

# Noise and Vibration Report

## Terravita Residential Development

Prepared for | John Stack  
Kingsbarn Realty Capital  
1645 Village Center Circle, Suite 200  
Las Vegas, Nevada 89134  
T: 702.454.9000

Prepared by | Psomas  
3 Hutton Centre Drive, Suite 200  
Santa Ana, California 92707  
T: 714.751.7373

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**Attachment**

- A – Noise Measurement Data
- B – Construction Noise and Vibration Calculations

**Acronyms**

CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted Decibels
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HUD	Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
L <sub>dn</sub>	Day-Night Sound Level
L <sub>eq</sub>	Equivalent Sound Level
L <sub>max</sub>	Maximum Sound Level
OSHA	Occupational Safety and Health Administration
ONAC	Office of Noise Abatement and Control
PPV	Peak Particle Velocity
RCNM	Roadway Construction Noise Model
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VdB	Vibration Decibels

## **1.0 INTRODUCTION**

This Technical Report presents the results of the noise and vibration analysis for the proposed Terravita Project located at 23272 Mill Creek Drive, 23282 Mill Creek Drive, 23382 Mill Creek Drive, 23422 Mill Creek Drive, 24411 Ridge Route Drive, and 24461 Ridge Route Drive (Assessor Parcel Numbers 588-141-11, 588-141-12, 588-161-09, 588-162-02, 588-162-03) in the City of Laguna Hills, California (hereinafter referred to as the “Project”). This analysis addresses the potential noise and vibration impacts associated with the Project in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code §21000 et seq.) and the State CEQA Guidelines (California Code of Regulations, Title 14, §15000 et seq.).

### **1.1 PROJECT DESCRIPTION AND SETTING**

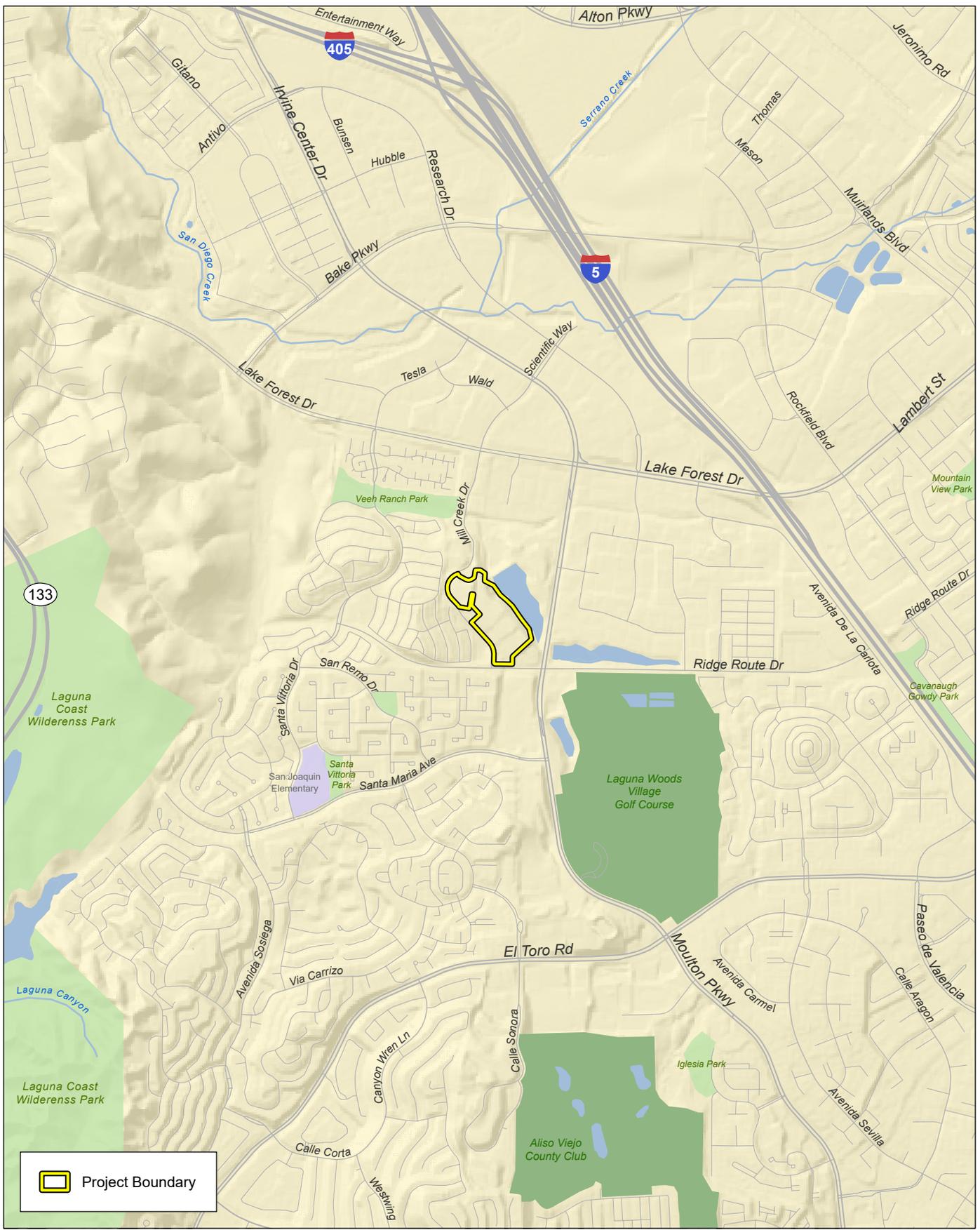
#### **1.1.1 Project Location and Setting**

The Project site is situated within the northern portion of the City of Laguna Hills at the northeast corner of the intersection of Ridge Route Drive and Mill Creek Road. Exhibits 1 and 2 show the Project’s location in a regional and local context. The Project site is currently occupied by 285,061 square feet of general commercial/office uses. Residential uses are located to the west and southwest of the Project site, while commercial uses abut the site to the north and southeast. In addition, Veeh Reservoir abuts the site to the east. Places of worship are located further east/northeast. Lastly, additional commercial uses occupy the frontage along the south side of Ridge Route Drive.

#### **1.1.2 Project Description**

The Project is a request to construct a total of 464 dwelling units on an 18.51-acre site. The Project would have a density of 25 dwelling units per acre (du/ac). Of the total number of units proposed, 254 would consist of attached single-family units and 210 would consist of multifamily units. The single-family units include duets (46 units), duplexes (108 units), and triplexes (108 units), all three stories in height. Meanwhile, the multifamily building would have a height of five stories, with the 210 apartment units wrapped around a parking structure. A total of 24 of the total units would be restricted for very low-income households. Lastly, up to 672 parking spaces would be provided. Exhibit 3 shows the proposed site plan for the Project.

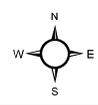




 Project Boundary

### Local Vicinity

*Terravita Project*



### Exhibit 2

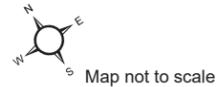


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# Site Plan

Terravita Project



## 2.0 NOISE AND VIBRATION ANALYSIS

### 2.1 BACKGROUND

#### 2.1.1 Characteristics of Noise

“Sound” is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. “Noise” is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment (Caltrans 2013).

Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort. Table 1: Noise Levels for Common Events, shows the relationship of various noise levels in dBA to commonly experienced noise events.

**TABLE 1  
NOISE LEVELS FOR COMMON EVENTS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet fly-over at 300 m (1,000 ft)	100	
Gas lawn mower at 1 m (3 ft)	90	
Diesel truck at 15 m (50 ft) at 80 km/hr (50 mph)	80	Food blender at 1 m (3 ft); garbage disposal at 1 m (3 ft)
Noisy urban area, daytime gas lawn mower at 30 m (100 ft)	70	Vacuum cleaner at 3 m (10 ft)
Commercial area, heavy traffic at 90 m (300 ft)	60	Normal speech at 1 m (3 ft)
Quiet urban daytime	50	Large business office, dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)

**TABLE 1**  
**NOISE LEVELS FOR COMMON EVENTS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing
dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour		
Source: Caltrans 2013.		

Two equal noise sources, when heard together, do not “sound twice as loud” as one of the sources. As stated above, a doubling of noise sources results in a noise level increase of 3 dB. It is widely accepted that (1) the average healthy ear can barely perceive changes of a 3 dB increase or decrease; (2) a change of 5 dB is readily perceptible; and (3) an increase (decrease) of 10 dB sounds twice (half) as loud (Caltrans 2013).

From the source to the receiver, noise changes both in the level and frequency spectrum. The most obvious change is the decrease in noise level as the distance from the source increases. Sound from a small, localized source (approximating a “point” source) radiates uniformly outward as it travels away from the source in a spherical pattern. For point sources, such as heating, ventilation, and air conditioning (HVAC) units or construction equipment, the sound level attenuates (or drops off) at a rate of 6 dB for each doubling of distance (i.e., if the noise level is 70 dBA at 25 feet, it is 64 dBA at 50 feet). Vehicle movement on a road makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The sound level attenuates or drops off at a rate of 3 dB per doubling of distance for line sources.

A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain or landform features as well as man-made features (e.g., buildings and walls) can significantly alter noise exposure levels. For a noise barrier to work, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 dB.

Several rating scales (or noise “metrics”) exist to analyze effects of noise on a community. These scales include the equivalent noise level ( $L_{eq}$ ), including  $L_{max}$  and  $L_{min}$ , which are respectively the highest and lowest A-weighted sound levels that occur during a noise event, and the Community Noise Equivalent Level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA  $L_{eq}$ , which is the equivalent noise level for that period of time. The period of time averaging may be specified; for example,  $L_{eq(3)}$  would be a three-hour average. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a one-hour period.

To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24-hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into three periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned an approximately 5-dB penalty, and the nighttime sound levels are assigned a 10-dB penalty prior to averaging with daytime hourly sound levels.

### **2.1.2 Characteristics of Vibration**

Vibration is an oscillatory motion through a solid medium in which the amplitude of the motion can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is described as the velocity, and the rate of change of the speed is described as the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction of a project, the operation of construction equipment can cause ground borne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. Analysis of this type of vibration is best measured in velocity and acceleration.

The three main wave types of concern in the propagation of groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation (known as retrograde elliptical).
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

The peak particle velocity (PPV) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The PPV is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The PPV is more appropriate for evaluating potential building damage and also used for evaluating human response.

The units for PPV are normally inches per second (in/sec). Often, vibration is presented and discussed in VdB units in order to compress the range of numbers required to describe the

vibration. In this study, all PPV velocity levels are in in/sec and all vibration levels are in VdB relative to one microinch per second.

The threshold of human perception is approximately 0.3 in/sec PPV. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Manmade vibration problems are, therefore, usually confined to short distances (500 feet or less) from the source.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures and pile driving generate the highest vibrations. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions (FTA 2018).

## **2.2 REGULATORY SETTING**

### **2.2.1 Noise**

#### ***Federal***

##### U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) has set a goal of 45 dBA  $L_{dn}$  as a desirable maximum interior noise standard for residential units developed under HUD funding (HUD 1984). While HUD does not specify acceptable exterior noise levels, standard construction of residential dwellings constructed pursuant to standards established under Title 24 of the California Code of Regulations typically provides 20 dBA, or more, of attenuation with the windows closed. Based on this premise, the exterior  $L_{dn}$  should not exceed 65 dBA (CBSC 2023).

##### Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970 (29 U.S.C. Section 1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation (OSHA 1970).

## Noise Control Act of 1972

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

This act authorized the United States Environmental Protection Agency (USEPA) to publish descriptive data on the effects of noise and establish levels of sound “requisite to protect the public welfare with an adequate margin of safety.” These levels are separated into health (hearing loss levels) and welfare (annoyance levels). The USEPA cautions that these identified levels are not standards because they do not consider the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an  $L_{eq}(24)$  of 70 dBA. The “(24)” signifies an  $L_{eq}$  duration of 24 hours. The USEPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

At 55 dBA Ldn, 95 percent sentence clarity (intelligibility) may be expected at 11 feet, and no substantial community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance.

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. Among the agencies now regulating noise are OSHA, which limits noise exposure of workers to 90 dB  $L_{eq}$  or less for 8 continuous hours or 105 dB  $L_{eq}$  or less for 1 continuous hour; the United States Department of Transportation (USDOT), which assumed a significant role in noise control through its various operating agencies; and the Federal Aviation Administration (FAA), which regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the FTA. Transit noise is regulated by the federal Urban Mass Transit Administration, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA).

Finally, the federal government encourages local jurisdictions use their land use regulatory authority to site new development in such a way that “noise-sensitive” uses are either prohibited from being sited adjacent to a highway, or alternatively, that developments are planned and constructed in such a manner that minimize potential noise impacts. Since the federal government has preempted the setting of standards for noise levels that can be emitted by transportation sources, local jurisdictions are limited to regulating the noise

generated by the transportation system through nuisance abatement ordinances and land use planning.

Federal Transit Administration

The Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA 2018) has developed construction impact guidelines shown in Table 2.

**TABLE 2  
FTA CONSTRUCTION NOISE CRITERIA**

<b>1-Hour Criteria (L<sub>eq</sub>)</b>		
<b>Land Use</b>	<b>Day</b>	<b>Night</b>
Residential	90	80
Commercial	100	100
Industrial	100	100
<b>8-Hour Criteria (L<sub>eq</sub>)</b>		
<b>Land Use</b>	<b>Day</b>	<b>Night</b>
Residential	80	70
Commercial	85	85
Industrial	90	90
Source: FTA 2018		

**State**

California Building Standards Code - Title 24

The California Buildings Standards Code, Title 24 of the *California Code of Regulations*, also known as the CBC, establishes building standards, including noise insulation standards, applicable to all occupancies throughout the State. The most recent building standards adopted by the legislature and used throughout the State is the 2022 version. Section 1206.4, Allowable interior noise levels, states “Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (L<sub>dn</sub>) or the CNEL, consistent with the noise element of the local general plan.” (DGS 2021). These noise standards are for new construction in California for the purposes of interior compatibility with exterior noise sources. The regulations specify that acoustical studies must be prepared for new buildings with habitable rooms that are near major transportation noises, and where such noise sources create an exterior noise level of 60 dBA CNEL/L<sub>dn</sub> or higher.

General Plan Guidelines/California Office of Noise Control—Noise Compatibility Standards

Established in 1973, the California Department of Health Services Office of Noise Control 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 delineate compatibility of sensitive uses with various incremental levels of noise.<sup>1</sup>

The California Office of Noise Control has set acceptable noise limits for sensitive uses. Sensitive land uses, such as homes, are “normally acceptable” in exterior noise environments up to 65 dBA CNEL and “conditionally acceptable” in areas up to 70 dBA CNEL. A “conditionally acceptable” designation implies that new development should be undertaken only after a detailed analysis of the necessary noise reduction measures that would need to be incorporated into the new development to ensure that acceptable noise levels could be achieved (e.g., needed noise insulation features are incorporated in the design). By comparison, a “normally acceptable” designation indicates that standard construction could occur with no special noise reduction requirements incorporated into the design of the new development (OPR 2024).

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 referenced above, which rank noise/land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. As discussed further below, because the Project is subject to review under CEQA, the impact thresholds for potential noise and vibration impacts set forth in Appendix G of the CEQA Guidelines are relevant in applying the foregoing guidelines.

**Local**

City of Laguna Hills Municipal Code – Chapter 5-24 – Noise Control

The City of Laguna Hills (City) Municipal Code Noise Ordinance has established rules and procedures to protect the public health and welfare . Chapter 5 of the City’s Municipal Code outlines local noise regulations as follows:

*Section 5-24.040 - Designated Noise Zone.*

The entire territory of the city is designated as “Noise Zone 1.”

Section 5-24.050 - Exterior Noise Standards.

- A. The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Residential Exterior Noise Standards		
Noise Zone	Noise Level	Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	50 dB(A)	10:00 p.m.—7:00 a.m.

<sup>1</sup> California Department of Health Services Office of Noise Control, “Land Use Compatibility for Community Noise Environments Matrix,” 1976.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels is reduced by five dB(A).

- B. The following noise standards, unless otherwise specifically indicated, apply to all land use entities that affect nonresidential property. If a land use affects both residential and nonresidential property then the residential standards are applied.

Nonresidential Exterior Noise Standards		
Noise Zone	Noise Level	Time Period
1	65 dB(A)	At any time

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels is reduced by five dB(A).

- C. It is unlawful for any person at any location within the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

1. The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or
2. The noise standard plus five dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or
3. The noise standard plus 10 dB(A) for a cumulative period of more than five minutes in any hour; or
4. The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour; or
5. The noise standard plus 20 dB(A) for any period of time.

- D. In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to said category is increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category is increased to reflect the maximum ambient noise level.

*Section 5-24.060 - Interior Noise Standards.*

- A. The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential properties within a designated noise zone:

Residential Exterior Noise Standards		
Noise Zone	Noise Level	Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.—7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dB(A).

- B. It is unlawful for any person at any location within the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property, either incorporated or unincorporated, to exceed:
  - 1. The interior noise standard for a cumulative period of more than five minutes in any hour; or
  - 2. The interior noise standard plus five db(A) for a cumulative period of more than one minute in any hour; or
  - 3. The interior noise standard plus 10 db(A) for any period of time.
- C. In the event the ambient noise level exceeds either of the first two noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

*Section 5-24.070 - Special Provisions.*

The following activities shall be exempted from the provisions of this Chapter:

- A. Activities conducted on the grounds of any public or private nursery, elementary, intermediate or secondary school or college.
- B. Outdoor gatherings, public dances and shows, provided said events are conducted pursuant to a license issued by the city pursuant to Title 4 of this code.
- C. Activities conducted on any park or playground, provided such park or playground is owned and operated by a public entity.
- D. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.
- E. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of eight p.m. and

seven a.m. on weekdays, eight p.m. and eight a.m. on Saturday, or at any time on Sunday or a federal holiday.

- F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.
- G. Mobile noise sources associated with agricultural operations, provided such operations do not take place between the hours of eight p.m. and seven a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.
- H. Mobile noise sources associated with agricultural pest control through pesticide application, provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.
- I. Noise sources associated with the maintenance of real property, provided said activities take place between seven a.m. and eight p.m. on any day except Sunday or a federal holiday, or between the hours of nine a.m. and eight p.m. on Sunday or a federal holiday.
- J. Any activity to the extent regulation thereof has been preempted by state or federal law.
- K. A temporary public construction activity deemed necessary for the safety and convenience of the traveling public by the City Manager or his or her authorized representative, which exemption shall be placed in writing, and subject to such conditions deemed necessary to protect the public welfare, health, and safety and to minimize noise disturbances.

*Section 5-24.080 - Schools, Hospitals and Churches—Special Provisions.*

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in Section 5-24.050 of this chapter prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three separate locations within one-tenth of a mile of the institution indicating the presence of a school, church or hospital.

*Section 5-24.100 - Air Conditioning and Refrigeration—Special Provisions.*

During the five-year period following the effective date of this chapter, the noise standards enumerated in Sections 5-24.050 and 5-24.060 shall be increased eight db(A) where the alleged offensive noise source is an air conditioning or refrigeration system or associated equipment which was installed prior to the effective date of this chapter.

*Section 5-24.110 - Noise Level Measurement.*

The location selected for measuring exterior noise levels shall be at any point on the affected property. Interior noise measurements shall be made within the affected dwelling unit. The measurement shall be made at a point at least four feet from the wall, ceiling, or floor nearest

the alleged offensive noise source and may be made with the windows of the affected unit open.

*Section 5-24.120 - Manner of Enforcement.*

The City Manager, the Chief of Police Services, and their duly authorized representatives are directed to enforce the provisions of this chapter. The Chief of Police Services and his or her duly authorized representatives are authorized, pursuant to Penal Code Section 836.5, to arrest any person without a warrant when they have reasonable cause to believe that such person has committed a misdemeanor in their presence.

No person shall interfere with, oppose, or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his or her duty.

*Section 5-24.130 - Violations—Misdemeanors.*

Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. The provisions of this chapter shall not be construed as permitting conduct not prescribed herein.

City of Laguna Hills General Plan

*General Plan Noise Element*

The purpose of the City’s General Plan Noise Element is to identify and assess existing noise sources in the community, and to discuss the City’s role in ensuring comfortable and safe noise levels in the future. As a part of the General Plan process, citizens and City officials identified goals for the future relating to balancing land uses in the City, in part to minimize incompatibilities and exposure to excessive noise while providing the range of uses needed to maintain a high quality of life (City of Laguna Hills 2009a). These goals, policies, and programs would assist in achieving noise compatibility between land uses and are provided in Table 3 shown below.

**TABLE 3  
GENERAL PLAN NOISE ELEMENT GOALS AND POLICIES**

Goal	Policy
<p><b>Goal N-1:</b> Reduce the effects of noise through proper land use planning and development techniques.</p>	<p><b>Policy N-1.1:</b> Use the City’s noise/land use compatibility matrix as a guide for future planning and development decisions.</p>
	<p><b>Policy N-1.2:</b> Use transitional and buffer areas to separate excessive noise-generating uses from residential and other noise sensitive land uses.</p>

**TABLE 3  
GENERAL PLAN NOISE ELEMENT GOALS AND POLICIES**

Goal	Policy
	<p><b>Policy N-1.3:</b> Limit future residential and other noise sensitive land uses in areas exposed to high levels of noise and/or utilize strategies to reduce noise experienced by sensitive uses at the point of reception.</p>
<p><b>Goal N-2:</b> Reduce the impact of transportation-related noise on residential areas and other sensitive land uses.</p>	<p><b>Policy N-2.1:</b> Reduce new transportation-related noise impacts to noise sensitive land uses through the use of noise control measures.</p>
	<p><b>Policy N-2.2:</b> Require noise-reducing construction techniques and site design measures for new development in areas impacted by transportation-related noise.</p>
	<p><b>Policy N-2.3:</b> Encourage new development to provide facilities that support the use of alternative transportation modes, such as walking, bicycling, carpooling and, where applicable, transit to reduce automobile traffic and its associated noise.</p>
	<p><b>Policy N-2.4:</b> Consider using low-noise pavement surfaces on Mobility Element roadways that reduce motor vehicle traffic noise.</p>
	<p><b>Policy N-2.5:</b> Control truck traffic routing to reduce truck traffic impacts on noise sensitive land uses.</p>
	<p><b>Policy N-2.6:</b> Use traffic calming design and traffic control measures as needed to reduce vehicular speeds and associated noise levels in residential neighborhoods.</p>
<p><b>Goal N-3:</b> Reduce the impact of non-transportation-related noise on residential areas and other sensitive land uses.</p>	<p><b>Policy N-3.1:</b> Ensure noise sources from construction activities, entertainment venues, private development/residences, landscaping activities, and special events impacting noise sensitive lands use are maintained at acceptable levels.</p>
	<p><b>Policy N-3.2:</b> Require that commercial and mixed-use structures be designed to prevent transfer of noise and vibration to residential and other noise sensitive land uses.</p>
	<p><b>Policy N-3.3:</b> Require commercial and mixed-use developments to locate loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noise sources away from residential development and, if necessary, to shield such noise sources with acoustic barriers.</p>
<p>Source: City of Laguna Hills 2009a.</p>	

*General Plan Environmental Impact Report*

The General Plan Environmental Impact Report (EIR) identifies the following programmatic mitigation measures, derived largely from the General Plan Implementation Program, which will reduce potential impacts to a less than significant level at the Program EIR level of analysis. Individual development projects will be required to undergo project-specific environmental review and mitigation measures will be identified to reduce any significant impacts. Mitigation for significant environmental impacts of each future development project shall include the following: objective of the measure; specific standards or measures to be applied, along with any needed contingency measure; responsible party; location; schedule for initiation; and how the measure will reduce the associated environmental impact (City of Laguna Hills 2009b). These General Plan EIR mitigation measures and the Project's consistency with these measures are provided below:

N-1: The City shall review development proposals to ensure that the noise standards and compatibility criteria set forth in the Noise Element are met. The City shall consult Noise Element guidelines and standards for noise compatible land uses to determine the suitability of proposed developments relative to existing and forecasted noise levels. The City shall enforce California Title 24 Noise Standards to ensure an acceptable interior noise level of 45 dBA CNEL in habitable rooms.

The City shall require acoustical analysis for all discretionary projects where any of the following apply:

1. The project will create or impact noise sensitive land uses and is located within the existing or future 60 dBA CNEL or higher contour.
2. The project will add more than 10 percent to the volume of average daily traffic of any arterial street.
3. The project will add 1,000 or more vehicles in the peak hour on adjacent roadways.
4. The project will introduce noise or vibration sources associated with mechanical equipment operations, entertainment, maintenance, and facility operations.
5. The project is a proposed residential use in the vicinity of existing and proposed commercial areas.
6. The project is a mixed-use development that includes a residential component. The focus of this type of acoustical study is to determine likely interior and exterior noise levels and recommend appropriate design features to reduce noise.

The City shall require mitigation measures, where necessary, to reduce noise levels to meet the adopted standards and criteria. Such measures may include landscaped berms, barriers, walls, enhanced parkways, increased parkways, and other sound attenuating architectural design and construction methods. The City will only permit new development if adopted noise standards and regulations can be met. (Implementation Program N-1).

*Applicable. The proposed Project meets the adopted noise requirements, regulations and standards in place for the designated Project area.*

N-2 The City shall implement provisions of the California Noise Insulation Standards (Title 24) that specify that indoor noise levels for multi-family residential living spaces shall not exceed 45 dB CNEL. The standard is defined as the combined effect of all noise sources and is implemented when existing or future exterior noise levels exceed 60 dB CNEL. Title 24 further requires that the standard be applied to all new hotels, motels, apartment houses, and dwellings other than single-family dwellings. The City shall also apply this standard to single-family dwellings and condominium conversion projects. (Implementation Program N-3).

*Applicable. The project would demonstrate to the City Building Department that the proposed building shell and window assemblies would achieve exterior-to-interior noise reduction necessary to meet the State of California and City of Laguna Hills requirements.*

N-3 The City shall review the locations of proposed projects with the potential to generate noise in relation to sensitive receptors through the discretionary project review process. The City shall limit delivery or service hours for stores and businesses with loading areas, docks, or trash bins that gain access on driveways next to residential and other noise sensitive areas. The City shall only approve exceptions if full compliance with the nighttime limits of the noise regulations is achieved. (Implementation Program N-4).

*Applicable. Project complies with City regulations regarding noise in relation to sensitive receptors as well as City limits on delivery or service hours.*

N-4 The City shall require all construction activity to comply with the limits (maximum noise levels, hours, and days of allowed activity) established in City noise regulations to reduce impacts associated with temporary construction noise to the extent feasible. Trucks associated with construction activities shall follow designated truck routes, where appropriate.

*Applicable: Project complies with construction activity regulations established by the City.*

## **2.2.2 Vibration**

### ***Federal***

The FTA has adopted standards associated with human annoyance for determining the groundborne vibration impacts on the following three off-site land-use categories (FTA 2018):

- Vibration Category 1 – High Sensitivity;
- Vibration Category 2 – Residential; and
- Vibration Category 3 – Institutional.

The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but that still potentially involve activities that could be disturbed by vibration. The vibration thresholds associated with human annoyance for these three land-use categories are shown in Table 4: Indoor Ground-Borne Vibration Impact Criteria for General Vibration Assessment.

**TABLE 4  
INDOOR GROUND-BORNE VIBRATION (GBV) IMPACT CRITERIA FOR GENERAL  
VIBRATION ASSESSMENT**

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)		
	Frequent Events	Occasional Events	Infrequent Events
<b>Category 1:</b> Buildings where vibration would interfere with interior operations.	65 VdB*	65 VdB*	65 VdB*
<b>Category 2:</b> Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
<b>Category 3:</b> Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB
Frequent Events: More than 70 events per day; Occasional Events: 30 to 70 events per day; Infrequent Events: Less than 30 events per day  Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.  *Note: Sensitive land uses constitute uses that contain vibration sensitive equipment or uses in which vibration would interfere with interior operations.  Source: FTA 2018			

**State**

California Department of Transportation Vibration Standards

There are no applicable City standards for vibration-induced annoyance or structural damage due to vibration from construction activity and the City defers to other authoritative sources for evaluating these impacts. Groundborne vibration levels resulting from construction activities at the Project site were estimated using the California Department of Transportation (Caltrans) vibration damage potential guideline thresholds; shown in Table 5: Vibration Damage Threshold Criteria. Based on the guidance in Table 5, the vibration level of 0.3 in/sec PPV for older residential structures exposed to continuous/frequent intermittent sources is considered the most applicable threshold for a potentially significant vibration damage impact from the Project.

**TABLE 5  
VIBRATION DAMAGE THRESHOLD CRITERIA**

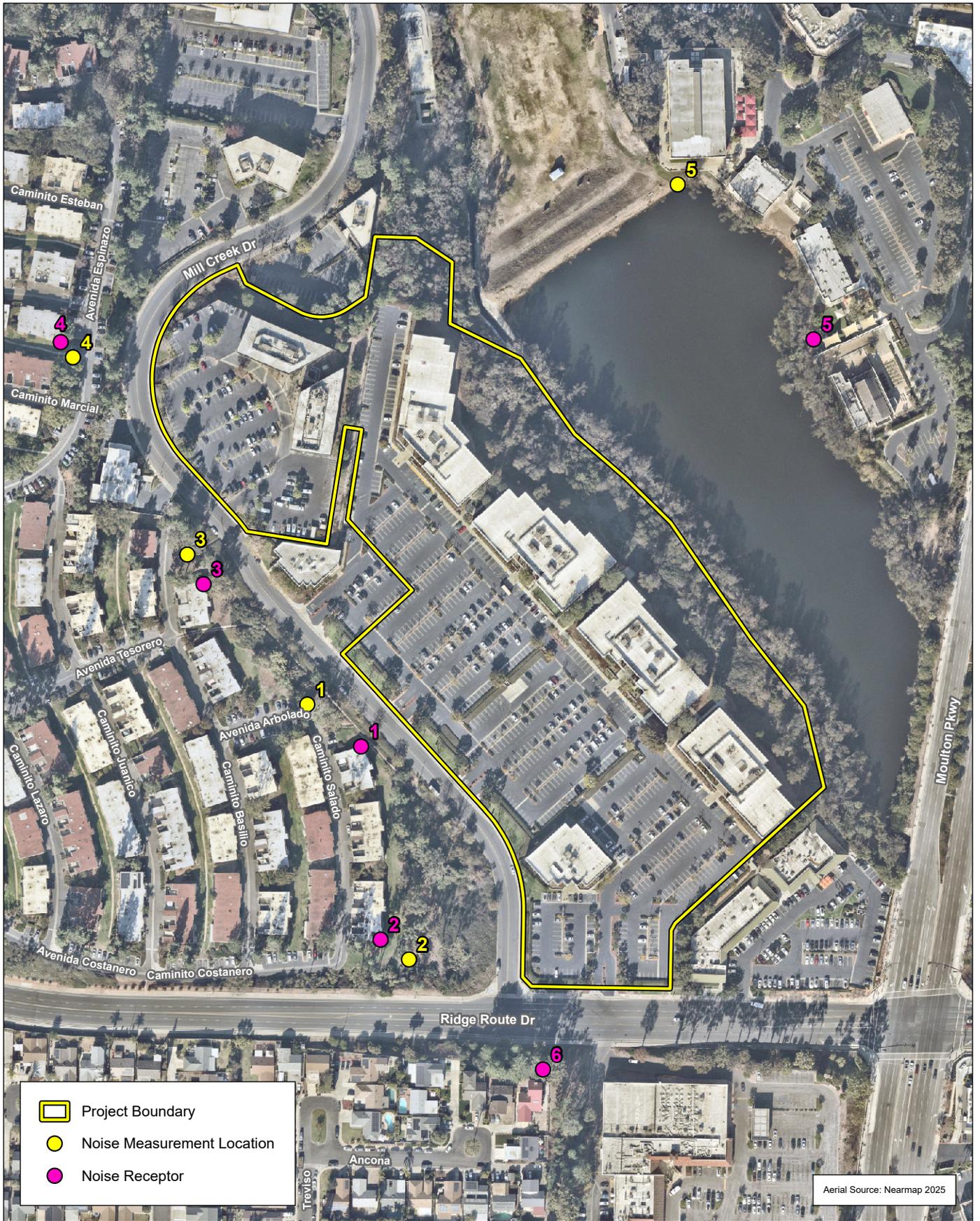
Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
PPV: peak particle velocity; in/sec: inch(es) per second Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Construction of the Project would involve continuous/frequent intermittent sources. Source: Caltrans 2020.		

**2.3 ENVIRONMENTAL SETTING**

The existing noise environment in the vicinity of the Project site is typical of a developed urban residential setting. The predominant sources of noise in the Project area are vehicular traffic movements on local roadways, including Moulton Parkway, Ridge Route Drive, and Mill Creek Drive. Other noise sources include birds chirping, distant aircraft overflights, rustling leaves, pedestrians talking, and occasional noise from distant landscaping. In order to quantify the existing daytime noise conditions at noise-sensitive areas nearest to the Project site, short-term noise measurements were conducted at locations that represent the nearest noise-sensitive areas.

**2.3.1 Ambient Noise Environment**

Psomas conducted ambient noise monitoring at five locations representing the adjoining sensitive land uses around the Project site on February 11, 2025. Exhibit 4 shows the selected noise measurement locations. Two sets of short-term (20 minutes each) noise measurements were conducted at each measurement location using a Larson Davis Laboratories Model 831 (LD 831) sound level meter (SLM). The measurement microphone was placed approximately five feet above the ground and equipped with a windscreen. The SLM was set to “A”-weighted decibel reading and a time response of “slow.”



### Noise Measurement and Receptor Locations

### Exhibit 4

Terravita Project



0 125 250 Feet



The meteorological conditions were documented at the time of the noise monitoring. Overall, the sky was overcast at the time of the noise monitoring, temperatures ranged from 58 to 60 degrees Fahrenheit (°F), with relative humidity measured at 57 percent. There was a light breeze with wind speeds varying from 2 to 3 miles per hour. Table 6: Existing Measured Noise Levels at the Project site summarizes the results of the noise monitoring.

**TABLE 6  
EXISTING MEASURED NOISE LEVELS AT THE PROJECT SITE**

Noise Monitoring Location Description	Primary Noise Sources	Measurement Star/End Time	Measured Noise Levels (dBA)		
			Leq	Lmin	Lmax
Measurement Location 1: Between Caminito Salado and Mill Creek Drive	Traffic, birds chirping, distant aircraft overflights, rustling leaves, pedestrians talking.	Start: 11:12 AM End: 11:32 AM	48.5	40.5	65.2
		Start: 11:33 AM End: 11:53 AM	47.9	40.4	65.5
Measurement Location 2: Northwest Corner of Mill Creek Drive and Ridge Route Drive	Traffic, birds chirping, landscape equipment, distant aircraft overflights, rustling leaves, pedestrians talking and shouting, distant landscaping activity.	Start: 12:15 PM End: 12:35 PM	53.4	40.7	71.0
		Start: 3:39 PM End: 3:59 PM	48.5	39.4	59.2
Measurement Location 3: Between Caminito Basilio and Mill Creek Drive	Traffic, birds chirping, distant industrial.	Start: 12:52 PM End: 1:12 PM	46.7	41.3	62.9
		Start: 1:13 PM End: 1:33 PM	48.2	41.7	68.6
Measurement Location 4: West of Avenida Espinazo	Traffic, trash trucks, distant traffic.	Start: 1:45 PM End: 2:05 PM	49.8	44.1	65.5
		Start: 2:08 PM End: 2:28 PM	47.8	43.3	64.5
Measurement Location 5: Crossline Community Church	Geese, rustling leaves, birds chirping, distant children playing, distant traffic, pedestrians talking, sirens from first responders.	Start: 2:43 PM End: 3:03 PM	61.4	47.4	74.9
		Start: 3:04 PM End: 3:24 PM	53.2	47.9	66.0
dBA: A-weighted decibels Leq: average measured noise level Lmin: minimum measured noise level Lmax: maximum measured noise level Noise measurement data provided in Attachment A.					

As shown in Table 6, existing measured Leq ranged from 46.7 to 61.4 dBA, with the highest noise levels recorded east of the Project site adjacent to Crossline Community Church. The predominant source of noise around the Project site is traffic travelling along Mill Creek Drive and Ridge Route Drive. Other sources of noise during the measurements included

distant aircraft overflights, distant industrial/construction activities, wind, birds, distant children playing, landscape equipment, and pedestrians talking.

### **2.3.2 Sensitive Receptors**

The State of California defines noise-sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions (State of California 2017). The land use categories requiring the lowest noise thresholds are schools, libraries, churches, hospitals, and residences. Schools, libraries, churches, hospitals, and residences proximate to the Project site are referred to as the Project's "noise sensitive receptors" due to sensitivity of these uses to noise exposure.

The closest sensitive receptors are the multi-family development located to the west of the Project site along the west side of Mill Creek Drive. Other nearby noise-sensitive receptors include single-family residential areas along the south side of Ridge Route Drive and the Crossline Community Church located northeast of the Project site. Selected receptors representative of the nearest noise-sensitive areas in the vicinity of the Project site are shown as Receptors 1 through 6 on Exhibit 4.

### **2.3.3 Roadway Segment Volumes**

The main source of roadway and mobile noise in the vicinity of the Project site is vehicular traffic along Mill Creek Drive, which is a classified Collector (Commuter) Arterial, which can accommodate up to 10,000 vehicle trips per day. Moulton Parkway and Ridge Route Drive, classified as Major Arterial and Primary Arterial, respectively, are also main traffic noise sources in the general noise study area.

## **2.4 METHODOLOGY**

### **2.4.1 Noise**

#### ***Construction Noise***

The analysis of construction noise involves the modeling of average and highest construction noise levels using the FHWA Roadway Construction Noise Model (RCNM) Version 1.1, which allows for quantification of noise levels emanating from individual machinery. RCNM is a state-of-the-art computer program that enables the prediction of construction noise levels for a variety of construction operations based on a compilation of empirical data and the application of acoustical propagation formulas (FHWA 2017).

Average noise levels represent the noise levels that would typically occur during construction and are calculated using the distance between the closest noise-sensitive receptors and the center of activity for each of the corresponding construction phases. To assess construction noise impacts, the equipment types and utilization rates during each phase of construction and distances to the center of construction activities were input into the RCNM for each of the representative receptor locations shown in Exhibit 4. The resultant construction noise levels were then compared to applicable noise criteria to determine the level of significance of impacts.

## ***Operational Noise***

Operational noise sources associated with the proposed Project would include Project-related vehicular traffic on area roadways, future stationary noise sources, such as residential HVAC units, and other community noise sources within the Project site.

Increases in roadway noise are determined by adding Project traffic trips to surrounding roadways based on available traffic count and fleet mix data. Typically, a doubling of traffic along adjacent streets results in an increase in noise of 3 dBA. Roadway noise is typically modeled using the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108; however, as the Project would result in fewer daily, morning, and evening peak hour trips compared to the existing conditions, the Project would not result in an increase to hourly or daily traffic along the adjacent streets and no increases in roadway noise are anticipated.

HVAC noise was calculated using the FHWA's RCNM (RK Engineering, Inc 2024). The RCNM was modified and air conditioning units were added to the equipment list. HVAC data included in the RCNM is based on manufacturer specifications. The noise attenuation effects from distance, local topography, ground effects, and the proposed wall along the western boundary are all considered during the model projections.

### **2.4.2 Vibration**

#### ***Construction Vibration***

The analysis of construction vibration is based on the vibration levels presented in Table 7, Vibration Source Levels for Construction Equipment, of the FTA's 2018 Transit Noise and Vibration Impact Assessment Manual and in Attachment B of this report. The assessment of construction vibration is performed by assuming equipment would be operating at the property lines closest to the nearest receptors. For analyses of construction vibration, Project generated vibration is measured from the particular construction source to the closest off-site structures, unlike analyses of noise impacts, which are conducted at the property lines of affected properties.

#### ***Operational Vibration***

The proposed Project is a residential development that would not include any long-term vibration-generating sources. Therefore, there is no need to quantify operational vibration related to the Project.

## 2.5 IMPACT ANALYSIS

### 2.5.1 Noise

Under CEQA, Project impacts are considered significant if the Project would result in:

- a) ***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**

##### ***Construction Noise***

Construction noise is evaluated at the noise measurement locations based on their corresponding thresholds for construction noise established by the FTA. Estimated noise levels attributable to construction of the proposed Project are shown in Table 7: Average Construction Noise Levels at Adjacent Receptors, and calculations are included in Attachment B, Construction Noise and Vibration Calculations.

**TABLE 7  
AVERAGE CONSTRUCTION NOISE LEVELS AT ADJACENT RECEPTORS**

Construction Phase	Receptor 1		Receptor 2		Receptor 3		Receptor 4		Receptor 5		Receptor 6	
	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?	Project $L_{eq}^*$ (dBA)	Exceeds Daytime $L_{eq}$ Limit of 80 dBA?
Demolition	78.5	No	74.7	No	77.6	No	75.3	No	71.6	No	73.6	No
Site Preparation	75.0	No	71.3	No	74.6	No	72.0	No	69.3	No	69.9	No
Grading	76.5	No	71.7	No	75.0	No	72.4	No	69.7	No	70.3	No
Construction	74.5	No	69.7	No	73.1	No	70.5	No	67.7	No	68.4	No
Paving	76.1	No	71.3	No	74.7	No	72.1	No	69.3	No	70.0	No
Coatings	62.2	No	57.4	No	60.7	No	58.1	No	55.3	No	56.0	No

$L_{eq}$  dBA: average noise energy level in A-weighted decibels  
\* Based on calculated  $L_{eq}$  at distances from center of construction activity for each corresponding Project construction phase.  
Source: RCNM. Construction noise calculations are provided in Attachment B.

Typical average hourly noise levels ( $L_{eq}$ ) from Project-related construction activities would be 55 to 78 dBA at the nearest off-site receptors. It should be noted that the construction noise calculations conservatively assume simultaneous operation of all equipment during each construction phase. Relative to existing ambient noise levels around the Project site, the Project construction would result in increases of 13.7 to 30.6 dBA in average hourly noise levels at Receptor 1, increases of 4.0 to 26.2 dBA in average hourly noise levels at Receptor 2, increases of 12.5 to 30.9 dBA in average hourly noise levels at Receptor 3, increases of 8.3 to 27.5 dBA in average hourly noise levels at Receptor 4, increases of 2.1 to 18.4 dBA at Receptor 5, and increases of 2.6 to 25.1 dBA at Receptor 6. Therefore, average Project construction noise level increases would be clearly noticeable at noise-sensitive areas north, west, and south of the Project site. Nevertheless, noise levels are anticipated to be below the FTA’s 8-hour daytime construction threshold of 80 dBA  $L_{eq}$ .

**Operational Noise**

Project operation would not include significant sources of stationary noise, as the main sources of potential onsite noise would include onsite slow vehicle movements, residential HVAC units, and community noise sources from common activity areas associated with the Project (such as a rooftop pool in Lot B, the terrace park proposed in Lot A, the dog park, and the corner park proposed in Lot B). Noise created from these sources would not typically be categorized as loud, unnecessary, or unusual sound that disturbs the peace or quiet of any neighborhood or noise that causes discomfort or annoyance to any person of normal sensitivity. This noise is also substantially less during the nighttime hours. Noise from onsite vehicles and residents’ chattering in common activity areas would be typical of other residential areas and random in nature. Any noises from such sources would not be different than those currently experienced in the general Project area.

On-site HVAC units are proposed to be located at ground level in pairs. The closest proposed pair of HVAC equipment to the adjacent residential receptors would be located near the Project site’s western boundary approximately 110 feet to the west, and the closest pair of HVAC units to the adjacent commercial receptor would be located near the middle of the Project site.

The noise level impacts were estimated from the nearest proposed HVAC location to the residential and commercial receptor property lines, at a distance of approximately 95 feet and 15 feet, respectively. Results are shown in Table 8 and Table 19 for daytime results, and in Tables 10 and 11 for nighttime results.

**TABLE 8  
DAYTIME STATIONARY NOISE SOURCE IMPACTS AT RESIDENTIAL RECEPTORS**

Noise Source	Receptor Distance from Noise Source (feet)	Noise Level at Receptor	
		dBA $L_{eq}$	dBA $L_{max}$
HVAC <sup>1</sup>	95	39.9	39.9
Noise Level Threshold		55.0	75.0
<b>Exceeds Threshold?</b>		<b>No</b>	<b>No</b>
<sup>1</sup> Noise Level is indicative of two units operating simultaneously. Source: RK Engineering 2024			

**TABLE 9  
DAYTIME STATIONARY NOISE SOURCE IMPACTS AT COMMERCIAL RECEPTORS**

Noise Source	Receptor Distance from Noise Source (feet)	Noise Level at Receptor	
		dBa Leq	dBa Lmax
HVAC <sup>1</sup>	15	60.4	60.4
Noise Level Threshold		65.0	85.0
<b>Exceeds Threshold?</b>		<b>No</b>	<b>No</b>
<sup>1</sup> Noise Level is indicative of two units operating simultaneously. Source: RK Engineering 2024			

**TABLE 10  
NIGHTTIME STATIONARY NOISE SOURCE IMPACTS AT RESIDENTIAL RECEPTORS**

Noise Source	Receptor Distance from Noise Source (feet)	Noise Level at Receptor	
		dBa Leq	dBa Lmax
HVAC <sup>1</sup>	95	39.9	39.9
Noise Level Threshold		50.0	70.0
<b>Exceeds Threshold?</b>		<b>No</b>	<b>No</b>
<sup>1</sup> Noise Level is indicative of two units operating simultaneously. Source: RK Engineering 2024			

**TABLE 11  
NIGHTTIME STATIONARY NOISE SOURCE IMPACTS AT COMMERCIAL RECEPTORS**

Noise Source	Receptor Distance from Noise Source (feet)	Noise Level at Receptor	
		dBa Leq	dBa Lmax
HVAC <sup>1</sup>	15	60.4	60.4
Noise Level Threshold		65.0	85.0
<b>Exceeds Threshold?</b>		<b>No</b>	<b>No</b>
<sup>1</sup> Noise Level is indicative of two units operating simultaneously. Source: RK Engineering 2024			

As shown in Tables 8 through 11 above, noise levels generated by the Project stationary noise sources are not expected to exceed the City’s daytime or nighttime residential or commercial noise standards and impacts would be less than significant (RK Engineering, Inc. 2024).

**Roadway Traffic Noise**

As shown in Table 1 of the Project Traffic Memorandum (Psomas 2025), the Project would generate 2,840 daily trips, with 207 occurring during the morning peak hour and 230 trips

occurring during the evening peak hour. The existing offices currently occupying the Project site generate 2,887 daily trips, with 412 in the morning peak hour and 396 trips in the evening peak hour. A comparison of proposed and existing trips indicates that the Project will generate 47 fewer daily trips, with 205 fewer trips in the morning peak hour and 166 fewer trips in the evening peak hour (Psomas 2025). As the Project would result in fewer daily, morning, and evening peak hour trips compared to the existing conditions, the Project would not result in an increase to hourly or daily traffic along the adjacent streets. As a result, after the proposed Project is fully operational, roadway traffic noise exposure at nearby noise-sensitive receptors would be unchanged in comparison to no-Project conditions. Therefore, Project-related traffic noise impacts would be less than significant.

**2.5.2 Vibration**

**b) *Generation of excessive groundborne vibration or groundborne noise levels.***

**Less than Significant Impact**

***Construction Vibration***

To determine the vibratory impacts during construction, referenced construction equipment vibration levels provided by the FTA were utilized and then extrapolated to the façade of the nearest adjacent structures. The nearest residential structures to the Project site are considered “older residential structures” and are situated approximately 85 feet from construction activity.

The nearest commercial structures to the Project site are located approximately 10 feet from the nearest expected bulldozer and truck activity and are considered “modern industrial/commercial buildings”. These receptors are also located approximately 20 feet from the nearest expected use of a vibratory roller. The main source of vibration impacts during the construction phase would be operation of equipment such as bulldozers during site preparation and loading trucks during grading and excavation (RK Engineering 2024). In addition, rollers would be used during the Project’s paving phase. The Project related construction vibration was quantified and summarized in Table 12: Project Construction Vibration Damage Assessment.

**TABLE 12  
PROJECT CONSTRUCTION VIBRATION DAMAGE ASSESSMENT**

<b>Construction Activity</b>	<b>Distance to Nearest Structure (ft)</b>	<b>Duration</b>	<b>Calculated Vibration Level - PPV (in/sec)</b>
<b>Nearest Residential Structures</b>			
Large Bulldozer	85	Continuous/Frequent	0.014
Loaded Trucks	85	Continuous/Frequent	0.012
Jackhammer	85	Continuous/Frequent	0.006
Vibratory Rollers	155	Continuous/Frequent	0.014
<b>Maximum Construction Vibration Level</b>			<b>0.014</b>

**TABLE 12  
PROJECT CONSTRUCTION VIBRATION DAMAGE ASSESSMENT**

Construction Activity	Distance to Nearest Structure (ft)	Duration	Calculated Vibration Level - PPV (in/sec)
<b>Vibration Damage Potential Threshold<sup>1</sup></b>			<b>0.30</b>
<b>Exceeds Threshold?</b>			<b>No</b>
<b>Commercial and Office Buildings</b>			
Large Bulldozer	10	Continuous/Frequent	0.352
Loaded Trucks	10	Continuous/Frequent	0.300
Jackhammer	10	Continuous/Frequent	0.138
Vibratory Rollers	20	Continuous/Frequent	0.293
<b>Maximum Construction Vibration Level</b>			<b>0.352</b>
<b>Vibration Damage Potential Threshold<sup>1</sup></b>			<b>0.50</b>
<b>Exceeds Threshold?</b>			<b>No</b>
1. Vibration threshold established by Caltrans. Source: RK Engineering 2024 and FTA 2018.			

Based on the results provided in Table 12 above, Project-related construction activity is not expected to cause any potential damage to the nearest structures; therefore, impacts from construction-related vibration would be less than significant. Table 13: Project Construction Vibration Human Annoyance Assessment, shows the estimated groundborne vibration levels in terms of VdB during Project construction at the nearest residential building west of the Project site. The estimated vibration levels at the residential building are compared to the applicable human annoyance threshold. For a conservative analysis, the threshold of 75 VdB established for residential land uses exposed to occasional events was used as the threshold of significance.

**TABLE 13  
PROJECT CONSTRUCTION VIBRATION HUMAN ANNOYANCE ASSESSMENT**

Construction Activity	Distance to Nearest Structure (ft)	Duration	Calculated Vibration Level - Lv (VdB)
<b>Residential Structures</b>			
Large Bulldozer	85	Continuous/Frequent	71
Loaded Trucks	85	Continuous/Frequent	70
Jackhammer	85	Continuous/Frequent	63
Vibratory Rollers	155	Continuous/Frequent	70
<b>Maximum Construction Vibration Level</b>			<b>71</b>
<b>Vibration Annoyance Threshold<sup>1</sup></b>			<b>72</b>
<b>Exceeds Threshold?</b>			<b>No</b>
1. Vibration threshold established by the FTA. Source: FTA 2018. Vibration calculations are provided in Attachment B.			

As shown in Table 13, vibration generated during Project construction would not exceed the FTA's 72 VdB human annoyance threshold for frequent events. As a result, potential vibration annoyance effects at the nearest residential locations are considered to be less than significant.

### ***Operational Vibration***

The proposed Project would not include any sources of operational vibration. HVAC units and other stationary equipment would not generate any detectable vibrations. Vehicular traffic associated with the Project would be similar to the existing mix of traffic in the general Project area. Therefore, Project operational vibration impacts would be less than significant.

- c) 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?***

### **No Impact**

The Project site is not located within an airport land use plan. The nearest airport to the Project site is John Wayne International Airport, which is located approximately 8.2 miles from the Project site. Therefore, no impacts with respect to the exposure of future residents to excessive airstrip or airport related noise would occur.

## **2.6 MITIGATION MEASURES**

The analyses presented in this report conclude that noise and vibration impacts associated with Project construction and operation would be less than significant and no mitigation is required. Nevertheless, the following recommended Project Design Features (PDF) include standard rules and requirements, best practices, and recognized design guidelines for reducing noise levels. Project design features are typically included as part of the conditions of approval for the project but are not considered mitigation under CEQA (RK Engineering, Inc. 2024).

### *Operational Design Features*

- PDF-1 The Project should incorporate building construction techniques and insulation that is consistent with California Title 24 Building Standards to achieve the minimum interior noise standard of 45 dBA CNEL for all residential units.
- PDF-2 A "windows closed" condition and upgraded windows and sliding glass doors are expected to be required for all residential units facing adjacent roadways in order to meet the interior noise standard.
- PDF-3 For proper acoustical performance, all exterior windows, doors, and sliding glass doors should have a positive seal and leaks/cracks must be kept to a minimum. Attic vents and opening should be oriented away from the adjacent roadways.

*Construction Design Features*

- PDF -4 The Project must comply with all applicable City of Laguna Hills Municipal Code requirements. No construction may occur between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, 8:00 p.m. and 8:00 a.m. on Saturday, or at any time on Sunday or a federal holiday.
  
- PDF -5 The Applicant shall provide public notifications and signage in readily visible locations along the perimeter of construction sites that indicate the dates and duration of construction activities, as well as provide a telephone number where neighbors can enquire about the construction process and register complaints to a designated construction noise disturbance coordinator.
  
- PDF -6 All construction equipment should be equipped with mufflers and other suitable noise attenuation devices (e.g., engine shields).
  
- PDF-7 An electric connection to the site should be established to avoid the use of diesel- and gas-powered generators, to the extent feasible.
  
- PDF -8 Construction staging areas, generators, and stationary construction equipment should be placed as far from the adjacent residential homes as feasible.
  
- PDF-9 Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.

### **3.0 CONCLUSION**

The Project's implementation would result in less than significant impacts with respect to Project construction noise and vibration, operational noise and vibration from stationary sources, and roadway noise. Furthermore, no impact would result with respect to the exposure of future residents and guests to excessive airstrip or airport-related noise. Therefore, the proposed Project would not result in significant noise and vibration impacts at the neighboring noise-sensitive land uses.

## 4.0 REFERENCES

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- . 2009b (June). City of Laguna Hills General Plan Program Environment Impact Report. Laguna Hills, CA: the City. <https://lagunahillscagov/DocumentCenter/View/134/Laguna-Hills-General-Plan-EIR>.
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**ATTACHMENT A**  
**NOISE MEASUREMENT DATA**

**Summary**  
 File Name on Meter 831\_Data.658.s  
 File Name on PC 831\_20250211 11:20:831\_Data.658.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation ---

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Preampifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 48.5 dB  
 LAE 79.3 dB  
 EA 9.439 µPa<sup>2</sup>h  
 LAeq (max) ##### 94.6 dB  
 LA5min ##### 65.2 dB  
 LA5min ##### 40.5 dB  
 SEA -99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 1 1.7 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDEN LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 48.5 48.5 -99.9 48.5 48.5 -99.9 -99.9 dB  
 LCeq 63.2 dB  
 LAeq 48.5 dB  
 LCeq - LAeq 14.7 dB  
 LAeq 51.6 dB  
 LAeq 48.5 dB  
 LAeq - LAeq 3.1 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
48.5		63.2		74.3	
65.2	2025/02/11 11:21:16	79.0	2025/02/11 11:21:16	86.0	2025/02/11 11:22:22
71.0	2025/02/11 11:22:21	80.5	2025/02/11 11:21:15	89.4	2025/02/11 11:22:21
76.0	2025/02/11 11:22:21	82.3	2025/02/11 11:21:15	92.4	2025/02/11 11:19:12
80.5	2025/02/11 11:30:16	86.9	2025/02/11 11:16:00	61.6	2025/02/11 11:30:12
39.9	2025/02/11 11:30:14	54.4	2025/02/11 11:30:17	59.5	2025/02/11 11:27:35
40.2	2025/02/11 11:30:14	57.5	2025/02/11 11:30:30	62.8	2025/02/11 11:23:01
94.6	2025/02/11 11:22:21	92.2	2025/02/11 11:22:21	96.5	2025/02/11 11:22:21

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 53.6 dB  
 LA 10.00 51.1 dB  
 LA 33.33 45.5 dB  
 LA 50.00 44.1 dB  
 LA 66.60 43.4 dB  
 LA 90.00 42.3 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.29	61.02			
PRM831	#####	-24.29	61.05			
PRM831	#####	-24.26	61.20			
PRM831	#####	-24.26	61.21			
PRM831	#####	-24.27	61.18			
PRM831	#####	-24.30	60.98			
PRM831	#####	-24.33	60.75			
PRM831	#####	-24.40	60.25			
PRM831	#####	-24.48	59.70			
PRM831	#####	-24.27	61.20			
PRM831	#####	-24.26	61.22			



**Summary**  
 File Name on Meter 831\_Data.659.s  
 File Name on PC 831\_20250211 11:33:10 831\_Data.659.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation --

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Pre-amplifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 47.9 dB  
 LAE 78.7 dB  
 EA 8.221 uPa<sup>2</sup>/h  
 LAeq (max) 77.6 dB  
 LA5min 65.5 dB  
 LA5min 40.4 dB  
 SEA -99.9 dB

Exceedance Counts	Duration
LAS > 65.0 dB	1 1.4 s
LAS > 85.0 dB	0 0.0 s
LAA > 135.0 dB	0 0.0 s
LAA > 137.0 dB	0 0.0 s
LAA > 140.0 dB	0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDEN LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 47.9 47.9 -99.9 47.9 47.9 -99.9 -99.9 dB

LCeq 61.6 dB  
 LAeq 47.9 dB  
 LCeq - LAeq 13.7 dB  
 LAeq 50.7 dB  
 LAeq 47.9 dB  
 LAeq - LAeq 2.8 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
47.9		61.6		71.3	
65.5	2025/02/11 11:52:15	81.0	2025/02/11 11:52:15	87.0	2025/02/11 11:47:41
67.1	2025/02/11 11:52:15	82.9	2025/02/11 11:52:15	92.6	2025/02/11 11:47:41
67.7	2025/02/11 11:52:15	84.0	2025/02/11 11:52:15	95.8	2025/02/11 11:47:41
40.4	2025/02/11 11:47:06	55.6	2025/02/11 11:33:10	60.0	2025/02/11 11:33:19
39.7	2025/02/11 11:39:10	54.0	2025/02/11 11:36:07	57.7	2025/02/11 11:33:19
40.3	2025/02/11 11:42:10	55.7	2025/02/11 11:33:10	61.2	2025/02/11 11:33:17
77.6	2025/02/11 11:52:15	91.7	2025/02/11 11:52:15	98.3	2025/02/11 11:47:41

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 52.6 dB  
 LA 10.00 50.5 dB  
 LA 33.33 44.5 dB  
 LA 50.00 43.6 dB  
 LA 66.60 42.7 dB  
 LA 90.00 41.6 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831		-24.29	61.02			
PRM831		-24.29	61.05			
PRM831		-24.26	61.20			
PRM831		-24.26	61.21			
PRM831		-24.27	61.18			
PRM831		-24.30	60.98			
PRM831		-24.33	60.75			
PRM831		-24.40	60.25			
PRM831		-24.48	59.70			
PRM831		-24.27	61.20			
PRM831		-24.26	61.22			







RECYCLED WATER





**Summary**  
 File Name on Meter 831\_Data.661.5  
 File Name on PC 831\_20250211 12:14:58 831\_Data.661.libin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation --

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Preampifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.9 dB  
 A C Z  
 Under Range Peak 74.4 71.4 76.4 dB  
 Under Range Limit 25.9 26.1 31.2 dB  
 Noise Floor 16.8 17.0 22.0 dB  
 Instrument Identification First Second Third  
 B

**Results**  
 LAeq 53.4 dB  
 LAE 84.2 dB  
 EA 29.170 µPa<sup>2</sup>/h  
 LAeq (max) 87.3 dB  
 LA5min 71.0 dB  
 LA5min 40.7 dB  
 SEA -99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 3 13.7 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 53.4 53.4 -99.9 53.4 53.4 -99.9 -99.9 dB

LCeq 64.7 dB  
 LAeq 53.4 dB  
 LCeq - LAeq 11.3 dB  
 LAeq 56.4 dB  
 LAeq 53.4 dB  
 LAeq - LAeq 3.0 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
53.4		64.7		74.9	
71.0	2025/02/11 12:28:44	84.2	2025/02/11 12:21:24	88.1	2025/02/11 12:21:52
76.6	2025/02/11 12:34:40	86.5	2025/02/11 12:21:24	93.6	2025/02/11 12:21:52
79.0	2025/02/11 12:34:40	87.2	2025/02/11 12:21:24	95.8	2025/02/11 12:21:52
80.7	2025/02/11 12:16:31	86.5	2025/02/11 12:20:50	60.7	2025/02/11 12:28:08
80.1	2025/02/11 12:16:31	53.9	2025/02/11 12:16:03	59.7	2025/02/11 12:28:08
40.6	2025/02/11 12:16:31	57.3	2025/02/11 12:20:54	62.2	2025/02/11 12:28:01
87.3	2025/02/11 12:34:41	93.1	2025/02/11 12:21:28	97.8	2025/02/11 12:15:27

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 59.0 dB  
 LA 10.00 57.0 dB  
 LA 20.00 49.0 dB  
 LA 50.00 46.3 dB  
 LA 66.60 44.4 dB  
 LA 90.00 42.5 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.39	60.32			
PRM831	#####	-24.39	60.31			
PRM831	#####	-24.28	60.41			
PRM831	#####	-24.40	60.26			
PRM831	#####	-24.33	60.78			
PRM831	#####	-24.29	61.02			
PRM831	#####	-24.29	61.05			
PRM831	#####	-24.26	61.20			
PRM831	#####	-24.26	61.21			
PRM831	#####	-24.27	61.18			
PRM831	#####	-24.30	60.98			

12.5 16.0 20.0 25.0 31.5 40.0 50.0 63.0 80.0 100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000 6300 8000 10000 12500 16000 20000

**Summary**  
 File Name on Meter 831\_Data.668.s  
 File Name on PC 831\_20250211 153934 831\_Data.668.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation --

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Pre-amplifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.9 dB  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.2 dB  
 Noise Floor 16.8 16.9 22.0 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 48.5 dB  
 LAE 79.3 dB  
 EA 9.439 µPa<sup>2</sup>/h  
 LAeq (max) 79.5 dB  
 LA5min 59.2 dB  
 LA5min 39.4 dB  
 SEA 79.3 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 0 0.0 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDEN LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 48.5 48.5 79.3 48.5 48.5 79.3 79.3 dB

LCeq 63.3 dB  
 LAeq 48.5 dB  
 LCeq - LAeq 14.8 dB  
 LAeq 50.2 dB  
 LAeq 48.5 dB  
 LAeq - LAeq 1.7 dB

dB	A		C		Z	
	Time Stamp		Time Stamp		Time Stamp	
48.5			63.3		71.5	
LAeq	59.2	2025/02/11 15:43:21	76.4	2025/02/11 15:53:59	86.2	2025/02/11 15:48:12
Lf1max	66.5	2025/02/11 15:43:21	78.3	2025/02/11 15:43:04	92.2	2025/02/11 15:48:12
Lf2max	69.4	2025/02/11 15:43:21	79.2	2025/02/11 15:43:04	94.3	2025/02/11 15:48:12
Lf3max	39.4	2025/02/11 15:50:53	57.0	2025/02/11 15:50:59	60.7	2025/02/11 15:50:59
Lf4max	39.8	2025/02/11 15:50:45	54.6	2025/02/11 15:50:55	57.7	2025/02/11 15:50:55
Lf5max	39.3	2025/02/11 15:50:53	57.7	2025/02/11 15:52:54	61.8	2025/02/11 15:52:54
Lpk1max	79.5	2025/02/11 15:41:55	85.7	2025/02/11 15:43:04	96.4	2025/02/11 15:48:12

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 53.2 dB  
 LA 10.00 51.8 dB  
 LA 20.00 48.2 dB  
 LA 50.00 46.6 dB  
 LA 66.60 45.2 dB  
 LA 90.00 42.7 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.33	60.77			
PRM831	#####	-24.32	60.80			
PRM831	#####	-24.23	60.76			
PRM831	#####	-24.32	60.80			
PRM831	#####	-24.30	60.98			
PRM831	#####	-24.29	61.01			
PRM831	#####	-24.25	61.30			
PRM831	#####	-24.35	60.62			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.28	61.09			

12.5 16.0 20.0 25.0 31.5 40.0 50.0 63.0 80.0 100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000 6300 8000 10000 12500 16000 20000









**Summary**  
 File Name on Meter 831\_Data.662.5  
 File Name on PC 831\_20250211 12:54:0 831\_Data.662.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation --

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Preampifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.9 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.2 dB  
 Noise Floor 16.8 16.9 22.0 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 46.7 dB  
 LAE 77.5 dB  
 EA 6.236 µPa<sup>2</sup>h  
 LAeq (max) 88.5 dB  
 LA5min 62.9 dB  
 LA5min 41.3 dB  
 SEA 99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 0 0.0 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 46.7 46.7 99.9 46.7 46.7 99.9 99.9 dB  
 LCeq 61.6 dB  
 LAeq 46.7 dB  
 LCeq - LAeq 14.9 dB  
 LAeq 50.3 dB  
 LAeq 46.7 dB  
 LAeq - LAeq 3.6 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
46.7		61.6		70.4	
62.9	2025/02/11 13:00:03	75.5	2025/02/11 13:07:22	87.0	2025/02/11 13:03:39
68.4	2025/02/11 13:03:07	77.9	2025/02/11 13:07:21	92.7	2025/02/11 13:03:39
73.5	2025/02/11 13:03:07	79.4	2025/02/11 13:03:39	95.9	2025/02/11 13:03:39
41.3	2025/02/11 12:54:50	56.4	2025/02/11 13:09:37	60.2	2025/02/11 12:54:23
40.6	2025/02/11 12:54:50	54.2	2025/02/11 13:09:16	59.0	2025/02/11 13:05:53
41.1	2025/02/11 12:54:50	57.1	2025/02/11 13:09:16	61.6	2025/02/11 13:07:41
88.5	2025/02/11 13:03:07	90.7	2025/02/11 13:03:07	98.5	2025/02/11 13:03:39

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 50.6 dB  
 LA 10.00 49.0 dB  
 LA 20.00 45.6 dB  
 LA 50.00 44.4 dB  
 LA 66.60 43.5 dB  
 LA 90.00 42.6 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.37	60.44			
PRM831	#####	-24.36	60.52			
PRM831	#####	-24.33	60.73			
PRM831	#####	-24.24	60.67			
PRM831	#####	-24.33	60.74			
PRM831	#####	-24.39	60.29			
PRM831	#####	-24.38	60.43			
PRM831	#####	-24.33	60.75			
PRM831	#####	-24.39	60.32			



**Summary**  
 File Name on Meter 811\_Data\_861.r  
 File Name on PC 811\_20250211 131312\_811\_Data\_861.r  
 Serial Number 0001912  
 Model Model 811  
 Firmware Version 2.00  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start 2025-02-11 13:13:12  
 Stop 2025-02-11 13:13:12  
 Duration 00:00:00.0  
 Run Time 00:00:00.0  
 Pause 00:00:00.0  
 Pre-Calibration 2025-02-11 13:50:24  
 Post-Calibration  
 Calibration Duration

**Overall Settings**  
 RMS Weighting A Weighting  
 Peak Weighting A Weighting  
 Detector Slow  
 Pre-amplifier Preamplifier  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.9 dB  
 Under Range Peak A C Z  
 74.3 71.1 76.1 dB  
 Under Range Level 26.9 26.1 31.2 dB  
 Noise Floor 16.8 16.9 22.0 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 68.2 dB  
 LAeq 79.0 dB  
 EA 8.800 dBA  
 LAeq (max) 2025-02-11 13:25:39 87.3 dB  
 LAmax 2025-02-11 13:25:39 68.6 dB  
 LAmin 2025-02-11 13:26:06 47.7 dB  
 SEA  
 Exceedance Counts Duration  
 LA5 > 67.0 dB 1 1.4 s  
 LA5 > 65.0 dB 0 0.0 s  
 LA5 > 63.0 dB 0 0.0 s  
 LA5 > 61.0 dB 0 0.0 s  
 LA5 > 59.0 dB 0 0.0 s

**Community Noise**  
 LdN LDay 07:00-22:00 UNight 22:00-07:00 LdEN LDay 07:00-19:00 LEvening 19:00-22:00 UNight 22:00-07:00  
 68.2 68.2 68.2 68.2

LCeq 63.4 dB  
 LAeq 68.2 dB  
 LCeq - LAeq 15.2 dB  
 LAeq 51.5 dB  
 LAeq 68.2 dB  
 LAeq - LAeq 3.3 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
68.2	2025/02/11 13:25:39	68.6		75.1	
68.6	2025/02/11 13:25:39	70.5	2025/02/11 13:25:40	80.1	2025/02/11 13:25:40
71.5	2025/02/11 13:25:39	79.1	2025/02/11 13:25:40	94.1	2025/02/11 13:25:50
73.0	2025/02/11 13:25:39	81.4	2025/02/11 13:25:40	96.9	2025/02/11 13:25:50
67.7	2025/02/11 13:26:06	56.7	2025/02/11 13:26:17	60.7	2025/02/11 13:26:19
61.6	2025/02/11 13:26:06	51.4	2025/02/11 13:26:11	57.0	2025/02/11 13:26:01
61.3	2025/02/11 13:26:06	57.5	2025/02/11 13:26:02	61.8	2025/02/11 13:26:19
67.1	2025/02/11 13:25:39	68.7	2025/02/11 13:25:38	99.5	2025/02/11 13:25:39

Overload Count 0  
 Overload Duration 0.0 s

**LA Percentiles**  
 LA 5.00 51.1 dB  
 LA 10.00 49.0 dB  
 LA 25.00 46.4 dB  
 LA 50.00 42.0 dB  
 LA 60.00 41.0 dB  
 LA 90.00 47.8 dB

**Calculation History**

Pramp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM811	2025-02-11 13:50:24	-24.36	60.55			
PRM811	2025-02-11 13:50:06	-24.36	60.55			
PRM811	2025-02-11 13:48:46	-24.37	60.44			
PRM811	2025-02-11 13:48:28	-24.36	60.52			
PRM811	2025-02-11 13:48:14	-24.33	60.70			
PRM811	2025-02-11 13:48:00	-24.34	60.67			
PRM811	2025-02-11 13:48:00	-24.33	60.74			
PRM811	2025-02-11 13:48:12	-24.39	60.29			
PRM811	2025-02-11 13:48:18	-24.36	60.48			
PRM811	2025-02-11 13:48:03	-24.33	60.75			
PRM811	2025-02-11 13:50:15	-24.39	60.52			











**Summary**  
 File Name on Meter 831\_Data.664.s  
 File Name on PC 831\_20250211134504.831\_Data.664.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation ---

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Pre-amplifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 49.8 dB  
 LAE 80.6 dB  
 EA 12.733 µPa<sup>2</sup>/h  
 LAeq (max) 79.6 dB  
 LA5min 65.5 dB  
 LA5min 44.1 dB  
 SEA -99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 1 3.3 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 49.8 49.8 -99.9 49.8 49.8 -99.9 -99.9 dB

LCeq 65.1 dB  
 LAeq 49.8 dB  
 LCeq - LAeq 15.3 dB  
 LAeq 51.4 dB  
 LAeq 49.8 dB  
 LAeq - LAeq 1.6 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
49.8		65.1		72.8	
65.5	2025/02/11 13:52:41	80.9	2025/02/11 13:52:41	87.3	2025/02/11 13:51:18
67.7	2025/02/11 13:52:41	83.7	2025/02/11 13:52:41	90.9	2025/02/11 13:51:17
69.4	2025/02/11 13:52:41	85.2	2025/02/11 13:52:41	93.4	2025/02/11 13:51:17
44.1	2025/02/11 13:58:28	57.8	2025/02/11 13:45:42	66.6	2025/02/11 13:45:45
43.6	2025/02/11 13:58:28	55.6	2025/02/11 13:45:42	58.5	2025/02/11 13:57:35
44.0	2025/02/11 13:58:28	58.6	2025/02/11 13:45:42	61.9	2025/02/11 13:45:45
79.6	2025/02/11 14:03:35	91.2	2025/02/11 13:52:41	95.8	2025/02/11 13:51:18

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 53.9 dB  
 LA 10.00 51.0 dB  
 LA 25.00 47.9 dB  
 LA 50.00 46.9 dB  
 LA 66.60 46.1 dB  
 LA 90.00 45.2 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831		-24.29	61.04			
PRM831		-24.29	61.04			
PRM831		-24.28	61.09			
PRM831		-24.40	60.23			
PRM831		-24.36	60.55			
PRM831		-24.36	60.55			
PRM831		-24.37	60.44			
PRM831		-24.36	60.52			
PRM831		-24.33	60.79			
PRM831		-24.34	60.07			
PRM831		-24.33	60.74			

12.5 16.0 20.0 25.0 31.5 40.0 50.0 63.0 80.0 100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000 6300 8000 10000 12500 16000 20000

**Summary**  
 File Name on Meter 811\_Data\_865.r  
 File Name on PC 811\_20250211 140823 811\_Data 865.r  
 Serial Number 0002142  
 Model Model 811  
 Firmware Version 2.000  
 User User  
 Location User  
 Job Description User  
 Note

**Measurement**  
 Description 2025-02-11 14:08:23  
 Start 2025-02-11 14:08:23  
 Stop 00:00:00.0  
 Duration 00:00:00.0  
 Run Time 00:00:00.0  
 Pause 00:00:00.0  
 Pre-Calibration 2025-02-11 13:43:12  
 Post-Calibration None  
 Calibration Duration --

**Overall Settings**  
 RMS Weighting A Weighting  
 Peak Weighting A Weighting  
 Detector Slow  
 Pre-amplifier Preamplifier  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 Under Range Peak A C Z  
 26.9 71.1 76.1 dB  
 Under Range Level 26.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third  
 B

**Results**  
 LAeq 47.8 dB  
 LAeq 78.6 dB  
 EA 8.036 dBA  
 LAeq (max) 2025-02-11 14:08:23 90.2 dB  
 LAmax 2025-02-11 14:27:05 94.5 dB  
 LAmin 2025-02-11 14:18:38 61.3 dB  
 SEA --- dB

**Exceedance Counts**  
 Duration  
 LA5 > 62.0 dB 0 0.0 s  
 LA5 > 65.0 dB 0 0.0 s  
 LA5 > 70.0 dB 0 0.0 s  
 LA5 > 75.0 dB 0 0.0 s  
 LA5 > 80.0 dB 0 0.0 s

**Community Noise**  
 LDN 47.8 LDAY 07:00-22:00 47.8 UNIGHT 22:00-07:00 47.8 LDEN LDAY 07:00-19:00 47.8 EVENING 19:00-22:00 47.8 UNIGHT 22:00-07:00 47.8

LCeq 61.1 dB  
 LAeq 47.8 dB  
 LCeq - LAeq 13.3 dB  
 LAeq 52.8 dB  
 LAeq 47.8 dB  
 LAeq - LAeq 6.6 dB

A			C			Z		
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp			
47.8		61.1		65.1				
69.3	2025/02/11 14:27:05	77.7	2025/02/11 14:11:08	83.0	2025/02/11 14:14:53			
69.6	2025/02/11 14:27:05	77.8	2025/02/11 14:11:07	87.8	2025/02/11 14:24:14			
77.8	2025/02/11 14:27:05	79.5	2025/02/11 14:11:07	79.1	2025/02/11 14:24:14			
63.1	2025/02/11 14:18:38	54.8	2025/02/11 14:24:06	60.4	2025/02/11 14:27:24			
61.8	2025/02/11 14:20:05	54.8	2025/02/11 14:24:06	58.1	2025/02/11 14:27:21			
69.1	2025/02/11 14:18:49	57.7	2025/02/11 14:23:21	61.8	2025/02/11 14:15:55			
90.2	2025/02/11 14:08:23	88.6	2025/02/11 14:08:23	94.3	2025/02/11 14:24:14			

**Overload Count**  
 0  
 Overload Duration 0.0 s

**LA Protection**  
 LA 5.00 50.9 dB  
 LA 15.00 46.9 dB  
 LA 25.00 46.2 dB  
 LA 35.00 45.6 dB  
 LA 45.00 45.0 dB  
 LA 55.00 44.3 dB

**Calculation History**

Pramp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRAMP1	2025-02-11 13:43:12	-24.29	01.04			
PRAMP1	2025-02-11 13:43:57	-24.29	01.04			
PRAMP1	2025-02-11 13:44:41	-24.28	01.05			
PRAMP1	2025-02-11 13:45:26	-24.40	00.23			
PRAMP1	2025-02-11 13:50:06	-24.36	00.55			
PRAMP1	2025-02-11 13:50:06	-24.36	00.55			
PRAMP1	2025-02-11 13:50:06	-24.37	00.44			
PRAMP1	2025-02-11 13:50:28	-24.36	00.52			
PRAMP1	2025-02-11 13:50:44	-24.31	00.73			
PRAMP1	2025-02-11 13:50:50	-24.34	00.67			
PRAMP1	2025-02-11 13:50:56	-24.33	00.74			











**Summary**  
 File Name on Meter 831\_Data.666.s  
 File Name on PC 831\_20250211144339-831\_Data.666.libin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation --

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Pre-amplifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third  
 B

**Results**  
 LAeq 61.4 dB  
 LAE 92.2 dB  
 EA 184.051 µPa<sup>2</sup>h  
 LAeq (max) 96.4 dB  
 LA5min 74.9 dB  
 LA5min 47.4 dB  
 SEA 99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 36 183.2 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDEN LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 61.4 61.4 99.9 61.4 61.4 99.9 99.9 dB

LCeq 66.7 dB  
 LAeq 61.4 dB  
 LCeq - LAeq 5.3 dB  
 LAeq 68.3 dB  
 LAeq 61.4 dB  
 LAeq - LAeq 6.9 dB

dB	A		C		Z	
	Time Stamp		Time Stamp		Time Stamp	
61.4			66.7		77.3	
LAeq	74.9	2025/02/11 15:01:50	77.5	2025/02/11 14:57:17	91.3	2025/02/11 14:57:17
Lfmax	80.6	2025/02/11 15:02:43	81.9	2025/02/11 14:57:17	96.7	2025/02/11 14:57:17
Lfmin	83.4	2025/02/11 15:02:43	84.7	2025/02/11 14:57:17	99.6	2025/02/11 14:57:17
Lqmin	47.4	2025/02/11 14:49:36	60.9	2025/02/11 14:56:39	65.1	2025/02/11 14:56:38
Lqmax	46.7	2025/02/11 14:48:58	58.9	2025/02/11 14:49:51	63.3	2025/02/11 14:55:06
Lkmin	47.0	2025/02/11 14:48:58	61.1	2025/02/11 14:56:39	65.5	2025/02/11 14:56:38
Lkmax	96.4	2025/02/11 15:02:43	94.9	2025/02/11 15:01:50	102.5	2025/02/11 14:57:17

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 67.9 dB  
 LA 10.00 65.8 dB  
 LA 33.33 59.1 dB  
 LA 50.00 55.4 dB  
 LA 66.60 52.8 dB  
 LA 90.00 49.8 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.30	60.98			
PRM831	#####	-24.29	61.01			
PRM831	#####	-24.25	61.30			
PRM831	#####	-24.35	60.62			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.28	61.09			
PRM831	#####	-24.40	60.23			
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.37	60.44			



**Summary**  
 File Name on Meter 831\_Data.667.5  
 File Name on PC 831\_20250211 150443 831\_Data.667.lbin  
 Serial Number 0001742  
 Model Model 831  
 Firmware Version 2.300  
 User  
 Location  
 Job Description  
 Note

**Measurement**  
 Description  
 Start #####  
 Stop #####  
 Duration 00:20:00.0  
 Run Time 00:20:00.0  
 Pause 00:00:00.0  
 Pre-Calibration #####  
 Post-Calibration None  
 Calibration Deviation ---

**Overall Settings**  
 RMS Weight A Weighting  
 Peak Weight A Weighting  
 Detector Slow  
 Pre-amplifier PRM831  
 Microphone Correction Off  
 Integration Method Linear  
 Gain 0.0 dB  
 Overload 141.8 dB  
 A C Z  
 Under Range Peak 74.3 71.3 76.3 dB  
 Under Range Limit 25.9 26.1 31.1 dB  
 Noise Floor 16.8 16.9 21.9 dB  
 Instrument Identification First Second Third

**Results**  
 LAeq 53.2 dB  
 LAE 84.0 dB  
 EA 27.857 µPa<sup>2</sup>h  
 LAeq (max) 84.8 dB  
 LA5min 66.0 dB  
 LA5min 47.9 dB  
 SEA -99.9 dB

Exceedance Counts Duration  
 LA5 > 65.0 dB 1 1.0 s  
 LA5 > 85.0 dB 0 0.0 s  
 LAeq > 135.0 dB 0 0.0 s  
 LAeq > 137.0 dB 0 0.0 s  
 LAeq > 140.0 dB 0 0.0 s

Community Noise LDN LDay 07:00-22:00 LNight 22:00-07:00 LDay 07:00-19:00 LEvening 19:00-22:00 LNight 22:00-07:00  
 53.2 53.2 -99.9 53.2 53.2 -99.9 -99.9 dB

LCeq 64.8 dB  
 LAeq 53.2 dB  
 LCeq - LAeq 11.6 dB  
 LAeq 57.4 dB  
 LAeq 53.2 dB  
 LAeq - LAeq 4.2 dB

dB	A		C		Z	
	Time Stamp		Time Stamp		Time Stamp	
53.2			64.8		75.0	
LAeq	66.0	2025/02/11 15:15:58	73.5	2025/02/11 15:17:28	87.0	2025/02/11 15:09:52
Lj1max	70.5	2025/02/11 15:15:58	76.7	2025/02/11 15:07:41	92.3	2025/02/11 15:19:47
Lj2max	71.8	2025/02/11 15:15:58	80.1	2025/02/11 15:07:41	95.4	2025/02/11 15:19:47
Lj3max	47.9	2025/02/11 15:23:46	60.9	2025/02/11 15:21:09	64.4	2025/02/11 15:20:39
Lj4max	47.0	2025/02/11 15:23:45	59.2	2025/02/11 15:18:27	61.7	2025/02/11 15:17:09
Lj5max	47.7	2025/02/11 15:23:46	61.5	2025/02/11 15:21:30	65.1	2025/02/11 15:13:54
Lpk1max	84.8	2025/02/11 15:13:09	85.0	2025/02/11 15:07:41	98.7	2025/02/11 15:19:47

Overload Count 0  
 Overload Duration 0.0 s

**Ln Percentiles**  
 LA 5.00 56.4 dB  
 LA 10.00 55.3 dB  
 LA 20.00 53.3 dB  
 LA 50.00 52.5 dB  
 LA 66.60 51.7 dB  
 LA 90.00 50.1 dB

**Integration History**

Preamp	Date	dB re 1V/Pa	mV/Pa	6.3	8.0	10.0
PRM831	#####	-24.30	60.98			
PRM831	#####	-24.29	61.01			
PRM831	#####	-24.25	61.30			
PRM831	#####	-24.35	60.62			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.29	61.04			
PRM831	#####	-24.28	61.09			
PRM831	#####	-24.40	60.23			
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.36	60.55			
PRM831	#####	-24.37	60.44			









w 21:13

STAFF  
ENTRANCE









LOVE  
GOD



**ATTACHMENT B**  
**CONSTRUCTION NOISE AND VIBRATION CALCULATIONS**

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Demolition (Typical)

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	410.0	0.0
Dozer	No	40		81.7	410.0	0.0
Dozer	No	40		81.7	410.0	0.0
Dozer	No	40		81.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Excavator	No	40		80.7	410.0	0.0
Jackhammer	Yes	20		88.9	410.0	0.0
Jackhammer	Yes	20		88.9	410.0	0.0
Jackhammer	Yes	20		88.9	410.0	0.0
Jackhammer	Yes	20		88.9	410.0	0.0
Rock Crusher	No	100		95.0	385.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening		Lmax	Lmax	Lmax
		Lmax	Leq		Lmax	Leq			
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Dozer			63.4	59.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			63.4	59.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			63.4	59.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			63.4	59.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			62.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.6	63.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.6	63.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.6	63.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.6	63.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rock Crusher			77.3	77.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	77.3	78.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 2	Residential	48.5	48.5	48.5

Description	Equipment					
	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	436.0	0.0
Dozer	No	40		81.7	436.0	0.0
Dozer	No	40		81.7	436.0	0.0
Dozer	No	40		81.7	436.0	0.0

Excavator	No	40	80.7	436.0	0.0
Excavator	No	40	80.7	436.0	0.0
Excavator	No	40	80.7	436.0	0.0
Excavator	No	40	80.7	436.0	0.0
Excavator	No	40	80.7	436.0	0.0
Excavator	No	40	80.7	436.0	0.0
Jackhammer	Yes	20	88.9	436.0	0.0
Jackhammer	Yes	20	88.9	436.0	0.0
Jackhammer	Yes	20	88.9	436.0	0.0
Jackhammer	Yes	20	88.9	436.0	0.0
Rock Crusher	No	100	95.0	742.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment		Calculated (dBA)					Noise Limits (dBA)		
		Day		Evening		Day Night		Evening	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Dozer	N/A	N/A	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	70.1	63.1	N/A	N/A	N/A	N/A	N/A

Jackhammer			70.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			70.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rock Crusher			71.6	71.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	71.6	74.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	319.0	0.0
Dozer	No	40		81.7	319.0	0.0
Dozer	No	40		81.7	319.0	0.0
Dozer	No	40		81.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Excavator	No	40		80.7	319.0	0.0
Jackhammer	Yes	20		88.9	319.0	0.0
Jackhammer	Yes	20		88.9	319.0	0.0
Jackhammer	Yes	20		88.9	319.0	0.0
Jackhammer	Yes	20		88.9	319.0	0.0
Rock Crusher	No	100		95.0	290.0	5.0

Results

Noise Limit Exceedance (dBA)			Noise Limits (dBA)	
	Day	Evening	Day	Evening
Calculated (dBA)			Night	

Equipment		Lmax		Leq	Lmax		Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Lmax
Dozer			65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator			64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			72.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			72.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			72.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer			72.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rock Crusher			74.7	74.7	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	74.7	77.6	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #4 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 4	Residential	47.8	47.8	47.8

Equipment		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Impact	Usage				



Excavator			62.3	58.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			62.3	58.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Jackhammer			70.4	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Jackhammer			70.4	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Jackhammer			70.4	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Jackhammer			70.4	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Rock Crusher			72.5	72.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
		Total	72.5	75.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

\*\*\*\* Receptor #5 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 5	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	725.0	0.0
Dozer	No	40		81.7	725.0	0.0
Dozer	No	40		81.7	725.0	0.0
Dozer	No	40		81.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Excavator	No	40		80.7	725.0	0.0
Jackhammer	Yes	20		88.9	725.0	0.0
Jackhammer	Yes	20		88.9	725.0	0.0
Jackhammer	Yes	20		88.9	725.0	0.0
Jackhammer	Yes	20		88.9	725.0	0.0
Rock Crusher	No	100		95.0	940.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night		Calculated (dBA)			Day		Evening		Lmax
		Day	Evening		Night				
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Dozer	N/A	N/A	58.4	54.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	58.4	54.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	58.4	54.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	58.4	54.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	N/A	N/A	57.5	53.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	65.7	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	65.7	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	65.7	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	65.7	58.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rock Crusher	N/A	N/A	69.5	69.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	69.5	71.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #6 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
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Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Site Prep (Typical)

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening			Lmax	
		Lmax	Leq		Lmax	Leq	Lmax		
Dozer		67.1	63.1	N/A	N/A	N/A	N/A	N/A	





Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	64.7	71.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0

Results

Noise Limit Exceedance (dBA)						Noise Limits (dBA)			
Night	Day	Calculated (dBA)		Day		Evening		Lmax	
		Day	Evening	Day	Night	Lmax	Leq		
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Dozer			65.7	61.7	N/A	N/A	N/A	N/A	

N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.7	61.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.7	61.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.7	61.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer			65.7	61.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	68.0	74.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #4 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 4	Residential	47.8	47.8	47.8

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	425.0	0.0
Dozer	No	40		81.7	425.0	0.0
Dozer	No	40		81.7	425.0	0.0
Dozer	No	40		81.7	425.0	0.0
Dozer	No	40		81.7	425.0	0.0
Dozer	No	40		81.7	425.0	0.0
Tractor	No	40	84.0		425.0	0.0



Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	65.4	72.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #5 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 5	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening			Lmax	
		Lmax	Leq		Lmax	Leq	Lmax		
Dozer		60.3	56.3	N/A	N/A	N/A	N/A	N/A	







Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Grading

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		267.0	0.0
Grader	No	40	85.0		267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Dozer	No	40		81.7	267.0	0.0
Excavator	No	40		80.7	267.0	0.0
Excavator	No	40		80.7	267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening			Lmax	
		Lmax	Leq		Lmax	Leq	Lmax		
Grader		70.4	66.5	N/A	N/A	N/A	N/A	N/A	

N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Grader			70.4	66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			67.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dozer			67.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			66.2	62.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			66.2	62.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
		Total	70.4	76.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 2	Residential	48.5	48.5	48.5

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		463.0	0.0
Grader	No	40	85.0		463.0	0.0
Dozer	No	40		81.7	463.0	0.0
Dozer	No	40		81.7	463.0	0.0
Excavator	No	40		80.7	463.0	0.0
Excavator	No	40		80.7	463.0	0.0
Tractor	No	40	84.0		463.0	0.0



Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	65.7	71.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		315.0	0.0
Grader	No	40	85.0		315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Dozer	No	40		81.7	315.0	0.0
Excavator	No	40		80.7	315.0	0.0
Excavator	No	40		80.7	315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0

Results

Noise Limit Exceedance (dBA)						Noise Limits (dBA)			
Night	Day	Calculated (dBA)		Day		Evening		Lmax	
		Day	Evening	Day	Night	Lmax	Leq		
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Grader			69.0	65.0	N/A	N/A	N/A	N/A	





Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	66.4	72.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #5 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 5	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85.0		586.0	0.0
Grader	No	40	85.0		586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Dozer	No	40		81.7	586.0	0.0
Excavator	No	40		80.7	586.0	0.0
Excavator	No	40		80.7	586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0

Results

Noise Limit Exceedance (dBA)						Noise Limits (dBA)			
Night	Day	Calculated (dBA)		Day Night	Evening		Lmax	Leq	Lmax
		Lmax	Leq		Lmax	Leq			
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader			63.6	59.6	N/A	N/A	N/A	N/A	N/A







Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Construction (Typical)

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	267.0	0.0
Generator	No	50		80.6	267.0	0.0
Crane	No	16		80.6	267.0	0.0
Crane	No	16		80.6	267.0	0.0
Welder / Torch	No	40		74.0	267.0	0.0
Welder / Torch	No	40		74.0	267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Forklift	No	50		72.0	267.0	0.0
Forklift	No	50		72.0	267.0	0.0
Forklift	No	50		72.0	267.0	0.0
Forklift	No	50		72.0	267.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening		Lmax		
		Lmax	Leq		Lmax	Leq			
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Generator			66.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Generator			66.1	63.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Crane			66.0	58.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Crane			66.0	58.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Welder / Torch			59.4	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Welder / Torch			59.4	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			57.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			57.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			57.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			57.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
		Total	69.4	74.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Baselines (dBA)				
		Daytime	Evening	Night		
Receptor 2	Residential	48.5	48.5	48.5		
Equipment						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	463.0	0.0

Generator	No	50		80.6	463.0	0.0
Crane	No	16		80.6	463.0	0.0
Crane	No	16		80.6	463.0	0.0
Welder / Torch	No	40		74.0	463.0	0.0
Welder / Torch	No	40		74.0	463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Tractor	No	40	84.0		463.0	0.0
Forklift	No	50		72.0	463.0	0.0
Forklift	No	50		72.0	463.0	0.0
Forklift	No	50		72.0	463.0	0.0
Forklift	No	50		72.0	463.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night		Calculated (dBA)			Day		Evening			
		Day	Evening		Night					
Equipment		Day		Evening		Day		Evening		
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Generator	N/A	N/A	61.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Generator	N/A	N/A	61.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Crane	N/A	N/A	61.2	53.3	N/A	N/A	N/A	N/A	N/A	N/A
Crane	N/A	N/A	61.2	53.3	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	N/A	N/A	54.7	50.7	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	N/A	N/A	54.7	50.7	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	64.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	64.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	64.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A

Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			52.7	49.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			52.7	49.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			52.7	49.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			52.7	49.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
		Total	64.7	69.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	315.0	0.0
Generator	No	50		80.6	315.0	0.0
Crane	No	16		80.6	315.0	0.0
Crane	No	16		80.6	315.0	0.0
Welder / Torch	No	40		74.0	315.0	0.0
Welder / Torch	No	40		74.0	315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Forklift	No	50		72.0	315.0	0.0
Forklift	No	50		72.0	315.0	0.0
Forklift	No	50		72.0	315.0	0.0
Forklift	No	50		72.0	315.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night		Calculated (dBA)			Day		Evening		
		Day	Evening		Night				
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Generator	N/A	N/A	64.6	61.6	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Generator	N/A	N/A	64.6	61.6	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Crane	N/A	N/A	64.6	56.6	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Crane	N/A	N/A	64.6	56.6	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Welder / Torch	N/A	N/A	58.0	54.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Welder / Torch	N/A	N/A	58.0	54.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tractor	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tractor	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tractor	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tractor	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tractor	N/A	N/A	68.0	64.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	N/A	N/A	56.0	53.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	N/A	N/A	56.0	53.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	N/A	N/A	56.0	53.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forklift	N/A	N/A	56.0	53.0	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Total	68.0	73.1	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

\*\*\*\* Receptor #4 \*\*\*\*



Crane			62.0	54.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			55.4	51.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch			55.4	51.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			53.4	50.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			53.4	50.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			53.4	50.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			53.4	50.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	65.4	70.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #5 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 5	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	586.0	0.0
Generator	No	50		80.6	586.0	0.0
Crane	No	16		80.6	586.0	0.0
Crane	No	16		80.6	586.0	0.0
Welder / Torch	No	40		74.0	586.0	0.0
Welder / Torch	No	40		74.0	586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0

Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Forklift	No	50		72.0	586.0	0.0
Forklift	No	50		72.0	586.0	0.0
Forklift	No	50		72.0	586.0	0.0
Forklift	No	50		72.0	586.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

		Calculated (dBA)			Day		Evening		
Night		Day	Evening		Night				
		-----			-----		-----		
Equipment	Leq	Lmax	Leq	Lmax	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
-----		-----			-----		-----		
Generator			59.3	56.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Generator			59.3	56.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Crane			59.2	51.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Crane			59.2	51.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Welder / Torch			52.6	48.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Welder / Torch			52.6	48.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			62.6	58.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			62.6	58.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			62.6	58.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			62.6	58.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			62.6	58.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Forklift			50.6	47.6	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			50.6	47.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			50.6	47.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Forklift			50.6	47.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	62.6	67.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #6 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 6	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	542.0	0.0
Generator	No	50		80.6	542.0	0.0
Crane	No	16		80.6	542.0	0.0
Crane	No	16		80.6	542.0	0.0
Welder / Torch	No	40		74.0	542.0	0.0
Welder / Torch	No	40		74.0	542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Forklift	No	50		72.0	542.0	0.0
Forklift	No	50		72.0	542.0	0.0
Forklift	No	50		72.0	542.0	0.0
Forklift	No	50		72.0	542.0	0.0

Results

Noise Limit Exceedance (dBA)		Noise Limits (dBA)	
Day	Evening	Day	Evening
-----	-----	-----	-----
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Night	Calculated (dBA)	Day	Evening



Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Paving (Typical)

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	267.0	0.0
Paver	No	50		77.2	267.0	0.0
Pavement Scarafier	No	20		89.5	267.0	0.0
Pavement Scarafier	No	20		89.5	267.0	0.0
Pavement Scarafier	No	20		89.5	267.0	0.0
Pavement Scarafier	No	20		89.5	267.0	0.0
Roller	No	20		80.0	267.0	0.0
Roller	No	20		80.0	267.0	0.0
Roller	No	20		80.0	267.0	0.0
Roller	No	20		80.0	267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Tractor	No	40	84.0		267.0	0.0
Concrete Mixer Truck	No	40		78.8	267.0	0.0
Concrete Mixer Truck	No	40		78.8	267.0	0.0
Concrete Pump Truck	No	20		81.4	267.0	0.0
Concrete Pump Truck	No	20		81.4	267.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening		Lmax	Leq	Lmax
		Lmax	Leq		Lmax	Leq			
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax

Paver			62.7	59.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Paver			62.7	59.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Pavement Scarafier			74.9	68.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Pavement Scarafier			74.9	68.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Pavement Scarafier			74.9	68.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Pavement Scarafier			74.9	68.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			65.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			65.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			65.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Roller			65.4	58.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Tractor			69.4	65.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Concrete Mixer Truck			64.2	60.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Concrete Mixer Truck			64.2	60.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Concrete Pump Truck			66.8	59.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Concrete Pump Truck			66.8	59.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
		Total	74.9	76.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 2	Residential	48.5	48.5	48.5

Description	Equipment			Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage (%)	Spec Lmax (dBA)		
Paver	No	50	77.2	463.0	0.0

Paver	No	50	77.2	463.0	0.0
Pavement Scarafier	No	20	89.5	463.0	0.0
Pavement Scarafier	No	20	89.5	463.0	0.0
Pavement Scarafier	No	20	89.5	463.0	0.0
Pavement Scarafier	No	20	89.5	463.0	0.0
Roller	No	20	80.0	463.0	0.0
Roller	No	20	80.0	463.0	0.0
Roller	No	20	80.0	463.0	0.0
Roller	No	20	80.0	463.0	0.0
Tractor	No	40	84.0	463.0	0.0
Tractor	No	40	84.0	463.0	0.0
Concrete Mixer Truck	No	40	78.8	463.0	0.0
Concrete Mixer Truck	No	40	78.8	463.0	0.0
Concrete Pump Truck	No	20	81.4	463.0	0.0
Concrete Pump Truck	No	20	81.4	463.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night		Calculated (dBA)			Day		Evening		
		Day	Evening		Night				
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Paver	N/A	N/A	57.9	54.9	N/A	N/A	N/A	N/A	N/A
Paver	N/A	N/A	57.9	54.9	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	70.2	63.2	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	70.2	63.2	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	70.2	63.2	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	70.2	63.2	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	60.7	53.7	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	60.7	53.7	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	60.7	53.7	N/A	N/A	N/A	N/A	N/A

Roller			60.7	53.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			64.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			59.5	55.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			62.1	55.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			62.1	55.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	70.2	71.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Equipment		Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage (%)				
Paver	No	50		77.2	315.0	0.0
Paver	No	50		77.2	315.0	0.0
Pavement Scarafier	No	20		89.5	315.0	0.0
Pavement Scarafier	No	20		89.5	315.0	0.0
Pavement Scarafier	No	20		89.5	315.0	0.0
Pavement Scarafier	No	20		89.5	315.0	0.0
Roller	No	20		80.0	315.0	0.0
Roller	No	20		80.0	315.0	0.0
Roller	No	20		80.0	315.0	0.0
Roller	No	20		80.0	315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Tractor	No	40	84.0		315.0	0.0
Concrete Mixer Truck	No	40		78.8	315.0	0.0
Concrete Mixer Truck	No	40		78.8	315.0	0.0
Concrete Pump Truck	No	20		81.4	315.0	0.0
Concrete Pump Truck	No	20		81.4	315.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

			Calculated (dBA)		Day		Evening		
Night			Day	Evening	Night				
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Paver			61.2	58.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver			61.2	58.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			73.5	66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			73.5	66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			73.5	66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			73.5	66.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			64.0	57.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			64.0	57.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			64.0	57.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			64.0	57.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			68.0	64.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			62.8	58.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			62.8	58.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			65.4	58.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			65.4	58.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			73.5	74.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #4 \*\*\*\*



Pavement Scarafier			70.9	63.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			70.9	63.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier			70.9	63.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			61.4	54.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor			65.4	61.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			60.2	56.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			60.2	56.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			62.8	55.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			62.8	55.8	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	70.9	72.1	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #5 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 5	Residential	53.2	53.2	53.2

Description	Equipment			Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
	Impact Device	Usage (%)	Spec Lmax (dBA)			
Paver	No	50		77.2	586.0	0.0
Paver	No	50		77.2	586.0	0.0
Pavement Scarafier	No	20		89.5	586.0	0.0
Pavement Scarafier	No	20		89.5	586.0	0.0
Pavement Scarafier	No	20		89.5	586.0	0.0
Pavement Scarafier	No	20		89.5	586.0	0.0
Roller	No	20		80.0	586.0	0.0
Roller	No	20		80.0	586.0	0.0

Roller	No	20		80.0	586.0	0.0
Roller	No	20		80.0	586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Tractor	No	40	84.0		586.0	0.0
Concrete Mixer Truck	No	40		78.8	586.0	0.0
Concrete Mixer Truck	No	40		78.8	586.0	0.0
Concrete Pump Truck	No	20		81.4	586.0	0.0
Concrete Pump Truck	No	20		81.4	586.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night		Day		Calculated (dBA)		Evening		Night		Evening	
		Leq	Lmax	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Paver	N/A	N/A	N/A	55.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Paver	N/A	N/A	N/A	55.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	N/A	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	N/A	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	N/A	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	N/A	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	N/A	N/A	N/A	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	N/A	58.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	N/A	58.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	N/A	58.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	N/A	N/A	N/A	58.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	N/A	62.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	N/A	62.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	N/A	N/A	N/A	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck			57.4	53.4	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			60.0	53.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck			60.0	53.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total	68.1	69.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #6 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
Receptor 6	Residential	53.2	53.2	53.2

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Paver	No	50		77.2	542.0	0.0
Paver	No	50		77.2	542.0	0.0
Pavement Scarafier	No	20		89.5	542.0	0.0
Pavement Scarafier	No	20		89.5	542.0	0.0
Pavement Scarafier	No	20		89.5	542.0	0.0
Pavement Scarafier	No	20		89.5	542.0	0.0
Roller	No	20		80.0	542.0	0.0
Roller	No	20		80.0	542.0	0.0
Roller	No	20		80.0	542.0	0.0
Roller	No	20		80.0	542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Tractor	No	40	84.0		542.0	0.0
Concrete Mixer Truck	No	40		78.8	542.0	0.0
Concrete Mixer Truck	No	40		78.8	542.0	0.0
Concrete Pump Truck	No	20		81.4	542.0	0.0
Concrete Pump Truck	No	20		81.4	542.0	0.0

Results

Noise Limit Exceedance (dBA)			Noise Limits (dBA)	
Night	Day	Calculated (dBA)	Day	Evening
		Evening	Night	
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Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 02/28/2025  
 Case Description: Terravita Coatings

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
Receptor 1	Residential	48.0	48.0	48.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	267.0	0.0
Compressor (air)	No	40		77.7	267.0	0.0

Results

Noise Limit Exceedance (dBA)					Noise Limits (dBA)				
Night	Day	Calculated (dBA)		Day Night	Evening		Lmax	Leq	Lmax
		Lmax	Leq		Lmax	Leq			
Compressor (air)	N/A	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	N/A	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.1	62.2	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
Receptor 2	Residential	48.5	48.5	48.5

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	463.0	0.0
Compressor (air)	No	40		77.7	463.0	0.0

Results

		Noise Limit Exceedance (dBA)				Noise Limits (dBA)			
Night	Day	Calculated (dBA)		Day Night		Evening			
		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		58.3	54.4	N/A	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		58.3	54.4	N/A	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.3	57.4	N/A	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 3	Residential	46.7	46.7	46.7

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	315.0	0.0
Compressor (air)	No	40		77.7	315.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night	Day		Calculated (dBA)		Day		Evening			
	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Lmax	
Compressor (air)	N/A	N/A	N/A	61.7	57.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	N/A	N/A	N/A	61.7	57.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Total	61.7	60.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #4 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Receptor 4	Residential	47.8	47.8	47.8

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	425.0	0.0
Compressor (air)	No	40		77.7	425.0	0.0

Results

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Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night	Day		Calculated (dBA)		Day		Evening		
	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Lmax





Construction Vibration

	Receptors							
	North		South		East		West	
	Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)	
Distance	0		10		0		85	
Equipment	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)
Vibratory Roller	0.21	#DIV/0!	0.21	0.830	0.21	#DIV/0!	0.21	0.033
Hoe Ram	0.089	#DIV/0!	0.089	0.352	0.089	#DIV/0!	0.089	0.014
Large Bulldozer	0.089	#DIV/0!	0.089	0.352	0.089	#DIV/0!	0.089	0.014
Caisson Drilling	0.089	#DIV/0!	0.089	0.352	0.089	#DIV/0!	0.089	0.014
Loaded Trucks	0.076	#DIV/0!	0.076	0.300	0.076	#DIV/0!	0.076	0.012
Jackhammer	0.035	#DIV/0!	0.035	0.138	0.035	#DIV/0!	0.035	0.006
Small Bulldozer	0.003	#DIV/0!	0.003	0.012	0.003	#DIV/0!	0.003	0.000
Maximum Vibration Levels		#DIV/0!		0.830		#DIV/0!		0.033
Vibration Damage Threshold		0.30		0.30		0.30		0.30
Vibration Annoyance Threshold		0.04		0.04		0.04		0.04
Exceeds Vibration Damage Threshold?		#DIV/0!		Yes		#DIV/0!		No
Exceeds Vibration Annoyance Threshold?		#DIV/0!		Yes		#DIV/0!		No

Structure and Condition	Older residential structures
Human Response	Distinctly perceptible
	Source: FTA 2018

Construction Vibration

	Receptors							
	North		South		East		West	
	Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)	
Distance	0		20		0		155	
Equipment	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)	PPVref (@ 25 ft, in/sec)	PPV (in/sec)
Vibratory Roller	0.21	#DIV/0!	0.21	0.293	0.21	#DIV/0!	0.21	0.014
Hoe Ram	0.089	#DIV/0!	0.089	0.124	0.089	#DIV/0!	0.089	0.006
Large Bulldozer	0.089	#DIV/0!	0.089	0.124	0.089	#DIV/0!	0.089	0.006
Caisson Drilling	0.089	#DIV/0!	0.089	0.124	0.089	#DIV/0!	0.089	0.006
Loaded Trucks	0.076	#DIV/0!	0.076	0.106	0.076	#DIV/0!	0.076	0.005
Jackhammer	0.035	#DIV/0!	0.035	0.049	0.035	#DIV/0!	0.035	0.002
Small Bulldozer	0.003	#DIV/0!	0.003	0.004	0.003	#DIV/0!	0.003	0.000
Maximum Vibration Levels		#DIV/0!		0.293		#DIV/0!		0.014
Vibration Damage Threshold		0.30		0.30		0.30		0.30
Vibration Annoyance Threshold		0.04		0.04		0.04		0.04
Exceeds Vibration Damage Threshold?		#DIV/0!		No		#DIV/0!		No
Exceeds Vibration Annoyance Threshold?		#DIV/0!		Yes		#DIV/0!		No

Structure and Condition	Older residential structures
Human Response	Distinctly perceptible
	Source: FTA 2018

**Construction Vibration**

	Receptors			
	North		West	
	Distance to Closest Receiver (ft)		Distance to Closest Receiver (ft)	
<b>Distance</b>	0		155	
<b>Equipment</b>	<b>Lvref (@ 25 ft, VdB)</b>	<b>Lv (VdB)</b>	<b>Lvref (@ 25 ft, VdB)</b>	<b>Lv (VdB)</b>
Vibratory Roller	94	#NUM!	94	70
Hoe Ram	87	#NUM!	87	63
Large Bulldozer	87	#NUM!	87	63
Caisson Drilling	87	#NUM!	87	63
Loaded Trucks	86	#NUM!	86	62
Jackhammer	79	#NUM!	79	55
Small Bulldozer	58	#NUM!	58	34
<b>Maximum Vibration Levels</b>		#NUM!		70
<b>Vibration Annoyance Threshold</b>		72		72
<b>Exceeds Vibration Annoyance Threshold?</b>		#NUM!		No

**Land Use**

**Residential**

**Source: FTA 2018**