Appendix “N”

Noise Impact Analysis

NOISE IMPACT ANALYSIS

HIGHLAND GROVE 5 TTM NO. 39011 RESIDENTIAL PROJECT

COUNTY OF RIVERSIDE

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Project No. 24081

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
cmu	concrete masonry unit
CNEL	Community Noise Equivalent Level
County	County of Riverside
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
TTM	Tentative Tract Map
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Highland Grove 5 Tentative Tract Map (TTM) No. 39011 Residential project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in an unincorporated area of the County of Riverside (County) within the Lake Matthews/Woodcrest area. The approximately 36.55-acre project site is currently vacant and is bounded by vacant land that is entitled for single-family homes (TTM 36805) to the north and west, vacant land and single-family homes on Cambria Court to the northeast, vacant land to the east, and rural residential uses and El Sobrante Road to the south. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are residents at the ranch homes located as near as 440 feet south of the project site and at the single-family homes located as near as 500 feet northeast of the project site. The nearest school is Lake Matthews Elementary School that is located as near as 1.2 mile west of the project site.

1.3 Proposed Project Description

The proposed project would disturb approximately 29 acres of the 36.55-acre project site and would consist of development of 73 single-family homes with an onsite road network and a water quality detention basin. This analysis also analyzed emissions from limited blasting that may be required during grading of the project site. The proposed site plan is shown in Figure 2.

1.4 Executive Summary

Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the County and State of California (State).

County of Riverside Noise Regulations

The following lists the noise regulations from the Municipal Code that are applicable, but not limited to the proposed project.

- Section 9.52.020(I) Construction time limitations
- Section 9.5.040 General sound level standards (exterior and interior residential noise standards)

The following lists the vibration standards from the General Plan that are for railroad vibration impacts.

- General Plan Policy N 16.3 limits train vibration to residential dwellings to perceptible ground vibration, which is defined as a motion velocity of 0.01 inch per second over a range of 1 to 100 Hz.

State of California Noise Regulations

The following lists the State of California noise regulations that are applicable, but not limited to the proposed project.

- California Vehicle Code Section 27200-27207 – On Road Vehicle Noise Limits
- California Vehicle Code Section 38365-38350 – Off-Road Vehicle Noise Limits

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than significant impact.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less than significant impact.

1.5 Project Design Features Incorporated into the Proposed Project

This analysis was based on implementation of the following project design features that are either already depicted on the proposed project site plan and architectural plans or are required from County and State Regulations.

Project Design Feature 1:

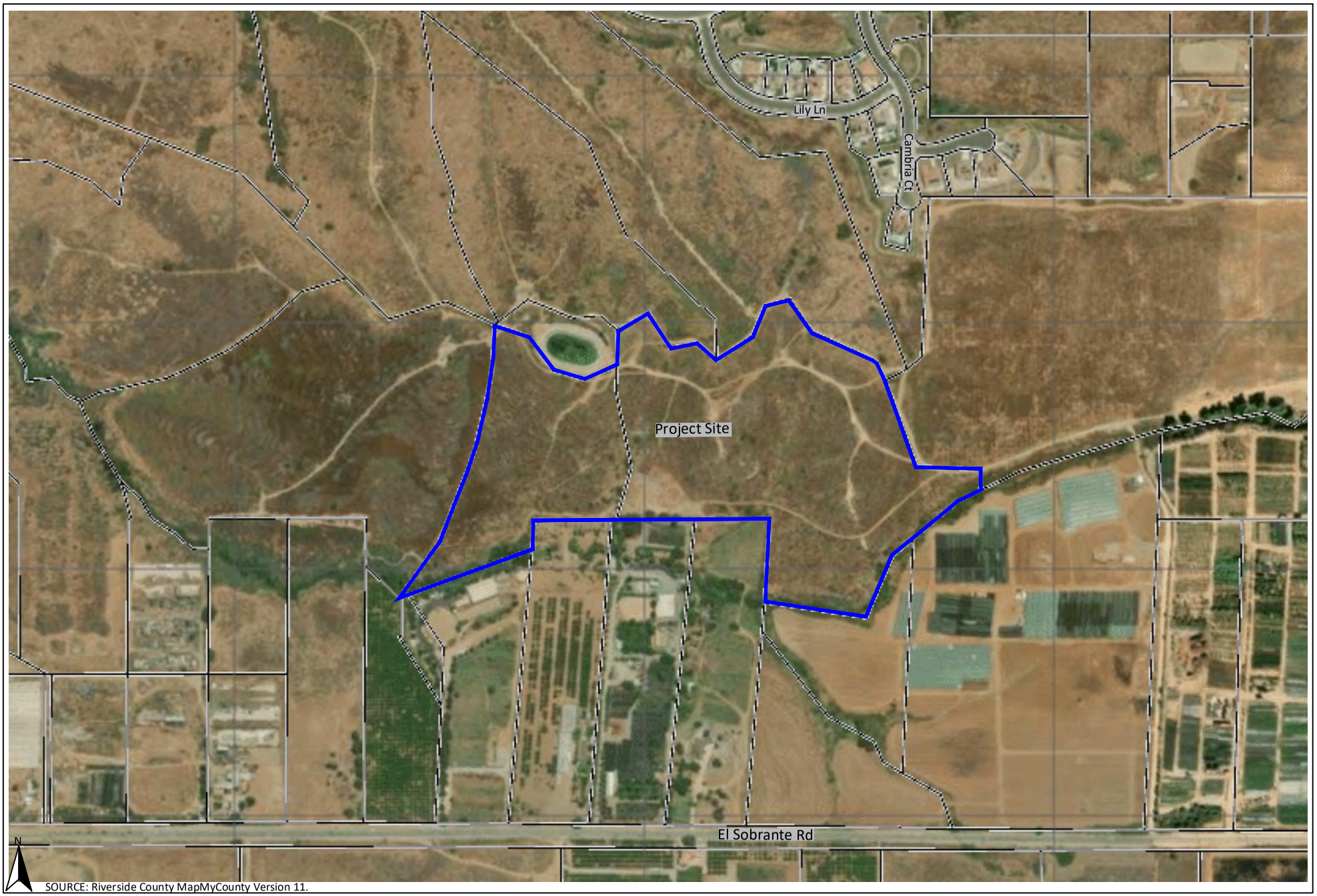
Prior to the issuance of the grading permit, the project applicant shall submit a construction-related noise mitigation plan to the County for review and approval. The plan shall depict the locations of where construction equipment will operate on the project site and how the noise

from the construction equipment will be mitigated during construction of the project, through use of such methods as:

1. Temporary noise attenuation fences;
2. Preferential location of equipment; and
3. Use of current noise suppression technology and equipment.

1.6 Mitigation Measures for the Proposed Project

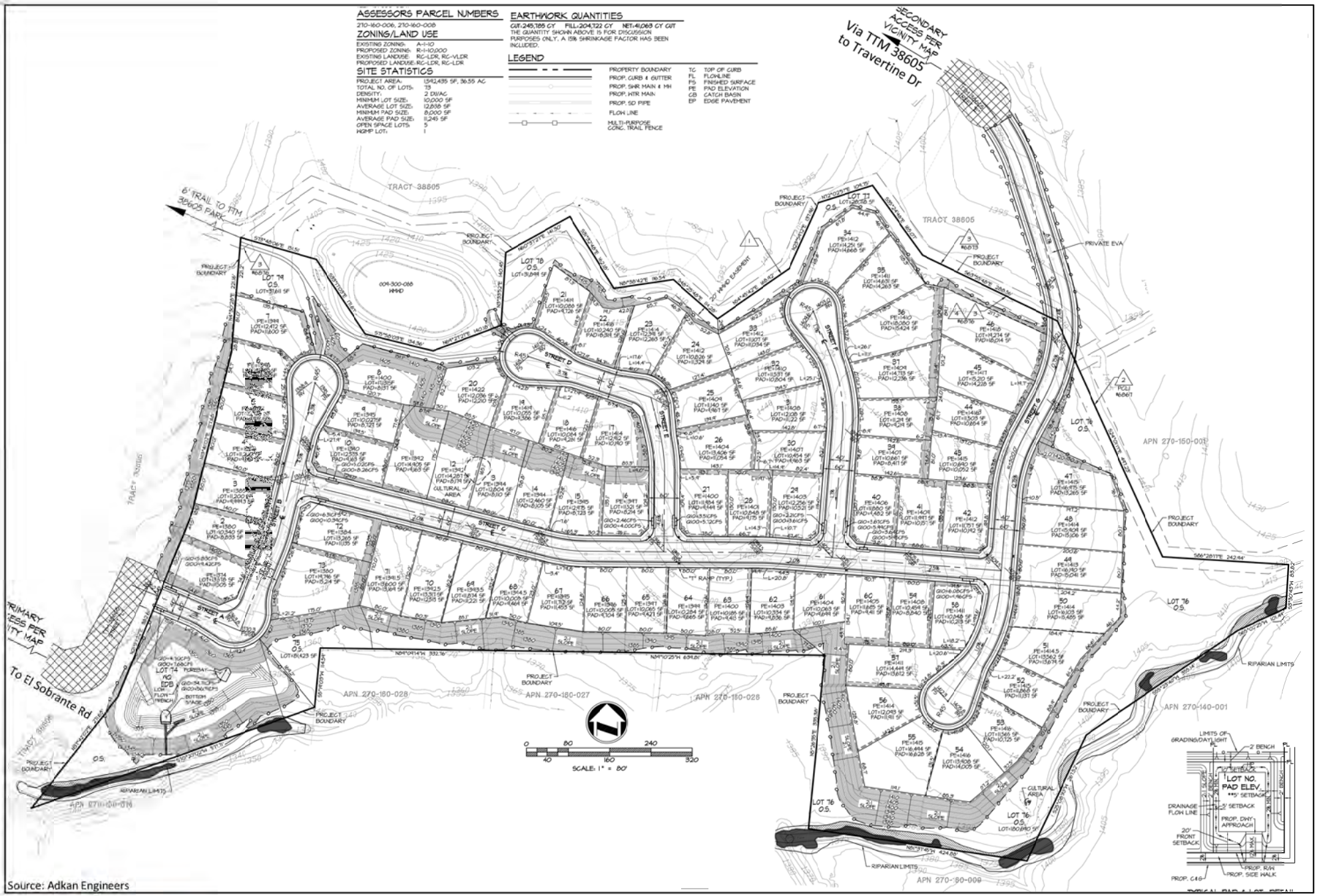
This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 and through implementation of Project Design Feature 1 detailed in Section 1.5 above were adequate to limit all noise and vibration impacts to less than significant levels. No mitigation measures are required for the proposed project with respect to noise and vibration impacts.



SOURCE: Riverside County MapMyCounty Version 11.

VISTA ENVIRONMENTAL

Figure 1
Project Location Map



Source: Adkan Engineers

VISTA ENVIRONMENTAL

Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The worst-hour traffic Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The County of Riverside relies on the Ldn noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in level of noise as the distance from the source increases. The manner in which the noise level reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features.

Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD) between source and receiver. Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

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. Off-site 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.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform medium, while ground-borne vibrations travel through the earth which may contain significant geological differences. 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 project site is located in the County of Riverside. Noise and vibration regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise and vibration 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:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA), which regulates transit noise, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual), prepared by the FTA, September 2018, is the only guidance document from a government agency that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

Table A – FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2018.

As shown in Table A, the allowable cumulative noise level increase created from a project would range from 0 to 7 dBA, which is based on the existing (ambient) noise levels in the project vicinity. The justification for the sliding scale, is that people already exposed to high levels of noise should be expected to tolerate only a small increase in the amount of noise in their community. In contrast, if the existing noise levels are quite low, it is reasonable to allow a greater change in the community noise for the equivalent difference in annoyance.

The FTA Manual also provides specific guidance for construction noise. The FTA recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances if possible. However, local noise ordinances usually relates to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings for a general construction noise assessment are provided below in Table B.

Table B – FTA Construction Noise Criteria

Land Use	Day (dBA Leq(8-hour))	Night (dBA Leq(8-hour))	30-day Average (dBA Ldn)
Residential	80	70	75
Commercial	85	85	80*
Industrial	90	90	85*

Notes:
* 24-hour Leq not Ldn.
Source: Federal Transit Administration, 2018.

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

4.2 State Regulations

Noise Standards

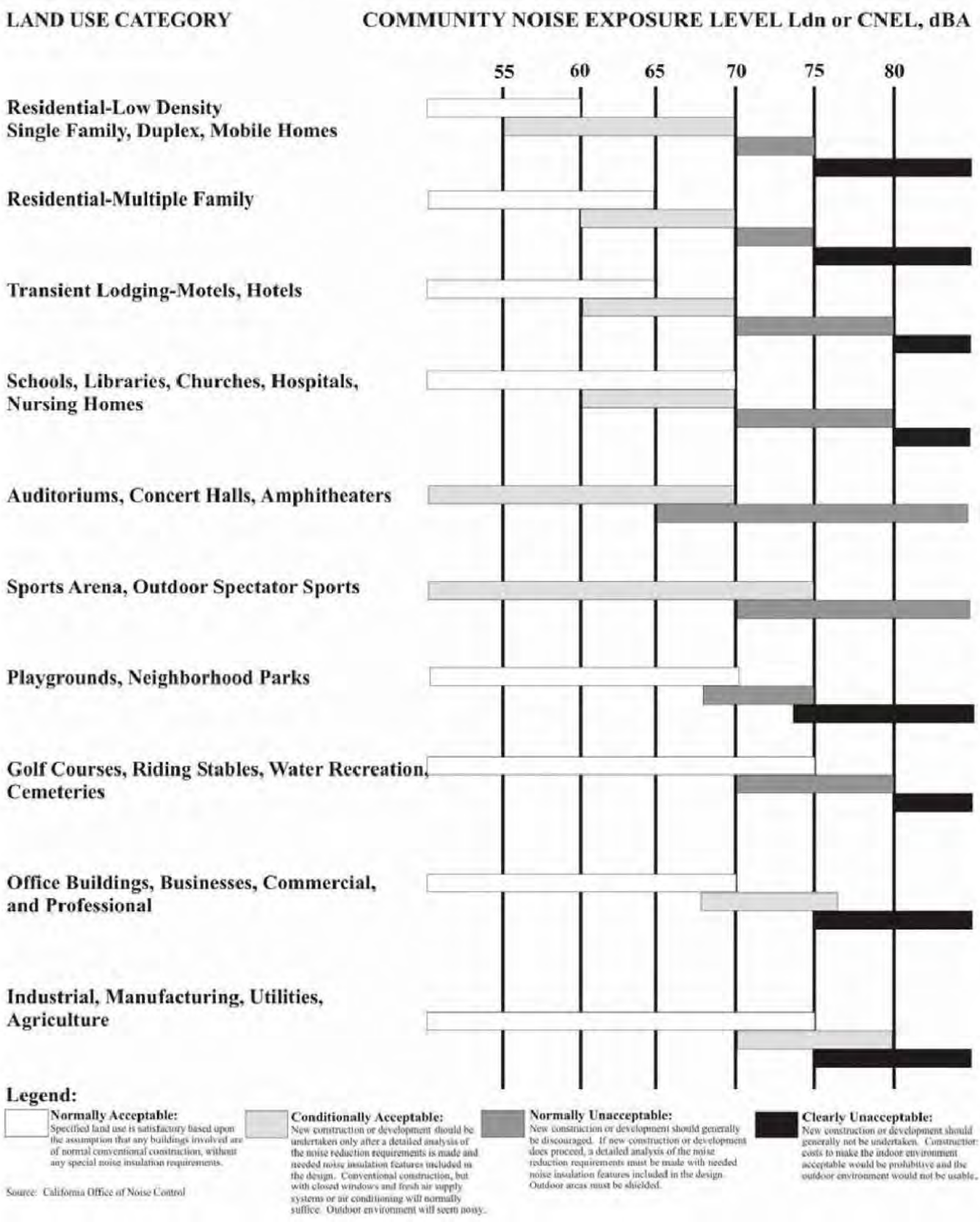
California Department of Health Services Office of Noise Control

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," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise. The Land Use Compatibility Matrix that was adopted by the County is shown in Figure 3.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required

Table N-1
Land Use Compatibility for Community Noise Exposure



SOURCE: County of Riverside General Plan.

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Figure 3
County of Riverside Land Use Compatibility Matrix

to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California 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.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

The *Transportation- and Construction Vibration Guidance Manual*, prepared by Caltrans, April 2020, provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The County of Riverside General Plan Noise Element, Revised December 8, 2015 and *A Codification of the General Ordinances of Riverside County, California (*Municipal Code), June 10, 2025, establishes the following applicable policies related to noise and vibration.

County of Riverside General Plan Policies

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

N1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

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

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

N 2.3 Mitigate exterior and interior noises to the levels listed in Table N-2 [Table C] below to the extent feasible, for stationary sources:

Table C – County of Riverside Stationary Source Land Use Noise Standards

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

Notes: These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health
Source: County of Riverside, 2015.

N 4.1 Prohibit facility-related noise, received by any sensitive use from exceeding the following worst-case noise levels:

a. 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.
b. 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

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

N 7.1 New land use development within Airport Influence Areas shall comply with airport land use noise compatibility criteria contained in the corresponding airport land use compatibility plan for the area. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix I-1 and summarized in the Policy Area section of the affected Area Plan.

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

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

N 9.3 Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures.

N 9.6 Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts.

N 9.7 Require that field noise monitoring be performed prior to siting any sensitive land uses along arterial roadways. Noise level measurements should be at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels.

N 12.1 Utilize natural barriers such as hills, berms, and dense vegetation to assist in noise reduction.

N 12.2 Utilize dense landscaping to effectively reduce noise. However, when there is a long initial period where the immaturity of new landscaping makes this approach only marginally effective, utilize a large number of highly dense species planted in a fairly mature state, at close intervals, in conjunction with earthen berms, setbacks, or block walls.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices.

N13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

N13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through use of such methods as:

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

N 13.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection

is provided to the public. Some design features may include extra-dense insulation, double paned windows, and dense construction materials.

N 14.6 Prevent the transmission of excessive and unacceptable noise levels between individual tenants and businesses in commercial structures and between individual dwelling units in multi-family residential structures.

N 16.1 Restrict the placement of sensitive land uses in proximity to vibration-producing land uses.

N 16.2 Consider the following land uses sensitive to vibration:

- Hospitals;
- Residential Areas;
- Concert Halls;
- Libraries;
- Sensitive Research Operations;
- Schools; and
- Offices

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

County of Riverside Municipal Code

The County of Riverside Municipal Code establishes the following applicable standards related to noise.

Chapter 9.52 Noise Regulation

9.52.010 Intent

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

9.52.020 Exemptions

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

I. Private construction projects located within one-quarter mile of an inhabited dwelling, provided that:
1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and
2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October thru May;

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

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

L. Heating and air conditioning equipment;

9.52.040 General sound level standards

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

Table D – County of Riverside Sound Level Standards

General Plan Foundation Component	General Plan Land Use Designation	General Plan Land Use Designation Name	Density	Exterior Standards	
				7 am – 10 pm	10 pm – 7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Residential	1 AC	55	45
	LDR	Low Density Residential	½ AC	55	45

Source: County of Riverside, 2023.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on the nearby roadways. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Larson Davis Model LXT1 Class 1 sound level meters programmed in "slow" mode to record the sound pressure level at 1-second intervals for 24 hours in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded with the three sound level meters. The sound level meters and microphones were mounted on poles, were placed approximately five feet above the ground and were equipped with windscreens during all measurements. The noise meters were calibrated before and after the monitoring using a Larson Davis Cal200 calibrator. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4-2014 standard).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels in the vicinity of the project site. Descriptions of the noise monitoring sites are provided below in Table E and are shown in Figure 4. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 10:43 a.m. on Tuesday, December 3, 2024 and 11:03 a.m. on Wednesday, December 4, 2024. At the start of the noise measurements, the sky was partly cloudy, the temperature was 65 degrees Fahrenheit, the humidity was 36 percent, barometric pressure was 28.59 inches of mercury, and the wind was blowing around two miles per hour. Overnight, the temperature dropped to 42 degrees Fahrenheit and the humidity peaked at 99 percent. At the conclusion of the noise measurements, the sky was hazy, the temperature was 63 degrees Fahrenheit, the humidity was 57 percent, barometric pressure was 29.36 inches of mercury, and the wind was blowing around four miles per hour.

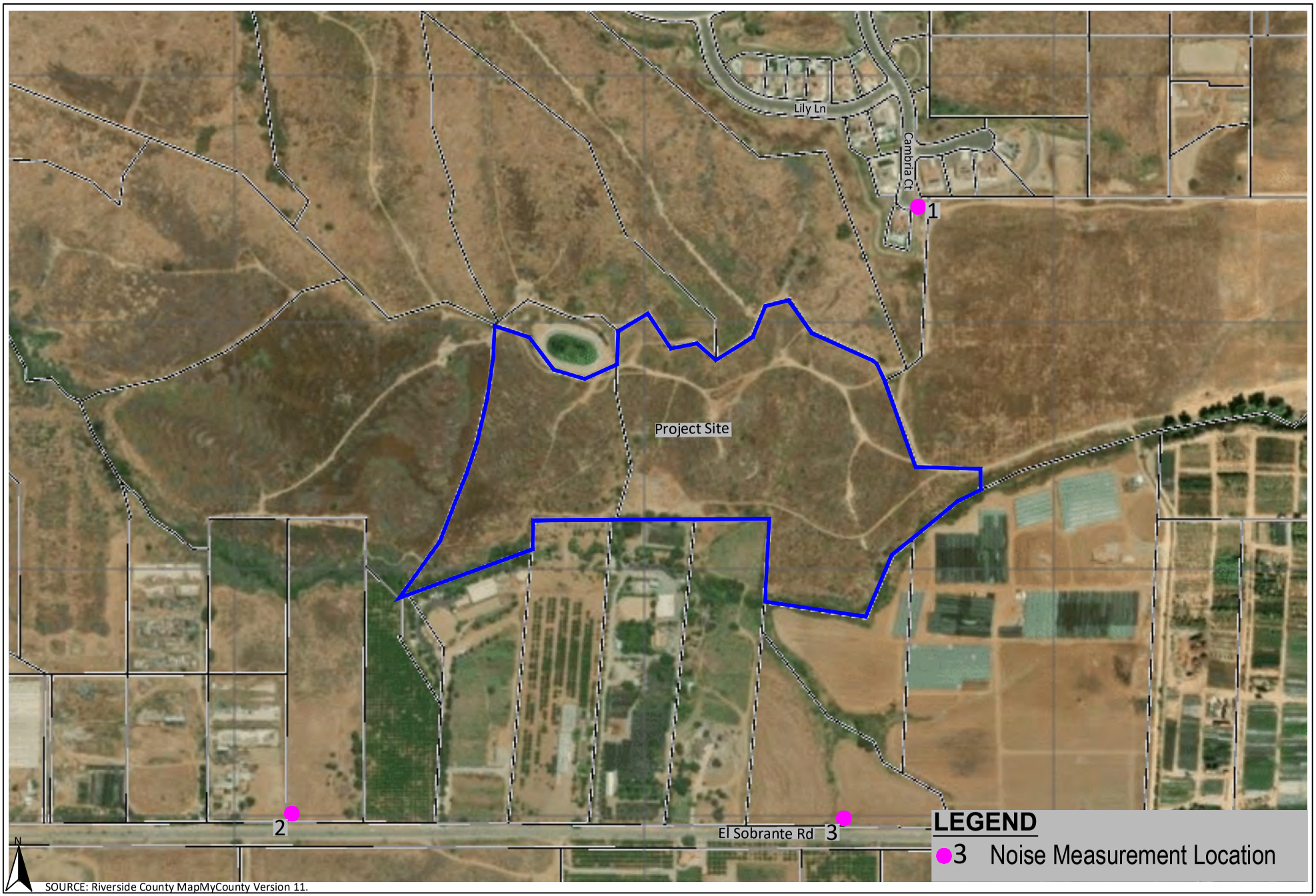
5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table E. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table E also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The Ldn was calculated through use of the hourly Leq that was entered into Equation 2-23 from *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (TeNS), prepared by Caltrans, September 2013. The noise monitoring data printouts are included in Appendix B. Figure 5 shows a graph of the 24-hour noise measurements.

Table E – Existing (Ambient) Noise Level Measurements

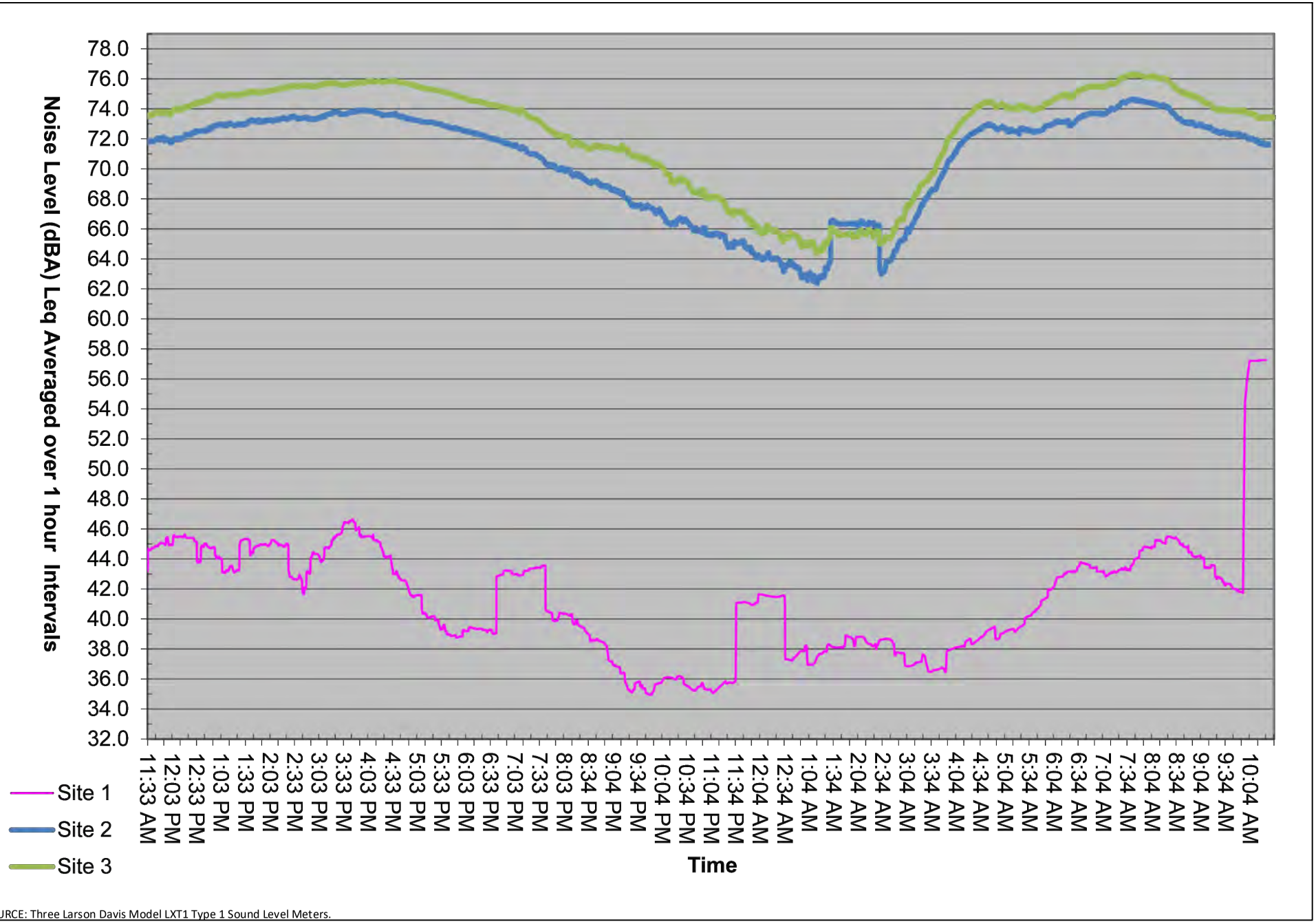
Site No.	Site Description	Average (dBA L_{eq})		1-hr Average (dBA L_{eq}/Time)		24-hour dBA Ldn
		Daytime[1]	Nighttime[2]	Minimum	Maximum	
1	Located northeast of project site on a fence, approximately 30 feet southeast of Cambria Court south terminus center point.	48.6	39.6	35.0 9:33 p.m.	57.3 10:05 p.m.	48.6
2	Located southwest of project site on a fence at the approximate location of the proposed access road and approximately 40 feet north of El Sobrante Road centerline.	73.0	70.7	62.3 1:13 a.m.	74.7 7:40 a.m.	76.5
3	Located south of the eastern portion of the project site on a power pole, approximately 35 feet north of El Sobrante Road centerline.	74.9	72.6	64.3 1:13 a.m.	76.3 7:33 a.m.	78.2

Notes:
[1] Daytime defined as 7:00 a.m. to 10:00 p.m. (Section 9.52.040 of the Municipal Code)
[2] Nighttime define as 10:00 p.m. to 7:00 a.m. (Section 9.52.040 of the Municipal Code)
Source: Noise measurements taken between Tuesday, December 3, 2024 and Wednesday, December 4, 2024.



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Figure 4
Field Noise Monitoring Locations



SOURCE: Three Larson Davis Model LXT1 Type 1 Sound Level Meters.

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Figure 5
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table F below provides a list of the construction equipment anticipated to be used for each phase of construction that was obtained from the *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Highland Grove 5 TTM No. 39011 Residential Project* (Air Quality Analysis), prepared by Vista Environmental, August 11, 2025.

Table F – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozers	3	40	85	82
Tractor	2	40	84	N/A
Front End Loader	1	40	80	79
Backhoe	1	40	80	78
Blasting	1	1	94	N/A
Grading				
Excavators	2	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Scrapers	2	40	85	84
Tractor	1	40	84	N/A
Front End Loader	1	40	80	79
Blasting	1	1	94	N/A
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Tractor	1	40	84	N/A
Front End Loader	1	40	80	79
Backhoe	1	40	80	78
Welder	1	40	73	74
Paving				
Paver	2	50	85	77
Paving Equipment	2	50	85	77
Roller	2	20	85	80
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.

[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table F shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table F and through use of the RCNM.

The FTA Manual provides for two different levels of assessment of construction noise and the current state of the proposed project meets the definition of a General Assessment, which is defined as "projects in an early assessment stage when the equipment roster and schedule are undefined and only a rough estimate of construction noise levels is practical." As such, construction noise has been analyzed based on the methodology for a General Assessment, which includes analyzing all construction equipment being placed in the middle of the project site, and is based on the rationale that mobile equipment would likely move around the entire project site in a typical workday. As such, the middle of project site would provide the acoustical average noise level created over a typical workday. Since blasting would only occur at specific locations on the project site, blasting was analyzed based on the shortest distance from where blasting will likely occur to the nearby homes. However, in order to provide a conservative analysis, all equipment was analyzed for the nearest home to the project site, instead of just the two nosiest pieces of equipment as detailed in the FTA Manual. In addition, the more stringent noise thresholds for a Detailed Analysis were utilized (see Table B), instead of the General Assessment noise thresholds. The RCNM model printouts are provided in Appendix C.

6.2 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to damage at the highest levels. Table G gives approximate vibration levels for particular construction activities. The data in Table G provides a reasonable estimate for a wide range of soil conditions. It should be noted that the *Transportation- and Construction Vibration Guidance Manual*, prepared by Caltrans, April 2020, references the FTA Report and some of the equipment listed in Table G, however since the FTA provides a more extensive list of equipment, the FTA vibration sources table is shown below.

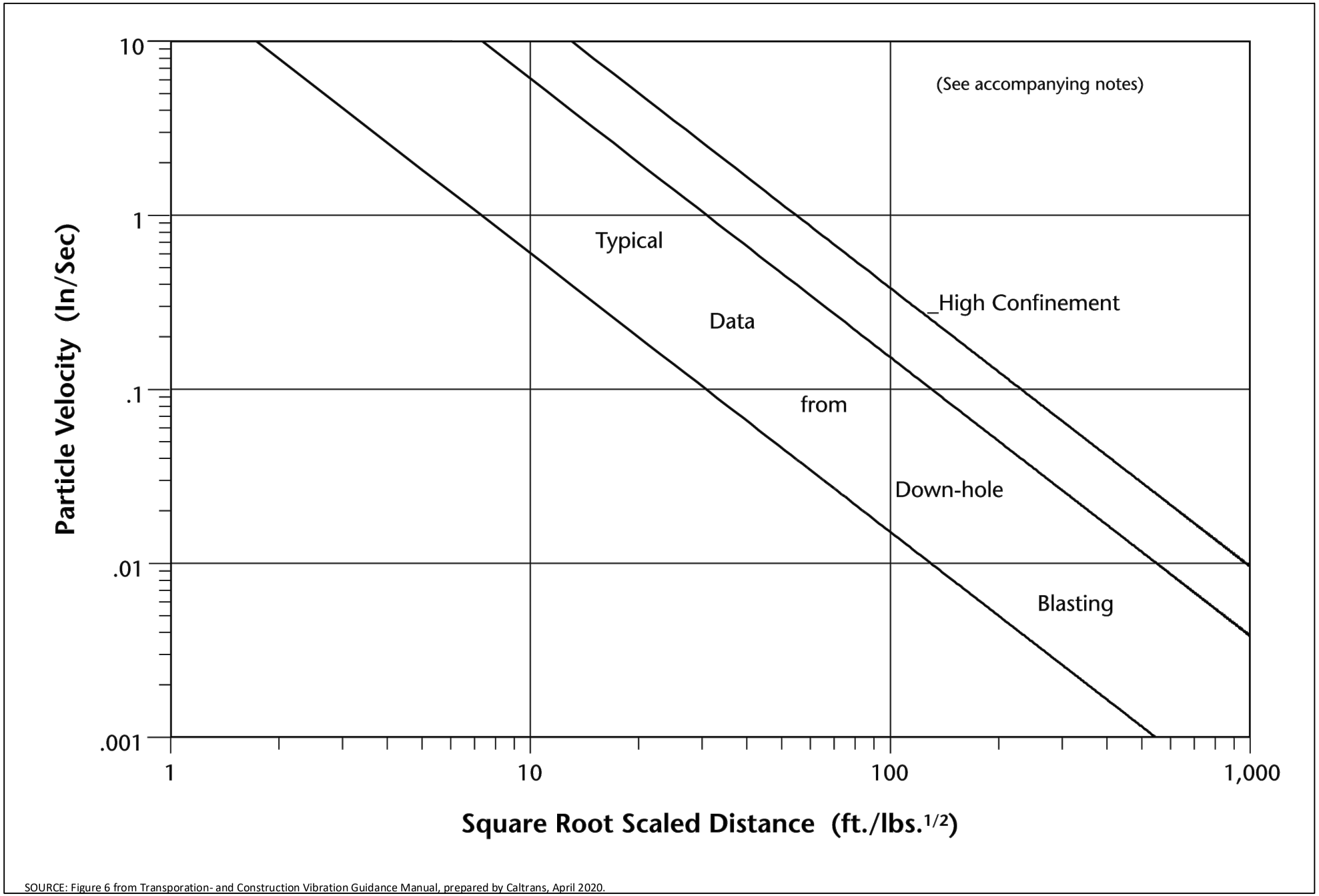
The construction-related vibration impacts from off-road equipment have been calculated through the vibration levels shown below in Table G and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table F.

For vibration created by blasting, the *Transportation- and Construction Vibration Guidance Manual*, prepared by Caltrans, April 2020, includes Figure 6 – Blast Vibration Prediction Curves (see Figure 6, below), that provide a range of vibration levels that may occur from blasting operations.

Table G – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drill		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: Federal Transit Administration, 2018.



SOURCE: Figure 6 from Transporation- and Construction Vibration Guidance Manual, prepared by Caltrans, April 2020.

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Figure 6
Caltrans Blast Vibration Curves

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the County standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of 29 acres of the 36.55-acre project site, building construction of 73 single-family homes, paving of the onsite roads and driveways, sidewalks and hardscapes, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are residents at the ranch homes located as near as 440 feet south of the project site and at the single-family homes located as near as 500 feet northeast of the project site.

General Plan Policy N 13.1 requires that construction noise impacts to be minimized on adjacent uses through acceptable practices. General Plan Policy N 13.2 requires that construction activities are limited to established hours of operation in order to mitigate the generation of excessive or adverse noise impacts on the surrounding community. Section 9.52.020(I) of the Municipal Code provides the established hours of construction operations, and details that construction activities that occurs between 6:00 a.m. and 6:00 p.m. during the months of June through September and between 7:00 a.m. and 6:00 p.m. during the months of October through May are exempt from the Noise Ordinance. General Plan Policy N 13.3 requires construction of subdivisions that are adjacent to occupied noise sensitive land uses to submit a construction-related noise mitigation plan to the County that depicts how construction noise will be mitigated through use of temporary noise fences, preferred location of equipment and use of current noise suppression technology and equipment. Project Design Feature 1 has been included in this analysis to ensure compliance with General Plan Policy N 13.3 that requires the County to review and approve a construction-related noise mitigation plan, prior to issuance of the grading permit for the proposed project. General Plan Policy 13.4 requires that all construction equipment utilize noise reduction features

(e.g. mufflers and engine shrouds) that are no less effectively than what was originally installed by the manufacturer. As detailed above, through implementation of Project Design Feature 1, construction of the proposed project would not exceed the applicable standards in the General Plan and Municipal Code.

However, the County construction noise standards do not provide any limits to the noise levels that may be created from construction activities and even with adherence to the County standards, the resultant construction noise levels may result in a significant substantial temporary noise increase to the nearby residents. In order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds detailed above in Section 4.1 have been utilized, which shows that a significant construction noise impact would occur if construction noise exceeds 80 dBA during the daytime at any of the nearby homes.

Construction noise levels to the nearby homes have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table F – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table H and the RCNM printouts are provided in Appendix C.

Table H – Construction Noise Levels at the Nearby Homes

	Construction Noise Level (dBA Leq) at Nearest:	
Construction Phase	**Ranch Homes South of Project Site[1]**	**Single Family Homes Northeast of Project Site[2]**
Site Preparation[3]	63	59
Grading[3]	64	61
Building Construction	63	60
Paving	57	54
Painting	49	46
FTA Construction Noise Threshold[4]	**80**	**80**
Exceed Thresholds?	**No**	**No**

[1] The nearest ranch homes south of the project site are located as near as 840 feet from the center of project site.
[2] The nearest single-family homes northeast of the project site are located as near as 1,240 feet from the center of project site.
[3] These phases include blasting that was analyzed based on the shortest distance from where blasting will likely occur to the nearby homes.
[4] The FTA Construction noise thresholds are detailed above in Table B.
Source: RCNM, Federal Highway Administration, 2006

Table H shows that the greatest noise impacts would occur during the grading phase with a noise level as high as 64 dBA Leq at the nearest ranch homes south of the project site and 61 dBA Leq at the nearest single-family homes northeast of the project site. All calculated construction noise levels shown in Table H are within the FTA daytime construction noise standard of 80 dBA averaged over eight hours. Therefore, through adherence to the allowable construction times detailed in Section 9.52.020(I) of the Municipal Code and through implementation of Project Design Feature 1, that requires the preparation of a construction-related noise mitigation plan, prior to the issuance of the grading plan for the proposed project, the proposed project would not create a substantial temporary increase in ambient noise levels from construction of the proposed project. Impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of 73 single-family detached homes. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite noise sources that are typical of single-family

home developments (i.e, air conditioning equipment and landscaping maintenance activities). It should be noted that Section 9.52.020(J) of the Municipal Code exempts property maintenance activities that occur between 7:00 a.m. and 8:00 p.m. from the Noise Ordinance and Section 9.52.020(L) exempt air conditioning equipment from the Noise Ordinance. It should also be noted that these onsite noise sources would not be noticeable at the nearest offsite sensitive receptors that are located over 400 feet away from the project site.

Since, the proposed homes would be located over 900 feet away from El Sobrante Road, which is the nearest major roadway to the project site, the proposed homes would not be exposed to excessive roadway noise level impacts that exceed the County noise standards for placement of new homes.

Operational Roadway Noise Impacts to Nearby Homes

Neither the General Plan nor the Municipal Code defines what constitutes a "substantial permanent increase to ambient noise levels" from project-related roadway noise increases. As such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A that shows that the project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing roadway noise levels.

Due to the small size of the project, a full traffic analysis has not been prepared for the proposed project. Access to the proposed project will utilize the same proposed access road to El Sobrante Road as TTM No. 38605, which prepared a full traffic analysis. The *Noise Impact Analysis Greentree TTM No. 38605 Residential Project,* prepared by Vista Environmental, August 23, 2024, analyzed the roadway noise impacts to the nearby homes from the generation of 1,538 daily vehicle trips from 163 single-family homes and found the greatest road noise impact of a 0.5 dBA noise increase would occur on El Sobrante Road, west of the access road, which was found to be below the +1 dB increase threshold for this road segment.

Based on the same project trip generation rate utilized for TTM No. 38605 of 9.43 daily trips per single-family home the proposed 73 single family homes would generate 689 daily trips, which is less than half of the daily trips generated by TTM No. 38605, which would result in a noise increase of around 0.2 dBA (less than half of 0.5 dBA) on El Sobrante Road, west of the access road, which would be well below the +1 dB increase threshold for this road segment. As such, operational roadway noise impacts from the proposed project would result in a less than significant impact.

Therefore, the proposed project would not create a substantial permanent increase in ambient noise levels from on-going operations of the proposed project. Impacts would be less than significant.

Level of Significance

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of 29 acres of the 36.55-acre project site, building construction of 73 single-family homes, paving of the onsite roads and driveways, sidewalks and hardscapes, and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment and from blasting activities. The nearest sensitive receptors to the project site are residents at the ranch homes located as near as 440 feet south of the project site.

Since neither the Municipal nor the General Plan provide a quantifiable vibration threshold for temporary construction activities, guidance from the *Transportation and Construction-Induced Vibration Guidance Manual*, prepared by Caltrans, April 2020, has been utilized, which defines the threshold of perception from transient sources such as off-road construction equipment at 0.25 inch per second peak particle velocity (PPV).

The primary source of off-road equipment vibration during typical construction activities would be from the operation of a bulldozer. From Table G above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest home to construction activities (440 feet away) would be 0.004 inch per second PPV. The vibration level at the nearest homes would be below the 0.25 inch per second PPV threshold detailed above. Off-road equipment vibration impacts would be less than significant.

The project applicant has stated that limited blasting may be required to remove rock outcroppings on the project site. According to Figure 6 from the *Transportation and Construction-Induced Vibration Guidance Manual*, prepared by Caltrans, April 2020 (see Figure 6, above), at 440 feet away from blasting the vibration level would range between 0.002 and 0.04 inch per second PPV. The vibration level at the nearest homes would be below the 0.25 inch per second PPV threshold detailed above. In addition, all blasting activities would be required to adhere to all applicable regulations, including Title 8 Section 5291 of the California Code of Regulations that requires the blaster to be licensed as well as provides the procedures to be followed before, during and after a blasting event to ensure safety as well as minimize blasting impacts to the nearby homes. For these reasons, blasting vibration impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of a residential community with 73 single-family homes. The on-going operation of the proposed project would not include the operation of any known vibration sources other than typical onsite vehicle operations for a residential development. Therefore, a less than significant vibration impact is anticipated from operation of the proposed project.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project may expose people residing in the project area to excessive noise levels from aircraft. The nearest airport is Riverside Airport that is located as near as 5.8 miles north of the project

site. The project site is located outside of the 60 dBA CNEL noise contours of this Airport. Therefore, the proposed homes would not be exposed to excessive aircraft noise. Impacts would be less than significant.

Level of Significance

Less than significant impact.

8.0 REFERENCES

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation- and Construction Vibration Guidance Manual*, April 2020.

County of Riverside, *A Codification of the General Ordinances of Riverside County, California,* June 10, 2025.

County of Riverside, *County of Riverside General Plan Noise Element,* December 2015.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual,* September 2018.

Urban Crossroads, *Draft Greentree (TTM No. 38605) Traffic Analysis,* October 13, 2023.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

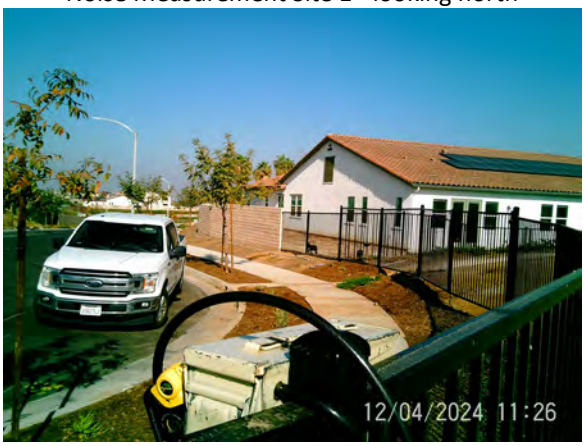
U.S. Department of Transportation, *Highway Traffic Noise: Analysis and Abatement Guidance,* December, 2011.

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Highland Grove 5 TTM No. 39011 Residential Project*, August 11, 2025.

APPENDIX A

Field Noise Measurements Photo Index

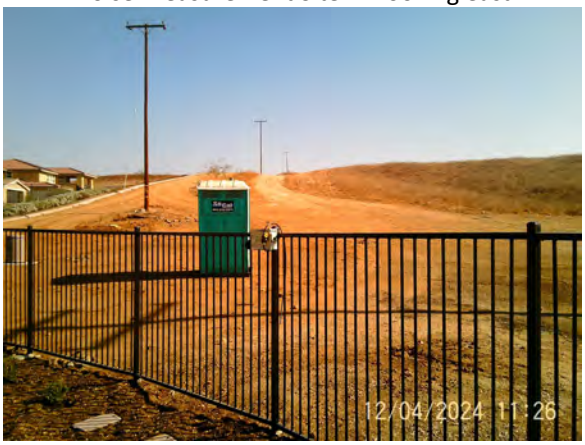
Noise Measurement Site 1 - looking north



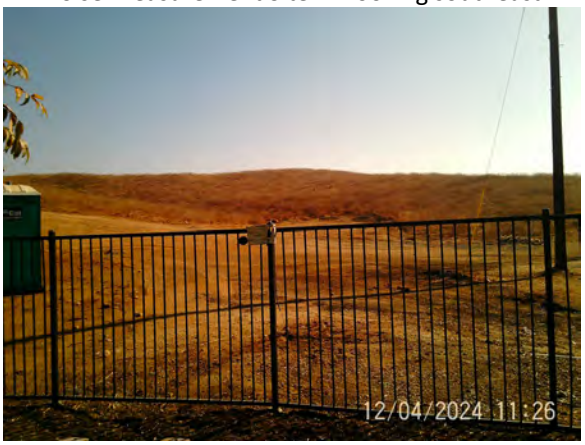
Noise Measurement Site 1 - looking northeast



Noise Measurement Site 1 - looking east



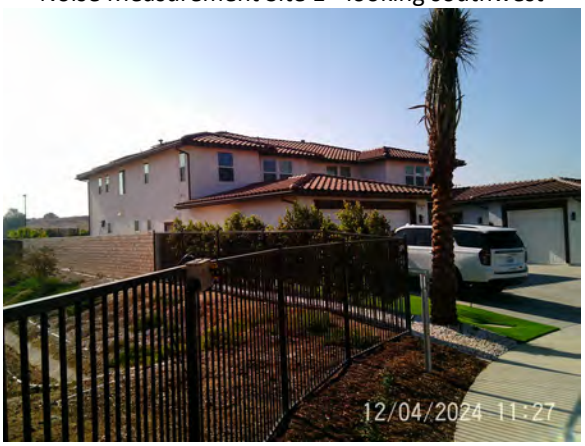
Noise Measurement Site 1 - looking southeast



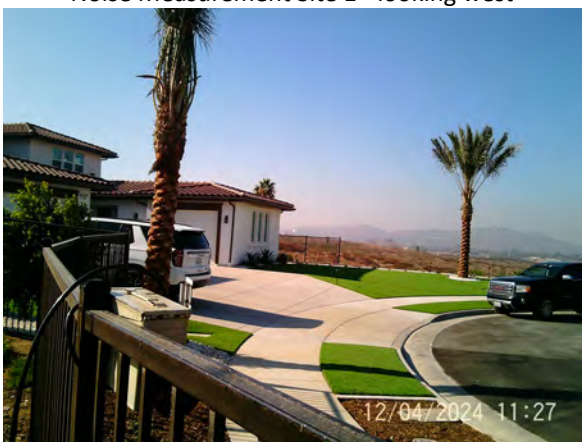
Noise Measurement Site 1 - looking south



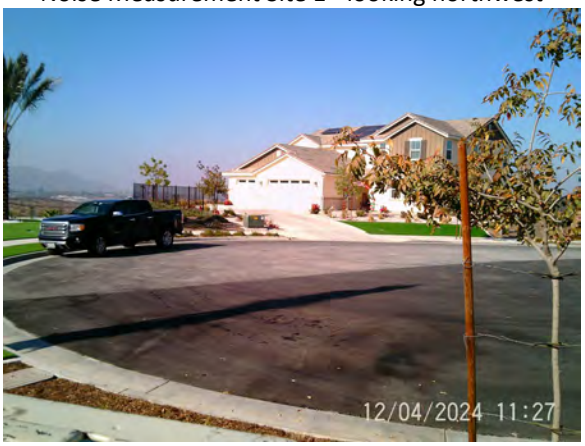
Noise Measurement Site 1 - looking southwest



Noise Measurement Site 1 - looking west



Noise Measurement Site 1 - looking northwest



Noise Measurement Site 2 - looking north



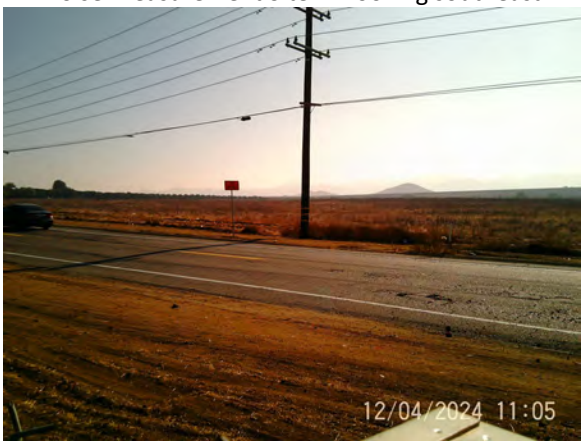
Noise Measurement Site 2 - looking northeast



Noise Measurement Site 2 - looking east



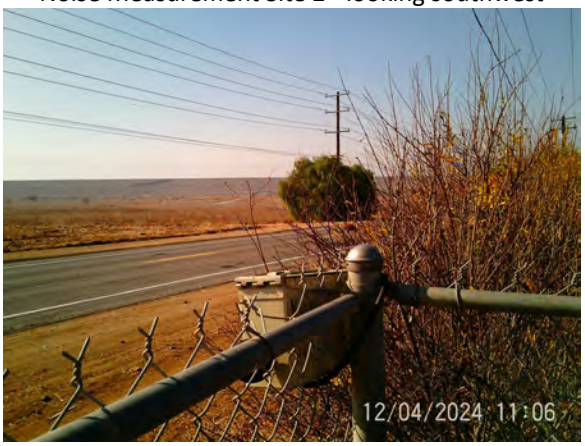
Noise Measurement Site 2 - looking southeast



Noise Measurement Site 2 - looking south



Noise Measurement Site 2 - looking southwest



Noise Measurement Site 2 - looking west



Noise Measurement Site 2 - looking northwest



Noise Measurement Site 3 - looking north



Noise Measurement Site 3 - looking northeast



Noise Measurement Site 3 - looking east



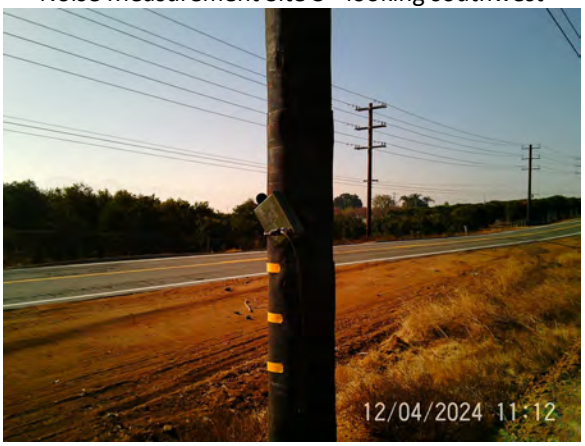
Noise Measurement Site 3 - looking southeast



Noise Measurement Site 3 - looking south



Noise Measurement Site 3 - looking southwest



Noise Measurement Site 3 - looking west



Noise Measurement Site 3 - looking northwest



APPENDIX B

Field Noise Measurements Printouts

Site 1 - Northeast of Project Site (Cambria Ct)

December 3, 2024
Sampling Time = 1 sec
Record Num = 86402
Leq = 46.1
Min = 30.0
Max = 79.2

Leq Daytime = 48.6
Freq Weighting=A
Leq Evening = 40.5
Leq Nighttime = 39.6
Ldn(24hr)= 48.6
CNEL = 48.7
Min Leq hr at 9:33 PM 35.0
Max Leq hr at 10:05 AM 57.3

Site 1 - Northeast of Project Site (Cambria Ct)

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
45.1	10:43:21		45.1	45.1
47.5	10:43:22		47.5	47.5
56.6	10:43:23		56.6	56.6
53.8	10:43:24		53.8	53.8
63.2	10:43:25		63.2	63.2
66.2	10:43:26		66.2	66.2
78.7	10:43:27		78.7	78.7
55.5	10:43:28		55.5	55.5
75.3	10:43:29		75.3	75.3
53.8	10:43:30		53.8	53.8
50.0	10:43:31		50.0	50.0
68.1	10:43:32		68.1	68.1
46.6	10:43:33		46.6	46.6
56.1	10:43:34		56.1	56.1
43.9	10:43:35		43.9	43.9
47.4	10:43:36		47.4	47.4
55.2	10:43:37		55.2	55.2
63.9	10:43:38		63.9	63.9
54.8	10:43:39		54.8	54.8
53.7	10:43:40		53.7	53.7
53.4	10:43:41		53.4	53.4
56.8	10:43:42		56.8	56.8
52.3	10:43:43		52.3	52.3
56.3	10:43:44		56.3	56.3
59.3	10:43:45		59.3	59.3
55.1	10:43:46		55.1	55.1
46.4	10:43:47		46.4	46.4
45.2	10:43:48		45.2	45.2
58.6	10:43:49		58.6	58.6
47.1	10:43:50		47.1	47.1
45.4	10:43:51		45.4	45.4
39.4	10:43:52		39.4	39.4
45.1	10:43:53		45.1	45.1
69.9	10:43:54		69.9	69.9
61.7	10:43:55		61.7	61.7
53.7	10:43:56		53.7	53.7
43.1	10:43:57		43.1	43.1
45.7	10:43:58		45.7	45.7
60.0	10:43:59		60.0	60.0
79.2	10:44:00		79.2	79.2
72.9	10:44:01		72.9	72.9
61.4	10:44:02		61.4	61.4
65.2	10:44:03		65.2	65.2
55.8	10:44:04		55.8	55.8
70.0	10:44:05		70.0	70.0
61.7	10:44:06		61.7	61.7
58.3	10:44:07		58.3	58.3
67.2	10:44:08		67.2	67.2
51.0	10:44:09		51.0	51.0
55.1	10:44:10		55.1	55.1
59.0	10:44:11		59.0	59.0
62.4	10:44:12		62.4	62.4
60.6	10:44:13		60.6	60.6
54.8	10:44:14		54.8	54.8
57.5	10:44:15		57.5	57.5
52.9	10:44:16		52.9	52.9
54.2	10:44:17		54.2	54.2
68.8	10:44:18		68.8	68.8
61.9	10:44:19		61.9	61.9
48.4	10:44:20		48.4	48.4
47.5	10:44:21		47.5	47.5
47.2	10:44:22		47.2	47.2
45.5	10:44:23		45.5	45.5
46.0	10:44:24		46.0	46.0
44.2	10:44:25		44.2	44.2
46.4	10:44:26		46.4	46.4
46.4	10:44:27		46.4	46.4
46.4	10:44:28		46.4	46.4
46.4	10:44:29		46.4	46.4
46.3	10:44:30		46.3	46.3
47.5	10:44:31		47.5	47.5
46.1	10:44:32		46.1	46.1
47.4	10:44:33		47.4	47.4
48.2	10:44:34		48.2	48.2
46.2	10:44:35		46.2	46.2
46.3	10:44:36		46.3	46.3
45.5	10:44:37		45.5	45.5
46.0	10:44:38		46.0	46.0
45.9	10:44:39		45.9	45.9
46.3	10:44:40		46.3	46.3
47.9	10:44:41		47.9	47.9
47.0	10:44:42		47.0	47.0
46.2	10:44:43		46.2	46.2
47.0	10:44:44		47.0	47.0
47.4	10:44:45		47.4	47.4
46.8	10:44:46		46.8	46.8
46.4	10:44:47		46.4	46.4
47.6	10:44:48		47.6	47.6
45.3	10:44:49		45.3	45.3
46.1	10:44:50		46.1	46.1
46.5	10:44:51		46.5	46.5
47.2	10:44:52		47.2	47.2
46.7	10:44:53		46.7	46.7
47.8	10:44:54		47.8	47.8
50.5	10:44:55		50.5	50.5
48.1	10:44:56		48.1	48.1
48.1	10:44:57		48.1	48.1
49.1	10:44:58		49.1	49.1
48.0	10:44:59		48.0	48.0
49.6	10:45:00		49.6	49.6
49.3	10:45:01		49.3	49.3
50.1	10:45:02		50.1	50.1
50.8	10:45:03		50.8	50.8
52.9	10:45:04		52.9	52.9
52.4	10:45:05		52.4	52.4
53.0	10:45:06		53.0	53.0
52.9	10:45:07		52.9	52.9
52.9	10:45:08		52.9	52.9
54.6	10:45:09		54.6	54.6
55.4	10:45:10		55.4	55.4
56.9	10:45:11		56.9	56.9
58.1	10:45:12		58.1	58.1
58.0	10:45:13		58.0	58.0
57.2	10:45:14		57.2	57.2
55.7	10:45:15		55.7	55.7
57.1	10:45:16		57.1	57.1
58.6	10:45:17		58.6	58.6
59.1	10:45:18		59.1	59.1
57.4	10:45:19		57.4	57.4
56.1	10:45:20		56.1	56.1
55.8	10:45:21		55.8	55.8
54.4	10:45:22		54.4	54.4
52.8	10:45:23		52.8	52.8
52.2	10:45:24		52.2	52.2
51.4	10:45:25		51.4	51.4
48.4	10:45:26		48.4	48.4
49.4	10:45:27		49.4	49.4
47.4	10:45:28		47.4	47.4
47.9	10:45:29		47.9	47.9
47.3	10:45:30		47.3	47.3
46.0	10:45:31		46.0	46.0
45.6	10:45:32		45.6	45.6
50.1	10:45:33		50.1	50.1
43.0	10:45:34		43.0	43.0
44.4	10:45:35		44.4	44.4
44.8	10:45:36		44.8	44.8
43.2	10:45:37		43.2	43.2
42.9	10:45:38		42.9	42.9
42.3	10:45:39		42.3	42.3
42.0	10:45:40		42.0	42.0
42.0	10:45:41		42.0	42.0
47.4	10:45:42		47.4	47.4
41.5	10:45:43		41.5	41.5
39.6	10:45:44		39.6	39.6
39.2	10:45:45		39.2	39.2
38.6	10:45:46		38.6	38.6
38.9	10:45:47		38.9	38.9
49.1	10:45:48		49.1	49.1
45.1	10:45:49		45.1	45.1
49.5	10:45:50		49.5	49.5
46.2	10:45:51		46.2	46.2
45.1	10:45:52		45.1	45.1
43.4	10:45:53		43.4	43.4
43.4	10:45:54		43.4	43.4
40.2	10:45:55		40.2	40.2
39.5	10:45:56		39.5	39.5
39.9	10:45:57		39.9	39.9
39.9	10:45:58		39.9	39.9
39.0	10:45:59		39.0	39.0
39.4	10:46:00		39.4	39.4
38.2	10:46:01		38.2	38.2
37.4	10:46:02		37.4	37.4
37.0	10:46:03		37.0	37.0
36.9	10:46:04		36.9	36.9

Site 2 - Southwest of Project Site (El Sobrante Rd at Access Rd)

December 3, 2024 10:56:56 AM
Sampling Time = 1 sec
Record Num = 86402
Leq = 71.6
Min = 31.4
Max = 96.8

Leq Daytime = 73.0
Freq Weighting=A
Leq Evening = 69.5
Leq Nighttime = 70.7
Ldn(24hr)= 76.5
CNEL = 76.7
Min Leq hr at 1:13 AM 62.3
Max Leq hr at 7:40 AM 74.7

Site 2 - Southwest of Project Site (El Sobrante Rd at Access Rd)

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
51.2	10:56:56		51.2	51.2
48.6	10:56:57		48.6	48.6
50.6	10:56:58		50.6	50.6
51.2	10:56:59		51.2	51.2
57.3	10:57:00		57.3	57.3
48.2	10:57:01		48.2	48.2
69.1	10:57:02		69.1	69.1
83.4	10:57:03		83.4	83.4
66.5	10:57:04		66.5	66.5
58.2	10:57:05		58.2	58.2
51.0	10:57:06		51.0	51.0
61.7	10:57:07		61.7	61.7
55.3	10:57:08		55.3	55.3
59.9	10:57:09		59.9	59.9
65.0	10:57:10		65.0	65.0
75.8	10:57:11		75.8	75.8
82.5	10:57:12		82.5	82.5
75.3	10:57:13		75.3	75.3
73.0	10:57:14		73.0	73.0
76.1	10:57:15		76.1	76.1
77.0	10:57:16		77.0	77.0
73.6	10:57:17		73.6	73.6
70.1	10:57:18		70.1	70.1
74.7	10:57:19		74.7	74.7
78.6	10:57:20		78.6	78.6
69.2	10:57:21		69.2	69.2
63.9	10:57:22		63.9	63.9
63.2	10:57:23		63.2	63.2
62.8	10:57:24		62.8	62.8
61.9	10:57:25		61.9	61.9
61.0	10:57:26		61.0	61.0
64.3	10:57:27		64.3	64.3
57.5	10:57:28		57.5	57.5
61.2	10:57:29		61.2	61.2
56.8	10:57:30		56.8	56.8
59.7	10:57:31		59.7	59.7
75.0	10:57:32		75.0	75.0
75.3	10:57:33		75.3	75.3
66.9	10:57:34		66.9	66.9
70.4	10:57:35		70.4	70.4
77.2	10:57:36		77.2	77.2
76.2	10:57:37		76.2	76.2
79.2	10:57:38		79.2	79.2
75.8	10:57:39		75.8	75.8
74.9	10:57:40		74.9	74.9
74.0	10:57:41		74.0	74.0
70.9	10:57:42		70.9	70.9
75.7	10:57:43		75.7	75.7
72.7	10:57:44		72.7	72.7
72.6	10:57:45		72.6	72.6
70.8	10:57:46		70.8	70.8
72.3	10:57:47		72.3	72.3
77.4	10:57:48		77.4	77.4
78.0	10:57:49		78.0	78.0
79.8	10:57:50		79.8	79.8
79.0	10:57:51		79.0	79.0
76.0	10:57:52		76.0	76.0
70.8	10:57:53		70.8	70.8
67.1	10:57:54		67.1	67.1
65.1	10:57:55		65.1	65.1
64.1	10:57:56		64.1	64.1
61.9	10:57:57		61.9	61.9
63.9	10:57:58		63.9	63.9
68.7	10:57:59		68.7	68.7
79.0	10:58:00		79.0	79.0
77.4	10:58:01		77.4	77.4
68.4	10:58:02		68.4	68.4
64.9	10:58:03		64.9	64.9
67.6	10:58:04		67.6	67.6
71.1	10:58:05		71.1	71.1
75.7	10:58:06		75.7	75.7
71.8	10:58:07		71.8	71.8
69.0	10:58:08		69.0	69.0
63.1	10:58:09		63.1	63.1
60.4	10:58:10		60.4	60.4
59.6	10:58:11		59.6	59.6
59.3	10:58:12		59.3	59.3
60.9	10:58:13		60.9	60.9
67.9	10:58:14		67.9	67.9
70.1	10:58:15		70.1	70.1
71.0	10:58:16		71.0	71.0
67.3	10:58:17		67.3	67.3
62.5	10:58:18		62.5	62.5
70.1	10:58:19		70.1	70.1
66.0	10:58:20		66.0	66.0
69.8	10:58:21		69.8	69.8
77.4	10:58:22		77.4	77.4
74.5	10:58:23		74.5	74.5
70.4	10:58:24		70.4	70.4
67.2	10:58:25		67.2	67.2
64.6	10:58:26		64.6	64.6
60.5	10:58:27		60.5	60.5
64.7	10:58:28		64.7	64.7
60.4	10:58:29		60.4	60.4
69.3	10:58:30		69.3	69.3
69.2	10:58:31		69.2	69.2
69.5	10:58:32		69.5	69.5
86.0	10:58:33		86.0	86.0
64.1	10:58:34		64.1	64.1
61.2	10:58:35		61.2	61.2
57.6	10:58:36		57.6	57.6
57.6	10:58:37		57.6	57.6
58.5	10:58:38		58.5	58.5
58.8	10:58:39		58.8	58.8
61.1	10:58:40		61.1	61.1
65.9	10:58:41		65.9	65.9
71.0	10:58:42		71.0	71.0
77.2	10:58:43		77.2	77.2
75.5	10:58:44		75.5	75.5
67.6	10:58:45		67.6	67.6
63.2	10:58:46		63.2	63.2
59.0	10:58:47		59.0	59.0
56.5	10:58:48		56.5	56.5
58.8	10:58:49		58.8	58.8
62.6	10:58:50		62.6	62.6
67.1	10:58:51		67.1	67.1
72.9	10:58:52		72.9	72.9
78.4	10:58:53		78.4	78.4
78.5	10:58:54		78.5	78.5
74.8	10:58:55		74.8	74.8
79.2	10:58:56		79.2	79.2
75.8	10:58:57		75.8	75.8
74.8	10:58:58		74.8	74.8
72.3	10:58:59		72.3	72.3
73.8	10:59:00		73.8	73.8
75.6	10:59:01		75.6	75.6
75.9	10:59:02		75.9	75.9
74.0	10:59:03		74.0	74.0
66.4	10:59:04		66.4	66.4
61.9	10:59:05		61.9	61.9
59.5	10:59:06		59.5	59.5
58.8	10:59:07		58.8	58.8
57.3	10:59:08		57.3	57.3
55.1	10:59:09		55.1	55.1
52.9	10:59:10		52.9	52.9
51.8	10:59:11		51.8	51.8
51.2	10:59:12		51.2	51.2
53.3	10:59:13		53.3	53.3
55.1	10:59:14		55.1	55.1
56.7	10:59:15		56.7	56.7
58.5	10:59:16		58.5	58.5
61.1	10:59:17		61.1	61.1
65.4	10:59:18		65.4	65.4
71.1	10:59:19		71.1	71.1
77.3	10:59:20		77.3	77.3
80.8	10:59:21		80.8	80.8
72.7	10:59:22		72.7	72.7
66.2	10:59:23		66.2	66.2
64.1	10:59:24		64.1	64.1
62.4	10:59:25		62.4	62.4
60.6	10:59:26		60.6	60.6
60.4	10:59:27		60.4	60.4
59.5	10:59:28		59.5	59.5
59.8	10:59:29		59.8	59.8
59.7	10:59:30		59.7	59.7
63.9	10:59:31		63.9	63.9
69.1	10:59:32		69.1	69.1
74.7	10:59:33		74.7	74.7
74.6	10:59:34		74.6	74.6
77.9	10:59:35		77.9	77.9
78.5	10:59:36		78.5	78.5
79.8	10:59:37		79.8	79.8
78.7	10:59:38		78.7	78.7
77.7	10:59:39		77.7	77.7

Site 3 - Southeast Side of Project Site (El Sobrante Rd)

December 3, 2024 11:03:42 AM
Sampling Time = 1 sec
Record Num = 86403
Leq = 73.5
Min = 30.0
Max = 96.9

Leq Daytime = 74.9
Freq Weighting=A
Leq Evening = 72.0
Leq Nighttime = 72.6
Ldn(24hr)= 78.2
CNEL = 78.4
Min Leq hr at 1:13 AM 64.3
Max Leq hr at 7:33 AM 76.3

Site 3 - Southeast Side of Project Site (El Sobrante Rd)

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
51.4	11:03:42		51.4	51.4
60.1	11:03:43		60.1	60.1
61.6	11:03:44		61.6	61.6
66.7	11:03:45		66.7	66.7
80.9	11:03:46		80.9	80.9
68.2	11:03:47		68.2	68.2
69.9	11:03:48		69.9	69.9
68.5	11:03:49		68.5	68.5
45.0	11:03:50		45.0	45.0
43.3	11:03:51		43.3	43.3
42.0	11:03:52		42.0	42.0
44.5	11:03:53		44.5	44.5
45.1	11:03:54		45.1	45.1
45.3	11:03:55		45.3	45.3
42.3	11:03:56		42.3	42.3
41.1	11:03:57		41.1	41.1
55.4	11:03:58		55.4	55.4
61.3	11:03:59		61.3	61.3
66.7	11:04:00		66.7	66.7
59.5	11:04:01		59.5	59.5
57.2	11:04:02		57.2	57.2
60.3	11:04:03		60.3	60.3
60.8	11:04:04		60.8	60.8
61.8	11:04:05		61.8	61.8
65.9	11:04:06		65.9	65.9
70.3	11:04:07		70.3	70.3
72.4	11:04:08		72.4	72.4
65.3	11:04:09		65.3	65.3
62.2	11:04:10		62.2	62.2
63.4	11:04:11		63.4	63.4
53.9	11:04:12		53.9	53.9
64.7	11:04:13		64.7	64.7
62.4	11:04:14		62.4	62.4
74.2	11:04:15		74.2	74.2
71.7	11:04:16		71.7	71.7
63.9	11:04:17		63.9	63.9
66.0	11:04:18		66.0	66.0
61.2	11:04:19		61.2	61.2
58.1	11:04:20		58.1	58.1
53.1	11:04:21		53.1	53.1
57.7	11:04:22		57.7	57.7
62.9	11:04:23		62.9	62.9
54.4	11:04:24		54.4	54.4
52.4	11:04:25		52.4	52.4
48.9	11:04:26		48.9	48.9
50.5	11:04:27		50.5	50.5
51.4	11:04:28		51.4	51.4
51.6	11:04:29		51.6	51.6
51.3	11:04:30		51.3	51.3
46.6	11:04:31		46.6	46.6
45.1	11:04:32		45.1	45.1
51.8	11:04:33		51.8	51.8
51.4	11:04:34		51.4	51.4
55.3	11:04:35		55.3	55.3
58.3	11:04:36		58.3	58.3
53.8	11:04:37		53.8	53.8
61.8	11:04:38		61.8	61.8
65.5	11:04:39		65.5	65.5
68.8	11:04:40		68.8	68.8
69.6	11:04:41		69.6	69.6
76.5	11:04:42		76.5	76.5
73.2	11:04:43		73.2	73.2
66.7	11:04:44		66.7	66.7
62.5	11:04:45		62.5	62.5
59.4	11:04:46		59.4	59.4
54.2	11:04:47		54.2	54.2
52.0	11:04:48		52.0	52.0
53.7	11:04:49		53.7	53.7
56.3	11:04:50		56.3	56.3
62.4	11:04:51		62.4	62.4
68.8	11:04:52		68.8	68.8
78.3	11:04:53		78.3	78.3
75.6	11:04:54		75.6	75.6
65.8	11:04:55		65.8	65.8
61.9	11:04:56		61.9	61.9
58.1	11:04:57		58.1	58.1
55.9	11:04:58		55.9	55.9
54.3	11:04:59		54.3	54.3
55.5	11:05:00		55.5	55.5
58.0	11:05:01		58.0	58.0
61.5	11:05:02		61.5	61.5
66.7	11:05:03		66.7	66.7
74.0	11:05:04		74.0	74.0
72.4	11:05:05		72.4	72.4
75.9	11:05:06		75.9	75.9
78.8	11:05:07		78.8	78.8
81.9	11:05:08		81.9	81.9
70.6	11:05:09		70.6	70.6
64.3	11:05:10		64.3	64.3
59.3	11:05:11		59.3	59.3
58.5	11:05:12		58.5	58.5
55.9	11:05:13		55.9	55.9
56.6	11:05:14		56.6	56.6
57.4	11:05:15		57.4	57.4
59.6	11:05:16		59.6	59.6
65.8	11:05:17		65.8	65.8
73.5	11:05:18		73.5	73.5
78.8	11:05:19		78.8	78.8
76.9	11:05:20		76.9	76.9
81.3	11:05:21		81.3	81.3
71.4	11:05:22		71.4	71.4
66.5	11:05:23		66.5	66.5
63.0	11:05:24		63.0	63.0
58.2	11:05:25		58.2	58.2
55.0	11:05:26		55.0	55.0
52.6	11:05:27		52.6	52.6
52.0	11:05:28		52.0	52.0
50.7	11:05:29		50.7	50.7
51.5	11:05:30		51.5	51.5
51.0	11:05:31		51.0	51.0
50.9	11:05:32		50.9	50.9
51.1	11:05:33		51.1	51.1
56.2	11:05:34		56.2	56.2
52.6	11:05:35		52.6	52.6
56.8	11:05:36		56.8	56.8
62.0	11:05:37		62.0	62.0
69.5	11:05:38		69.5	69.5
75.0	11:05:39		75.0	75.0
78.2	11:05:40		78.2	78.2
80.8	11:05:41		80.8	80.8
82.9	11:05:42		82.9	82.9
78.9	11:05:43		78.9	78.9
78.1	11:05:44		78.1	78.1
80.8	11:05:45		80.8	80.8
80.4	11:05:46		80.4	80.4
83.4	11:05:47		83.4	83.4
82.7	11:05:48		82.7	82.7
79.4	11:05:49		79.4	79.4
85.4	11:05:50		85.4	85.4
82.1	11:05:51		82.1	82.1
74.7	11:05:52		74.7	74.7
67.5	11:05:53		67.5	67.5
64.0	11:05:54		64.0	64.0
63.0	11:05:55		63.0	63.0
59.0	11:05:56		59.0	59.0
56.8	11:05:57		56.8	56.8
55.1	11:05:58		55.1	55.1
53.0	11:05:59		53.0	53.0
51.2	11:06:00		51.2	51.2
49.7	11:06:01		49.7	49.7
49.4	11:06:02		49.4	49.4
50.2	11:06:03		50.2	50.2
49.3	11:06:04		49.3	49.3
50.0	11:06:05		50.0	50.0
49.9	11:06:06		49.9	49.9
50.5	11:06:07		50.5	50.5
53.3	11:06:08		53.3	53.3
57.8	11:06:09		57.8	57.8
61.3	11:06:10		61.3	61.3
67.4	11:06:11		67.4	67.4
75.6	11:06:12		75.6	75.6
73.5	11:06:13		73.5	73.5
64.9	11:06:14		64.9	64.9
62.3	11:06:15		62.3	62.3
56.6	11:06:16		56.6	56.6
53.9	11:06:17		53.9	53.9
47.1	11:06:18		47.1	47.1
45.7	11:06:19		45.7	45.7
43.1	11:06:20		43.1	43.1
41.9	11:06:21		41.9	41.9
44.0	11:06:22		44.0	44.0
40.2	11:06:23		40.2	40.2
39.0	11:06:24		39.0	39.0
39.7	11:06:25		39.7	39.7

APPENDIX C

RCNM Model Construction Noise Calculation Printouts

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/12/2025
Case Description: Highland Grove 5 TTM No. 39011 - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Ranch Homes to South	Residential	73.0	73.0	70.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	840	0
Dozer	No	40		81.7	840	0
Dozer	No	40		81.7	840	0
Backhoe	No	40		77.6	840	0
Front End Loader	No	40		79.1	840	0
Tractor	No	40	84		840	0
Tractor	No	40	84		840	0
Blasting	Yes	1	94		440	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Dozer		57.2	53.2	N/A	N/A	N/A	N/A
Dozer		57.2	53.2	N/A	N/A	N/A	N/A
Dozer		57.2	53.2	N/A	N/A	N/A	N/A
Backhoe		53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader		54.6	50.6	N/A	N/A	N/A	N/A
Tractor		59.5	55.5	N/A	N/A	N/A	N/A
Tractor		59.5	55.5	N/A	N/A	N/A	N/A
Blasting		75.1	55.1	N/A	N/A	N/A	N/A
	Total	**75**	**63**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/12/2025
Case Description: Highland Grove 5 TTM No. 39011 - Site Preparation

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-Family Homes to NE	Residential	48.6	48.6	39.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1200	0
Dozer	No	40		81.7	1200	0
Dozer	No	40		81.7	1200	0
Backhoe	No	40		77.6	1200	0
Front End Loader	No	40		79.1	1200	0
Tractor	No	40	84		1200	0
Tractor	No	40	84		1200	0
Blasting	Yes	1	94		850	0

		Calculated (dBA)		Results Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Dozer		54.1	50.1	N/A	N/A	N/A	N/A
Dozer		54.1	50.1	N/A	N/A	N/A	N/A
Dozer		54.1	50.1	N/A	N/A	N/A	N/A
Backhoe		50.0	46.0	N/A	N/A	N/A	N/A
Front End Loader		51.5	47.5	N/A	N/A	N/A	N/A
Tractor		56.4	52.4	N/A	N/A	N/A	N/A
Tractor		56.4	52.4	N/A	N/A	N/A	N/A
Blasting		69.4	49.4	N/A	N/A	N/A	N/A
	Total	**69**	**59**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/12/2025
Case Description: Highland Grove 5 TTM No. 39011 - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Ranch Homes to South	Residential	73.0	73.0	70.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	840	0
Excavator	No	40		80.7	840	0
Grader	No	40	85		840	0
Dozer	No	40		81.7	840	0
Scraper	No	40		83.6	840	0
Scraper	No	40		83.6	840	0
Front End Loader	No	40		79.1	840	0
Tractor	No	40	84		840	0
Blasting	Yes	1	94		440	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Excavator	56.2	52.2	N/A	N/A	N/A	N/A
Excavator	56.2	52.2	N/A	N/A	N/A	N/A
Grader	60.5	56.5	N/A	N/A	N/A	N/A
Dozer	57.2	53.2	N/A	N/A	N/A	N/A
Scraper	59.1	55.1	N/A	N/A	N/A	N/A
Scraper	59.1	55.1	N/A	N/A	N/A	N/A
Front End Loader	54.6	50.6	N/A	N/A	N/A	N/A
Tractor	59.5	55.5	N/A	N/A	N/A	N/A
Blasting	75.1	55.1	N/A	N/A	N/A	N/A
Total	**75**	**64**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/12/2025
Case Description: Highland Grove 5 TTM No. 39011 - Grading

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-Family Homes to NE	Residential	48.6	48.6	39.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	1200	0
Excavator	No	40		80.7	1200	0
Grader	No	40	85		1200	0
Dozer	No	40		81.7	1200	0
Scraper	No	40		83.6	1200	0
Scraper	No	40		83.6	1200	0
Front End Loader	No	40		79.1	1200	0
Tractor	No	40	84		1200	0
Blasting	Yes	1	94		850	0

		Calculated (dBA)		Results Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Excavator		53.1	49.1	N/A	N/A	N/A	N/A
Excavator		53.1	49.1	N/A	N/A	N/A	N/A
Grader		57.4	53.4	N/A	N/A	N/A	N/A
Dozer		54.1	50.1	N/A	N/A	N/A	N/A
Scraper		56.0	52.0	N/A	N/A	N/A	N/A
Scraper		56.0	52.0	N/A	N/A	N/A	N/A
Front End Loader		51.5	47.5	N/A	N/A	N/A	N/A
Tractor		56.4	52.4	N/A	N/A	N/A	N/A
Blasting		69.4	49.4	N/A	N/A	N/A	N/A
	Total	**69**	**61**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/13/2025
Case Description: Highland Grove 5 TTM No. 39011 - Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Ranch Homes to South	Residential	73.0	73.0	70.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	840	0
Gradall	No	40		83.4	840	0
Gradall	No	40		83.4	840	0
Gradall	No	40		83.4	840	0
Generator	No	50		80.6	840	0
Backhoe	No	40		77.6	840	0
Front End Loader	No	40		79.1	840	0
Tractor	No	40	84		840	0
Welder / Torch	No	40		74	840	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Crane		56.0	48.1	N/A	N/A	N/A	N/A
Gradall		58.9	54.9	N/A	N/A	N/A	N/A
Gradall		58.9	54.9	N/A	N/A	N/A	N/A
Gradall		58.9	54.9	N/A	N/A	N/A	N/A
Generator		56.1	53.1	N/A	N/A	N/A	N/A
Backhoe		53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader		54.6	50.6	N/A	N/A	N/A	N/A
Tractor		59.5	55.5	N/A	N/A	N/A	N/A
Welder / Torch		49.5	45.5	N/A	N/A	N/A	N/A
	Total	**60**	**63**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/13/2025
Case Description: Highland Grove 5 TTM No. 39011 - Building Construction

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-Family Homes to NE	Residential	48.6	48.6	39.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1200	0
Gradall	No	40		83.4	1200	0
Gradall	No	40		83.4	1200	0
Gradall	No	40		83.4	1200	0
Generator	No	50		80.6	1200	0
Backhoe	No	40		77.6	1200	0
Front End Loader	No	40		79.1	1200	0
Tractor	No	40	84		1200	0
Welder / Torch	No	40		74	1200	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Crane		53.1	49.1	N/A	N/A	N/A	N/A
Gradall		53.1	49.1	N/A	N/A	N/A	N/A
Gradall		57.4	53.4	N/A	N/A	N/A	N/A
Gradall		54.1	50.1	N/A	N/A	N/A	N/A
Generator		56.0	52.0	N/A	N/A	N/A	N/A
Backhoe		56.0	52.0	N/A	N/A	N/A	N/A
Front End Loader		51.5	47.5	N/A	N/A	N/A	N/A
Tractor		56.4	52.4	N/A	N/A	N/A	N/A
Welder / Torch		66.4	46.4	N/A	N/A	N/A	N/A
	Total	**66**	**60**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/13/2025
Case Description: Highland Grove 5 TTM No. 39011 - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Ranch Homes to South	Residential	73	73	70.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	840	0
Paver	No	50		77.2	840	0
Paver	No	50		77.2	840	0
Paver	No	50		77.2	840	0
Roller	No	20		80	840	0
Roller	No	20		80	840	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq
Paver	52.7	49.7	N/A	N/A	N/A	N/A
Paver	52.7	49.7	N/A	N/A	N/A	N/A
Paver	52.7	49.7	N/A	N/A	N/A	N/A
Paver	52.7	49.7	N/A	N/A	N/A	N/A
Roller	55.5	48.5	N/A	N/A	N/A	N/A
Roller	55.5	48.5	N/A	N/A	N/A	N/A
Total	**56**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/13/2025
Case Description: Highland Grove 5 TTM No. 39011 - Paving

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-Family Homes to NE	Residential	48.6	48.6	39.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	1200	0
Paver	No	50		77.2	1200	0
Paver	No	50		77.2	1200	0
Paver	No	50		77.2	1200	0
Roller	No	20		80	1200	0
Roller	No	20		80	1200	0

		Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Paver		49.6	47	N/A	N/A	N/A	N/A
Paver		49.6	46.6	N/A	N/A	N/A	N/A
Paver		49.6	46.6	N/A	N/A	N/A	N/A
Paver		49.6	46.6	N/A	N/A	N/A	N/A
Roller		52.4	45.4	N/A	N/A	N/A	N/A
Roller		52.4	45.4	N/A	N/A	N/A	N/A
	Total	**52**	**54**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/13/2025
Case Description: Highland Grove 5 TTM No. 39011 - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Ranch Homes to South	Residential	73.0	73.0	70.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	840	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Compressor (air)		53.2	49.2	N/A	N/A	N/A	N/A
	Total	**53**	**49**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-Family Homes to NE	Residential	48.6	48.6	39.6

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1200	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Compressor (air)		50.1	46.1	N/A	N/A	N/A	N/A
	Total	**50**	**46**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.