APPLE VALLEY TRUCK AND TRAILER FACILITY NOISE IMPACT ANALYSIS

Town of Apple Valley

January 2, 2025

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Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

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prepared by
Roma Stromberg, INCE, MS
Catherine Howe, MS

GANDDINI GROUP INC.
555 Parkcenter Drive, Suite 225
Santa Ana, California 92705
(714) 795-3100 | ganddini.com

Project No. 19763

TABLE OF CONTENTS

List of Tables

List of Figures

EXECUTIVE SUMMARY

The proposed project involves the development of a truck and trailer parking lot with 426 truck/trailer parking spaces (12' by 55') and three standard parking spaces (9' x 19'). Vehicle access for the project site is proposed via gated access to Waalew Road. The 14.86-acre project site (APN: 0440-014-11) is located on the southside of Waalew Road between Ramona Street and Navajo Road in the Town of Apple Valley, California. The project site is currently vacant and zoned Planned Industrial (I-P).

Existing Noise Environment

Nearby sensitive receptors that may be affected by project generated noise include the existing non-conforming single-family residence on property zoned for industrial land uses immediately west of the project site; several single-family homes located along the eastern project boundary that are on parcels zoned for residential land uses; and the existing single-family residence located just north of the project site on property designated for industrial land uses.

Measured short-term ambient noise levels in the project vicinity ranged between 48.7 and 52.2 dBA L_{eq} and measured long-term hourly ambient noise levels ranged from 45.6 to 56.5 dBA L_{eq}. The dominant noise source in the project vicinity was vehicle traffic associated with Waalew Road and Navajo Road.

Project Construction Impacts – Onsite Equipment

Based on the modeled construction noise levels, exterior noise levels are estimated to reach a maximum of 71.8 dBA at the nearest residential property line. Therefore, the project would not exceed the Town-established daytime mobile construction noise threshold of 75 dBA L_{eq}. However, the nighttime mobile construction noise threshold of 60 dBA L_{eq} will potentially be exceeded at the residential uses to the north, east, and west of the project site if construction activities occur between 7:00 PM and 7:00 AM.

Although it is not anticipated that the project would undergo construction activities during the noise sensitive nighttime hours (7:00 PM to 7:00 AM), the following measure is recommended to ensure the project does not exceed the nighttime mobile construction noise threshold of 60 dBA L_{eq}:

> **Mitigation Measure 1**
> Construction shall be prohibited during the nighttime hours of 7:00 PM to 7:00 AM.

With implementation of Mitigation Measure 1, the project is not expected to exceed established standards relating to construction noise; therefore, the project impact would be less than significant.

Notwithstanding the above, best management practices (BMPs) are provided in the Project Description that can be implemented to further minimize construction noise at adjacent properties.

Project Construction Impacts – Offsite Vehicle Trips

Project vehicle traffic generated during project construction would be anticipated to be nominal relative to existing roadway volumes and would not result in the doubling of traffic volume necessary to increase noise levels by 3 dBA. The project impact is less than significant; no mitigation is required.

Operational Noise Impacts – Onsite Sources

Exterior Noise Impacts

Project exterior operational noise levels at residential zoned property lines are expected to range between 47 and 50 dBA L_{eq}. therefore, the project will not exceed Town-established daytime exterior adjusted stationary noise standards. Further, project operational hours will be 7:00 AM until 5:00 PM and therefore will not violate nighttime noise standards. This impact is less than significant. No mitigation is required.

Interior Noise Impacts

Typical residential construction provides approximately 20 dB of exterior to interior noise reduction with windows closed and approximately 15 dB of reduction with windows open. Project operational noise will not cause daytime interior noise levels to exceed the Town's interior noise standard of 45 dBA L_{eq} at nearby residential land uses. Project operational hours are 7:00 AM to 5:00 PM. Therefore, nighttime interior noise standards will not be exceeded.

Operational Noise Impacts – Offsite Vehicle Trips

The addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments. The project impact is less than significant; no mitigation is required.

Groundborne Vibration Impacts

Groundborne vibration generated by project construction would not exceed the levels necessary to cause architectural damage to sensitive receptors.

The use of vibratory rollers and/or large bulldozers could theoretically exceed the threshold for annoyance due to vibration (PPV of 0.04 in/sec at offsite residential sensitive uses) at the existing residential receptors to the east of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 75 feet, for vibratory rollers, and 43 feet, for large bulldozers, of the existing residential structures. Furthermore, this impact would only occur during daytime hours and will be temporary. This impact would be less than significant. No mitigation is required.

Air Traffic Impacts

The closest airport to the project site is the Apple Valley Airport. Per the Town of Apple Valley 2009 General Plan, the 60 dBA noise contour for the airport was identified as occurring within the airport's property, and noise levels on surrounding lands are not significantly affected. Furthermore, even taking into consideration potential future expansion of the airport, the noise contours are expected to remain within the airport boundary. Therefore, the project would not expose people residing or working in the project area to excessive noise levels associated with airports. The impact would be less than significant; no mitigation is required.

1. INTRODUCTION

This section describes the purpose of this study and the proposed project.

PURPOSE AND OBJECTIVES

The purpose of this report is to provide an assessment of the noise impacts resulting from development and operation of the proposed project and to identify mitigation measures that may be necessary to reduce potentially significant impacts. The noise issues related to the proposed land use and development have been evaluated in light of applicable federal, state and local policies, including those of the Town of Apple Valley, in the context of the California Environmental Quality Act (CEQA).

Although this is a technical report, effort has been made to write the report clearly and concisely. A list of acronyms and glossary are provided in Appendix A and Appendix B of this report to assist the reader with technical terms related to noise and vibration analysis.

PROJECT LOCATION

The 14.86-acre project site (APN: 0440-014-11) is located on the southside of Waalew Road between Ramona Street and Navajo Road in the Town of Apple Valley, California. The project site is currently vacant and zoned Planned Industrial (I-P). A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The proposed project involves the development of truck and trailer parking lot with 426 truck/trailer parking spaces (12' by 55') and three standard parking spaces (9' x 19'). Vehicle access for the project site is proposed via gated access to Waalew Road. Figure 2 illustrates the project site plan.

BEST MANAGEMENT PRACTICES

The following best management practices (BMPs) can be provided on project plans and in contract specifications to minimize construction noise emanating from the proposed project:

1. All equipment, whether fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.
2. All stationary construction equipment will be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.
3. As applicable, all equipment shall be shut off and not left to idle when not in use.
4. To the degree possible, equipment staging will be located in areas that create the greatest distance between construction-related noise and vibration sources and existing sensitive receptors.
5. All noisy portable stationary noise sources will be directed away and shielded from existing residences in the vicinity of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and existing residences. The shielding should be without holes and cracks.
6. No amplified music and/or voice will be allowed on the project site during construction.
7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per Town of Apple Valley Code of Ordinances Section 9.73.060(F).

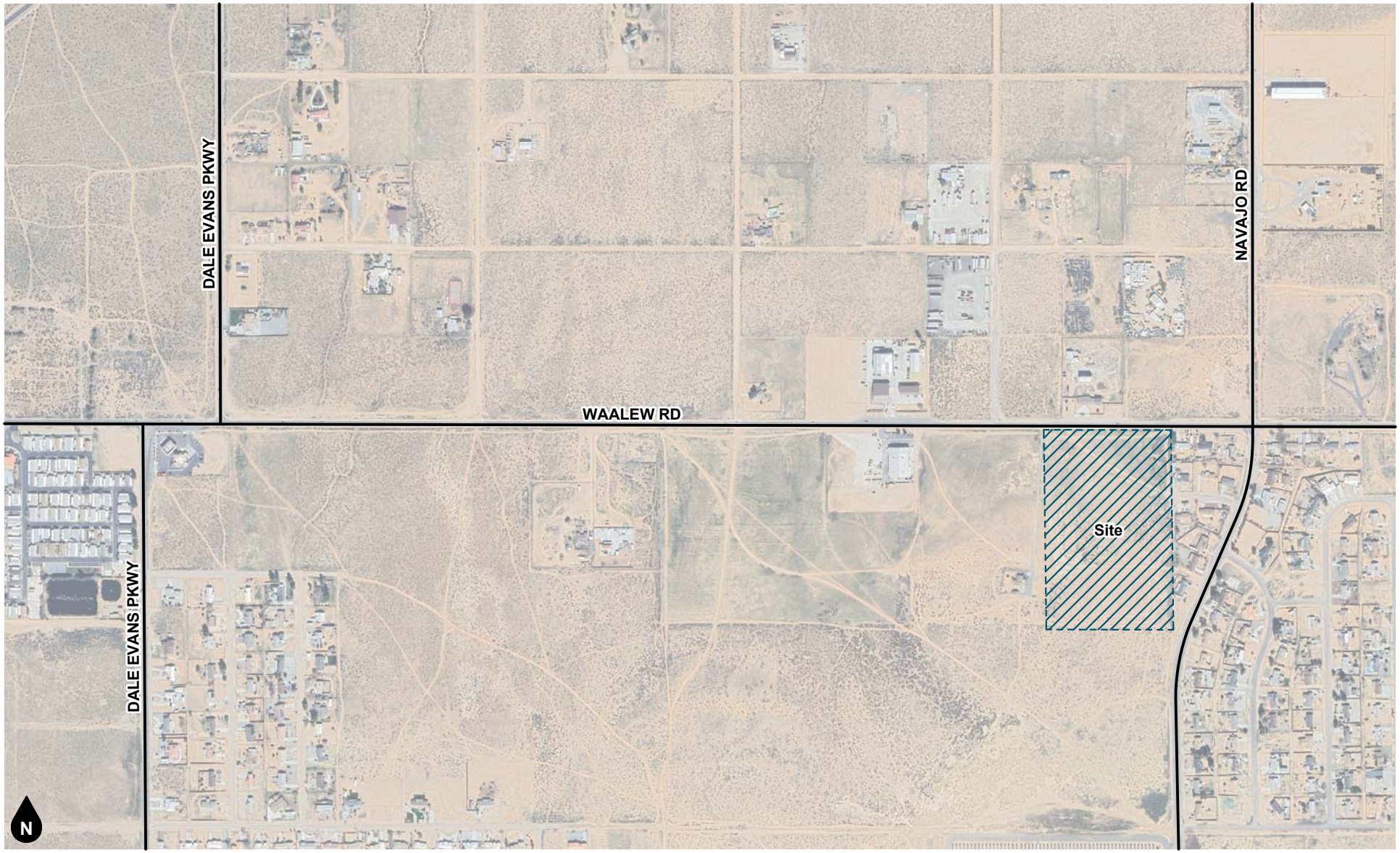


Figure 1
Project Location Map

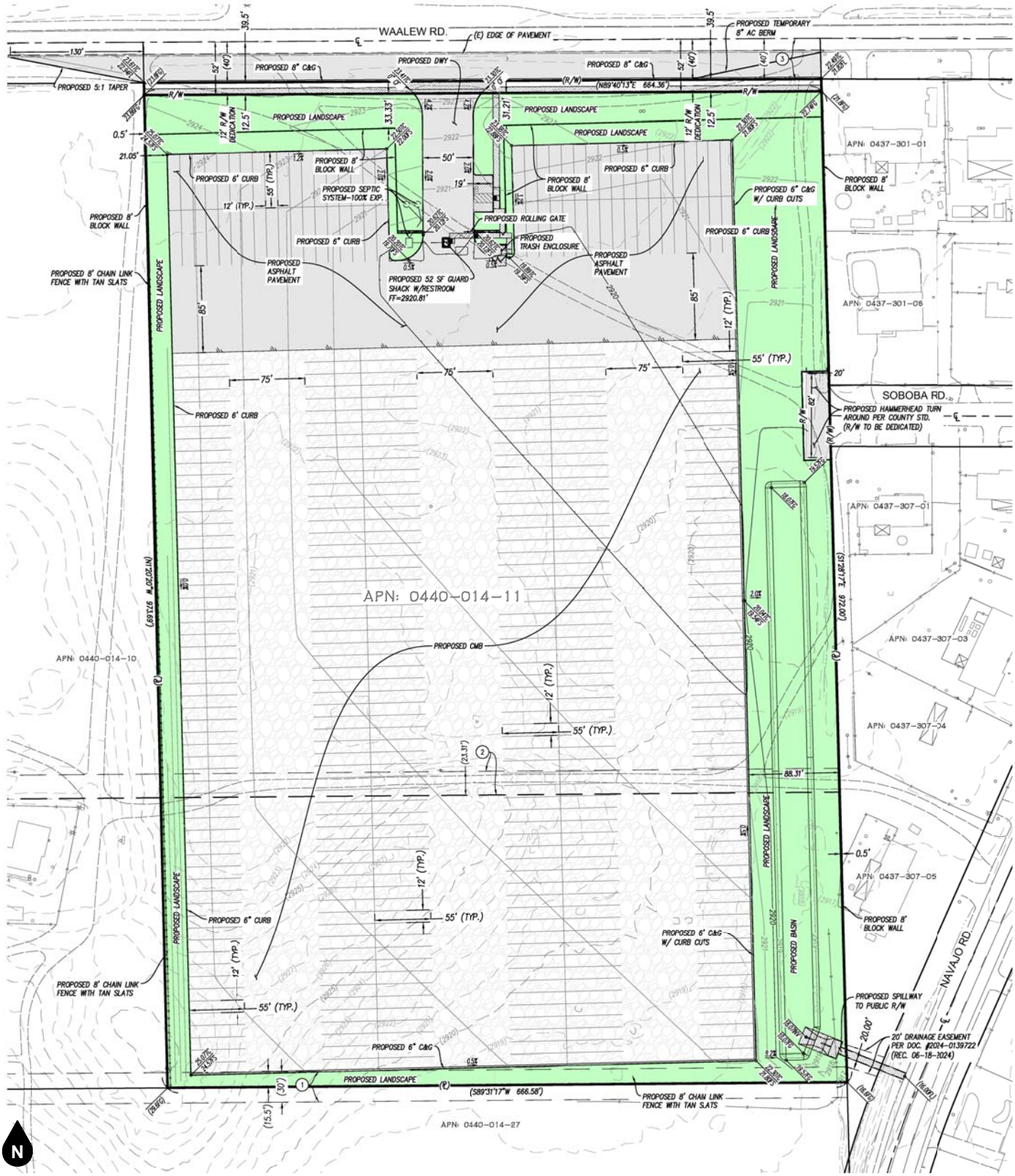


Figure 2
Site Plan

2. NOISE AND VIBRATION FUNDAMENTALS

This section provides an overview of key noise and vibration concepts.

NOISE FUNDAMENTALS

Sound is a pressure wave created by a moving or vibrating source that travels through an elastic medium such as air. Noise is defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in extreme circumstances, hearing impairment.

Commonly used noise terms are presented in Appendix B. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA.

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiates uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as a doubled traffic volume, would increase the noise levels by 3 dBA; halving of the energy would result in a 3 dBA decrease. Figure 3 shows the relationship of various noise levels to commonly experienced noise events.

Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, or the equivalent noise level for that period of time. For example, $L_{eq(3\text{-}hr)}$ would represent a 3-hour average. When no period is specified, a one-hour average is assumed.

Noise standards for land use compatibility are stated in terms of the Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (DNL). CNEL is a 24-hour weighted average measure of community noise. CNEL is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours. DNL is a very similar 24-hour average measure that weights only the nighttime hours.

It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA; that a change of 5 dBA is readily perceptible, and that an increase (decrease) of 10 dBA sounds twice (half) as loud. This definition is recommended by the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (2013).

VIBRATION FUNDAMENTALS

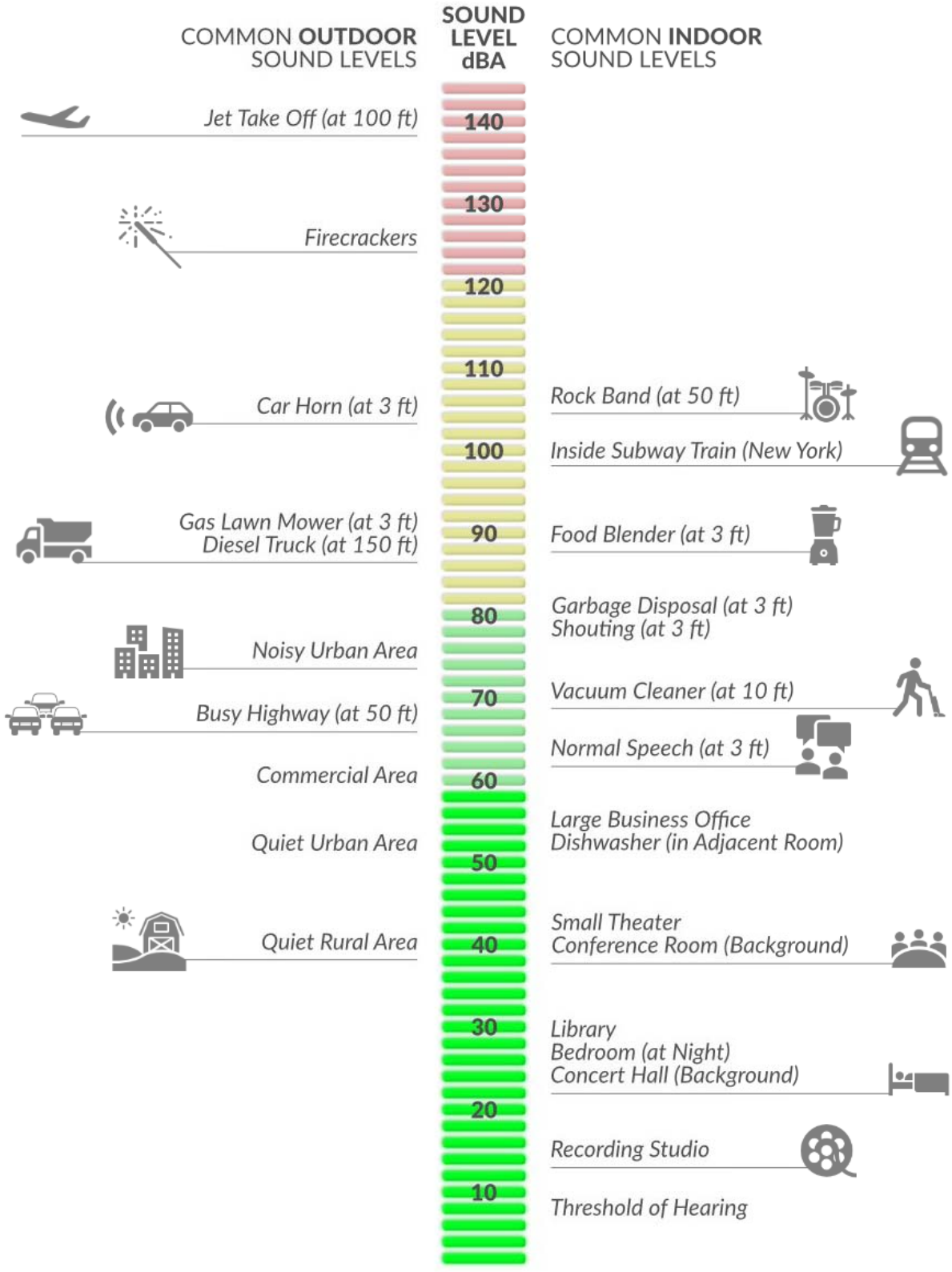
The way in which vibration is transmitted through the earth is called propagation. Propagation of earthborn vibrations is complicated and difficult to predict because of the endless variations in the soil through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves.

Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation".

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

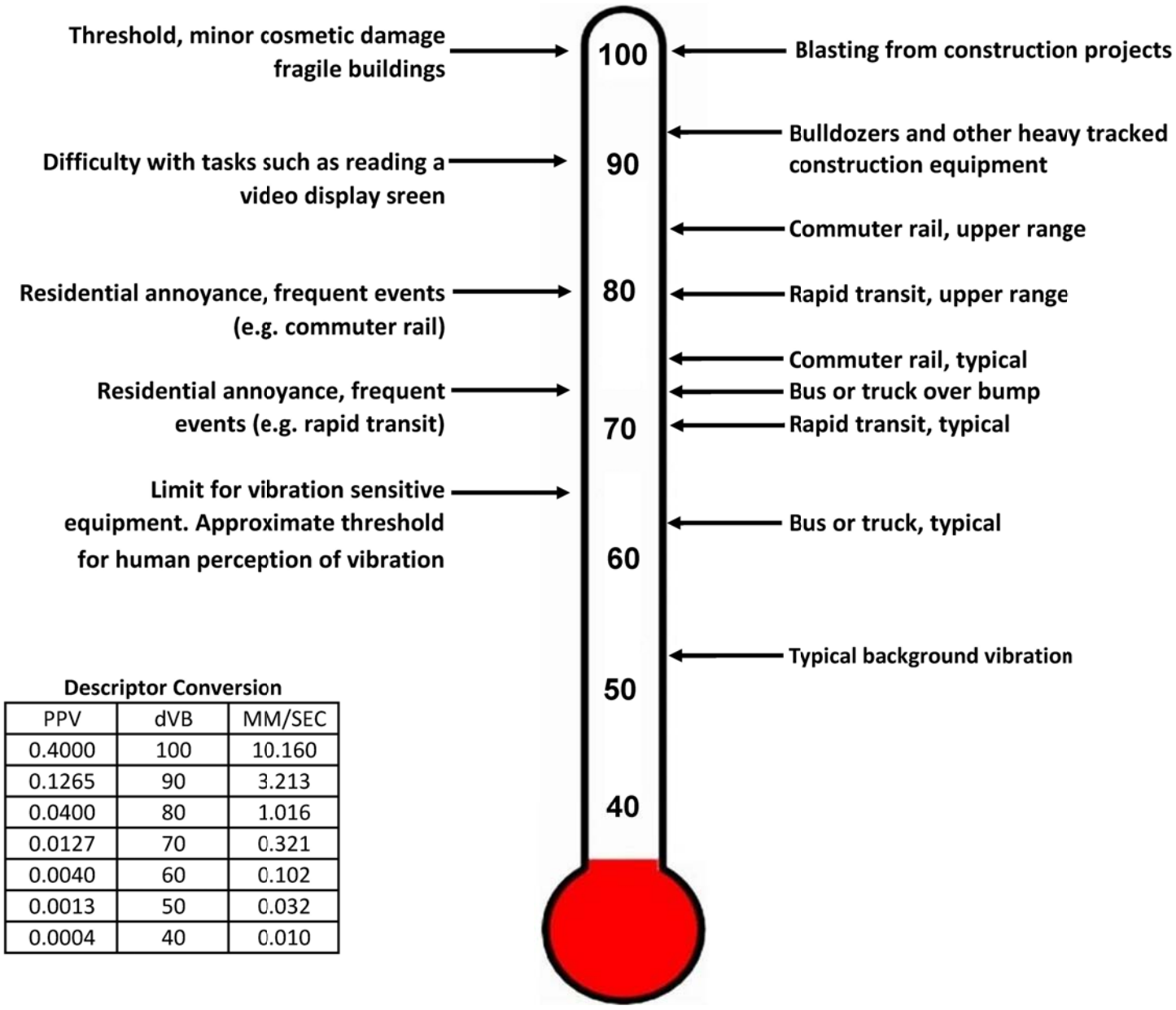
Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal in vibration decibels (VdB), ref one micro-inch per second. The Federal Railroad Administration uses the abbreviation "VdB" for vibration decibels to reduce the potential for confusion with sound decibel.

PPV is appropriate for evaluating the potential of building damage and VdB is commonly used to evaluate human response. Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval. Figure 4 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in the figure, the threshold of perception for human response is approximately 65 VdB; however, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Vibration tolerance limits for sensitive instruments such as magnetic resonance imaging (MRI) or electron microscopes could be much lower than the human vibration perception threshold.



Based on Policy & Guidance from Federal Aviation Administration

Figure 3
A-Weighted Comparative Sound Levels



Descriptor Conversion

PPV	dVB	MM/SEC
0.4000	100	10.160
0.1265	90	3.213
0.0400	80	1.016
0.0127	70	0.321
0.0040	60	0.102
0.0013	50	0.032
0.0004	40	0.010

Source: FRA, 2012. Federal Railroad Administration High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy Development, Washington, D.C. DOT/FRA/ORD-12/15. September.

Figure 4
Typical Levels of Groundborne Vibration

3. EXISTING NOISE ENVIRONMENT

This section describes the existing noise setting in the project vicinity.

EXISTING LAND USES AND SENSITIVE RECEPTORS

The project site is bordered by Waalew Road to the north, existing single-family residential uses and Soboba Road to the east, vacant land to the south, and an existing single-family residential use to the west of the project site.

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas.

There is an existing non-conforming single-family building on property zoned for industrial land uses immediately west of the project site; and several single-family homes located along the eastern project boundary that are on parcels zoned for residential land uses.[1] The existing single-family residence located just north of the project site is located within the North Apple Valley Industrial Specific Plan and is designated for industrial land uses.

AMBIENT NOISE MEASUREMENTS

An American National Standards Institute (ANSI Section SI.4 2014, Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, two (2) 15-minute daytime noise measurements were taken between 1:39 PM and 3:09 PM on November 12, 2024. In addition, one (1) long-term 24-hour noise measurement was also taken from November 12, 2024, to November 13, 2024. Figure 5 shows the noise measurement location map. Field worksheets and noise measurement worksheets are provided in Appendix C.

As shown on Figure 5, existing ambient noise measurements were taken at the following locations:

- STNM1: represents the existing noise environment of the residential land use and vacant land located to the north of the project site along the northern side of Waalew Road (21576 Waalew Road, Apple Valley). The noise meter was placed north of Waalew Road and east of the residential use.
- STNM2: represents the existing noise environment of the residential land uses located to the east and southeast of the project site (21709 Soboba Road, Apple Valley) as well as the existing single-family use on the west side of the project site. The noise meter was placed near the eastern project property line just west of the residential use.[2]
- LTNM1: represents the existing noise environment of the project site, the residential uses to the east, and nighttime noise levels for the area. The noise meter was placed within the northeastern portion of the project site just west of the residential uses.

Table 1 provides a summary of the short-term ambient noise data. Table 2 provides hourly interval ambient noise data from the long-term noise measurements. Measured short-term ambient noise levels ranged between 48.7 and 52.2 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 45.6 to 56.5 dBA L_{eq}. The dominant noise source in the project vicinity was vehicle traffic associated with Waalew Road and Navajo Road.

[1] Town of Apple Valley General Plan Land Use Map, Exhibit II-2

[2] Town of Apple Valley North Apple Valley Industrial Specific Plan Land Use Plan, Exhibit II-2

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	1:39 PM	52.2	67.9	32.9	61.1	55.6	52.3	47.5
STNM2	2:54 PM	48.7	65.7	35.7	59.4	49.1	45.5	43.7

Notes:

(1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.

(2) Noise measurements performed on November 12, 2024.

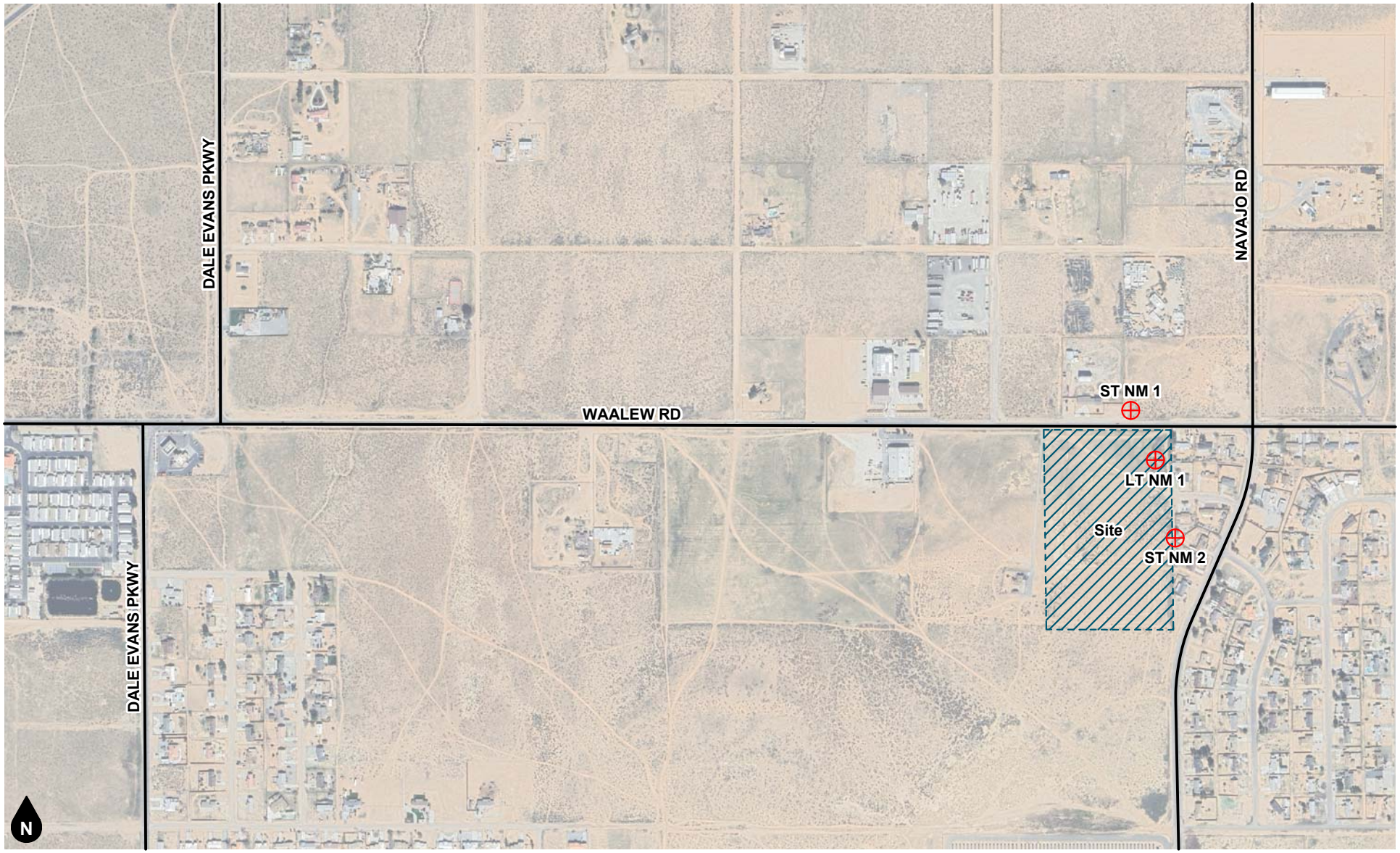
Table 2
Long-Term Noise Measurement Summary (LTNM1) (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	5:00 PM	53.2	80.8	24.1	60.9	56.6	52.7	48.0
1	5:00 PM	54.5	70.6	37.6	61.2	57.9	55.2	52.7
2	6:00 PM	52.0	62.9	34.1	57.9	55.9	53.5	50.4
3	7:00 PM	51.0	64.6	30.1	57.5	55.2	52.5	48.4
4	8:00 PM	51.6	64.3	31.8	59.4	56.4	52.4	47.0
5	9:00 PM	50.8	68.2	31.2	58.8	54.3	50.3	45.5
6	10:00 PM	52.7	71.7	28.6	61.2	56.1	50.6	44.2
7	11:00 PM	51.8	74.3	26.9	59.8	54.9	48.4	40.8
8	12:00 AM	48.7	74.8	24.1	56.9	51.4	42.9	35.9
9	1:00 AM	45.6	62.5	24.9	56.7	49.4	40.8	32.3
10	2:00 AM	47.6	65.3	25.1	57.7	52.9	43.6	35.8
11	3:00 AM	50.2	65.1	29.3	58.6	55.3	50.3	44.5
12	4:00 AM	53.6	70.6	35.8	61.1	58.0	53.8	49.7
13	5:00 AM	53.7	75.5	33.7	59.9	57.0	53.9	50.3
14	6:00 AM	55.4	68.9	39.7	62.2	59.0	56.4	53.2
15	7:00 AM	53.6	68.1	39.4	61.0	56.8	54.0	51.3
16	8:00 AM	53.4	74.5	35.2	59.8	55.6	52.5	49.3
17	9:00 AM	55.8	75.0	33.2	65.0	59.3	53.5	49.2
18	10:00 AM	50.8	70.3	32.4	59.9	54.3	49.9	44.9
19	11:00 AM	56.5	80.8	32.1	64.1	58.7	53.4	48.8
20	12:00 PM	52.7	77.4	33.7	60.2	55.3	51.2	46.9
21	1:00 PM	56.1	78.4	33.7	65.5	57.8	53.4	49.7
22	2:00 PM	52.5	69.7	32.9	60.8	56.2	52.7	49.2
23	3:00 PM	53.5	68.4	32.9	62.7	56.7	53.3	50.1
24	4:00 PM	55.0	68.5	35.0	64.0	58.3	54.9	52.2
CNEL	58.9							

Notes:

(1) See Figure 5 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from November 12, 2024 to November 13, 2024.



Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 5
Noise Measurement Location Map

4. REGULATORY SETTING

This section documents the regulatory framework and applicable noise standards.

FEDERAL REGULATION

Federal Noise Control Act of 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the Ldn should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies, allowing more individualized control for specific issues by designated Federal, State, and local government agencies.

STATE REGULATIONS

State of California General Plan Guidelines 2017

Though not adopted by law, the State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of construction relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., Ldn or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally unacceptable" ranges include conditions calling for detailed acoustical study prior to the construction or operation of the proposed project.

Department of Transportation

The California Department of Transportation (Caltrans) has developed several publications on groundborne vibration. The *Transportation and Construction Vibration Guidance Manual* (Caltrans, 2020) provides informational content that supplements previous publications with improved knowledge and information relating to groundborne transportation- and construction-induced vibrations. Although the *Transportation and Construction Vibration Guidance Manual* is not an official policy, standard, specification, or regulation, it serves as a useful guide for evaluating vibration impacts.

Table 3 and Table 4 show the guideline criteria for potential damage and annoyance resulting from groundborne vibration. As shown in Table 3, these guidelines recommend that the threshold at which there is a risk of architectural damage is a peak particle velocity (PPV) of 0.25 inches/second (in/sec) for historic buildings, PPV of 0.3 in/sec at older residential structures, and a PPV of 0.5 in/sec at new residential structures and modern commercial/industrial buildings. Table 4 shows that a PPV of 0.4 in/sec is the threshold at which groundborne vibration becomes severe in regard to annoyance (Caltrans, 2020).

LOCAL REGULATIONS

Town of Apple Valley General Plan

The Town of Apple Valley has adopted their own version of the State Land Use Compatibility Guidelines for land use planning and to assess potential transportation noise impacts to proposed land uses (see Table 5).

Applicable policies and standards governing environmental noise in the Town are set forth in the Town of Apple Valley General Plan Environmental Hazards Element. Those applicable to the proposed project are presented below:

Goal Noise levels that are consistent with the Town's rural character and high quality of life.

Policies

1.A The Town shall adhere to the standards of "Land Use Compatibility for Community Environments."

1.B New development projects shall assure that exterior noise levels in back yards and/or useable open space do not exceed 65 dBA CNEL, and that interior noise levels are consistent with the requirements of the Building Code.

1.B Changes proposed to the Land Use Map shall include consideration of the potential noise impacts associated with such a change.

1.C The Town shall assure low levels of traffic within neighborhoods by assigning truck routes to major roadways only.

1.D The development review and environmental review process shall require all development proposals within the noise impact area of U.S. I-15, State Route 18, the High Desert Corridor or the railroads to mitigate both noise and vibration to acceptable levels through the preparation of focused studies.

1.E The Town shall coordinate with adjoining jurisdictions to ensure noise-compatible land uses across jurisdictional boundaries.

Town of Apple Valley Code of Ordinances

Chapter 9.73 of the Town's Code of Ordinances aims to reduce unnecessary, excessive and annoying noise and vibration within the Town.

Section 9.73.020(A)(34) Definitions

Vibration Perception Threshold. The minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hz.

Section 9.73.050 External and Internal Noise Standards.

A. External Noise Standards

1. Maximum Permissible Sound Levels by Receiving Land Use.

a. The noise standards for the various categories as presented in Table 6 apply to all such property within a designated zone.

b. No person shall produce or cause to be produced any sound at any location within the incorporated Town or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed:

1. The noise standard for that land use as specified in Table 6 for a cumulative period of more than thirty (30) minutes in any hour; or
2. The noise standard plus five (5) dBA for a cumulative period of more than fifteen (15) minutes in any hour; or
3. The noise standard plus ten (10) dBA for a cumulative period of more than five (5) minutes in any hour; or
4. The noise standard plus fifteen (15) dBA for a cumulative period of more than one (1) minute in any hour; or
5. The noise standard plus twenty (20) dBA or the maximum measured ambient level, for any period of time.

c. If the measured ambient level differs from that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be adjusted in five (5) dBA increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

d. If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus five (5) dBA shall apply.

e. If possible, the ambient noise shall be measured at the same location along the property line utilized in paragraph 9.73.050.A.1.b with the alleged offending noise source inoperative. If, for any reason, the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least ten (10) dBA below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dBA, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.

2. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the NCO, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 6 shall be reduced by five (5) dBA.

B. Interior Noise Standards

1. Maximum Permissible Dwelling Interior Sound Levels

a. The interior noise standards for multi-family residential dwellings as presented in Table 7 within all such dwellings with windows in their normal seasonal configuration.

b. No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level, when measured inside a neighboring receiving dwelling unit, to exceed:

1. The noise standard as specified in Table 7 for a cumulative period of more than five (5) minutes in any hour; or
2. The noise standard plus five (5) dBA for a cumulative period of more than one (1) minute in any hour; or
3. The noise standard plus ten (10) dBA or the maximum measured ambient, for any period of time.

c. If the measured ambient level differs from that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be adjusted in five (5) dBA increments in each category as appropriate to reflect said ambient noise level.

2. Correction for Character of Sound. In the event the alleged offensive noise, as judged by the NCO, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 7 shall be reduced by five (5) dBA.

Section 9.73.060 Prohibited Noise and Vibration.

No person shall unnecessarily make, continue, or cause to be made or continued, any noise disturbance. The following acts, and the causing or permitting thereof, are declared to be in violation of Chapter 9.73 of the Town's Code of Ordinances.

E. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10 PM and 7 AM in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of 9.73.050.A.1.

F. Construction/Demolition

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 PM and 7:00 AM, or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the Town.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in Table 8.

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

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

H. Noise Sensitive Zones

1. Creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards set forth in Section 9.73.050.A.1., provided that conspicuous signs are displayed indicating the zone; or

2. Creating or causing the creation of any sound within or adjacent to any noise sensitive zone containing a hospital, nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the occupants in the activity, provided that conspicuous signs are displayed indicating the presence of the zone.

I. Domestic Power Tools, Machinery

1. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool between 10 PM and 7AM, so as to create a noise disturbance across a residential or commercial real property line.

2. Any motor, machinery, pump, such as swimming pool equipment, etc., shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with Section 9.73.050.

Table 3
Guideline Vibration Damage Potential Threshold Criteria

Structure Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, anceint 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

Notes:
Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.
(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 4
Guideline Vibration Annoyance Potential Criteria

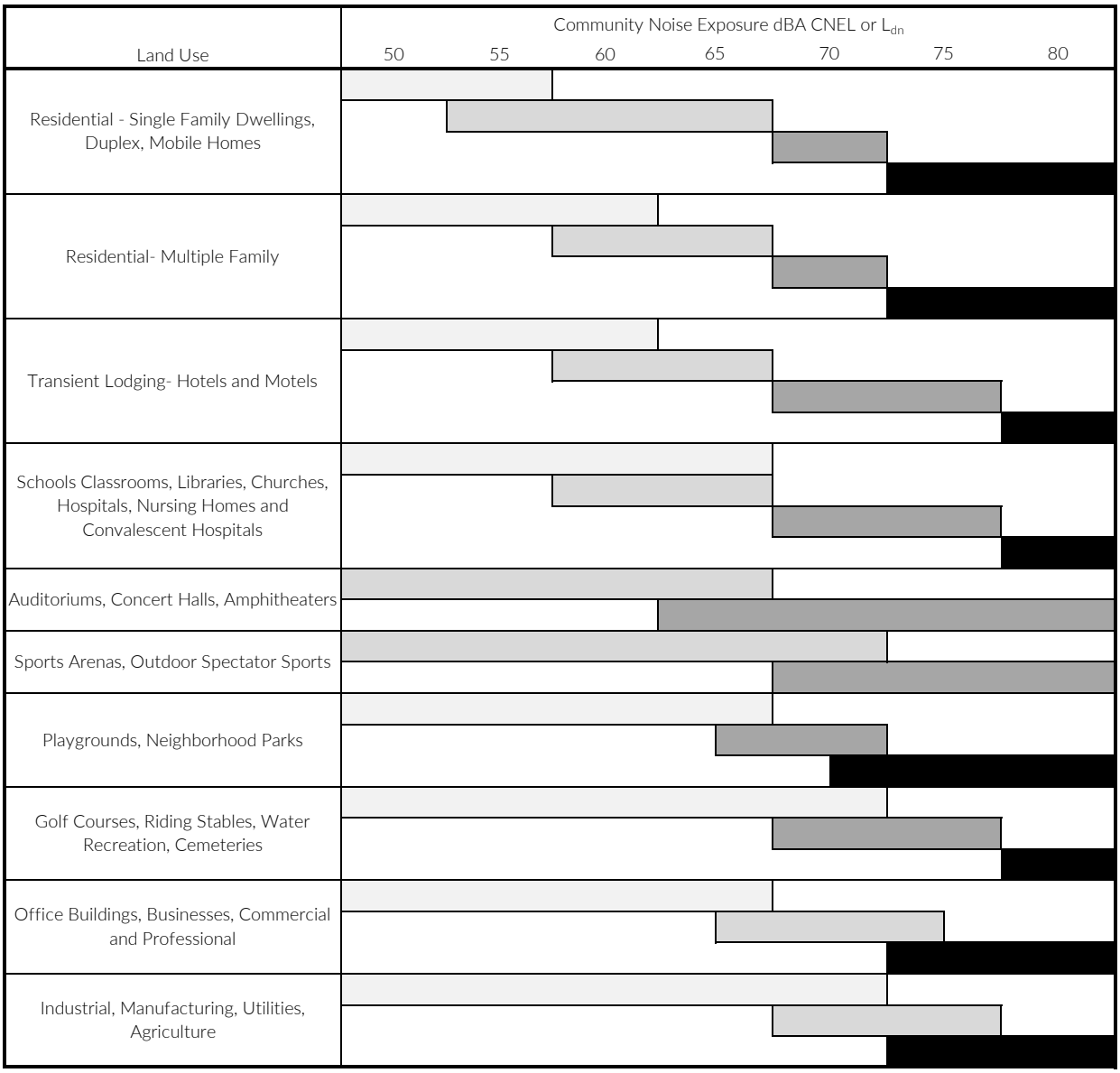
Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Notes:

(1) 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.

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

Table 5
Land Use Compatibility for Community Noise Environments



Normally Acceptable:	With no special noise reduction requirements assuming standard construction.
Conditionally Acceptable:	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design
Normally Unacceptable:	New construction is discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable:	New construction or development should generally not be undertaken.

Source: Town of Apple Valley General Plan Environmental Hazards Element Table IV-4, 2009.

Table 6
Exterior Noise Limits

Receiving Land Use Category	Time Period	Noise Level (dBA)[1,2,3]
Single Family Residential	10:00 PM to 7:00 AM	40
	7:00 AM to 10:00 PM	50
Multiple Dwelling Residential, Public Space	10:00 PM to 7:00 AM	45
	7:00 AM to 10:00 PM	50
Limited Commercial & Office	10:00 PM to 7:00 AM	55
	7:00 AM to 10:00 PM	60
General Commercial	10:00 PM to 7:00 AM	60
	7:00 AM to 10:00 PM	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

Source: Town of Apple Valley Municipal Code Table 9.73-050-A.

Notes:

(1) Levels Not To Be Exceeded More Than 30 Minutes In Any Hour

Table 7
Interior Noise Limits

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Multi-Family	Any Time	70
	Residential	Any Time	75

Source: Town of Apple Valley Municipal Code Table 9.73-050-B.

Table 8
Maximum Noise Levels

AT RESIDENTIAL PROPERTIES			
	Type 1 Areas Single-Family Residential	Type II Areas Multi-Family Residential	Type III Areas Semi-Residential/ Commercial
Mobile Equipment: Maximum noise levels for nonscheduled intermittent, short-term operation (less than 10 days) of mobile equipment:			
Daily, except Sundays and Legal Holidays, 7 AM to 7 PM	75 dBA	80 dBA	85 dBA
Daily, 7 PM to 7 AM and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA
Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:			
Daily, except Sundays and Legal Holidays, 7 AM to 7 PM	60 dBA	65 dBA	70 dBA
Daily, 7 PM to 7 AM and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA
Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment: Daily, including Sundays and legal holidays, all hours: maximum of 85 dBA.			
Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment: Daily, including Sundays and legal holidays, all hours: maximum of 75 dBA.			

Source: Town of Apple Valley Municipal Code Table 9.73-060-A.

5. ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

This section discusses the analysis methodologies used to assess noise impacts.

CONSTRUCTION NOISE MODELING

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

Construction noise associated with the proposed project was calculated at the sensitive receptor locations utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters, including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site.

Construction equipment used to calculate the construction noise levels for each phase were based on the assumptions provided in the CalEEMod modeling in the Air Quality Study prepared for the proposed project (Lilburn, 2024). For construction noise purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the building façade of the dwelling unit associated with residential properties. Sound emission levels associated with typical construction equipment as well as typical usage factors are provided in Table 9. Construction noise worksheets are provided in Appendix D.

STATIONARY SOURCE/OPERATIONAL NOISE MODELING

The SoundPLAN acoustical modeling software was utilized to model project operational stationary noise levels during the busiest hour from the proposed project to adjacent and nearby land uses. SoundPLAN is capable of evaluating stationary noise sources (e.g., parking lots, drive-through menus, car wash equipment, vacuums, etc.). The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition to the information provided below, noise modeling input and outputs assumptions are provided in Appendix E.

Peak parking lot noise was calculated using SoundPLAN methodology. Specifically, the traffic volume of the parking lot is entered with the number of moves per parking space, the hour and the number of parking bays. The user defines whether the parking lots are for automobiles, motorcycles, or trucks, and the emission level of a parking lot is automatically adjusted accordingly. The values for the number of parking moves for each time slice is the number of parking moves per reference unit (most often per parking bay), averaged for the hour[3].

SoundPLAN utilizes parking lot noise emission levels from the 6th revised edition of the parking lot study "Recommendations for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus Stations as well as of Multi-Story Car Parks and Underground Car Parks" published by the Bavarian Landesamt für Umwelt provides calculation methods to determine the emissions of parking lots.

The parking lot emission table documents the reference level (Lw, ref) from the parking lot study.
114

Lw, ref = Lw0 + KPA + KI + KD + KstrO + 10 log(B) [dB(A)]

[3] SoundPLAN Essential 5.1 Manual. SoundPLAN GmbH. August 2020. https://www.aacacustica.com/galeria/soundplan/essential/Manual_SoundPLAN_Essential_5.1.pdf

With the following parameters:

Lw0 = Basic sound power, sound power level of one motion / per hour on P+R areas = 63 dB(A)
KPA = Surcharge parking lot type
KI = Surcharge for impulse character
KD = Surcharge for the traffic passaging and searching for parking bays in the driving lanes 2,5 * lg (f * B – 9)
f = Parking bays per unit of the reference value
B = Reference value
KstrO = Surcharge for the road surface

MOBILE SOURCE NOISE MODELING

Noise from vehicular traffic (Existing and Existing Plus Project) was modeled using spreadsheets that use the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) formulas. The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Key model parameters and REMEL adjustments are presented below:

- Roadway classification (e.g., freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway active width (distance between the center of the outer most travel lanes on each side of the roadway),
- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks,
- Roadway grade and angle of view,
- Site conditions (e.g., soft vs. hard), and
- Percentage of total ADT which flows each hour throughout a 24-hour period.

Traffic noise levels were calculated at the right-of-way based on distance from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the modeled noise levels are shown for comparative purposes only to show the difference between with and without project conditions. Traffic noise calculation worksheets are included in Appendix F.

Existing and Existing Plus Project Traffic Noise Levels

Project generated vehicle traffic is expected to utilize Waalew Road to access the project site. Existing and Project average daily vehicle trips were provided in the *Apple Valley Truck and Trailer Facility Traffic Impact Analysis* (TIA) prepared for the project (Ganddini October 14, 2024). Per the TSIA, the project is anticipated to generate 666 new daily trips. Table 10 includes the modeled roadway segments as well as the average daily traffic volumes, posted speed limits, and vehicle mix utilized in this analysis.

GROUNDBORNE VIBRATION MODELING

Groundborne vibration modeling was performed using vibration propagation equations and construction equipment source levels obtained from the FTA *Transit Noise and Vibration Impact Assessment Manual* (2018). Table 11 shows typical vibration levels associated with commonly used construction equipment based on data from the FTA.

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 11, a vibratory roller could generate up to 0.21 in/sec PPV at and operation of a large bulldozer could generate up to 0.089 PPV at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the receptors, the vibration associated with it would drop below 0.0026 in/sec PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment. Groundborne vibration calculations are provided in Appendix G.

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

$$PPV_{equipment} = PPV_{ref} (25/D_{rec})^{n}$$

Where: PPV_{ref} = reference PPV at 25ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.5 (the value related to the attenuation rate through ground)

Table 9 (1 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-N/A-	0
Blasting	Yes	-N/A-	94	-N/A-	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift[2,3]	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-N/A-	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-N/A-	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9

Table 9 (2 of 2)
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-N/A-	0
Tractor	No	40	84	-N/A-	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014 http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

Table 10
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume[1]		Posted Travel Speeds (MPH)	Site Conditions
		Existing	Existing Plus Project		
Waalew Road	West of Dale Evans Parkway	5,300	5,610	55	Hard
	East of Dale Evans Parkway	5,900	6,780	55	Hard
	West of Navajo Road	5,700	6,060	55	Hard
	East of Navajo Road	4,200	4,510	55	Hard
Dale Evans Parkway	South of Waalew Road	4,500	4,750	55	Hard
	North of Waalew Road	3,800	4,120	55	Hard
Navajo Road	South of Waalew Road	2,200	2,250	50	Hard

Vehicle Distribution (Light Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.56	13.96	10.49
Medium Trucks	48.91	2.17	48.91
Heavy Trucks	47.30	5.41	47.30

Vehicle Distribution (Heavy Mix)[2]			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.54	14.02	10.43
Medium Trucks	48.00	2.00	50.00
Heavy Trucks	48.00	2.00	50.00

Notes:

(1) Existing and project average daily traffic volumes and project vehicle were obtained from the Apple Valley Truck and Trailer Facility Traffic Impact Analysis (TIA) prepared for the project (Ganddini October 14, 2024).

(2) Existing vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 11
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: Federal Transit Administration: Transit Noise and Vibration Impact Assessment Manual, 2018.
*RMS velocity in decibels, VdB re 1 micro-in/sec

6. NOISE AND VIBRATION IMPACTS

This section analyzes the significance of project-related noise and groundborne vibration impacts relative to standards established by the Town of Apple Valley and other applicable agencies in the context of CEQA. Appendix G of the California Environmental Quality Act Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations) includes an environmental checklist that identifies issues upon which findings of significance should be made. The CEQA Environmental Checklist Appendix G, XIII. Noise, requires determination 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?*

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

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 area to excessive noise levels?*

NOISE IMPACTS

Would the project 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?*

Finding: Less Than Significant with Mitigation

In relation to the Environmental Checklist noise issue "a", applicable standards established by the Town of Apple Valley can be categorized into the following areas:

- Construction Noise
- Operational Noise

Project Construction

On-Site Equipment

Construction noise is regulated within Section 9.73.060 of the Town of Apple Valley Code of Ordinances (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if:

- Project construction occurs outside the hours of 7:00 AM and 7:00 PM or at any time on weekends and holidays; and,
- Project construction noise exceeds the daytime (7:00 AM to 7:00 PM) mobile exterior noise level limit of 75 dBA L_{eq} and the nighttime hours (7:00 PM to 7:00 AM) mobile exterior noise level limit 60 dBA L_{eq} during (see Table 8)[4] at residential properties.

[4] Construction projects involve various phases with activities frequently shifting from one location to another. For example, during the initial phases of construction, noise-generating activities might concentrate in one area and then move to another as construction progresses. Therefore, the mobile construction noise level thresholds capture these changes ensuring that noise impacts are assessed accurately throughout the entire project site.

Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix D. Anticipated noise levels during each construction phase are presented in Table 12. Modeled construction noise levels reach up to 67 dBA L_{eq} at the nearest existing residential property line (zoned for industrial land uses) to the north, 71.8 dBA L_{eq} at the nearest existing residential property line to the east, and 71.8 dBA L_{eq} at the nearest existing residential property line (zoned for industrial land uses) to the west of the project site.

Project construction is not anticipated to occur outside of the hours outlined in within Section 9.73-060-A of the Town of Apple Valley Code of Ordinances. Based on the modeled construction noise levels, exterior noise levels are estimated to reach a maximum of 71.8 dBA at the nearest residential property line. Therefore, the project would not exceed the Town-established daytime mobile construction noise threshold of 75 dBA L_{eq}. However, the nighttime mobile construction noise threshold of 60 dBA L_{eq} will potentially be exceeded at the residential uses to the north, east, and west of the project site if construction activities occur between 7:00 PM and 7:00 AM.

Although it is not anticipated that the project would undergo construction activities during the noise sensitive nighttime hours (7:00 PM to 7:00 AM), the following measure is recommended to ensure the project does not exceed the nighttime mobile construction noise threshold of 60 dBA L_{eq}:

Mitigation Measure 1
Construction shall be prohibited during the nighttime hours of 7:00 PM to 7:00 AM.

With implementation of Mitigation Measure 1, the project is not expected to exceed established standards relating to construction noise; therefore, the project impact would be less than significant.

Notwithstanding the above, best management practices (BMPs) are provided in the Project Description that can be implemented to further minimize construction noise at adjacent properties.

Off-Site Vehicle Trips

According to the FHWA, traffic volumes would need to double in order to result in a barely perceptible increase in noise levels (3 dBA[5]). The *Terra Nova/Town of Apple Valley General Plan and Annexations 2008-001 & 2008-002/Environmental Impact Report* (EIR) (August 11, 2009) states the following: "Given the logarithmic nature of traffic noise levels, assuming no change in speed and truck mix, a doubling of the traffic volume would result in an increase in noise levels of 3 dBA. This increase is considered "barely perceptible" based on FHWA community noise assessment criteria. Based on these criteria, therefore, increases to noise levels of less than or equal to 3 dBA are considered less than significant." Existing measured ambient noise levels at nearby residential land uses ranged between 48.7 and 52.2 dBA L_{eq} (see Table 1). Therefore, per the Town, a project traffic induced noise increase of 3 dBA or greater may be considered to be significant.

Construction truck trips would occur throughout the construction period. Waalew Road currently handles between approximately 4,200 and 5,900 average daily vehicle trips in the vicinity of the project site.[6] According to the Air Quality Study prepared for the proposed project (Lilburn, 2024), the greatest number of construction-related vehicle trips per day would be during grading at up to 20 worker vehicle trips per day. Given the project site's proximity to the Highway 18 and the Interstate 15 freeway, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate highway and freeway ramps. Therefore, the addition of project construction vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes necessary to increase noise levels by 3 dBA. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not

[5] Federal Highway Administration, Highway Noise Prediction Model, December 1978.

[6] Existing average daily vehicle trips obtained from the *Apple Valley Truck and Trailer Facility Traffic Impact Analysis* (TIA) prepared for the project (Ganddini October 14, 2024).

result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Project Operational Noise

On-Site Noise Sources

Stationary noise source standards are established within Section 9.73.050 of the Town of Apple Valley Municipal Code (see Regulatory Setting section of this report). Accordingly, the project would result in a significant impact if:

- Project operational noise exceeds the Town-established stationary noise standards at the exterior of nearby properties as modified per ordinance and shown in Table 13(varying between 55 and 70 dBA L_{eq}); or,
- Project operational noise exceeds the Town-established stationary noise standards at the interior of nearby sensitive receptors (45 dBA L_{eq} daytime or 35 dBA L_{eq} at nighttime for residential uses; see Table 7).

Noise levels at nearby sensitive receptors were determined based on the SoundPLAN acoustical model developed for the project. SoundPLAN modeling worksheets are provided in Appendix E. Figure 6 and Figure 7 show modeled peak project operational noise levels at the nearby sensitive receptors. Modeled noise levels are compared to applicable Town noise standards in Table 13.

Exterior Noise Levels

As shown in Table 13, peak project operation would not exceed the daytime exterior adjusted stationary noise standards. Further, project operational hours will be 7:00 AM until 5:00 PM and therefore will not violate nighttime noise standards. This impact is less than significant. No mitigation is required.

Interior Noise Levels

Exterior noise levels at residential zoned property lines due to project operation are expected to range between 47 and 50 dBA L_{eq} (Table 13). Typical residential construction provides approximately 20 dB of exterior to interior noise reduction with windows closed and approximately 15 dB of reduction with windows open. Project operational noise will not cause daytime interior noise levels to exceed the Town's interior noise standard of 45 dBA L_{eq} at nearby residential land uses. Project operational hours are 7:00 AM to 5:00 PM. Therefore, nighttime interior noise standards will not be exceeded.

Off-Site Noise Sources

California courts have rejected use of what is effectively a single "absolute noise level" threshold of significance (e.g., exceed 65 dBA CNEL) on the grounds that the use of such a threshold fails to consider the magnitude or severity of increases in noise levels attributable to the project in different environments (see *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814). California courts have also upheld the use of "ambient plus increment" thresholds for assessing project noise impacts as consistent with CEQA, noting however, that the severity of existing noise levels should not be ignored by incorporating a smaller incremental threshold for areas where existing ambient noise levels were already high (see *Mission Bay Alliance v. Office of Community Investment and Infrastructure* (2016) 6 Cal.App.5th 160).

As stated previously, the *Terra Nova/Town of Apple Valley General Plan and Annexations 2008-001 & 2008-002/Environmental Impact Report* (EIR) (August 11, 2009) states the following: "Given the logarithmic nature of traffic noise levels, assuming no change in speed and truck mix, a doubling of the traffic volume would

result in an increase in noise levels of 3 dBA. This increase is considered "barely perceptible" based on FHWA community noise assessment criteria. Based on these criteria, therefore, increases to noise levels of less than or equal to 3 dBA are considered less than significant."

Furthermore, it is widely accepted that the average healthy human ear can barely perceive changes of 3 dBA in an outdoor environment and that a change of 5 dBA is readily perceptible.[7] Therefore, based on the Town-established standard and considering relevant case law, the project would result in a significant impact if the addition of project generated vehicle trips on surrounding roadways causes noise levels to increase by 3 dB or more.

Roadway noise levels were calculated at roadways included in the *TIA* (Ganddini Group, Inc., October 14, 2024) based on the FHWA Traffic Noise Prediction Model methodology. During operation, the proposed project is expected to generate approximately 666 average daily trips with 33 trips during the AM peak-hour and 43 trips during the PM peak-hour (non-PCE). Roadway noise levels were calculated for the following scenarios:

- *Existing (without Project)*: This scenario refers to existing year traffic noise conditions.
- *Existing Plus Project*: This scenario refers to existing year plus project traffic noise conditions.

Table 14 shows the change in existing roadway noise levels with the addition of project-generated operational trips. FHWA Traffic Noise Prediction Model calculation worksheets are provided in Appendix F.

As shown in Table 14, modeled existing traffic noise levels range between 66-72 dBA CNEL and the modeled Existing Plus Project traffic noise levels range between 67-74 dBA CNEL at the right-of-way of each study roadway segment. The addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments (see Table 14). The project impact is less than significant; no mitigation is required.

GROUNDBORNE VIBRATION IMPACTS

Would the project result in:

b) Generation of excessive groundborne vibration or groundborne noise levels?

Finding: Less Than Significant

In relation to the Environmental Checklist noise issue "b", the Town of Apple Valley Code of Ordinances Section 9.73.060(G) prohibits the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty (150) feet (46 meters) from the source if on a public space or public right-of-way. Furthermore, as stated in Section 9.73.020(A)(34), the Town identifies the vibration perception threshold as the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hz.[8] This threshold refers to groundborne vibration annoyance related impacts, and the Town has not established numerical thresholds of significance concerning architectural damage related groundborne vibration impacts. Therefore, in the absence of Town-established architectural damage thresholds, groundborne vibration impacts are based on both the Town of Apple Valley Code of Ordinances and guidance from the *Transportation and Construction Vibration Guidance Manual* (California Department of Transportation, 2020) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

[8] An RMS of 0.01 in/sec is equivalent to a peak particle velocity (PPV) level of 0.04 in/sec.

[8] An RMS of 0.01 in/sec is equivalent to a peak particle velocity (PPV) level of 0.04 in/sec.

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:
  - 0.08 in/sec at extremely fragile historic buildings, ruins, ancient monuments
  - 0.10 in/sec at fragile buildings
  - 0.25 in/sec at historic and some old buildings
  - 0.30 in/sec at older residential structures
  - 0.50 in/sec at new residential structures and modern industrial/commercial buildings.
- Groundborne vibration levels generated by the project have the potential to cause severe annoyance to people living or working in nearby buildings at a PPV of 0.04 in/sec.

Groundborne vibration modeling worksheets are provided in Appendix G.

Based on the groundborne vibration modeling (see Table 15), use of a vibratory roller is expected to generate a PPV of 0.273 in/sec and use of a bulldozer is expected to generate a PPV of 0.116 in/sec at the closest off-site building, a residential structure located approximately 21 feet east of the project site. The project would not exceed the architectural damage threshold of 0.3 PPV in/sec for older residential structures. Other equipment anticipated to be used during project construction generate lower PPV. Therefore, groundborne vibration generated by project construction would not exceed the levels necessary to cause architectural damage.

Use of vibratory rollers and/or large bulldozers could theoretically exceed the threshold for annoyance due to vibration (PPV of 0.04 in/sec) at offsite residential sensitive uses) at the existing residential receptors to the east of the project site, and residents may be temporarily annoyed (Table 15). However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 75 feet, for vibratory rollers, and 43 feet, for large bulldozers, of the existing residential structures (see Appendix G). Furthermore, this impact would only occur during daytime hours and will be temporary. This impact would be less than significant. No mitigation is required.

The most substantial sources of groundborne vibration during post-construction project operations will include the movement of passenger vehicles and trucks on paved and generally smooth surfaces. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020), which is a substantially lower PPV than that of a vibratory roller (0.210 in/sec PPV at 25 feet). Therefore, groundborne vibration levels generated by project operation would not exceed those modeled for project construction.

AIR TRAFFIC IMPACTS

Would the project result in:

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 area to excessive noise levels?*

Finding: No Impact

The closest airport to the project site is the Apple Valley Airport, with airport runways located approximately 0.87 miles north of the project site. Per the Town of Apple Valley 2009 General Plan, the 60 dBA noise contour for the airport was identified as occurring within the airport's property, and noise levels on surrounding lands were not significantly affected. The Town's General Plan also states that, in the future, the County intends to expand the airport's capabilities to better serve the industrial and commercial land uses which will develop within the North Apple Valley Industrial Specific Plan; however, even with the expansion,

future noise contours are expected to remain within the airport boundary, and noise impacts on surrounding land uses, particularly are expected to be less than significant. Therefore, the project would not expose people residing or working in the project area to excessive noise levels associated with airports.

Table 12
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Construction Noise Levels at Property Line (dBA Leq)[1]	Construction Noise Levels Exceed Daytime 75 dBA Leq Standard?	Construction Noise Levels Exceed Nighttime 60 dBA Leq Standard?
Site Preparation	Residential to North (21576 Waalew Road, Apple Valley)	66.3	No	Yes
	Residential to East (21709 Soboba Road, Apple Valley)	71.1	No	Yes
	Residential to West (21571 Waalew Road, Apple Valley)	71.1	No	Yes
Grading	Residential to North (21576 Waalew Road, Apple Valley)	67.0	No	Yes
	Residential to East (21709 Soboba Road, Apple Valley)	71.8	No	Yes
	Residential to West (21571 Waalew Road, Apple Valley)	71.8	No	Yes
Building Construction	Residential to North (21576 Waalew Road, Apple Valley)	64.5	No	Yes
	Residential to East (21709 Soboba Road, Apple Valley)	69.4	No	Yes
	Residential to West (21571 Waalew Road, Apple Valley)	69.4	No	Yes
Paving	Residential to North (21576 Waalew Road, Apple Valley)	60.0	No	No
	Residential to East (21709 Soboba Road, Apple Valley)	64.9	No	Yes
	Residential to West (21571 Waalew Road, Apple Valley)	64.9	No	Yes
Architectural Coating	Residential to North (21576 Waalew Road, Apple Valley)	52.6	No	No
	Residential to East (21709 Soboba Road, Apple Valley)	57.4	No	No
	Residential to West (21571 Waalew Road, Apple Valley)	57.4	No	No

Notes:

(1) Construction noise worksheets are provided in Appendix D.

Table 13
Project Consistency with Stationary Noise Standards

Exterior Noise											
	Daytime (7:00 AM to 10:00 PM) Peak Operation						Nighttime (6:00 AM to 7:00 AM) Peak Operation				
Receiver[1]	Land Use Designation[2]	Daytime Noise Standard[3]	Measured Ambient Noise Level[4]	Adjusted Daytime Standard[5]	Modeled Operational Noise Level (dBA Leq)1	Exceeds Daytime Standard?	Nighttime Noise Standard	Measured Ambient Noise Level[4]	Adjusted Nighttime Standard[5]	Modeled Operational Noise Level (dBA Leq)[1]	Exceeds Nighttime Standard?
R1	Industrial	70	52	70	49	No	70	55	70	49	No
R2	Residential	50	49	50	48	No	40	55	55	48	No
R3	Residential	50	52	55	47	No	40	55	55	47	No
R4	Residential	50	52	55	50	No	40	55	55	50	No
R5	Industrial	70	49	60	59	No	70	55	55	59	Yes
Interior Noise											
	Daytime (7:00 AM to 10:00 PM) Peak Operation						Nighttime (6:00 AM to 7:00 AM) Peak Operation				
Receiver[1]	Land Use Designation[2]	Daytime Noise Standard[3]	Measured Ambient Noise Level[4]	Adjusted Daytime Standard[5]	Projected Interior Noise Level[6]	Exeeds Daytime Standard?	Nighttime Noise Standard	Measured Ambient Noise Level[4]	Adjusted Nighttime Standard[5]	Projected Interior Noise Level[6]	Exceeds Nighttime Standard?
R1	Industrial	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R2	Residential	45	49	n/a	28.0	No	35	49	n/a	28	No
R3	Residential	45	52	n/a	27.0	No	35	52	n/a	27	No
R4	Residential	45	52	n/a	30.0	No	35	52	n/a	30	No
R5	Industrial	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:

(1) As shown on Figure 6.

(2) Town of Apple Valley General Plan Land Use Map, Exhibit II-2, and Town of Apple Valley Industrial Specific Plan Land Use Plan, Exhibit II-2.

(3) See Table 6.

(4) See Tables 1 and 2 and Section 3 in this report.

(5) See Table 6. Adjusted per Town of Apple Valley Muncipal Code 9.73.050 1.c,d.

(6) This is the modeled exterior noise level minus the expected noise attenuation provided by the structures (20 dB).

Table 14
Increase in Existing Noise Levels Due to Project Generated Vehicle Traffic

Roadway	Segment	Distance from roadway centerline to ROW (feet)[1]	Modeled Noise Levels at ROW (dBA CNEL)[2]				
			Existing Modeled Noise Level	Existing Plus Project	Change in Noise Level	Applicable Increase Threshold (dB)	Significant Impact?
Waalew Road	West of Dale Evans Parkway	52	71.33	72.40	+1.07	3	No
	East of Dale Evans Parkway	52	71.80	74.13	+2.33	3	No
	West of Navajo Road	52	71.65	72.79	+1.14	3	No
	East of Navajo Road	52	70.32	71.63	+1.31	3	No
Dale Evans Parkway	South of Waalew Road	71	69.27	70.29	+1.02	3	No
	North of Waalew Road	71	68.54	70.00	+1.46	3	No
Navajo Road	South of Waalew Road	30	65.90	66.82	+0.92	3	No

Notes:
(1) Right of way per the Town of Apple Valley Street System General Plan Exhibit II-6 (as amended August 25, 2015).
(2) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway.

Table 15
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level[1]	Applicable Architectural Damage Vibration Threshold[1]	Threshold Exceeded?[2]	Applicable Annoyance Vibration Threshold[1]	Threshold Exceeded?[3]
Residential to East (21709 Waalew Road, Apple Valley)	21	Vibratory Roller	0.273	0.3	No	0.04	Yes
	21	Large Bulldozer	0.116	0.3	No	0.04	Yes
Residential to North (21576 Waalew Road, Apple Valley)	127	Vibratory Roller	0.018	0.3	No	0.04	No
	127	Large Bulldozer	0.008	0.3	No	0.04	No
Residential to West (21571 Waalew Road, Apple Valley)	125	Vibratory Roller	0.019	0.3	No	0.04	No
	125	Large Bulldozer	0.008	0.3	No	0.04	No

Notes:

(1) Vibration levels are provided in PPV in/sec.

(2) Caltrans identifies the threshold at which there is a risk to "architectural" damage to older residential structures as 0.3 in/sec PPV and to modern industrial/commercial buildings as 0.5 in/sec PPV (see Table 3).

(3) The Town of Apple Valley Code of Ordinances Section 9.73.020(A)(34) identifies the perception threshold to be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hz. An RMS of 0.01 in/sec is equivalent to a peak particle velocity (PPV) level of 0.04 in/sec.

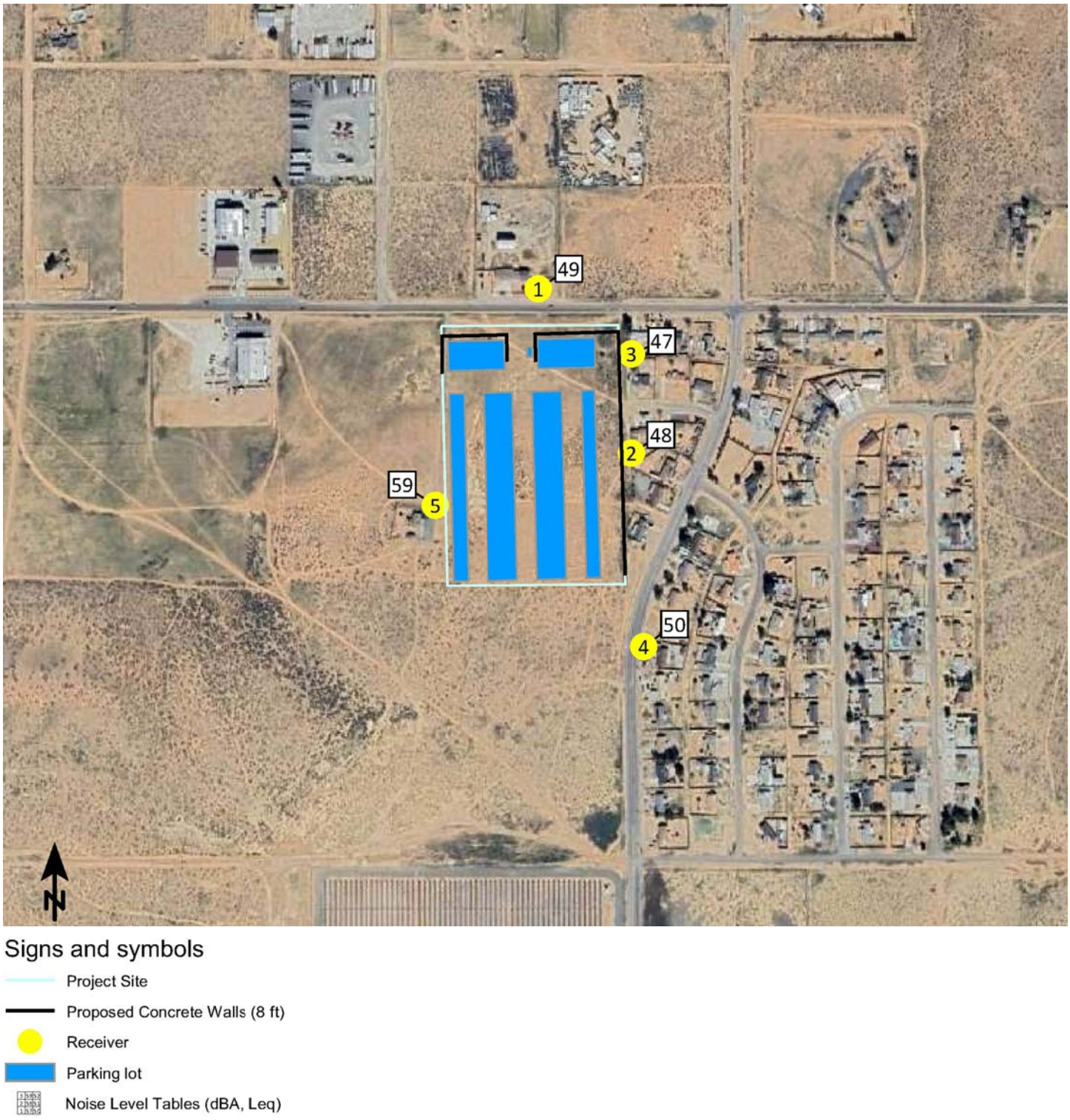


Figure 6
Operational Noise Levels (dBA CNEL)

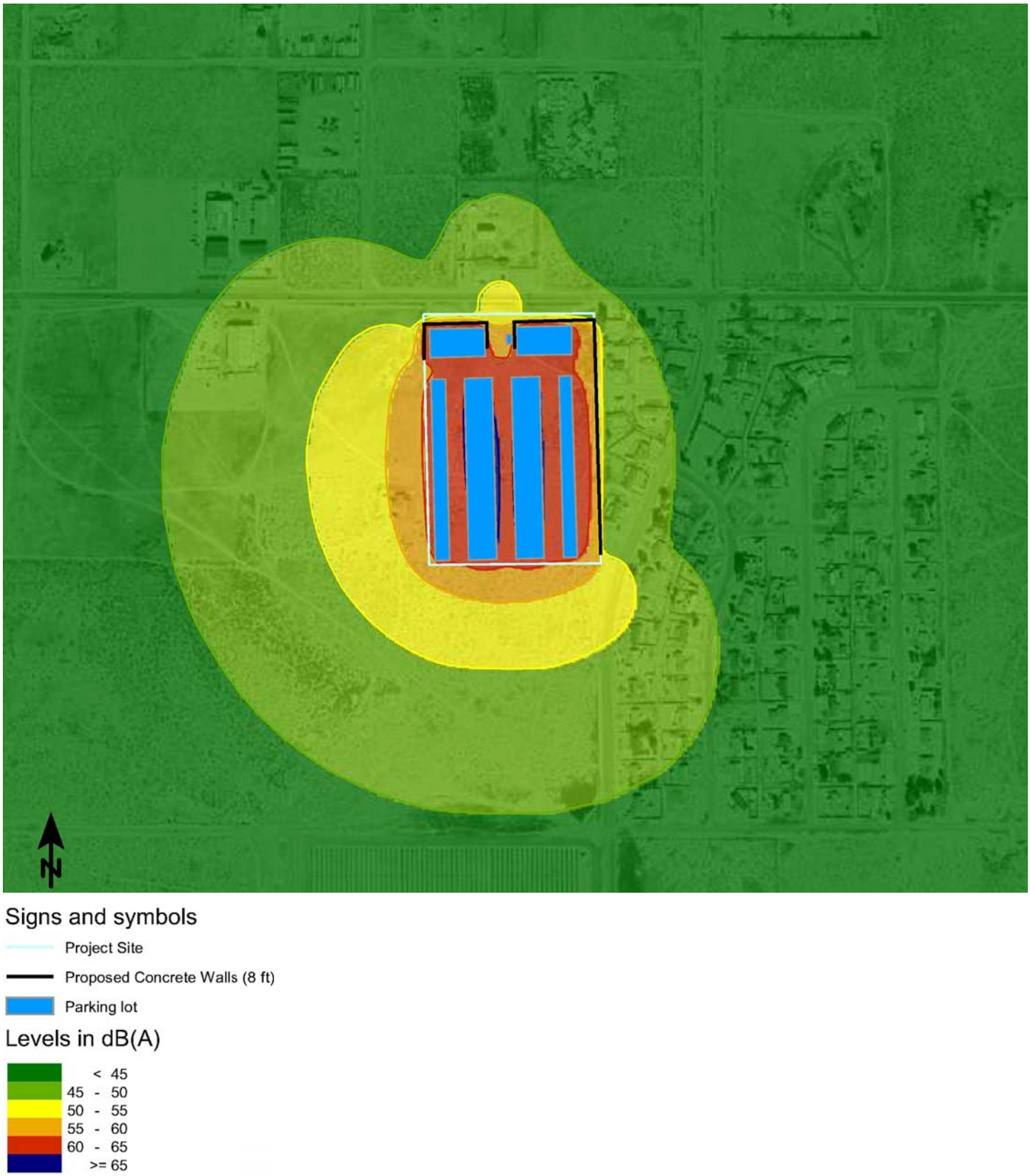


Figure 7
Operational Noise Level Contours

7. REFERENCES

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2017 State of California General Plan Guidelines

Riverside, County of
2001 General Plan, Chapter 4, Figure C-3 "Link Volume Capacities/Level of Service for Riverside County Roadways".
2009 County of Riverside Industrial Hygiene Guidelines for Determining and Mitigating Traffic Noise Impacts to Residential Structures and County.

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APPENDICES

APPENDIX A

LIST OF ACRONYMS

Term	Definition
ADT	Average Daily Traffic
ANSI	American National Standard Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D/E/N	Day / Evening / Night
dB	Decibel
dBA or dB(A)	Decibel "A-Weighted"
dBA/DD	Decibel per Double Distance
dBA L_{eq}	Average Noise Level over a Period of Time
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
L_{02},L_{08},L_{50},L_{90}	A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
DNL	Day-Night Average Noise Level
$L_{eq(x)}$	Equivalent Noise Level for '"x" period of time
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Level of Noise (measured using a sound level meter)
L_{min}	Minimum Level of Noise (measured using a sound level meter)
Lp	Sound pressure level
LOS C	Level of Service C
Lw	Sound Power Level
OPR	California Governor's Office of Planning and Research
PPV	Peak Particle Velocities
RCNM	Road Construction Noise Model
REMEL	Reference Energy Mean Emission Level
RMS	Root Mean Square

APPENDIX B

GLOSSARY

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02}, L_{08}, L_{50}, L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max}, L_{min}	Lmax is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. L_{min} is the minimum level.
Offensive/ Offending/Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEETS

Noise Measurement
Field Data

Project Name: Apple Valley Truck & Trailer, Town of Apple Valley **Date:** November 12, 2024

Project #: 19763

Noise Measurement #: STNM1 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 21576 Waalew Road, Apple Valley, CA

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: ~70' E of property 21576 Waalew Rd & ~100' N of Waalew Rd within vacant deset land. Adjacent: Vacant land to east, north, and south, with a residnetial use to west. Waalew Rd (running E-W) ~100' south and Navajo Rd (running N-S) ~570' eas.

Weather: <5% cloud, sunshine. Sunset 4:46 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 21% **Terrain:** Flat

Start Time: 1:39 PM **End Time:** 1:54 PM **Run Time:**

Leq:	52.2	dB	**Primary Noise Source:** Traffic noise from the 85 vehicles passing STNM1 microphone traveling along
Lmax	67.9	dB	Waalew Road (running E-W) ~100' S of STNM1.
L2	61.1	dB	**Secondary Noise Sources:** Distant traffic ambiance from vehicles on other roads. Leaf rustle from 7mph
L8	55.6	dB	breeze. Bird song, some residential ambiance.
L25	52.3	dB	
L50	47.5	dB	

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	11/12/2024		

Noise Measurement
Field Data

PHOTOS:

STNM1 looking SE, across Waalew Road (~190' SE), towards residence 21709 Waalew Road, Apple Valley (~290' SE).

STNM1 looking W, parallel with Waalew Road, towards residence 21576 Waalew Road, Apple Valley (~70' W).

Summary	
File Name on Meter	LxT_Data.469.s
File Name on PC	LxT_0003099-20241112 133908-LxT_Data.469.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM1 34°33'25.92"N 117°11'28.64"W
Job Description	15 minute noise measurement
Note	Ganddini Project#19763 Apple Valley Truck & Trailer Facility, Apple Valley

Measurement	
Start	2024-11-12 13:39:08
Stop	2024-11-12 13:54:08
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-11-12 13:37:31
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.0 dB

Results			
LA_{eq}	52.2		
LAE	81.8		
EA	16.68929 µPa²h		
EA8	534.0573 µPa²h		
EA40	2.670286 mPa²h		
$LA_{peak\ (max)}$	2024-11-12 13:51:46	81.5 dB	
LAS_{max}	2024-11-12 13:45:44	67.9 dB	
LAS_{min}	2024-11-12 13:41:54	32.9 dB	
			Statistics
LC_{eq}	68.4 dB	**LA2.00**	61.1 dB
LA_{eq}	52.2 dB	**LA8.00**	55.6 dB
LC_{eq} - LA_{eq}	16.2 dB	**LA25.00**	52.3 dB
LAI_{eq}	54.8 dB	**LA50.00**	47.5 dB
LA_{eq}	52.2 dB	**LA66.60**	43.3 dB
LAI_{eq} - LA_{eq}	2.5 dB	**LA90.00**	37.1 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.469.s	Computer's File Name	LxT_0003099-20241112 133908-LxT_Data.469.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 34°33'25.92"N 117°11'28.64"W
Job Description	15 minute noise measurement		
Note	Ganddini Project#19763 Apple Valley Truck & Trailor Facility, Apple Valley		
Start Time	2024-11-12 13:39:08	Duration	0:15:00.0
End Time	2024-11-12 13:54:08	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	52.2 dB		
LAE	81.8 dB	SEA	--- dB
EA	16.7 µPa²h	LAFTM5	56.8 dB
EA8	534.1 µPa²h		
EA40	2.7 mPa²h		
LA_{peak}	81.5 dB	2024-11-12 13:51:46	
LAS_{max}	67.9 dB	2024-11-12 13:45:44	
LAS_{min}	32.9 dB	2024-11-12 13:41:54	
LA_{eq}	52.2 dB		
LC_{eq}	68.4 dB	LC_{eq} - LA_{eq}	16.2 dB
LAI_{eq}	54.8 dB	LAI_{eq} - LA_{eq}	2.5 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	1	0:00:07.1
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB

LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	52.2 dB		68.4 dB		--- dB	
$L_{S(max)}$	67.9 dB	2024-11-12 13:45:44	--- dB		--- dB	
$L_{S(min)}$	32.9 dB	2024-11-12 13:41:54	--- dB		--- dB	
$L_{Peak(max)}$	81.5 dB	2024-11-12 13:51:46	--- dB		--- dB	

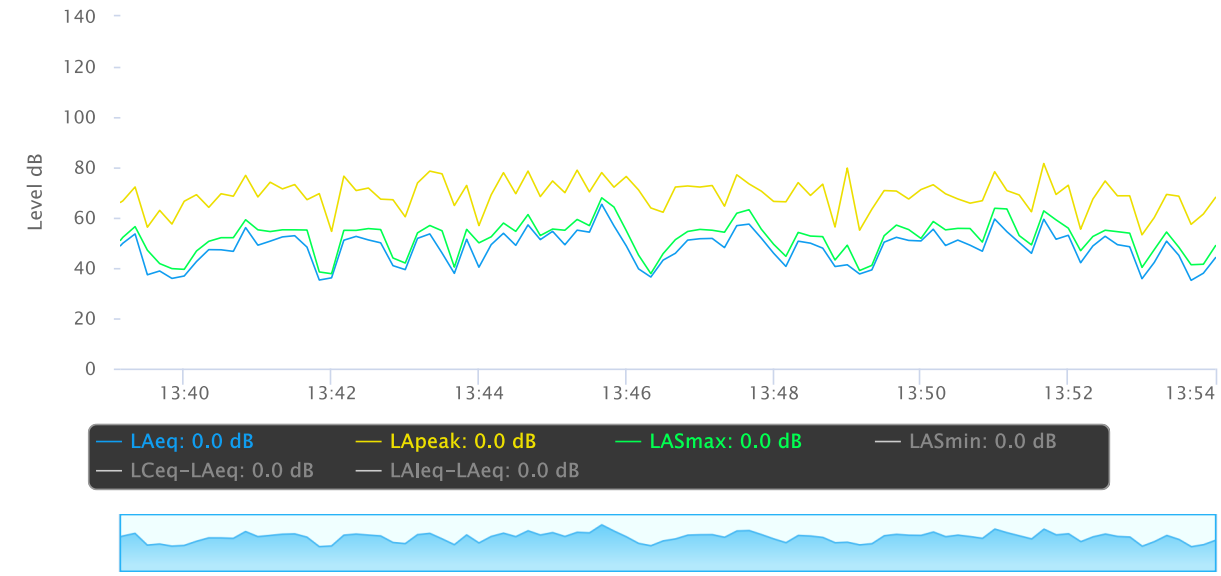
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

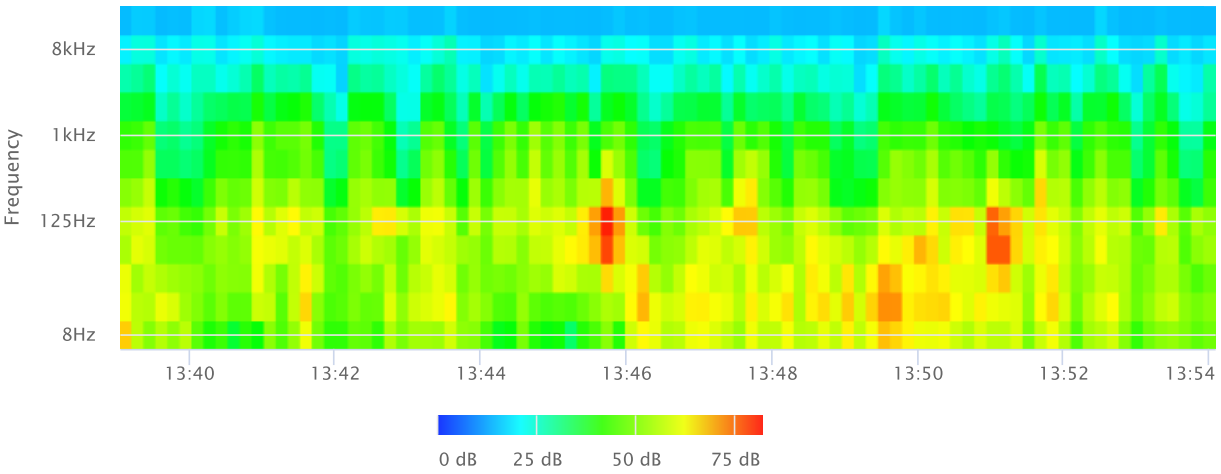
Statistics

LAS 2.0	61.1 dB
LAS 8.0	55.6 dB
LAS 25.0	52.3 dB
LAS 50.0	47.5 dB
LAS 66.6	43.3 dB
LAS 90.0	37.1 dB

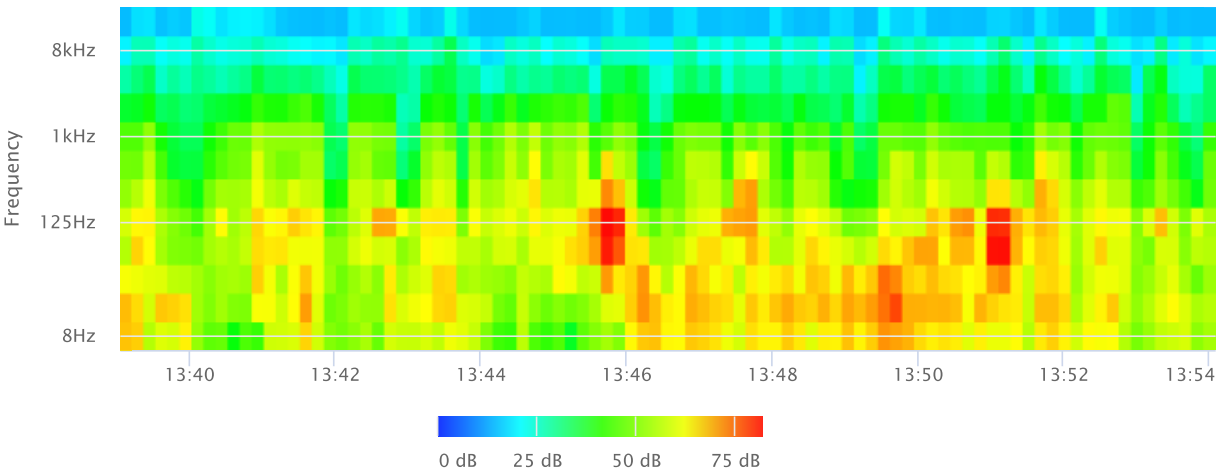
Time History



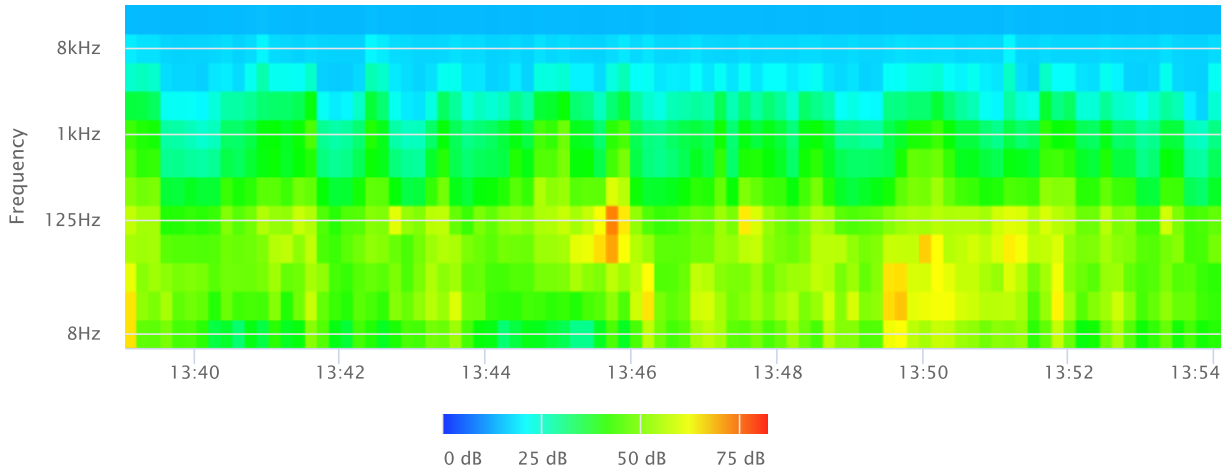
OBA 1/1 Leq



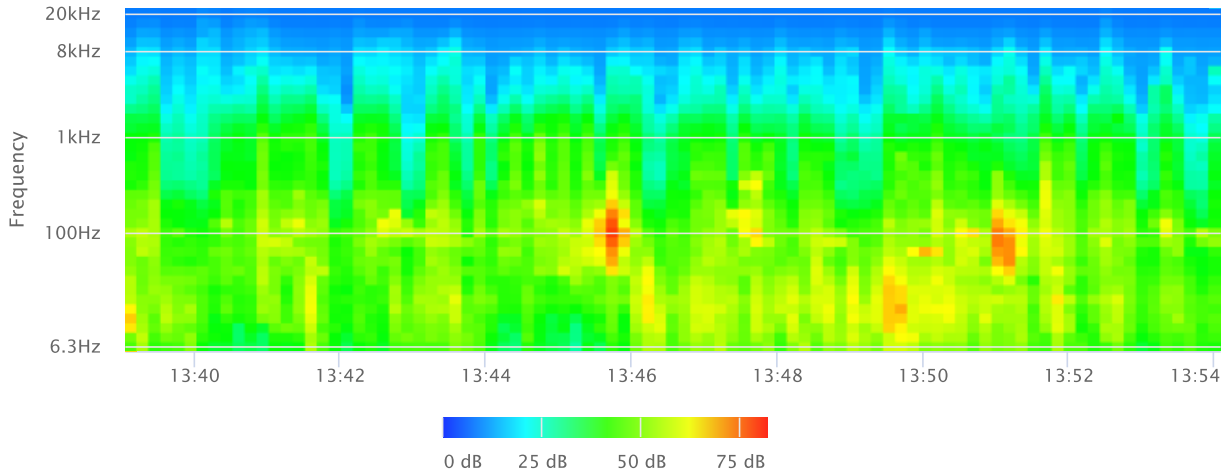
OBA 1/1 Lmax



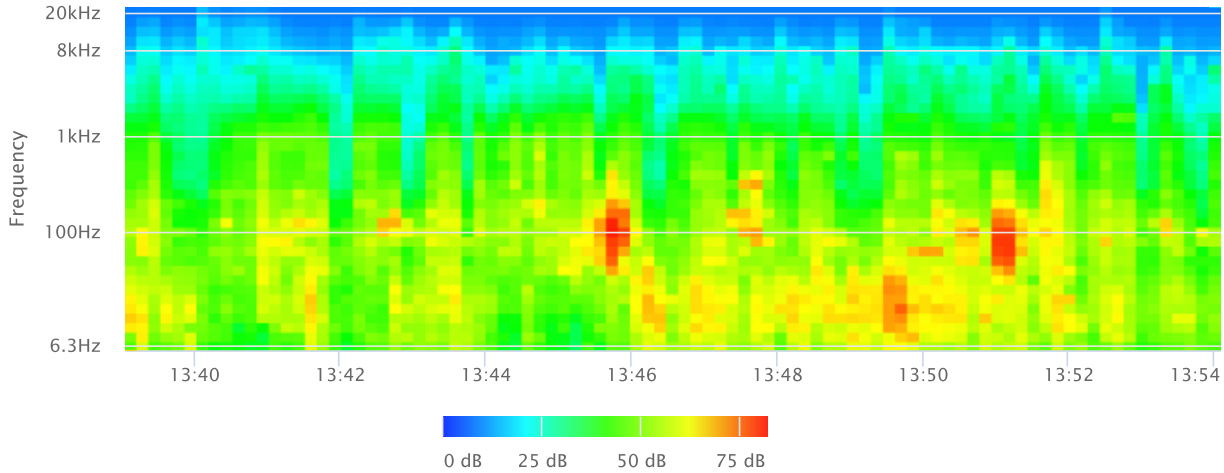
OBA 1/1 Lmin



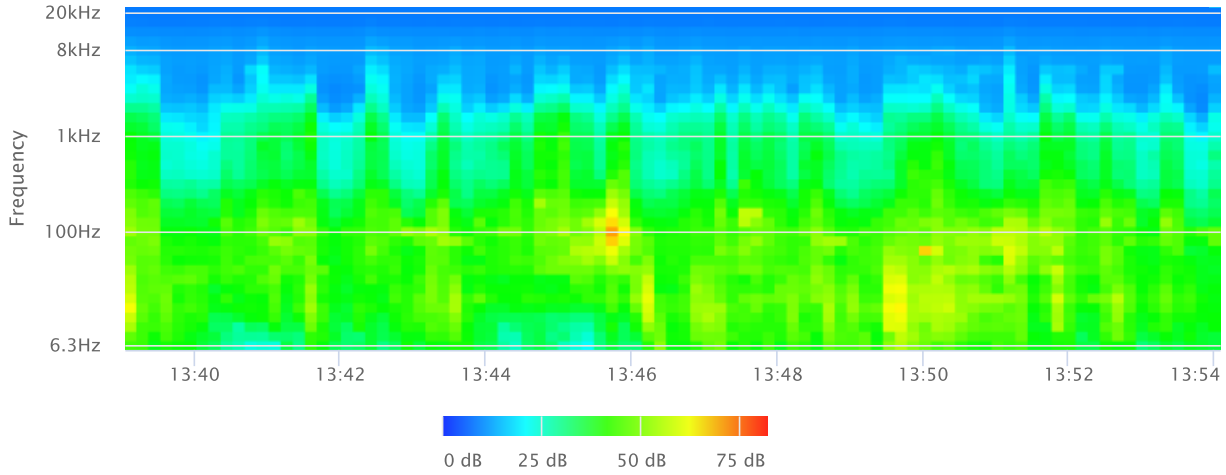
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
13:40
13:42
13:44
13:46
13:48
13:50
13:52
13:54
0 dB
25 dB
50 dB
75 dB

Noise Measurement
Field Data

Project Name: Apple Valley Truck & Trailer, Town of Apple Valley **Date:** November 12, 2024

Project #: 19763

Noise Measurement #: STNM2 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 21709 Soboba Road, Apple Valley, CA 92307

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: ~100' SW of property 21709 Saboba Road within vacant desert project site. Adjacent: Vacant land surrouding to west and single-family residential to east. Waalew Rd (running E-W) ~510' N of STNM2 and Navajo Rd (running N-S) ~310' E of STNM2.

Weather: <5% cloud, sunshine. Sunset 4:46 PM **Settings:** SLOW FAST

Temperature: 61 deg F **Wind:** 7 mph **Humidity:** 21% **Terrain:** Flat

Start Time: 2:54 PM **End Time:** 3:09 PM **Run Time:**

Leq:	48.7	dB	**Primary Noise Source:** Traffic ambiance from vehicles traveling along Waalew Road & Navajo Road.
Lmax	65.7	dB	
L2	59.4	dB	**Secondary Noise Sources:** Distant traffic ambiance from vehicles on other roads. Leaf rustle from 7mph
L8	49.1	dB	breeze. Bird song, residential ambiance, occasional dog bark.
L25	45.5	dB	
L50	43.7	dB	

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	11/12/2024		

Noise Measurement
Field Data

PHOTOS:

STNM2 looking N towards Waalew Road (~510' N), residence 21709 Soboba Road, Apple Valley on the right (~100' NE).

STNM2 looking NE towards residence 21709 Soboba Road, Apple Valley. (~100' NE)

Summary	
File Name on Meter	LxT_Data.472.s
File Name on PC	LxT_0003099-20241112 145459-LxT_Data.472.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	STNM2 34°33'19.35"N 117°11'26.73"W
Job Description	15 minute noise measurement
Note	Ganddini Project#19763 Apple Valley Truck & Trailer Facility, Apple Valley

Measurement	
Start	2024-11-12 14:54:59
Stop	2024-11-12 15:09:59
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2024-11-12 14:40:21
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	C Weighting
OBA Max Spectrum	At LMax
Overload	122.1 dB

Results				
LA_{eq}	48.7			
LAE	78.2			
EA	7.339845	µPa²h		
EA8	234.875	µPa²h		
EA40	1.174375	mPa²h		
$LA_{peak\ (max)}$	2024-11-12 15:06:21		82.7	dB
LAS_{max}	2024-11-12 15:06:11		65.7	dB
LAS_{min}	2024-11-12 15:05:00		35.7	dB

			Statistics		
LC_{eq}	65.4	dB	**LA2.00**	59.4	dB
LA_{eq}	48.7	dB	**LA8.00**	49.1	dB
LC_{eq} - LA_{eq}	16.7	dB	**LA25.00**	45.5	dB
LAI_{eq}	51.0	dB	**LA50.00**	43.7	dB
LA_{eq}	48.7	dB	**LA66.60**	42.4	dB
LAI_{eq} - LA_{eq}	2.4	dB	**LA90.00**	39.6	dB
Overload Count	0				
Overload Duration	0.0	s			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.472.s	Computer's File Name	LxT_0003099-20241112 145459-LxT_Data.472.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 34°33'19.35"N 117°11'26.73"W
Job Description	15 minute noise measurement		
Note	Ganddini Project#19763 Apple Valley Truck & Trailor Facility, Apple Valley		
Start Time	2024-11-12 14:54:59	Duration	0:15:00.0
End Time	2024-11-12 15:09:59	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	48.7 dB		
LAE	78.2 dB	SEA	--- dB
EA	7.3 µPa²h	LAFTM5	53.1 dB
EA8	234.9 µPa²h		
EA40	1.2 mPa²h		
LA_{peak}	82.7 dB	2024-11-12 15:06:21	
LAS_{max}	65.7 dB	2024-11-12 15:06:11	
LAS_{min}	35.7 dB	2024-11-12 15:05:00	
LA_{eq}	48.7 dB		
LC_{eq}	65.4 dB	LC_{eq} - LA_{eq}	16.7 dB
LAI_{eq}	51.0 dB	LAI_{eq} - LA_{eq}	2.4 dB

Exceedances	Count	Duration
LAS > 65.0 dB	2	0:00:02.6
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

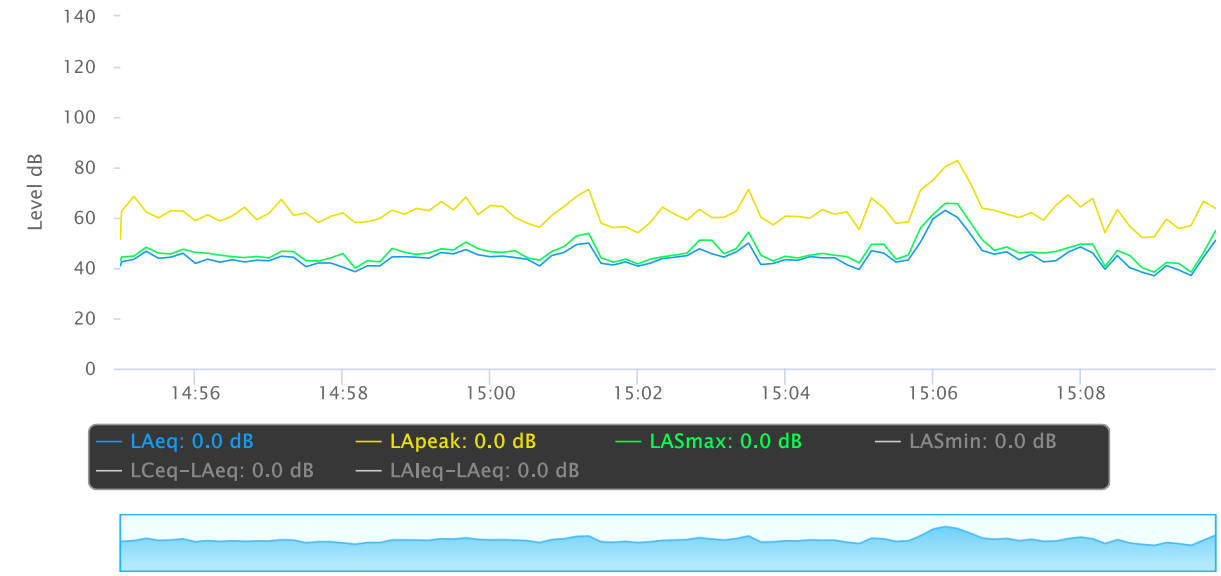
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	48.7 dB		65.4 dB		--- dB	
$L_{S(max)}$	65.7 dB	2024-11-12 15:06:11	--- dB		--- dB	
$L_{S(min)}$	35.7 dB	2024-11-12 15:05:00	--- dB		--- dB	
$L_{Peak(max)}$	82.7 dB	2024-11-12 15:06:21	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

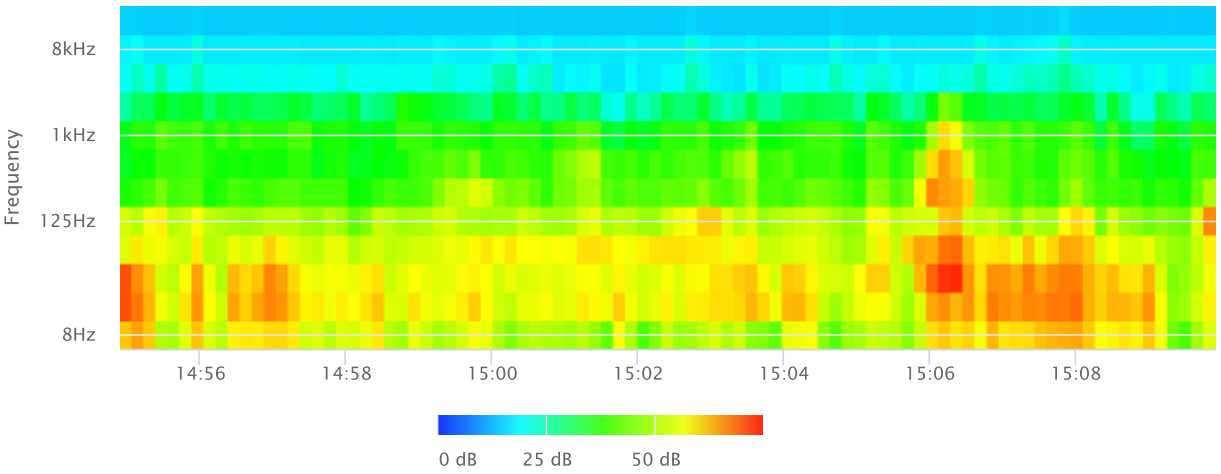
Statistics

LAS 2.0	59.4 dB
LAS 8.0	49.1 dB
LAS 25.0	45.5 dB
LAS 50.0	43.7 dB
LAS 66.6	42.4 dB
LAS 90.0	39.6 dB

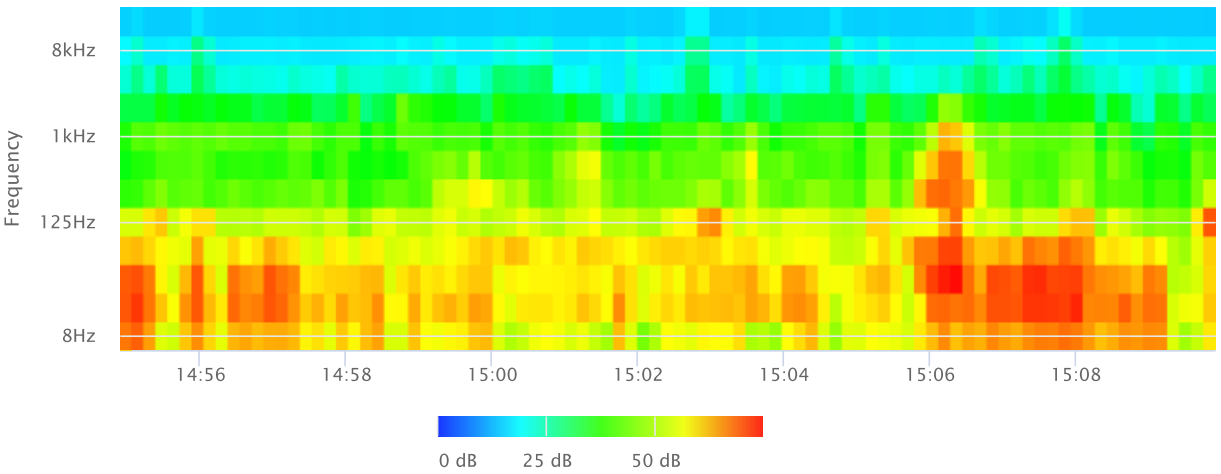
Time History



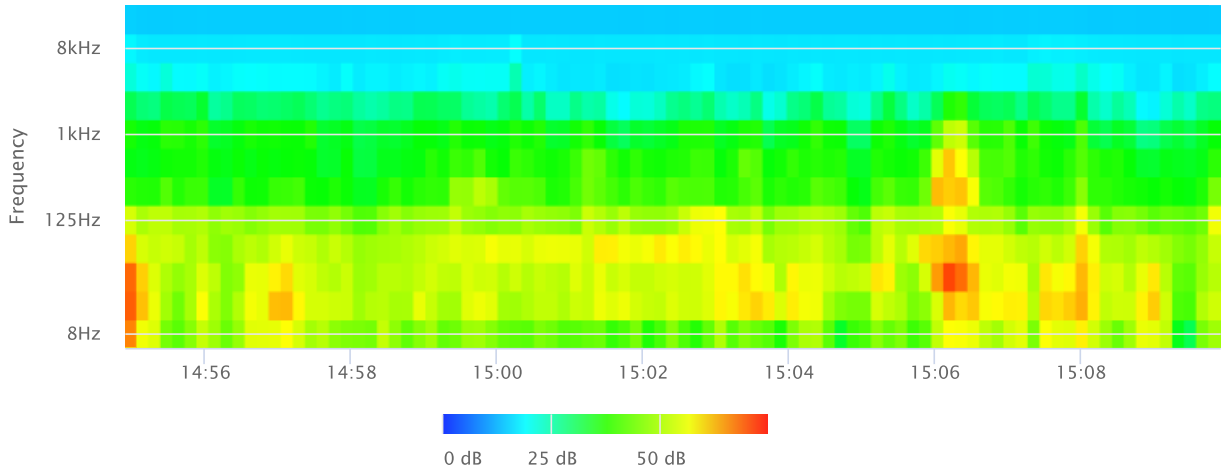
OBA 1/1 Leq



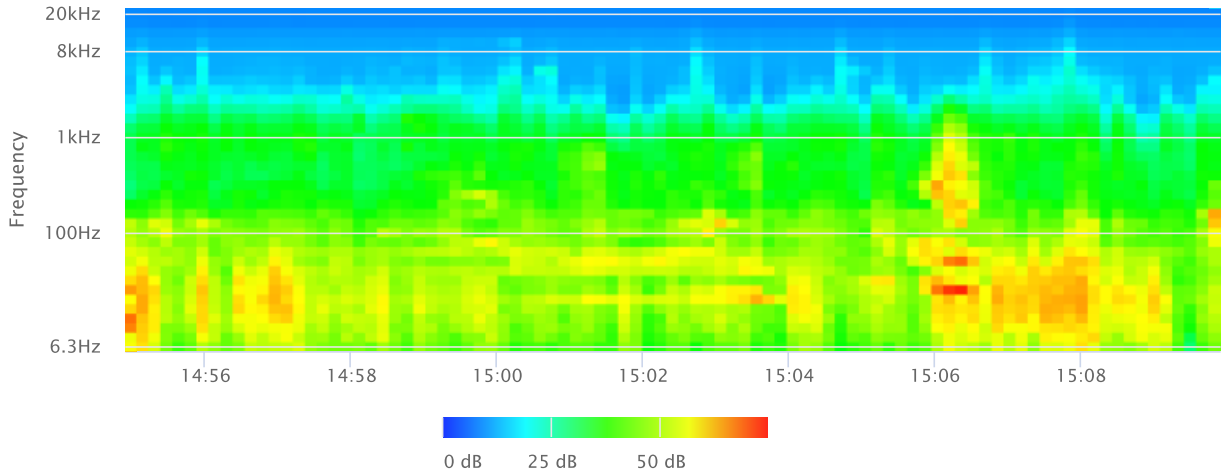
OBA 1/1 Lmax



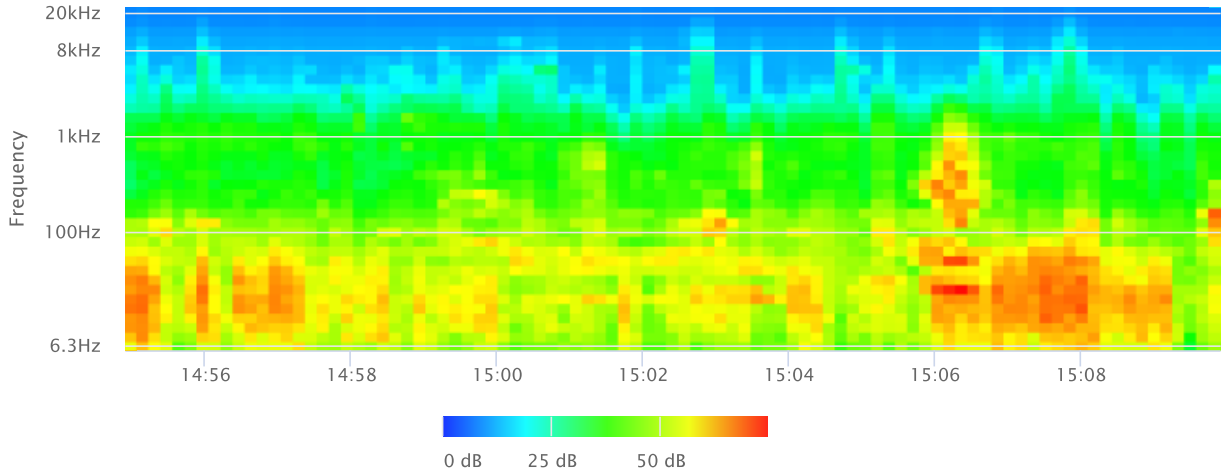
OBA 1/1 Lmin



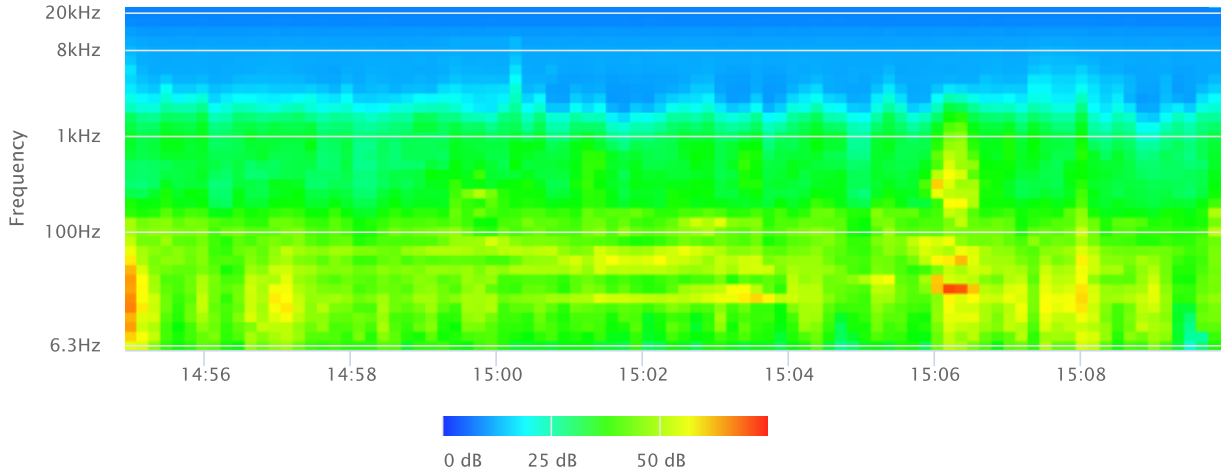
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
14:56
14:58
15:00
15:02
15:04
15:06
15:08
0 dB
25 dB
50 dB

Noise Measurement
Field Data

Project Name: Apple Valley Truck & Trailer, Town of Apple Valley **Date:** November 12-13, 2024

Project #: 19763

Noise Measurement #: LTNM1 Run Time: 24 hours (24 x 1 hours) **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 21709 Waalew Road, Apple Valley, CA 92307

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: ~90' W of property 21709 Waalew Road on open desert ground. Adjacent: Vacant land surrounding with single-family residential to east. Waalew Rd (running E-W) ~170' N of LTNM1 and Navajo Rd (running N-S) ~480' E of LTNM1. Area mostly residential with areas of open desert land.

Weather: <5% cloud, sunshine by day. Sunset/rise 4:46 PM/ 6:20 AM **Settings:** SLOW FAST

Temperature: 40-75 deg F **Wind:** 3-7 mph **Humidity:** 20-50% **Terrain:** Flat

Start Time: 5:00 PM **End Time:** 5:00 PM **Run Time:**

Leq: 53.2 dB **Primary Noise Source:** Traffic ambiance from vehicles traveling along Waalew Road & Navajo Road.

Lmax 80.8 dB

L2 60.9 dB **Secondary Noise Sources:** Distant traffic ambiance from vehicles on other roads. Leaf rustle from

L8 56.6 dB breeze. Bird song by day, residential ambiance, occasional dog bark.

L25 52.7 dB

L50 48.0 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL 250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	CAL 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2723
FACTORY CALIBRATION DATE:	7/31/2024	**FACTORY CALIBRATION DATE:**	7/10/2024
FIELD CALIBRATION DATE:	11/12/2024		

Noise Measurement
Field Data

PHOTOS:

LTNM1 looking at microphone inside bush, misrophone ~6' above ground.

LTNM1 looking E past bush hiding equipment & microphone towards residence 21710 Soboba Road on the right & residence 21709 Waalew Road on the left.

Summary	
File Name on Meter	LxT_Data.473.s
File Name on PC	LxT_0003099-20241112 170000-LxT_Data.473.ldbin
Serial Number	3099
Model	SoundTrack LxT®
Firmware Version	2.404
User	Ian Edward Gallagher
Location	LTNM1 34°33'23.00"N 117°11'27.54"W
Job Description	24 hour noise measurement (24 x 1 hours)
Note	Ganddini Project#19763 Apple Valley Truck & Trailer Facility, Apple Valley

Measurement	
Start	2024-11-12 17:00:00
Stop	2024-11-13 17:00:00
Duration	24:00:00.0
Run Time	24:00:00.0
Pause	00:00:00.0
Pre-Calibration	2024-11-12 15:43:16
Post-Calibration	None

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Overload	122.1 dB

Results			
LA_{eq}	53.2		
LAE	102.5		
EA	1.983858	mPa^2h	
EA8	661.2861	μPa^2h	
EA40	3.30643	mPa^2h	
$LA_{peak\ (max)}$	2024-11-12 17:46:48	97.7	dB
LAS_{max}	2024-11-13 11:29:57	80.8	dB
LAS_{min}	2024-11-13 00:57:42	24.1	dB

			Statistics		
LC_{eq}	64.2	dB	**LA2.00**	60.9	dB
LA_{eq}	53.2	dB	**LA8.00**	56.6	dB
LC_{eq} - LA_{eq}	11.1	dB	**LA25.00**	52.7	dB
LAI_{eq}	55.2	dB	**LA50.00**	48.0	dB
LA_{eq}	53.2	dB	**LA90.00**	35.6	dB
LAI_{eq} - LA_{eq}	2.0	dB	**LA99.00**	27.6	dB
Overload Count	0				
Overload Duration	0.0	s			

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2024-11-12	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.5	37.6	17:57:50	70.6	17:48:12	61.2	57.9	55.2	52.7	46.3	41.1
2	2024-11-12	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.0	34.1	18:12:52	62.9	18:42:45	57.9	55.9	53.5	50.4	42.0	36.8
3	2024-11-12	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.0	30.1	19:42:56	64.6	19:14:04	57.5	55.2	52.5	48.4	38.8	32.4
4	2024-11-12	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.6	31.8	20:41:42	64.3	20:59:37	59.4	56.4	52.4	47.0	38.8	34.2
5	2024-11-12	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	50.8	31.2	21:16:33	68.2	21:24:59	58.8	54.3	50.3	45.5	37.8	33.7
6	2024-11-12	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.7	28.6	22:55:53	71.7	22:15:55	61.2	56.1	50.6	44.2	34.3	30.2
7	2024-11-12	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	51.8	26.9	23:57:42	74.3	23:15:43	59.8	54.9	48.4	40.8	31.1	28.3
8	2024-11-13	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.7	24.1	00:57:42	74.8	00:43:13	56.9	51.4	42.9	35.9	28.0	25.0
9	2024-11-13	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	45.6	24.9	01:01:44	62.5	01:22:21	56.7	49.4	40.8	32.3	27.2	25.9
10	2024-11-13	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.6	25.1	02:45:22	65.3	02:08:02	57.7	52.9	43.6	35.8	29.0	26.9
11	2024-11-13	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	50.2	29.3	03:28:02	65.1	03:24:36	58.6	55.3	50.3	44.5	35.5	32.5
12	2024-11-13	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.6	35.8	04:26:20	70.6	04:53:33	61.1	58.0	53.8	49.7	40.9	37.3
13	2024-11-13	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.7	33.7	05:03:38	75.5	05:35:12	59.9	57.0	53.9	50.3	41.5	36.7
14	2024-11-13	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.4	39.7	06:09:54	68.9	06:45:18	62.2	59.0	56.4	53.2	45.9	41.1
15	2024-11-13	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.6	39.4	07:12:20	68.1	07:41:23	61.0	56.8	54.0	51.3	44.5	41.1
16	2024-11-13	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.4	35.2	08:58:27	74.5	08:34:40	59.8	55.6	52.5	49.3	40.5	36.8
17	2024-11-13	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.8	33.2	09:58:59	75.0	09:32:09	65.0	59.3	53.5	49.2	38.5	34.9
18	2024-11-13	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	50.8	32.4	10:52:20	70.3	10:59:23	59.9	54.3	49.9	44.9	36.4	33.4
19	2024-11-13	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.5	32.1	11:04:22	80.8	11:29:57	64.1	58.7	53.4	48.8	38.8	35.1
20	2024-11-13	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.7	33.7	12:16:35	77.4	12:13:05	60.2	55.3	51.2	46.9	37.9	35.1
21	2024-11-13	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.1	33.7	13:51:12	78.4	13:56:29	65.5	57.8	53.4	49.7	39.7	35.5
22	2024-11-13	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.5	32.9	14:07:10	69.7	14:59:41	60.8	56.2	52.7	49.2	39.3	34.9
23	2024-11-13	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.5	32.9	15:14:29	68.4	15:33:11	62.7	56.7	53.3	50.1	39.4	34.6
24	2024-11-13	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.0	35.0	16:07:50	68.5	16:06:29	64.0	58.3	54.9	52.2	44.8	37.9

Measurement Report

Report Summary

Meter's File Name	LxT_Data.473.s	Computer's File Name	LxT_0003099-20241112 170000-LxT_Data.473.ldbin
Meter	LxT1 0003099		
Firmware	2.404		
User	Ian Edward Gallagher	Location	LTNM1 34°33'23.00"N 117°11'27.54"W
Job Description	24 hour noise measurement (24 x 1 hours)		
Note	Ganddini Project#19763 Apple Valley Truck & Trailor Facility, Apple Valley		
Start Time	2024-11-12 17:00:00	Duration	24:00:00.0
End Time	2024-11-13 17:00:00	Run Time	24:00:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	53.2 dB		
LAE	102.5 dB	SEA	--- dB
EA	2.0 mPa²h	LAFTM5	56.8 dB
EA8	661.3 µPa²h		
EA40	3.3 mPa²h		
LA_{peak}	97.7 dB	2024-11-12 17:46:48	
LAS_{max}	80.8 dB	2024-11-13 11:29:57	
LAS_{min}	24.1 dB	2024-11-13 00:57:42	
LA_{eq}	53.2 dB		
LC_{eq}	64.2 dB	LC_{eq} - LA_{eq}	11.1 dB
LAI_{eq}	55.2 dB	LAI_{eq} - LA_{eq}	2.0 dB

Exceedances	Count	Duration
LAS > 65.0 dB	96	0:11:31.9
LAS > 85.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	--- dB	--- dB	0.0 dB

	LDEN	LDay	LEve	LNight
	--- dB	--- dB	--- dB	--- dB

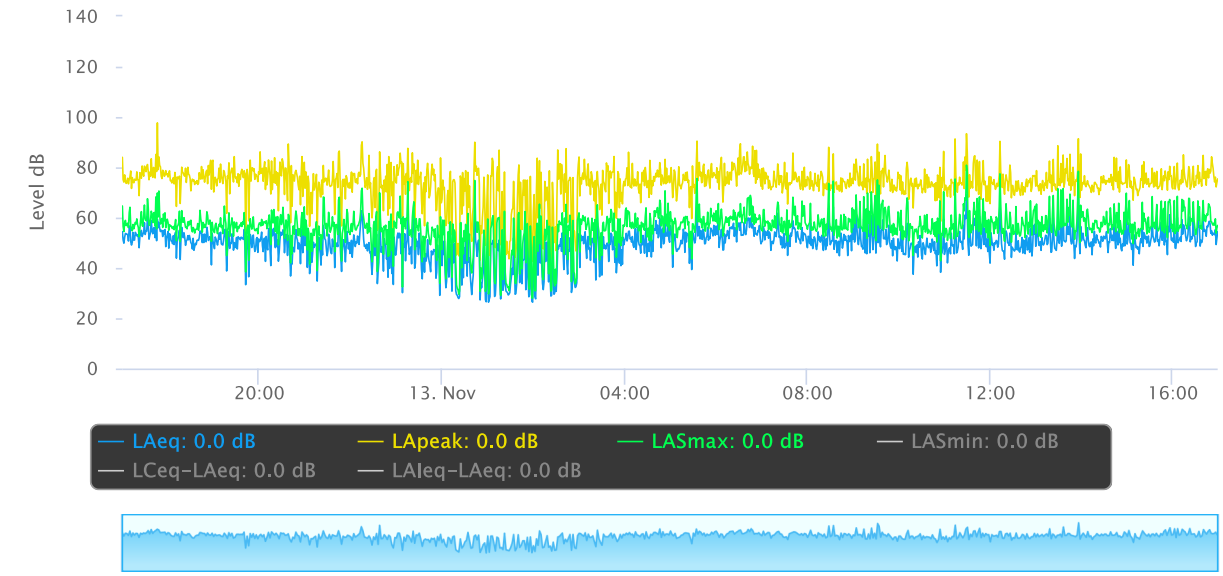
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	53.2 dB		64.2 dB		--- dB	
$L_{S(max)}$	80.8 dB	2024-11-13 11:29:57	--- dB		--- dB	
$L_{S(min)}$	24.1 dB	2024-11-13 00:57:42	--- dB		--- dB	
$L_{Peak(max)}$	97.7 dB	2024-11-12 17:46:48	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

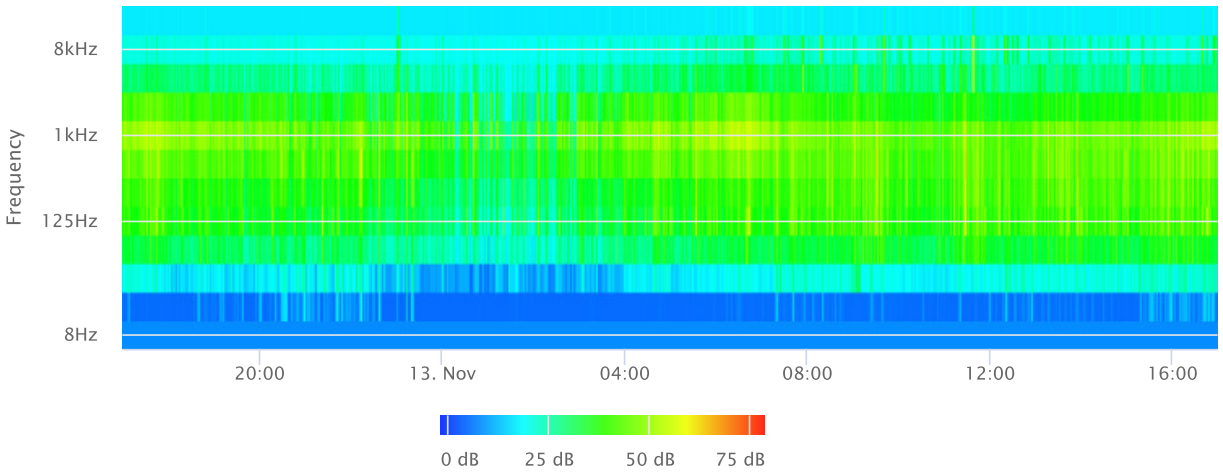
Statistics

LAS 2.0	60.9 dB
LAS 8.0	56.6 dB
LAS 25.0	52.7 dB
LAS 50.0	48.0 dB
LAS 90.0	35.6 dB
LAS 99.0	27.6 dB

Time History



OBA 1/1 Leq



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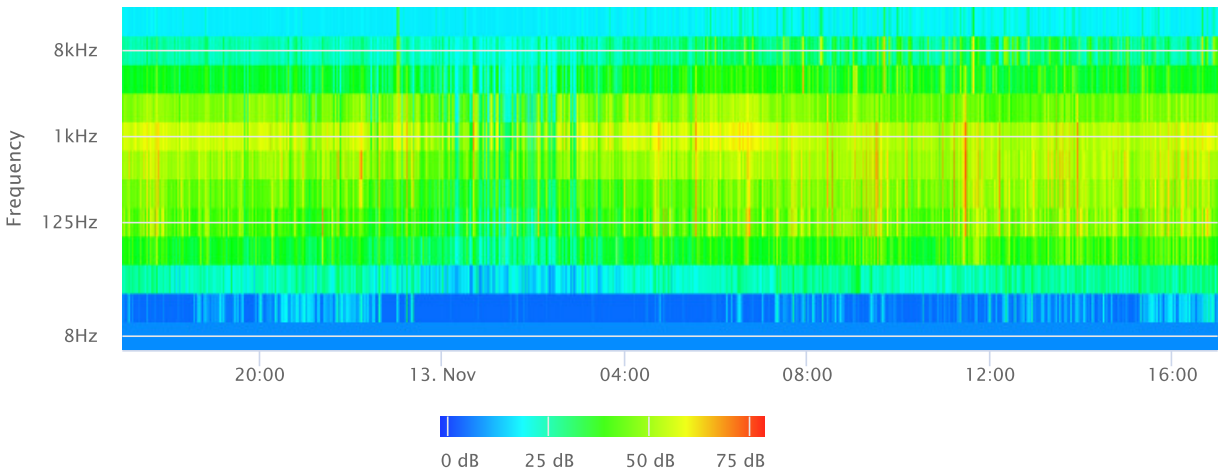

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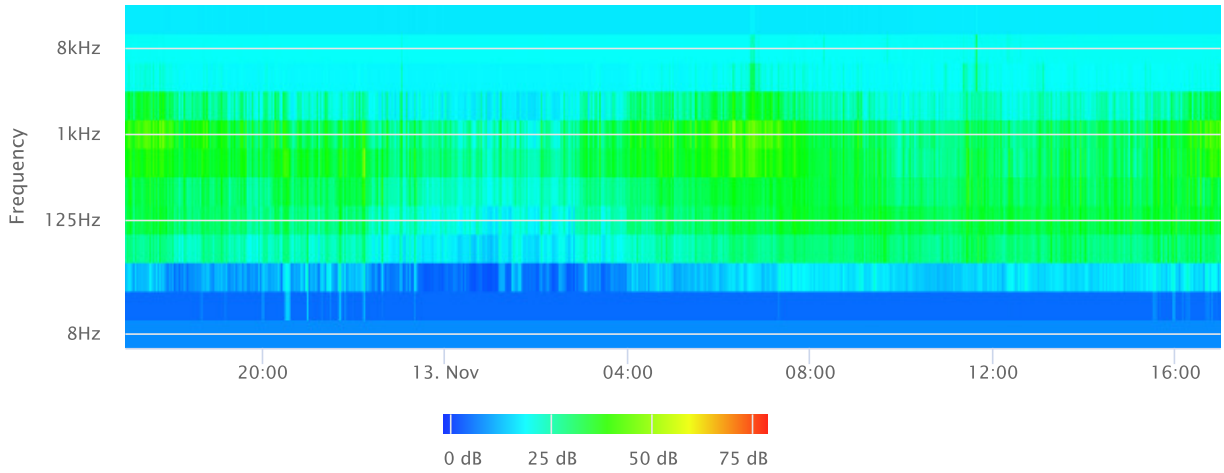

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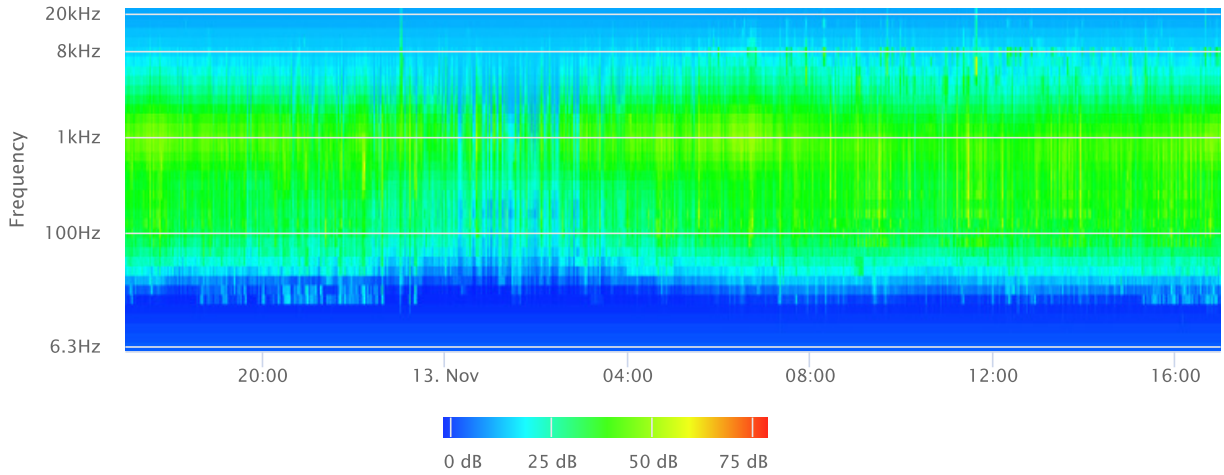

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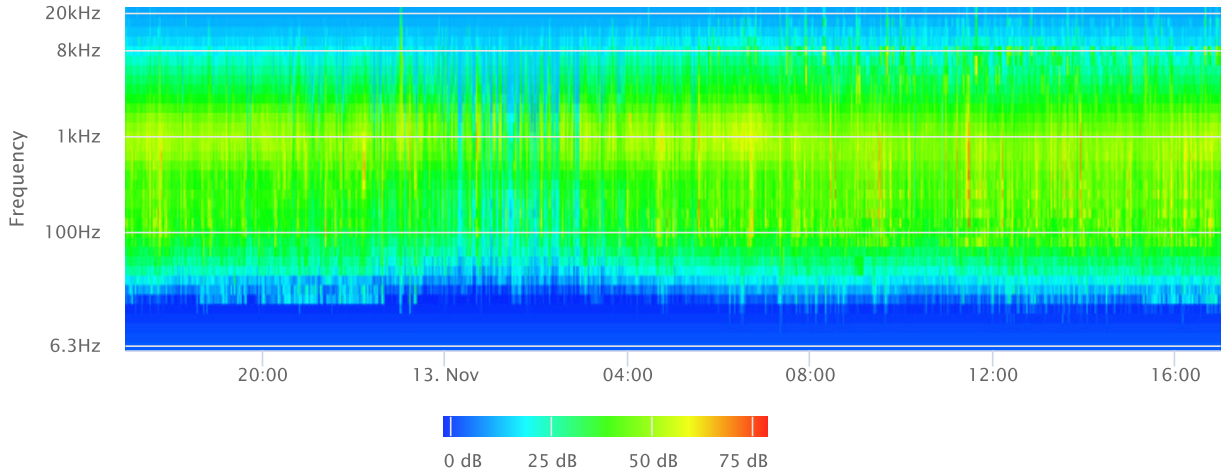
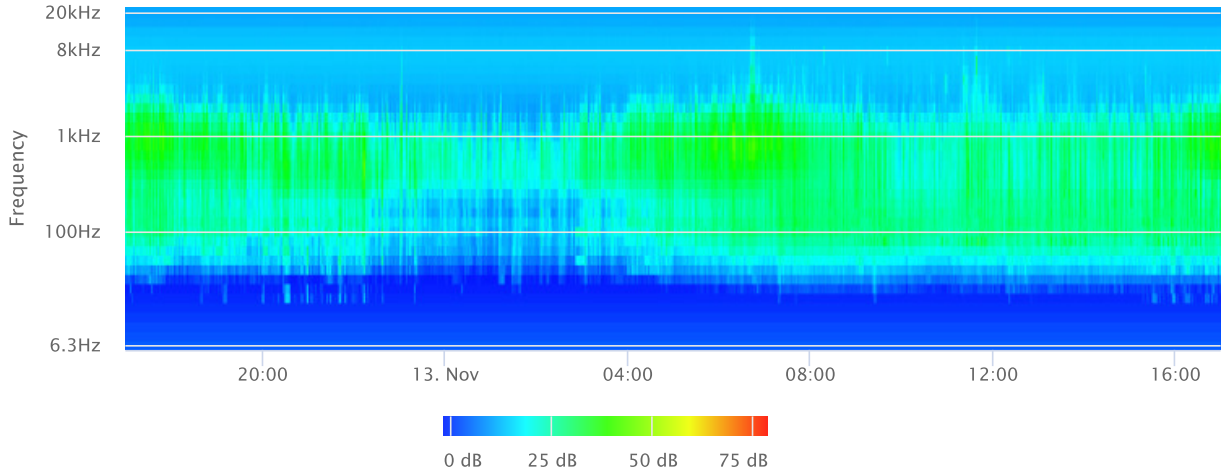


OBA 1/3 Lmin


20kHz
8kHz
1kHz
100Hz
6.3Hz
Frequency
20:00
13. Nov
04:00
08:00
12:00
16:00
0 dB
25 dB
50 dB
75 dB

APPENDIX D

CONSTRUCTION NOISE MODEL WORKSHEETS

Receptor - Residential to North (21576 Waalew Road, Apple Valley)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	591	40	1.20	-21.5	0.8	60.5	61.3
Tractors/Loaders/Backhoes	4	84	591	40	1.60	-21.5	2.0	62.5	64.6
								Log Sum	66.3
Grading									
Excavators	2	81	591	40	0.8	-21.5	-1.0	59.5	58.6
Scrapers	2	84	591	40	0.8	-21.5	-1.0	62.5	61.6
Rubber Tired Dozers	1	82	591	40	0.40	-21.5	-4.0	60.5	56.6
Tractors/Loaders/Backhoes	2	84	591	40	0.80	-21.5	-1.0	62.5	61.6
Graders	1	85	591	40	0.40	-21.5	-4.0	63.5	59.6
								Log Sum	67.0
Building Construction									
Cranes	1	81	591	16	0.16	-21.5	-8.0	59.5	51.6
Forklifts[2]	3	48	591	40	1.20	-21.5	0.8	26.5	27.3
Tractors/Loaders/Backhoes	3	84	591	40	1.20	-21.5	0.8	62.5	63.3
Generator Sets	1	81	591	50	0.50	-21.5	-3.0	59.5	56.5
Welders	1	74	591	40	0.40	-21.5	-4.0	52.5	48.6
								Log Sum	64.5
Paving									
Pavers	2	77	591	50	1.00	-21.5	0.0	55.5	55.5
Paving Equipment	2	77	591	50	1.00	-21.5	0.0	55.5	55.5
Rollers	2	80	591	20	0.40	-21.5	-4.0	58.5	54.6
								Log Sum	60.0
Architectural Coating									
Air Compressors	1	78	591	40	0.40	-21.5	-4.0	56.5	52.6
								Log Sum	52.6

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Residential to East (21709 Soboba Road, Apple Valley)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	338	40	1.20	-16.6	0.8	65.4	66.2
Tractors/Loaders/Backhoes	4	84	338	40	1.60	-16.6	2.0	67.4	69.4
								Log Sum	71.1
Grading									
Excavators	2	81	338	40	0.8	-16.6	-1.0	64.4	63.4
Scrapers	2	84	338	40	0.8	-16.6	-1.0	67.4	66.4
Rubber Tired Dozers	1	82	338	40	0.40	-16.6	-4.0	65.4	61.4
Tractors/Loaders/Backhoes	2	84	338	40	0.80	-16.6	-1.0	67.4	66.4
Graders	1	85	338	40	0.40	-16.6	-4.0	68.4	64.4
								Log Sum	71.8
Building Construction									
Cranes	1	81	338	16	0.16	-16.6	-8.0	64.4	56.4
Forklifts[2]	3	48	338	40	1.20	-16.6	0.8	31.4	32.2
Tractors/Loaders/Backhoes	3	84	338	40	1.20	-16.6	0.8	67.4	68.2
Generator Sets	1	81	338	50	0.50	-16.6	-3.0	64.4	61.4
Welders	1	74	338	40	0.40	-16.6	-4.0	57.4	53.4
								Log Sum	69.4
Paving									
Pavers	2	77	338	50	1.00	-16.6	0.0	60.4	60.4
Paving Equipment	2	77	338	50	1.00	-16.6	0.0	60.4	60.4
Rollers	2	80	338	20	0.40	-16.6	-4.0	63.4	59.4
								Log Sum	64.9
Architectural Coating									
Air Compressors	1	78	338	40	0.40	-16.6	-4.0	61.4	57.4
								Log Sum	57.4

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Residential to West (21571 Waalew Road, Apple Valley)

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Distance to Receptor[3]	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA
Site Preparation									
Rubber Tired Dozers	3	82	338	40	1.20	-16.6	0.8	65.4	66.2
Tractors/Loaders/Backhoes	4	84	338	40	1.60	-16.6	2.0	67.4	69.4
								Log Sum	71.1
Grading									
Excavators	2	81	338	40	0.8	-16.6	-1.0	64.4	63.4
Scrapers	2	84	338	40	0.8	-16.6	-1.0	67.4	66.4
Rubber Tired Dozers	1	82	338	40	0.40	-16.6	-4.0	65.4	61.4
Tractors/Loaders/Backhoes	2	84	338	40	0.80	-16.6	-1.0	67.4	66.4
Graders	1	85	338	40	0.40	-16.6	-4.0	68.4	64.4
								Log Sum	71.8
Building Construction									
Cranes	1	81	338	16	0.16	-16.6	-8.0	64.4	56.4
Forklifts[2]	3	48	338	40	1.20	-16.6	0.8	31.4	32.2
Tractors/Loaders/Backhoes	3	84	338	40	1.20	-16.6	0.8	67.4	68.2
Generator Sets	1	81	338	50	0.50	-16.6	-3.0	64.4	61.4
Welders	1	74	338	40	0.40	-16.6	-4.0	57.4	53.4
								Log Sum	69.4
Paving									
Pavers	2	77	338	50	1.00	-16.6	0.0	60.4	60.4
Paving Equipment	2	77	338	50	1.00	-16.6	0.0	60.4	60.4
Rollers	2	80	338	20	0.40	-16.6	-4.0	63.4	59.4
								Log Sum	64.9
Architectural Coating									
Air Compressors	1	78	338	40	0.40	-16.6	-4.0	61.4	57.4
								Log Sum	57.4

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

APPENDIX E

SOUNDPLAN WORKSHEETS

Noise emissions of parking lot traffic

Name	Parking lot type	Size	Movements per hour			Road surface	Separated method	Lw,ref
			Day	Evening	Night			dB(A)
P1	Rest stop (Trucks)	36 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	96.1
P3	Rest stop (Trucks)	36 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	96.1
P4	Visitors and staff	3 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	67.8
P4	Rest stop (Trucks)	59 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	99.0
P4	Rest stop (Trucks)	118 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	102.8
P4	Rest stop (Trucks)	118 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	102.8
P4	Rest stop (Trucks)	59 Parking bays	0.050	0.000	0.000	Asphaltic driving lanes	no	99.0

Receiver list

No.	Receiver name	Building side	Floor	Limit Day dB(A)	Level Day dB(A)	Conflict Day dB
1	2	-	EG	-	49.2	-
2		-	EG	-	48.4	-
3	3	-	EG	-	47.0	-
4	4	-	EG	-	50.4	-
5	5	-	EG	-	58.7	-

APPENDIX F

FHWA TRAFFIC NOISE MODEL WORKSHEETS

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **West of Dale Evans Parkway**

	DAYTIME			EVENING			NIGHTTIME			ADT	5300.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	306.96	6.36	10.60	227.90	1.06	1.77	56.53	8.83	14.72	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	17.16	0.33	2.54	15.87	-7.46	-5.24	9.81	1.75	3.97		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	71.33
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	66.55
LEQ	64.65	54.94	61.12	63.35	47.16	53.34	57.30	56.36	62.54	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	66.55		EVENING LEQ	63.86		NIGHT LEQ	64.42		Use hour?	no
										GRADE dB	0.00
		CNEL	**71.33**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **West of Dale Evans Parkway**

	DAYTIME			EVENING			NIGHTTIME			ADT	5610.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	314.45	10.40	14.20	233.46	1.73	2.37	57.91	14.45	19.72	% A	89.04
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	4.64
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	6.33
ADJUSTMENTS											
Flow	17.27	2.46	3.81	15.97	-5.32	-3.97	9.92	3.89	5.24		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	72.40
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	67.18
LEQ	64.75	57.07	62.39	63.46	49.29	54.61	57.40	58.50	63.81	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	67.18		EVENING LEQ	64.13		NIGHT LEQ	65.64		Use hour?	no
										GRADE dB	0.00
		CNEL	**72.40**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **East of Dale Evans Parkway**

	DAYTIME			EVENING			NIGHTTIME			ADT	5900.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	341.71	7.08	11.80	253.70	1.18	1.97	62.93	9.83	16.39	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	17.63	0.79	3.01	16.33	-6.99	-4.77	10.28	2.22	4.44		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	71.80
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	67.02
LEQ	65.11	55.40	61.58	63.82	47.62	53.80	57.77	56.83	63.01	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	67.02		EVENING LEQ	64.33		NIGHT LEQ	64.89		Use hour?	no
										GRADE dB	0.00
		CNEL	**71.80**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **East of Dale Evans Parkway**

	DAYTIME			EVENING			NIGHTTIME			ADT	6780.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	362.98	18.56	22.01	269.49	3.09	3.67	66.85	25.77	30.57	% A	85.04
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	6.84
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	8.12
ADJUSTMENTS											
Flow	17.89	4.98	5.72	16.60	-2.81	-2.07	10.54	6.40	7.14		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	74.13
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	68.48
LEQ	65.38	59.59	64.29	64.08	51.81	56.51	58.03	61.01	65.72	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	68.48		EVENING LEQ	65.00		NIGHT LEQ	67.50		Use hour?	no
										GRADE dB	0.00
		CNEL	**74.13**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **West of Navajo Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	5700.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	330.13	6.84	11.40	245.10	1.14	1.90	60.80	9.50	15.83	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	17.48	0.64	2.86	16.18	-7.14	-4.92	10.13	2.07	4.29		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	71.65
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	66.87
LEQ	64.96	55.25	61.43	63.67	47.47	53.65	57.62	56.68	62.86	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	66.87		EVENING LEQ	64.18		NIGHT LEQ	64.74		Use hour?	no
										GRADE dB	0.00
		CNEL	**71.65**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **West of Navajo Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	6060.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	338.83	11.53	15.58	251.56	1.92	2.60	62.40	16.02	21.63	% A	88.82
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	4.76
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	6.43
ADJUSTMENTS											
Flow	17.59	2.91	4.22	16.30	-4.87	-3.57	10.24	4.34	5.64		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	72.79
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	67.55
LEQ	65.08	57.52	62.79	63.78	49.74	55.01	57.73	58.95	64.22	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	67.55		EVENING LEQ	64.47		NIGHT LEQ	66.04		Use hour?	no
										GRADE dB	0.00
		CNEL	**72.79**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **East of Navajo Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	4200.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	243.25	5.04	8.40	180.60	0.84	1.40	44.80	7.00	11.67	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	16.15	-0.69	1.53	14.86	-8.47	-6.25	8.80	0.74	2.96		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	70.32
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	65.54
LEQ	63.64	53.93	60.11	62.34	46.15	52.33	56.29	55.35	61.53	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	65.54		EVENING LEQ	62.85		NIGHT LEQ	63.41		Use hour?	no
										GRADE dB	0.00
		CNEL	**70.32**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Waalew Road**

Segment: **East of Navajo Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	4510.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	52.00
INPUT PARAMETERS											
Vehicles per hour	250.74	9.08	12.00	186.16	1.51	2.00	46.18	12.61	16.66	% A	88.32
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	5.03
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	6.65
ADJUSTMENTS											
Flow	16.28	1.87	3.08	14.99	-5.91	-4.70	8.94	3.30	4.51		
Distance	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	71.63
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	66.33
LEQ	63.77	56.49	61.66	62.48	48.70	53.87	56.42	57.91	63.08	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	66.33		EVENING LEQ	63.19		NIGHT LEQ	64.90		Use hour?	no
										GRADE dB	0.00
		CNEL	**71.63**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Dale Evans Parkway**

Segment: **South of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	4500.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	71.00
INPUT PARAMETERS											
Vehicles per hour	260.63	5.40	9.00	193.50	0.90	1.50	48.00	7.50	12.50	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	16.45	-0.39	1.83	15.16	-8.17	-5.95	9.10	1.04	3.26		
Distance	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	69.27
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	64.49
LEQ	62.58	52.87	59.05	61.29	45.09	51.27	55.24	54.30	60.48	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	64.49		EVENING LEQ	61.80		NIGHT LEQ	62.36		Use hour?	no
										GRADE dB	0.00
		CNEL	**69.27**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Dale Evans Parkway**

Segment: **South of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	4750.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	71.00
INPUT PARAMETERS											
Vehicles per hour	266.67	8.66	11.90	197.99	1.44	1.98	49.11	12.03	16.53	% A	89.18
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	4.56
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	6.26
ADJUSTMENTS											
Flow	16.55	1.67	3.05	15.26	-6.12	-4.74	9.20	3.09	4.47		
Distance	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	70.29
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	65.09
LEQ	62.68	54.93	60.27	61.39	47.14	52.49	55.34	56.35	61.69	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	65.09		EVENING LEQ	62.06		NIGHT LEQ	63.52		Use hour?	no
										GRADE dB	0.00
		CNEL	**70.29**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Dale Evans Parkway**

Segment: **North of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	3800.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	71.00
INPUT PARAMETERS											
Vehicles per hour	220.08	4.56	7.60	163.40	0.76	1.27	40.53	6.33	10.56	% A	92
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	5
ADJUSTMENTS											
Flow	15.72	-1.12	1.10	14.42	-8.90	-6.68	8.37	0.31	2.53		
Distance	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	68.54
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	63.75
LEQ	61.85	52.14	58.32	60.56	44.36	50.54	54.50	53.57	59.75	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	63.75		EVENING LEQ	61.06		NIGHT LEQ	61.62		Use hour?	no
										GRADE dB	0.00
		CNEL	**68.54**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Dale Evans Parkway**

Segment: **North of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	4120.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	55.00
										DISTANCE	71.00
INPUT PARAMETERS											
Vehicles per hour	227.82	8.73	11.31	169.14	1.46	1.89	41.96	12.13	15.71	% A	87.84
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	5.30
NOISE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	6.86
ADJUSTMENTS											
Flow	15.87	1.70	2.83	14.57	-6.08	-4.96	8.52	3.13	4.25		
Distance	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	-1.59	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	70.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	64.64
LEQ	62.00	54.96	60.05	60.71	47.18	52.27	54.65	56.39	61.47	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	64.64		EVENING LEQ	61.45		NIGHT LEQ	63.29		Use hour?	no
										GRADE dB	0.00
		CNEL	**70.00**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Navajo Road**

Segment: **South of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	2200.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	50.00
										DISTANCE	30.00
INPUT PARAMETERS											
Vehicles per hour	134.92	1.65	0.64	99.71	0.29	0.29	24.98	2.20	0.86	% A	97.4
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	1.84
NOISE CALCULATIONS											
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02	% HT	0.74
ADJUSTMENTS											
Flow	14.01	-5.12	-9.22	12.69	-12.63	-12.62	6.68	-3.87	-7.97		
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	65.90
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	62.86
LEQ	62.27	50.82	50.95	60.96	43.31	47.55	54.95	52.07	52.20	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	62.86		EVENING LEQ	61.22		NIGHT LEQ	58.06		Use hour?	no
										GRADE dB	0.00
		CNEL	**65.90**								

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Existing Plus Project Traffic Noise

Project: **19763 Apple Valley Truck and Trailer Facility**

Road: **Navajo Road**

Segment: **South of Waalew Road**

	DAYTIME			EVENING			NIGHTTIME			ADT	2250.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	50.00
										DISTANCE	30.00
INPUT PARAMETERS											
Vehicles per hour	136.13	2.31	1.21	100.61	0.41	0.56	25.20	3.09	1.62	% A	96.09
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.52
NOISE CALCULATIONS											
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02	% HT	1.37
ADJUSTMENTS											
Flow	14.04	-3.65	-6.46	12.73	-11.16	-9.85	6.72	-2.40	-5.21		
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	66.82
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	63.24
LEQ	62.31	52.29	53.71	61.00	44.78	50.32	54.99	53.54	54.96	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	63.24		EVENING LEQ	61.45		NIGHT LEQ	59.32		Use hour?	no
										GRADE dB	0.00
		CNEL	**66.82**								

APPENDIX G

GROUNDBORNE VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS

Project:	19763 Apple Valley Truck and Trailer Facility	Date:	1/2/25
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to East		
Address:	21709 Waalew Road, Apple Valley		

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

INPUT

Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	21.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.273	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility		Date: 1/2/25
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to East		
Address:	21709 Waalew Road, Apple Valley		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	21.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.116	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS

Project:	19763 Apple Valley Truck and Trailer Facility	Date:	1/2/25
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to North		
Address:	21576 Waalew Road, Apple Valley		

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

INPUT

Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	127.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	

Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.

RESULTS

PPV =	0.018	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility		Date: 1/2/25
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to North		
Address:	21576 Waalew Road, Apple Valley		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	127.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.008	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility		Date: 1/2/25
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to West		
Address:	21571 Waalew Road, Apple Valley		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	125.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.019	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility		Date: 1/2/25
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to West		
Address:	21571 Waalew Road, Apple Valley		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	125.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.008	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility	Date:	1/2/25
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Distance to Annoyance Threshold		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment Type =	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	75.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.040	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19763 Apple Valley Truck and Trailer Facility		Date: 1/2/25
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Distance to Annoyance Threshold		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	43.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.039	IN/SEC	OUTPUT IN BLUE

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