Appendix J. Noise Impact Analysis

NOISE IMPACT ANALYSIS

5770 NORTH INDUSTRIAL PARKWAY LOGISTICS FACILITY PROJECT

CITY OF SAN BERNARDINO

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Bernardino
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise and vibration impacts associated with the proposed 5770 North Industrial Parkway Logistics Facility project (proposed project). The following is provided in this report:

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

1.2 Site Location and Study Area

The project site is located in the City of San Bernardino (City). The 11.07-acre project site currently contains an 34,000 square foot pallet manufacturing building on the southern portion of the project site and the northern portion of the project site is currently vacant. The project site is bounded by Palm Avenue and vacant land to the northeast, Industrial Parkway and industrial uses to the northeast, vacant land and industrial uses to the southeast, and the BNSF/UP Cajon Line Railroad, Cajon Boulevard and industrial uses to the southwest. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are homes that are located on the northeast side of Kendall Drive (east side of Interstate 215) that are located as near as 1,500 feet northeast of the project site. There are also homes are homes that are located on the southwest side of Kendall Drive (west side of Interstate 215) that are located as near as 1,750 feet north of the project site. The nearest school is Cesar Chavez Middle School, which is located as near as 0.9 mile north of the project site.

1.3 Proposed Project Description

The proposed project consists of demolition of the existing pallet manufacturing building and construction of a 52,160 square foot truck terminal building, which includes 6,000 square feet of office space. The proposed project also includes the construction of parking, landscaping, signage, and utility improvements to serve the site. A total of 100 dock-high doors and one grade-high door are proposed. The dock doors would be placed along the northeast and southwest sides of the building. The parking lot would include 80 passenger vehicle stalls that would be located on the northeast side and southern portion of the project site and 156 trailer stalls that would be located along the southwest side and northern portion of the project site. Vehicle access to the project site would be provided by two driveways on Industrial Parkway. The proposed site plan is shown in Figure 2.

1.4 Executive Summary

Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City of San Bernardino and State of California.

City of San Bernardino Municipal Code

The following lists the *San Bernardino Municipal Code* (Municipal Code), revised October 2021 regulations that are applicable to all industrial development projects in the City.

Section 8.54.070 Construction Activities

Section 8.54.070 of the Municipal Code limits construction activities to between the hours of 7:00 a.m. and 8:00 p.m.

Sections 19.20.030(15) Noise Standards

Section 19.20.030(15) of the Municipal Code restricts creating noise that exceeds 65 dBA at the exterior of residential areas.

Section 19.20.030(28) Vibration

Section 19.20.030(28) of the Municipal Code restricts vibration from being discernible beyond the boundary line of the property.

State of California Rules

The following lists the State of California rules that are applicable to all commercial projects in the State.

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

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

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

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

Summary of Analysis Results

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

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

Less than significant impact.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

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

No impact.

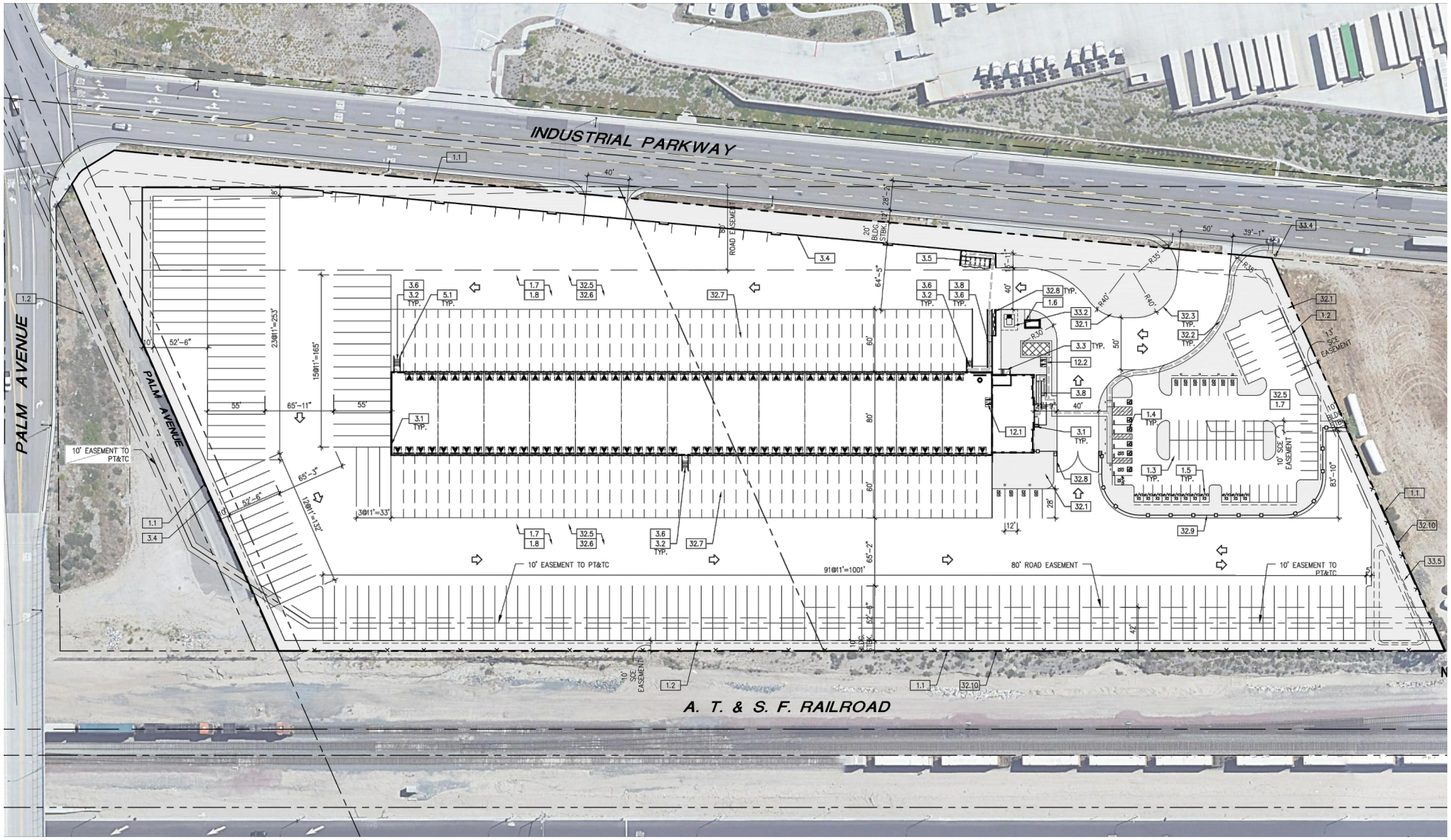
1.5 Mitigation Measures for the Proposed Project

This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above, all noise and vibration impacts would be reduced to less than significant levels.

SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 1
Project Location Map



SOURCE: GAA Architects.

VISTA ENVIRONMENTAL

Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

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

2.1 Noise Descriptors

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

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

2.2 Tone Noise

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

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

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in 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, radiate uniformly outward as it travels away from

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

2.4 Ground Absorption

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

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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

3.1 Vibration Descriptors

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

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform medium, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation."

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 REGULATORY SETTING

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

4.1 Federal Regulations

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

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

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

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

Table A – FTA Project Effects on Cumulative Noise Exposure

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

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Allowable Project Noise Exposure Before Moderate Impact	Allowable Combined Total Noise Exposure	Allowable Noise Exposure Increase Before Moderate Impact
75	65	75	0

Source: Federal Transit Administration, 2018.

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

Table B – FTA Construction Noise Criteria

Land Use	Day (dBA $Leq_{(8\text{-hour})}$)	Night (dBA $Leq_{(8\text{-hour})}$)	30-day Average (dBA Ldn)
Residential	80	70	75
Commercial	85	85	80[(1)]
Industrial	90	90	85[(1)]

Notes:
[(1)] Use a 24-hour $Leq_{(24\ hour)}$ instead of $Ldn_{(30\ day)}$.
Source: Federal Transit Administration, 2018.

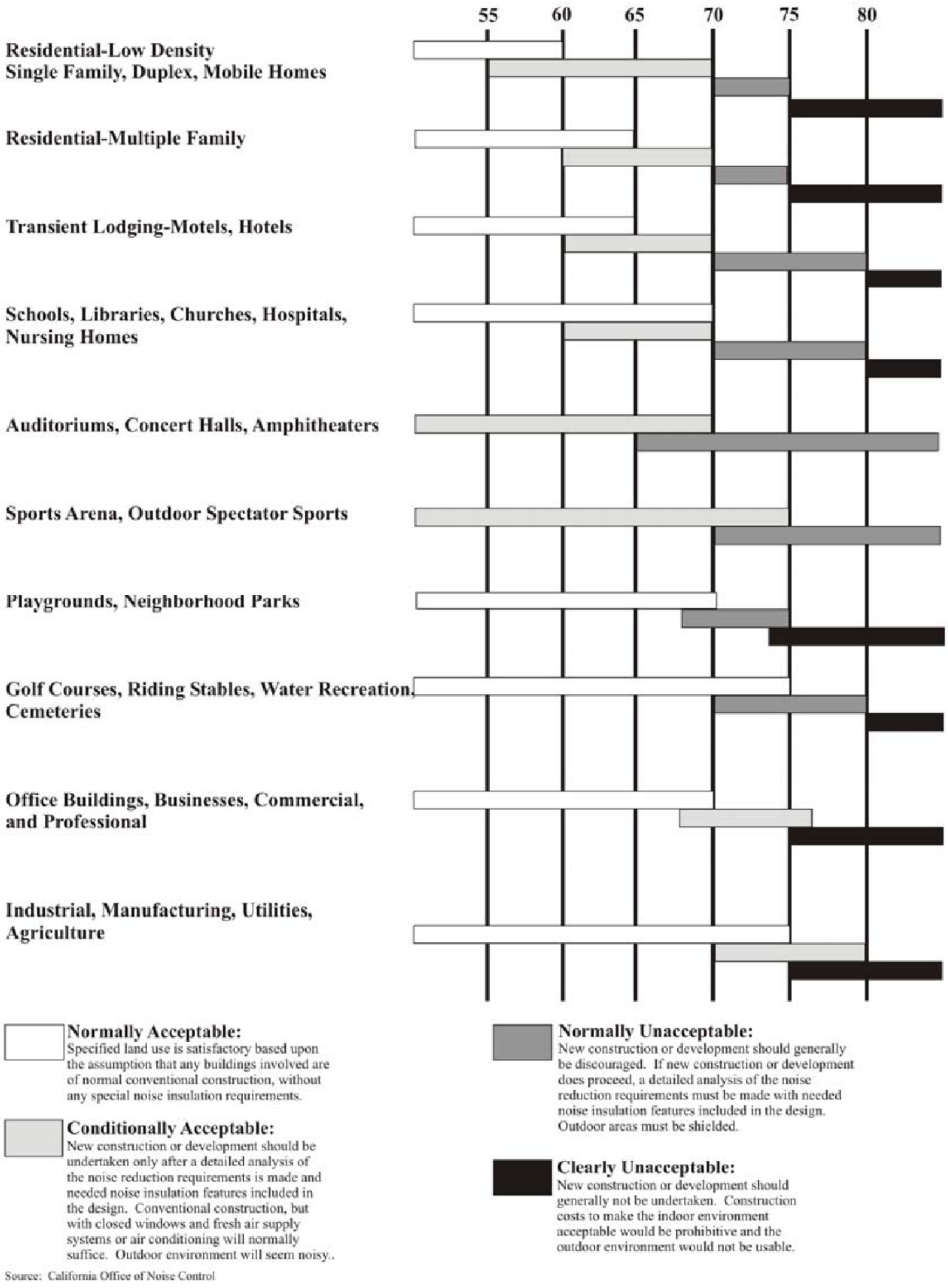
Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise. The Land Use Compatibility Matrix adopted by the City of San Bernardino is shown in Figure 3.



SOURCE: City of San Bernardino, 2005.

VISTA ENVIRONMENTAL

Figure 3
Land Use Compatibility Matrix

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

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

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

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

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

Vibration Standards

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

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

4.3 Local Regulations

The City of San Bernardino General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

City of San Bernardino General Plan

The following applicable goals and policies to the proposed industrial project are from the Noise Element of the General Plan.

Goal 14.1: Ensure that residents are protected from excessive noise through careful land planning.

Policies

14.1.4 Prohibit the development of new or expansion of existing industrial, commercial, or other uses that generate noise impacts on housing, schools, health care facilities or other sensitive uses above a Ldn of 65 dB(A). (LU-1)

Goal 14.2: Encourage the reduction of noise from transportation-related noise sources such as motor vehicles, aircraft operations, and railroad movements.

Policies

14.2.3 Require that development that increases the ambient noise level adjacent to noise-sensitive land uses provide appropriate mitigation measures. (LU-1)

14.2.10 Provide for the development of alternative transportation modes such as bicycle paths and pedestrian walkways to minimize the number of automobile trips. (LU-1)

14.2.12 Require that commercial and industrial uses implement transportation demand management programs consistent with the Air Quality Management Plan that provide incentives for carpooling, van pools, and the use of public transit to reduce traffic and associated noise levels in the City. (LU-1)

14.2.17 Ensure that new development is compatible with the noise compatibility criteria and noise contours as defined in the Comprehensive Land Use Plan for the SBIA and depicted in Figure LU-4 (see Figure 3 above).

Goal 14.3: Protect residents from the negative effects of "spill over" or nuisance noise.

Policies

14.3.2 Require that construction activities employ feasible and practical techniques that minimize the noise impacts on adjacent uses. (LU-1)

14.3.6 Ensure that buildings are constructed soundly to prevent adverse noise transmission between differing uses located in the same structure and individual residences in multifamily buildings. (LU-1)

City of San Bernardino Municipal Code

The *San Bernardino Municipal Code*, revised October 2021 establishes the following applicable standards related to noise.

Title 8 Health and Safety

8.54.010 Purpose and Intent

A. It is the purpose and intent of these regulations to establish community-wide noise standards. It is further the purpose of these regulations to recognize that the existence of excessive noise within the City is a condition which is detrimental to the health, safety, welfare, and quality of life of the citizens and shall be regulated in the public interest.

8.54.020 Prohibited Acts

It shall be unlawful for any person to engage in the following activities:

H. The unnecessary or excessive blowing of whistles, sounding of horns, ringing of bells or use of signaling devices by operators of railroad locomotives, motor trucks and other transportation equipment;

I. The creation of loud and excessive noise in connection with the loading or unloading of motor trucks and other vehicles;

L. The operation or use between the hours of 10:00 p.m. and 8:00 a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City

8.54.050 Controlled Hours of Operation

It shall be unlawful for any person to engage in the following activities other than between the hours of 8:00 a.m. and 8:00 p.m. in residential zones and other than between the hours of 7:00 a.m. and 8:00 p.m. in all other zones:

A. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous, or unnecessary noise within one thousand (1,000) feet of a residence.

8.54.060 Exemptions

The following activities and noise sources shall be exempt from the provisions of this chapter:

B. Such noises as are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose, except where there is evidence that such noise is a nuisance and that such a nuisance is a result of the employment of unnecessary and injurious methods of operation.

H. Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including, but not limited to, trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.

I. Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures.

8.54.070 Disturbance from Construction Activity

No person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m.

Chapter 19.20 Property Development Standards

19.20.010 Purpose

These standards shall ensure that new or modified uses and development will produce an urban environment of stable, desirable character which is harmonious with the existing and future development, consistent with the General Plan.

19.20.030 General Standards.

No permit shall be approved unless it conforms to all of the following standards set forth in this Chapter:

15. Noise

No loudspeaker, bells, gongs, buzzers, mechanical equipment or other sounds, attention-attracting, or communication device associated with any use shall be discernible beyond any boundary line of the parcel, except fire protection devices, burglar alarms and church bells. The following provisions shall apply:

A. In residential areas, no exterior noise level shall exceed 65 dBA and no interior noise level shall exceed 45 dBA.

28. Vibration

No vibration associated with any use shall be permitted which is discernible beyond the boundary line of the property

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Industrial Parkway, which is adjacent to the northeast side of the project site, Palm Avenue, which is adjacent to the northwest side of the project site, and Cajon Boulevard, which is located as near as 150 feet southwest of the project site. There is also rail noise created from the BNSF/UP Cajon Line Railroad that is located adjacent to the southwest side of the project site and industrial noise created from the nearby industrial uses. The following describes the measurement procedures, measurement locations, and measurement results.

5.1 Noise Measurement Equipment

The noise measurements were taken using a Larson-Davis Model 831 Type 1 precision sound level meter programmed in "slow" mode to record noise levels in "A" weighted form as well as the frequency spectrum of the noise broken down into 1/3 octaves. The sound level meter and microphone were mounted on a tripod five feet above the ground and were equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200. The accuracy of the calibrator is maintained through a program established through the manufacturer and is traceable to the National Bureau of Standards. The unit meets the requirements of ANSI Standard S1.4-1984 and IEC Standard 942: 1988 for Class 1 equipment. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels on the project site and at the nearest residential uses to the project site. Descriptions of the noise monitoring sites are provided below in Table C and Figure 4 shows the noise monitoring locations. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 12:26 p.m. and 1:24 p.m. on Tuesday, July 27, 2021. At the start of the noise measurements, the sky was clear (no clouds), the temperature was 91 degrees Fahrenheit, the humidity was 43 percent, barometric pressure was 28.21 inches of mercury, and the wind was blowing at an average rate of two miles per hour. At the conclusion of the noise measurements, the sky was clear, the temperature was 94 degrees Fahrenheit, the humidity was 337 percent, barometric pressure was 28.19 inches of mercury, and the wind was blowing at an average rate of five miles per hour.

5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table C and the noise monitoring data printouts are included in Appendix B.

Table C – Existing (Ambient) Noise Measurement Results

Site No.	Description	Primary Noise Sources	Start Time of Measurement	Measured Noise Level	
				dBA Leq	dBA Lmax
A	Located near the middle of the east side of the project site, approximately 130 feet southwest of Industrial Parkway centerline.	Vehicles on Industrial Parkway and Cajon Boulevard	12:26 p.m.	57.8	69.7
B	Located approximately 2,200 feet northwest of the project site, in front of homes at 20151 Kendall Drive and approximately 50 feet southwest of Kendall Drive centerline.	Vehicles on Kendall Drive and Interstate 215	12:50 p.m.	72.0	83.6
C	Located approximately 1,450 feet northeast of the project site, in front of home at 3144 Kendall Drive, approximately 50 feet northeast of Kendall Drive centerline.	Vehicles on Kendall Drive	1:24 p.m.	69.2	83.9

Notes: Noise measurements taken with a Larson-Davis Model 831 Type 1 precision sound level meter on Tuesday, July 27, 2021.

SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 4
Field Noise Monitoring Locations

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table D below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in the CalEEMod model runs that were utilized in the Air Quality and Greenhouse Gas Emissions analysis for the proposed project and were prepared by EPD Solutions, Inc.

Table D – Construction Equipment Noise Emissions and Usage Factors

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

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.
[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
Source: Federal Highway Administration, 2006.

Table D also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table D and through use of the RCNM. The construction equipment noise levels were analyzed at representative nearby homes that are shown in Figure 5.

6.2 Operations-Related Noise

FHWA Model Methodology

The proposed project would result in increases in traffic noise to the nearby roadways as well as introduce new sensitive receptors to the project site. The project impacts to the offsite roadways were analyzed through use of the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for: the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks and heavy trucks, the roadway grade, the angle of view of the observer exposed to the roadway and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

FHWA Model Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table E. The roadway classifications are based on the City's General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest residence. It should be noted that the project site is located in an industrial area, where the nearest residence is 1,500 feet northeast of the project site. As such, there is only one roadway segment analyzed in the *5770 North Industrial Parkway Traffic Impact Analysis* (Traffic Analysis), prepared by EPD Solutions, Inc., October 12, 2021, that has residential uses adjacent to the roadway. Since Palm Avenue north of Interstate 215 is located in a suburban environment and landscaping or natural vegetation exists along the sides of the roadway, soft site conditions were modeled.

Table E – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (MPH)	Distance to Nearest Receptor[1] (feet)
Palm Avenue	North of Interstate 215 NB Ramps	Secondary	45	70

Notes:
[1] Distance measured from nearest residential structure to centerline of roadway.
Source: EPD Solutions, Inc.,2021; and City of San Bernardino, 2006.

The average daily traffic (ADT) volumes were obtained from the Traffic Analysis (EPD Solutions, 2021). The without project ADT volumes were calculated by multiplying the PM peak hour volumes by 12. The Traffic Analysis found that the proposed project would generate 169 daily trips and that 15 percent of the passenger vehicle trips would travel on Palm Avenue north of Interstate 215 northbound ramps, as such the with project trips were calculated by adding 25 daily trips were to the without project trips. The ADT

volumes used in this analysis are shown in Table F and include without and with project conditions for both existing year and Build Out year 2040.

Table F – Average Daily Traffic Volumes

Roadway	Segment	Average Daily Traffic Volumes			
		Existing	Existing + Project	Year 2040	Year 2040 +Project
Palm Avenue	North of Interstate 215 NB Ramps	23,510	23,535	29,230	29,255

Source: EPD Solutions, Inc., 2021.

The vehicle mix used in the FHWA-RD-77-108 Model is shown in Table G and is based on the typical vehicle mix observed for arterial roadways in Southern California. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA model.

Table G – Roadway Vehicle Mix

Vehicle Type	Traffic Flow Distributions			
	Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	Overall
Automobiles	69.5%	12.9%	9.6%	92.0%
Medium Trucks	1.4%	0.1%	1.5%	3.0%
Heavy Trucks	2.4%	0.1%	2.5%	5.0%

Source: Vista Environmental

FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road grade where the noise is being emitted from, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

6.2 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to damage at the highest levels. Table H gives approximate vibration levels for particular construction activities. The data in Table H provides a reasonable estimate for a wide range of soil conditions.

Table H – Vibration Source Levels for Construction Equipment

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

Source: Federal Transit Administration, May 2018.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table H and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table D.

VISTA ENVIRONMENTAL

Figure 5
Locations of Nearby Sensitive Receptors Analyzed

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

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

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

7.2 Generation of Noise Levels in Excess of Standards

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

Construction-Related Noise

The construction activities for the proposed project are anticipated to include demolition of the existing pallet manufacturing building on the project site, site preparation and grading of the 11.07-acre project site, building construction of the 52,160 square foot truck terminal building, paving of the truck loading areas, driveways, and parking lots, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are homes that are located on the northeast side of Kendall Drive (east side of Interstate 215) that are located as near as 1,500 feet northeast of the project site. There are also homes are homes that are located on the southwest side of Kendall Drive (west side of Interstate 215) that are located as near as 1,750 feet north of the project site.

Section 8.54.060(I) of the Municipal Code exempts construction noise from the City noise standards. Section 8.54.070 of the Municipal Code restricts construction activities from occurring between 8:00 p.m. and 7:00 a.m. However, the City construction noise standards do not provide any limits to the noise levels that may be created from construction activities during the allowable hours of construction and even with adherence to the City standards, the resultant construction noise levels may result in a significant substantial temporary noise increase to the nearby residents.

In order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds detailed above in Section 4.1 have been utilized, which shows that a significant construction noise impact would occur if construction noise exceeds 80 dBA during the daytime at any of the nearby homes.

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

Table I – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at[1]:	
	1 - Home to Northeast	2 - Home to Northwest
Demolition	57	56
Site Preparation	57	56
Grading	58	57
Building Construction	58	56
Paving	52	51
Painting	44	43
FTA Construction Noise Threshold[2]	**80**	**80**
Exceed Thresholds?	**No**	**No**

Notes:
[1] The locations of Receptors 1 and 2 are shown above in Figure 5.
[2] FTA Construction Noise Threshold obtained from Table B above.
Source: RCNM, Federal Highway Administration, 2006

Table I shows that the greatest noise impacts would occur during the grading and building construction phases of construction, with a noise level as high as 58 dBA Leq at Receiver 2, which is located at the home northeast of the project site. All calculated construction noise levels shown in Table I are within the FTA daytime construction noise standard of 80 dBA. Therefore, through adherence to the limitation of allowable construction times provided in Section 8.54.070 of the Municipal Code, construction-related noise levels would not exceed any standards established in the General Plan or Noise Ordinance nor would construction activities create a substantial temporary increase in ambient noise levels from construction of the proposed project. Impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of a truck terminal building. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite activities, which have been analyzed separately below.

Roadway Vehicular Noise Impacts

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

General Plan Policy 14.2.3 requires that new development that increases the ambient noise level adjacent to noise-sensitive land uses to provide appropriate mitigation measures. However neither the General Plan nor the CEQA Guidelines define what constitutes a "substantial permanent increase to ambient noise levels", as such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A that shows that the project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing noise levels.

The potential offsite traffic noise impacts created by the on-going operations of the proposed project have been analyzed through utilization of the FHWA model and parameters described above in Section 6.2 and the FHWA model traffic noise calculation spreadsheets are provided in Appendix D. The proposed project's potential offsite traffic noise impacts have been analyzed for both existing year and Build Out year 2040 conditions that are discussed separately below.

Existing Year Conditions

The proposed project's offsite traffic noise impacts have been calculated through a comparison of the existing year scenario to the existing year with project scenario. The results of this comparison are shown in Table J.

Table J – Existing Conditions Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Existing	Existing Plus Project	Project Contribution	Increase Threshold[2]
Palm Avenue	North of Interstate 215 NB Ramps	67.6	67.6	0.0	+1 dBA

Notes:
[1] Distance to nearest residential use shown in Table E, does not take into account existing noise barriers.
[2] Increase Threshold obtained from the FTA's allowable noise impact exposures detailed above in Table A..
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table J shows that the proposed project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the existing conditions. Impacts would be less than significant.

Build Out Year 2040 Conditions

The proposed project's offsite traffic noise impacts have been calculated through a comparison of the Build Out year 2040 scenario to the Build Out year 2040 with project scenario. The results of this comparison are shown in Table K.

Table K – Build Out Year 2040 Conditions Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Year 2040	Year 2040 Plus Project	Project Contribution	Increase Threshold[2]
Palm Avenue	North of Interstate 215 NB Ramps	68.6	68.6	0.0	+1 dBA

Notes:
[1] Distance to nearest residential use shown in Table E, does not take into account existing noise barriers.
[2] Increase Threshold obtained from the FTA's allowable noise impact exposures detailed above in Table A..
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table K shows that the proposed project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the Build Out year 2040 conditions. Impacts would be less than significant.

Proposed Onsite Noise Sources

The operation of the proposed project may create an increase in onsite noise levels from truck operations, including truck loading/unloading activities, rooftop mechanical equipment, forklift activities, and automobile parking lot activities.

Section 19.20.030(15) of the Municipal Code limits the noise created from on the project site to 65 dBA at the nearby residential areas. It should be noted that the time limits for the operation of vehicles or forklifts on the project as detailed in Section 8.54.050 of the Municipal Code does not apply to the proposed project, since there are no residences located within 1,000 feet of the project site.

In order to determine the noise impacts from the operation of rooftop mechanical equipment, automobile parking lots, forklifts, and truck loading/unloading activities, reference noise measurements were taken of each noise source and the reference noise measurements output files are provided in Appendix E. The noise levels at the nearby sensitive receptors were calculated based on standard geometric spreading of noise, which provides an attenuation rate of 6 dB per doubling the distance between source and receptor. The operational noise levels were calculated at the representative sensitive receptors identified above in Figure 5 and the results are shown in Table L.

Table L – Operational Noise Levels at the Nearby Sensitive Receptors

	1-Nearest Home to Northeast		2-Nearest Home to Northwest	
Noise Source	**Distance - Source to Property Line (feet)**	**Noise Level (dBA Leq)**	**Distance - Source to Property Line (feet)**	**Noise Level (dBA Leq)**
Rooftop Equipment[1]	1,700	22.0	2,000	20.6
Auto Parking Lot[2]	1,500	13.6	1,900	11.5
Onsite Truck Operations[3]	1,500	19.8	1,800	18.2
Forklift[4]	1,500	30.9	1,800	29.3
Combined Noise Level		**32**		**30**
City Residential Exterior Noise Standard		**65**		**65**
Exceed City Noise Standard?		**No**		**No**

Notes:
[1] Rooftop equipment is based on a reference noise measurement of 66.6 dBA at 10 feet.
[2] Parking lot is based on a reference noise measurement of 63.1 dBA at 5 feet.
[3] Onsite truck operations is based on a reference noise measurement of 63.3 dBA at 10 feet.
[4] Forklift activities is based on a reference noise measurement of 74.4 dBA at 10 feet.
Source: Reference noise measurement printouts provided in Appendix E.

Table L shows that the proposed project's worst-case operational noise from the simultaneous operation of all noise sources on the project site would create a noise level as high as 32 dBA at the nearest home to the northeast and 30 dBA at the nearest home to the northwest. The worst-case operational noise levels are within the City's residential exterior noise standard of 65 dBA. Therefore, the onsite operational noise impacts would be less than significant.

Level of Significance

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

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

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include demolition of the existing pallet manufacturing building on the project site, site preparation and grading of the 11.07-acre project site, building construction of the 52,160 square foot truck terminal building, paving of the truck loading areas, driveways, and parking lots, and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest offsite structure where people may sit, which makes them much more susceptible to vibration, would be the warehouse on the east side of Industrial Parkway that is located as near as 230 feet east of the project site

Section 19.20.030(28) of the Municipal Code restricts the creation of vibration that is discernible beyond the property line of the property. However, since neither the Municipal Code nor the General Plan provides a quantifiable vibration threshold level, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table H above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest offsite structure (230 feet away) would be 0.08 inch per second PPV. The vibration level at the nearest offsite structure would be below the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of a truck terminal building. The proposed project would result in the operation of trucks on the project site, which are a known source of vibration. The nearest offsite structure where people may sit, which makes them much more susceptible to vibration, would be the warehouse on the east side of Industrial Parkway that is located as near as 230 feet east of the project site.

Caltrans has done extensive research on vibration level created along freeways and State Routes and their vibration measurements of roads have never exceeded 0.08 inches per second PPV at 15 feet from the center of the nearest lane, with the worst combinations of heavy trucks. As detailed above, truck activities would occur onsite as near as 230 feet from the nearest offsite receptor. Based on typical propagation rates, the vibration level at the nearest offsite receptor would by 0.004 inch per second PPV. Therefore, vibration created from operation of the proposed project would be within the 0.25 inch per second PPV threshold of detailed above. Impacts would be less than significant.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is San Bernardino International Airport that is located as near as nine miles south of the project site. The project site is located outside of the 60 dBA CNEL noise contours of San Bernardino International Airport. No impacts would occur from aircraft noise.

Level of Significance

No impact.

8.0 REFERENCES

California Department of Transportation, *2016 Annual Average Daily Truck Traffic on the California State Highway System*, 2018.

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

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

City of San Bernardino, *San Bernardino General Plan,* November 1, 2005.

City of San Bernardino, *San Bernardino Municipal Code,* revised October, 2021.

EPD Solutions, Inc., *5770 North Industrial Parkway Traffic Impact Analysis,* October 12, 2021.

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

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

APPENDIX A

Field Noise Measurements Photo Index

Noise Measurement Site A - looking north

Noise Measurement Site A - looking northeast

Noise Measurement Site A - looking east

Noise Measurement Site A - looking southeast

Noise Measurement Site A - looking south

Noise Measurement Site A - looking southwest

Noise Measurement Site A - looking west

Noise Measurement Site A - looking northwest

Noise Measurement Site B - looking north

Noise Measurement Site B - looking northeast

Noise Measurement Site B - looking east

Noise Measurement Site B - looking southeast

Noise Measurement Site B - looking south

Noise Measurement Site B - looking southwest

Noise Measurement Site B - looking west

Noise Measurement Site B - looking northwest

Noise Measurement Site C - looking north

Noise Measurement Site C - looking northeast

Noise Measurement Site C - looking east

Noise Measurement Site C - looking southeast

Noise Measurement Site C - looking south

Noise Measurement Site C - looking southwest

Noise Measurement Site C - looking west

Noise Measurement Site C - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Measurement Report

Report Summary

Meter's File Name	831_Data.001	Computer's File Name	SLM_0002509_831_Data_001.08.ldbin
Meter	831		
Firmware	2.314		
User	GT	Location	
Description	5770 N Industrial Way Logistics Facility		
Note	Located near middle of NE side of Project Site. Approx 130 ft west of Industrial Pkwy CL		
Start Time	2021-07-27 12:26:42	Duration	0:15:00.0
End Time	2021-07-27 12:41:42	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	57.8 dB		
LAE	87.3 dB	SEA	--- dB
EA	59.6 µPa²h		
LZ_{peak}	104.9 dB	2021-07-27 12:26:42	
LAS_{max}	69.7 dB	2021-07-27 12:29:44	
LAS_{min}	45.5 dB	2021-07-27 12:33:37	
LA_{eq}	57.8 dB		
LC_{eq}	71.5 dB	LC_{eq} - LA_{eq}	13.8 dB
LAI_{eq}	59.5 dB	LAI_{eq} - LA_{eq}	1.8 dB

Exceedances	Count	Duration
LAS > 65.0 dB	9	0:00:49.1
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	57.8 dB	57.8 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	57.8 dB	57.8 dB	--- dB	--- dB

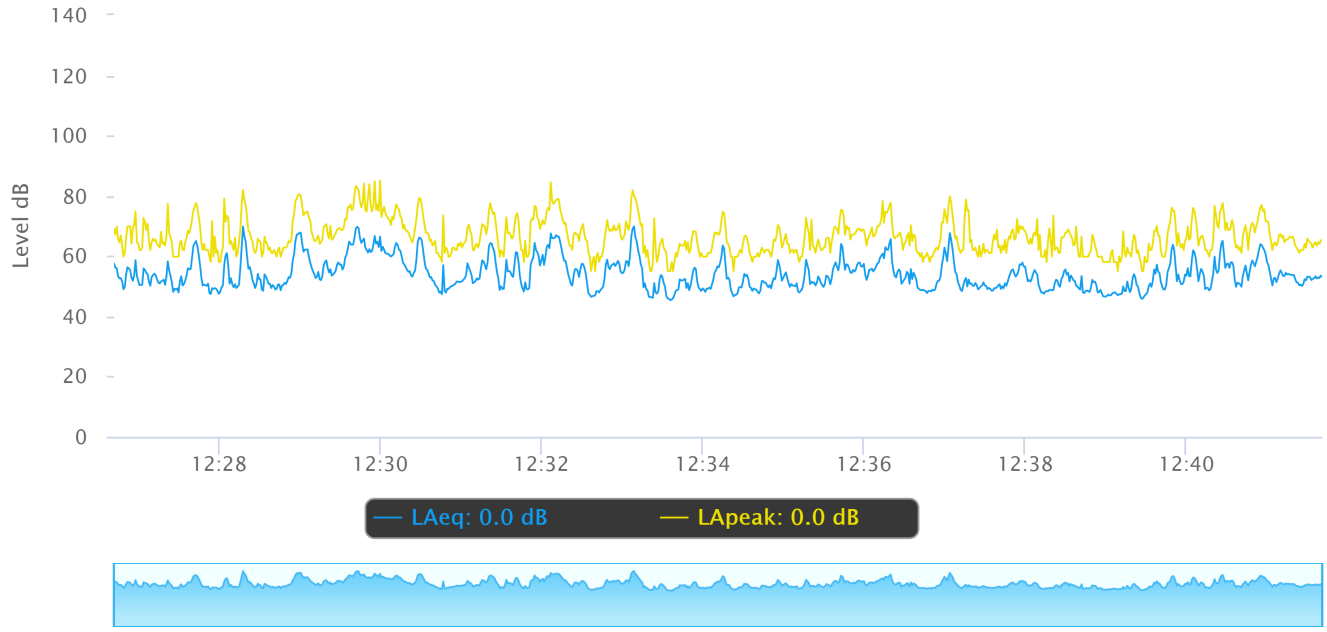
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	57.8 dB		71.5 dB		78.5 dB	
$LS_{(max)}$	69.7 dB	2021-07-27 12:29:44	82.8 dB	2021-07-27 12:35:44	95.7 dB	2021-07-27 12:26:42
$LF_{(max)}$	71.2 dB	2021-07-27 12:33:09	84.9 dB	2021-07-27 12:35:44	100.4 dB	2021-07-27 12:26:42
$LI_{(max)}$	73.2 dB	2021-07-27 12:32:07	85.6 dB	2021-07-27 12:35:44	102.9 dB	2021-07-27 12:26:42
$LS_{(min)}$	45.5 dB	2021-07-27 12:33:37	65.8 dB	2021-07-27 12:27:54	70.4 dB	2021-07-27 12:38:19
$LF_{(min)}$	45.0 dB	2021-07-27 12:39:27	63.5 dB	2021-07-27 12:26:48	68.1 dB	2021-07-27 12:27:54
$LI_{(min)}$	45.4 dB	2021-07-27 12:33:37	66.4 dB	2021-07-27 12:27:53	71.1 dB	2021-07-27 12:38:19
$L_{Peak(max)}$	85.1 dB	2021-07-27 12:30:00	92.5 dB	2021-07-27 12:37:04	104.9 dB	2021-07-27 12:26:42

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

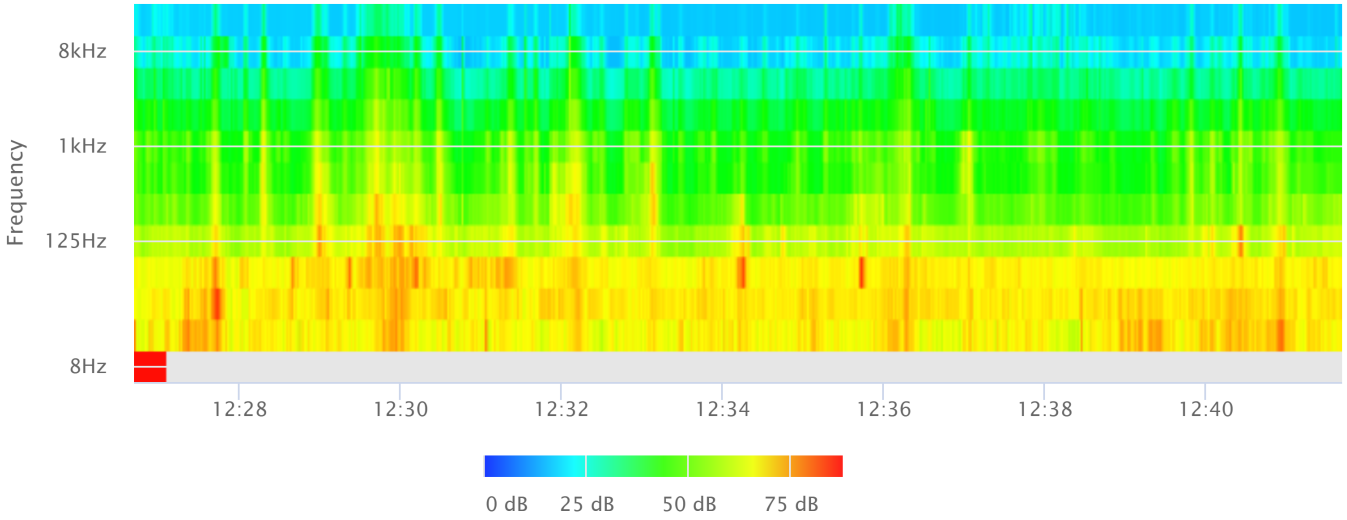
Statistics

LAS 5.0	64.2 dB
LAS 10.0	62.2 dB
LAS 33.3	55.6 dB
LAS 50.0	53.3 dB
LAS 66.6	51.4 dB
LAS 90.0	48.7 dB

Time History



OBA 1/1 Leq



Measurement Report

Report Summary

Meter's File Name	831_Data.002	Computer's File Name	SLM_0002509_831_Data_002.07.ldb
Meter	831		
Firmware	2.314		
User	GT		Location
Description	5770 N Industrial Way Logistics Facility		
Note	Located at nearest home NW of Project Site at 20151 Kendall Dr. Approx 50 ft SW of Kendall Dr CL		
Start Time	2021-07-27 12:50:05	Duration	0:15:00.0
End Time	2021-07-27 13:05:05	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	72.0 dB		
LAE	101.6 dB	SEA	--- dB
EA	1.6 mPa²h		
LZ_{peak}	105.2 dB	2021-07-27 12:50:05	
LAS_{max}	83.6 dB	2021-07-27 13:01:02	
LAS_{min}	59.0 dB	2021-07-27 12:58:14	
LA_{eq}	72.0 dB		
LC_{eq}	79.1 dB	LC_{eq} - LA_{eq}	7.1 dB
LAI_{eq}	73.5 dB	LAI_{eq} - LA_{eq}	1.5 dB

Exceedances	Count	Duration
LAS > 65.0 dB	10	0:14:24.7
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	72.0 dB	72.0 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	72.0 dB	72.0 dB	--- dB	--- dB

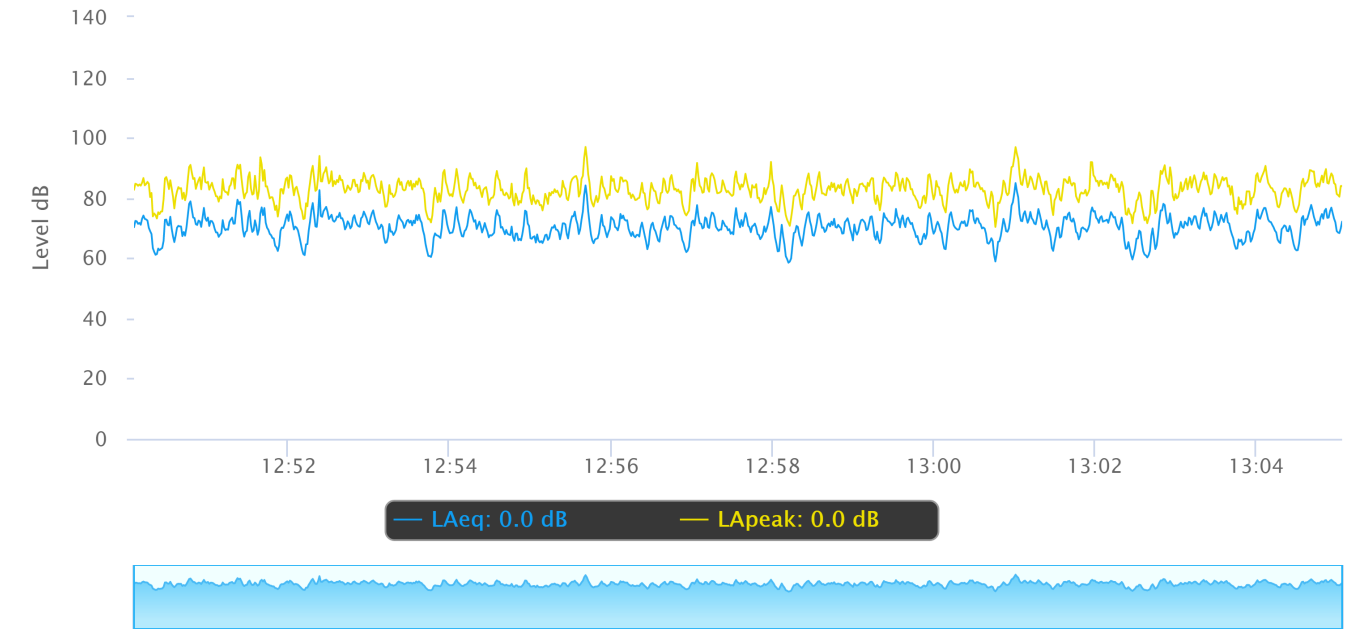
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	72.0 dB		79.1 dB		81.1 dB	
$LS_{(max)}$	83.6 dB	2021-07-27 13:01:02	91.7 dB	2021-07-27 12:50:48	95.6 dB	2021-07-27 12:50:05
$LF_{(max)}$	87.1 dB	2021-07-27 12:55:41	94.4 dB	2021-07-27 12:50:48	99.8 dB	2021-07-27 12:50:05
$LI_{(max)}$	88.5 dB	2021-07-27 12:55:41	95.1 dB	2021-07-27 12:50:48	102.8 dB	2021-07-27 12:50:05
$LS_{(min)}$	59.0 dB	2021-07-27 12:58:14	69.0 dB	2021-07-27 12:53:47	71.8 dB	2021-07-27 13:02:29
$LF_{(min)}$	57.7 dB	2021-07-27 12:58:13	67.3 dB	2021-07-27 13:02:28	69.6 dB	2021-07-27 13:02:28
$LI_{(min)}$	58.3 dB	2021-07-27 12:58:13	69.7 dB	2021-07-27 12:53:46	72.7 dB	2021-07-27 12:58:14
$L_{Peak(max)}$	96.9 dB	2021-07-27 12:55:41	101.7 dB	2021-07-27 13:01:01	105.2 dB	2021-07-27 12:50:05

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

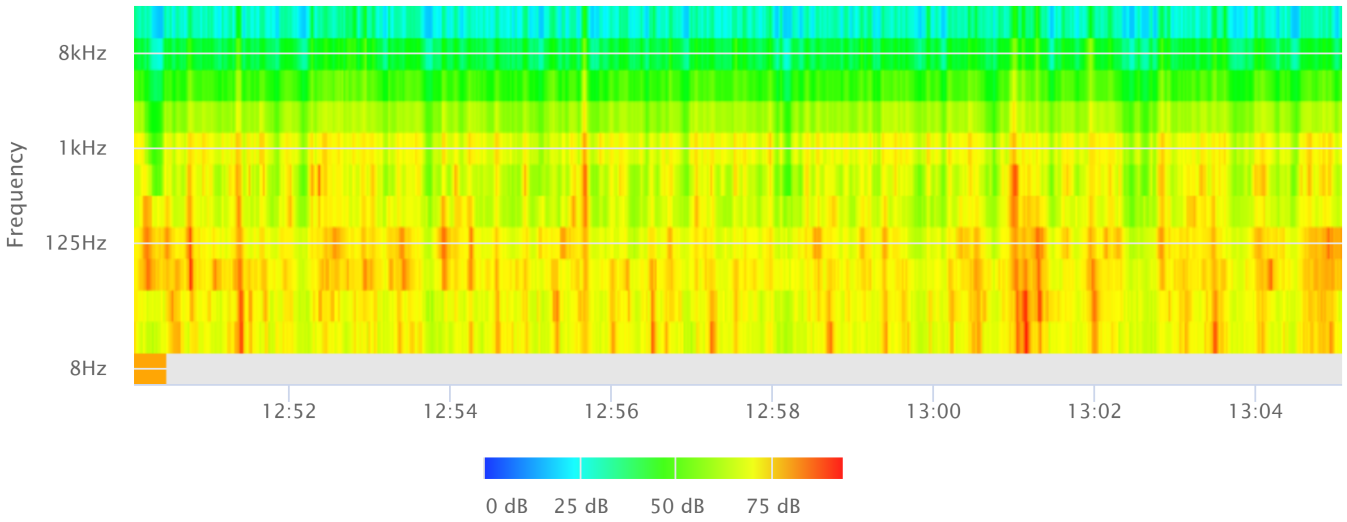
Statistics

LAS 5.0	75.6 dB
LAS 10.0	74.6 dB
LAS 33.3	72.3 dB
LAS 50.0	70.9 dB
LAS 66.6	69.5 dB
LAS 90.0	65.9 dB

Time History



OBA 1/1 Leq



Measurement Report

Report Summary

Meter's File Name	831_Data.003	Computer's File Name	SLM_0002509_831_Data_003.06.ldbin
Meter	831		
Firmware	2.314		
User	GT	Location	
Description	5770 N Industrial Way Logistics Facility		
Note	Located at nearest home NE of Project Site at 3144 Kendall Dr. Approx 50 ft NE of Kendall Dr CL		
Start Time	2021-07-27 13:09:45	Duration	0:15:00.0
End Time	2021-07-27 13:24:45	Run Time	0:15:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	69.2 dB		
LAE	98.7 dB	SEA	--- dB
EA	831.1 µPa²h		
LZ_{peak}	105.9 dB	2021-07-27 13:09:45	
LAS_{max}	83.9 dB	2021-07-27 13:11:13	
LAS_{min}	52.2 dB	2021-07-27 13:20:07	
LA_{eq}	69.2 dB		
LC_{eq}	76.6 dB	LC_{eq} - LA_{eq}	7.4 dB
LAI_{eq}	71.3 dB	LAI_{eq} - LA_{eq}	2.1 dB

Exceedances	Count	Duration
LAS > 65.0 dB	42	0:08:48.5
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	69.2 dB	69.2 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	69.2 dB	69.2 dB	--- dB	--- dB

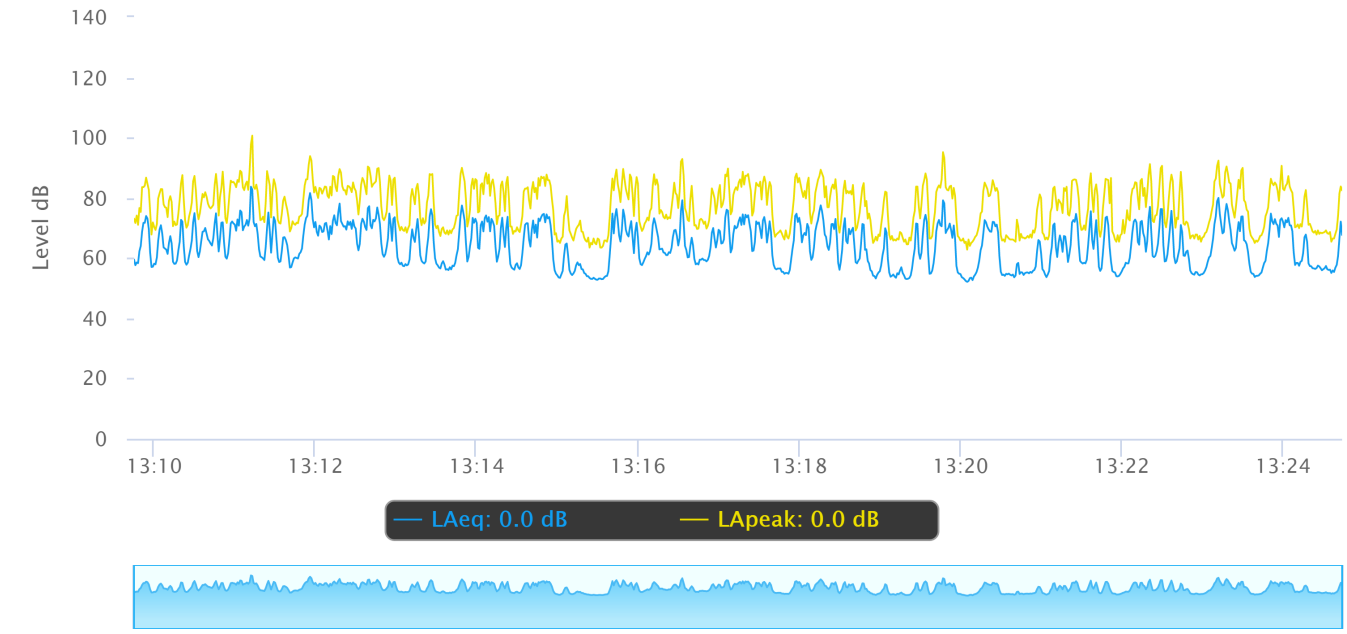
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	69.2 dB		76.6 dB		79.5 dB	
$LS_{(max)}$	83.9 dB	2021-07-27 13:11:13	91.6 dB	2021-07-27 13:22:22	98.7 dB	2021-07-27 13:09:45
$LF_{(max)}$	87.2 dB	2021-07-27 13:11:13	94.8 dB	2021-07-27 13:22:21	101.2 dB	2021-07-27 13:09:45
$LI_{(max)}$	88.9 dB	2021-07-27 13:11:13	95.4 dB	2021-07-27 13:22:21	103.8 dB	2021-07-27 13:09:45
$LS_{(min)}$	52.2 dB	2021-07-27 13:20:07	68.0 dB	2021-07-27 13:23:40	70.1 dB	2021-07-27 13:23:40
$LF_{(min)}$	51.7 dB	2021-07-27 13:20:05	66.2 dB	2021-07-27 13:22:53	68.5 dB	2021-07-27 13:23:40
$LI_{(min)}$	52.1 dB	2021-07-27 13:20:05	68.9 dB	2021-07-27 13:23:40	70.9 dB	2021-07-27 13:23:40
$L_{Peak(max)}$	100.6 dB	2021-07-27 13:11:13	102.4 dB	2021-07-27 13:11:13	105.9 dB	2021-07-27 13:09:45

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

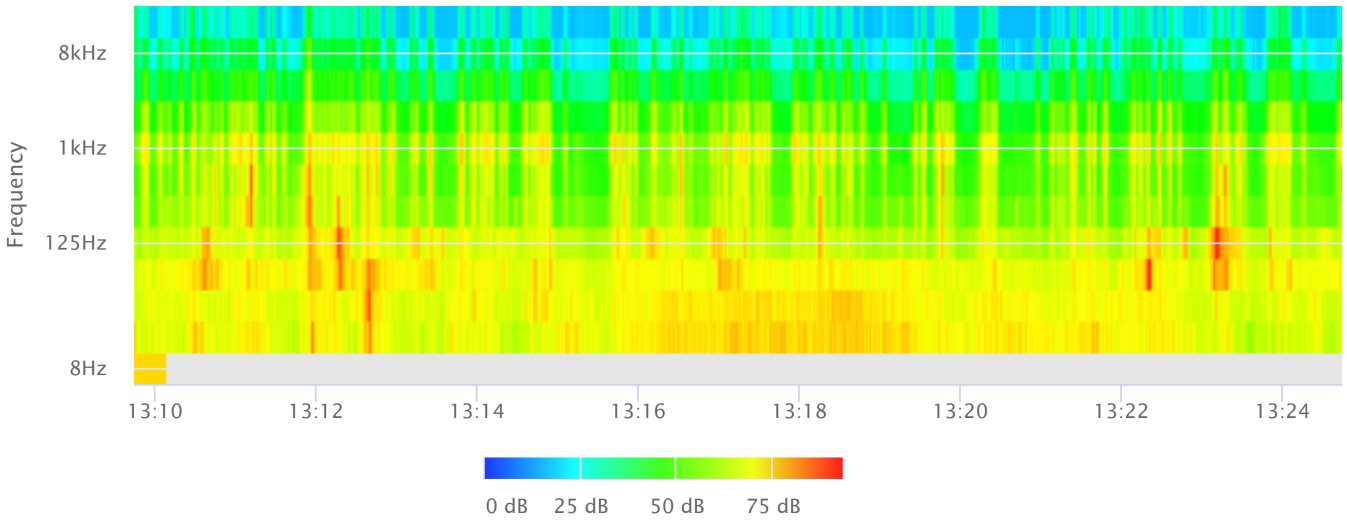
Statistics

LAS 5.0	74.1 dB
LAS 10.0	72.9 dB
LAS 33.3	69.5 dB
LAS 50.0	65.9 dB
LAS 66.6	61.5 dB
LAS 90.0	55.3 dB

Time History



OBA 1/1 Leq



APPENDIX C

RCNM Model Construction Noise Calculation Printouts

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Demolition

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	1500	0
Excavator	No	40		80.7	1500	0
Excavator	No	40		80.7	1500	0
Excavator	No	40		80.7	1500	0
Dozer	No	40		81.7	1500	0
Dozer	No	40		81.7	1500	0

	Calculated (dBA)		Results	Noise Limits (dBA)		
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	60.0	53.0	N/A	N/A	N/A	N/A
Excavator	51.2	47.2	N/A	N/A	N/A	N/A
Excavator	51.2	47.2	N/A	N/A	N/A	N/A
Excavator	51.2	47.2	N/A	N/A	N/A	N/A
Dozer	52.1	48.1	N/A	N/A	N/A	N/A
Dozer	52.1	48.1	N/A	N/A	N/A	N/A
Total	**60**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Demolition

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72.0

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	1750	0
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Dozer	No	40		81.7	1750	0
Dozer	No	40		81.7	1750	0

	Calculated (dBA)		Results Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	58.7	51.7	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A
Dozer	50.8	46.8	N/A	N/A	N/A	N/A
Dozer	50.8	46.8	N/A	N/A	N/A	N/A
Total	**59**	**56**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1500	0
Dozer	No	40		81.7	1500	0
Dozer	No	40		81.7	1500	0
Tractor	No	40	84		1500	0
Front End Loader	No	40		79.1	1500	0
Backhoe	No	40		77.6	1500	0
Tractor	No	40	84		1500	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Leq	Evening Lmax	Leq
Dozer		52.1	48.1	N/A	N/A	N/A	N/A
Dozer		52.1	48.1	N/A	N/A	N/A	N/A
Dozer		52.1	48.1	N/A	N/A	N/A	N/A
Tractor		54.5	50.5	N/A	N/A	N/A	N/A
Front End Loader		49.6	45.6	N/A	N/A	N/A	N/A
Backhoe		48.0	44.0	N/A	N/A	N/A	N/A
Tractor		54.5	50.5	N/A	N/A	N/A	N/A
	Total	**55**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Site Preparation

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1750	0
Dozer	No	40		81.7	1750	0
Dozer	No	40		81.7	1750	0
Tractor	No	40	84		1750	0
Front End Loader	No	40		79.1	1750	0
Backhoe	No	40		77.6	1750	0
Tractor	No	40	84		1750	0

		Calculated (dBA)		Results	Noise Limits (dBA)		
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		50.8	46.8	N/A	N/A	N/A	N/A
Dozer		50.8	46.8	N/A	N/A	N/A	N/A
Dozer		50.8	46.8	N/A	N/A	N/A	N/A
Tractor		53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader		48.2	44.2	N/A	N/A	N/A	N/A
Backhoe		46.7	42.7	N/A	N/A	N/A	N/A
Tractor		53.1	49.1	N/A	N/A	N/A	N/A
	Total	**53**	**56**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Grading

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	1500	0
Excavator	No	40		80.7	1500	0
Grader	No	40	85		1500	0
Dozer	No	40		81.7	1500	0
Scraper	No	40		83.6	1500	0
Scraper	No	40		83.6	1500	0
Tractor	No	40	84		1500	0
Front End Loader	No	40		79.1	1500	0

		Calculated (dBA)		Results	Noise Limits (dBA)		
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		51.2	47.2	N/A	N/A	N/A	N/A
Excavator		51.2	47.2	N/A	N/A	N/A	N/A
Grader		55.5	51.5	N/A	N/A	N/A	N/A
Dozer		52.1	48.1	N/A	N/A	N/A	N/A
Scraper		54.0	50.1	N/A	N/A	N/A	N/A
Scraper		54.0	50.1	N/A	N/A	N/A	N/A
Tractor		54.5	50.5	N/A	N/A	N/A	N/A
Front End Loader		49.6	45.6	N/A	N/A	N/A	N/A
	Total	**56**	**58**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Grading

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72.0

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Grader	No	40.0	85		1750	0
Dozer	No	40.0		81.7	1750	0
Scraper	No	40.0		83.6	1750	0
Scraper	No	40		83.6	1750	0
Tractor	No	40	84		1750	0
Front End Loader	No	40.0		79.1	1750	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Excavator	49.8	45.8	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A
Grader	54.1	50.1	N/A	N/A	N/A	N/A
Dozer	50.8	46.8	N/A	N/A	N/A	N/A
Scraper	52.7	48.7	N/A	N/A	N/A	N/A
Scraper	52.7	48.7	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader	48.2	44.2	N/A	N/A	N/A	N/A
Total	**54**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1500	0
Gradall	No	40		83.4	1500	0
Gradall	No	40		83.4	1500	0
Gradall	No	40		83.4	1500	0
Generator	No	50		80.6	1500	0
Welder / Torch	No	40		74	1500	0
Tractor	No	40	84		1500	0
Front End Loader	No	40		79.1	1500	0
Backhoe	No	40		77.6	1500	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Crane		51.0	43.0	N/A	N/A	N/A	N/A
Gradall		53.9	49.9	N/A	N/A	N/A	N/A
Gradall		53.9	49.9	N/A	N/A	N/A	N/A
Gradall		53.9	49.9	N/A	N/A	N/A	N/A
Generator		51.1	48.1	N/A	N/A	N/A	N/A
Welder / Torch		44.5	40.5	N/A	N/A	N/A	N/A
Tractor		54.5	50.5	N/A	N/A	N/A	N/A
Front End Loader		49.6	45.6	N/A	N/A	N/A	N/A
Backhoe		48.0	44.0	N/A	N/A	N/A	N/A
	Total	**55**	**58**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Building Construction

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1750	0
Gradall	No	40		83.4	1750	0
Gradall	No	40		83.4	1750	0
Gradall	No	40		83.4	1750	0
Generator	No	50		80.6	1750	0
Welder / Torch	No	40		74	1750	0
Tractor	No	40	84		1750	0
Front End Loader	No	40		79.1	1750	0
Backhoe	No	40		77.6	1750	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Leq	Evening Lmax	Leq
Crane		49.7	41.7	N/A	N/A	N/A	N/A
Gradall		52.5	48.5	N/A	N/A	N/A	N/A
Gradall		52.5	48.5	N/A	N/A	N/A	N/A
Gradall		52.5	48.5	N/A	N/A	N/A	N/A
Generator		49.7	46.7	N/A	N/A	N/A	N/A
Welder / Torch		43.1	39.1	N/A	N/A	N/A	N/A
Tractor		53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader		48.2	44.2	N/A	N/A	N/A	N/A
Backhoe		46.7	42.7	N/A	N/A	N/A	N/A
	Total	**53**	**56**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	1500	0
Paver	No	50		77.2	1500	0
Paver	No	50		77.2	1500	0
Paver	No	50		77.2	1500	0
Roller	No	20		80.0	1500	0
Roller	No	20		80.0	1500	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Paver	47.7	44.7	N/A	N/A	N/A	N/A
Paver	47.7	44.7	N/A	N/A	N/A	N/A
Paver	47.7	44.7	N/A	N/A	N/A	N/A
Paver	47.7	44.7	N/A	N/A	N/A	N/A
Roller	50.5	43.5	N/A	N/A	N/A	N/A
Roller	50.5	43.5	N/A	N/A	N/A	N/A
Total	**51**	**52**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Paving

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72.0

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	1750	0
Paver	No	50		77.2	1750	0
Paver	No	50		77.2	1750	0
Paver	No	50		77.2	1750	0
Roller	No	20		80.0	1750	0
Roller	No	20		80.0	1750	0

	Calculated (dBA)		Results Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	46.3	43.3	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A
Roller	49.1	42.1	N/A	N/A	N/A	N/A
Roller	49.1	42.1	N/A	N/A	N/A	N/A
Total	**49**	**51**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/3/2021
Case Description: 5770 N Industrial Pkwy - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northeast	Residential	69.2	69.2	69.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1500	0

		Calculated (dBA)		Results Day	Noise Limits (dBA)	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		48.1	44.1	N/A	N/A	N/A	N/A
	Total	**48**	**44**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to Northwest	Residential	72.0	72.0	72.0

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1750	0

		Calculated (dBA)		Results Day	Noise Limits (dBA)	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		46.8	42.8	N/A	N/A	N/A	N/A
	Total	**47**	**43**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

FHWA Model Traffic Noise Calculations Printouts

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: 5770 N Industrial Pkwy Logistics
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Hwy 111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	61.54%	12.61%	14.75%	88.90%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.98%	0.98%	3.21%	9.17%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.96%	0.10%	0.87%	1.93%

Road Name: Palm Avenue **Segment: North of Interstate 215 NB Ramps**

Average Daily Traffic: 23510 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Secondary

	NOISE PARAMETERS AT 70 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	1.51	-1.99	-1.20	67.67	65.30	64.00	57.95	66.38	67.01	70 dBA:	**45**	**49**
Medium Trucks	77.62	-13.35	-1.99	-1.20	61.08	41.87	34.09	43.30	49.45	49.49	65 dBA:	**97**	**105**
Heavy Trucks	82.14	-11.14	-1.99	-1.20	67.82	50.83	43.05	52.26	58.41	58.44	60 dBA:	**208**	**226**
				Total:	**71.20**	**65.47**	**64.04**	**59.10**	**67.10**	**67.64**	55 dBA:	**448**	**488**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: 5770 N Industrial Pkwy Logistics
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Hwy 111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	61.54%	12.61%	14.75%	88.90%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.98%	0.98%	3.21%	9.17%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.96%	0.10%	0.87%	1.93%

Road Name: Palm Avenue **Segment: North of Interstate 215 NB Ramps**

Average Daily Traffic: 23535 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Secondary

	NOISE PARAMETERS AT 70 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	1.52	-1.99	-1.20	67.67	65.30	64.01	57.95	66.39	67.02	70 dBA:	**45**	**49**
Medium Trucks	77.62	-13.35	-1.99	-1.20	61.09	41.88	34.10	43.30	49.46	49.49	65 dBA:	**97**	**105**
Heavy Trucks	82.14	-11.13	-1.99	-1.20	67.82	50.83	43.05	52.26	58.41	58.45	60 dBA:	**208**	**226**
				Total:	**71.20**	**65.47**	**64.05**	**59.11**	**67.10**	**67.65**	55 dBA:	**449**	**488**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: BUILDOUT YEAR 2040 WITHOUT PROJECT CONDITIONS

Project: 5770 N Industrial Pkwy Logistics
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Hwy 111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	61.54%	12.61%	14.75%	88.90%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.98%	0.98%	3.21%	9.17%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.96%	0.10%	0.87%	1.93%

Road Name: Palm Avenue **Segment: North of Interstate 215 NB Ramps**

Average Daily Traffic: 29230 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Secondary

	NOISE PARAMETERS AT 70 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	2.46	-1.99	-1.20	68.62	66.24	64.95	58.90	67.33	67.96	70 dBA:	**52**	**56**
Medium Trucks	77.62	-12.41	-1.99	-1.20	62.03	42.82	35.04	44.24	50.40	50.43	65 dBA:	**112**	**121**
Heavy Trucks	82.14	-10.19	-1.99	-1.20	68.76	51.77	43.99	53.20	59.36	59.39	60 dBA:	**241**	**262**
				Total:	**72.15**	**66.41**	**64.99**	**60.05**	**68.05**	**68.59**	55 dBA:	**519**	**564**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: BUILDOUT YEAR 2040 WITH PROJECT CONDITIONS

Project: 5770 N Industrial Pkwy Logistics
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Hwy 111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	61.54%	12.61%	14.75%	88.90%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.98%	0.98%	3.21%	9.17%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.96%	0.10%	0.87%	1.93%

Road Name: Palm Avenue **Segment: North of Interstate 215 NB Ramps**

Average Daily Traffic: 29255 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 2 Roadway Classification: Secondary

	NOISE PARAMETERS AT 70 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.78 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	69.34	2.46	-1.99	-1.20	68.62	66.25	64.95	58.90	67.33	67.96	70 dBA:	**52**	**56**
Medium Trucks	77.62	-12.40	-1.99	-1.20	62.03	42.82	35.04	44.25	50.40	50.44	65 dBA:	**112**	**122**
Heavy Trucks	82.14	-10.19	-1.99	-1.20	68.77	51.78	44.00	53.20	59.36	59.39	60 dBA:	**241**	**262**
				Total:	**72.15**	**66.42**	**64.99**	**60.05**	**68.05**	**68.59**	55 dBA:	**519**	**564**

APPENDIX E

Onsite Operations Reference Noise Measurements

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.005
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Rooftop HVAC Unit
Measurement Description	
Start Time	Saturday, 2013 July 27 18:31:43
Stop Time	Saturday, 2013 July 27 18:41:44
Duration	00:10:01.1
Run Time	00:10:01.1
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 17:53:07
Post Calibration	None
Calibration Deviation	---

Note

Located 10 feet southeast of rooftop HVAC Unit 14 located on western side of roof
94 F, 30% Hu., 29.45 in Hg, no wind, partly cloudy

Overall Data

LAeq		66.6	dB
LASmax	2013 Jul 27 18:33:16	67.6	dB
LApeak (max)	2013 Jul 27 18:32:17	81.6	dB
LASmin	2013 Jul 27 18:41:08	65.8	dB
LCeq		75.8	dB
LAeq		66.6	dB
LCeq - LAeq		9.2	dB
LAIeq		67.2	dB
LAeq		66.6	dB
LAIeq - LAeq		0.6	dB
Ldn		66.6	dB
LDay 07:00-23:00		66.6	dB
LNight 23:00-07:00		---	dB
Lden		66.6	dB
LDay 07:00-19:00		66.6	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		94.4	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	67.0	dBA
LAS10.00	66.9	dBA
LAS33.30	66.7	dBA
LAS50.00	66.6	dBA
LAS66.60	66.5	dBA
LAS90.00	66.3	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	1 / 601.1	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.2	dB
Under Range Peak	75.8	dB
Noise Floor	17.1	dB
Overload	143.4	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	70.9	64.4	61.4	74.2	68.2	64.9	66.3	61.7	55.1	49.9	44.3	44.0
LZSmax	83.8	78.9	70.0	78.4	72.3	66.1	67.8	63.1	56.9	53.2	46.7	45.4
LZSmin	53.2	56.5	56.7	67.7	66.1	63.5	65.0	60.7	53.9	48.4	43.2	43.7

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	68.1	65.7	63.2	61.0	58.0	59.3	56.0	57.8	55.8	69.7	72.0	59.3
LZSmax	82.3	79.5	78.7	77.2	72.8	72.3	67.9	63.5	64.0	74.2	76.1	72.0
LZSmin	41.9	46.3	48.8	48.7	46.5	49.7	50.1	51.8	41.2	63.9	67.9	54.5

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.6	63.7	64.5	59.0	58.7	60.9	63.2	60.8	59.9	59.2	56.1	54.6
LZSmax	71.3	68.0	67.3	61.6	61.7	64.1	65.5	64.2	62.0	60.7	57.6	58.6
LZSmin	52.9	60.0	57.2	45.1	56.0	58.9	61.1	58.4	58.4	57.1	54.9	53.3

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.0	49.8	48.4	46.4	45.4	42.8	41.1	38.6	38.5	38.4	39.0	40.2
LZSmax	54.4	52.3	51.2	50.2	49.7	45.7	45.4	41.6	40.4	40.4	41.4	41.3
LZSmin	50.9	48.4	46.9	45.0	43.7	41.4	39.6	37.5	37.9	38.0	38.7	39.9

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 17:53:07	-25.9
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.002
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Northwest Fresno Walmart
Measurement Description	
Start Time	Saturday, 2013 July 27 15:49:15
Stop Time	Saturday, 2013 July 27 16:09:15
Duration	00:20:00.6
Run Time	00:20:00.6
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 13:36:08
Post Calibration	None
Calibration Deviation	---

Note

Located at the eastern portion of the southern parking lot and approx 140 feet south of the front door
96 F, 35% Humidity, 29.48 in Hg, 3 mph wind, partly cloudy

Overall Data

LAeq		63.1	dB
LASmax	2013 Jul 27 15:59:44	79.2	dB
LApeak (max)	2013 Jul 27 16:06:25	102.2	dB
LASmin	2013 Jul 27 15:50:20	49.6	dB
LCeq		74.0	dB
LAeq		63.1	dB
LCeq - LAeq		10.9	dB
LAIeq		67.4	dB
LAeq		63.1	dB
LAIeq - LAeq		4.3	dB
Ldn		63.1	dB
LDay 07:00-23:00		63.1	dB
LNight 23:00-07:00		---	dB
Lden		63.1	dB
LDay 07:00-19:00		63.1	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		93.9	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	66.7	dBA
LAS10.00	66.3	dBA
LAS33.30	62.8	dBA
LAS50.00	61.7	dBA
LAS66.60	57.7	dBA
LAS90.00	52.8	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	17 / 347.8	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.1	dB
Under Range Peak	75.6	dB
Noise Floor	17.0	dB
Overload	143.1	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	66.7	66.1	71.1	71.6	64.9	59.5	59.6	58.3	56.2	51.8	46.8	44.6
LZSmax	82.6	84.9	82.2	89.3	77.1	67.1	72.4	76.6	76.6	69.0	67.7	63.1
LZSmin	46.5	55.4	53.6	59.0	55.2	49.9	45.5	43.6	40.9	37.7	39.6	42.8

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	63.6	61.5	59.8	58.7	60.7	63.4	67.2	66.6	65.3	65.7	67.5	67.2
LZSmax	80.9	76.9	73.6	75.5	79.8	83.7	80.9	76.8	78.9	83.8	87.4	88.8
LZSmin	37.3	40.3	43.7	45.3	48.2	51.5	55.9	60.4	54.9	53.2	57.5	47.0

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.7	61.0	54.9	52.9	57.0	53.2	57.3	54.1	52.1	54.5	53.3	52.7
LZSmax	76.0	71.0	69.8	65.8	64.6	65.6	67.0	71.0	67.1	65.9	72.9	73.0
LZSmin	52.1	48.8	46.7	42.4	46.2	44.6	43.2	38.5	38.6	39.0	39.4	38.2

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.5	50.9	50.7	49.0	46.4	44.5	43.0	41.7	41.1	40.0	39.6	40.0
LZSmax	75.9	69.6	63.7	63.8	64.4	64.7	63.3	62.7	62.7	60.8	57.9	52.5
LZSmin	37.2	35.4	34.6	33.1	32.6	32.8	33.6	34.7	35.9	36.7	37.7	39.4

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

File Translated: Z:\Vista Env\2008\081101-Los Banos Wal-Mart\Noise Measurements\5.slmdl
Model/Serial Number: 824 / A3176
Firmware/Software Revs: 4.272 / 3.120
Name: Vista Environmental
Descr1: 1021 Didrikson Way
Descr2: Laguna Beach, CA 92651
Setup/Setup Descr: slm&rta.ssa / SLM & Real-Time Analyzer
Location: 10 feet south of Walmart truck loading area
Note1: Noise from a truck unloading and trailer transfer and from mechanical push sweeper
Note2:

Overall Any Data
Start Time: 20-Jan-2009 14:40:19
Elapsed Time: 00:10:00.6

	A Weight		C Weight		Flat	
Leq:	63.3 dBA		68.8 dBC		69.5 dBF	
SEL:	91.1 dBA		96.6 dBC		97.3 dBF	
Peak:	90.1 dBA		93.2 dBC		93.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:41:22	20-Jan-2009	14:41:22
Lmax (slow):	76.4 dBA		79.3 dBC		80.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19
Lmin (slow):	41.0 dBA		58.0 dBC		59.7 dBF	
	20-Jan-2009	14:41:35	20-Jan-2009	14:42:11	20-Jan-2009	14:42:11
Lmax (fast):	77.4 dBA		81.6 dBC		83.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19
Lmin (fast):	39.8 dBA		56.9 dBC		58.8 dBF	
	20-Jan-2009	14:42:33	20-Jan-2009	14:42:11	20-Jan-2009	14:42:08
Lmax (impulse):	78.8 dBA		84.7 dBC		85.3 dBF	
	20-Jan-2009	14:44:25	20-Jan-2009	14:41:22	20-Jan-2009	14:41:22
Lmin (impulse):	41.1 dBA		58.5 dBC		61.0 dBF	
	20-Jan-2009	14:42:11	20-Jan-2009	14:42:11	20-Jan-2009	14:42:08

Spectra

Date	Time	Run Time
20-Jan-2009	14:40:19	00:10:00.6

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	52.8		65.8		31.8		630	56.0		68.6		27.4	
16.0	53.6	59.3	65.4	71.2	36.1	39.5	800	54.3		67.2		27.6	
20.0	56.3		67.7		35.1		1000	52.9	58.3	67.4	72.1	26.7	31.6
25.0	56.1		77.1		39.3		1250	53.4		67.3		26.2	
31.5	60.2	63.4	77.3	81.5	38.9	44.9	1600	53.8		69.4		25.0	
40.0	58.8		75.6		41.6		2000	53.2	57.7	68.0	72.7	21.3	27.2
50.0	58.3		68.8		45.6		2500	51.6		65.7		18.9	
63.0	58.5	64.0	67.2	73.0	44.9	49.8	3150	48.5		62.2		17.4	
80.0	60.6		68.4		44.4		4000	45.9	51.7	59.8	65.8	15.8	21.0
100	57.5		67.8		40.1		5000	45.8		60.9		15.0	
125	57.0	61.7	70.6	73.4	41.3	45.1	6300	43.6		58.4		14.7	
160	56.3		66.2		39.5		8000	41.9	46.8	54.6	61.2	15.0	19.9
200	52.9		61.5		35.0		10000	39.9		55.3		15.5	
250	52.8	56.9	62.3	66.4	34.4	38.4	12500	37.2		52.9		15.9	
315	50.4		60.9		30.3		16000	33.0	38.9	48.9	54.7	17.3	22.4
400	52.0		63.8		30.8		20000	27.1		44.0		19.0	
500	52.8	58.7	66.2	71.4	27.6	33.7							

Ln Start Level: 15 dB

L1.00	0.0 dBA	L50.00	0.0 dBA	L95.00	0.0 dBA
L5.00	0.0 dBA	L90.00	0.0 dBA	L99.00	0.0 dBA

Detector: Slow
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

File Translated: Z:\Vista Env\2008\081101-Los Banos Wal-Mart\Noise Measurements\5.slmdl
Model/Serial Number: 824 / A3176

Current Any Data
Start Time: 20-Jan-2009 14:40:19
Elapsed Time: 00:10:00.6

	A Weight		C Weight		Flat	
Leq:	63.3 dBA		68.8 dBC		69.5 dBF	
SEL:	91.1 dBA		96.6 dBC		97.3 dBF	
Peak:	90.1 dBA		93.2 dBC		93.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:41:22	20-Jan-2009	14:41:22
Lmax (slow):	76.4 dBA		79.3 dBC		80.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19
Lmin (slow):	41.0 dBA		58.0 dBC		59.7 dBF	
	20-Jan-2009	14:41:35	20-Jan-2009	14:42:11	20-Jan-2009	14:42:11
Lmax (fast):	77.4 dBA		81.6 dBC		83.2 dBF	
	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19	20-Jan-2009	14:43:19
Lmin (fast):	39.8 dBA		56.9 dBC		58.8 dBF	
	20-Jan-2009	14:42:33	20-Jan-2009	14:42:11	20-Jan-2009	14:42:08
Lmax (impulse):	78.8 dBA		84.7 dBC		85.3 dBF	
	20-Jan-2009	14:44:25	20-Jan-2009	14:41:22	20-Jan-2009	14:41:22
Lmin (impulse):	41.1 dBA		58.5 dBC		61.0 dBF	
	20-Jan-2009	14:42:11	20-Jan-2009	14:42:11	20-Jan-2009	14:42:08

Calibrated: 20-Jan-2009 08:31:09 Offset: -49.2 dB
Checked: 20-Jan-2009 08:31:09 Level: 94.0 dB
Calibrator not set Level: 94.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Disabled Number History Records: 0
Run/Stop Records: Number Run/Stop Records: 2

File Translated: V:\Vista Env\2010\10022-Fresno Walmart\Noise Measurements\LD\10.slmdl
Model/Serial Number: 824 / A3176
Firmware/Software Revs: 4.283 / 3.120
Name:
Descr1: 1021 Didrikson Way
Descr2: Laguna Beach, CA 92651
Setup/Setup Descr: slm&rta.ssa / SLM & Real-Time Analyzer
Location: At pallet stacking area on north side of Walmart
Note1: Approx. 10' from operational forklift
Note2: 70F, 29.43 in Hg, 27% Humid., 4 mph wind, partly cloudy

Overall Any Data
Start Time: 18-May-2011 17:21:20
Elapsed Time: 00:04:00.7

	A Weight		C Weight		Flat	
Leq:	74.4 dBA		80.5 dBC		81.0 dBF	
SEL:	98.2 dBA		104.3 dBC		104.8 dBF	
Peak:	108.4 dBA		109.1 dBC		109.1 dBF	
	18-May-2011	17:24:51	18-May-2011	17:24:44	18-May-2011	17:24:48
Lmax (slow):	87.9 dBA		90.9 dBC		91.0 dBF	
	18-May-2011	17:24:49	18-May-2011	17:24:49	18-May-2011	17:24:49
Lmin (slow):	62.8 dBA		68.6 dBC		69.7 dBF	
	18-May-2011	17:21:34	18-May-2011	17:21:33	18-May-2011	17:21:33
Lmax (fast):	91.7 dBA		93.9 dBC		94.0 dBF	
	18-May-2011	17:24:48	18-May-2011	17:24:48	18-May-2011	17:24:48
Lmin (fast):	59.2 dBA		67.1 dBC		68.2 dBF	
	18-May-2011	17:21:28	18-May-2011	17:21:30	18-May-2011	17:21:30
Lmax (impulse):	94.3 dBA		96.2 dBC		96.3 dBF	
	18-May-2011	17:24:51	18-May-2011	17:24:44	18-May-2011	17:24:48
Lmin (impulse):	63.1 dBA		69.1 dBC		70.4 dBF	
	18-May-2011	17:23:23	18-May-2011	17:21:33	18-May-2011	17:21:33

Spectra

Date	Time	Run Time
18-May-2011	17:21:20	00:04:00.7

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	63.2		76.2		39.0		630	67.7		84.8		45.8	
16.0	60.8	66.2	73.2	78.3	41.6	45.6	800	64.6		83.9		47.6	
20.0	59.6		67.5		41.5		1000	63.1	68.6	82.1	86.9	46.7	52.4
25.0	62.7		70.0		44.6		1250	63.6		79.1		48.4	
31.5	67.6	72.5	68.8	73.9	46.6	51.1	1600	63.8		79.9		48.8	
40.0	70.0		68.5		47.3		2000	61.7	66.9	81.9	84.9	46.3	51.4
50.0	70.4		68.1		48.0		2500	60.1		77.6		42.6	
63.0	71.6	76.2	83.2	86.2	51.8	55.4	3150	63.4		76.7		41.0	
80.0	72.1		83.1		51.2		4000	53.5	64.2	73.4	79.7	36.6	43.3
100	68.5		73.7		51.0		5000	53.5		74.0		36.4	
125	68.7	73.9	77.6	82.2	50.3	54.9	6300	49.8		69.2		32.9	
160	70.1		79.2		48.9		8000	47.2	52.2	66.0	71.2	30.3	35.3
200	68.1		77.5		51.5		10000	42.4		59.4		25.8	
250	63.4	69.9	73.7	80.0	46.3	53.3	12500	39.5		57.8		24.0	
315	60.2		73.2		45.0		16000	34.8	41.1	52.6	59.4	23.0	27.7
400	65.6		78.8		48.7		20000	30.1		48.9		21.3	
500	69.1	72.5	85.1	88.5	48.5	52.6							

Ln Start Level: 15 dB

L1.00	0.0 dBA	L50.00	0.0 dBA	L95.00	0.0 dBA
L5.00	0.0 dBA	L90.00	0.0 dBA	L99.00	0.0 dBA

Detector: Slow
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 1 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 4 times
Peak-2 Exceedance Level: 100 dB Exceeded: 4 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

File Translated: V:\Vista Env\2010\10022-Fresno Walmart\Noise Measurements\LD\10.slmdl
Model/Serial Number: 824 / A3176

Current Any Data
Start Time: 18-May-2011 17:21:20
Elapsed Time: 00:04:00.7

	A Weight	C Weight	Flat
Leq:	74.4 dBA	80.5 dBC	81.0 dBF
SEL:	98.2 dBA	104.3 dBC	104.8 dBF
Peak:	108.4 dBA	109.1 dBC	109.1 dBF
	18-May-2011 17:24:51	18-May-2011 17:24:44	18-May-2011 17:24:48
Lmax (slow):	87.9 dBA	90.9 dBC	91.0 dBF
	18-May-2011 17:24:49	18-May-2011 17:24:49	18-May-2011 17:24:49
Lmin (slow):	62.8 dBA	68.6 dBC	69.7 dBF
	18-May-2011 17:21:34	18-May-2011 17:21:33	18-May-2011 17:21:33
Lmax (fast):	91.7 dBA	93.9 dBC	94.0 dBF
	18-May-2011 17:24:48	18-May-2011 17:24:48	18-May-2011 17:24:48
Lmin (fast):	59.2 dBA	67.1 dBC	68.2 dBF
	18-May-2011 17:21:28	18-May-2011 17:21:30	18-May-2011 17:21:30
Lmax (impulse):	94.3 dBA	96.2 dBC	96.3 dBF
	18-May-2011 17:24:51	18-May-2011 17:24:44	18-May-2011 17:24:48
Lmin (impulse):	63.1 dBA	69.1 dBC	70.4 dBF
	18-May-2011 17:23:23	18-May-2011 17:21:33	18-May-2011 17:21:33

Calibrated: 18-May-2011 13:09:02 Offset: -48.2 dB
Checked: 19-May-2011 06:46:08 Level: 113.9 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Disabled Number History Records: 0
Run/Stop Records: Number Run/Stop Records: 2

Truck Loading/Unloading Noise Measurement

Truck Loading/Unloading Noise Measurement

Forklift Operations Noise Measurement

Forklift Operations Noise Measurement

Parking Lot Noise Measurement

Parking Lot Noise Measurement


Rooftop Mechanical Equipment Noise Measurement


Rooftop Mechanical Equipment Noise Measurement