Appendix 4.7-1

Acoustical Assessment

Prepared by

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Expect More. Experience Better.

Acoustical Assessment
Artesia Place Project
(Artesia Boulevard Corridor Specific Plan Amendment)
City of Artesia, California

Kimley»Horn
Expect More. Experience Better.

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LIST OF ABBREVIATED TERMS

ABCSP	Artesia Boulevard Corridor Specific Plan
ADT	average daily traffic
AMC	Artesia Municipal Code
dBA	A-weighted sound level
DDA	Disposition and Development Agreement
CEQA	California Environmental Quality Act
CNEL	community equivalent noise level
L_{dn}	day-night noise level
dB	decibel
L_{eq}	equivalent noise level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	heating ventilation and air conditioning
Hz	hertz
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 Artesia Place Project (Artesia Boulevard Corridor Specific Plan [ABCSP] Amendment Project) (Project). The purpose of this Acoustical Assessment is to evaluate the potential Project construction and operational noise and vibration levels and determine the level of impact the Project would have on the environment.

1.1 Project Location and Setting

The Project site is in the City of Artesia (City), approximately 14 miles southeast of downtown Los Angeles; see **Figure 1: Regional Vicinity Map**. The Project site consists of one approximately 3.3 acre parcel (Assessor Parcel Number [APN] 7035-016-064) located at 11709 Artesia Boulevard; see **Figure 2: Local Vicinity Map**. The Project site is generally bound by roadways, with Artesia Boulevard on the south, Alburtis Avenue on the east, and Flallon Avenue on the west.

The Project site is at the northeast portion of the 21-acre ABCSP area, which extends along Artesia Boulevard, generally between Corby Avenue on the east and Gridley Road on the west. As shown in **Figure 3: Project Site Boundary Within ABCSP**, the Project site is at the eastern extent of ABCSP's Quadrant 2, which is comprised of approximately 6.0 acres located north of Artesia Boulevard between Alburtis Avenue on the east and Roseton Avenue on the west. Two major freeways provide regional access to the Project site: Artesia Freeway (State Route 91 [SR-91]) to the north; and Interstate 605 (I-605) to the west. From SR-91, access to the Project site is provided via Pioneer Boulevard, which is east of the Project site. From I-605, access to the Project site is provided via Artesia Boulevard, which bisects the ABCSP area. Local access to the Project site is provided via Artesia Boulevard, which is a four-lane divided arterial roadway oriented east-west through the ABCSP area. Local access is also provided via Pioneer Boulevard, which is a four-lane arterial oriented north-south to the west of the Project site.

The City encompasses approximately 1.6 square miles in southeast Los Angeles County. The City is a suburban jurisdiction with a mix of residential densities, although low-density residential uses predominate. The City also contains a mix of retail commercial, office, and industrial uses.

The General Plan land use designation for the ABCSP area is Gateway Community Commercial, except for two parcels southeast of the Roseton Avenue at Artesia Boulevard intersection (within ABCSP's Quadrant 4), which are designated Low Density Residential.[1] The Gateway Community Commercial designation provides for a complementary mix of job-creating industrial, manufacturing uses, and local/regional-serving commercial retail and office uses.[2] The Low Density Residential designation, which is the City's predominant land use designation, is characterized by single-family, detached units.[3]

The Project site is in ABCSP Quadrant 2. Quadrant 2 is comprised of five parcels with four unique landowners. Quadrant 2 supports a variety of commercial, retail, and industrial uses. Existing uses include a Public Storage complex, a small industrial building, and a retail center that was redeveloped in 2004. The Project site comprises the eastern portion of Quadrant 2.

[1] City of Artesia. (2010). *City of Artesia General Plan 2030*. Exhibit LU-3: General Plan 2030 Land Use. http://www.cityofartesia.us/DocumentCenter/View/226/Artesia-General-Plan?bidId=.
[2] City of Artesia. (2010). *City of Artesia General Plan 2030*. Land Use Sub-Element. Page LU-10. http://www.cityofartesia.us/DocumentCenter/View/226/Artesia-General-Plan?bidId=.
[3] City of Artesia. (2010). *City of Artesia General Plan 2030*. Land Use Sub-Element. Page LU-9. http://www.cityofartesia.us/DocumentCenter/View/226/Artesia-General-Plan?bidId=.

The Project site is currently vacant. California Dairies, Inc., a dairy manufacturing plant totaling approximately 27,290 gross square feet (SF) occupied the Project site until it was demolished in 2022. All existing onsite utility connections remain capped and abandoned. The Project site is generally surrounded by residential, business park, commercial, and light industrial land uses.

1.2 Project Description

The Project proposes construction and operation of a mixed-use development comprised of 80 dwelling units (DU) and approximately 11,257 GSF of non-residential (commercial and office) land uses, as described below. To allow the proposed development, the Applicant proposes to amend the ABCSP. The proposed Zoning Code Text Amendment (Specific Plan Amendment) would amend the ABCSP to permit residential uses on the Project site, establish a maximum allowable development within the Project site, and amend the ABCSP's Design Standards and Guidelines (among other chapters). In addition to the Zoning Code Text Amendment, the Project seeks approval of the following entitlements: a General Plan Amendment; Design Review; Development Agreement; Vesting Tentative Tract Map No. 83834; and CEQA EIR certification.

The Project would construct a mixed-use development generally comprised of two portions – a commercial portion and a residential portion – connected by pedestrian walkways. **Figure 4: Conceptual Site Plan**, depicts the proposed land plan. In total, the Project proposes 80 DU and approximately 11,257 GSF of non-residential (commercial and office) land uses, including the components summarized in **Table 1: Project Development Summary** below:

Table 1: Project Development Summary

Land Use	Residential (DU)	Non-Residential (GSF)			
		Office	Restaurant	Retail	Total
Townhomes	59				
Mixed-Use Carriage Townhomes (Commercial Ground Floor)	4		1,725	1,725	*3,450*
Shopkeeper Units (Commercial Condominiums with Townhomes above)	8		1,332	1,332	*2,664*
Commercial			1,350	1,350	*2,700*
Live/Work Townhomes	9	2,443			*2,443*
Total	***80***	***2,443***	***4,407***	***4,407***	***11,257***

DU = dwelling units; GSF = gross square feet

The following proposed land uses would be developed at a density of 23.2 dwelling units per acre (DU/AC) and floor area ratio (FAR) of 1.21:

- Townhomes: 10 buildings with 59 three-story townhome units.
- Mixed-Use Carriage Townhomes: One mixed-use building with approximately 3,450 GSF of commercial uses on the ground level and 4 carriage-type townhome units above;
- Shopkeeper Units: Two buildings with 8 commercial condominiums totaling approximately 2,664 GSF on the ground level and 8 townhome units above;
- Commercial: One building with approximately 2,700 GSF of commercial uses; and
- Live/Work Townhomes: Two buildings with approximately 2,443 GSF of office uses and 9 townhome units.

The Project is designed to be a mixed-use, pedestrian-oriented, and placemaking development with various commercial opportunities. The various buildings are linked by a central pedestrian walkway through a series of landscaped courtyards. The Project site is divided into two portions: the northern portion is bisected by the central pedestrian walkway, pool, and pool building and consists of traditional paseo rowtown-inspired residential clustering around a recreation area; and the southern portion fronting Artesia Boulevard consists of the urban commercial mixed-use buildings.

The Project site is designated Gateway Community Commercial.[4] As noted above, Gateway Community Commercial designation provides for a complimentary mix of job-creating industrial and manufacturing uses, and local/regional-serving commercial retail and office uses. The City's Zoning Map classifies the Project site as Artesia Boulevard Corridor Specific Plan (ABCSP).[5] The ABCSP establishes the City's vision for a 21-acre area along Artesia Boulevard, between Gridley Road and Pioneer Boulevard. For Quadrant 2 of the ABSCP area, the City's primary goal is to establish a retail, commercial, and industrial center.

[4] City of Artesia. (2010). *City of Artesia General Plan 2030*. Exhibit LU-3: General Plan 2030 Land Use. http://www.cityofartesia.us/DocumentCenter/View/226/Artesia-General-Plan?bidId=.

[5] City of Artesia. (2019). *Zoning Map*. https://www.cityofartesia.us/DocumentCenter/View/1877/Zoning-Map-January-7-2019?bidId=.

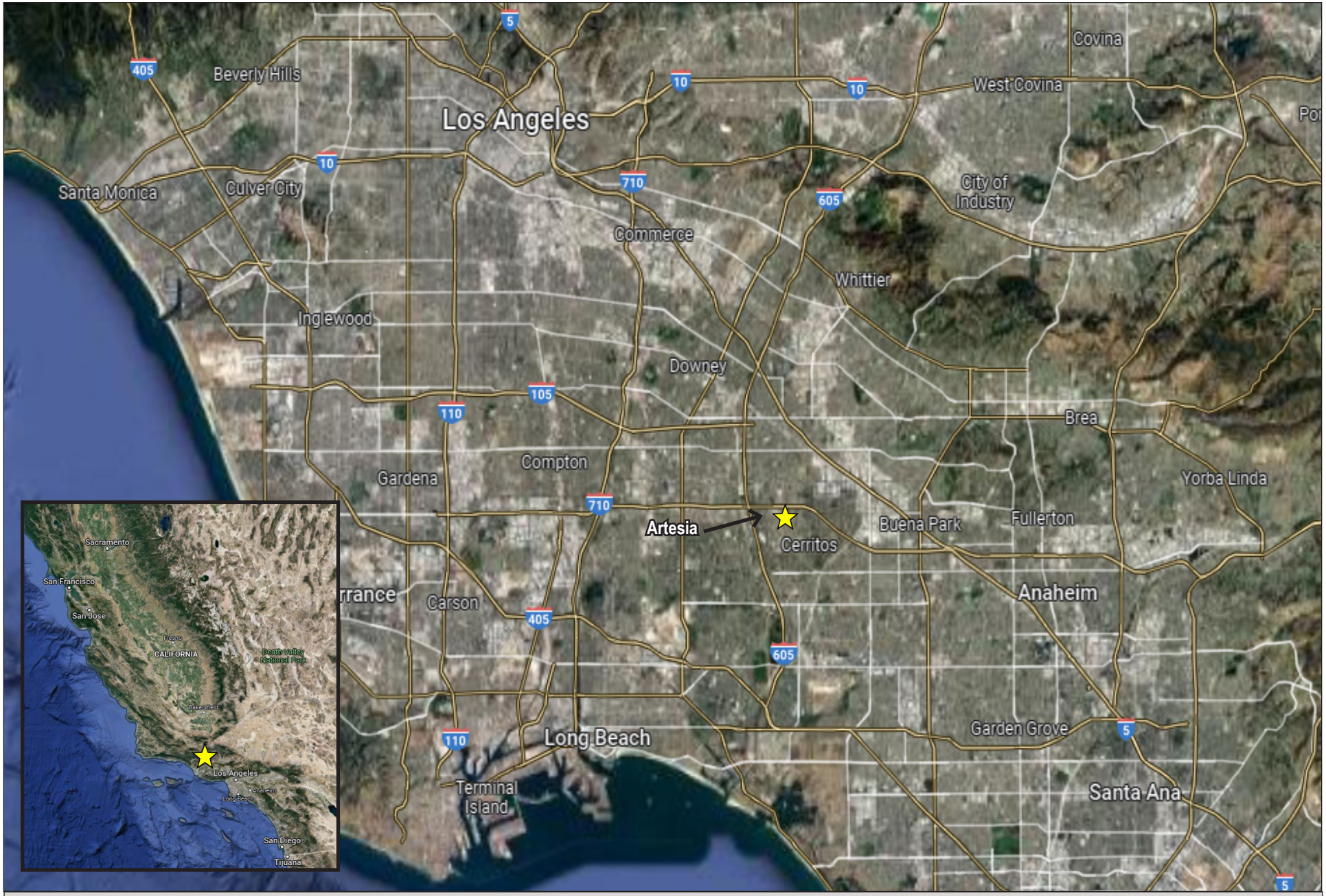

FIGURE 1: REGIONAL VICINITY MAP

Artesia Place Project (Artesia Boulevard Corridor Specific Plan Amendment)

NOT TO SCALE

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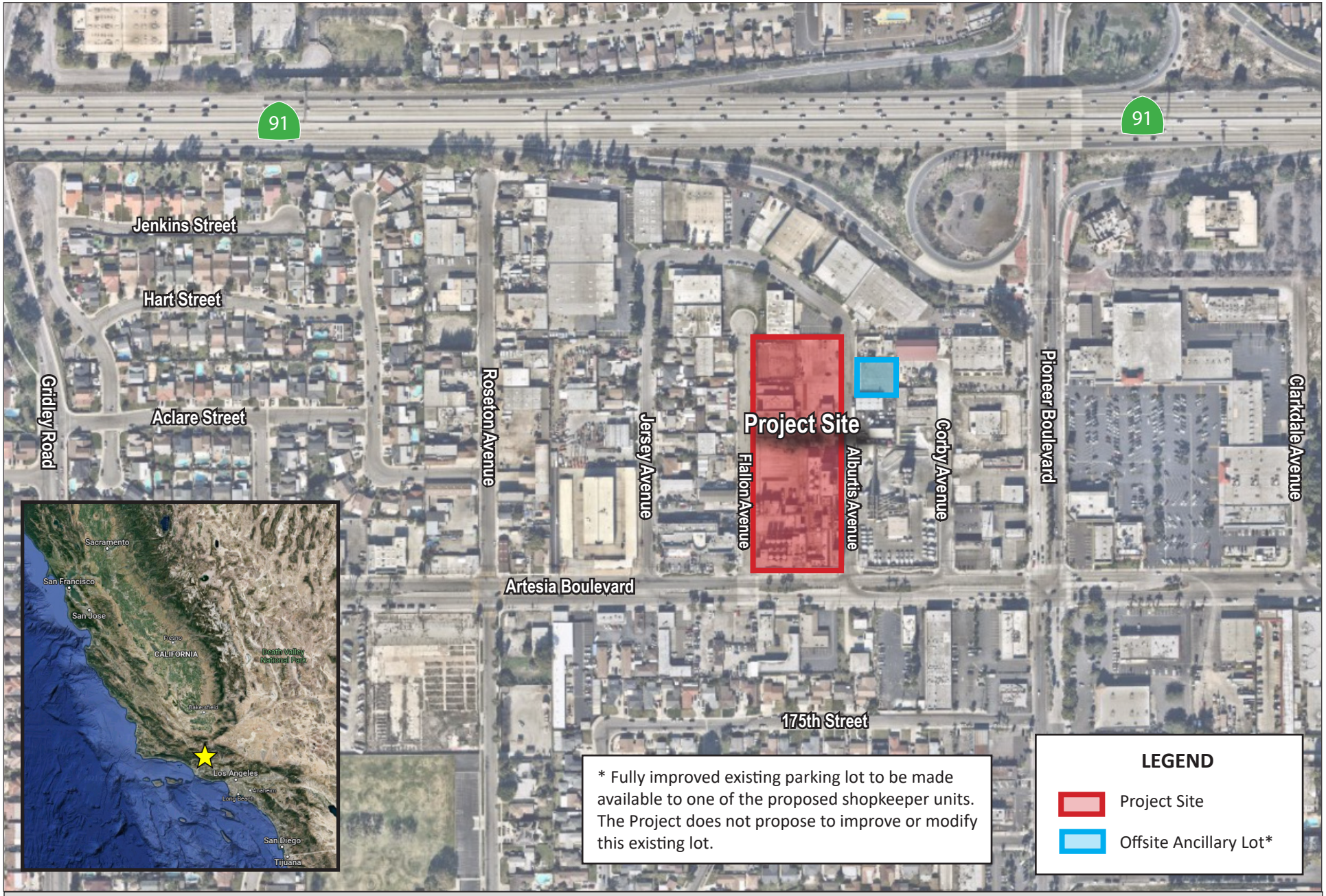

FIGURE 2: LOCAL VICINITY MAP

Artesia Place Project (Artesia Boulevard Corridor Specific Plan Amendment)

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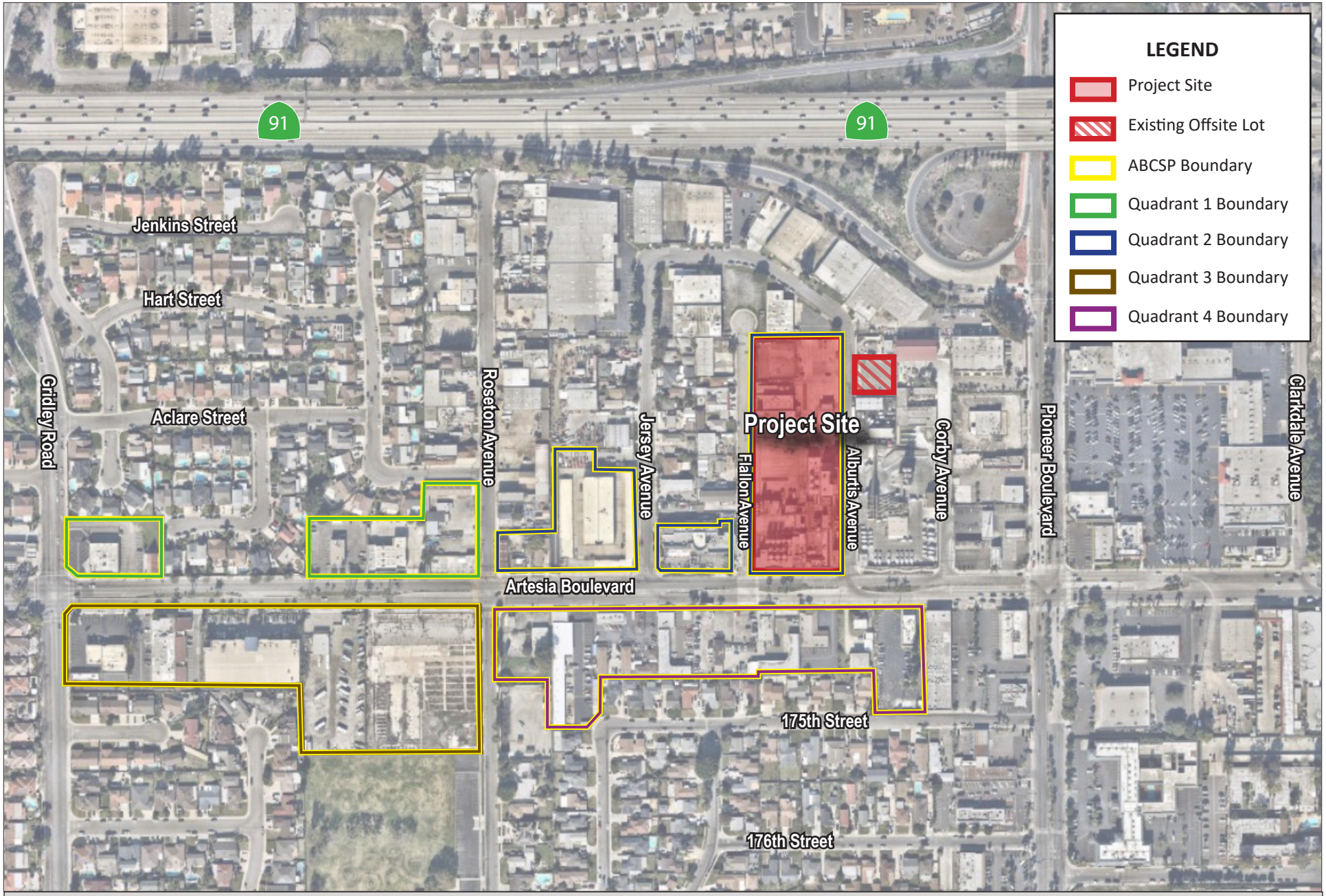

FIGURE 3: PROJECT SITE BOUNDARY WITHIN ABCSP

Artesia Place Project (Artesia Boulevard Corridor Specific Plan Amendment)

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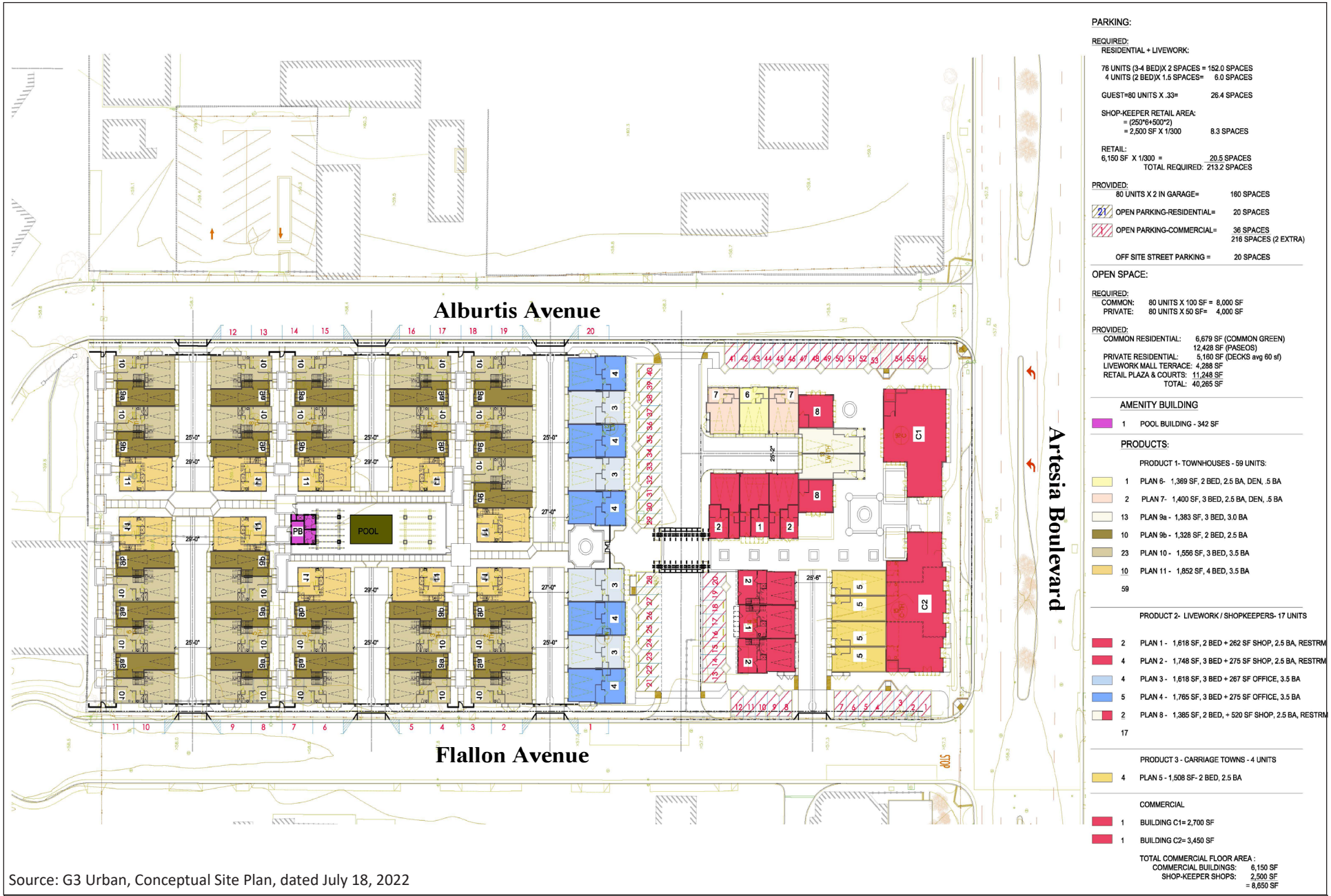

Source: G3 Urban, Conceptual Site Plan, dated July 18, 2022

FIGURE 4: CONCEPTUAL SITE PLAN

Artesia Place Project (Artesia Boulevard Corridor Specific Plan Amendment)

NOT TO SCALE

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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. The sound from individual local sources is superimposed on this background noise. 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 2: Typical Noise Levels** provides typical noise levels.

Table 2: 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}) represents the continuous sound pressure level 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 3: Definitions of Acoustical Terms**.

Table 3: 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.
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 a.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 sound's average character or the variations' statistical behavior 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 predicted models' accuracy depends on the distance between the noise receptor and 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.[6] 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.[7] Under the dB scale, three sources of equal loudness together would produce an increase of approximately 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.[8] 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.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the noise receptor and noise source reduces the noise level by about 5 dBA, while a solid wall or berm

[6] *Noise Sources and Their Effects*. Available at: https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm
[7] FHWA, *Noise Fundamentals,* 2017. Available at: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm
[8] California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, Page 2-29, September 2013.

reduces noise levels by 5 to 10 dBA.[9] 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.[10] 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[11]:

- 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 (OSHA) 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

[9] James P. Cowan, *Handbook of Environmental Acoustics,* 1994.

[10] Compiled from James P. Cowan, *Handbook of Environmental Acoustics,* 1994 and Cyril M. Harris, Handbook of Noise Control, 1979.

[11] Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and FHWA, *Noise Fundamentals,* 2017.

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.[12]

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 or heavy equipment use during construction). 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 4: 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 indivisual's sensitivity. 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.

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.

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

Table 4: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations

Maximum PPV (in/sec)	Vibration Annoyance Potential Criteria	Vibration Damage Potential Threshold Criteria	FTA Vibration Damage Criteria
0.008	--	Extremely fragile historic buildings, ruins, ancient monuments	--
0.01	Barely Perceptible	--	--
0.04	Distinctly Perceptible	--	--
0.1	Strongly Perceptible	Fragile buildings	--
0.12	--	--	Buildings extremely susceptible to vibration damage
0.2	--	--	Non-engineered timber and masonry buildings
0.25	--	Historic and some old buildings	--
0.3	--	Older residential structures	Engineered concrete and masonry (no plaster)
0.4	Severe	--	--
0.5	--	New residential structures, Modern industrial/commercial buildings	Reinforced-concrete, steel or timber (no plaster)

PPV = peak particle velocity; in/sec = inches per second; FTA = Federal Transit Administration

Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020 and Federal Transit administration, *Transit Noise and Vibration Assessment Manual*, 2018.

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, hotel rooms, 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 and habitable rooms (including hotels), the acceptable interior noise limit for new construction is 45 dBA CNEL.

3.2 Local

City of Artesia General Plan

The *City of Artesia General Plan 2030* (Artesia General Plan) Noise Sub-Element has determined a number of policies that are directed at controlling or mitigating environmental noise effects. **Table 5: Noise and Land Use Compatibility Matrix** illustrates the California State guidelines established by the State Department of Health Services for acceptable noise levels for each county and city. These standards and criteria are incorporated into the City's land use planning process to reduce future noise and land use incompatibilities. **Table 5** is the primary tool that allows the City to ensure integrated planning for compatibility between land uses and outdoor noise.[13]

[13] City of Artesia, *City of Artesia General Plan 2030,* 2010.

Table 5: City of Artesia Noise and Land Use Compatibility Matrix				
Land Use Category	**Community Noise Exposure (CNEL dB)**			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	75 - 85
Multi-Family Homes	50 - 65	60 - 70	70 - 75	70 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 - 85
Transient Lodging - Motels, Hotels	50 - 65	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	-	50 - 70	-	65 - 85
Sports Arena, Outdoor Spectator Sports	-	50 - 75	-	70 - 85
Playgrounds, Neighborhood Parks	50 - 70	-	67.5 – 75	72.5 -85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	-	70 - 80	80 - 85
Office Buildings, Business and Professional Commercial	50 - 70	67.5 – 77.5	75 - 85	-
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	-
Notes: Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction 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. Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Clearly Unacceptable: New construction or development should generally not be undertaken.				
Source: City of Artesia, *City of Artesia General Plan 2030*, Noise Element, 2010				

The following goals and policies from the Noise Sub-Element are applicable to the Project:

Goal N 1: Land use planning decisions, including planning for new development, consider noise impacts.

Policy N 1.1 Permit only those new development or redevelopment projects that have incorporated appropriate mitigation measures, so that standards contained in the Noise Sub-Element or adopted ordinances are met.

Policy N 1.2 Consider noise impacts associated with the development of non-residential uses in the vicinity of residential uses.

Policy Action N 1.1.2 Require a noise impact evaluation for projects, if determined necessary through the environmental review process. If noise abatement is found

necessary, require implementation mitigation measures based on a technical study prepared by a qualified acoustical professional.

Policy Action N 1.1.3 Implement noise mitigation by placing conditions of approval on development projects and require a clear description of mitigation on subdivision maps, site plans, and building plans for inspection purposes.

Policy N 1.2 Consider noise impacts associated with the development of non-residential uses in the vicinity of residential uses.

Policy Action N 1.2.1 Require that any proposed development near existing residential land uses demonstrate compliance with the City's Noise Ordinance prior to the approval of the project.

Goal N 2: Noise impacts from transportation sources are minimized.

Goal N 4: Noise impacts to noise sensitive receptors are minimized, ensuring that City and State interior and exterior noise levels are not exceeded.

Policy N 1.1 Ensure Community Noise Equivalent Levels (CNEL) for noise sensitive land uses meet normally acceptable levels, as defined by State standards.

Policy Action N 4.1.1 Require buffers or appropriate mitigation of potential noise sources on noise sensitive areas.

City of Artesia Municipal Code

The City of Artesia has established citywide interior and exterior noise level standards in a comprehensive Noise Ordinance within the *Artesia Municipal Code* (AMC). The purpose of the Ordinance is to control loud, unnecessary, and unusual noises, sounds, or vibrations emanating from areas of the City. The Noise Ordinance (AMC Title 5, Chapter 2: Noise) establishes daytime and nighttime permissible sound limits or levels for all residentially zoned properties in the City as well as prohibited noises.[14]

Section 5-2.03 Permissible Exterior Sound Limits or Levels

A. The noise, sound or vibration limits or levels imposed by this section shall apply to all residentially zoned properties in the City.

B. Except as otherwise allowed in AMC Chapter 2 Noise, no person, from any location within the City, shall create or allow the creation of noise, sound or vibration on any property owned, leased, occupied, or other controlled by such person, which causes the noise level on any residential property to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than thirty (30) minutes in any hour as measured at any property line:

[14] City of Artesia, *City of Artesia General Plan 2030 – Noise Sub-Element,* http://www.cityofartesia.us/DocumentCenter/View/226/Artesia-General-Plan?bidId=, accessed July 12, 2022.

Table 6: Permitted Exterior Noise Level	
Time Period	**Noise Level**
7:00 a.m. – 10:00 p.m.	55 dB(A)
10:00 p.m. – 7:00 a.m.	50 dB(A)

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above shall be reduced by five (5) dB(A).

C. If the intruding noise source is continuous and cannot be reasonably discontinued for sufficient time in which the ambient noise level can be determined, the presumed ambient noise level shall be used.

D. Increases in noise levels prescribed in this section are permitted in accordance with the following:

Table 7: Permitted Increase in Exterior Noise Level	
Increase in Noise Level	**Duration of Increase in Minutes Per Hour**
5 dB(A)	15
10 dB(A)	5
15 dB(A)	1
20 dB(A)	Less than one minute

Section 5-2.04 Permissible Interior Sound Limits or Levels

A. The noise, sound or vibration limits or levels imposed by this section shall apply to all interior spaces within buildings or structures on residentially zoned properties in the City.

B. Except as otherwise allowed in this chapter, no person, from any location within the City, shall create or allow the creation of noise, sound or vibration on any property owned, leased, occupied, or other controlled by such person, which causes the noise level on any residential property to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than five (5) minutes in any hour:

Table 8: Permitted Interior Noise Level	
Time Period	**Noise Level**
7:00 a.m. – 10:00 p.m.	55 dB(A)
10:00 p.m. – 7:00 a.m.	45 dB(A)

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above shall be reduced by five (5) dB(A).

C. If the intruding noise source is continuous and cannot be reasonably discontinued for sufficient time in which the ambient noise level can be determined, the presumed ambient noise level shall be used.

D. Increases in noise levels prescribed in this section are permitted in accordance with the following:

Table 9: Permitted Increase in Interior Noise Level	
Increase in Noise Level	**Duration of Increase in Minutes Per Hour**
5 dB(A)	1
10 dB(A)	Less than one minute

Section 5-2.05 – Prohibited Noises—General Standard

Notwithstanding any other provision of this chapter, and in addition thereto, it is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise, sound or vibration which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The factors which shall be considered in determining whether such noise violates the provisions of this section shall include, but not be limited to, the following:

a. The volume of the noise;
b. The intensity of the noise;
c. Whether the nature of the noise is usual or unusual;
d. Whether the origin of the noise is natural or unnatural;
e. The volume and intensity of the background noise, if any;
f. The proximity of the noise to residential sleeping facilities;
g. The nature and zoning of the area within which the noise emanates;
h. The density of the inhabitation of the area within which the noise emanates;
i. The time of the day or night the noise occurs;
j. The duration of the noise;
k. Whether the noise is recurrent, intermittent, or constant; and
l. Whether the noise is produced by a commercial or noncommercial activity. (Ord. 599, § 1)

Section 5-2.06 Prohibited Noises – Specific Violations

Except as set forth in Section 5-2.07 of AMC Chapter 2 Noise, the following act and the causing or permitting thereof, is specifically declared to be a violation of AMC Chapter 2:

A. *Radios, Phonographs, Etc.* The using, operating or permitting to be played used or operated between the hours of 10:00 p.m. and 7:00 a.m. of any radio, musical instrument, phonograph, television set, or instrument or device similar to those heretofore specifically mentioned (hereinafter "device") for the production or reproduction of sound in volume sufficiently loud as to be plainly audible at a distance of fifty (50) feet or more from the property line of the property from which the noise, sound or vibration is emanating, and the using, operating or permitting to be played, used or operated between the hours of 7:00 a.m. and 10:00 p.m. of any such device for the production or reproduction of sound in volume sufficiently loud as to be plainly audible at a distance of two hundred (200) feet or more from the property line of the property from which the noise, sound or vibration is emanating.

B. *Band or Orchestral Rehearsals.* The conducting of or carrying on, or allowing the conducting or carrying on of band or orchestral concerts or rehearsals or practice between the hours of 10:00 p.m. and 7:00 a.m. sufficiently loud as to be plainly audible at a distance of fifty (50) feet or more from the property line of the property where the concert, rehearsal or practice is occurring, and

the conducting of or carrying on, or allowing the conducting or carrying on of band or orchestral concerts or rehearsals or practice between the hours of 7:00 a.m. and 10:00 p.m. sufficiently loud as to be plainly audible at a distance of two hundred (200) feet or more from the property line of the property where the concert, rehearsal or practice is occurring.

C. *Engines, Motors and Mechanical Devices Near Residential District*. The sustained, continuous or repeated operation or use between the hours of 8:00 p.m. and 7:00 a.m. of any motor or engine or the repair, modification, reconstruction, testing or operation of any automobile, motorcycle, machine, contrivance, or mechanical device or other contrivance or facility unless such motor, engine, automobile, motorcycle, machine or mechanical device is enclosed within a sound insulated structure so as to prevent noise and sound from being plainly audible at: (1) a distance of fifty (50) feet or more from the property line of the property from which the noise, sound or vibration is emanating or (2) the exterior wall of any adjacent residence, whichever is less.

D. *Motor Vehicles*. Racing the engine of any motor vehicle or needlessly bringing to a sudden start or stop of any motor vehicle.

E. *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 8:00 p.m. and 7:00 a.m. in volume sufficiently loud as to be plainly audible at a distance of fifty (50) feet or more from the property line of the property where the activity is occurring.

F. *Construction*. Operating or causing the operation of any tools, equipment, impact devices, derricks or hoists used on construction, drilling, repair, alteration, demolition or earthwork, between the hours of 7:00 p.m. and 7:00 a.m. on weekdays or at any time on Sunday or Federal holiday.

G. *Nonemergency Signaling Devices*. Sounding or permitting the sounding of any bell, chime, siren, whistle or similar device, intended primarily for nonemergency purposes between the hours of 8:00 p.m. and 7:00 a.m. Sound sources included within this provision may be exempted by a variance issued by the Planning Commission

H. *Emergency Signaling Devices*

(1) The intentional sounding, or permitting the sounding, outdoors of any emergency signaling device including fire, burglar, civil defense alarm, siren, whistle or similar emergency signaling device, for testing, except as provided in Subsection 5-2.06(h)(2).

(2) Testing of an emergency signaling device shall not occur between the hours of 8:00 p.m. and 7:00 a.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed sixty (60) seconds. Testing of the emergency signaling system shall not occur more than once in each calendar month.

(3) Sounding or permitting the sounding of any exterior burglar or fire alarm unless such alarm is terminated within fifteen (15) minutes of activation.

(4) Sounding or permitting the sounding of any motor vehicle alarm unless such alarm is terminated within five (5) minutes of activation.

(5) Sounding or permitting the sounding of any motor vehicle alarm more than three (3) times of any duration in any twenty-four (24) hour period.

I. *Commercial Establishments Adjacent to Residential Property.* Continuous, repeated or sustained noise, sound or vibration from the premises of any commercial establishment, including any outdoor area that is a part or under the control of the establishment, which is licensed by the City and is adjacent to one or more residential dwelling units, between the hours of 10:00 p.m. and 7:00 a.m., that is plainly audible from the exterior wall of the adjacent residential dwelling unit

J. *Leaf Blowers.* The use or operation or allowing the use or operation of any leaf blower, as defined and regulated in Chapter 12 of Title 5 of this Code, between the hours of 8:00 p.m. and 8:00 a.m. of the next day. (Ord. 599, § 1)

Section 5-2.07 – Exemptions.

The following activities shall be exempted from the AMC Chapter 5.2 (Noise):

A) Outdoor events, such as gatherings, fairs, bazaars, festivals and similar events if and to the extent the events are conducted pursuant to a temporary use permit issued by the City.

B) The emission of sound for the purpose of alerting persons to the existence of an emergency or the emission of sound in the performance of emergency work. For the purposes of this section, "emergency" means a condition that constitutes an immediate threat to public safety, health or welfare or to property.

C) Noise sources associated with the maintenance of real property such as the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool or similar tool, provided such activities take place between 7:00 a.m. and 7:00 p.m. on weekdays and the hours of 9:00 a.m. and 6:00 p.m. on weekends and holidays.

D) Any activity to the extent regulation thereof has been preempted by State or Federal law.

E) Activities of the Federal, State or local jurisdiction while performing governmental duties.

F) Warning devices necessary for the protection of public safety as for example, police, fire and ambulance sirens and train horns.

G) Activities conducted on public playgrounds, public or private school grounds including, but not limited to, school athletic and school entertainment events and band or orchestral rehearsals for school athletic or school entertainment events.

4 EXISTING CONDITIONS

4.1 Existing Noise Sources

The Project site and surrounding area are impacted by various mobile and stationary noise sources, as described below. Artesia Boulevard located to the south of the Project site and the concrete mixing plant located to the east are the primary noise sources in the Project vicinity.

Mobile Sources

Traffic along Artesia Boulevard to the south, Alburtis Avenue to the east, and Flallon Avenue to the west are the most common and prominent mobile noise sources in the Project area. Existing roadway noise levels were calculated for these roadway segments in the Project vicinity. These calculations were accomplished using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and traffic data from the Project's Traffic Impact Analysis (Kimley-Horn and Associates, August 2022). The noise prediction model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (also referred to as energy rates) used in the FHWA model have been modified to reflect average vehicle noise rates identified for California by the California Department of Transportation (Caltrans). The Caltrans data indicates that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. The average daily noise levels along roadway segments near the Project site are included in **Table 10: Existing Traffic Noise Levels**. As shown in **Table 10**, existing traffic noise levels in the Project vicinity range between 50.2 dBA CNEL and 64.2 dBA CNEL.

Table 10: Existing Traffic Noise Levels

Roadway Segment	ADT	dBA CNEL[1]
Artesia Boulevard		
West of Flallon Ave	16,169	64.1
East of Flallon Ave &	16,295	64.2
West of Alburtis Ave	16,295	64.2
East of Alburtis Ave	16,543	64.2
Flallon Avenue		
North of Artesia Blvd	16,700	50.3
Alburtis Avenue		
North of Artesia Blvd	19,900	50.2
ADT = average daily trips; dBA = A-weighted decibels; CNEL= Community Equivalent Noise Level		
Notes: 1. Traffic noise levels are at 100 feet from the roadway centerline.		
Source: Based on traffic data provided by Kimley-Horn and Associates, Inc., August 2022. Refer to **Appendix B: Noise Modeling Data** for traffic noise modeling results.		

Stationary Sources

The primary stationary noise sources near the Project site are from industrial uses, including the concrete mixing plant located to the east, parking lot activity (e.g., automobile related noise such as cars starting and doors slamming, engines starting), mechanical equipment (e.g., heating, ventilation, and air

conditioning [HVAC] units), and truck activity noise at nearby commercial and industrial properties, and other urban-related activities (e.g., idling cars/trucks, pedestrians, car radios and music playing, dogs barking, etc.). The noise associated with these sources may represent a single-event noise occurrence or short-term noise. In addition, existing stationary noise sources from the residential uses to the south and west of the Project site include mechanical equipment such as HVAC units and landscaping equipment. 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 four short-term (10-minute) noise measurements on June 29, 2022, and one short-term noise measurement on March 8, 2023. In addition, one long-term noise measurement (24 hours) was conducted at the Project site starting on March 8, 2023 and ending on March 9, 2023; see **Appendix A: Existing Ambient Noise Measurements**. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site. The average noise levels and noise sources measured at each location are listed in **Table 11: Existing Noise Measurements** and the noise measurement locations are shown on **Figure 5: Noise Measurement Locations**.

Table 11: Existing Noise Measurements[1]

Site ID[2]	Location	Time	Date	Duration	L_{min} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	dBA CNEL
ST-1	On 175th Street in residential neighborhood, south of the Project site.	9:15 a.m.	06/29/22	10 Minutes	46.4	74.8	54.5	-
ST-2	West side of Flallon Avenue, directly west of the Project site.	9:38 a.m.	06/29/22	10 Minutes	51.7	71.1	57.4	-
ST-3	South of Alburtis Avenue, north of the Project site.	9:50 a.m.	06/29/22	10 Minutes	55.8	74.3	62.2	-
ST-4	Along Artesia Boulevard, southeast of the Project site near 11714 Artesia Boulevard.	10:13 a.m.	06/29/22	10 Minutes	53.4	82.6	68.3	-
ST-5	At Alburtis Avenue adjacent to the concrete mixing plant situated east of the Project site.	9:57 a.m.	03/08/23	10 Minutes	57.9	89.8	68.5	-
LT-1	At the Project site's eastern/Alburtis Avenue boundary, across from the concrete mixing plant situated east of the Project site.	9:45 a.m.	03/8/23 to 03/09/23	24 hours	43.0	91.6	67.8	71.2

Notes:
1. Noise measurements taken by Kimley-Horn, June 29, 2022, and March 8-9, 2023; see **Appendix A: Existing Ambient Noise Measurements** for noise measurement results.
2. The Site ID (Identification Number) correlates with labels on **Figure 5: Noise Measurement Locations**.

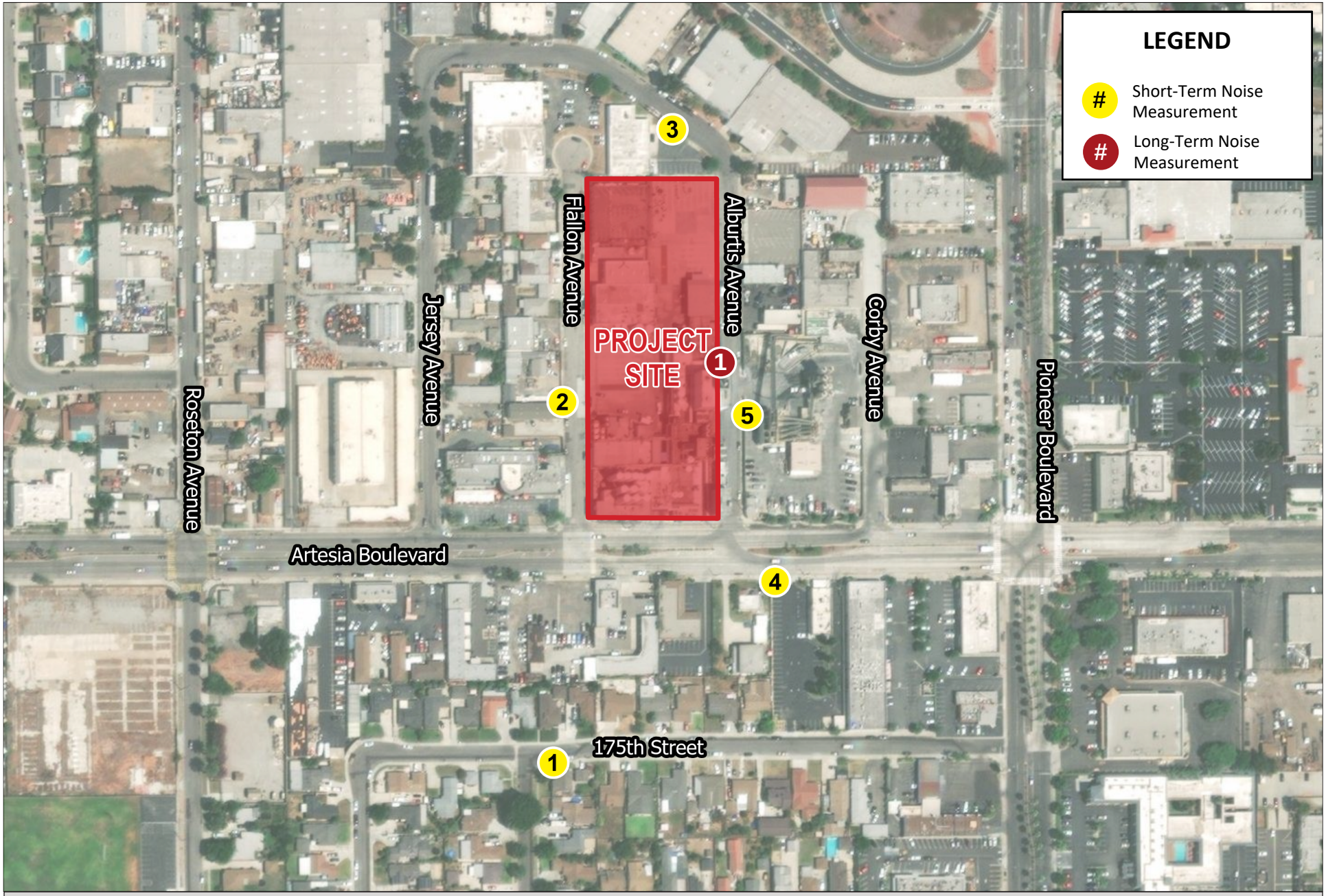

FIGURE 5: NOISE MEASUREMENT LOCATIONS
Artesia Place Project (Artesia Boulevard Corridor Specific Plan Amendment)

NOT TO SCALE

Kimley»Horn

4.3 Sensitive Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Land uses considered sensitive receptors include residences, hospitals, schools, playgrounds, childcare facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. **Table 12: Sensitive Receptors** lists the noise-sensitive receptors nearest the Project Site. As shown in **Table 12**, the nearest sensitive receptors are live-work units adjacent/west of the Project site.

Table 12: Sensitive Receptors

Receptor Description	Distance and Direction from the Project
Single-family Residences	300 feet to the south
Live-Work Units	Adjacent to the west, 62 feet
Single-family Residences	760 feet to the north
Luther Burbank Elementary School	1,010 feet to the southwest

Notes:
1. Distances have been measured from the nearest Project site boundary to the property line of each receptor.

Source: Google Earth, 2022.

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

State CEQA Guidelines Appendix G contains analysis guidelines related to noise and vibration. 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 the Federal Highway Administration (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.

Construction noise modeling was conducting using the FHWA Roadway Construction Noise Model (RCNM). For modeling purposes, construction equipment has been distributed evenly between the center of the construction site and the nearest noise-sensitive receptor. Noise level estimates do not account for the presence of 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. The City of Artesia does not establish quantitative construction noise standards. As such, this analysis uses the FTA's threshold of 80 dBA (8-hour L_{eq}) for residential uses, 85 dBA (8-hour L_{eq}) for commercial uses, and 90 dBA (8-hour L_{eq}) for industrial uses to evaluate construction noise impacts.

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 Project operational noise levels from stationary sources. Noise levels are 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 levels from stationary sources can vary throughout the day. Operational noise is evaluated based on the City's Noise Ordinance and General Plan standards. Traffic noise impacts were assessed using methodologies consistent with the FHWA.

Vibration

Groundborne vibration levels associated with Project construction-related activities were evaluated utilizing typical groundborne vibration levels 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.

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 *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018) (FTA Noise and Vibration Manual) identifies 80 VdB as the threshold for buildings where people normally sleep.

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 Noise Levels

Construction noise typically occurs intermittently and varies depending on the construction activity's nature or phase (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 noise-sensitive receptors near the construction site. However, it is noted that construction activities would occur throughout the Project site and would not be concentrated at a single point near noise-sensitive receptors.

Project construction activities would include demolition, site preparation, grading, building construction, paving, and architectural coating. Such activities may require:

- Industrial saws, excavators, and dozers for demolition;
- Dozers and tractors during site preparation;
- Excavators, graders, dozers, 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 one or two minutes of full power operation followed by three to four 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). Construction equipment noise, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in **Table 13: Typical Construction Noise Levels**. It is noted that the noise levels shown in **Table 13** 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 13: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source	Typical Noise Level (dBA) at 95 feet from Source
Air Compressor	80	74
Backhoe	80	74
Compactor	82	76
Concrete Mixer	85	77
Concrete Pump	82	76
Concrete Vibrator	76	79
Crane, Derrick	88	76
Crane, Mobile	83	70

Table 13: Typical Construction Noise Levels		
Equipment	**Typical Noise Level (dBA) at 50 feet from Source**	**Typical Noise Level (dBA) at 95 feet from Source**
Dozer	85	82
Generator	82	77
Grader	85	79
Impact Wrench	85	76
Jack Hammer	88	79
Loader	80	79
Paver	85	82
Pneumatic Tool	85	74
Pump	77	79
Roller	85	95
Saw	76	89
Scraper	85	79
Shovel	82	71
Truck	84	84
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.		

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.

Following FTA methodology, when calculating construction noise, all construction equipment is assumed to operate simultaneously at the Project site's center. Because in reality, equipment would be operating throughout the site and not all of the equipment would be operating at the point closest to the noise-sensitive receptors and considering the distance between the Project site's center and the sensitive receptors is a reasonable assumption. Therefore, the distances used in the RCNM model were approximately 175 feet to the nearest residential receptors to the west, 150 feet to the industrial uses to the east, and 255 feet to the commercial uses to the west of the center of the Project site; refer to **Appendix B: Noise Modeling Data** for RCNM modeling results. **Table 14: Project Construction Noise Levels**, show estimated exterior construction noise levels at the nearest receptors without accounting for attenuation from physical barriers or topography.

As shown in **Table 14**, construction activities would not exceed the applicable FTA noise standards at the nearest receptors in the Project vicinity. It is also noted that construction would occur during the City's allowable construction hours between 7:00 a.m. and 7:00 p.m. Monday through Saturday and would be prohibited on Sundays or Federal holidays. Therefore, construction related noise impacts would be less than significant.

Table 14: Project Construction Noise Levels

Construction Phase	Receptor Location			Modeled Exterior Noise Level (dBA L_{eq})[2]	FTA Noise Threshold (dBA $L_{eq\ (8\text{-}hour)}$)	Exceeded?
	Land Use	Direction	Distance (feet)[1]			
Demolition	Residential	West	175	75.6	80	No
	Commercial	West	255	72.3	85	No
	Industrial	East	150	76.9	90	No
Site Preparation	Residential	West	175	76.7	80	No
	Commercial	West	255	73.5	85	No
	Industrial	East	150	78.1	90	No
Grading	Residential	West	175	76.4	80	No
	Commercial	West	255	73.1	85	No
	Industrial	East	150	77.7	90	No
Building Construction	Residential	West	175	73.7	80	No
	Commercial	West	255	70.4	85	No
	Industrial	East	150	75.0	90	No
Paving	Residential	West	175	76.8	80	No
	Commercial	West	255	73.5	85	No
	Industrial	East	150	78.1	90	No
Architectural Coating	Residential	West	175	62.8	80	No
	Commercial	West	255	59.5	85	No
	Industrial	East	150	64.1	90	No

Notes:
1. Following FTA methodology, all equipment is assumed to operate at the center of the Project site because equipment would operate throughout the Project site and not at a fixed location for extended periods of time.
2. Modeled noise levels assume the simultaneous operation of all pieces of equipment.

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

Operations

Project implementation would create new sources of noise in the Project vicinity. The major noise sources that would potentially impact existing nearby sensitive receptors are stationary noise equipment (e.g., air conditioners, etc.); parking areas (i.e., car door slamming, car radios, engine start-up, and car pass-by); truck deliveries and trash/recycling pickups; landscape maintenance; and off-site traffic noise.

Mechanical Equipment

The nearest sensitive receptors to the Project site are the multi-family residences directly to the west of the Project site. Potential stationary noise sources related to long-term Project operation 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.[15] As indicated in **Table 15: Stationary Source Noise Levels**, noise levels from the Project's proposed mechanical equipment at the nearest sensitive receptors would be below the City's noise standards. Therefore, the Project would result in a less than significant impact concerning mechanical equipment noise levels.

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

Parking Lot Noise

The Project would provide 216 onsite parking spaces and 22 offsite parking spaces (along Flallon Avenue and Alburtis Avenue) (see Section 1.2, *Project Description*). Parking spaces would be a combination of ground-floor garage spaces for each residential unit, surface lot parking spaces in the southern portion of the site near the proposed commercial uses, and street parking along Flallon Avenue and Alburtis Avenue. 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[16] and may be an annoyance to nearby noise-sensitive receptors. As shown in **Table 15**, noise levels from the Project's proposed parking lot at the nearest noise-sensitive receptor would be below the City's noise standards which are in the $L_{eq\ (30\ min)}$ noise metric. A less than significant impact would occur in this regard.

Truck Deliveries and Trash/Recycling Collection

The proposed Project would involve occasional deliveries and weekly trash/recycling collection from slow-moving trucks during normal daytime hours. Low speed truck noise results from a combination of engine, exhaust, and tire noise as well as the intermittent sounds of back-up alarms and releases of compressed air associated with truck air-brakes. Medium-sized delivery trucks and trash collection trucks typically generate noise levels of 70 dBA at a distance of 50 feet.[17] The nearest noise-sensitive receptors (multi-family residences) would be located approximately 115 feet northwest of the closest trash/recycling/truck delivery area at the Project site. At this distance, noise levels from truck deliveries and trash/recycling collection trucks would be approximately 52.8 dBA and would not exceed the City's exterior or interior noise standards at the nearest residential uses; see **Table 15**. It is also noted that trash/recycling and truck delivery operations occur at the Project site under existing conditions and are considered part of standard operations in the area. Therefore, noise levels from truck deliveries and trash/recycling collection would result in a less than significant impact would occur in this regard.

Landscape Maintenance Activities

Operation of the Project would also include new landscaping that would require periodic maintenance. However, landscape maintenance activities would operate during daytime hours for brief periods of time and would be consistent with existing landscape maintenance activities at surrounding uses. In addition, landscape maintenance noise is exempt from the City's noise standards per AMC Section 5-2.07(c). Nonetheless, noise from landscape maintenance activities at the Project site would not exceed the City's exterior or interior noise standards at the nearest residential uses (see **Table 15**), and a less than significant impact would occur in this regard.

[16] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
[17] Urban Crossroads, *Lake Elsinore Walmart 2015 Noise Impact Analysis*, 2015.

Table 15: Stationary Source Noise Levels

Nearest Land Use	Direction	Distance (feet)	Reference Noise Level at 50 ft, dBA	Exterior Noise				Interior Noise	
				Noise Level at Receiver, dBA $L_{eq\ (30\ min)}$	Ambient Noise Level, dBA L_{eq}[1]	Noise Standard dBA $L_{eq\ (30\ min)}$[2]	Exceeds Standard?	Interior Noise Level at Receiver, dBA[10]	Exceeds 45 dBA Interior Noise Standard?
Mechanical Equipment									
Residential	West	60	52.0[3,4]	45.4[5]	57.4	57.4	No	20.4	No
Parking Area									
Residential	West	60	61.0[3]	44.6[6]	57.4	57.4	No	19.6	No
Truck Deliveries and Trash/Recycling Collection									
Residential	West	115	70.0[7]	52.8[6]	57.4	57.4	No	27.8	No
Landscape Maintenance									
Residential	West	70	58.4[3]	52.5[6]	57.4	57.4	No	27.5	No
Combined Noise Level (Mechanical Equipment + Parking Area + Truck Deliveries and Trash/Recycling Collection + Landscape Maintenance)									
Residential	West	N/A[5]	70.8[9]	56.4[6]	57.4	57.4	No	31.4	No

Notes:

1. Ambient noise levels obtained by Kimley-Horn on June 29, 2022; see **Table 11**.
2. The applicable noise standard is the higher of the measured ambient noise level or the base ambient noise levels identified in AMC Section 5-2.03(b). As indicated in **Table 11**, the measured ambient noise levels obtained by Kimley-Horn on June 29, 2022, exceed the City's base ambient noise levels. Therefore, the measured ambient noise levels are used to analyze impacts from the Project in accordance with Artesia Municipal Code 5-2.03(b).
3. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
4. Mechanical equipment is conservatively assumed to run in a continuous manner.
5. Includes a 5 dBA reduction from the rooftop parapet/screening walls at onsite buildings.
6. Noise level calculated using the Inverse Square Law of sound propagation and a maximum of 15 minutes of total operation within a 30-minute time period.
7. Urban Crossroads, *Lake Elsinore Walmart 2015 Noise Impact Analysis*, 2015.
8. Distances vary based on the location of the noise source, as identified above.
9. Calculated based on the logarithmic decibel scale and the reference noise levels for mechanical equipment, parking, truck deliveries and trash/recycling collection, and landscape maintenance noise levels identified above.
10. Interior noise levels were calculated assuming an exterior-interior sound reduction of 25 dBA from standard construction practices, per the United States Department of Housing and Urban Development *Noise Guidebook*, available at: https://www.hudexchange.info/resource/313/hud-noise-guidebook/ (2009).

Combined Noise Levels

Conservatively assuming a worst-case scenario where all noise sources identified above are simultaneously and continuously generating noise, the composite noise level at the nearest residential uses to the west would be approximately 56.4 dBA and would not exceed the City's exterior or interior noise standards; see **Table 15**. It is also noted that onsite mechanical equipment would be the primary noise source during the nighttime hours, which would generate noise levels up to 45.4 dBA at the nearest residences to the west (see **Table 15**) and would not exceed the City's nighttime exterior noise standard of 50 dBA. Therefore, noise levels from on-site Project operations would be less than significant.

Off-Site Traffic Noise

Project implementation would generate increased traffic volumes along nearby roadway segments. Based on the Traffic Impact Analysis Report, the proposed Project would result in approximately 2,585 daily trips. "2025 Opening Year Without Project" and "2025 Opening Year With Project" scenarios are compared in **Table 16: Opening Year Traffic Noise Levels**. As shown in **Table 16**, roadway noise levels without the Project would range from 50.3 dBA CNEL to 64.3 dBA CNEL and with the Project between 58.8 dBA CNEL and 64.7 dBA CNEL. Project generated traffic would result in substantial traffic noise increases[18] of 8.4 dBA along Flallon Avenue (north of Artesia Boulevard) and 7.7 dBA CNEL (north of Artesia Boulevard). However, as indicated in **Table 16**, the With Project noise levels at these roadway segments would not exceed the City's normally acceptable community noise exposure standards of 60 dBA CNEL for single-family residential and/or 65 dBA CNEL for multi-family residential uses. Therefore, the proposed Project would not result in a substantial permanent increase in traffic noise levels above the City's noise standards, and a less than significant impact would occur.

Table 16: Opening Year Traffic Noise Levels

Roadway Segment		2025 Opening Year Without Project		2025 Opening Year With Project		Change	Exceeds 3 dBA?[2]	Residential Land Use Compatibility Standard (SF/MF), dBA CNEL	Significant Impact[3]
		ADT	dBA CNEL[1]	ADT	dBA CNEL[1]				
Artesia Boulevard	West of Flallon Ave	16,660	64.3	18,212	64.7	0.4	No	60/65	No
	East of Flallon Ave	16,790	64.3	19,376	64.9	0.6	No	60/65	No
	West of Alburtis Ave	16,790	64.3	19,376	64.9	0.6	No	60/65	No
	East of Alburtis Ave	17,046	64.4	20,666	65.2	0.8	No	60/65	No[4]
Flallon Avenue	North Artesia Blvd	434	50.4	3,020	58.8	8.4	Yes	60/65	No
Alburtis Avenue	North Artesia Blvd	535	50.3	3,121	58.0	7.7	Yes	60/65	No

ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level; SF = single-family; MF = multiple-family.

Notes:
1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.
2. An increase of 3 dBA is barely perceptible. Therefore, an increase of 3 dBA or more is considered significant.
3. Potential impacts occur when the Project change exceeds 3 dBA and the land use compatibility standard is exceeded (i.e., both must occur).
4. Although the modeled traffic noise level exceeds the applicable land use compatibility standard(s) at 100 feet from the roadway centerline, the nearest residential uses along this segment are located over 350 feet from the roadway centerline. At 350 feet, traffic noise levels would attenuate to approximately 59.6 dBA CNEL and would be below the City's land use compatibility standards. In addition, the Project would result in a less than 3 dBA noise increase along this segment and would not be noticeable.

Source: Based on traffic data within the *Traffic Impact Analysis Report*, prepared by Kimley-Horn and Associates, Inc., August 2022. Refer to **Appendix B** for traffic noise modeling assumptions and results.

[18] Per the *Techniques for Reviewing Noise Analyses and Associated Noise Reports* (FHWA, 2018), the FHWA considers a noise increase over 3 dBA to be barely perceptible and would have an effect on the existing noise environment.

On-Site Noise Impacts[19]

As previously noted, the concrete mixing plant located east of the Project site along Alburtis Avenue and vehicular traffic along Artesia Boulevard located to the south are the primary noise sources in the Project vicinity. As depicted on **Figure 4: Conceptual Site Plan**, the Project proposes residential uses (i.e., townhomes and shopkeeper live/work units) along Alburtis Avenue, but commercial uses are proposed along Artesia Boulevard. Based on the noise measurement data obtained by Kimley-Horn for LT-1 (see **Table 11**), exterior noise levels at the proposed residences along Alburtis Avenue would be approximately 71.2 dBA CNEL, which is within the City's normally unacceptable land use compatibility noise standard of 70-75 dBA CNEL for multi-family residential uses (see **Table 5**). According to the General Plan Noise Element, a normally unacceptable noise level requires that noise insulation features be included in the design to ensure interior noise levels are below the California Building Code interior noise standard of 45 dBA CNEL. Therefore, the Project would be required to comply with Mitigation Measure NOI-1, which requires implementation of sound insulation to minimize interior noise levels at habitable rooms of residences along Alburtis Avenue to ensure the Project would be consistent with California Code of Regulations Title 24, Part 2, Section 1206.4 (Allowable Interior Noise Levels). With implementation of Mitigation Measure NOI-1, the interior noise levels would be reduced to below the California Building Code interior noise standard of 45 dBA CNEL and onsite noise impacts would be reduced to less than significant.

Mitigation Measures:

NOI-1 To comply with California Code of Regulations Title 24, Part 2, Section 1206.4 (Allowable Interior Noise Levels), the Project applicant shall install exterior building materials with sufficient Sound Transmission Class (STC) ratings to reduce interior noise levels at residential units to 45 CNEL or lower. To reduce potential noise impacts to future Project residents, habitable rooms[20] of residential units located within 30 feet of Alburtis Avenue shall incorporate design measures for windows, walls, and doors that achieve a composite STC rating of at least 27 and all exterior doors and windows shall be installed such that there are no air gaps or perforations. Both aforementioned STC rating standard requirements shall be incorporated into the building plans and submitted to the City of Artesia Building Department for review and approval prior to issuance of building permits. An acoustical analysis shall be performed prior to the issuance of an occupancy permit to demonstrate that noise levels in the interior livable spaces do not exceed the interior noise standard of 45 CNEL in any habitable room as set forth by the City and California Code of Regulations, Title 24, Section 1206.4.

Level of Significance: Less than significant with mitigation incorporated.

[19] The California Supreme Court in a December 2015 opinion (*California Building Industry Association v. Bay Area Air Quality Management District,* 62 Cal. 4th 369 [No. S 213478]) confirmed that CEQA, with several specific exceptions, is concerned with the impacts of a project on the environment, not the effects the existing environment may have on a project. Therefore, this section is not required under CEQA and is included for informational purposes only. The evaluation of the significance of project impacts in the following discussion is provided to ensure compliance with City and State Building Code noise standards.

[20] According to the California Building Code, a habitable room is "A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces."

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

Construction Vibration

Construction can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved.

Table 17: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet for typical construction equipment. Vibration levels at 20 feet, the distance from the Project construction area to the nearest existing structure to the north are also included in **Table 17**. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in **Table 17**, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity.

Table 17: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 20 Feet (in/sec)[1]
Large Bulldozer	0.089	0.124
Caisson Drilling	0.089	0.124
Loaded Trucks	0.076	0.106
Jackhammer	0.035	0.049
Small Bulldozer/Tractors	0.003	0.004

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.

The nearest structure to the Project construction area is located approximately 20 feet to the north. **Table 17** shows that at 20 feet, the maximum vibration velocities from construction equipment would be 0.124 in/sec PPV, which is below the FTA's 0.20 in/sec PPV threshold for building damage and Caltrans' 0.40 in/sec PPV threshold for human annoyance. It is also acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest structure. Therefore, vibration impacts associated with Project construction would be less than significant.

Operational Vibration

Once operational, the Project would not be a significant source of ground-borne vibration. Ground-borne vibration surrounding the Project currently result from heavy-duty vehicular travel (e.g., trash/recycling trucks, heavy duty trucks, and delivery trucks, etc.) on the nearby local roadways. 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. Therefore, vibration impacts from the Project would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

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 Long Beach Airport located approximately 4.8 miles to the southwest. The Project site is not within 2.0 miles of a public airport or within an airport land use plan. Additionally, there are no private airstrips located within the Project vicinity. Therefore, the Project would not expose people working in the Project area to excessive airport- or airstrip-related noise levels and no mitigation is required.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 Cumulative Noise Impacts

For purposes of noise analysis, cumulative impacts are considered for cumulative development within the ABCSP and adjacent areas in the City. The City identified the related projects and other possible development in the area that have the potential to interact with the Project to the extent that a significant cumulative effect may occur.[21]

Cumulative Construction Noise

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. Construction noise would be periodic and temporary noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction project noise impacts if construction activities were conducted concurrently. The nearest cumulative development project is located approximately 0.11-mile to the west at 17172 Roseton (a 4,758 SF office/warehouse). However, based on distance attenuation and the presence of intervening structures and traffic noise along Artesia Boulevard, construction noise emanating from the Project site would not cumulatively contribute to construction noise generated at the nearest cumulative development project. All other cumulative development projects are located more than 0.20 miles from the Project site.

In addition, construction activities at other planned and approved projects near the Project site would be required to comply with applicable City rules related to noise and would take place during daytime hours on the days permitted by the AMC, and projects requiring discretionary City approvals would be required to evaluate construction noise impacts, comply with the City's standard conditions of approval, and implement mitigation, if necessary, to minimize noise impacts. Therefore, Project construction would not

[21] Email correspondence with Mel Lee, Contract Planner, on September 23, 2022.

result in a cumulatively considerable contribution to significant cumulative impacts, assuming such a cumulative impact existed, and impacts in this regard are not cumulatively considerable.

Cumulative Operational Noise

Cumulative Off-Site Traffic Noise

Cumulative noise impacts describe how much noise levels are projected to increase over existing conditions with the development of the proposed Project and other foreseeable projects. Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the proposed Project and other projects in the vicinity.

Cumulative increases in traffic noise levels were estimated by comparing the Existing and Opening Year Without Project scenarios to the Opening Year Plus Project scenario. The traffic analysis considers cumulative traffic from future growth assumed in the transportation model, as well as cumulative projects.

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds the perception level (i.e., auditory level increase) threshold. The following criteria is used to evaluate the combined and incremental effects of the cumulative noise increase.

- *Combined Effect*. The cumulative with Project noise level ("Opening Year With Project") would cause a significant cumulative impact if a 3.0 dB increase over "Existing" conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use. Although there may be a significant noise increase due to the proposed Project in combination with other related projects (combined effects), it must also be demonstrated that the Project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed Project.

- *Incremental Effects*. The "Opening Year With Project" causes a 1.0 dBA increase in noise over the "Opening Year Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded and the With Project noise levels exceed the acceptable noise levels on the land use compatibility matrix (refer to **Table 5**). Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed Project and growth due to occur in the general area would contribute to cumulative noise impacts.

Table 18: Cumulative Off-Site Traffic Noise Levels identifies the traffic noise effects along roadway segments in the Project vicinity for "Existing," "Opening Year Without Project," and "Opening Year With Project," conditions, including incremental and net cumulative impacts. **Table 18** shows that although cumulative traffic noise levels would exceed the combined and incremental effects as a result of the Project, the Opening Year With Project noise levels would not exceed the City's land use compatibility standards at the nearest residential uses. Thus, cumulative operational noise impact from related projects, in conjunction with Project-specific noise impacts would not be cumulatively considerable and impacts would be less than significant.

Table 18: Cumulative Off-Site Traffic Noise Levels

Roadway Segment		Existing dBA CNEL[1]	Opening Year Without Project[1] dBA CNEL	Opening Year With Project[1] dBA CNEL	Combined Effects	Incremental Effects	Residential Land Use Compatibility Standard (SF/MF), dBA CNEL	Cumulatively Significant Impact?
					Difference In dBA Between Existing and Opening Year With Project	Difference In dBA Between Opening Year Without Project and Opening Year With Project		
Artesia Boulevard	West of Flallon Ave	64.1	64.3	64.7	0.6	0.4	60/65	No
	East of Flallon Ave	64.2	64.3	64.9	0.7	0.6	60/65	No
	West of Alburtis Ave	64.2	64.3	64.9	0.7	0.6	60/65	No
	East of Alburtis Ave	64.2	64.4	65.2	1.0	0.8	60/65	No[3]
Flallon Avenue	North Artesia Blvd	50.3	50.4	58.8	8.5	8.4	60/65	No
Alburtis Avenue	North Artesia Blvd	50.2	50.3	58.0	7.8	7.7	60/65	No

ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level.

Notes:
1. Traffic noise levels are at 100 feet from the roadway centerline. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography.
2. Potential cumulative impacts occur when the combined and incremental effects are exceeded, and the Opening Year Plus Project noise level exceeds the City's land use compatibility standard (i.e., all must occur).
3. Although the modeled traffic noise level exceeds the applicable land use compatibility standard(s), the nearest residential uses are located over 350 feet from the roadway centerline and noise levels would attenuate below land use compatibility standards.

Source: Based on traffic data within the *Traffic Impact Analysis Report*, prepared by Kimley-Horn and Associates, Inc., August 2022. Refer to **Appendix B: Noise Modeling Data** for traffic noise modeling assumptions and results.

Cumulative Stationary Noise

Stationary noise sources of the proposed Project would result in an incremental increase in non-transportation noise sources in the Project vicinity. However, as discussed above, operational noise caused by the proposed Project would be less than significant. Similar to the proposed Project, other planned and approved projects would be required to mitigate for stationary noise impacts at nearby sensitive receptors, if necessary. As stationary noise sources are generally localized, there is a limited potential for other projects to contribute to cumulative noise impacts.

No known past, present, or reasonably foreseeable projects would combine with the operational noise levels generated by the Project to increase noise levels above acceptable standards because each project must comply with applicable City regulations that limit operational noise. Therefore, the Project, together with other projects, would not create a significant cumulative impact, and even if there was such a significant cumulative impact, the Project would not make a cumulatively considerable contribution to significant cumulative operational noises.

Given that noise dissipates as it travels away from its source, operational noise impacts from on-site activities and other stationary sources would be limited to the Project site and vicinity. Thus, cumulative operational noise impacts from related projects, in conjunction with Project specific noise impacts, would not be cumulatively significant.

7 REFERENCES

1. California Department of Transportation, *California Vehicle Noise Emission Levels*, 1987.
2. California Department of Transportation, *Traffic Noise Analysis Protocol*, 2020.
3. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.
4. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020.
5. California Department of Transportation, *Transportation Related Earthborne Vibrations Technical Advisory, Vibration,* January 23, 2004.
6. City of *Artesia*, *Artesia, California Municipal Code*, current through Ordinance 22-924 and the June 2022 code supplement.
7. City of Artesia, *City of Artesia General Plan 2030*, 2010.
8. City of Artesia, *Zoning Map*, https://www.cityofartesia.us/DocumentCenter/View/1877/Zoning-Map-January-7-2019?bidId=, 2019.
9. Cowan, James P., *Handbook of Environmental Acoustics*, 1994.
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11. Federal Highway Administration, *Noise Fundamentals*, 2017.
12. Federal Highway Administration, *Noise Measurement Handbook – Final Report*, 2018.
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14. Federal Highway Administration, *Roadway Construction Noise Model User's Guide Final Report*, 2006.
15. Federal Highway Administration, *Techniques for Reviewing Noise Analyses and Associated Noise Reports*, 2018.
16. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, 1992.
17. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.
18. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
19. United States Department of Housing and Urban Development *Noise Guidebook,* 2009.
20. United States Environmental Protection Agency, *Protective Noise Levels (EPA 550/9-79-100)*, 1979.
21. Urban Crossroads, *Lake Elsinore Walmart 2015 Noise Impact Analysis*, 2015.

Appendix A

Existing Ambient Noise Measurements

Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	1	**Date:**	6/29/2022
Analyst:	Serena Lin, Steven Yu	**Time:**	9:15 - 9:25 AM
Location:	On 175th Street in residential neighborhood, south of the Project site		
Noise Sources:	cars, distant landscaping, birds		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
54.5	46.4	74.8	84.5

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

Weather	
Temp. (degrees F):	74
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.01 inHg
Humidity:	66%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	ART.001.s	Computer's File Name	LxTse_0007061-20220629 091549-ART.001.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-29 09:15:49	Duration	0:10:00.0
End Time	2022-06-29 09:25:49	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	54.5 dB		
LAE	82.3 dB	SEA	--- dB
EA	18.8 µPa²h		
LA_{peak}	84.5 dB	2022-06-29 09:17:16	
LAS_{max}	74.8 dB	2022-06-29 09:17:16	
LAS_{min}	46.4 dB	2022-06-29 09:25:38	
LA_{eq}	54.5 dB		
LC_{eq}	70.0 dB	LC_{eq} - LA_{eq}	15.5 dB
LAI_{eq}	56.8 dB	LAI_{eq} - LA_{eq}	2.3 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
54.5 dB	54.5 dB	0.0 dB

LDEN	LDay	LEve	LNight
54.5 dB	54.5 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	54.5 dB		70.0 dB		--- dB	
$Ls_{(max)}$	74.8 dB	2022-06-29 09:17:16	--- dB		--- dB	
$LS_{(min)}$	46.4 dB	2022-06-29 09:25:38	--- dB		--- dB	
$L_{Peak(max)}$	84.5 dB	2022-06-29 09:17:16	--- dB		--- dB	

Overloads

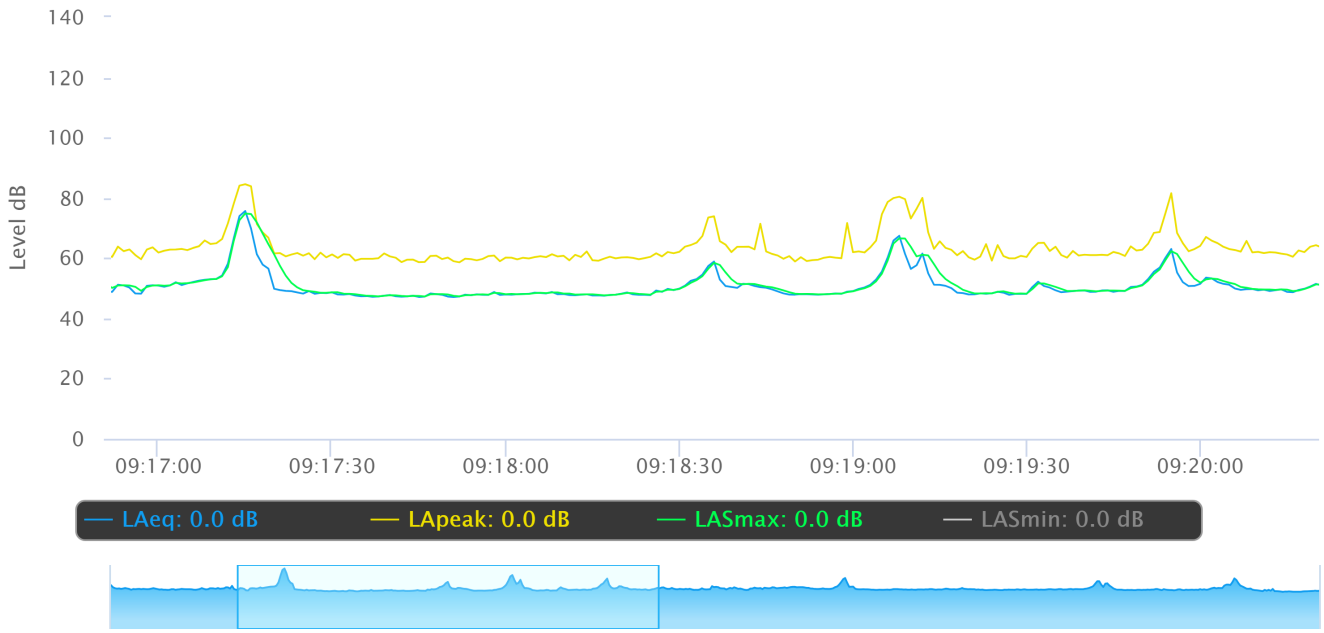
Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	57.2 dB
LAS 10.0	53.4 dB
LAS 33.3	50.4 dB
LAS 50.0	49.7 dB
LAS 66.6	49.2 dB
LAS 90.0	47.9 dB

Time History

Zoomed



Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	2	**Date:**	6/29/2022
Analyst:	Serena Lin, Steven Yu	**Time:**	9:38 - 9:48 AM
Location:	West side of Flallon Avenue, directly west of the Project site		
Noise Sources:	cars, trucks beeping, people talking, distant birds		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
57.4	51.7	71.1	90.2

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):	< 5
Sky:	Clear
Bar. Pressure:	30.01 inHg
Humidity:	62%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	ART.002.s	Computer's File Name	LxTse_0007061-20220629 093825-ART.002.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-29 09:38:25	Duration	0:10:00.0
End Time	2022-06-29 09:48:25	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	57.4 dB		
LAE	85.2 dB	SEA	--- dB
EA	36.7 µPa²h		
LA_{peak}	90.2 dB	2022-06-29 09:38:29	
LAS_{max}	71.1 dB	2022-06-29 09:39:12	
LAS_{min}	51.7 dB	2022-06-29 09:48:03	
LA_{eq}	57.4 dB		
LC_{eq}	69.2 dB	LC_{eq} - LA_{eq}	11.8 dB
LAI_{eq}	59.7 dB	LAI_{eq} - LA_{eq}	2.2 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
57.4 dB	57.4 dB	0.0 dB

LDEN	LDay	LEve	LNight
57.4 dB	57.4 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	57.4 dB		69.2 dB		--- dB	
$Ls_{(max)}$	71.1 dB	2022-06-29 09:39:12	--- dB		--- dB	
$LS_{(min)}$	51.7 dB	2022-06-29 09:48:03	--- dB		--- dB	
$L_{Peak(max)}$	90.2 dB	2022-06-29 09:38:29	--- dB		--- dB	

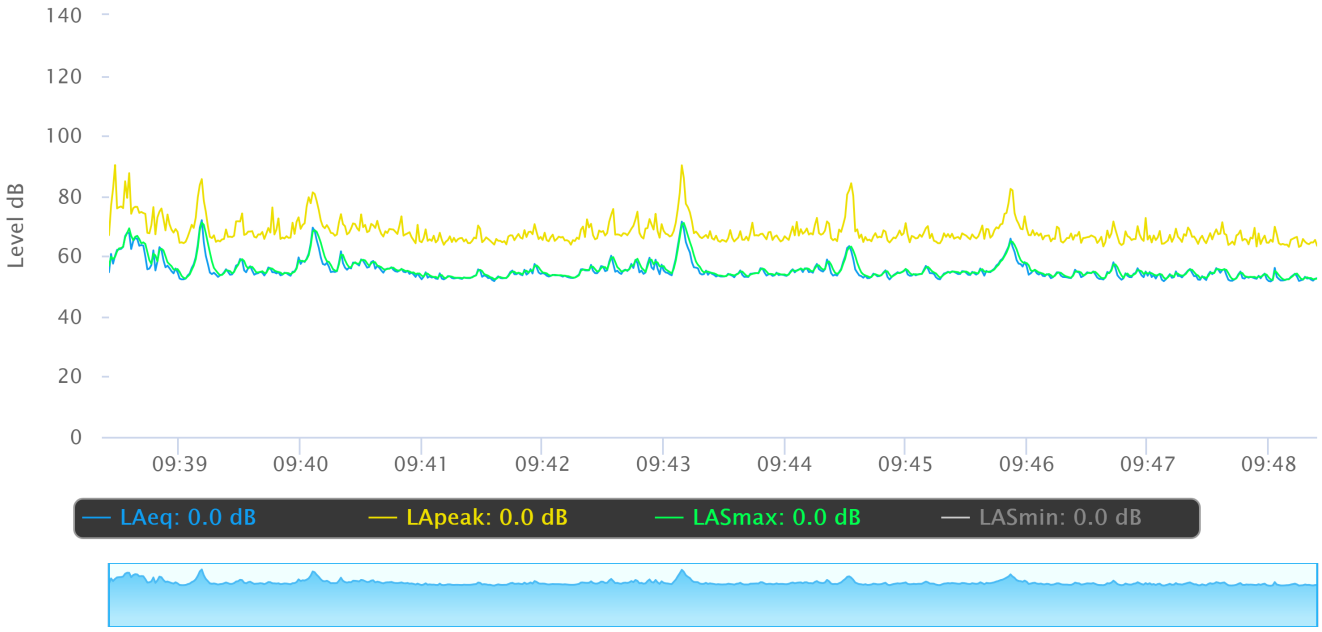
Overloads

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

Statistics

LAS 5.0	62.6 dB
LAS 10.0	58.9 dB
LAS 33.3	55.3 dB
LAS 50.0	54.4 dB
LAS 66.6	53.8 dB
LAS 90.0	52.8 dB

Time History



Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	3	**Date:**	6/29/2022
Analyst:	Serena Lin, Steven Yu	**Time:**	9:50 - 10:07 AM
Location:	South of Alburtis Avenue, north of Project site		
Noise Sources:	cars, distant construction, distant traffic (freeway), truck		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
62.2	55.8	74.3	97.3

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

Weather	
Temp. (degrees F):	77
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.01
Humidity:	58%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	ART.003.s	Computer's File Name	LxTse_0007061-20220629 095042-ART.003.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-29 09:50:42	Duration	0:10:04.1
End Time	2022-06-29 10:07:33	Run Time	0:10:03.9
Pause Time	0:00:00.2		

Results

Overall Metrics

LA_{eq}	62.2 dB		
LAE	90.1 dB	SEA	--- dB
EA	112.6 µPa²h		
LA_{peak}	97.3 dB	2022-06-29 10:04:47	
LAS_{max}	74.3 dB	2022-06-29 10:06:02	
LAS_{min}	55.8 dB	2022-06-29 09:57:46	
LA_{eq}	62.2 dB		
LC_{eq}	72.8 dB	LC_{eq} - LA_{eq}	10.5 dB
LAI_{eq}	65.4 dB	LAI_{eq} - LA_{eq}	3.1 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
	62.2 dB	62.2 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	62.2 dB	62.2 dB	--- dB	--- dB

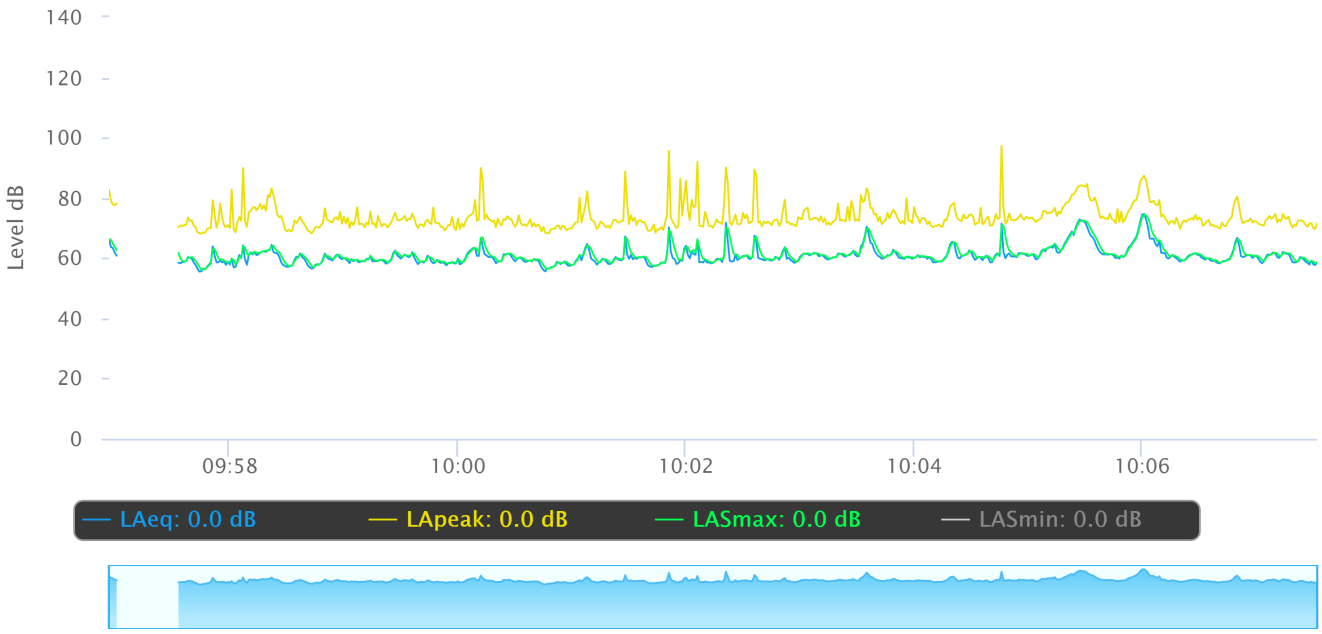
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	62.2 dB		72.8 dB		--- dB	
$Ls_{(max)}$	74.3 dB	2022-06-29 10:06:02	--- dB		--- dB	
$LS_{(min)}$	55.8 dB	2022-06-29 09:57:46	--- dB		--- dB	
$L_{Peak(max)}$	97.3 dB	2022-06-29 10:04:47	--- dB		--- dB	

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

Statistics

LAS 5.0	66.7 dB
LAS 10.0	64.0 dB
LAS 33.3	61.0 dB
LAS 50.0	60.3 dB
LAS 66.6	59.5 dB
LAS 90.0	58.4 dB

Time History



Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	4	**Date:**	6/29/2022
Analyst:	Serena Lin, Steven Yu	**Time:**	10:13 - 10:23 AM
Location:	Along Artesia Boulevard, southeast of the Project site near 11714 Artesia Blvd		
Noise Sources:	trucks, cars, birds		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.3	53.4	82.6	97.3

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

Weather	
Temp. (degrees F):	79
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.00 inHg
Humidity:	55%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	ART.004.s	Computer's File Name	LxTse_0007061-20220629 101316-ART.004.ldbin
Meter	LxT SE 0007061		
Firmware	2.404		
User		Location	
Job Description			
Note			
Start Time	2022-06-29 10:13:16	Duration	0:10:00.0
End Time	2022-06-29 10:23:16	Run Time	0:10:00.0
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	68.3 dB		
LAE	96.0 dB	SEA	--- dB
EA	446.6 µPa²h		
LA_{peak}	97.3 dB	2022-06-29 10:14:06	
LAS_{max}	82.6 dB	2022-06-29 10:14:07	
LAS_{min}	53.4 dB	2022-06-29 10:19:44	
LA_{eq}	68.3 dB		
LC_{eq}	75.3 dB	LC_{eq} - LA_{eq}	7.1 dB
LAI_{eq}	70.5 dB	LAI_{eq} - LA_{eq}	2.3 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
68.3 dB	68.3 dB	0.0 dB

LDEN	LDay	LEve	LNight
68.3 dB	68.3 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	68.3 dB		75.3 dB		--- dB	
$Ls_{(max)}$	82.6 dB	2022-06-29 10:14:07	--- dB		--- dB	
$LS_{(min)}$	53.4 dB	2022-06-29 10:19:44	--- dB		--- dB	
$L_{Peak(max)}$	97.3 dB	2022-06-29 10:14:06	--- dB		--- dB	

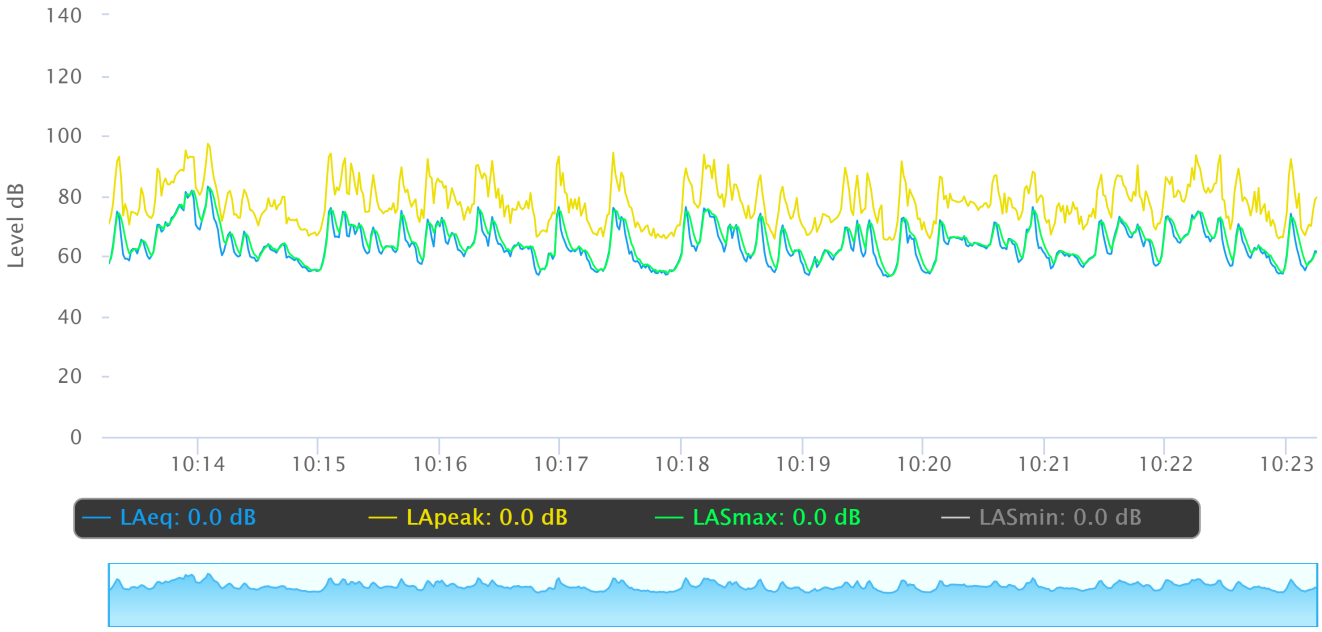
Overloads

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

Statistics

LAS 5.0	73.9 dB
LAS 10.0	71.9 dB
LAS 33.3	66.4 dB
LAS 50.0	63.5 dB
LAS 66.6	61.3 dB
LAS 90.0	56.6 dB

Time History



Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	5	**Date:**	3/8/2023
Analyst:	Ryan Callahan and Jacqueline Tran	**Time:**	9:57 - 10:07 AM
Location:	Along Alburtis Avenue, adjacent to the concrete mixing plant east of the Project site		
Noise Sources:	Street sweeping, heavy freight trucks/cement trucks back and forth, music outloud from speakers next door, cement plant next door, truck repair facility next door.		

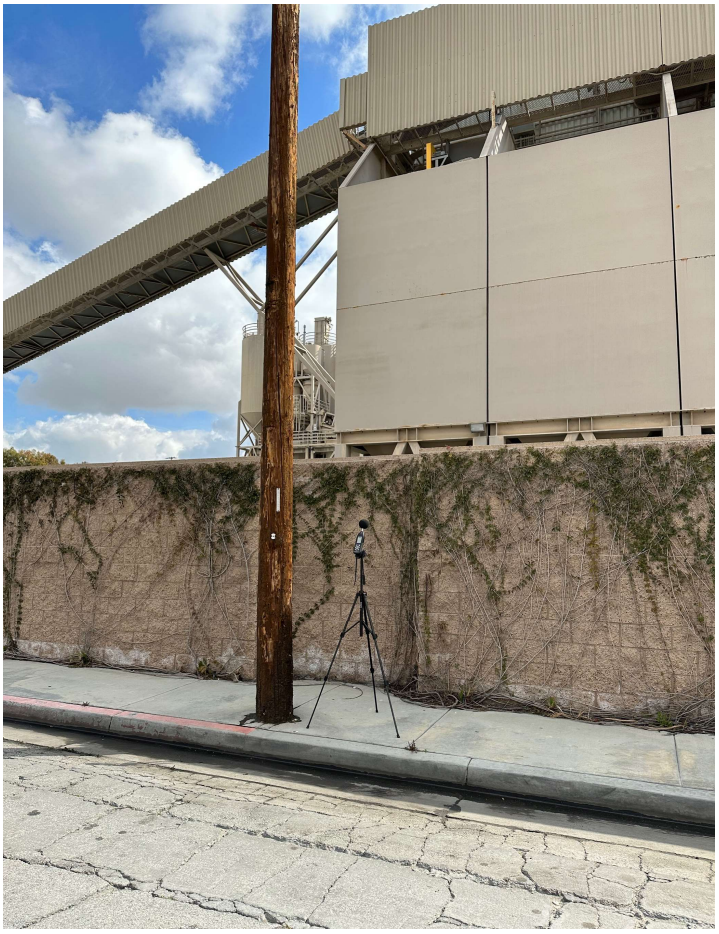
Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
68.5	57.9	89.8	110.8

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

Weather	
Temp. (degrees F):	54
Wind (mph):	3
Sky:	Partly Cloudy
Bar. Pressure:	30.17
Humidity:	65%

Photo:



Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	ANA.022	Computer's File Name	LxTse_0005586-20230308 095718-ANA.022.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			
Start Time	2023-03-08 09:57:18	Duration	0:10:00.0
End Time	2023-03-08 10:07:18	Run Time	0:10:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	68.5 dB		
LAE	96.3 dB	SEA	--- dB
EA	468.7 µPa²h		
LA_{peak}	110.8 dB	2023-03-08 10:01:02	
LAS_{max}	89.8 dB	2023-03-08 10:01:02	
LAS_{min}	57.9 dB	2023-03-08 09:59:40	
LA_{eq}	68.5 dB		
LC_{eq}	75.7 dB	LC_{eq} - LA_{eq}	7.2 dB
LAI_{eq}	74.3 dB	LAI_{eq} - LA_{eq}	5.9 dB

Exceedances	Count	Duration
LAS > 85.0 dB	1	0:00:02.4
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
	68.5 dB	68.5 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	68.5 dB	68.5 dB	--- dB	--- dB

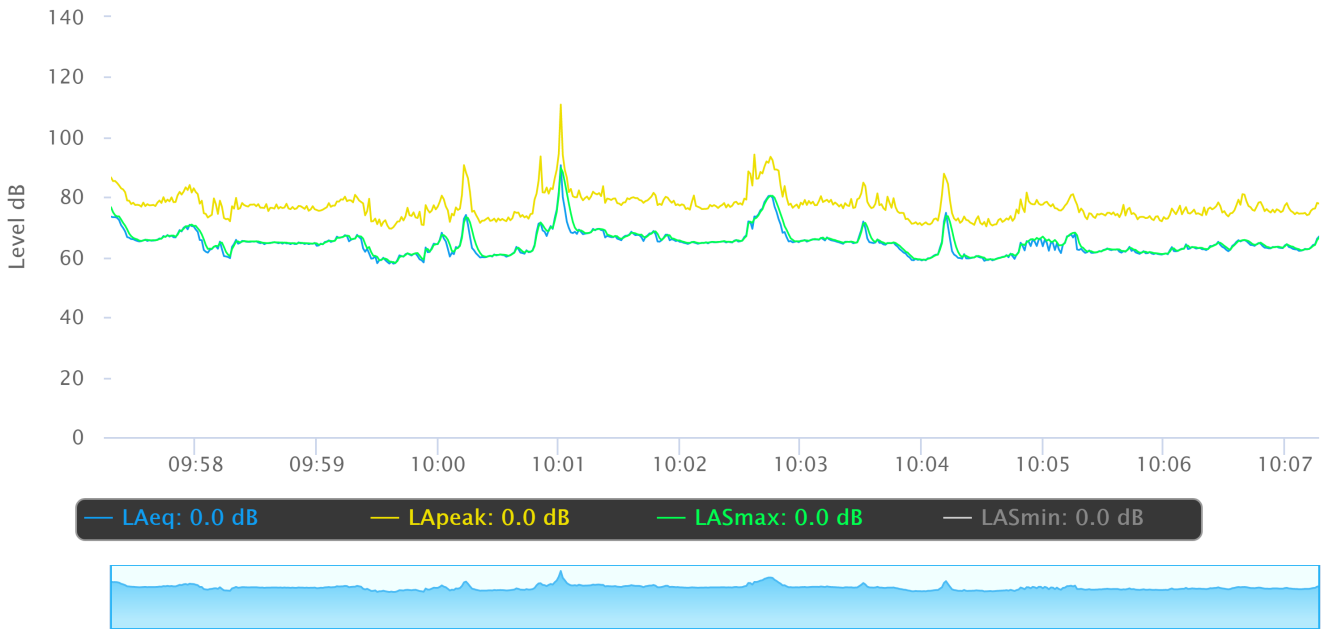
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	68.5 dB		75.7 dB		--- dB	
$LS_{(max)}$	89.8 dB	2023-03-08 10:01:02	--- dB		--- dB	
$LS_{(min)}$	57.9 dB	2023-03-08 09:59:40	--- dB		--- dB	
$L_{Peak(max)}$	110.8 dB	2023-03-08 10:01:02	--- dB		--- dB	

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

Statistics

LAS 5.0	72.2 dB
LAS 10.0	69.2 dB
LAS 33.3	65.4 dB
LAS 50.0	64.6 dB
LAS 66.6	63.0 dB
LAS 90.0	60.3 dB

Time History



Noise Measurement Field Data

Project:	Artesia Boulevard Corridor SP Amendment	**Job Number:**	194468001
Site No.:	LT-1	**Date:**	3/8/2023 to 3/9/2023
Analyst:	Ryan Callahan and Jacqueline Tran	**Time:**	9:45 AM
Location:	Along eastern Project site boundary, adjacent to the concrete mixing plant east of the Project site.		
Noise Sources:	Street sweeping, heavy freight trucks/cement trucks back and forth, music outloud from speakers next door, cement plant next door, truck repair facility next door.		

Results (dBA):

CNEL:	Leq:	Lmin:	Lmax:	Peak:
71.2	67.8	43.0	91.6	107.9

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

Weather	
Temp. (degrees F):	54
Wind (mph):	3
Sky:	Partly Cloudy
Bar. Pressure:	30.17
Humidity:	65%

Photo:

Kimley»Horn

Measurement Report

Report Summary

Meter's File Name	LT_.016	Computer's File Name	LT-1.ldbin
Meter	LxT SE		
Firmware	2.404		
User		Location	
Description			
Note			

Start Time	2023-03-08 09:45:31	Duration	24:20:38.4		
End Time	2023-03-09 10:07:06	Run Time	24:20:38.4	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	67.8 dB		
LAE	117.2 dB	SEA	--- dB
EA	58.4 mPa²h		
LA_{peak}	107.9 dB	2023-03-08 10:45:36	
LAS_{max}	91.6 dB	2023-03-08 10:45:36	
LAS_{min}	43.0 dB	2023-03-09 02:51:52	
LA_{eq}	67.8 dB		
LC_{eq}	73.5 dB	LC_{eq} - LA_{eq}	5.7 dB
LAI_{eq}	69.3 dB	LAI_{eq} - LA_{eq}	1.6 dB

Exceedances	Count	Duration
LAS > 85.0 dB	13	0:01:00.1
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
	70.9 dB	69.2 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	71.2 dB	69.8 dB	65.3 dB	62.7 dB

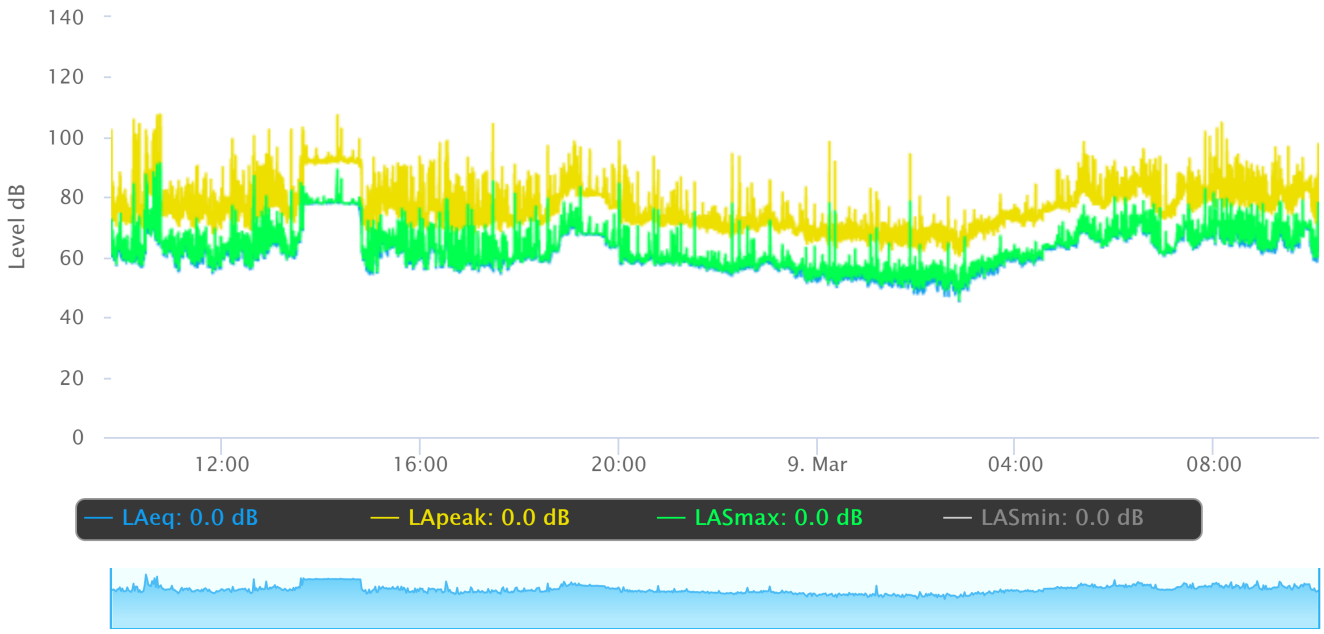
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	67.8 dB		73.5 dB		--- dB	
$L_{S(max)}$	91.6 dB	2023-03-08 10:45:36	--- dB		--- dB	
$L_{S(min)}$	43.0 dB	2023-03-09 02:51:52	--- dB		--- dB	
$L_{Peak(max)}$	107.9 dB	2023-03-08 10:45:36	--- dB		--- dB	

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

Statistics

LAS 5.0	77.3 dB
LAS 10.0	69.8 dB
LAS 33.3	63.7 dB
LAS 50.0	60.7 dB
LAS 66.6	58.3 dB
LAS 90.0	53.9 dB

Time History



Appendix B

Noise Modeling Data

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Artesia Boulevard Specific Plan Amendment
Project Number: 194468001
Scenario: Existing
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Artesia Boulevard	West of Flallon Ave	4	12	16169	40	0	2.0%	1.0%	64.1	-	82	259	820
2		East of Flallon Ave	4	12	16295	40	0	2.0%	1.0%	64.2	-	83	261	826
3		West of Alburtis Ave	4	12	16295	40	0	2.0%	1.0%	64.2	-	83	261	826
4		East of Alburtis Ave	4	12	16543	40	0	2.0%	1.0%	64.2	-	84	265	839
5	Flallon Avenue	North of Artesia Blvd	2	0	420	30	0	3.0%	5.0%	50.3	-	-	-	34
6	Alburtis Avenue	North of Artesia Blvd	2	0	518	25	0	3.0%	5.0%	50.2	-	-	-	33

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Artesia Boulevard Specific Plan Amendment
Project Number: 194468001
Scenario: Existing Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Artesia Boulevard	West of Flallon Ave	4	12	17,721	40	0	2.0%	1.0%	64.5	-	90	284	899
2		East of Flallon Ave	4	12	18,881	40	0	2.0%	1.0%	64.8	-	96	303	957
3		West of Alburtis Ave	4	12	18,881	40	0	2.0%	1.0%	64.8	-	96	303	957
4		East of Alburtis Ave	4	12	20,163	40	0	2.0%	1.0%	65.1	-	102	323	1,022
5	Flallon Avenue	North of Artesia Blvd	2	0	3,006	30	0	3.0%	5.0%	58.8	-	-	76	240
6	Alburtis Avenue	North of Artesia Blvd	2	0	3,104	25	0	3.0%	5.0%	57.9	-	-	62	197

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Artesia Boulevard Specific Plan Amendment
Project Number: 194468001
Scenario: Opening Year
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Artesia Boulevard	West of Flallon Ave	4	12	16,660	40	0	2.0%	1.0%	64.3	-	84	267	845
2		East of Flallon Ave	4	12	16,790	40	0	2.0%	1.0%	64.3	-	85	269	851
3		West of Alburtis Ave	4	12	16,790	40	0	2.0%	1.0%	64.3	-	85	269	851
4		East of Alburtis Ave	4	12	17,046	40	0	2.0%	1.0%	64.4	-	86	273	864
5	Flallon Avenue	North of Artesia Blvd	2	0	434	30	0	3.0%	5.0%	50.4	-	-	-	35
6	Alburtis Avenue	North of Artesia Blvd	2	0	535	25	0	3.0%	5.0%	50.3	-	-	-	34

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Artesia Boulevard Specific Plan Amendment
Project Number: 194468001
Scenario: Opening Year Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Artesia Boulevard	West of Flallon Ave	4	12	18,212	40	0	2.0%	1.0%	64.7	-	92	292	923
2		East of Flallon Ave	4	12	19,376	40	0	2.0%	1.0%	64.9	-	98	311	982
3		West of Alburtis Ave	4	12	19,376	40	0	2.0%	1.0%	64.9	-	98	311	982
4		East of Alburtis Ave	4	12	20,666	40	0	2.0%	1.0%	65.2	-	105	331	1,048
5	Flallon Avenue	North of Artesia Blvd	2	0	3,020	30	0	3.0%	5.0%	58.8	-	-	76	241
6	Alburtis Avenue	North of Artesia Blvd	2	0	3,121	25	0	3.0%	5.0%	58.0	-	-	63	198

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Artesia Boulevard Specific Plan Amendment
Project Number: 194468001
Scenario: Opening Year Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
4	Artesia Boulevard	East of Alburtis Ave	4	12	20,666	40	0	2.0%	1.0%	59.6	-	102	322	1,020

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - W	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	175	0
Concrete Saw	No	20		89.6	175	0
Dozer	No	40		81.7	175	0
Excavator	No	40		80.7	175	0
Excavator	No	40		80.7	175	0
Excavator	No	40		80.7	175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	78.7	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.7	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Commercial	Commercial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	255	0
Concrete Saw	No	20		89.6	255	0
Dozer	No	40		81.7	255	0
Excavator	No	40		80.7	255	0
Excavator	No	40		80.7	255	0
Excavator	No	40		80.7	255	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	75.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.4	72.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial	Industrial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	150	0
Concrete Saw	No	20		89.6	150	0
Dozer	No	40		81.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0

Results

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

Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Site Preparation

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - W	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	175	0
Tractor	No	40	84		175	0
Dozer	No	40		81.7	175	0
Dozer	No	40		81.7	175	0
Tractor	No	40	84		175	0
Tractor	No	40	84		175	0
Tractor	No	40	84		175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.1	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Commercial	Commercial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	255	0
Tractor	No	40	84		255	0
Dozer	No	40		81.7	255	0
Dozer	No	40		81.7	255	0
Tractor	No	40	84		255	0
Tractor	No	40	84		255	0
Tractor	No	40	84		255	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.8	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial	Industrial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	150	0
Tractor	No	40	84		150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0
Tractor	No	40	84		150	0
Tractor	No	40	84		150	0
Tractor	No	40	84		150	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.5	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - W	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		175	0
Grader	No	40	85		175	0
Excavator	No	40		80.7	175	0
Dozer	No	40		81.7	175	0
Tractor	No	40	84		175	0
Tractor	No	40	84		175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.1	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Commercial	Commercial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		255	0
Grader	No	40	85		255	0
Excavator	No	40		80.7	255	0
Dozer	No	40		81.7	255	0
Tractor	No	40	84		255	0
Tractor	No	40	84		255	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	70.8	66.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.8	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial	Industrial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		150	0
Grader	No	40	85		150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0
Tractor	No	40	84		150	0
Tractor	No	40	84		150	0

Results

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

Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75.5	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential - W	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		175	0
Crane	No	16		80.6	175	0
Front End Loader	No	40		79.1	175	0
Front End Loader	No	40		79.1	175	0
Front End Loader	No	40		79.1	175	0
Welder / Torch	No	40		74	175	0
Generator	No	50		80.6	175	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		69.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		68.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		68.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		68.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		69.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73.1	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Commercial	Commercial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		255	0
Crane	No	16		80.6	255	0
Front End Loader	No	40		79.1	255	0
Front End Loader	No	40		79.1	255	0
Front End Loader	No	40		79.1	255	0
Welder / Torch	No	40		74	255	0
Generator	No	50		80.6	255	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		69.8	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		66.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		59.8	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	69.8	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial	Industrial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		150	0
Crane	No	16		80.6	150	0
Front End Loader	No	40		79.1	150	0
Front End Loader	No	40		79.1	150	0
Front End Loader	No	40		79.1	150	0
Welder / Torch	No	40		74	150	0

Generator	No	50	80.6	150	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	71	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	64.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	71.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.5	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - W	Residential	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
		Impact	Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)		No	40		77.7	175	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Commercial	Commercial	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
		Impact	Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)		No	40		77.7	255	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial	Industrial	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
		Impact	Lmax	Lmax	Distance	Shielding
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)		No	40		77.7	150	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/9/2022
Case Description: Architectural Coating

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential - W	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	175	0
Compressor (air)	No	40		77.7	175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.8	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Commercial	Commercial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	255	0
Compressor (air)	No	40		77.7	255	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial	Industrial	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.