Appendix I

Acoustical Assessment 1450 Artesia Boulevard Specific Plan Project

Acoustical Assessment
1450 Artesia Boulevard Specific Plan Project
City of Gardena, California

Prepared by:

Kimley-Horn and Associates, Inc.
1100 W. Town and Country Road, Suite 700
Orange, California 92868
Contact: Mr. Ryan Chiene
714.705.1343

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Appendix A: Noise Data

LIST OF ABBREVIATED TERMS

APN	Assessor's Parcel Number
ADT	average daily traffic
dBA	A-weighted sound level
CEQA	California Environmental Quality Act
CLSP	California Landings Specific Plan
CSMA	California Subdivision Map Act
CNEL	community equivalent noise level
L_{dn}	day-night noise level
dB	decibel
du/ac	dwelling units per acre
L_{eq}	equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	heating ventilation and air conditioning
Hz	hertz
HOA	homeowner's association
in/sec	inches per second
L_{max}	maximum noise level
µPa	micropascals
L_{min}	minimum noise level
PPV	peak particle velocity
RMS	root mean square
VdB	vibration velocity level

1 INTRODUCTION

This report documents the results of an Acoustical Assessment completed for the 1450 Artesia Boulevard SP Project (Project). The purpose of this Acoustical Assessment is to evaluate the potential construction and operational noise and vibration impacts associated with the Project.

1.1 Project Location

The proposed Project is located at 1450 Artesia Boulevard in the City of Gardena (City), California, just northeast of the City's border with the City of Torrance. The City is in southwest Los Angeles County and is bordered by the unincorporated West Athens community and the City of Hawthorne to the north, the cities of Los Angeles and Torrance to the south, the city of Los Angeles to the east, and the cities of Torrance, and Hawthorne and Los Angeles County to the west; see Exhibit 1: Regional Vicinity Map and Exhibit 2: Site Vicinity Map.

The site is occupied by four buildings totaling approximately 12,064 gross square feet (GSF) (circa 1950) and associated surface parking lot. Preliminarily, it is assumed the existing buildings are occupied by two commercial uses (i.e., a U-Haul dealer and sandblasting service). For analysis purposes, it is assumed all onsite improvements would be removed and replaced with the proposed mixed-use development. Surrounding land uses include commercial to the north and west, residential and commercial to the south (potentially abandoned), and a vacant lot to the east. The Project site is designated Specific Plan and zoned 1450 Artesia Specific Plan. Surrounding areas to the south and west are also zoned Artesia Corridor Specific Plan. Regional access to the site is provided by State Route 91 (SR-91) freeway, located approximately 0.9 miles east of the Project site, the Interstate 110 (I-110) freeway, located approximately 0.9 miles east of the site, and the Interstate 405 (I-405) freeway located approximately 0.9 miles west of the site.

1.2 Project Description

The proposed Project is comprised of one industrial/commercial mixed-use development comprised of a 268,000 GSF building with associated surface parking (approximately 107 off-street parking spaces), along with landscape and circulation improvements, as shown in Exhibit 3: Conceptual Site Plan.

The proposed building would contain a self-storage use (four levels totaling 186,000 GSF), an industrial use (one level totaling 72,000 GSF plus ten loading docks), and an office/retail use (a mezzanine totaling 10,000 GSF). As noted in Chapter 5 of the 1450 Artesia Specific Plan, the Project permits warehouse, distribution, product delivery, wholesale, e-commerce, and storage uses (fulfillment-center uses which involve sorting are prohibited). For environmental analyses which depend on industrial land use type, this analysis is based on the light industrial land use, because although a warehouse use generates incrementally more truck traffic (approximately 6 additional heavy-duty truck trips per day), the warehouse use results in far fewer automobile trips. Thus, a light industrial land use would have the greatest overall trips and represents the "worst-case" for environmental analysis. See **Appendix L3: Revised Trip Generation Memo**.

Special Events

Additionally, the City of Gardena is proposing to host various special events on an approximately 36,000-square-foot portion (0.8 acre) of the industrial use's parking area (over approximately 63 parking spaces). The special events would be held approximately two to three times per month, including weekday evening events (after 6 PM) and weekend daytime events. During these events, the businesses would remain in operation, but drive aisles would be modified to protect the attendees.
The City anticipates hosting several types of medium-size special events, including the following:

- Food trucks Farmer's markets
- Car shows
- Live entertainment
- Food giveaways
- Mobile vaccination events

Site Access

Vehicular access to the site would be provided via one 35-foot driveway on Artesia Boulevard. The Project driveway will only service the Project. Additionally, there is a separate 35-foot exit driveway adjacent to the entrance, divided by a 20-foot divide.

Parking

Parking would be located along the northeastern portion of the site. The proposed Project would provide 124 automobile parking stalls and 10 dock doors. The dock doors will be oriented to face west. Daily activities within the Project site will include maneuvering forklifts, lift equipment, and large semi-trucks through and around the site and backing into the loading docks.

Project Phasing and Construction

The construction timeline, contingent on planning, zoning, and construction document approval, is assumed to start June 2024 and end December 2025 (18 months or 487 days). The proposed Project is anticipated to begin operations in January 2026.

Exhibit 1: Regional Vicinity Map

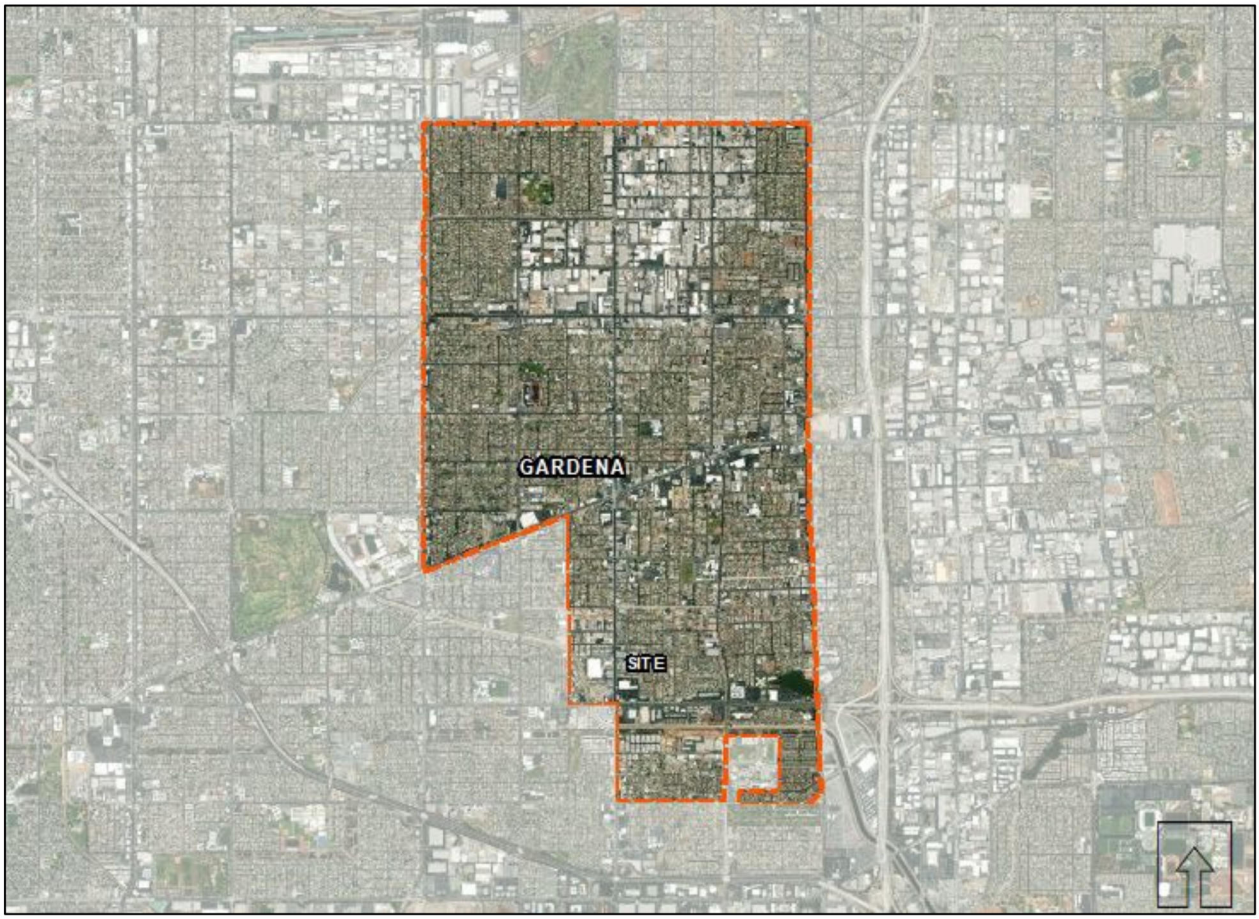
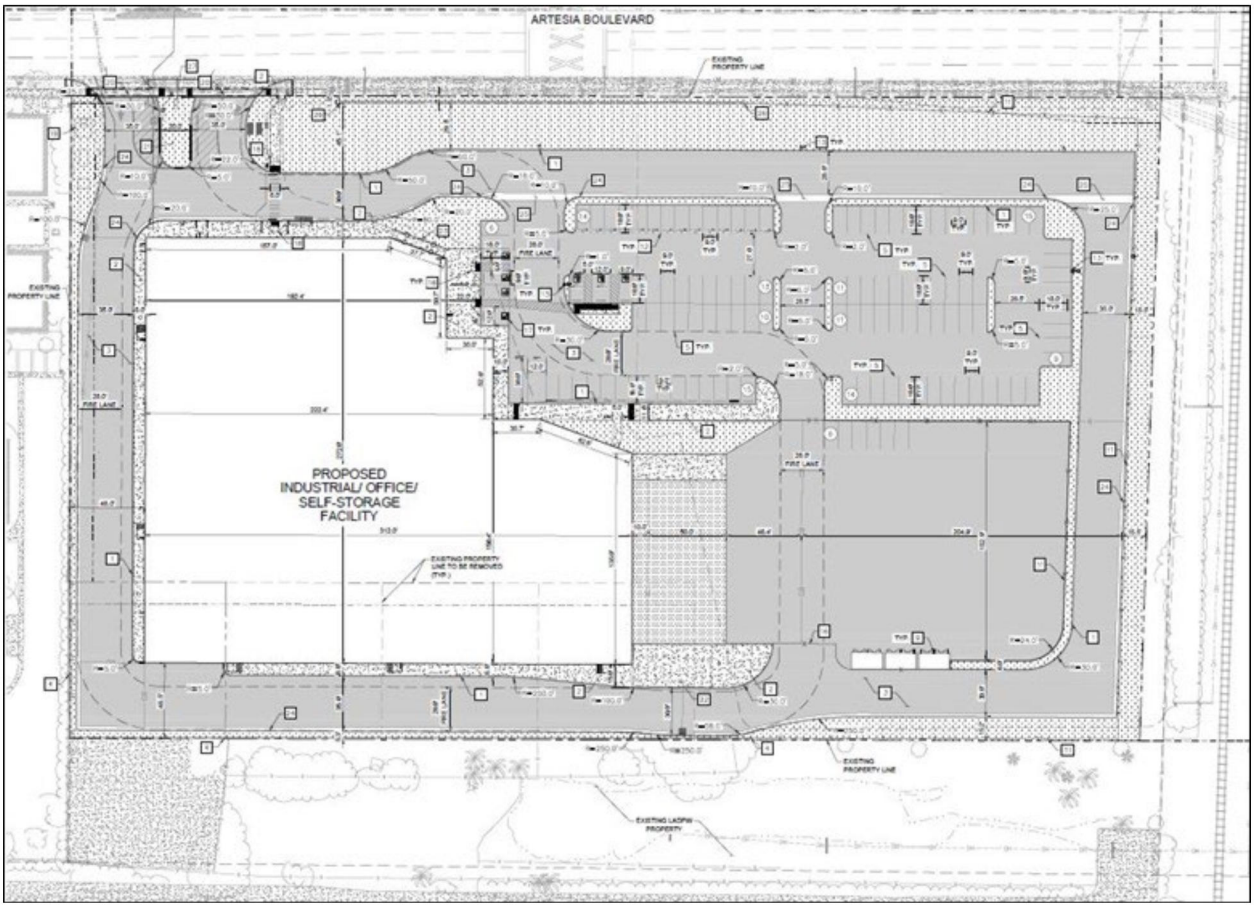


Exhibit 2: Site Vicinity Map

Exhibit 3: Conceptual Site Plan



2 ACOUSTIC FUNDAMENTALS

2.1 Sound and Environmental Noise

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g., air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. In acoustics, the fundamental model consists of a noise source, a receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (µPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. Table 1: Typical Noise Levels provides typical noise levels.

Table 1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**– 70 –**	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	**– 60 –**	
		Large business office
Quiet urban daytime	**– 50 –**	Dishwasher in next room
Quiet urban nighttime	**– 40 –**	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	**– 0 –**	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is the average noise level averaged over the measurement period, while the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of L_{eq} that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined in Table 2: Definitions of Acoustical Terms.

Table 2: Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 µPa.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in µPa (or 20 micronewtons per square meter), where 1 pascals is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 µPa). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in dB as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01}, L_{10}, L_{50}, L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 p.m. to 10:00 a.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions. Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics. No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The way older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted:

- Except in carefully controlled laboratory experiments, a 1-dBA change cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5-dBA change is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance. Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative

annoyance of these different sources. A noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance.[1]

2.2 Groundborne Vibration

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations

Peak Particle Velocity (in/sec)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006-0.019	64-74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4-0.6	98-104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

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

[1] Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise.

3.1 State of California

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established 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" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.2 Local

City of Gardena Municipal Code

The City also has regulations to control unnecessary, excessive, and annoying noise, as set forth in the City's Noise Ordinance (Chapter VIII, Noise Regulation, of the Gardena Municipal Code [GMC]). The City's Noise Ordinance establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources.

The Gardena Municipal Code establishes the following noise provisions relative to the Project:

Section 8.36.040 – Exterior Noise Standards

A. The following exterior noise standards, unless otherwise specifically indicated, shall apply to all property within the City. The Land Use category refers to the affected receiver property:

Table 4: Allowable Exterior Noise Level

Type of Land Use	15-Minute Average Noise Level (L_{eq})		Maximum Noise Level (L_{max})	
	7 a.m. to 10 p.m.	10 p.m. to 7 am	7 a.m. to 10 p.m.	10 p.m. to 7 am
Residential	55 dB(A)	50 dB(A)	75 dB(A)	70 dB(A)
Residential portions of mixed-use	60 dB(A)	50 dB(A)	80 dB(A)	70 dB(A)
Commercial	65 dB(A)	60 dB(A)	85 dB(A)	80 dB(A)
Industrial or manufacturing	70 dB(A)	70 dB(A)	90 dB(A)	90 dB(A)

In the event the alleged offensive noise contains a pure tone such as a whine, screech, or hum, or contains repetitive, impulsive or impact noise such as hammering or riveting, or contains music or speech conveying informational content, each of the above noise standards shall be reduced by 5 dB.

B. No person shall operate or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured from any other property, either incorporated or unincorporated, to exceed the noise standards of paragraph (A).

C. In the event the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard. (Ord. 1683, 2006; Urg. Ord. 1682, 2006)

Section 8.36.050 – Interior Noise Standards

A. The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential dwellings with windows in their normal seasonal configuration, where such dwelling is the receiver of intrusive noise:

Table 5: Allowable Interior Noise Level

Type of Land Use	15-Minute Average Noise Level (L_{eq})		Maximum Noise Level (L_{max})	
	7 a.m. to 10 p.m.	10 p.m. to 7 am	7 a.m. to 10 p.m.	10 p.m. to 7 am
Residential	45 dB(A)	40 dB(A)	65 dB(A)	60 dB(A)
Residential portions of mixed-use	45 dB(A)	40 dB(A)	70 dB(A)	60 dB(A)

In the event the alleged offensive noise contains a pure tone such as a whine, screech, or hum, or contains repetitive, impulsive or impact noise such as hammering or riveting, or contains music or speech conveying informational content, each of the above noise standards shall be reduced by 5 dB.

B. No person shall operate or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured within any residential dwelling, either incorporated or unincorporated, to exceed the noise standards of paragraph (A).

C. In the event the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard. (Ord. 1683, 2006; Urg. Ord. 1682, 2006)

Section 8.36.070 – Prohibited Acts—General Standard.

Notwithstanding any other provisions of this chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue or cause to be made or continued, any loud, unnecessary and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity:

a. Loading and Unloading. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of Section 8.36.040 or 8.36.050;

b. Vibration. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the real property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way. The vibration perception threshold as defined by the GMC is 0.01 in/sec over the range of 1 to 100 Hz.;

c. Powered Model Vehicles. Operating or permitting the operation of powered model vehicles:

(i) Between the hours of 7:00 p.m. and 7:00 a.m. so as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of Section 8.36.040 or 8.36.050.

(ii) In such a manner as to exceed the levels set forth in Section 8.36.040, measured at a distance not less than 100 feet from any point on the path of a vehicle operating on public space or public right-of-way., if any;

Section 8.36.080 – Exemptions.

The provisions of this chapter shall not apply to the following:

a. Noise associated with construction, repair, remodeling, grading or demolition of any real property, provided said activities do not take place between the hours of 6:00 p.m. and 7:00

a.m. on weekdays between the hours of 6:00 p.m. and 9:00 a.m. on Saturday or any time on Sunday or a Federal holiday.

City of Gardena General Plan

Adopted on April 16, 2006, the *City of Gardena General Plan* (Gardena General Plan) Noise Element provides guidance for the control of noise to protect residents, workers, and visitors from potentially adverse noise impacts. Its primary goal is to regulate long-term noise impacts to preserve acceptable noise environments for all types of land uses. The Noise Element defers regulation of temporary, point-source noises such as construction activities to the City's Municipal Code Noise Ordinance. With regard to long-term noise impacts, the Noise Element contains stated goals, objectives, policies, and implementation programs for noise control.

Goal: Incorporate noise considerations into land use planning decisions.

Policy 2.5: Require proposed projects to be reviewed for compatibility with nearby noise sensitive land uses with the intent of reducing noise impacts.

Policy 2.7: Require new commercial/industrial operations located in proximity to existing or proposed residential areas to incorporate noise mitigation into the project design.

Noise/Land Use Compatibility

The noise criteria identified in the Gardena Noise Plan are guidelines to evaluate noise/land use compatibility. The compatibility criteria, shown on Table 6: Gardena Noise/Land Use Compatibility Matrix, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The Noise/Land Use Compatibility Matrix describes categories of compatibility and not specific noise standards.

Table 6: Gardena Noise/Land Use Compatibility Matrix

Land Use Category	Exterior Noise Level (CNEL)						
		55	60	65	70	75	80
Residential- single family residences, multi-family residences, senior housing, convalescent homes	A	A	B	C	C	D	D
Residential- mobile homes, mixed-use (commercial/residential)	A	A	B	C	C	D	D
Transient Lodging- motels, hotels, resorts	A	A	B	B	C	C	D
Auditoriums, Concert Halls, Amphitheaters, Meeting Halls	B	B	C	C	D	D	D
Sports Arenas, Outdoor Spectator Sports, Amusement Parks	A	A	A	B	B	D	D
Playgrounds, Neighborhood Parks	A	A	A	B	C	D	D
Golf Courses, Riding Stables, Cemeteries	A	A	A	A	B	C	C
Office and Professional Buildings	A	A	A	B	B	C	D
Commercial Retail, Banks, Restaurants, Theaters	A	A	A	A	B	B	C
Industrial, Manufacturing, Utilities, Wholesale, Service Stations	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

A	NORMALLY ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
B	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
C	NORMALLY UNACCEPTABLE—New construction or development should generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
D	UNACCEPTABLE—New construction or development shall not be undertaken.

Source: City of Gardena, *General Plan - Noise Plan,* 2006.

4 EXISTING CONDITIONS

4.1 Existing Noise Sources

The City is impacted by various noise sources. Mobile sources of noise, especially cars, trucks, and trains are the most common and significant sources of noise. Other noise sources are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise.

Mobile Sources

Artesia Boulevard and Normandie Avenue are located directly north and east of the Project site and are the primary sources of mobile noise in the Project vicinity. Additional contributions to the ambient noise environment in the Project area include the I-110 freeway, located approximately 0.89-mile east of the Project site, and the Union Pacific rail line which runs in a north-south direction along the west side of Normandie Avenue directly east of the Project site. According to the Gardena General Plan, there are approximately two train pass-bys or less along the Union Pacific rail line each day, and thus is not considered a substantial source of noise.

Stationary Sources

The primary sources of stationary noise in the Project vicinity are those associated with residential properties to the west and commercial uses to the north of the Project site, and on-site operations from the U-Haul rental facility and sandblasting operations. Stationary noise sources associated with residential uses can include mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment), dogs barking, idling vehicles, vehicle movements, and residents talking. Stationary noise sources associated with the commercial uses to the north and existing on-site operations consist of mechanical equipment, idling vehicles, vehicle movement, freight loading/unloading and customers talking. The noise associated with these sources may represent a single-event noise occurrence or short-term noise.

4.2 Noise Measurements

To quantify existing ambient noise levels in the Project area, Kimley-Horn conducted one long-term and five short-term noise measurements on June 15, 2022; see Appendix A: Noise Data. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site. The 10-minute measurements were taken between 2:27 p.m. and 3:47 p.m. The 24-hour measurement was taken between 4:18 p.m. on June 15th and 4:38 p.m. on June 16th, 2022. Measurements of L_{eq} are considered representative of the noise levels throughout the day. The average noise levels and sources of noise measured at each location are listed in Table 7: Existing Noise Measurements and shown on Exhibit 4: Noise Measurement Locations.

Table 7: Existing Noise Measurements

Site	Location	Measurement Period	Duration	L_{max} (dBA)	L_{eq} (dBA) - Day[1]	L_{eq} (dBA) – Night[1]	L_{eq} (dBA) - 24 hr
Short-Term Noise Measurements (15-minute measurements)							
1	Education center right at the southeast corner of the W 177th Street and Normandie Avenue intersection.	2:27 – 2:37 p.m.	10 mins	71.2	59.8	-	-
2	Southeast corner of the W Cassidy Street and Normandie Avenue intersection.	2:44 – 2:54 p.m.	10 mins	79.2	69.6	-	-
3	Commercial center near the northwest corner of Artesia Boulevard and Normandie Avenue	3:03 – 3:13 p.m.	10 mins	84.9	71.3	-	-
4	In residential neighborhood near the corner of W 173rd Street and Halldale Avenue.	3:21 – 3:31 p.m.	10 mins	69.6	51.8	-	-
5	Multi-use residences directly west of the Project site.	3:37 – 3:47 p.m.	10 mins	62.4	53.1	-	-
Long-Term Noise Measurement (24-hour measurement)							
LT -1	Northwestern portion of Project site adjacent to residential uses to the west.	4:18 – 4:38 p.m.	24 hrs	90.5	61.8	57.8	60.7

Notes:
1. Daytime = 7:00 a.m. to 10:00 p.m.; Nighttime = 10:00 p.m. to 7:00 a.m.

Source: Noise measurements taken by Kimley-Horn, June 15-16, 2022. See Appendix A for noise measurement results.

4.3 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive receptors that are in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Table 8: Sensitive Receptors lists the sensitive receptors nearest the Project site, which include single- and multi-family residential and educational uses. As shown in Table 8, the nearest sensitive receptors to the Project site are the live/work residences to the west of the Project site.

Table 8: Sensitive Receptors

Receptor Description	Distance and Direction from the Project	Description
Live/Work Residences	Adjacent to the west	Live/Work Residences adjacent to Project, along Artesia Boulevard
Single-family Residences	150 feet to the east	Southeast corner of W Cassidy Street and Normandie Avenue
Single-family Residences	425 feet to the north	Along W 173rd Street
School	465 feet to the southeast	Gardena Early Education Center, southeast corner of W177th Street and Normandie Avenue
Multi-Family Residences	1,080 feet to the south	Along W 179th Street

Source: Google Earth, 2024.

Exhibit 4: Noise Measurement Locations

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains analysis guidelines related to noise impacts. These guidelines have been used by the City to develop thresholds of significance for this analysis. A project would create a significant environmental impact if it would:

- 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;

- Generate excessive groundborne vibration or groundborne noise levels; and

- 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, expose people residing or working in the Project area to excessive noise levels.

5.2 Methodology

Construction

Construction noise levels were based on typical noise levels generated by construction equipment published by the Federal Transit Administration (FTA) and FHWA. Construction noise is assessed in dBA L_{eq}. This unit is appropriate because L_{eq} can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.

FHWA's Roadway Construction Noise Model (RCNM) was used to estimate construction noise at nearby sensitive receptors. For modeling purposes, estimated noise levels conservatively assume all construction equipment would operate simultaneously and be situated at the construction area closest to sensitive receptors. Noise level estimates do not account for the presence of existing intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Operations

The analysis of the Without Project and With Project noise environments is based on noise prediction modeling and empirical observations. Reference noise level data are used to estimate the Project operational noise impacts from stationary sources. Noise levels collected from field noise measurements and other published sources from similar types of activities are used to estimate noise levels expected with the Project's stationary sources. The reference noise levels are used to represent a worst-case noise environment as noise level from stationary sources can vary throughout the day. Operational noise is evaluated based on the standards within the City's Noise Ordinance and General Plan. Traffic noise impacts were assessed using methodologies consistent with the FHWA.

Vibration

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne PPV associated with construction equipment, obtained from FTA published data for construction equipment. Potential groundborne vibration impacts related to building/structure damage and interference with sensitive existing operations were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria.

For a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.20 in/sec is considered safe and would not result in any vibration damage. Human annoyance is evaluated in vibration decibels (VdB) (the vibration velocity level in decibel scale) and occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. The GMC identifies vibration perception threshold as 0.01 in/sec.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold 6.1 Would the Project 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?

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods near the construction site. However, it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at a single point near sensitive receptors.

Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities would require tractors and dozers during site preparation; graders, dozers, excavators, and tractors during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in Table 9: Typical Construction Noise Levels. It should be noted that the noise levels shown in Table 9 are maximum noise levels (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power.

Table 9: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA L_{max}) at 50 feet from Source	Typical Noise Level (dBA L_{max}) at 100 feet from Source[1]
Air Compressor	80	74
Backhoe	80	74
Compactor	82	76
Concrete Mixer	85	79
Concrete Pump	82	76
Concrete Vibrator	76	70
Crane, Mobile	83	82
Dozer	85	77
Generator	82	79
Grader	85	76
Impact Wrench	85	79
Jack Hammer	88	79
Loader	80	82
Paver	85	74
Pneumatic Tool	85	71

Table 9: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA L_{max}) at 50 feet from Source	Typical Noise Level (dBA L_{max}) at 100 feet from Source[1]
Pump	77	79
Roller	85	70
Saw	76	79
Scraper	85	76
Shovel	82	78
Truck	84	74

dBA = A-weighted decibel; L_{max} = maximum A-weighted sound level

Notes:
1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1+20Log(d_1/d_2)$
Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance

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

Noise-sensitive uses closest to the Project site include residences located approximately 15 feet west and 150 feet east of the Project site. Following the methodology for quantitative construction noise assessments in the FTA's Transit Noise and Vibration Impact Assessment Manual (September 2018) (FTA Noise and Vibration Manual), the FHWA RCNM model was used to predict construction noise at the nearest off-site receptors. RCNM is a computer program used to assess construction noise impacts and allows for user-defined construction equipment and user-defined noise limit criteria. Noise levels were calculated for each construction phase and are based on the equipment used, distance to the nearest property/receptor, and acoustical use factor for equipment.

Although the GMC does not have a quantitative construction noise limit, a 10 dBA sound difference is estimated to be a doubling of the perceived loudness and is used as the construction noise threshold in this analysis. Table 10: Project Construction Noise Levels shows estimated exterior construction noise levels at the nearest receptors without accounting for attenuation from physical barriers or topography. Construction equipment was assumed to operate at the nearest Project property line approximately 15 to 408 feet from the nearest residential uses. As indicated in Table 10, the highest anticipated construction noise level of 95.6 dBA would occur during the site preparation phase at the residential receptors to the west of the Project site and would result in ambient noise level increases that would ranging from 0.1 dBA to 33.8 dBA at the nearest receptors. As such, Project construction noise levels would exceed the 10 dBA incremental increase threshold. The highest noise level increases above 10 dBA would be concentrated on the western portion of the Project site where the primary construction activities (i.e., construction of the self-storage building) would occur.

Mitigation Measure (MM) NOI-1 requires the construction of a minimum 8-foot-high noise barrier along the western and Project boundary to reduce construction noise levels at the residential uses directly west of the Project site. Implementation of MM NOI-1 would provide an approximate 12 dBA noise reduction[2] at these receptors, which is a substantial decrease compared to unmitigated conditions. However, as shown in Table 10, construction noise levels would still exceed ambient noise levels by more than 10 dBA at the nearest sensitive receptors to the west of the Project site despite implementation of MM NOI-1.

[2] MAS Environmental LTD, *Sound Propagation Level Calculator*, https://noisetools.net/barriercalculator, accessed November 13, 2023.

Table 10: Project Construction Noise Levels

Construction Phase	Land Use	Direction	Ambient Noise Level[1] (dBA L_{eq})	Without Noise Barrier				With 8-Foot Noise Barrier			
				Construction Noise Level (dBA L_{eq})[2]	Ambient + Construction (dBA L_{eq})[3]	Increase Over Ambient	Increase Exceeds 10 dBA?	Construction Noise Level[2] (dBA L_{eq})	Ambient + Construction (dBA L_{eq})[3]	Increase Over Ambient	Increase Exceeds 10 dBA?
Demolition	Residential	East	69.6	76.9	77.6	8.0	Yes	64.9	70.9	1.3	No
	Commercial	North	71.3	67.9	72.9	1.6	No	55.9	71.4	0.1	No
	Residential	Northwest	51.8	66.8	66.9	**15.1**	**Yes**	54.8	56.6	4.8	No
	Residential	West	61.8	94.4	94.4	**32.6**	**Yes**	82.4	82.4	**20.6**	**Yes**
Site Preparation	Residential	East	69.6	78.1	78.7	9.1	No	66.1	71.2	1.6	No
	Commercial	North	71.3	69.0	73.3	2.0	No	57.0	71.5	0.2	No
	Residential	Northwest	51.8	68.0	68.1	**16.3**	**Yes**	56.0	57.4	5.6	No
	Residential	West	61.8	95.6	95.6	**33.8**	**Yes**	83.6	83.6	**21.8**	**Yes**
Grading	Residential	East	69.6	77.7	78.3	8.7	No	65.7	71.1	1.5	No
	Commercial	North	71.3	68.7	73.2	1.9	No	56.7	71.4	0.1	No
	Residential	Northwest	51.8	67.6	67.7	**15.9**	**Yes**	55.6	57.1	5.3	No
	Residential	West	61.8	95.2	95.2	**33.4**	**Yes**	83.2	83.2	**21.4**	**Yes**
Building	Residential	East	69.6	76.5	77.3	7.7	No	64.5	70.8	1.2	No
	Commercial	North	71.3	67.5	72.8	1.5	No	55.5	71.4	0.1	No
	Residential	Northwest	51.8	66.4	66.5	**14.7**	**Yes**	54.4	56.3	4.5	No
	Residential	West	61.8	94.0	94.0	**32.2**	**Yes**	82.0	82.0	**20.2**	**Yes**
Paving	Residential	East	69.6	77.0	77.7	8.1	No	65.0	70.9	1.3	No
	Commercial	North	71.3	67.9	72.9	1.6	No	55.9	71.4	0.1	No
	Residential	Northwest	51.8	66.9	67.0	**15.2**	**Yes**	54.9	56.6	4.8	No
	Residential	West	61.8	94.5	94.5	**32.7**	**Yes**	82.5	82.5	**20.7**	**Yes**
Architectural Coating	Residential	East	69.6	64.2	70.7	1.1	No	52.2	69.7	0.1	No
	Commercial	North	71.3	55.1	71.4	0.1	No	43.1	71.3	0.0	No
	Residential	Northwest	51.8	54.1	56.1	4.3	No	42.1	52.2	0.4	No
	Residential	West	61.8	81.7	81.7	**19.9**	**Yes**	69.7	70.4	8.6	No

Notes:
1. Ambient daytime noise levels obtained by Kimley-Horn on June 15, 2022; see Table 7.
2. Noise levels calculated using the Federal Highway Administration, *Roadway Construction Noise Model*, 2006. Refer to Appendix A for noise modeling results.
3. Combined noise levels calculated based on the logarithmic addition of decibels.

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to Appendix A for noise modeling results.

The Project would be required to comply with Section 8.36.080 of the GMC which restricts construction to between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, between 9:00 a.m. and 6:00 p.m. on Saturdays, and prohibits construction on Sundays and national holidays. It should also be noted that traffic noise along Artesia Boulevard and Normandie Avenue would partially mask construction noise emanating from the Project site. However, due to the increase in ambient noise levels, impacts associated with Project on-site construction activities would remain significant and unavoidable despite implementation of MM NOI-1.

Operations

Implementation of the proposed Project would create new sources of noise in the site vicinity. The major noise sources associated with the Project that would potentially impact existing nearby residences include stationary noise equipment (i.e., air conditioning equipment); activities associated with loading/unloading storage items; parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); and off-site traffic noise. Given the nature of the Project, the operational noises would not be constant and would occur infrequently. Each stationary source is discussed below in further detail.

Mechanical Equipment

Potential stationary noise sources related to long-term operation of the Project would include mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment), which typically generates noise levels of approximately 52 dBA at 50 feet.[3] For the purposes of a conservative analysis, mechanical equipment at the Project site is assumed to be located at the edge of Project building closest to the nearest sensitive receptors. Based on the Project site plans, the nearest sensitive receptors (residences) would be located approximately 50 feet west and 500 feet east of on-site mechanical equipment. As indicated in Table 11: Stationary Source Noise Levels, noise levels from mechanical equipment at the Project site would not exceed the City's standards at the nearest residential uses in compliance GMC Section 8.36.070.

Storage Loading/Unloading Activities

Self-storage unit leasers would access the site via private vehicles or small single-unit truck rentals to drop off or pick up their personal items from the storage units and then exit the site. Access to the site would occur along Artesia Boulevard. Loading/unloading activities would generate noise levels up to approximately 61 dBA at a distance of 50 feet.[4] The nearest noise-sensitive receptors (i.e., residences) to the proposed storage loading/unloading activities would be approximately 75 feet to the west of storage loading/unloading activities at the Project site. Table 11 shows that storage loading and unloading activities will not exceed the City's standards outlined in GMC Section 8.36.070. In addition, individuals would use these facilities periodically and storage activities would occur throughout the Project site, resulting in lower noise levels than these estimates. Therefore, the Project would result in a less than significant impact concerning storage loading/unloading activity noise levels.

[3] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

[4] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

Truck Loading Dock Noise

During loading and unloading activities, noise would be generated by the trucks' diesel engines, exhaust systems, and brakes during low gear shifting' braking activities; backing up toward the docks; dropping down the dock ramps; and maneuvering away from the docks. Truck and loading dock noise is typically 64.4 dBA L_{eq} at 50 feet.[5] The proposed warehouse building includes dock-high doors for truck loading/unloading and manufacturing/light industrial operations. The dock-high doors are approximately 360 feet from the residential property line to the west.

Based on distance attenuation, noise levels due to loading/unloading would be reduced to approximately 47.3 dBA at the live/work residences to the west of the truck loading dock areas. Note that this noise level conservatively assumes activity would occur at the three closest loading docks simultaneously. At the closest non-residential property line (commercial uses to the north across Artesia Boulevard), truck loading dock noise levels would be approximately 46.0 dBA. As indicated in Table 11, loading/unloading noise levels would not exceed the City's noise standards at the nearest residential or commercial uses per GMC Section 8.36.070.

Furthermore, loading dock doors would also be surrounded with protective aprons, gaskets, or similar improvements that, when a trailer is docked, would serve as a noise barrier between the interior warehouse activities and the exterior loading area. This would attenuate noise emanating from interior activities. As described above, noise levels associated with trucks and loading/unloading activities would not exceed the City's standards and impacts would be less than significant.

Parking Noise

The Project would provide 124 parking spaces positioned throughout the property. Nominal parking noise would occur within the on-site parking facilities. Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA at 50 feet[6] and may be an annoyance to adjacent noise-sensitive receptors. However, as shown in Table 11, parking lot noise would not exceed the City's standards at the nearest residential uses in compliance GMC Section 8.36.070.

Combined Stationary Source Noise Levels

As discussed above, Section 8.36.060 (Noise Measurement Procedure) of the GMC provides procedures and criteria for the measurement of the sound level of standard and "offending" noise sources. According to GMC Section 8.36.040(c), a noise level over the established land use noise standard or existing average ambient noise level (whichever is higher) at an adjacent property line is considered a noise violation. As indicated in Table 11, the combined noise level from the Project's stationary noise sources would not exceed the City's noise standards at the nearest sensitive uses. Therefore, a less than significant impact would occur in this regard.

[5] Loading dock reference noise level measurement (single truck) conducted by Kimley-Horn on December 18, 2018.
[6] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

Table 11: Stationary Source Noise Levels

Nearest Land Use	Direction	Distance (feet)[1]	Reference Noise Level at 50 ft	Noise Level at Receiver (dBA)	Daytime Ambient Noise Level (dBA)[2]	Daytime Exterior Threshold[3]	Nighttime Ambient Noise Level (dBA)[2,3]	Nighttime Exterior Threshold[3,4]	Exceed Threshold?
Mechanical Equipment									
Residential	East	500	52 dBA[5]	32.0	69.6	69.6	N/A	50	No
Commercial	North	150		42.5	71.3	71.3	N/A	60	No
Residential	Northwest	536		31.4	51.8	55	N/A	50	No
Residential	West	50		47.0	61.8	61.8	57.8[6]	57.8	No
Storage Loading/Unloading Activities									
Residential	East	500	61 dBA[7]	41.0	69.6	69.6	N/A	N/A	No
Commercial	North	280		46.0	71.3	71.3	N/A	N/A	No
Residential	Northwest	535		40.4	51.8	55	N/A	N/A	No
Residential	West	75		57.5	61.8	61.8	N/A	N/A	No
Truck and Loading Docks Activities									
Residential	East	444	64.4 dBA[8]	42.0	69.6	69.6	N/A	N/A	No
Commercial	North	416		46.0	71.3	71.3	N/A	N/A	No
Residential	Northwest	888		39.4	51.8	55	N/A	N/A	No
Residential	West	360		47.3	61.8	61.8	N/A	N/A	No
Parking Area									
Residential	East	300	61 dBA[5]	45.4	69.6	69.6	N/A	N/A	No
Commercial	North	175		50.1	71.3	71.3	N/A	N/A	No
Residential	Northwest	480		41.4	51.8	55	N/A	N/A	No
Residential	West	360		43.9	61.8	61.8	N/A	N/A	No
Combined Noise Level (Mechanical Equipment + Storage Loading/Unloading Activities + Truck and Loading Docks + Parking Area)									
Residential	East	N/A[9]	67.3 dBA[10]	48.1	69.6	69.6	N/A	N/A	No
Commercial	North	N/A[9]		53.0	71.3	71.3	N/A	N/A	No
Residential	Northwest	N/A[9]		45.4	51.8	55	N/A	N/A	No
Residential	West	N/A[9]		58.4	61.8[11]	61.8	N/A	N/A	No

Notes:
1. Distance measured from the location of the noise source to the nearest receptor property line.
2. Ambient noise levels were obtained by Kimley-Horn on June 15-16, 2022; see Table 7.
3. The City's daytime and nighttime noise standards are outlined in GMC Section 8.36.040. Per GMC Section 8.36.040 (C), if the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard. The exterior thresholds used for each receptor was the City's noise standard or the measured ambient noise level, whichever is greater.
4. The City's nighttime standards only apply to mechanical equipment because storage loading/unloading activities, truck and dock use activities, and use of the parking lot would cease at 10:00 p.m. in accordance with GMC Section 8.36.070. Since the project is climate controlled, it is reasonable to assume that mechanical equipment onsite would be running 24 hours a day.
5. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
6. Nighttime ambient noise was only measured for the live/work residences west of the Project site as a worst-case scenario, as these receptors are closest to on on-site operational activities.
7. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
8. Loading dock reference noise level measurements conducted by Kimley-Horn on December 18, 2018.
9. Because stationary sources are located at various locations throughout the site and at different distances from the receptors, a composite distance is not possible.
10. Calculated based on the logarithmic decibel scale and the reference noise levels for mechanical equipment, storage loading/unloading, and parking area noise levels identified above.

Truck Pass-Bys

Trucks will enter the Project site via the access driveway at the northwest corner and traverse south along the western property line and then east to reach the loading dock area. The nearest sensitive receptors are the live/work residential uses directly to the west, approximately 25 feet from the centerline of the truck drive aisle. Utilizing a reference noise level of 68 dBA L_{max} at 30 feet for a truck pass-by,[7] distance attenuation calculations were calculated and are provided in Table 12: Truck Pass-by Noise Levels. Based on trip generation data provided in the *1450 Artesia Boulevard Local Transportation Assessment* (Kimley-Horn, December 2022) (Transportation Analysis) the proposed Project would generate approximately 75 daily truck trips, or approximately five truck trips per hour or one every 15 minutes (assuming the Project would operate for a total of 15 hours from 7:00 a.m. to 10:00 p.m.). As shown in Table 12, one truck pass-by in a 15-minute period would generate exterior noise levels up to approximately 54.9 dBA $L_{eq\ (15\text{-}minute)}$, and a single-truck pass-by would result in a maximum exterior noise level of approximately 69.6 dBA L_{max} at the live/work residences and would not exceed the City's daytime noise standards in compliance GMC Section 8.36.070. Interior noise levels from truck pass-bys would also not exceed the City's interior noise standards; see Table 12. It is also noted the Project would operate during normal daytime hours only, and therefore, truck pass-by noise is solely evaluated against the City's daytime noise standards. Therefore, a less than significant impact would occur in this regard.

Table 12: Truck Pass-by Noise Levels

Source	Exterior Noise		Interior Noise[1]	
	15-Minute Noise Level (dBA L_{eq})	Maximum Noise Level (dBA L_{max})	15-Minute Noise Level (dBA L_{eq})	Maximum Noise Level (dBA L_{max})
	7 a.m. to 10 p.m.	7 a.m. to 10 p.m.	7 a.m. to 10 p.m.	7 a.m. to 10 p.m.
Truck Pass-by[2]	50.1	69.6	38.1	57.6
Mixed-Use Residential Standard	**61.8[3]**	**75**	**45**	**65**
Exceeds Standard?	No	No	No	No

dBA = A-weighted decibel; L_{max} = maximum A-weighted sound level

Notes:
1. Interior noise levels calculated using a standard exterior-to-interior noise reduction of 12 dBA for windows open condition (U.S. EPA, *Protective Noise Levels*, November 1978).
2. Truck pass-by noise levels calculated using the following parameters:
   - A maximum of one truck trip would occur in a 15-minute period to evaluate impacts against the City's 15-minute average (dBA L_{eq}) standard;
   - A single truck trip/pass-by was assumed to evaluate impacts against the City's maximum (L_{max}) noise standard; and
   - A single truck pass-by would last for approximately 10 seconds.
3. Per GMC Section 8.36.040 (C), if the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard. The measured daytime noise level currently exceeds the City's noise standard at the live/work residences to the west; therefore, the ambient noise level is the noise standard used to analyze Project impacts.

Special Events

The Project has also obtained a permit by the City of Gardena to host occasional special events including farmers markets, outdoor trade shows, and live music that may result in the gathering of large crowds, use of loudspeakers, and on-site, portable generators. The various special events to be hosted two to three times per month are anticipated to attract an average of 250 attendees in addition to the 725 estimated daily vehicle trips. These 250 attendees are estimated to generate an additional 220 vehicle trips to the Project site on special event days.[8]

[7] Charles M. Salter Associates Inc., *Midpoint at 237 Loading Dock* Noise Study, March 2014.
[8] Kimley-Horn and Associates, *1450 Artesia Blvd – Special Events Trip Generation,* Technical Memorandum, December 2022.

Music

The various activities for special events could involve amplified live or recorded music. Amplified music is typically 91 dBA at 25 feet[9] and would attenuate to approximately 67.8 dBA at the closest receptors (live/work residences to the west) conservatively assuming the worst-case scenario that the noise source would be at the western edge of the Special events zone (approximately 360 feet from the western property line). As such, music noise levels would have the potential to exceed the City's daytime noise standard of 60 dBA for mixed-use residential uses established in GMC Section 8.36.700. Pursuant to Gardena MC Section 8.36.80, the types of events and gatherings anticipated for the Project that would involve amplified music would be exempt from noise level limits. However, in the event that activities not exempted by Gardena MC Section 8.36.80 are planned, mitigation would be required. Mitigation Measure NOI-2 prohibits amplified music after 10:00 p.m. and requires the preparation of a noise control plan prior to the issuance of a use or event permit for events not exempt by the Municipal Code. The noise control plan shall include the location and directionality of speakers, confirmation that the sound system includes volume control, and that the contact information of the event coordinator/representative is posted for complaints. In addition, the noise control plan shall include an acoustical assessment confirming that combined speaker noise would not exceed the City's daytime noise standard (in the event that ambient levels are higher than the daytime standard, the ambient level is the standard) at nearby sensitive receptors. Impacts would be less than significant with implementation of MM-NOI-2.

Crowds

Crowd noise from special events at the Project site may be audible at the nearest sensitive receptors (i.e., residences directly west and to the east across Normandie Avenue) due to noise generated by groups of people (i.e., crowds). Such noise is dependent on several factors including vocal effort, impulsiveness, and the random orientation of the crowd members. Crowd noise is estimated at 60 dBA at one meter (3.28 feet) away for raised normal speaking.[10] This noise level would have a +5 dBA adjustment for the impulsiveness of the noise source, and a -3 dBA adjustment for the random orientation of the crowd members. Therefore, crowd noise would be approximately 62 dBA at one meter from the source.[11] Crowd noise thus would be approximately 21.2 dBA at the closest receptor (live/work residences to the west), conservatively assuming the worst-case scenario that the noise source would be at the western edge of the Special events zone (approximately 360 feet from the western property line). Special Events are not expected to occur after the hours of 10:00 p.m. and thus would not exceed the City's daytime or nighttime exterior standards. MM NOI-2 will ensure that no events and crowds congregate after the hours of 10:00 p.m. and before 7:00 a.m. Therefore, impacts from crowd noise would be less than significant.

[9] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, 2015.
[10] M.J. Hayne, et al, *Prediction of Crowd Noise*, Acoustics, November 2011.
[11] Ibid.

Generators

Portable generators could be used for special events at the Project site to power electric equipment, speakers, etc., which typically generates noise levels similar to the mechanical equipment discussed above for the Project (approximately 52 dBA at 50 feet).[12] As indicated in Table 11, noise levels from mechanical equipment at the Project site would not exceed the City's standards at the nearest residential uses in compliance GMC Section 8.36.070. Therefore, impacts from portable generators would be less than significant.

Off-Site Traffic Noise

Implementation of the Project would generate increased traffic volumes along nearby roadway segments. Based on the trip generation rates in the Project's Transportation Analysis,[13] the proposed Project would generate 725 daily trips and an additional 220 daily trips during special event days for a potential maximum of 945 daily trips, which would result in noise increases on Project area roadways. A previous traffic count determined a minimum of 47,000 average daily trips take place on Artesia Boulevard in Torrance.[14] In general, a traffic noise increase of less than 3 dBA is barely perceptible to people, while a 5-dBA increase is readily noticeable.[15] Generally, traffic volumes on Project area roadways would have to approximately double (i.e., a 100 percent increase compared to existing conditions) for the resulting traffic noise levels to increase by 3 dBA. Since 945 maximum daily trips from the Project is a fraction of the minimum average daily trips along Artesia Boulevard (less than two percent), permanent increases in ambient noise levels are expected to be less than 3 dBA and would result in a less than significant impact.

Furthermore, the peak hour trip generation for special events is anticipated to be a maximum of 120 vehicles.[16] Assuming peak hour trips on Artesia Blvd (the primary access roadway to the Project site) are 0.1 times the existing ADT (i.e., an estimated 4,700 existing peak hour trips),[17] 120 peak hour trips from Special Events would result in less than a three percent increase in peak hour traffic noise levels along Artesia boulevard and would not create a noticeable 3 dBA increase. Therefore, traffic noise increases from Project-generated peak hour traffic during Special Events would be less than significant.

[12] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
[13] Kimley-Horn and Associates, *1450 Artesia Boulevard Local Transportation Assessment*, December 2022.
[14] Caltrans, *Freeway & Highway Traffic Volumes Los Angeles County (Artesia Blvd E/O 107 State Highway, East),* http://www.laalmanac.com/transport/tr26b.php, accessed on October 13, 2022.
[15] Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance, Noise Fundamentals*, https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm, accessed November 2, 2021.
[16] Kimley-Horn and Associates, *1450 Artesia Blvd SP Special Events Trip Generation Analysis Memorandum*, October 2022.
[17] Per traffic data provided in the Project's Transportation Analysis.

Mitigation Measures:

MM NOI-1: Temporary Construction Noise Barrier

Prior to issuance of a Demolition Permit, the applicant shall demonstrate, to the satisfaction of the City of Gardena Director of Public Works or Chief Engineer, that the construction contracts include at least an 8-foot-high temporary noise barrier along the western and Project boundary. The temporary noise barrier shall have a sound transmission class (STC) of 25 or greater in accordance with the American Society for Testing and Materials (ASTM) Test Method E90, or at least two pounds per sf to ensure adequate transmission loss characteristics. To achieve this, the barrier may consist of steel tubular framing, welded joints, a layer of 18-ounce tarp, a two-inch thick fiberglass blanket, a half-inch thick weatherwood asphalt sheathing, and 7/16-inch sturdy board siding. The barrier must be free of degrading holes or gaps and shall be designed to prevent structural failure due to factors such as wind, shear, shallow soil failure, earthquakes, and erosion.

NOI-2 Special Events Noise Control Plan

All activities permitted pursuant to Municipal Code Section 8.36.80 – Exemptions shall be subject to the following requirements:

- Special Events shall be restricted to the hours of 7:00 am to 10:00 pm unless a permit is acquired by the City pursuant to Section 08.26.080 of GMC.

- Amplified noise sources (e.g., speakers, bandstands, etc.) shall be directed away from the nearest sensitive receptors.

- Amplification systems will be positioned so that the tilt of the systems is downwards slightly to focus sound on the ground and prevent it from traveling up towards sensitive receptors. Amplification systems will also be distributed to avoid concentrated sound sources.

Prior to the issuance of a use or event permit by the City for activities not permitted pursuant to Municipal Code Section 8.36.80 – Exemptions, the event coordinator shall prepare and submit a noise control plan detailing the following:

- Date and time that amplification systems will be in use;

- Confirmation that amplification systems ae equipped with processors to control the maximum output that the speakers can reach;

- Conceptual event layout showing the locations and directionality of each speaker;

- Acoustical study confirming that the combined output of all speakers would not exceed City requirements pursuant to Municipal Code Section 8.36.040 at the nearest sensitive receptors (Pursuant to Municipal Code Section 8.36.040 (C), if the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard). Strategies to minimize noise levels at nearby sensitive receptors include, but are not limited to, distributing and directing

speakers away from sensitive receptors, providing shielding to keep amplified sound within the event space, and lower maximum volume outputs; and

- The contact information (e.g., phone number and email address) of the event coordinator and/or event representative in the even that complaints are made.

Level of Significance: Significant and unavoidable with mitigation incorporated.

Threshold 6.2 Would the Project generate excessive groundborne vibration or groundborne noise levels?

Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. The FTA has published standard vibration velocities for construction equipment operations in the FTA Noise and Vibration Manual. The types of construction vibration impacts include human annoyance and building damage.

Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.20 in/sec is considered safe and would not result in any vibration damage. Human annoyance is evaluated in vibration decibels (VdB) (the vibration velocity level in decibel scale) and occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. The GMC identifies 0.01 in/sec (PPV) as the approximate threshold for annoyance.

The nearest sensitive receptors are the residences located approximately 15 feet to the west of the Project site. However, since construction activity would be intermittent and the use of heavy construction equipment would be spread throughout the Project site and not concentrated at the point closest to sensitive uses or off-site properties for an extended period of time, it is assumed the concentration of construction activity for the purposes of this vibration analysis would occur no closer than 25 feet from the nearest sensitive receptors. Table 13: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Table 13: Typical Construction Equipment Groundborne Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)
Large Bulldozer	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractors	0.003

Notes:
1. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018; D = the distance from the equipment to the receiver.

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

As indicated in Table 14: Unmitigated Construction Groundborne Vibration Levels, vibration velocities from typical heavy construction equipment used during Project construction would range from 0.001 to 0.031 in/sec PPV at the nearest off-site uses and would exceed the GMC 0.01 in/sec threshold. Therefore, construction vibration levels at the nearest sensitive receptors (25 feet from Project construction activities) would be potentially significant and mitigation is required. MM NOI-3 requires a Vibration Management Plan that requires minimum setbacks for heavy machinery and limit the use of substantial vibration-generating equipment (e.g., pile drivers) to ensure that construction activities would not exceed the City's vibration threshold of 0.01 in/second at off-site uses. Table 15: Mitigated Construction Groundborne Vibration Levels, shows the mitigated vibration levels at the affected sensitive receptors. Therefore, impacts from construction vibration would be less than significant with implementation of MM NOI-3.

Table 14: Unmitigated Construction Vibration Levels

Nearest Land Use	Direction	Distance (feet)[1]	Reference Vibration Level at 25 ft[2]	Vibration Level at Receiver (in/sec)	GMC Vibration Threshold (in/sec)	Exceed Threshold?
Large Bulldozer						
Residential	East	475	0.089 PPV	0.001	0.01	No
Commercial	North	125		0.008	0.01	No
Residential	Northwest	511		0.001	0.01	No
Residential	West	25		0.089	0.01	**Yes**
Loaded Trucks						
Residential	East	475	0.079 PPV	0.001	0.01	No
Commercial	North	125		0.007	0.01	No
Residential	Northwest	511		0.001	0.01	No
Residential	West	25		0.079	0.01	**Yes**
Jackhammer						
Residential	East	475	0.035 PPV	0	0.01	No
Commercial	North	125		0.003	0.01	No
Residential	Northwest	511		0	0.01	No
Residential	West	25		0.035	0.01	**Yes**
Small Bulldozer/Tractor						
Residential	East	475	0.003 PPV	0	0.01	No
Commercial	North	125		0	0.01	No
Residential	Northwest	511		0	0.01	No
Residential	West	50		0.003	0.01	No

Notes:
1. Distances to sensitive receptors were assumed to be representative of atypical construction activities to evaluate the maximum potential vibration levels.
2. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPVref = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018; D = the distance from the equipment to the receiver.

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

Table 15: Mitigated Construction Vibration Levels

Nearest Land Use	Direction	Distance (feet)[1]	Reference Vibration Level at 25 ft[2]	Vibration Level at Receiver (in/sec)	GMC Vibration Threshold (in/sec)	Exceed Threshold?
Large Bulldozer						
Residential	West	105	0.089 PPV	0.01	0.01	No
Loaded Trucks						
Residential	West	95	0.079 PPV	0.01	0.01	No
Jackhammer						
Residential	West	54	0.035 PPV	0.01	0.01	No
Small Bulldozer/Tractor						
Residential	West	11	0.003 PPV	0.01	0.01	No

Notes:
1. Distances to sensitive receptors were determined by Mitigation Measure NOI-3 for each equipment type.
2. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPVref = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018; D = the distance from the equipment to the receiver.

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

Once operational, the Project would not be a significant source of groundborne vibration. Groundborne vibration surrounding the Project currently result from heavy-duty vehicular travel (e.g., refuse trucks, heavy duty trucks, delivery trucks, and transit buses) on the nearby local roadways. Operations of the proposed Project would include activities associated with a self-storage center (i.e., parking, opening and closing storage unit doors, moving objects in and out of units, etc.) that typically would not cause excessive ground-borne vibrations. Due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity. According to the FTA's Transit Noise and Vibration Impact Assessment, trucks rarely create vibration levels that exceed 70 VdB (equivalent to 0.012 inches per second PPV) when they are on roadways. Therefore, trucks operating at the Project site or along surrounding roadways would not exceed FTA or GMC thresholds for building damage or annoyance. Impacts would be less than significant in this regard.

Mitigation Measures:

MM NOI-3 Vibration Management Plan

The Project Applicant will require contractor(s) to comply with a Vibration Management Plan and implement minimum allowable setbacks from nearby buildings/structures to the west for heavy machinery. For all new construction, the contractor(s) will not use pile drivers, pavement breakers, or blasting equipment. In addition, when construction is required in direct proximity to the existing on-site residential care facility to the north and/or the residences immediately west of the Project site, the contractor(s) will observe the following minimum allowable setbacks for specified construction equipment:

- Small bulldozer/tractors shall not be used within 11 feet of buildings to the west;

- Jackhammers shall not be used within 54 feet of any buildings to the west;
- Loaded Trucks shall not be used within 95 feet of buildings to the west; and
- Large Bulldozers shall not be used within 105 feet of any buildings to the west.

Level of Significance: Less than significant impact with mitigation incorporated.

Threshold 6.3 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?

The nearest airport to the Project site is the Compton/Woodley Airport located approximately 3.34 miles to the east. Given the proposed Project's scope, people would not be exposed to excessive noise from the Project as visits to the self-storage unit would be brief. Persons working at the proposed self-storage business would most likely work inside and would not be exposed to noise from the airport. Other noise sources such as the I-110 freeway and SR-91 to the east of the Project site would likely negate the noise produced from the airport with the exception of planes passing overhead which would be temporary. Additionally, noise from operations associated with municipal airports is generally contained within airport property perimeters, and does not exceed 60 dBA CNEL in the adjacent communities. The Project site is not within any of the Compton/Woodley Noise Contours, which indicates that it would not experience excessive noise from Compton/Woodley Airport.[18] Thus, the Project is not located within an airport land use plan and would not expose people residing or working in the Project area to excessive noise levels. Therefore, the Project would have less than significant impact.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

[18] Matsubara, Kaoru, *Transportation Noise Impacts on Residential Property Values in Los Angeles County: A Spatial Hedonic Analysis*, https://escholarship.org/content/qt6wx2j5t9/qt6wx2j5t9_noSplash_14920d125a0d6f8408aa5b3dca399ba3.pdf?t=rdxdc9, accessed on July 13, 2022.

7 REFERENCES

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2. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
3. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, April 2020.
4. Charles M. Salter Associates Inc*., Midpoint at 237 Loading Dock* Noise Study, March 2014.
5. City of Gardena, *City of Gardena General Plan*, 2006.
6. City of Gardena, *Gardena Municipal Code*, current through Ordinance 1859, passed December 12, 2023.
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8. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, 2015.
9. Federal Highway Administration*, Highway Traffic Noise Analysis and Abatement Policy and Guidance, Noise Fundamentals*, https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm, accessed July 10, 2022.
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11. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.
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13. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
14. Kimley-Horn and Associates, *1450 Artesia Boulevard Local Transportation Assessment,* December 2022.
15. Kimley-Horn and Associates, *1450 Artesia Blvd SP Special Events Trip Generation Analysis Memorandum*, October 2022.
16. Kimley-Horn and Associates, *Civil Site Plan,* February 2024.
17. MAS Environmental LTD, *Sound Propagation Level Calculator*, https://noisetools.net/barriercalculator, accessed November 13, 2023.
18. Matsubara, Kaoru, *Transportation Noise Impacts on Residential Property Values in Los Angeles County: A Spatial Hedonic Analysis*, https://escholarship.org/content/qt6wx2j5t9/qt6wx2j5t9_noSplash_14920d125a0d6f8408aa5b3dca399ba3.pdf?t=rdxdc9, accessed on July 13, 2022.
19. M.J. Hayne, et al, *Prediction of Crowd Noise*, Acoustics, November 2011.
20. Occupational Safety and Health Administration (OSHA), *Occupational Noise Exposure, Typical Sound Levels (extrapolated),* Accessed at: https://www.osha.gov/noise#:~:text=OSHA%20sets%20legal%20limits%20on,for%20an%208%20hour%20day.

U.S. Environmental Protection Agency, *Protective Noise Levels* (EPA 550/9-79-100), November 1978.

Appendix A

NOISE DATA

Appendix A

NOISE DATA

Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	ST-1	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	2:27 - 2:37 PM
Location:	Gardena Early Education Center at southeast corner of the W 177th Street and Normandie Avenue intersection		
Noise Sources:	cars, birds, talking people, music		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
59.8	28.8	71.2	93.9

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	76
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.80 inHg
Humidity:	58%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	GDNA.001.s	Computer's File Name	LxTse_0007061-20220615 142742-GDNA.001.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 14:27:42	Duration	0:10:00.0
End Time	2022-06-15 14:37:42	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	59.8 dB		
LAE	87.6 dB	SEA	--- dB
EA	63.4 µPa²h		
LA_{peak}	93.9 dB	2022-06-15 14:32:50	
LAS_{max}	71.2 dB	2022-06-15 14:35:19	
LAS_{min}	28.8 dB	2022-06-15 14:27:42	
LA_{eq}	59.8 dB		
LC_{eq}	71.2 dB	LC_{eq} - LA_{eq}	11.4 dB
LAI_{eq}	61.6 dB	LAI_{eq} - LA_{eq}	1.8 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
59.8 dB	59.8 dB	0.0 dB

LDEN	LDay	LEve	LNight
59.8 dB	59.8 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	59.8 dB		71.2 dB		--- dB	
$Ls_{(max)}$	71.2 dB	2022-06-15 14:35:19	--- dB		--- dB	
$LS_{(min)}$	28.8 dB	2022-06-15 14:27:42	--- dB		--- dB	
$L_{Peak(max)}$	93.9 dB	2022-06-15 14:32:50	--- dB		--- dB	

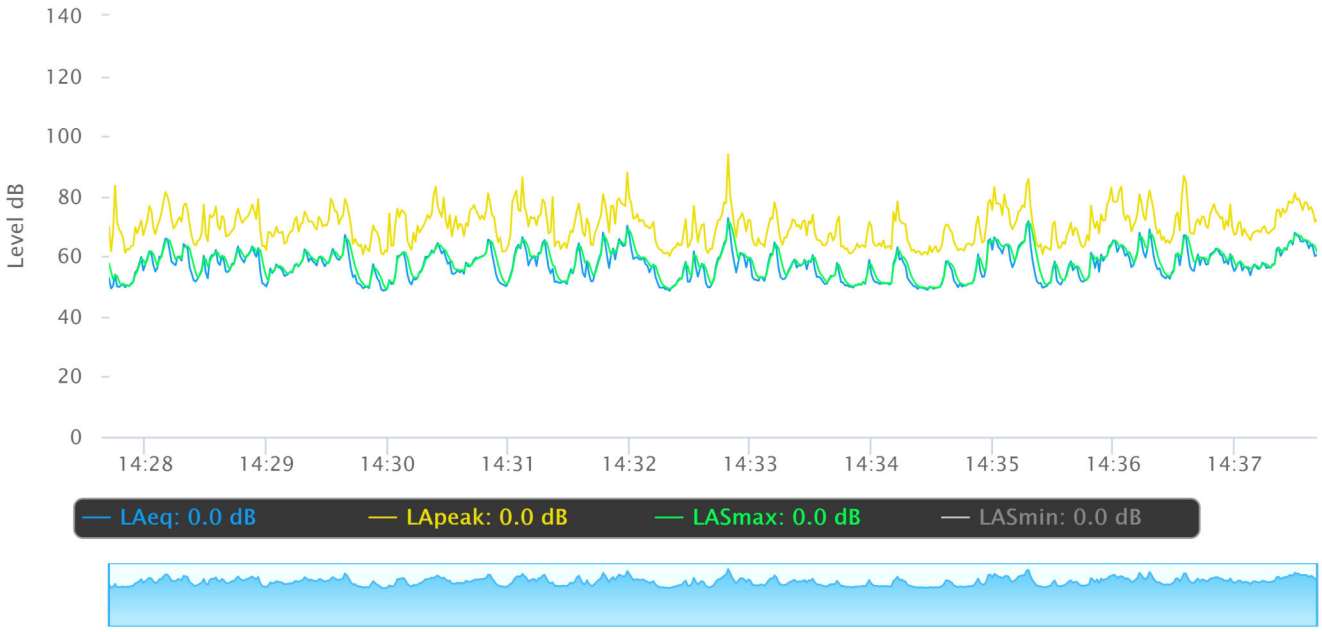
Overloads

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

Statistics

LAS 5.0	65.0 dB
LAS 10.0	63.6 dB
LAS 33.3	59.4 dB
LAS 50.0	57.3 dB
LAS 66.6	55.0 dB
LAS 90.0	50.9 dB

Time History



Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	ST-2	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	2:44 - 2:54 PM
Location:	Southeast corner of the W Cassidy Street and Normandie Avenue intersection		
Noise Sources:	cars, airplane, talking, honking, car stereo		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
69.6	51.3	79.2	92.5

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	76
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.80 inHg
Humidity:	59%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	GDNA.002.s	Computer's File Name	LxTse_0007061-20220615 144455-GDNA.002.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 14:44:55	Duration	0:10:00.0
End Time	2022-06-15 14:54:55	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	69.6 dB		
LAE	97.4 dB	SEA	--- dB
EA	613.6 µPa²h		
LA_{peak}	92.5 dB	2022-06-15 14:48:32	
LAS_{max}	79.2 dB	2022-06-15 14:48:32	
LAS_{min}	51.3 dB	2022-06-15 14:45:37	
LA_{eq}	69.6 dB		
LC_{eq}	81.4 dB	LC_{eq} - LA_{eq}	11.7 dB
LAI_{eq}	70.8 dB	LAI_{eq} - LA_{eq}	1.1 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
69.6 dB	69.6 dB	0.0 dB

LDEN	LDay	LEve	LNight
69.6 dB	69.6 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	69.6 dB		81.4 dB		--- dB	
$Ls_{(max)}$	79.2 dB	2022-06-15 14:48:32	--- dB		--- dB	
$LS_{(min)}$	51.3 dB	2022-06-15 14:45:37	--- dB		--- dB	
$L_{Peak(max)}$	92.5 dB	2022-06-15 14:48:32	--- dB		--- dB	

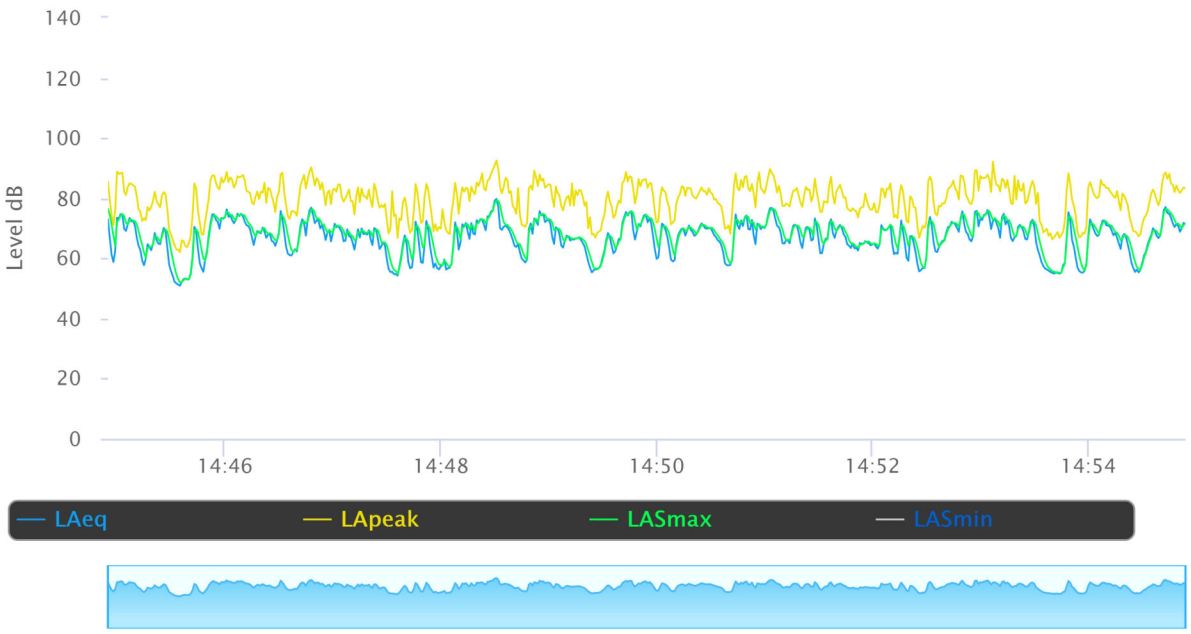
Overloads

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

Statistics

LAS 5.0	74.4 dB
LAS 10.0	73.2 dB
LAS 33.3	70.2 dB
LAS 50.0	68.2 dB
LAS 66.6	65.9 dB
LAS 90.0	58.5 dB

Time History



Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	ST-3	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	3:03 - 3:13 PM
Location:	Commercial center near the northwest corner of the Artesia Boulevard and Normandie Avenue intersection		
Noise Sources:	cars, vehicular traffic		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
71.3	56.3	84.9	97.6

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	76
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.80 inHg
Humidity:	59%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	GDNA.003.s	Computer's File Name	LxTse_0007061-20220615 150345-GDNA.003.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 15:03:45	Duration	0:10:00.0
End Time	2022-06-15 15:13:45	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	71.3 dB		
LAE	99.1 dB	SEA	--- dB
EA	902.7 µPa²h		
LA_{peak}	97.6 dB	2022-06-15 15:05:15	
LAS_{max}	84.9 dB	2022-06-15 15:05:15	
LAS_{min}	56.3 dB	2022-06-15 15:07:09	
LA_{eq}	71.3 dB		
LC_{eq}	79.6 dB	LC_{eq} - LA_{eq}	8.3 dB
LAI_{eq}	72.3 dB	LAI_{eq} - LA_{eq}	1.0 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
71.3 dB	71.3 dB	0.0 dB

LDEN	LDay	LEve	LNight
71.3 dB	71.3 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	71.3 dB		79.6 dB		--- dB	
$Ls_{(max)}$	84.9 dB	2022-06-15 15:05:15	--- dB		--- dB	
$LS_{(min)}$	56.3 dB	2022-06-15 15:07:09	--- dB		--- dB	
$L_{Peak(max)}$	97.6 dB	2022-06-15 15:05:15	--- dB		--- dB	

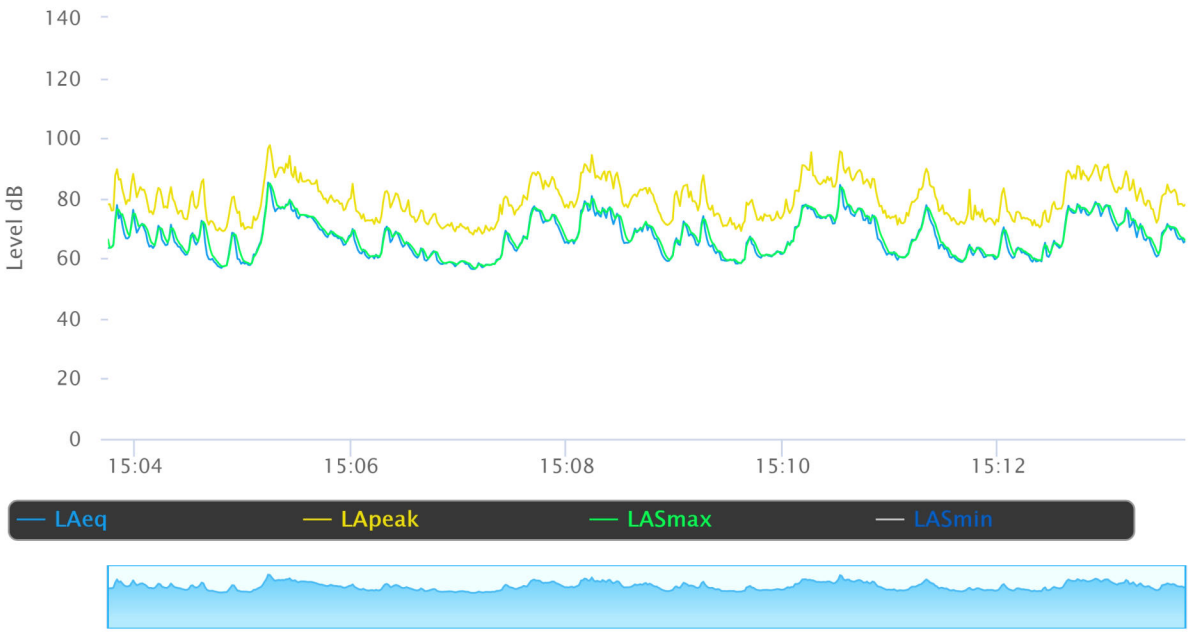
Overloads

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

Statistics

LAS 5.0	77.0 dB
LAS 10.0	75.9 dB
LAS 33.3	69.8 dB
LAS 50.0	66.2 dB
LAS 66.6	63.1 dB
LAS 90.0	59.3 dB

Time History



Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	ST-4	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	3:21 - 3:31 PM
Location:	In residential neighborhood near the corner of W 173rd Street Halldale Avenue		
Noise Sources:	motorcycle, birds, distant traffic		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
51.8	45.0	69.6	89.4

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	76
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.79 inHg
Humidity:	59%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	GDNA.004.s	Computer's File Name	LxTse_0007061-20220615 152105-GDNA.004.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 15:21:05	Duration	0:10:00.0
End Time	2022-06-15 15:31:05	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	51.8 dB		
LAE	79.5 dB	SEA	--- dB
EA	10.0 µPa²h		
LA_{peak}	89.4 dB	2022-06-15 15:24:16	
LAS_{max}	69.6 dB	2022-06-15 15:26:17	
LAS_{min}	45.0 dB	2022-06-15 15:29:18	
LA_{eq}	51.8 dB		
LC_{eq}	68.9 dB	LC_{eq} - LA_{eq}	17.2 dB
LAI_{eq}	55.2 dB	LAI_{eq} - LA_{eq}	3.4 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
51.8 dB	51.8 dB	0.0 dB

LDEN	LDay	LEve	LNight
51.8 dB	51.8 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	51.8 dB		68.9 dB		--- dB	
$Ls_{(max)}$	69.6 dB	2022-06-15 15:26:17	--- dB		--- dB	
$LS_{(min)}$	45.0 dB	2022-06-15 15:29:18	--- dB		--- dB	
$L_{Peak(max)}$	89.4 dB	2022-06-15 15:24:16	--- dB		--- dB	

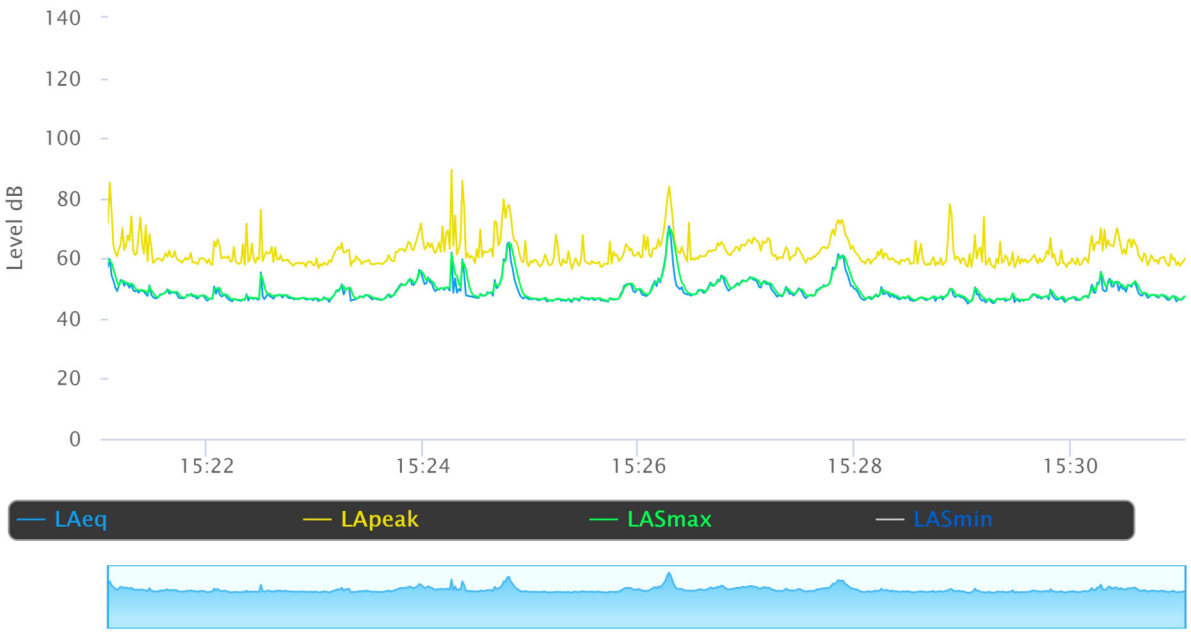
Overloads

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

Statistics

LAS 5.0	55.6 dB
LAS 10.0	52.5 dB
LAS 33.3	49.3 dB
LAS 50.0	47.7 dB
LAS 66.6	47.0 dB
LAS 90.0	46.2 dB

Time History



Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	ST-5	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	3:37 - 3:47 PM
Location:	Multi-family residences at east end of Main Street, west of Project site		
Noise Sources:	car, dog bark, owl, pressure washer		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
53.1	46.6	62.4	79.3

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	75
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.79 inHg
Humidity:	60%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	GDNA.005.s	Computer's File Name	LxTse_0007061-20220615 153734-GDNA.005.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 15:37:34	Duration	0:10:00.0
End Time	2022-06-15 15:47:34	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	53.1 dB		
LAE	80.8 dB	SEA	--- dB
EA	13.5 µPa²h		
LA_{peak}	79.3 dB	2022-06-15 15:37:34	
LAS_{max}	62.4 dB	2022-06-15 15:47:30	
LAS_{min}	46.6 dB	2022-06-15 15:39:38	
LA_{eq}	53.1 dB		
LC_{eq}	67.6 dB	LC_{eq} - LA_{eq}	14.5 dB
LAI_{eq}	54.4 dB	LAI_{eq} - LA_{eq}	1.3 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
53.1 dB	53.1 dB	0.0 dB

LDEN	LDay	LEve	LNight
53.1 dB	53.1 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	53.1 dB		67.6 dB		--- dB	
$Ls_{(max)}$	62.4 dB	2022-06-15 15:47:30	--- dB		--- dB	
$LS_{(min)}$	46.6 dB	2022-06-15 15:39:38	--- dB		--- dB	
$L_{Peak(max)}$	79.3 dB	2022-06-15 15:37:34	--- dB		--- dB	

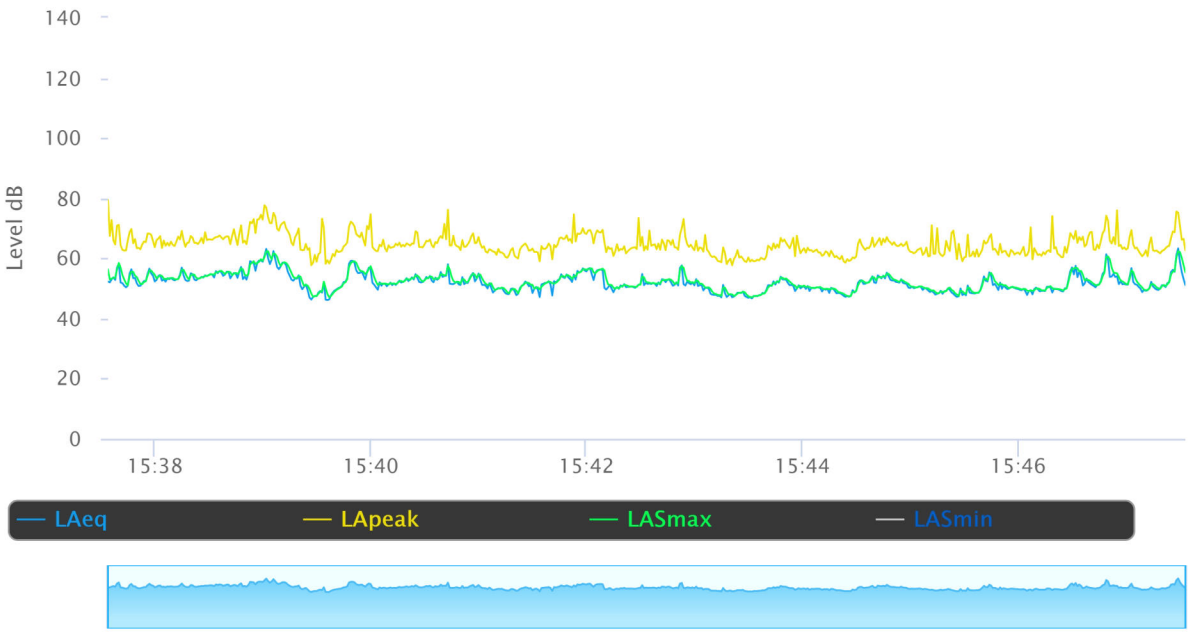
Overloads

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

Statistics

LAS 5.0	57.3 dB
LAS 10.0	55.6 dB
LAS 33.3	53.0 dB
LAS 50.0	51.7 dB
LAS 66.6	50.5 dB
LAS 90.0	48.5 dB

Time History



Noise Measurement Field Data

Project:	1450 Artesia Boulevard SP	**Job Number:**	197425001
Site No.:	LT-1	**Date:**	6/15/2022
Analyst:	Serena Lin, Alvar de la Torre	**Time:**	6/15/2022, 4:18 PM - 6/16/2022, 4:38 PM
Location:	Northwestern portion of Project site, adjacent to residential use to the west		
Noise Sources:	vehicular traffic		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
60.7	35.9	90.5	105.5

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	75
Wind (mph):	13
Sky:	Clear
Bar. Pressure:	29.79 inHg
Humidity:	60%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LT_.001.s	Computer's File Name	LxTse_0007061-20220615 161838-LT_.001.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-15 16:18:38	Duration	24:19:53.7
End Time	2022-06-16 16:38:31	Run Time	24:19:53.7
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	60.7 dB		
LAE	110.2 dB	SEA	--- dB
EA	11.5 mPa²h		
LA_{peak}	105.5 dB	2022-06-15 17:03:29	
LAS_{max}	90.5 dB	2022-06-15 17:47:33	
LAS_{min}	35.9 dB	2022-06-16 03:16:02	
LA_{eq}	60.7 dB		
LC_{eq}	70.3 dB	LC_{eq} - LA_{eq}	9.6 dB
LAI_{eq}	62.9 dB	LAI_{eq} - LA_{eq}	2.2 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	5	0:00:12.1
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
65.0 dB	61.8 dB	0.0 dB

LDEN	LDay	LEve	LNight
65.6 dB	61.8 dB	62.0 dB	57.8 dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	60.7 dB		70.3 dB		--- dB	
$Ls_{(max)}$	90.5 dB	2022-06-15 17:47:33	--- dB		--- dB	
$LS_{(min)}$	35.9 dB	2022-06-16 03:16:02	--- dB		--- dB	
$L_{Peak(max)}$	105.5 dB	2022-06-15 17:03:29	--- dB		--- dB	

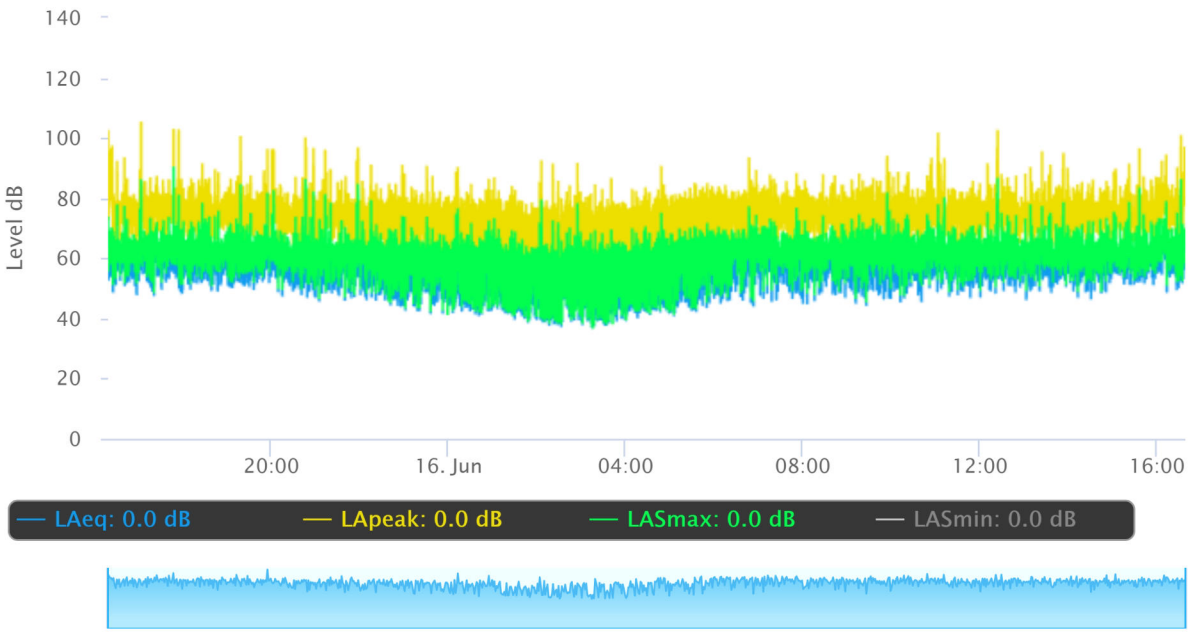
Overloads

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

Statistics

LAS 5.0	65.0 dB
LAS 10.0	63.6 dB
LAS 33.3	60.1 dB
LAS 50.0	57.6 dB
LAS 66.6	54.2 dB
LAS 90.0	46.3 dB

Time History



Project: **1450 Artesia Boulevard SP**

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
Leq to L10 factor		3

	Receptor (Land Use)	Distance (feet)	Shielding	Direction
1	Residential	150	0	E
2	Commercial	425	0	N
3	Residential	480	0	NW
4	Residential	20	0	W

					RECEPTOR 1		RECEPTOR 2		RECEPTOR 3		RECEPTOR 4	
Construction Phase	**Equipment Type**	**No. of Equip.**	**Acoustical Usage Factor**	**Reference Noise Level at 50ft per Unit, Lmax**	**Noise Level at Receptor 1, Lmax**	**Noise Level at Receptor 1, Leq**	**Noise Level at Receptor 2, Lmax**	**Noise Level at Receptor 2, Leq**	**Noise Level at Receptor 3, Lmax**	**Noise Level at Receptor 3, Leq**	**Noise Level at Receptor 4, Lmax**	**Noise Level at Receptor 4, Leq**
Demolition												
	Concrete Saw	1	20%	90	80.1	73.1	71.0	64.0	70.0	63.0	97.6	90.6
	Dozer	2	40%	82	75.2	71.2	66.1	62.1	65.1	61.1	92.7	88.7
	Excavator	3	40%	81	75.9	71.9	66.9	62.9	65.8	61.8	93.4	89.5
Combined LEQ						**76.9**		**67.9**		**66.8**		**94.4**
Site Preparation												
	Dozer	3	40%	82	76.9	72.9	67.9	63.9	66.8	62.8	94.4	90.5
	Tractor	4	40%	84	80.5	76.5	71.4	67.5	70.4	66.4	98.0	94.0
Combined LEQ						**78.1**		**69.0**		**68.0**		**95.6**
Grading												
	Excavator	1	40%	81	71.2	67.2	62.1	58.1	61.1	57.1	88.7	84.7
	Dozer	1	40%	82	72.2	68.2	63.1	59.1	62.1	58.1	89.7	85.7
	Tractor	3	40%	84	79.2	75.2	70.2	66.2	69.1	65.1	96.7	92.8
	Grader	1	40%	85	75.5	71.5	66.4	62.4	65.4	61.4	93.0	89.0
Combined LEQ						**77.7**		**68.7**		**67.6**		**95.2**
Building Construction												
	Tractor	3	40%	84	79.2	75.2	70.2	66.2	69.1	65.1	96.7	92.8
	Crane	1	16%	81	71.1	63.1	62.0	54.1	61.0	53.0	88.6	80.6
	Generator	1	50%	81	71.1	68.0	62.0	59.0	61.0	57.9	88.6	85.5
	Welder/Torch	1	40%	74	64.5	60.5	55.4	51.4	54.4	50.4	82.0	78.0
	Man Lift	3	20%	75	69.9	62.9	60.9	53.9	59.8	52.8	87.4	80.4
Combined LEQ						**76.5**		**67.5**		**66.4**		**94.0**
Architectural Coating												
	Compressor (air)	1	40%	78	68.2	64.2	59.1	55.1	58.1	54.1	85.7	81.7
Combined LEQ						**64.2**		**55.1**		**54.1**		**81.7**
Paving												
	Pavement Scarafier	2	20%	90	83.0	76.0	73.9	66.9	72.9	65.9	100.5	93.5
	Roller	2	20%	80	73.5	66.5	64.4	57.4	63.4	56.4	91.0	84.0
	Paver	2	50%	77	70.7	67.7	61.6	58.6	60.6	57.6	88.2	85.2
Combined LEQ						**77.0**		**67.9**		**66.9**		**94.5**

Source for Ref. Noise Levels: RCNM, 2005