

NOISE STUDY REPORT

Hueneme Road Widening Project



Hueneme Road Widening Project

County of Ventura, CA

07 – VEN - Hueneme Road

VEN011202

August 2025



For individuals with sensory disabilities, this document is available in alternative formats. To obtain a copy in one of these alternate formats, use the California Relay Service 1 (800) 735-2929 (TTY to voice), 1 (800) 735-2922 (voice to TTY), 1 (800) 855-3000 (Spanish TTY to voice and voice to TTY) 1-(800) 854-7784 (Spanish & English speech to speech), or 711.

NOISE STUDY REPORT

Hueneme Road Widening Project

County of Ventura, CA

07 – VEN – Hueneme Road

VEN011202

August 2025

Prepared by:



Date: 08/29/2025

Kurt Legleiter, Principal
Ambient Air Quality & Noise Consulting, LLC
75 Higuera Street, Suite 105
San Luis Obispo, CA 93401

Concurred By:



Date: 9/16/25

Andrew Yoon, Senior Transportation Engineer
Caltrans District 7
Office of Environmental Engineering
100 South Main Street
Los Angeles, California 90012
(213) 266-6892

Summary

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

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2020) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing NSRs. Noise impacts associated with the Hueneme Road Widening Project under the California Environmental Quality Act (CEQA) are evaluated separately in the Project's environmental document.

The Hueneme Road Widening Project (Project) is located in the County of Ventura, CA (County).

The Project is intended to serve existing transportation demand, improve freight movement corridor, and improve vehicle and bicycle travel and safety. The Project will provide new Class II buffered bicycle lanes along Hueneme Road between Edison Drive and Rice Avenue (Kimley Horn, 2023). In addition, the Project is included in the County's General Plan as a segment of the proposed multi-modal coastal trail. Proposed improvements, such as the addition of buffered bike lanes, would support the County's goal "To provide a continuous trail route along coastal areas of Ventura County that forms a part of the statewide California Coastal Trail system and provides access to other trails, the shoreline, public recreational opportunities, and coastal points of interest" (County of Ventura 2021, Kimley Horn 2023).

Two alternatives are being considered for evaluation as part of this proposed Project. The proposed alternatives include a Build Alternative (Alternative 1) with the proposed widening of Hueneme Road and a No-Build Alternative (Alternative 2).

The Build Alternative includes the widening of an approximate 1.93-mile portion of Hueneme Road, between Edison Drive and Rice Avenue, from a two-lane roadway to a four-lane roadway with buffered bike lanes, a paved median, and turn lanes (Project). The purpose of

this Project is to improve vehicle and bicycle travel and safety between the Cities of Oxnard and Camarillo. Construction of the Project is anticipated to take place over a 12-month period, between approximately Summer 2030 and Summer 2031.

The No-Build Alternative would not include any construction or result in changes to existing conditions and there would be no improvements to traffic and bicycle travel/safety or improvements in regional connectivity. The No-Build Alternative would not address the purpose or need of the Project, and serves mainly as a baseline to compare with the Build Alternative.

Nearby land uses consist predominantly of agriculture, commercial office, and residential. Two residential land uses are located on the north side of Hueneme Road. The terrain in the Project area is generally flat.

Table E-1 summarizes existing and predicted design-year (2050) with and without the Project noise levels for each land use activity category. As depicted under existing and design year without Project conditions noise levels at Activity Category B modeled receivers range from 65-67 dBA $L_{eq}^{(h)}$. Under existing and design-year without project conditions Activity Category B modeled receiver MR-1 is approaching the applicable Noise Abatement Criteria (NAC) of 67 dBA $L_{eq}^{(h)}$. As defined in the Traffic Noise Protocol a traffic noise impact occurs when "design-year build condition noise levels approach or exceed the noise abatement criteria (NAC) listed in Table 4-1 for the future build condition; or design-year build condition noise levels that create a substantial noise increase over existing noise levels.

In California a noise level is considered to approach the NAC for a given Activity Category if it is within 1 dBA of the NAC. A substantial noise increase occurs when the project's predicted worst-hour design-year noise level exceeds the existing worst-hour noise level by 12 dBA or more." (Caltrans 2020). As depicted in Table E-1, implementation of the Project would not result in a substantial increase in traffic noise levels at nearby modeled land uses. However, design year noise levels Activity Category B modeled receiver MR-1 would be 66 dBA $L_{eq}^{(h)}$, which would approach the NAC of 67 dBA $L_{eq}^{(h)}$. As a result, noise abatement must be considered for this residential land use. Access to this property is provided via driveways connecting to Hueneme Road. A noise barrier placed between this residential land use and Hueneme Road would prevent access to the site. As a result, noise abatement at modeled receiver MR-1 was deemed infeasible. Predicted design year noise levels with the Project at all other modeled land uses would not approach or exceed their applicable NAC.

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14.8-02. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise.

Table E-1. Summary of Modeled Traffic Noise Levels and Noise Impacts

Land Uses	Activity Category	NAC	Existing Noise Level Range, dBA	Modeled Design-Year With Project Noise Level Range, dBA		Number of Traffic Noise Impacted Receptors ¹
				No-Build Conditions	Build Conditions	
Residential	B	67	65 to 67	65 to 67	64 to 66	1
Commercial Office	E	72	63	63 to 64	65 to 66	0
Agriculture Utility Warehouse	F	NA	61 to 67	61 to 67	63 to 67	0

1. Traffic noise impacts are considered to occur when predicted design-year noise levels for build conditions are 12 dB, or more, than existing noise levels, or where predicted design-year noise levels for build conditions approach or exceed the noise-abatement criteria (NAC) for the applicable activity category under future design-year conditions, with Project implementation.

Table of Contents

Chapter 1.	Introduction	1
1.1.	Purpose of the Noise Study Report	1
1.2.	Project Purpose and Need	1
Chapter 2.	Project Description	2
2.1.	Build Alternative	2
2.2.	No-Build Alternative	3
Chapter 3.	Fundamentals of Traffic Noise	8
3.1.	Sound, Noise, and Acoustics	8
3.2.	Frequency	8
3.3.	Sound Pressure Levels and Decibels	8
3.4.	Addition of Decibels	9
3.5.	A-Weighted Decibels	9
3.6.	Human Response to Changes in Noise Levels	10
3.7.	Noise Descriptors	11
3.8.	Sound Propagation	11
3.9.	Geometric Spreading	11
3.9.1	Ground Absorbtion	12
3.9.2	Atmospheric Effects	12
3.9.3	Shielding by Natural or Human-Made Features	12
Chapter 4.	Federal Regulations and State Policies	13
4.1.	Federal Regulations	13
4.1.1.	23 CFR 772	13
4.1.2.	Protocol	14
4.2.	State Regulations and Policies	15
4.2.1.	CEQA	15
4.2.2.	Section 216 of the California Streets and Highways Code	16
Chapter 5.	Study Methods and Procedures	17
5.1.	Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations	17
5.2.	Field Measurement Procedures	17
5.2.1.	Short-Term Measurements	18
5.2.2.	Long -Term Measurements	22
5.3.	Traffic Noise Levels Prediction Methods	22
5.4.	Methods for Identifying Traffic Noise Impacts and Consideration of Abatement	23
Chapter 6.	Existing Noise Environment	25
6.1.	Existing Land Uses	25
6.2.	Noise Measurement Results	26
6.2.1.	Short-Term Noise Measurements	26
6.2.2.	Long-Term Noise Measurements	26
6.2.3.	Traffic Noise Model Calibration	30
Chapter 7.	Future Noise Environment, Impacts, and Considered Abatement	31
7.1.	Future Noise Environment and Impacts	31

7.2.	Preliminary Noise Abatement Analysis.....	32
7.2.1.	Activity Category B (Residential Land Uses).....	33
7.2.2.	Activity Category E (Commercial Office Land Uses).....	33
7.2.3.	Activity Category F (Agriculture, Utility Warehouse Land Uses)	33
Chapter 8.	Construction Noise	34
Chapter 9.	References	35
Appendix A	Traffic Data	36
Appendix B	Predicted Future Noise Levels and Noise Barrier Analysis	40
Appendix C	Supplemental Data.....	42

List of Figures

Figure 2-1.	Project Regional Location	4
Figure 2-2.	Project Location	5
Figure 2-3.	Project Limits West	6
Figure 2-4.	Project Limits East	7
Figure 5-1.	Monitoring Positions, Modeling Positions, and Land Uses, Sheet 1 of 3	19
Figure 5-2.	Monitoring Positions, Modeling Positions, and Land Uses, Sheet 2 of 3	20
Figure 5-3.	Monitoring Positions, Modeling Positions, and Land Uses, Sheet 3 of 3	21
Figure 6-1.	Long-Term Measurement at Location LT1, March 19–20, 2024.....	28
Figure 6-2	Long-Term Measurement at Location LT2, March 19–20, 2024.....	30

List of Tables

Table E-1.	Summary of Modeled Traffic Noise Levels and Noise Impacts.....	iii
Table 3-1.	Typical A-Weighted Noise Levels	10
Table 4-1.	Activity Categories and Noise Abatement Criteria (23 CFR 772).....	15
Table 6-1.	Summary of Short-Term Noise Measurements.....	26
Table 6-2.	Summary of Long-Term Measurement at Location LT1	27
Table 6-3.	Summary of Long-Term Measurement at Location LT2	29
Table 6-4.	Comparison of Measured to Modeled Noise Levels in the TNM Model.....	30
Table 8-1.	Typical Construction Equipment Noise Levels.....	34
Table A-1.	Traffic Data for Existing Conditions	37
Table A-2.	Traffic Data for No-Project Conditions 2050	37
Table A-3.	Traffic Data for Design Year 2050 with Project Conditions	39
Table B-1.	Predicted Design Year 2050 Noise and Barrier Analysis.....	41
Table C-1.	Predicted 2030 Noise With and Without the Project (For CEQA Purposes)	47

Acronyms and Abbreviations

Term	Definition
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
County	County of Ventura
dB	Decibels
FHWA	Federal Highway Administration
HOT	High-Occupancy Toll
HOV	High-Occupancy Vehicle
Hz	Hertz
L_{eq}	Equivalent Sound Level
$L_{eq}(h)$	Equivalent Sound Level over one hour
LT	Long-term
L_{max}	Maximum Sound Level
L_{xx}	Percentile-Exceeded Sound Level
mPa	Micro-Pascals
Mph	Miles per Hour
MR	Modeled Receiver
NAC	Noise Abatement Criteria
NADR	Noise Abatement Decision Report
NEPA	National Environmental Policy Act
NSR	Noise Study Report
Protocol	Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects
ROW	Right of way
SCE	Southern California Edison Company
SPL	Sound Pressure Level
ST	Short-term
TCE	Temporary Construction Easement
TeNS	Caltrans' Technical Noise Supplement
TNM 2.5	FHWA Traffic Noise Model Version 2.5

Chapter 1. Introduction

1.1. Purpose of the Noise Study Report

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

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2020) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing NSRs. Noise impacts associated with this Project under CEQA are evaluated separately in the Project's environmental document.

1.2. Project Purpose and Need

Roadways in the County facilitate the movement of goods throughout the region and state. Hueneme Road serves as the primary freight route to and from the Port of Hueneme, and there is a large percentage of truck traffic from the Oxnard city limit to Rice Avenue. Goal one of the Circulation, Transportation, and Mobility Element in the County's General Plan states "To ensure the design, construction, and maintenance of a safe and efficient roadway system for the movement of persons and goods." The Project is intended to serve existing transportation demand, improve freight movement corridor, and improve vehicle and bicycle travel and safety. The Project will provide new Class II buffered bicycle lanes along Hueneme Road between Edison Drive and Rice Avenue. In addition, the Project is included in the County's General Plan as a segment of the proposed multi-modal coastal trail. Proposed improvements, such as the addition of buffered bike lanes, would support the County's goal "To provide a continuous trail route along coastal areas of the County that forms a part of the statewide California Coastal Trail system and provides access to other trails, the shoreline, public recreational opportunities, and coastal points of interest" (County of Ventura 2021, Kimley Horn 2023).

Chapter 2. Project Description

2.1. Build Alternative

The Project would include four 12-foot through lanes (two in the eastbound direction and two in the westbound direction), a 14-foot paved median, two 6-foot bike lanes on either side of the roadway with a 2-foot buffer between the bicycle lanes and the traffic lanes, and two 4-foot shoulders on either side of Hueneme Road between Edison Drive and Rice Avenue. All existing left-turn lanes would be retained as part of the Project. The total width of the new roadway would vary between 63 to 72 feet. The widened roadway would taper to the existing configuration of one travel lane in each direction approximately 1,200 feet east of Rice Avenue.

The existing centerline of the road would be shifted as part of the roadway widening. Construction of the widened roadway would require a maximum ground disturbance of approximately 12 to 14 inches to install the new roadbed. Widening of the roadway would result in approximately 339,000 square feet of increased impervious surface area. It is anticipated that the existing drainage ditch on the north side of the roadway would be shifted north to accommodate the widening of the road. The limits of the relocated ditch would not extend beyond the new County right-of-way (ROW) line.

The Project would require three traffic signal modifications, drainage pipe and drainage inlet relocations, culvert extensions and relocations, 41 power pole relocations, and 10 irrigation and water facility relocations. The power poles along Hueneme Road are located within County ROW; however, coordination and preplanning would be needed with Southern California Edison (SCE) to relocate the poles prior to widening the roadway. It is anticipated that SCE would install the poles using auger drilling. Additionally, Frontier Communications (Telecommunications) are located on the SCE overhead poles and have underground lines along Hueneme Road. Sempra Utilities (Gas Company) has gas transmission mains along Hueneme Road near Edison Drive; the existing gas main may be impacted where drainage and/or water facilities are relocated. Signal pole relocations would require ground disturbance at a maximum depth of 16 feet. The Project would not include the relocation of any water lines, recycled water lines, or sewer mains.

The Project may include minor work related to 23 driveways located within the Project area; this work would be limited to conforming the driveway to the new roadway configuration. Construction would be staged to provide continuous access to each private parcel at all times. In addition, at least one lane would be open to provide continuous access for vehicles

through the Project area and no detours to adjacent roadways would be required. Due to traffic volumes in the area, night work is anticipated to avoid traffic impacts during construction. Construction of the Project is anticipated to take place over a 12-month period, between approximately Summer 2030 and Summer 2031.

The proposed improvements would require ROW and temporary construction easements (TCE). The Project would require permanent ROW of approximately 9.3 acres from 30 properties. This would include approximately 4.7 acres of Farmland of Statewide Importance, 4.5 acres of Prime Farmland, and 0.13 acres of Urban and Built-Up Land and Other Land. Additionally, the Project would require TCE from 3.73 acres of Farmland of Statewide Importance, 3.53 acres of Prime Farmland, and 0.14 acres of Urban and Built-Up Land and Other Land. The total area of disturbance would be approximately 7.8 acres.

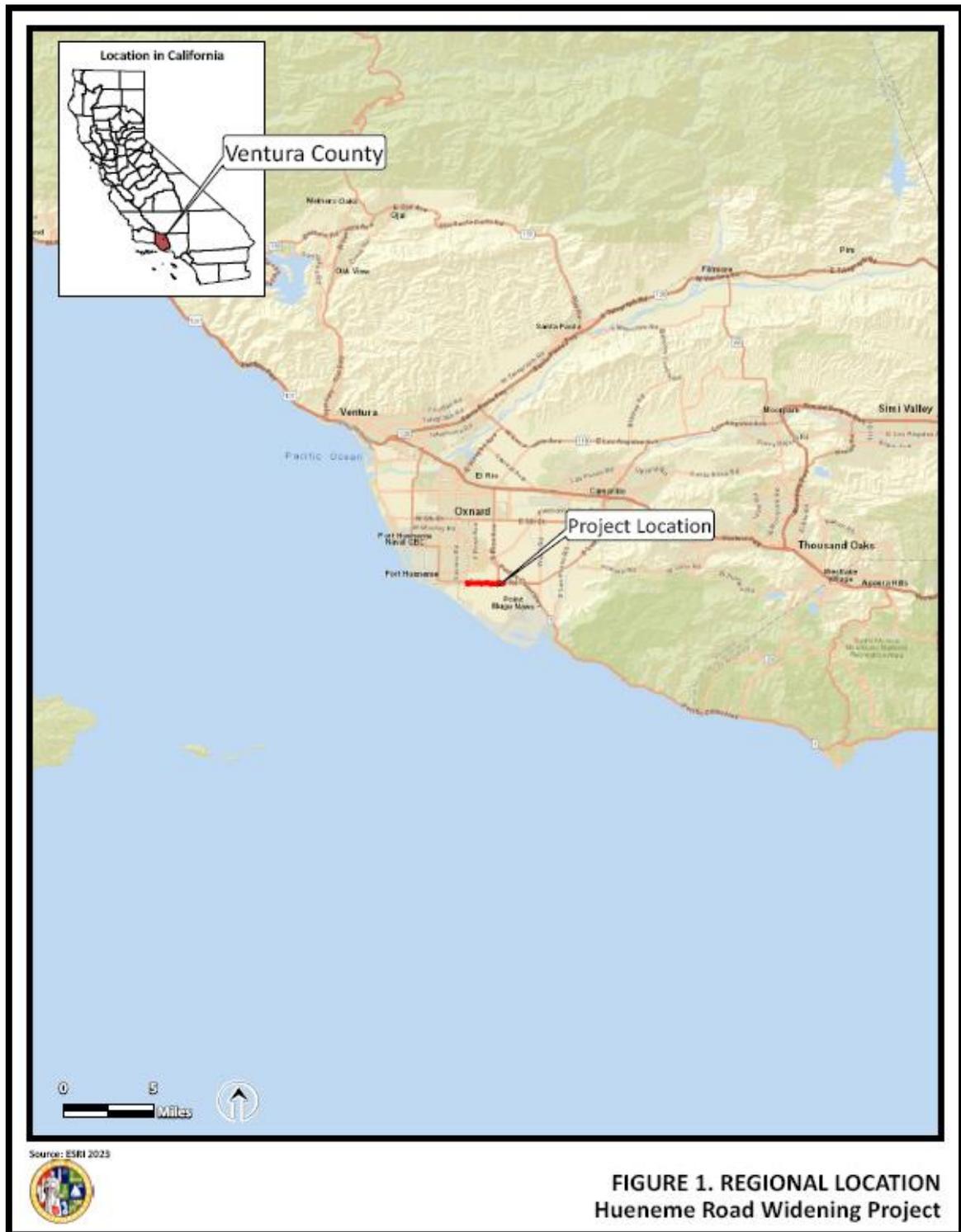
Permanent ROW acquisition required to complete the Project would include sliver takes from parcels adjacent to the Project area; no full acquisitions are anticipated. The roadway widening would require removal of four buildings, including one fruit stand, one auxiliary building, one residence, and one garage. The location of this residence to be removed is depicted in Figure 5-1. Vegetation removal would be required to accommodate the widening, and approximately 329 eucalyptus trees would also need to be removed. Tree removal would result in a vertical ground disturbance of approximately 2 feet below existing grade; a stump grinder would be used to remove the trunk and roots.

Project regional location and Project location are depicted in Figures 2-1 and 2-2, respectively. Project limits are depicted in Figures 2-3 and 2-4.

2.2. No-Build Alternative

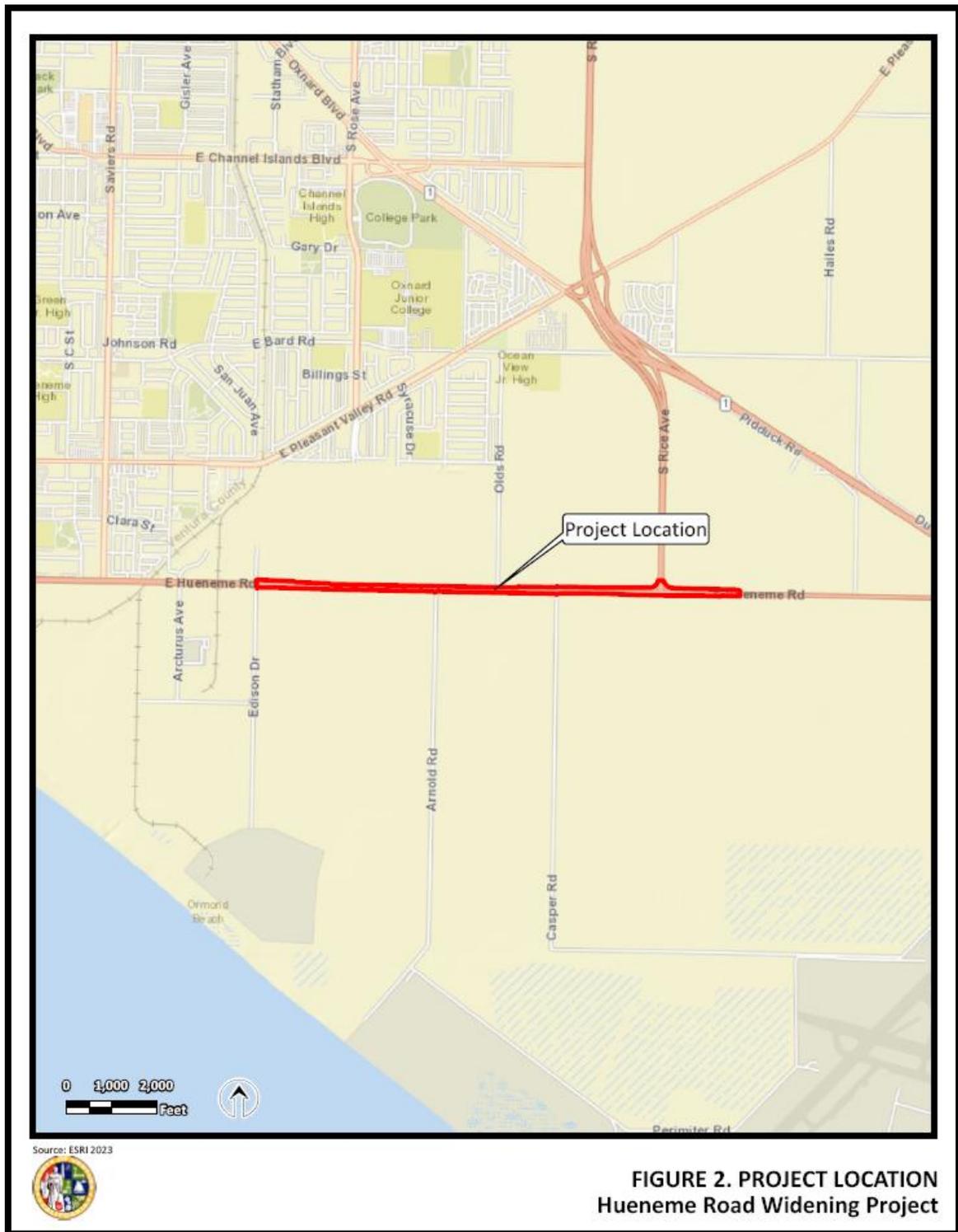
The No-Build Alternative would not include any construction or result in changes to existing conditions; the existing roadway would remain the same, and there would be no improvements to traffic or vehicle/pedestrian safety. The No-Build Alternative would not address the purpose and need of the Project and serves mainly as a baseline to compare with the Build Alternative.

Figure 2-1. Project Regional Location



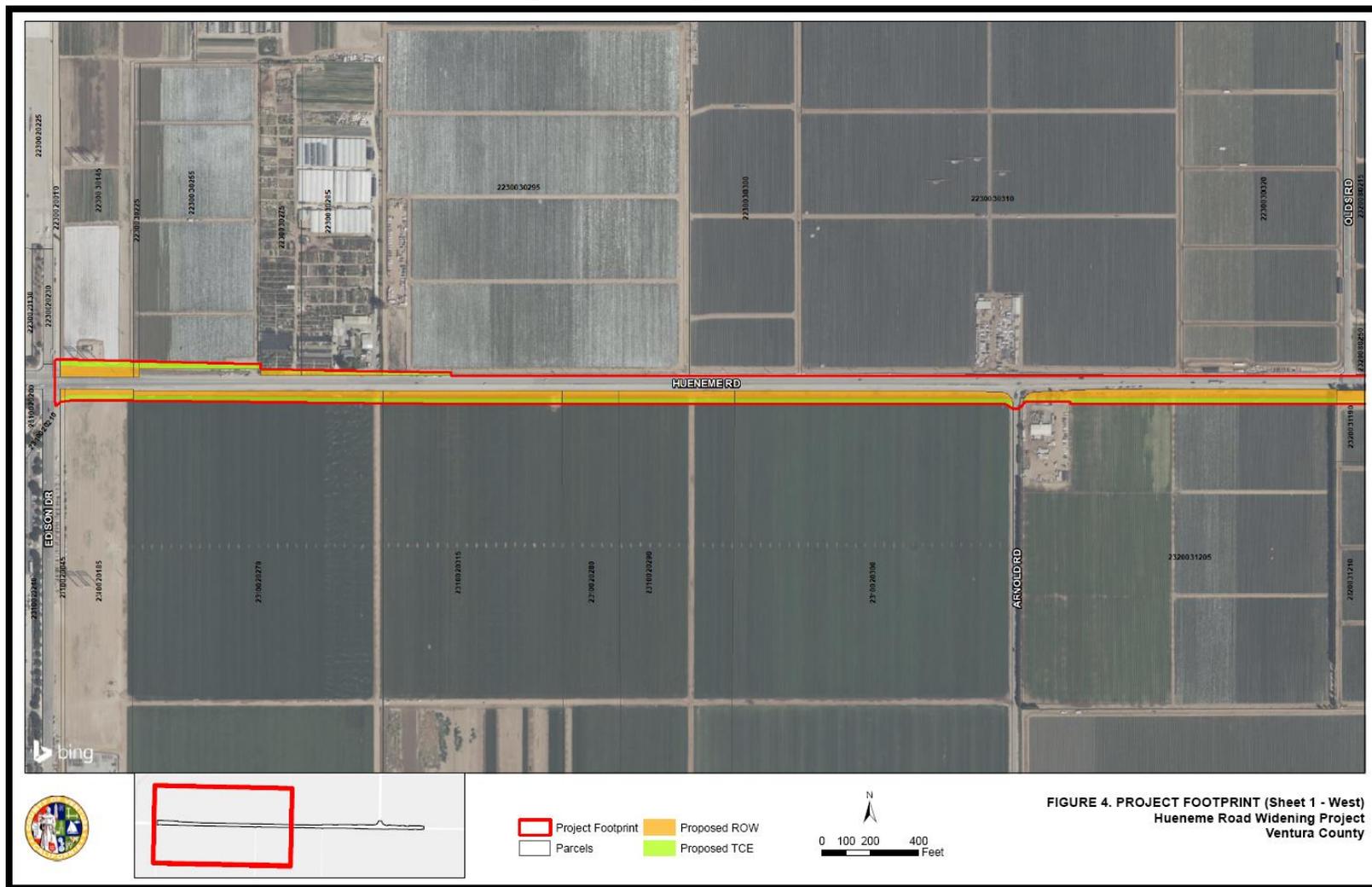
Not to scale. Locations are approximate.

Figure 2-2. Project Location



Not to scale. Locations are approximate.

Figure 2-3. Project Limits West



Not to scale. Locations are approximate.

Figure 2-4. Project Limits East

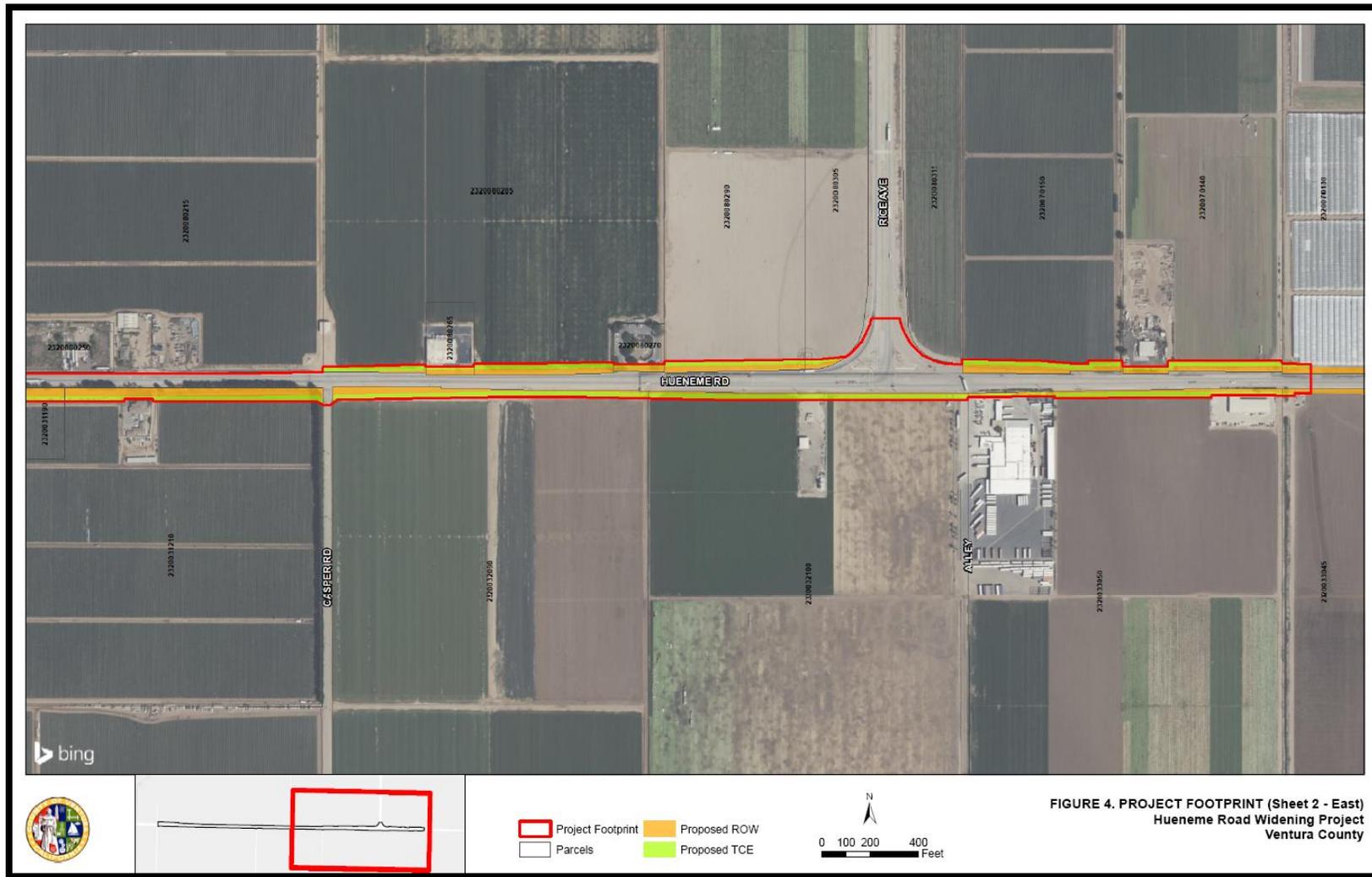


FIGURE 4. PROJECT FOOTPRINT (Sheet 2 - East)
Hueneme Road Widening Project
Ventura County

Not to scale. Locations are approximate.

Chapter 3. Fundamentals of Traffic Noise

The following is a brief discussion of fundamental traffic noise concepts. For a detailed discussion, please refer to Caltrans' Technical Noise Supplement (TeNS) (Caltrans 2013), a technical supplement to the Protocol that is available on Caltrans Website (http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf).

3.1. Sound, Noise, and Acoustics

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

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

3.2. Frequency

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

3.3. Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-pascals (mPa). One mPa is approximately one hundred billionths (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

3.4. Addition of Decibels

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

3.5. A-Weighted Decibels

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

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

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

Table 3-1. Typical A-Weighted Noise Levels

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

Source: Caltrans 2013.

3.6. Human Response to Changes in Noise Levels

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

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

3.7. Noise Descriptors

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

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.
- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn} , CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m., and a 5-dB penalty applied to the A-weighted sound levels occurring during evening hours between 7:00 p.m. and 10:00 p.m.

3.8. Sound Propagation

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

3.9. Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each

doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

3.9.1. Ground Absorption

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling add to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

3.9.2. Atmospheric Effects

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

3.9.3. Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receptor specifically to reduce noise. A barrier that breaks the line of sight between a source and a receptor will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and the receptor is rarely effective in reducing noise because it does not create a solid barrier.

Chapter 4. Federal Regulations and State Policies

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

4.1. Federal Regulations

4.1.1. 23 CFR 772

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and Federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I, Type II, or Type III projects.

FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment of the highway. The following projects are also considered to be Type I projects:

- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a high-occupancy vehicle (HOV) lane, high-occupancy toll (HOT) lane, bus lane, or truck climbing lane,
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane,
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange,
- Restriping existing pavement for the purpose of adding a through traffic lane or an auxiliary lane,
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

If a project is determined to be a Type I project under this definition, the entire project area as defined in the environmental document is a Type I project.

A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment. A Type III project is a project that does not meet the classifications of Type I or Type II project. Type III projects do not require a noise analysis.

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project sponsor “consider” noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable,

feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available. This Project is categorized as a Type I project.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design-year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (a “substantial” noise increase) with project implementation. 23 CFR 772 does not specifically define the terms “substantial increase” or “approach”; these criteria are defined in the Protocol, as described below.

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

4.1.2. Protocol

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or Federal-aid highway projects (Caltrans 2020). The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA or more. The Protocol also states that a noise level is considered to approach NAC level when the noise level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

The TeNs provides detailed technical guidance for the evaluation of highway traffic noise (Caltrans 2013). This includes field measurement methods, noise modeling methods, and report preparation guidance.

Table 4-1. Activity Categories and Noise Abatement Criteria (23 CFR 772)

Activity Category	Activity $L_{eq}[h]$ ¹	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ²	67	Exterior	Residential.
C ²	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F			Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G			Undeveloped lands that are not permitted.
<p>1. The $L_{eq}(h)$ activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).</p> <p>2. Includes undeveloped lands permitted for this activity category.</p>			

4.2. State Regulations and Policies

4.2.1. CEQA

Noise analysis under CEQA may be required regardless of whether or not the project is a Type I project. The CEQA noise analysis is completely independent of the 23 CFR 772 analysis done for NEPA. Under CEQA, the baseline noise level is compared to the build noise level. The assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include: the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected, and the absolute noise level.

The significance of noise impacts under CEQA are addressed in the environmental document rather than the NSR. Even though the NSR (or noise technical memorandum) does not

specifically evaluate the significance of noise impacts under CEQA, it must contain the technical information that is needed to make that determination in the environmental document.

4.2.2. Section 216 of the California Streets and Highways Code

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

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA $L_{eq}(h)$. If the noise levels generated from freeway and roadway sources exceed 52 dBA $L_{eq}(h)$ prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

Chapter 5. Study Methods and Procedures

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

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the Project. Existing land uses in the Project area were categorized by land use type and activity category as defined in Table 4-1, and the extent of frequent human use. As stated in the Protocol, noise abatement is only considered where frequent human use occurs and where a lowered noise level would be of benefit. Although all land uses are evaluated in this analysis, the focus is on locations of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards. The geometry of the Project relative to nearby existing and land uses was also identified.

Short-term measurement locations were selected to represent each major developed area within the Project area. Two long-term measurement sites were selected to capture the diurnal traffic noise level pattern in the Project area. Several other non-measurement locations were selected as modeling locations.

The noise measurement sites were selected taking into consideration the following general site requirements:

1. Sites were acoustically representative of areas and conditions of interest. They were located at areas of human use.
2. Sites were clear of major obstructions between source and receiver. Microphone positions were more than 10 feet away from reflecting surfaces.
3. Sites were free of noise contamination by sources other than those of interest. Sites were not located near barking dogs, lawn mowers, pool pumps, air conditioners, etc.
4. Sites were not exposed to prevailing meteorological conditions that are beyond the constraints discussed in the TeNs.

5.2. Field Measurement Procedures

A field noise study was conducted in accordance with recommended procedures in TeNS. The following is a summary of the procedures used to collect short-term and long-term noise level data.

5.2.1. Short-Term Measurements

Short-term (ST) measurements were conducted at five locations (ST1-ST5) on Tuesday, March 19, 2024. Noise measurements were conducted using Larson Davis Model LxT Precision Type 1 noise level meters. The calibration of the meters was checked before and after the measurement using a Larson Davis Model CAL 200 calibrator and a Larson Davis CA250 Calibrator. Measurements were taken over a 10-minute period at each site. Short-term measurements were conducted at Activity Categories B, E, and F land uses. Short-term measurement locations are identified in Figures 5-1 through 5-3.

In addition to the above measurements, a short-term background noise measurement was also conducted to determine noise levels within the surrounding community, excluding traffic noise generated by Project roadways. Background noise levels are routinely measured to determine the feasibility of noise abatement and to ensure that noise reduction goals can be achieved. Noise abatement cannot reduce traffic noise levels to below background noise levels. Based on the measurements conducted, community background noise was approximately 50.2 dBA $L_{eq}(h)$. These levels are lower than noise levels on Hueneme Road used for calibration of the noise model by 10 dB, or more. As a result, background noise levels would not significantly contribute to predicted noise levels at modeled receiver locations evaluated for this Project. Short-term, long-term, and background noise measurement locations and measurement data have been included in Appendix C.

During the short-term measurements, field staff attended each meter. L_{eq} values during the measurement period were collected and logged manually. Dominant noise sources observed were also identified and logged. Temperature, wind speed, and humidity were recorded manually during the short-term measurement session using a Kestrel Model 5500 weather meter. During the short-term measurements, wind speeds typically ranged from 2 to 7 miles per hour (mph). Temperatures ranged from 17 to 18°C (63 to 65°F), with relative humidity typically 66 to 72 percent.

Traffic on Hueneme Road was classified and counted during ST noise measurements, where feasible. Vehicles were classified as automobiles, medium-duty trucks, heavy-duty trucks, buses, and motorcycles. An automobile was defined as a vehicle with two axles and four tires that are designed primarily to carry passengers. Small vans and light trucks were included in this category. Medium-duty trucks included all cargo vehicles with two axles and six tires. Heavy-duty trucks included all vehicles with three or more axles. Vehicle speeds were measured using radar and driving a vehicle through the Project area at the prevailing speed. The posted speed limit on Hueneme Road was 55 mph.

Figure 5-1. Monitoring Positions, Modeling Positions, and Land Uses, Sheet 1 of 3



Not to scale. Locations are approximate.

Figure 5-2. Monitoring Positions, Modeling Positions, and Land Uses, Sheet 2 of 3



Not to scale. Locations are approximate.

Figure 5-3. Monitoring Positions, Modeling Positions, and Land Uses, Sheet 3 of 3



Not to scale. Locations are approximate.

5.2.2. Long-Term Measurements

Long-term (LT) measurement was conducted at locations LT1 and LT2 using a SoftdB Piccolo II Type 2 Integrating and Datalogger noise level meter (refer to Figures 5-1 through 5-3). The purpose of this measurement was to identify variations in noise levels throughout the day. The long-term noise level data was collected over 24-hour periods at both locations.

5.3. Traffic Noise Levels Prediction Methods

Traffic noise levels were predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key inputs to the traffic noise model were the locations of roadways, traffic mix, and speed, shielding features (e.g., topography and buildings), noise barriers, ground type, and receptors. Three-dimensional representations of these inputs were developed using CAD drawings, aerials, and topographic contours provided by the Project engineer.

Traffic noise was evaluated under existing conditions (2023) and design-year (2050) with and without the Project for the loudest hour of the day. The loudest hour is generally characterized by free-flowing traffic at the highway design speed (i.e., LOS C or better). The loudest hour noise level measured during long-term measurements occurred during the A.M. hours of 7:00 and 8:00. The long-term measured noise levels for the loudest hours coincided with the peak traffic hour period of 6:00 to 9:00 identified in the traffic report prepared for this Project (Kimley Horn 2023). Therefore, A.M. peak hour traffic volumes were used in the model. Tables A-1, A-2, and A-3 in Appendix A summarize the traffic volumes and assumptions used for modeling existing and design-year conditions with and without the Project alternative.

To validate the accuracy of the model calculations, TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. Traffic volumes counted during the short-term measurement periods were normalized to 1-hour volumes. These normalized volumes were assigned to the corresponding Project area roadways to simulate the noise source strength at the roadways during the actual measurement period. Modeled and measured noise levels were then compared to determine the accuracy of the model and if additional adjustment of the model was necessary. Because the measured loudest hours coincided with peak traffic hours, no additional adjustments to modeled traffic noise levels were applied.

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

Traffic noise impacts are considered to occur at receptor locations where predicted design-year noise levels for the build scenario are 12 dB or more than existing noise levels, or where predicted design-year noise levels for the build scenario approach or exceed the NAC for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 CFR 772 and the Protocol.

According to the Protocol, abatement measures are considered acoustically feasible if a minimum noise reduction of 5 dB at impacted receptor locations is predicted with implementation of the abatement measures. In addition, barriers should be designed to intercept the line-of-sight from the exhaust stack of a truck to the first tier of receptors, as required by the *Highway Design Manual*, Chapter 1100. Other factors that affect feasibility include topography, access requirements for driveways and ramps, presence of local cross streets, utility conflicts, other noise sources in the area, and safety considerations.

The overall reasonableness of noise abatement is determined by the following three factors:

- The noise reduction design goal.
- The cost of noise abatement.
- The viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

The Caltrans' acoustical design goal is that a barrier must be predicted to provide at least 7 dB of noise reduction at one benefited receptor. This design goal applies to any receptor and is not limited to impacted receptors.

The Protocol defines the procedure for assessing reasonableness of noise barriers from a cost perspective. Based on 2023 construction costs an allowance of \$146,000 is provided for each benefited receptor (i.e., receptors that receive at least 5 dB of noise reduction from a noise barrier). The total allowance for each barrier is calculated by multiplying the number of benefited receptors by \$146,000. If the estimated construction cost of a barrier is less than the total calculated allowance for the barrier, the barrier is considered reasonable from a cost perspective. The viewpoints of benefits receptors are determined by a survey that is typically conducted after completion of the NSR. The process for conducting the survey is described in detail in the Protocol.

The NSR identifies traffic noise impacts and evaluates noise abatement for acoustical feasibility. It also reports information that will be used in the reasonableness analysis including if the 7 dB design goal reduction in noise can be achieved and the abatement allowances. The NSR does not make any conclusions regarding reasonableness. The feasibility and reasonableness of noise abatement are reported in the Noise Abatement Decision Report.

Chapter 6. Existing Noise Environment

6.1. Existing Land Uses

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the Project. The following land uses were identified in the Project area:

- Residential Dwelling (Activity Category B)
- Commercial Office (Activity Category E)
- Agriculture, Utility, Warehouse (Activity Category F)

Land uses near the Project site are depicted in Figures 5-1 through 5-3. The Project site is generally flat. Although all developed land uses are addressed under the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards (Activity Category B), and outdoor activity areas at commercial buildings (Activity Category E). Category F land uses were also included for informational purposes.

Activity Category B (Residential Land uses)

Activity Category B land uses in the Project area include residential uses. Residential land uses are identified as Modeled Receptor 1 (MR-1) and MR-6 (Refer to Figures 5-1 through 5-3). The NAC for Activity Category B land uses is an exterior threshold of 67 dB Leq(h). No sound barriers or topographical shielding occur between Hueneme Road and land uses in this category.

Activity Category E (Commercial Office Land Uses)

Activity Category E land uses in the Project area include commercial office land uses. Commercial office land uses in the Project area are identified as MR-7 and MR-9 (Refer to Figures 5-1 through 5-3). The NAC for Activity Category E is an exterior threshold of 72 dB Leq(h). No sound barriers or topographical shielding occur between Hueneme Road and land uses in this category.

Activity Category F (Agriculture, Utility Warehouse Land Uses)

Activity Category F land uses in the Project area include agriculture, utility, and warehouse land uses. These land uses are identified as MR-2, MR-3, MR-4, MR-8, MR-10, MR-11, MR-12, and MR-1. Activity Category F does not include a NAC. No sound barriers or topographical shielding occur between Hueneme Road and receivers in this category.

6.2. Noise Measurement Results

The existing noise environment in the Project area is characterized below based on the short- and long-term noise measurements conducted.

6.2.1. Short-Term Noise Measurements

Table 6-1 summarizes the results of the ST noise measurements conducted in the Project area (Refer to Figures 5-1 through 5-3 for noise measurement locations).

Table 6-1. Summary of Short-Term Noise Measurements

Position	Location	Measurement Dates	Start Time & End Time	Measured $L_{eq}(h)$, dBA
ST-1	Hueneme Road, west of Arnold Avenue, east of Edison north side of road ~26 ft from the road centerline	3/19/2024	5:39	79.5
			5:50	
ST-2	Hueneme Road, west of Olds Road, east of Arnold north side of road ~28 ft from the road centerline	3/19/2024	5:22	78.4
			5:33	
ST-3	Hueneme Road, west of Rice Avenue, east of Casper Road north side of road ~30 ft from the road centerline	3/19/2024	5:06	77.9
			5:17	
ST-4	Hueneme Road, east of Rice Avenue, south side of road ~27 ft from the road centerline	3/19/2024	10:43	74.2
			10:53	
ST-5	Hueneme Road, east of Rice Avenue, north side of road ~28 ft from the road centerline	3/19/2024	10:20	75.9
			10:35	

6.2.2. Long-Term Noise Measurements

Two LT noise measurements were conducted over a 24-hour period beginning on March 19th. Noise measurement location LT1 was located on Hueneme Road east of Olds Road west of Casper Road. The measurement was located on the south side of the road approximately 29 feet from the Hueneme Road centerline (refer to Figures 5-1 through 5-3). Noise measurement location LT2 was located on Hueneme Road east of Rice Ave west of Nauman Road on the north side of the road (Refer to Figures 5-1 through 5-3). The loudest average-hourly noise levels measured at LT1 and LT2 occurred during the hours of 7:00 a.m. and 8:00 a.m., respectively. The loudest measured average-hourly noise levels coincided with the AM peak traffic hours of 6:00 a.m. to 9:00 a.m., identified in the traffic report prepared for this project (Kimley Horn 2023).

Long-Term Noise Measurement 1

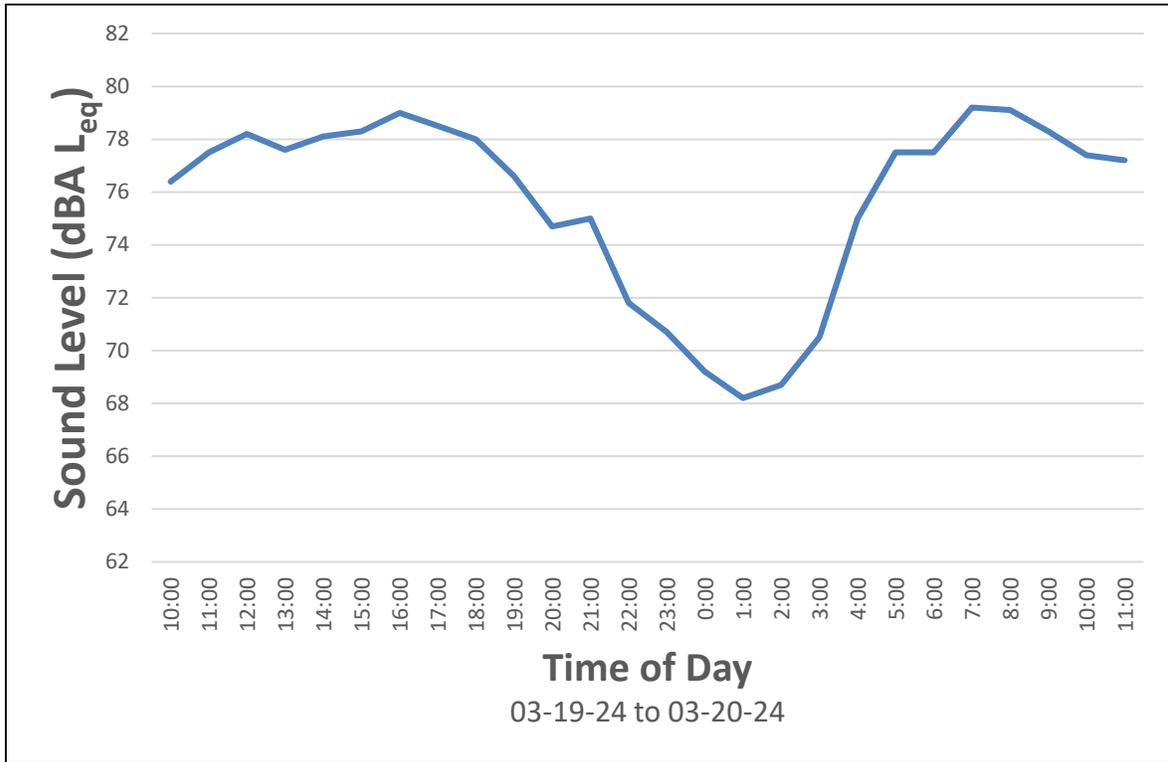
The loudest average-hourly noise level measured at LT1 was 79.2 dBA $L_{eq}(h)$ which occurred between 7:00 and 8:00 a.m. Table 6-2 and Figure 6-1 summarize the noise measurement results obtained at LT1.

Table 6-2. Summary of Long-Term Measurement at Location LT1

Hour Beginning	Average (dBA $L_{eq}(h)$)	Difference from Loudest Hour (dB)
10:00	76.4	-2.8
11:00	77.5	-1.7
12:00	78.2	-1
13:00	77.6	-1.6
14:00	78.1	-1.1
15:00	78.3	-0.9
16:00	79.0	-0.2
17:00	78.5	-0.7
18:00	78.0	-1.2
19:00	76.6	-2.6
20:00	74.7	-4.5
21:00	75.0	-4.2
22:00	71.8	-7.4
23:00	70.7	-8.5
0:00	69.2	-10
1:00	68.2	-11
2:00	68.7	-10.5
3:00	70.5	-8.7
4:00	75.0	-4.2
5:00	77.5	-1.7
6:00	77.5	-1.7
7:00	79.2	0
8:00	79.1	-0.1
9:00	78.3	-0.9
10:00	77.4	-1.8

Note: Based on measurements conducted on March 19-20, 2024. The worst noise hour noise level is bolded. dBA $L_{eq}(h)$ = A-weighted decibels hourly equivalent noise level; dB = decibels

Figure 6-1. Long-Term Measurement at Location LT1, March 19–20, 2024



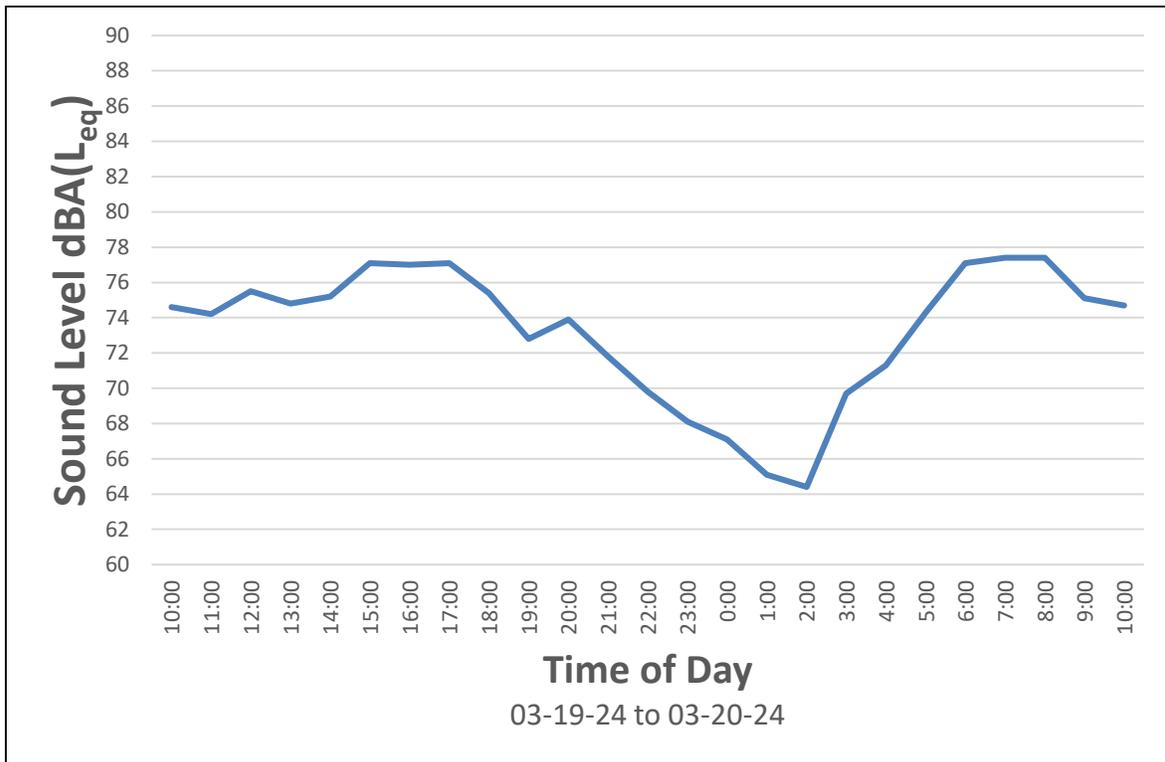
Long-Term Noise Measurement 2

The loudest average-hourly noise level measured was 77.4 dBA $L_{eq}(h)$ which occurred between 8:00 a.m. and 9:00 a.m. Table 6-3 and Figure 6-2 summarize the noise measurement results obtained at LT2.

Table 6-3. Summary of Long-Term Measurement at Location LT2

Hour Beginning	Average (dBA $L_{eq}(h)$)	Difference from Loudest Hour (dB)
10:00	74.6	-2.8
11:00	74.2	-3.2
12:00	75.5	-1.9
13:00	74.8	-2.6
14:00	75.2	-2.2
15:00	74.8	-2.6
16:00	77.1	-0.3
17:00	77.0	-0.4
18:00	77.1	-0.3
19:00	75.4	-2
20:00	72.8	-4.6
21:00	73.9	-3.5
22:00	71.8	-5.6
23:00	69.8	-7.6
0:00	68.1	-9.3
1:00	67.1	-10.3
2:00	65.1	-12.3
3:00	64.4	-13
4:00	69.7	-7.7
5:00	71.3	-6.1
6:00	74.3	-3.1
7:00	77.1	-0.3
8:00	77.4	0
9:00	75.1	-2.3
10:00	74.7	-2.7

Note: Based on measurements conducted on March 19-20, 2024. The worst noise hour noise level is bolded. dBA $L_{eq}(h)$ = A-weighted decibels hourly equivalent noise level; dB = decibels

Figure 6-2. Long-Term Measurement at Location LT2, March 19–20, 2024

6.2.3. Traffic Noise Model Calibration

TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. Table 6-4 compares measured and modeled noise levels at each calibration measurement location. The predicted noise levels are within 2 dB of the measured noise levels and are, therefore, considered to be in reasonable agreement with the measured noise levels. Therefore, no further adjustment of the model was necessary.

Table 6-4. Comparison of Measured to Modeled Noise Levels in the TNM Model

Measurement Position	Measured Noise Level (dBA)	Modeled Noise Level (dBA)	Measured Minus Modeled (dB)
ST-2	78.4	76.7	1.7
ST-3	77.9	76.3	1.6
ST-4	74.2	74.2	0.0

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

7.1. Future Noise Environment and Impacts

Table B-1 in Appendix B summarizes the traffic noise modeling results for existing conditions and design-year 2050 conditions with (Build) and without (No-Build) the Project. Predicted design-year 2050 traffic noise levels under the Build conditions are compared to existing conditions and to design-year 2050 conditions under the No-Build Alternative. The comparison to existing conditions is included in the analysis to identify traffic noise impacts as defined under 23 CFR 772. The comparison to the No-Build conditions indicates the direct effect of the Project.

As stated in the TeNS, modeling results are rounded to the nearest decibel before comparisons are made. In some cases, this can result in relative changes that may not appear intuitive. An example would be a comparison between calculated noise levels of 64.4 and 64.5 dBA. The difference between these two values is 0.1 dB. However, after rounding, the difference is reported as 1 dB.

Table B-1 in Appendix B presents existing, design year 2050 with and without Project noise levels at each receptor. Traffic noise modeling results in Appendix B indicate the following:

Activity Category B (Residential Land uses)

Modeled receivers in Activity Category B include residential land uses MR-1 and MR-6, both residential homes are located on the north side of Hueneme Road. Access to these land uses is provided via Hueneme Road. As per the Traffic Noise Protocol, receivers were placed at the primary outdoor use area of each dwelling unit. The traffic noise modeling results in Table B-1 indicate that design-year 2050 noise levels with the Project are predicted to be in the range of 64 to 66 dBA $L_{eq}(h)$ at residences in Activity Category B. Predicted noise levels in the design-year 2050 with the Project are predicted to approach the NAC of 67 dBA $L_{eq}(h)$ at modeled receiver MR-1. As a result, noise abatement must be considered for modeled receiver MR-1.

Activity Category E (Commercial Office Land Uses)

Modeled receivers in Activity Category E include commercial office land uses MR-7 and MR-9. As per the Traffic Noise Protocol, MR-7 was placed in the rear courtyard. No defined outdoor activity area was identified at MR-9. In accordance with the noise protocol, a receiver was placed within the property no closer than 100 feet from the edge of the outside traffic lane in the area that best represents the highest expected noise level. The traffic noise

modeling results in Table B-1 indicate that design-year 2050 noise levels with the Project are predicted to be 66 dBA $L_{eq}(h)$ at MR-7 and 65 dBA $L_{eq}(h)$ at MR-9. Predicted noise levels in the design-year 2050 are not predicted to approach or exceed the NAC of 72 dBA $L_{eq}(h)$ or result in a substantial increase in noise at these land uses. No traffic noise impacts are predicted at Activity Category E land uses.

Activity Category F (Agriculture, Utility Warehouse Land Uses)

Modeled receivers in Activity Category F consist primarily of agricultural storage/maintenance facilities, as well as a utility building and warehouse. As per the Traffic Noise Protocol, receivers for Category F land uses were placed within their property no closer than 100 feet from the edge of the outside traffic lane in the area that best represents the highest expected noise level. The traffic noise modeling results in Table B-1 indicate that design-year 2050 noise levels with the Project are predicted to range from 63 to 67 dBA $L_{eq}(h)$ at land uses in Activity Category F. There is no NAC for Activity Category F land uses. In addition, the proposed Project would not result in a substantial increase in noise at these land uses. No traffic noise impacts are predicted at Activity Category F land uses.

7.2. Preliminary Noise Abatement Analysis

Noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. According to 23 CFR 772(13)(c) and 772(15)(c), federal funding may be used for the following abatement measures:

- Construction of noise barriers, including acquisition of property rights, either within or outside the highway ROW.
- Traffic management measures including, but not limited to, traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
- Alteration of horizontal and vertical alignments.
- Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise.
- Noise insulation of Activity Category D land use facilities listed in Table 4-1. Post-installation maintenance and operational costs for noise insulation are not eligible for Federal-aid funding.

For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier must include all items appropriate and

necessary for the construction of the barrier, such as traffic control, drainage modification, retaining walls, landscaping for graffiti abatement, and ROW costs. Construction cost estimates are not provided in this NSR but are presented in the noise abatement decision report (NADR). The NADR is a design responsibility and is prepared to compile information from the NSR, other relevant environmental studies, and design considerations into a single, comprehensive document. The NADR is prepared by the Project engineer after completion of the NSR and prior to Project approval. The NADR includes noise abatement construction cost estimates that have been prepared and signed by the Project engineer based on site-specific conditions. Construction cost estimates are compared to reasonableness allowances in the NADR to identify which wall configurations are reasonable from a cost perspective.

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

7.2.1. Activity Category B (Residential Land uses)

In comparison to future design year 2050 no-project conditions, implementation of the proposed project would not result in a substantial increase in traffic noise levels at Activity Category B land uses. However, under future design-year 2050 with project conditions, predicted noise levels at the residential land use represented by receiver MR-1 would be 66 dBA $L_{eq}(h)$, which would approach within 1 dBA of the NAC of 67 dBA $L_{eq}(h)$. As a result, noise abatement must be considered for this residential land use. Access to this residential land use is provided via driveways connecting to Hueneme Road. A noise barrier placed between this residential land use and Hueneme Road would prevent access to the site. As a result, noise abatement for this residential land uses is deemed infeasible.

7.2.2. Activity Category E (Commercial Office Land Uses)

Predicted noise levels in the design-year 2050 with the Project are not predicted to approach or exceed the NAC of 72 dBA $L_{eq}(h)$ or result in a substantial increase in noise at Activity Category E land uses. No traffic noise impacts are predicted for Activity Category E land uses within the Project area. Accordingly, noise abatement does not need to be considered for Activity Category E.

7.2.3. Activity Category F (Agriculture, Utility Warehouse Land Uses)

There is no NAC for Activity Category F land uses. In addition, the proposed Project would not result in a substantial increase in noise at these land uses. No traffic noise impacts are predicted for Activity Category F land uses within the Project area. Accordingly, noise abatement does not need to be considered for Activity Category F.

Chapter 8. Construction Noise

During the construction of the Project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Noise associated with construction is controlled by Caltrans Standard Specification Section 14-8.02, "Noise Control," which states the following:

- Do not exceed 86 dBA L_{max} at 50 feet from the job site activities from 9:00 PM to 6:00 AM.
- Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

Table 8-1 summarizes typical noise levels produced by construction equipment that is commonly used on roadway construction Projects. Construction equipment is expected to generate noise levels ranging from 80 to 101 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 8-1. Typical Construction Equipment Noise Levels

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Vibratory Pile Driver	101
Concrete Pump	82
<i>Source: Federal Transit Administration, 2018.</i>	

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14.8-02. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise.

Chapter 9. References

- Caltrans. 2020. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. Sacramento, CA. Available at website url: <https://dot.ca.gov>.
- . 2013. *Technical Noise Supplement*. Sacramento, CA: Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office. Sacramento, CA. Available at website url: <https://dot.ca.gov/programs/environmentalanalysis/noise-vibration>.
- County of Ventura. January 2021. *Preliminary Environmental Study (PES) HIPL-5952(215)*.
- Federal Highway Administration. 2011. *Highway Traffic Noise: Analysis and Abatement Guidance*. Washington D.C. FHWA-HEP-10-025. Available at website url: http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf.
- . 1998a. *FHWA Traffic Noise Model, Version 1.0 User's Guide*. FHWA-PD-96-009. Washington D.C.
- . 1998b. *FHWA Traffic Noise Model, Version 2.5*. FHWA-PD-96-010. Washington D.C.
- Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. (DOT-T-95-16.) Office of Planning, Washington, DC. Prepared by Harris Miller Miller & Hanson, Inc. Burlington, MA.
- Kimley Horn. 2023. *Hueneme Road Widening Project Traffic Impact Study*.

Appendix A Traffic Data

This appendix contains tables presenting the traffic data for existing conditions, design-year conditions without the Project, and design-year conditions with the Project.

Table A-1. Traffic Data for Existing Conditions

East Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	1	735	88.7%	652	1.2%	9	7.2%	53	0.0%	0	2.9%	21	55
Hueneme Rd., Edison to Arnold Rd.	1	691	88.7%	613	1.2%	8	7.2%	50	0.0%	0	2.9%	20	55
Hueneme Rd., Arnold Rd. to Olds Rd.	1	703	88.7%	624	1.2%	8	7.2%	51	0.0%	0	2.9%	20	55
Hueneme Rd., Olds Rd. to Casper Rd.	1	684	88.7%	607	1.2%	8	7.2%	49	0.0%	0	2.9%	20	55
Hueneme Rd., Casper Rd. to Rice Ave.	1	684	88.7%	607	1.2%	8	7.2%	49	0.0%	0	2.9%	20	55
Hueneme Rd., East of Rice Ave.	1	574	91.6%	526	1.2%	7	7.2%	41	0.0%	0	0.0%	0	55
West Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	1	471	88.7%	418	1.2%	5	7.2%	34	0.0%	0	2.9%	14	55
Hueneme Rd., Edison Dr. to Arnold Rd.	1	494	88.7%	438	1.2%	6	7.2%	36	0.0%	0	2.9%	14	55
Hueneme Rd., Arnold Rd. to Olds Rd.	1	502	88.7%	445	1.2%	6	7.2%	36	0.0%	0	2.9%	15	55
Hueneme Rd., Olds Rd. to Casper Rd.	1	493	88.7%	437	1.2%	6	7.2%	35	0.0%	0	2.9%	14	55
Hueneme Rd., Casper Rd. to Rice Ave.	1	503	91.6%	461	1.2%	6	7.2%	36	0.0%	0	0.0%	0	55
Hueneme Rd., East of Rice Ave.	1	417	91.6%	382	1.2%	5	7.2%	30	0.0%	0	0.0%	0	55

Traffic volumes based on AM peak-hour conditions. Based on traffic data derived from the traffic analysis prepared for this project (Kimley Horn 2023).

Table A-2. Traffic Data for Design Year 2050 Conditions - Without Project

East Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	1	776	88.7%	689	1.2%	9	7.2%	56	0.0%	0	2.9%	23	55
Hueneme Rd., Edison to Arnold Rd.	1	750	88.7%	666	1.2%	9	7.2%	54	0.0%	0	2.9%	22	55
Hueneme Rd., Arnold Rd. to Olds Rd.	1	733	88.7%	650	1.2%	9	7.2%	53	0.0%	0	2.9%	21	55
Hueneme Rd., Olds Rd. to Casper Rd.	1	746	88.7%	662	1.2%	9	7.2%	54	0.0%	0	2.9%	22	55
Hueneme Rd., Casper Rd. to Rice Ave.	1	793	88.7%	704	1.2%	9	7.2%	57	0.0%	0	2.9%	23	55
Hueneme Rd., East of Rice Ave.	1	615	91.6%	564	1.2%	7	7.2%	44	0.0%	0	0.0%	0	55
West Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	1	471	88.7%	418	1.2%	5	7.2%	34	0.0%	0	2.9%	14	55
Hueneme Rd., Edison Dr. to Arnold Rd.	1	495	88.7%	439	1.2%	6	7.2%	36	0.0%	0	2.9%	14	55
Hueneme Rd., Arnold Rd. to Olds Rd.	1	502	88.7%	445	1.2%	6	7.2%	36	0.0%	0	2.9%	15	55
Hueneme Rd., Olds Rd. to Casper Rd.	1	505	88.7%	448	1.2%	6	7.2%	36	0.0%	0	2.9%	15	55
Hueneme Rd., Casper Rd. to Rice Ave.	1	608	91.6%	557	1.2%	7	7.2%	44	0.0%	0	0.0%	0	55
Hueneme Rd., East of Rice Ave.	1	560	91.6%	513	1.2%	6	7.2%	40	0.0%	0	0.0%	0	55

Traffic volumes based on AM peak-hour conditions. Based on traffic data derived from the traffic analysis prepared for this project (Kimley Horn 2023).

Table A-3. Traffic Data for Design Year 2050 Conditions – With Project

East Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	2	817	88.7%	725	1.2%	9	7.2%	59	0.0%	0	2.9%	24	55
Hueneme Rd., Edison to Arnold Rd.	2	773	88.7%	686	1.2%	9	7.2%	56	0.0%	0	2.9%	22	55
Hueneme Rd., Arnold Rd. to Olds Rd.	2	792	88.7%	703	1.2%	9	7.2%	57	0.0%	0	2.9%	23	55
Hueneme Rd., Olds Rd. to Casper Rd.	2	789	88.7%	700	1.2%	9	7.2%	57	0.0%	0	2.9%	23	55
Hueneme Rd., Casper Rd. to Rice Ave.	2	836	88.7%	742	1.2%	10	7.2%	60	0.0%	0	2.9%	24	55
Hueneme Rd., East of Rice Ave.	2	658	91.6%	603	1.2%	8	7.2%	47	0.0%	0	0.0%	0	55
West Bound Roadway Segments	No. of Lanes	Total Volume AM-Peak Hour	Automobiles		Medium-Duty Trucks		Heavy-Duty Trucks		Buses		Motorcycles		Speed (mph)
			%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	
Hueneme Rd., West of Edison Dr.	2	472	88.7%	419	1.2%	5	7.2%	34	0.0%	0	2.9%	14	55
Hueneme Rd., Edison Dr. to Arnold Rd.	2	496	88.7%	440	1.2%	6	7.2%	36	0.0%	0	2.9%	14	55
Hueneme Rd., Arnold Rd. to Olds Rd.	2	504	88.7%	447	1.2%	6	7.2%	36	0.0%	0	2.9%	15	55
Hueneme Rd., Olds Rd. to Casper Rd.	2	506	88.7%	449	1.2%	6	7.2%	36	0.0%	0	2.9%	15	55
Hueneme Rd., Casper Rd. to Rice Ave.	2	615	91.6%	564	1.2%	7	7.2%	44	0.0%	0	0.0%	0	55
Hueneme Rd., East of Rice Ave.	2	567	91.6%	520	1.2%	7	7.2%	41	0.0%	0	0.0%	0	55

Traffic volumes based on AM peak-hour conditions. Based on traffic data derived from the traffic analysis prepared for this project (Kimley Horn 2023).

Appendix B Predicted Future Noise Levels and
Noise Barrier Analysis

Appendix C Supplemental Data



NOISE MEASUREMENT SURVEY FORM

SHEET 1 OF 1

DATE:	3/19/2024
PROJECT:	HUENEME RD WIDENING
MONITORING STAFF:	KURT LEGLEITER



Not to scale. Locations are approximate.

NOISE MEASUREMENT CONDITIONS & EQUIPMENT

MET CONDITIONS & MONITORING EQUIPMENT:	TEMP: 63-65 F. HUMIDITY: 66-68% WIND SPEED: 2-5 MPH GROUND: DRY
	COVER BY CLASS (OC=OVERCAST): 3 (1. HEAVY OC, 2. LIGHT OC, 3. SUNNY, 4. CLEAR NIGHT, 5. OC NIGHT)
	MET. METER: KESTREL 2500
NOISE MONITORING EQUIPMENT:	LARSON DAVIS SLM MODEL: PICCOLO TYPE II (LT), LD LX1 TYPE 1 (ST)
	CALIBRATOR: REED
NOISE MONITORING SETUP:	WITHIN 10 FT OF REFLECTIVE SURFACE?: NO MICROPHONE HEIGHT AGL (FT): 5
	CALIBRATED PRIOR TO AND UPON COMPLETION OF MEASUREMENTS: YES METER SETTINGS: A-WHT SLOW

NOISE & TRAFFIC MEASUREMENTS

MEASUREMENT		DURATION	MEASUREMENT LOCATION	PRIMARY NOISE SOURCES NOTED	MEASURED NOISE LEVELS		
LOCATION	DATE/TIME	(Minutes)			LEQ		
2 - LT	3/19-3/20	LT	HUENEME RD, EAST OF RICE AVE., NORTH SIDE OF ROAD *23 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY	REFER TO LONG-TERM MONITORING SHEETS		
1 - ST	3/19, 10:20	15	HUENEME RD, EAST OF RICE AVE., NORTH SIDE OF ROAD *28 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY, TRUCKS HITTING RUMBLE STRIPS	75.9		
2 - ST	3/19, 10:43	10	HUENEME RD, EAST OF RICE AVE., SOUTH SIDE OF ROAD *27 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY	74.2		
3 - ST	3/19, 11:00	10	HUENEME RD, EAST OF RICE AVE., SOUTH SIDE OF ROAD *25 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY, TRACTORS IN ADJACENT FIELD BACKGROUND	76.1		



NOISE MEASUREMENT SURVEY FORM

SHEET 2 OF 3

DATE: 3/19/2024
PROJECT: HUENEME RD WIDENING
MONITORING STAFF: KURT LEGLEITER

SITE PHOTO(S): (Refer to data sheet for noise measurement locations)

MEASUREMENT LOCATION 1



MEASUREMENT LOCATION 2



MEASUREMENT LOCATION 3





NOISE MEASUREMENT SURVEY FORM

SHEET 1 OF 3

DATE:	3/19/2024
PROJECT:	HUENEME RD WIDENING
MONITORING STAFF:	Dylan Mick



NOISE MEASUREMENT CONDITIONS & EQUIPMENT	
MET CONDITIONS & MONITORING EQUIPMENT:	TEMP: 63-65 F. HUMIDITY: 66-72% WIND SPEED: 2-5 MPH GROUND: DRY COVER BY CLASS (OC=OVERCAST): 3 (1. HEAVY OC, 2. LIGHT OC, 3. SUNNY, 4. CLEAR NIGHT, 5. OC NIGHT)
NOISE MONITORING EQUIPMENT:	MET. METER: KESTREL 2500 LARSON DAVIS SLM MODEL: PICCOLO TYPE II (LT), LD, LX, T TYPE 1 (ST) CALIBRATOR: CAL 200
NOISE MONITORING SETUP:	WITHIN 10 FT OF REFLECTIVE SURFACE?: NO MICROPHONE HEIGHT AGL (FT): 5 CALIBRATED PRIOR TO AND UPON COMPLETION OF MEASUREMENTS: YES METER SETTINGS: A-WHT SLOW

NOISE & TRAFFIC MEASUREMENTS						
MEASUREMENT		DURATION (Minutes)	MEASUREMENT LOCATION	PRIMARY NOISE SOURCES NOTED	MEASURED NOISE LEVELS	
LOCATION	DATE/TIME				LEQ	
1-LT	3/19: 3:20	LT	HUENEME RD, EAST OF OLDS RD., WEST OF CASPER RD, SOUTH SIDE OF THE ROAD 28 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY	REFER TO LONG-TERM MONITORING SHEETS	
BACKGROUND MEASUREMENT	3/19: 6:17	10	SOUTHLAND SOD DR, WEST OF CASPER RD EAST OF ARNOLD RD, NORTH SIDE OF THE ROAD	BIRDS IN DISTANCE	50.2	
1-ST	3/19: 5:06	10	HUENEME RD, RICE AVE., EAST OF CASPER RD, NORTH SIDE OF ROAD 30 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY, BIRDS	77.9	
2-ST	3/19: 5:22	10	HUENEME RD, WEST OF OLDS RD., EAST OF ARNOLD NORTH SIDE OF ROAD 28 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY	78.4	
3-ST	3/19: 5:39	10	HUENEME RD, WEST OF ARNOLD AVE., EAST OF EDISON NORTH SIDE OF ROAD 26 FT FROM RD CENTERLINE	VEHICLE TRAFFIC ON HUENEME RD. PRIMARY, TRACTORS IN ADJACENT FIELD	79.5	



NOISE MEASUREMENT SURVEY FORM

SHEET 2 OF 3

DATE: 3/19/2024
PROJECT: HUENEME RD WIDENING
MONITORING STAFF: Dylan Mick

SITE PHOTO(S): (Refer to data sheet for noise measurement locations)

MEASUREMENT LOCATION 1



MEASUREMENT LOCATION 2



MEASUREMENT LOCATION 3



Table C-1. Predicted Year 2030 Noise Levels With and Without the Project (For CEQA Purposes)

Receptor I.D.	Land Use	Number of Benefited Receptors	Parcel Number	Year 2030 Worst Hour Noise Levels - $L_{eq}(h)$, dBA		
				Opening Year Noise Level without Project $L_{eq}(h)$, dBA	Opening Year Noise Level with Project $L_{eq}(h)$, dBA	Noise Level with Project minus noise Level without Project $L_{eq}(h)$, dBA
MR-1	Residential	1	223003028	67	66	-1
MR-2	Agriculture (Maintenance/ Storage)	1	223003028	67	66	-1
MR-3	Agriculture (Maintenance/ Storage)	1	223003031	66	66	0
MR-4	Agriculture (Maintenance/ Storage)	1	232003120	62	65	3
MR-5	Maintenance	1	232008025	67	66	-1
MR-6	Residential	1	232008021	65	64	-1
MR-7	Commercial (Office)	1	232003121	63	66	3
MR-8	Utility	1	232008026	66	66	0
MR-9	Commercial (Office)	1	232008027	63	65	2
MR-10	Agriculture (Maintenance/ Storage)	1	232003210	63	65	2
MR-11	Warehouse	1	232003305	61	63	2
MR-12	Agriculture (Maintenance/ Storage)	1	232007014	63	65	2
MR-13	Agriculture (Maintenance/ Storage)	1	232003305	63	65	2

Note: All NAC are exterior unless noted.