17.7	9.8	-0.7	-13.4

Appendix C:

FHWA Roadway Noise Modeling Worksheets

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	Pilot Perris	JOB #:	0462-2021-15
ROADWAY:	Ethanac Rd East of Trumble - Existing	DATE:	17-Jan-23
LOCATION:	50' from centerline	ENGINEER	C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,200	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DI:	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,020	

RECEIVER INPUT DATA

RECEIVER DISTANCE =	50	
DIST C/L TO WALL =	0	
RECEIVER HEIGHT =	5.0	
WALL DISTANCE FROM RECEIVEI	50	
PAD ELEVATION =	0.0	
ROADWAY VIEW: LF ANGLE=	-90	
RT ANGLE:	90	
DF ANGLE:	180	

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.105	0.9742
MEDIUM TRUCK	0.489	0.022	0.489	0.0184
HEAVY TRUCKS	0.473	0.054	0.473	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	49.73	- -
MEDIUM TRUCKS	4.0	49.65	- -
HEAVY TRUCKS	8.0	49.73	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.7	62.7	61.4	55.4	63.8	64.4
MEDIUM TRUCKS	56.5	52.6	45.1	53.8	60.0	60.0
HEAVY TRUCKS	57.3	53.3	49.9	54.5	60.7	60.8
NOISE LEVELS (dBA)	66.0	63.6	61.8	59.4	66.6	67.0

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.7	62.7	61.4	55.4	63.8	64.4
MEDIUM TRUCKS	56.5	52.6	45.1	53.8	60.0	60.0
HEAVY TRUCKS	57.3	53.3	49.9	54.5	60.7	60.8
NOISE LEVELS (dBA)	66.0	63.6	61.8	59.4	66.6	67.0

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	68	146	315
LDN	30	64	138	298

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	Pilot Perris	JOB #:	0462-2021-15
ROADWAY:	Ethanac Rd East of Trumble - Existing Plus Project	DATE:	17-Jan-23
LOCATION:	50' from centerline	ENGINEER	C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,522	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DI:	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,052	

RECEIVER INPUT DATA

RECEIVER DISTANCE =	50	
DIST C/L TO WALL =	0	
RECEIVER HEIGHT =	5.0	
WALL DISTANCE FROM RECEIVEI	50	
PAD ELEVATION =	0.0	
ROADWAY VIEW: LF ANGLE=	-90	
RT ANGLE:	90	
DF ANGLE:	180	

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.105	0.9742
MEDIUM TRUCK	0.489	0.022	0.489	0.0184
HEAVY TRUCKS	0.473	0.054	0.473	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	49.73	- -
MEDIUM TRUCKS	4.0	49.65	- -
HEAVY TRUCKS	8.0	49.73	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.9	62.9	61.6	55.5	64.0	64.6
MEDIUM TRUCKS	56.6	52.7	45.3	53.9	60.1	60.2
HEAVY TRUCKS	57.5	53.4	50.0	54.7	60.9	61.0
NOISE LEVELS (dBA)	66.1	63.7	61.9	59.5	66.8	67.1

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.9	62.9	61.6	55.5	64.0	64.6
MEDIUM TRUCKS	56.6	52.7	45.3	53.9	60.1	60.2
HEAVY TRUCKS	57.5	53.4	50.0	54.7	60.9	61.0
NOISE LEVELS (dBA)	66.1	63.7	61.9	59.5	66.8	67.1

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	69	149	322
LDN	30	65	141	304

Appendix D:

Construction Noise Modeling Output

Receptor - Residences to the Northeast

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Edge of Site to Receptor, feet	Center of Site to Receptor, feet	Item Usage Percent[1]	Ground Factor[2]	Usage Factor	Receptor Item Lmax, dBA	Recptor. Item Leq, dBA
SITE PREP									
Tractor	1	84	395	900	40	0.66	0.40	60.1	46.6
Dozer	1	82	395	900	40	0.66	0.40	58.1	44.6
							Log Sum	60.1	48.8
GRADE									
Excavator	2	81	395	900	40	0.66	0.40	57.1	43.6
Grader	2	85	395	900	40	0.66	0.40	61.1	47.6
Dozer	2	82	395	900	40	0.66	0.40	58.1	44.6
Tractor	3	84	395	900	40	0.66	0.40	60.1	46.6
								61.1	55.5
BUILD									
Crane	1	81	395	900	16	0.66	0.16	57.1	39.7
Man lift	1	75	395	900	20	0.66	0.20	51.1	34.6
Welder/Torch	1	74	395	900	40	0.66	0.40	50.1	36.6
								57.1	42.2
PAVE									
Paver	1	77	395	900	50	0.66	0.50	53.1	40.6
Front End Loader	1	79	395	900	40	0.66	0.40	55.1	41.6
Roller	2	80	395	900	20	0.66	0.20	56.1	39.6
								56.1	46.5

[1]FHWA Construction Noise Handbook: Table 9.1 RCNM Default Noise Emission Reference Levels and Usage Factors

Appendix E:

Construction Vibration Modeling Output

VIBRATION LEVEL IMPACT

Project:	Pilot Perris	Date: 1/16/23
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Nearest building to the south	
Address:	Ethanac Rd & Trumble Rd	

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	180.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.010**	IN/SEC	OUTPUT IN RED