Noise and Vibration Impact Analysis

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Pioneer Park Specific Plan

Noise and Vibration Impact Analysis

Prepared For

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1 INTRODUCTION

This Noise and Vibration Impact Analysis evaluates the potential noise impacts of the proposed Pioneer Park Specific Plan Project ("Project" or "proposed Project"). The Project is located within the jurisdiction of the City of Redlands (City).

1.1 Project Description

The Project ("Project," or "proposed Project") is situated in the northern portion of the City of Redlands within San Bernardino County. The Project site is located east of State Route (SR-210), north of West San Bernardino Avenue, south of West Pioneer Avenue, and is bisected by Tennessee Avenue. Regional access to the site is provided by SR-210 and Interstate 10 (I-10). Local access to the Project site is provided by West San Bernardino Avenue and West Pioneer Avenue. The Project site and the surrounding area are shown in Figure 1-1, *Local Vicinity*.

The Project site encompasses approximately 35.31 gross acres and 30.98 net acres, inclusive of four parcels identified by Assessor's Parcel Numbers (APNs) 0167-091, -10, -11, and -042. The site was historically utilized for agricultural activities and is currently vacant and undeveloped. It is primarily vegetated with unplanned, non-native grasses, along with sparse shrub. A portion of the site is developed with Tennessee Avenue which bisects the site from West San Bernardino Avenue to West Pioneer Avenue.

The Specific Plan proposes residential development within 30.98 net acres of the 35.31-gross acre site. The remaining 4.33 acres would be dedicated to the City as part of the right-of-way (ROW). The proposed Specific Plan would include two zoning designations: Single-Family Residential (SFR) would cover a 30.56-acre area of the Project site with an allowed density range of 8-9 dwelling units per acre (du/ac), and Multiple-Family Residential (MFR) would cover an approximately 0.42-acre portion of the Project site with an allowed density range of 16-17 du/ac. The proposed Specific Plan zoning would allow for a maximum of 275 single-family residences and seven multi-family units, for a total of 282 residences. Figure 1-2, *Project Tentative Tract Map*, illustrates the Project as proposed.

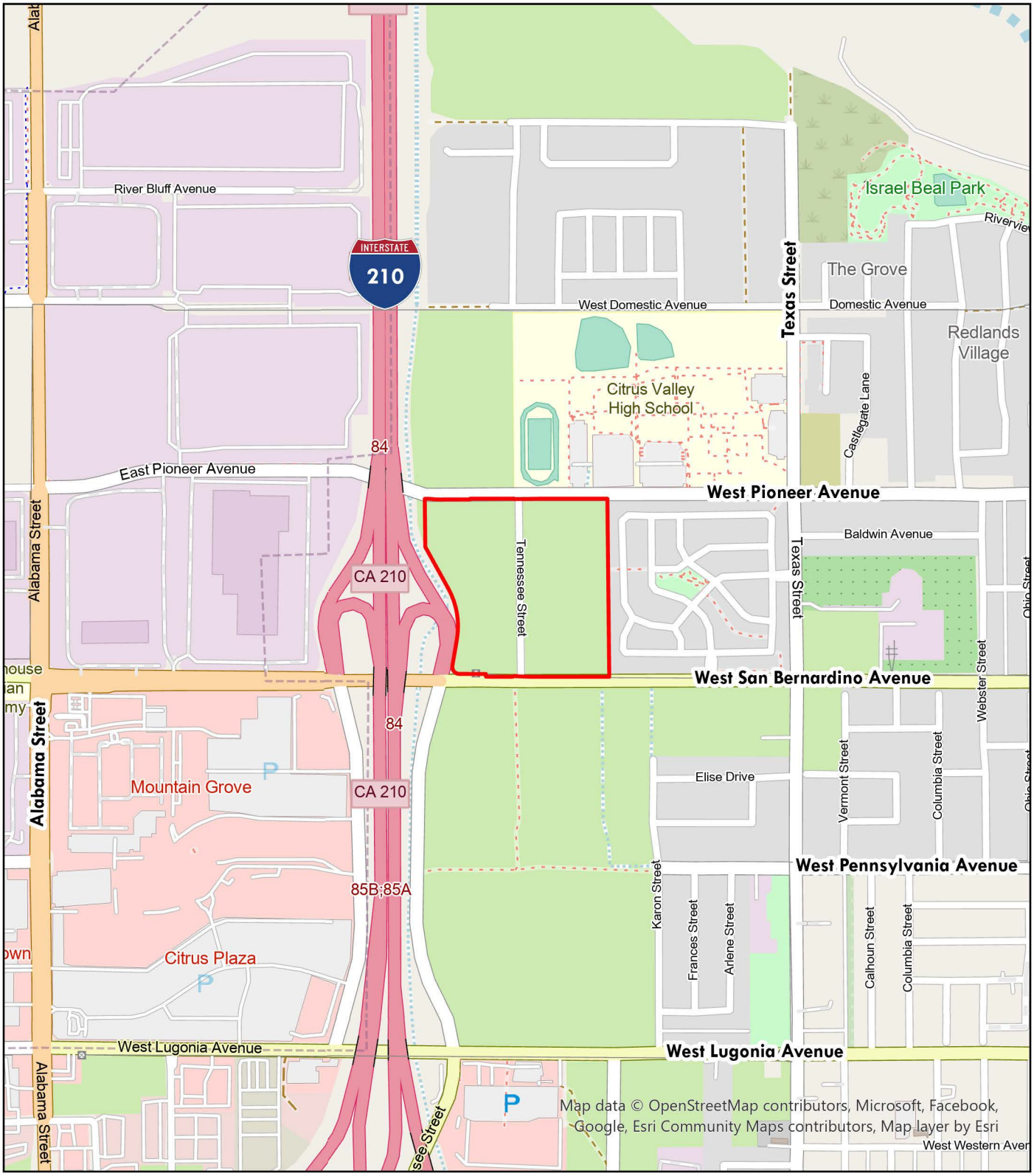
The Project site is designated as Commercial (C) by the City of Redlands General Plan and is zoned as Specific Plan Area (the current Specific Plan Area). The Project site is located within the East Valley Corridor Specific Plan (EVCSP) (SP 40) area and is designated as Special Development District (EV/SD) by the Specific Plan. The EV/SD designation is intended to provide an alternative, more flexible site planning process which encourages creative and imaginative planning of administrative professional, commercial or industrial developments, or a mixture of such uses, within the framework of a single cohesive concept plan. The proposed Project consists of a General Plan Amendment, Specific Plan Amendment, Pioneer Park Specific Plan ("Specific Plan"), and Tentative Tract Map (TTM), to allow for residential development on four parcels. Table 1-1, *Existing Land Use and Zoning Designations of Project Site and Surrounding Area*, provides a description of the land use and zoning designations of the Project site and surrounding area.

Table 1-1: Existing Land Use and Zoning Designations of Project Site and Surrounding Area

Direction	General Plan Land Use	Zoning
Proposed Project Site	Commercial (C)	East Valley Corridor Specific Plan (EVCSP) (SP 40)
North	West: Medium Density Residential (MDR) East: Public/Institutional	Specific Plan 64 Science Research Park (EV/SRP)
East	C and Medium Density Residential	Concept Plan 4 and Multiple Family Residential District
South	Low Density Residential (LDR)	Specific Plan 62 (SP62)
West	General Industrial (GI) (Unincorporated San Bernardino County)	Special Development District (EV/SD)

Source: City of Redlands, General Plan Land Use Map (2017); City of Redlands, Zoning Map (2026a).

Figure 1-1: Local Vicinity



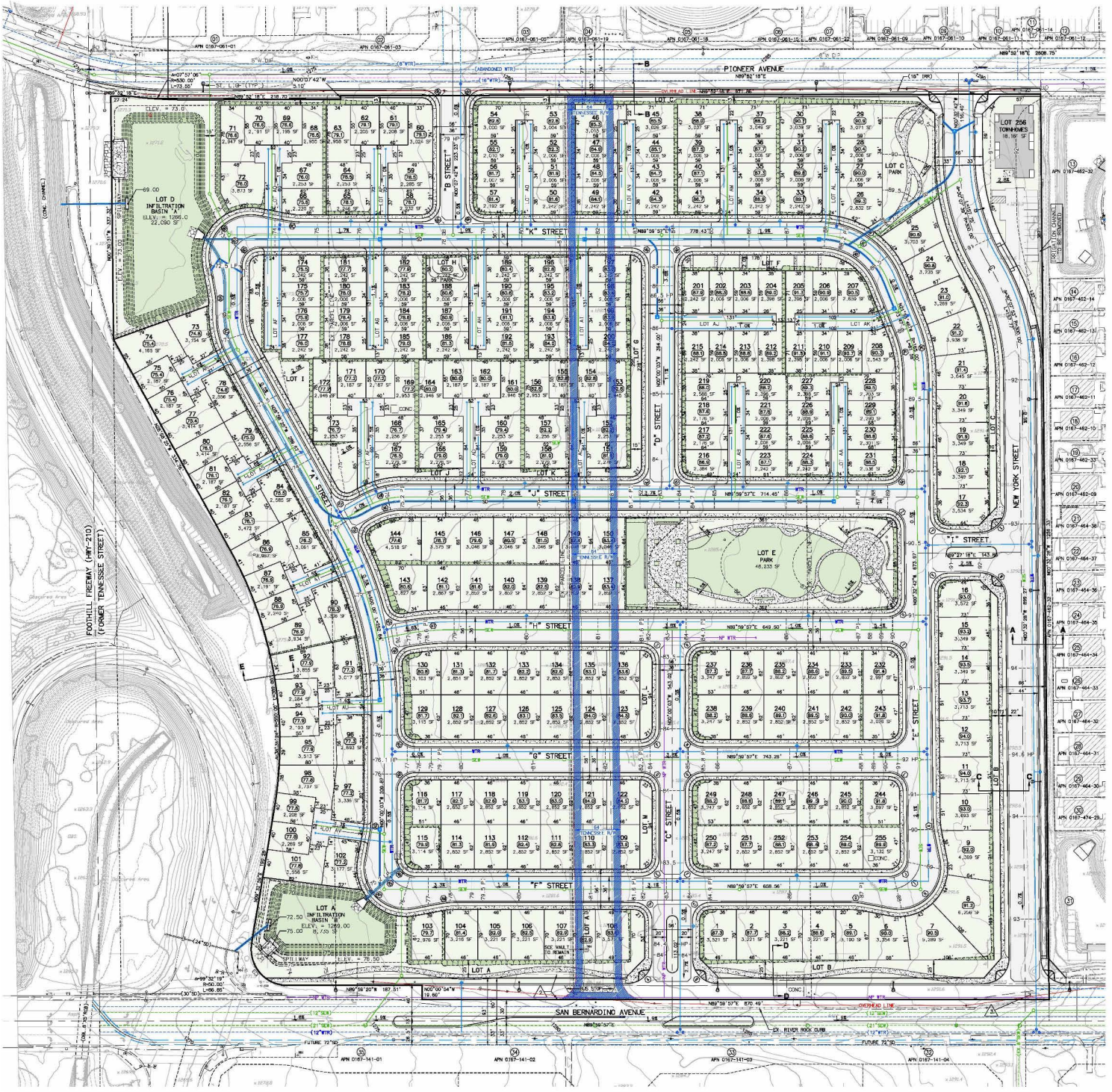
Legend

Project Boundary

0 0.15 0.3 Miles

N

TENTATIVE TRACT No. 20797
PRELIMINARY GRADING PLAN
A PORTION OF THE S 1/2 , SE 1/4 OF SECTION 16, TOWNSHIP 1S, RANGE 3W SAN BERNARDINO BASE AND MERIDIAN, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA



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1.2 Purpose of the Report

To support the California Environmental Quality Act (CEQA) document for the proposed Project, this report evaluates potential noise-related impacts to surrounding land uses as a result of implementation of the Project. This report begins with an overview of the study area, the Project site, and the key components of the proposed development. It then provides a foundational explanation of noise and vibration concepts to help frame the analysis.

To ensure consistency with local requirements, this report outlines relevant noise guidelines and regulatory standards that apply to the Project. It also describes the existing noise environment in and around the Project site to establish a baseline for comparison. From there, the analysis addresses potential short-term noise and vibration impacts that could occur during construction activities. Finally, the report examines long-term operational impacts once the Project is built and active.

1.3 Summary of Findings

The conclusions of this analysis are shown in Table 1-2, *Summary of Findings*.

Table 1-2: Summary of Findings

Topics	Significance Findings	Mitigation Measures Proposed
Construction Noise	Less than significant	NA
Operation Noise	Less than significant	NA
Construction Vibration	Less than significant	NA
Operation Vibration	Less than significant	NA
Airport Noise	Less than significant	NA

Notes: NA = not applicable

2 NOISE SCALES AND DEFINITIONS

Sound is energy transferred through air that our ears detect as small changes in air pressures. Noise is defined as any sound that is unwanted or excessive. Noise is considered undesirable when it disrupts everyday activities, poses a risk of physical harm, or negatively impacts health. Its effects on people can include irritation, difficulty communicating, sleep disruption, and in severe cases, hearing loss. These impacts can stem from either the pitch or the loudness of the sound. Pitch refers to the frequency of a sound wave, how many vibrations occur per second, which determines whether a sound is high or low in tone. Humans generally perceive higher-pitched sounds as louder. Loudness, on the other hand, relates to the intensity or amplitude of the sound.

Typically, noise is measured or predicted by a sound pressure level, reported in decibels (dB). The dB is a logarithmic unit used to represent the ratio between a measured sound pressure level and a standard reference level. A sound level of 0 dB corresponds to the quietest sound that a healthy, unimpaired human ear can hear. The human ear does not hear all frequencies equally. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. On this scale, the human range of hearing extends from approximately 3 dBA to approximately 140 dBA. Figure 2-1, *Common Noise Levels*, shows typical sound levels and human response for everyday sounds and noises.

Sound and vibration are intimately related. Sound is produced by the vibration of sound pressure waves in the air. Vibrating surfaces and structures can radiate sound, so measures taken to reduce vibration will often lead to a reduction in noise level.

2.1 Terminology

Sound: Sound is a vibratory disturbance produced by a vibrating object that travels through a medium, such as air, in the form of pressure waves. It can be detected by a receiver, such as the human ear or a microphone.

Noise: Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

Ambient noise: The combined noise from all nearby and distant sources present in a specific environment.

Decibel (dB): Unit used to measure the intensity of a sound.

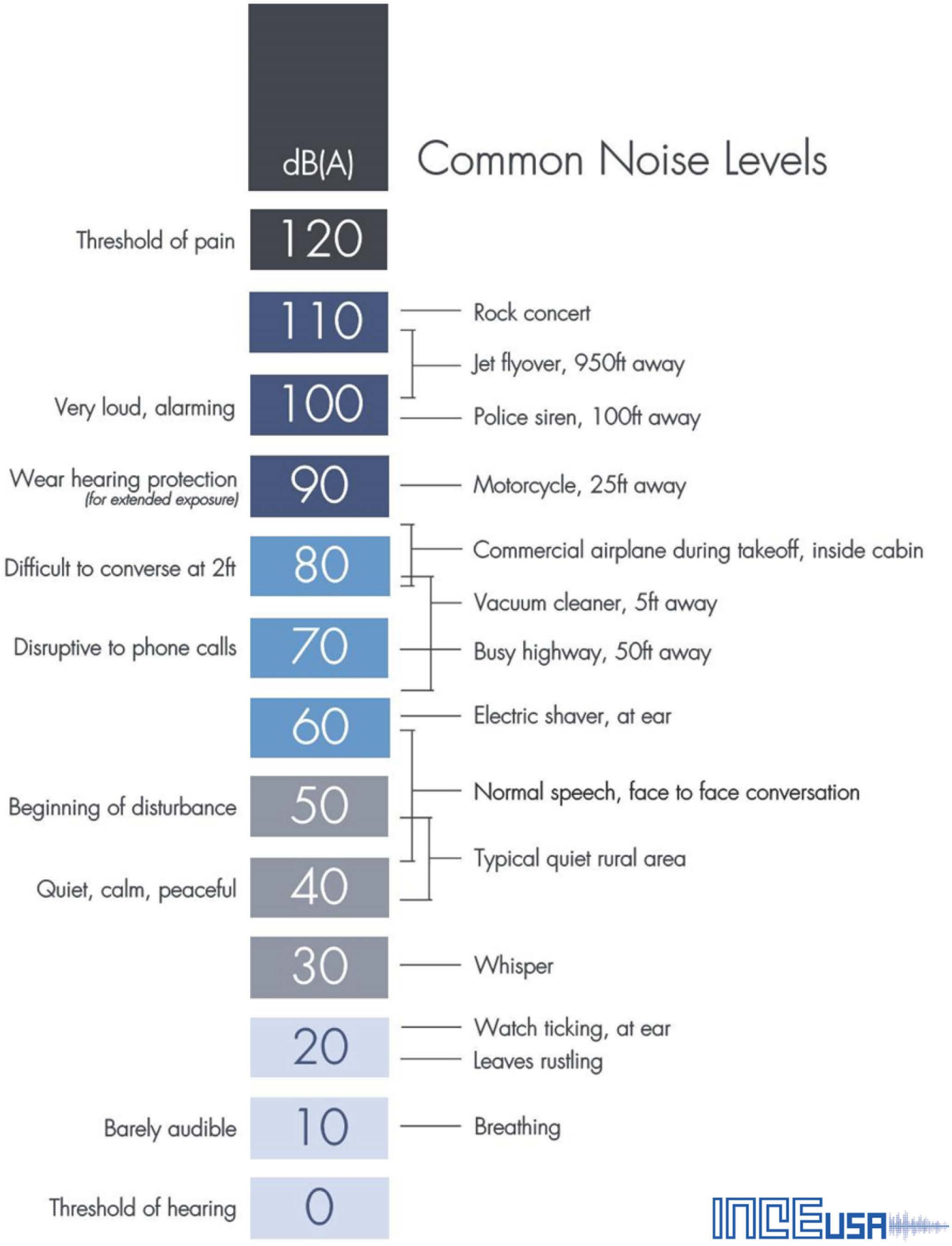
A-weighted decibel (dBA): Unit of sound pressure level in decibels on the “A-weighted” scale.

Sound exposure level (SEL): Represents all the acoustic energy (sound pressure) of an individual noise event as if that event had occurred within a one-second time period.

Equivalent sound level (L_{eq}): L_{eq} is the equivalent steady-state level which within a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period.

Maximum sound level (L_{max}): The highest values measured by the sound meter over a given time period.

Figure 2-1: Common Noise Levels



Minimum sound level (L_{min}): The lowest values measured by the sound meter over a given time period.

Day-night average sound level (L_{dn}): A noise metric used to reflect a person's cumulative exposure to sound over a 24-hour period, expressed as the noise level for the average day of the year on the basis of annual operation.

Community noise equivalent level (CNEL): CNEL represents a composite 24-hour noise level. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 PM to 10:00 PM, and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 PM and 7:00 AM. These additions are to account for the noise-sensitive time periods during the evening and night hours when quiet is most desirable and sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure.

Root mean square (RMS): RMS is the average vibration amplitude. The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body (FTA, 2018).

Peak Particle Velocity (PPV): PPV is the maximum instantaneous peak of the vibration signal (FTA, 2018). The PPV is most frequently used to describe vibration impacts on buildings.

Vibration Decibel (VdB): VdB is a unit used to measure ground motion caused by vibrations, specifically particle velocity in inches per second.

2.2 Sound Propagation

Sound propagates uniformly outward in a spherical pattern. Sound can propagate through air, water, and solids. During propagation, waves can be reflected, refracted, or attenuated by the medium. The reduction of sound (acoustic) waves is known as attenuation. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance in air from a point source. Sound attenuation can occur in numerous ways, including:

- Dissipating through the air when absorbed by another medium.
- Reflected against a barrier.
- Via interference from ambient noise.

2.3 Stationary Noise

A stationary noise source refers to any fixed-location activity or equipment that generates noise. Examples include engines, machinery, energy generation systems, and other powered equipment, as well as activities such as loading and unloading and parking lot activity. Although noise from motor vehicles on public roads is generally exempt from local regulation, these vehicles are considered stationary noise

sources when used on private property, such as at construction sites, truck terminals, or warehouse facilities.

The impact of stationary noise depends on several factors, including the type and operation of the equipment, the distance and path between the noise source and the receiver, and environmental conditions such as weather. Regulation of stationary noise can occur at the point of manufacture (for example, limits on engine noise), through restrictions on hours of operation, location of installation, or by requiring noise mitigation features such as barriers, structures, or other project features.

Construction activities are a frequent and often temporary source of stationary noise. Although construction-related noise is typically higher than existing background levels, it is limited to the duration of the work. Construction occurs in phases, each involving different equipment and operations, resulting in varied noise levels and characteristics throughout the project. Despite differences in equipment type and size, the primary sources and patterns of noise during construction are consistent enough to categorize noise levels by construction phase.

2.4 Mobile Noise

Traffic noise levels are primarily influenced by three factors: the volume of traffic, the speed of vehicles, and the proportion of trucks within the traffic flow. In general, traffic noise becomes louder with increased vehicle volume, higher speeds, and a greater number of heavy trucks. Vehicle noise comes from a combination of sources, including the engine, exhaust system, and tires.

Because noise levels are measured on a logarithmic scale, doubling the volume of traffic (while speed and truck percentage remain the same) results in an increase of about 3 dBA. According to the Federal Highway Administration (FHWA), a change of 3 dBA is considered "barely perceptible" and a change of 5 dBA is considered readily perceptible. A 10 dBA increase is typically required to produce a doubling in perceived loudness. The mix of vehicles also affects noise levels; as the number of heavy trucks rises and makes up a larger share of the traffic, nearby noise levels increase (FTA, 2018).

2.5 Noise From Multiple Sources

Because sound pressure levels in decibels are measured on a logarithmic scale, they cannot be added or subtracted using standard arithmetic. Instead, these levels are combined using energy-based summation. This means that adding a new noise source with the same sound level as an existing one does not result in a doubling of the overall noise level.

When two noise sources differ by 10 dBA or more, the louder source determines the overall level, and the combined noise level will be equal to that louder source. If the difference is between 0 and 1 dBA, the resulting level will be 3 dBA higher than the louder source or both sources if they are equal. A difference of 2 to 3 dBA results in a combined level 2 dBA above the louder source. When the difference is between 4 and 10 dBA, the resulting level will be 1 dBA higher than the louder source (FTA, 2018).

2.6 Vibration

The FTA *Transit Noise and Vibration Impact Assessment Manual* describes that vibration is the periodic oscillation of a medium or object. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Unlike airborne noise, ground-borne vibration is generally not perceptible outdoors and is primarily an indoor annoyance. Vibration effects should therefore be evaluated at the structure, considering building characteristics. Light structures such as wood-framed homes are more susceptible to vibration than heavy buildings with deep or spread foundations. In general, heavier buildings respond less to ground vibration due to soil-structure coupling.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts on buildings. The root mean square (RMS) vibration is the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Also, vibration decibel notation (VdB) is another vibration notation used by the FTA to describe vibration levels, provide a background of common vibration levels, and set vibration limits. Typical sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, heavy trucks and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. For construction-related activities, PPV-based threshold, such as those established by California Department of Transportation (Caltrans), are generally more appropriate for evaluating potential impacts on both structures and human receptors.

3 REGULATORY SETTING

3.1 Federal

Federal Transit Administration Noise and Vibration Guidance

The noise and vibration assessment in this report is based on criteria from the FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual) for a detailed construction noise assessment. Table 3-1, *Construction Noise Thresholds*, lists the FTA's recommended noise thresholds for a detailed construction noise assessment based on adjacent land uses.

Table 3-1: Construction Noise Thresholds

Land Use	$L_{eq.equip(8hr)}$, dBA	
	Day	Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: Federal Transit Administration. (2018). *Federal Transit Administration Transit Noise and Vibration Guidance.*

Construction activity can result in varying degrees of ground vibration, depending on the equipment and method employed. Operation of the construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings founded on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibration at moderate levels, and slight damage at the highest levels. While ground vibrations from construction activities do not often reach levels that can damage structures, fragile buildings must receive special consideration.

Federal Interagency Committee on Noise

The Federal Interagency Committee on Noise (FICON) made the following recommendations when reviewing noise levels for land use planning. If screening analysis shows that noise sensitive areas will be at or above 65 dB and will have an increase of 1.5 dB L_{dn} or more, further analysis should be conducted of noise-sensitive areas between 60-65 dB L_{dn} having an increase of 3 dB L_{dn} or more due to the proposed project noise exposure. If the 65 dB L_{dn} screening test calls for further analysis between 60-65 dB L_{dn}, agency mitigation options may include noise sensitive areas between 60-65 dB L_{dn} that are projected to have an increase of 3 dB or more as a result of the proposed project noise exposure. When the ambient noise level is less than 60 dB L_{dn}, a margin of safety of 5 dB is applied to the identified outdoor level to

account for other adverse effects on activity interference and annoyance as well as for the most sensitive fraction of the population.

3.2 State

Noise Element Requirements

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a Noise Element within the General Plan. The Element must identify and evaluate noise problems within the community, focusing on noise sources such as transportation, industrial plants, and airports, and presenting noise contours using CNEL or Ldn.

The Governor's Office of Land Use and Climate Innovation (previously known as the Governor's Office of Planning and Research) Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of community noise equivalent level (CNEL). A noise environment of 50 CNEL to 60 CNEL is considered to be "normally acceptable" for residential uses.

Title 24 – California Building Standards Code

The California Building Code (CBC) (California Code of Regulations Title 24, Part 2) contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. Section 1206.4, *Allowable Interior Noise Levels*, of the CBC requires that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room.

California Department of Transportation

Caltrans published updates to the *Traffic Noise Analysis Protocol* and *Transportation and Construction Vibration Guidance Manual* in April 2020. It contains the recommended thresholds to evaluate vibration impacts during construction. The construction vibration criteria include consideration of building conditions, as shown in Table 3-2, *Construction Vibration Damage Thresholds*.

Table 3-2: Construction Vibration Damage Thresholds

Structure and Condition	Maximum PPV, inches/second	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial structures	2.0	0.5

PPV=Peak Particle Velocity
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans. (2020). *Transportation and Construction Vibration Guidance Manual*.

California Public Resources Code

California Public Resources Code (PRC) Division 13 – Environmental Quality, Chapter 2.6 – General, Section 21085. For the purposes of this division, for residential projects, the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment.

3.3 Local

City of Redlands General Healthy Community Element

The City's current General Plan, adopted in 2017, is a policy document, or "blueprint" for future development, adopted by the City Council to guide future growth in Redlands. The Healthy Community Element of the General Plan contains policies related to noise. The following are policies categorized as "principles" and "actions" that are applicable to the proposed Project.

Principles

7-P.39 Support measures to reduce noise emissions by motor vehicles, aircraft, and trains.

7-P.41 Ensure that new development is compatible with noise environment by continuing to use potential noise exposure as a criterion in land use planning.

7-P.43 Ensure long-term compatibility between the Redlands Municipal Airport and surrounding land uses.

Actions

7-A.135 Use the noise and land use compatibility matrix (Table 7-10 [of the General Plan]) and Future Noise Contours Map (Figure 7-9) as criteria to determine the acceptability of a given land use including the improvement/construction of streets, railroads, freeways, and highways. Do not permit new noise-sensitive uses – including schools, hospitals, places of worship, and homes – where noise levels are "normally unacceptable: or higher, if alternative locations are available for the uses in the city.

7-A.136 Require a noise analysis be conducted for all development proposals located where projected noise exposure would be other than "clearly" or "normally compatible" as specified in Table 7-10.

7-A.137 For all projects that have noise exposure levels that exceed the standards in Table 7-10, require site planning and architecture to incorporate noise-attenuating features. With mitigation, development should meet the allowable outdoor and indoor noise exposure standards in Table 7-11. When a building's openings to the exterior are required to be closed to meet the interior noise standard, mechanical ventilation shall be provided.

7-A.138 Continue to maintain performance standards in the Municipal code to ensure that noise generated by proposed projects is compatible with surrounding land uses.

The Healthy Community Element establishes maximum allowable exterior noise exposure standards for new development affected by transportation noise sources, including arterial roadways, freeways, airports, and rail corridors. As shown in Table 3-3, *Noise/Land Use Compatibility Matrix*, the standards contained in the General Plan provide guidance for evaluating land use compatibility with transportation-related noise sources and serve as a planning framework to assess the relationship between land use types and existing or projected exterior noise levels. The Noise/Land Use Compatibility Matrix and Interpretation table identifies compatibility classifications rather than enforceable noise limits. Noise-sensitive residential land uses are considered clearly compatible (Zone A) with unmitigated exterior noise levels below 60 dBA CNEL and normally incompatible (Zone C) where unmitigated exterior noise levels exceed 75 dBA CNEL. Noise-sensitive industrial land uses are considered clearly compatible (Zone A) with unmitigated exterior noise levels below 75 dBA CNEL and normally compatible (Zone B) at exterior noise levels up to 85 dBA CNEL.

Table 3-3: Noise/Land Use Compatibility Matrix

Land Use Categories		Community Noise Equivalent Level (CNEL)						
Categories	**Uses**	**< 60**	**65**	**70**	**75**	**80**	**85**	**>**
RESIDENTIAL	Single Family, Duplex Multiple Family	A	C	C	C	D	D	D
RESIDENTIAL	Mobile Homes	A	C	C	C	D	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Loding	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater, Mixed Uses with residential units	A	A	A	A	B	B	C
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research & Dev., Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheater, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	A	B	B	B
COMMERCIAL General, Special INDUSTRIAL INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library, Schools Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

Zone A (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.

Zone B (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.

Zone C (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.

Zone D (Clearly Unacceptable): New construction or development should generally not be undertaken.

Source: City of Redlands. (2017). *City of Redlands General Plan Healthy Community Element.*

Additionally, as shown in Table 3-4, *City of Redlands Interior and Exterior Noise Standards*, specific interior and exterior noise limits are established for defined land uses.

Table 3-4: City of Redlands Interior and Exterior Noise Standards

Land Use Categories		Community Noise Equivalent Level (CNEL) Energy Average CNEL	
Uses		**Interior[1]**	**Exterior[2]**
Residential	Single Family, Duplex, Multi Family	45[3]	60
	Mobile Home	--	60[4]
Commercial, Industrial, Institutional	Hotel, Motel, Transient Lodging	45	65[5]
	Commercial Retail, Bank, Restaurant	55	--
	Office Building, Research & Development, Professional Offices, City Office Building	50	--
	Amphitheater, Concert, Auditorium, Meeting Hall	45	--
	Gymnasium (Multipurpose)	50	--
	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	60	--
	Movie Theaters	45	--
Institutional	Hospitals, Schools, and Classrooms	45	60
Open Space	Parks	--	60

Notes:
* CNEL (Community Noise Equivalent Level) – The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of approximately five decibels to sound levels in the evening from 7:00 PM to 10:00 PM and ten decibels to sound levels at night after 10:00 PM and before 7:00 AM.
1. Indoor environment excluding bathrooms, toilets, closets, and corridors.
2. Outdoor environment limited to private yard of single-family as measured at the property line; multi-family private patio or balcony which is served by a means of exit from inside; mobile home park; hospital patio; park picnic area; school playground; hotel and recreational area.
3. Noise level requirement with open windows, if they are used to meet the natural ventilation requirement.
4. Exterior noise level should be such that interior level will not exceed 45 CNEL.
5. Except those areas affected by aircraft noise.

City of Redlands Municipal Code

The City of Redlands regulates noise through Title 8 of the Municipal Code (Health and Safety), specifically Chapter 8.06, *Community Noise Control*.

Section 8.06.070. Exterior Noise Limit.

A. The noise standards for the categories of land uses identified in Table 3-5, *Maximum Permissible Exterior Sound Levels by Receiving Land Use*, of this section shall, unless otherwise indicated, apply to all such property within a designated zone.

Table 3-5: Maximum Permissible Exterior Noise Level by Receiving Land Use

Receiving Land Use Category Noise Level - dBA	Time Period	Noise Level - dBA
Single-family residential districts	10:00 PM – 7:00 AM	50
	7:00 AM – 10:00 PM	60
Multi-family residential districts;	10:00 PM – 7:00 AM	50
Public space; institutional	7:00 AM – 10:00 PM	60
Commercial	10:00 PM – 7:00 AM	60
	7:00 AM – 10:00 PM	65
Industrial	Anytime	75

Source: Section 8.06.070: Exterior Noise Limits

B. No person shall operate, or cause to be operated, any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level when measured on any other property to exceed:

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

C. If the measured ambient level exceeds the allowable noise exposure standard within any of the first four (4) noise limit categories listed above, the allowable noise exposure standard shall be adjusted in five (5) dB increments in each category, as appropriate, to encompass or reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category, the maximum

allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

D. The ambient noise shall be measured at the same location along the property line utilized in subsection 8.06.060B of this chapter, with the alleged offending noise source inoperative. If the alleged offending noise source cannot be shut down, the ambient noise shall be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dB, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.

Section 8.06.080. Interior Noise Standards.

A. No person shall operate or cause to be operated any source of sound, or allow the creation of any noise, which causes the noise level when measured inside a neighboring receiving occupied building to exceed the following standards:

1. The noise standard for that land use specified in Table 3-6 for a cumulative period of more than five (5) minutes in any hour.
2. The noise standard for that land use specified in Table 3-6 plus five (5) dB for a cumulative period of more than one (1) minute in any hour.
3. The noise standard for that land use specified in Table 3-6 plus ten (10) dB for the maximum measured ambient noise level for any period of time.

B. If the measured ambient level exceeds the allowable exterior noise exposure standard in table 1 of this chapter [of the Municipal Code], the allowable interior noise exposure level shall be adjusted in five (5) dB increments as appropriate to reflect the ambient noise level.

Table 3-6: Maximum Permissible Interior Noise Level by Receiving Land Use

Receiving Land Use Category	Time Period	Noise Level - dBA
Single-family residential districts	Anytime	45
Institutional; hotels	Anytime	45
Commercial	Anytime	50
Industrial	Anytime	60

Source: Section 8.06.080: Interior Noise Limits

Section 8.06.090. Noise Disturbance Prohibited.

The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

F. Construction And/Or Demolition: Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of six

o'clock (6:00) P.M. and seven o'clock (7:00) A.M., including Saturdays, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work by public service utilities, the city or another governmental entity. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with exhaust and air intake silencers in proper working order, or suitable to meet the standards set forth herein.

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

3.4 Significance Criteria

The following significance criteria are based on the analysis identified within Appendix G of the CEQA Guidelines. The City's General Plan guidelines and Municipal Code regulations identify noise compatibility and establish noise standards that are implemented as thresholds. However, the existing City regulations do not identify levels of ambient noise increases that are considered substantial or vibration criteria during operation. Thus, thresholds established in the FTA manual for construction noise, from FICON guidance for operational increase in ambient noise, and from Caltrans for vibration were utilized, as described below.

Construction Noise

Construction-related activities were evaluated using the FTA thresholds to assess potential construction-related impacts at nearby sensitive receptors. A noise threshold of 80 dBA for residential properties is used in this analysis.

Operational Increase in Ambient Noise

FICON guidance provides an established source of criteria to assess the impacts of a substantial permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the "without Project" (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or readily perceptible, 3 dBA or barely perceptible, and 1.5 dBA depending on the underlying "without Project" noise levels for noise-sensitive uses.

Per the FICON, if ambient noise is less than 60 dBA, a readily perceptible 5 dBA or greater project-related noise level would be significant; if ambient noise levels range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase would be significant; and if ambient noise levels exceed 65 dBA, a 1.5 dBA or greater increase is considered significant as it likely contributes to an existing noise exposure exceedance.

Vibration

Vibration-generating activities are evaluated using the Caltrans *Transportation and Construction Vibrational Manual* vibration damage thresholds to assess potential construction-related impacts at nearby buildings. Most buildings near the Project site are modern structures. However, to provide a conservative analysis, the threshold for older residential structures was used, which provides a vibration threshold of 0.3 PPV (in/sec), as listed previously in Table 3-2, *Construction Vibration Damage Thresholds*.

Summary

Table 3-4, *Significance Criteria Summary*, provides a summary of thresholds established by the City of Redlands and used in this report.

Table 3-7: Significance Criteria Summary

Analysis	Conditions	Significant Criteria	
		Daytime	Nighttime
Off-Site Traffic[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project Increase	
	If ambient is 60-65 dBA CNEL	≥ 3 dBA CNEL Project Increase	
	If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project Increase	
Operational	Noise Level Standards for Residential Properties[2]	60 dBA	50 dBA
Construction	Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of six o'clock (6:00) P.M. and seven o'clock (7:00) A.M., including Saturdays, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work by public service utilities, the city or another governmental entity.[2]		
	Noise Level at Residential Property[5]	80 dB	X
	Vibration Damage Criteria[6]	0.3 PPV (inches/second) – *Older residential structures*	
		0.5 PPV (inches/second) – *Commercial structures*	

1. FICON. (1992). *Federal Agency Review of Selected Airport Noise Analysis Issue.*
2. City of Redlands. (2026). *City of Redlands Municipal Code.*
3. City of Redlands. (2010). *City of Redlands Noise Element.*
4. FTA. (2018). *Transit Noise and Vibration Impact Assessment Manual*.
5. Caltrans. (2020). *Transportation and Construction Vibration Guidance Manual*.

4 EXISTING CONDITIONS

4.1 Existing Noise Levels

To assess existing ambient noise levels in the Project area, EPD conducted two short-term noise measurements on February 12, 2026, at locations in the vicinity of the proposed Project. These measurement locations are shown in Figure 4-1, *Noise Measurement Locations*, and are representative of typical noise exposure levels experienced at the nearest sensitive receptors. Each measurement consisted of a 15-minute recording taken between 10:30 AM and 11:30 AM. These short-term L_{eq} measurements are considered indicative of general noise conditions throughout the day.

The measurements were conducted during "off-peak" traffic hours (between 9:00 AM to 3:00 PM) to establish a more conservative baseline. During traditional peak hours, traffic congestion often results in lower vehicle and heavy truck volumes. In contrast, free-flowing traffic conditions immediately before or after peak periods can produce higher noise levels. The recorded noise levels at the measurement sites and at the nearest sensitive receptors are summarized in Table 4-1, *Ambient Noise Measurements*.

Table 4-1: Ambient Noise Measurements

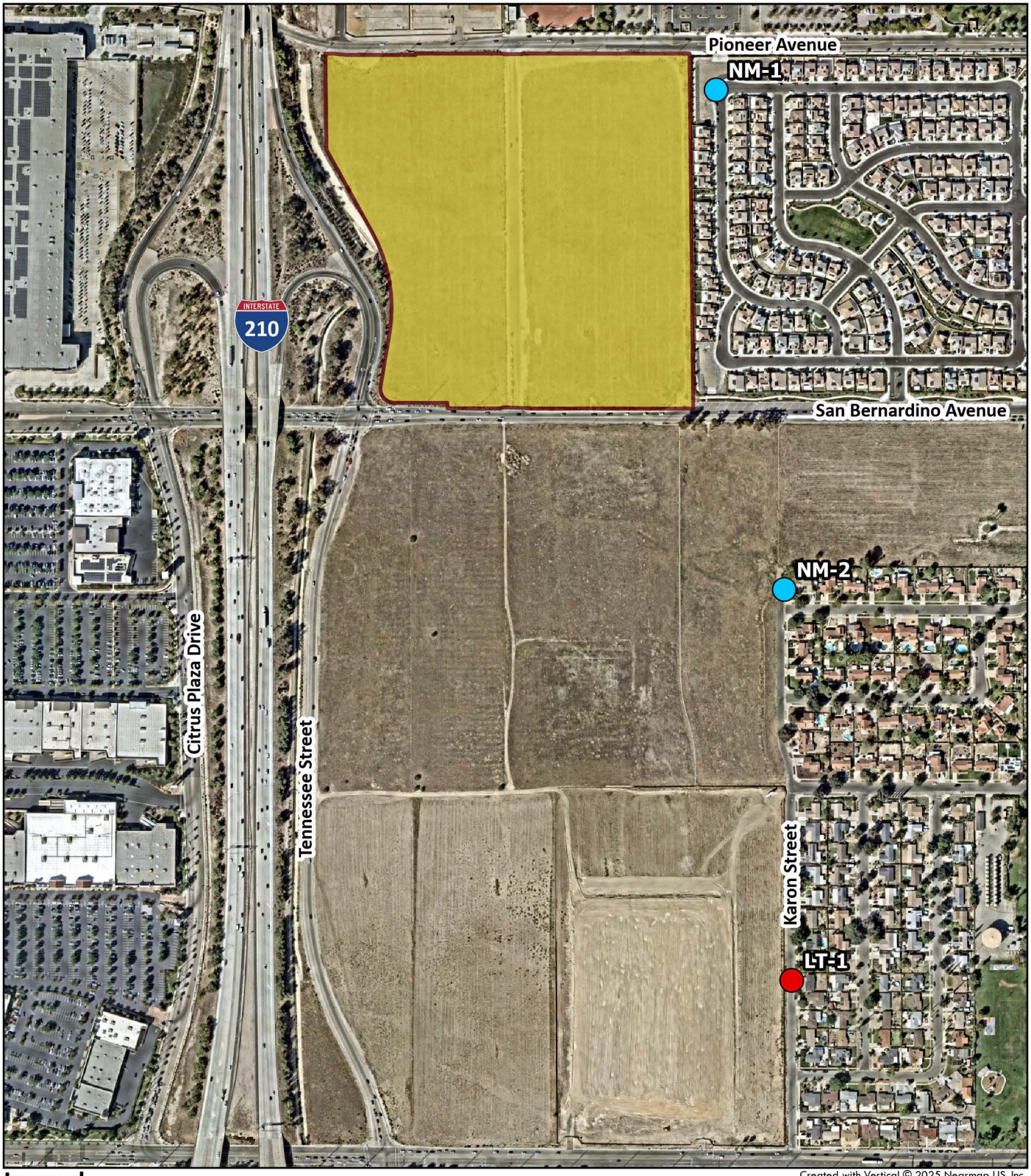
Location	Description	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
NMST-1	Intersection of Half Moon Avenue and Camelia Lane, facing Pioneer Avenue	57.3	69.6	51.8
NMST-2	West of 912 Elise Drive, facing the site	56.6	73.2	51.1

Notes: dBA=A-weighted decibels; L_{eq}=Equivalent Sound Level; L_{min}=Minimum Sound Level; L_{max}=Maximum Sound Level
Source: EPD Solutions, Inc. 2025. Refer to Appendix A, *Noise Measurement Data*.

The background ambient noise levels in the Project area are dominated by transportation-related noise associated with surface streets, including the auto and truck activities on study area roadway segments near the noise level measurement locations.

The meteorological conditions during the measurement of ambient noise levels included clear conditions and warm temperatures with light windspeeds (5 miles per hour). Noise monitoring equipment used for the ambient noise survey consisted of a PCE-430, which is a Class 1 sound level meter with a half-inch measurement microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for sound level meters. The results of the field measurements are included in Appendix A.

Figure 4-1: Noise Measurement Locations



Legend

Project Boundary

Long Term Noise Measurement Location

Noise Measurement Location

0 500 1,000 US Feet

N

The most recent long-term noise measurements were conducted from December 7 to December 8, 2022, using Larson Davis Spark dosimeters. The recorded noise levels at the measurement sites are summarized in Table 4-2, *Long-Term Noise Measurements*. These measurement locations are shown in Figure 4-1, *Noise Measurement Locations*, as mentioned above.

Table 4-2: Long-Term Noise Measurements

Location	Description	Noise Level (dBA)					Noise Sources
		Daytime		Nighttime		CNEL	
		L_{eq}	L_{max}	L_{eq}	L_{max}		
NMLT-1	Located on the southeast corner of Karon Street and Pennsylvania Avenue. On a utility pole. Approximately 22 ft from Pennsylvania Avenue centerline.	53.7-62.8	69.6-86.4	50.0-61.7	67.9-84.9	62.7	Traffic on Pennsylvania Avenue and Karon Street.

Notes: CNEL=Community Noise Equivalent Level; dBA=A-weighted decibels; L_{eq}=Equivalent Sound Level; L_{min}=Minimum Sound Level; L_{max}=Maximum Sound Level
Source: Refer to Appendix A, *Noise Measurement Data*.

4.2 Sensitive Receptors

Noise-sensitive receptors are locations or individuals that may be adversely affected by elevated noise levels due to their nature, function, or occupancy. Land uses considered sensitive by the State of California include schools, playgrounds, athletic facilities, hospitals, rest homes, rehabilitation centers, long-term care and mental care facilities. Generally, a sensitive receptor is identified as a location where human populations (especially children, senior citizens, and sick people) are present.

The nearest sensitive receptors to the Project site boundary are single-family residences adjacent to the Project site to the east. There is also an existing high school with athletic facilities (stadium) to the north. The stadium is located 100 feet from the Project site to the north. Other noise sensitive land uses near the Project site are located at greater distances than those listed above and would experience lower noise levels than those detailed in this report due to the additional attenuation from distance and the shielding of intervening structures.

4.3 Aircraft Noise

Airport-related noise levels are primarily associated with aircraft engine noise made during takeoff, landing, or idling on the tarmac. The closest airport to the Project site is San Bernardino County International Airport (SBD), approximately 1.68 miles northwest of the Project site.

4.4 Stationary Sources

Land uses in the Project area are mostly residential and institutional. The primary sources of stationary noise in the Project vicinity are urban-related activities (e.g., mechanical equipment and parking areas). The noise associated with these sources may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise.

4.5 Existing Traffic Noise

The Federal Highway Administration (FHWA) Highway Traffic Prediction Model (FHWA-RD-77-108) was used to evaluate traffic-related noise conditions along local roadway segments in the Project vicinity. The details of traffic noise modeling are included in Appendix B, *Noise Modeling Data*. Table 4-3, *Existing Traffic Noise Levels*, provides the existing traffic noise levels in the Project vicinity. These traffic noise levels are representative of a worst-case scenario that assumes a flat terrain and no shielding between the traffic and the noise contour.

Table 4-3: Existing Traffic Noise Levels

Roadway Segment	ADT[1]	dBA @ curbside from Roadway Centerline[2]	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)
W Pioneer Avenue					
West of Future New York Street	4,675	67.8	-	38	83
East of Future New York Street	6,450	68.7	-	44	95
W San Bernardino Avenue					
Between West Pioneer Avenue and West San Bernardino Avenue	9,105	70.2	-	55	119
West of New York Street	7,665	67.8	36	77	167
New York Street/Tennessee Street					
Between West Pioneer Avenue and West San Bernardino Avenue	2,420	59.8	-	-	48

Notes: ADT = average daily traffic; CNEL = community noise equivalent level; dBA=A-weighted decibels, - = contour is within the roadway.

1. EPD Solutions. (2026). Pioneer Park Traffic Impact Analysis.
2. United States Department of Transportation and Federal Highway Administration. (2018). *Traffic Data Computation Method.*

Refer to Appendix B, *Noise Modeling Data*.

5 THRESHOLDS OF SIGNIFICANCE

5.1 CEQA Thresholds

Appendix G, *Environmental Checklist Form*, of the CEQA Guidelines contains the following significance criteria. A project could have potential significant impacts regarding noise and vibration if it were to:

- 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 the other agencies;
- Generate excessive ground vibration or ground borne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public or public use airport, expose people residing or working in the project area to excessive noise levels.

Based on these standards/criteria, the effects of the Project have been categorized as having "no impact," a "less-than-significant impact," or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less-than-significant level through the application of existing regulations and mitigation, it is categorized as a significant and unavoidable impact.

5.2 Methodology

Construction Noise

Since the City's Municipal Code does not establish quantified thresholds for increases to noise volumes and vibration, the thresholds from the FTA *Transit Noise and Vibration Impact Assessment Manual* were used in this analysis. Construction noise levels were based on typical noise levels generated by construction equipment as published by the FTA and FHWA and using the FHWA's Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise levels. The equipment list used in this analysis is based on land use and Project location using the California Emissions Estimator Model (CalEEMod). Since the exact specific equipment to be used on-site is unknown, this evaluation identifies the combined noise levels for all pieces of equipment operating simultaneously for each stage. Construction noise is assessed in dBA L_{eq}. The FTA's *Transit Noise and Vibration Impact Assessment Manual* sets a threshold of 80 dBA for residential land uses that is used to evaluate noise impacts.

Operational Noise

Operational noise would include noise from off-site mobile sources and on-site noise sources such as heating, ventilation, and air conditioning (HVAC) units, parking lot activities, and on-site moving vehicles

such as garbage and delivery trucks traveling on internal roads. The Project was compared to the exterior thresholds set in the City of Redlands Municipal Code to evaluate the significance of impact. The operational noise on-site is analyzed using the Computer Aided Noise Abatement (CadnaA) program. CadnaA can analyze multiple types of noise sources using the spatially accurate project site plan and OpenStreetMap data in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA calculates the distance from each noise source to the noise receptor locations and applies ground absorption, distance attenuation, and barrier/building attenuation inputs to provide a summary of the noise level at each receptor, as well as the partial noise level contributions from each source.

Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on reference sound power levels (PWL) to describe individual noise sources. While sound pressure levels (SPL) quantify in decibels the intensity of a given sound at a reference distance, SPLs vary with distance from the source and are influenced by intervening obstacles and barriers, air absorption, wind, and other factors. In contrast, sound power represents the total acoustic energy emitted by a source and is an absolute value that is not affected by the surrounding environment.

The operational noise level calculations presented in this study account for distance attenuation due to geometric spreading, which occurs when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the analysis to represent mixed ground conditions, reflecting a combination of hard and soft surfaces. This approach provides a reasonable approximation for environments where both surface types are present and aligns with typical real-world conditions.

The FHWA-RD-77-108 traffic noise model was used to evaluate traffic-related noise conditions along local roadway segments in the Project vicinity without noise attenuation from barriers and topography. The "Existing with Project" levels would be calculated based on existing trip generation plus the Project daily trips with roadway distribution based on the *Pioneer Park Traffic Impact Analysis* (TIA Analysis), dated 2026, prepared by EPD Solutions, Inc. Based on TIA Analysis, the Project would generate an estimated increase of 2,543 daily trips, including 196 AM peak hour trips and 260 PM peak hour trips. It is important to note the modeled noise level is not representative to the actual ambient noise level. However, the noise increase along off-site roadways is calculated as the difference between existing conditions and existing-plus-project conditions to provide a comparable analysis. The threshold is based on the actual ambient noise level. According to the Caltrans Traffic Noise Analysis Protocol, a doubling of traffic on a roadway results in an increase of 3 dB (Caltrans, 2020a). A 3 dBA change is considered a just perceptible difference. Since the existing ambient noise level is between 60-65 dBA, referring to Section 4.1, *Existing Noise Levels*, the mobile noise increases due to implementation of the Project was compared to a threshold of 3 dBA (as listed in Table 3-4, *Significance Criteria Summary*) to evaluate the significance.

Construction and Operation Vibration

Vibration levels were calculated based on the structure damage assessment method provided in the Caltrans' *Transportation and Construction Vibration Guidance Manual*. As the nearest sensitive receptor

structures are new residential structures, the construction damage criterion for vibrations at 0.5 inches per second is applied (see Table 3-4, *Significance Criteria Summary*).

Distance to the Surrounding Sensitive Receptors

As discussed above, there are sensitive receptors located in the Project vicinity. The nearest sensitive receptors are the residences located to the east of the Project site. Other noise sensitive land uses near the Project site are located at greater distances than those listed above and would experience lower noise levels than those detailed in this report due to the additional attenuation from distance and the shielding of intervening structures. The construction noise impacts are evaluated from the geographic center of the Project to the nearest sensitive receptors. The construction vibration impacts are evaluated from the construction activities to the nearest residential structures. Please refer to Table 5-1, *Distances Used for Construction Noise Analysis*, for details of distances.

Table 5-1: Distances Used for Construction Noise Analysis

Sensitive Receptor	Distance Between Project Boundary to Surrounding Land Uses (feet)	Distance From the Geographic Center of Project Site to the Nearest Sensitive Receptor (feet)	Distance from Construction Activities to the Nearest Structure (feet)
Residential to the East	0 (Adjacent)	625	15
Institutional to the North	100	765	510

The Project will be constructed in a single phase; therefore, future occupants of the Project site are not considered sensitive receptors for the construction noise analysis since dwelling units will not be occupied during construction. Therefore, this analysis was limited to off-site sensitive receptors.

Airport Noise

The distance between the Project site and the nearest airport was evaluated to determine whether the Project is located within an airport land use plan area or within the vicinity of a public or private airstrip. Aircraft flyovers may occasionally be audible at the Project site due to air traffic in the surrounding area. The closest airport to the Project site is San Bernardino International Airport (SBD), approximately 1.6 miles northeast of the Project site. The *HZ-9 Airport Safety and Planning Areas* figure in the San Bernardino Countywide Plan shows that the Project site is within the Airport Safety Review Area but outside of the Redlands Municipal Airport 70 dBA Contour and San Bernardino International Airport 65 dBA Contour (County of San Bernadino, 2026). Because the site is not within this contour, no significant impact would occur and no further evaluation of aircraft-related noise impacts is warranted.

6 PROJECT IMPACTS

6.1 Construction Noise

On-Site Construction Noise

Construction is accomplished in different phases with a specific equipment mix, depending on the work to be performed during that phase. As a result of the different equipment mix for each phase, each phase has its own noise characteristics; some phases have higher continuous noise levels, while others have higher impact noise levels. The Project construction activities are expected to occur in the following phases:

1. Site preparation;
2. Grading;
3. Building construction;
4. Paving; and
5. Architectural coating.

Construction activities frequently shift from one location to another. For example, during site preparation and grading, noise-generating activities may concentrate in an area for a short period to remove existing structures, while the majority of the grading involves the equipment moving back and forth in a predictable pattern throughout the site. The building construction and foundation work generally concentrates near the building location, while paving involves a pattern of movement throughout the site over a short term. Therefore, the FTA recommends that construction activities are best evaluated as multiple moving point sources because equipment changes position in terms of its distance and direction relative to the receivers (FTA, 2018). Since this analysis assumed all equipment operating simultaneously, the distance used to evaluate construction noise would be from the geographic center of the Project site and nearest sensitive receptors. The construction noise would be attenuated by distance and existing objects (e.g., walls or buildings) to block line of sight. The noise levels of the construction equipment identified by California Emissions Estimator Model (CalEEMod) for use in the Project are listed in Table 6-1, *Construction Equipment Noise Levels*.

Table 6-1: Construction Equipment Noise Levels

Activity	Equipment[1]	Quantities[1]	Maximum Noise Level @ 50 Feet[2,3]
			dBA L_{max}
Site Preparation	Rubber Tired Dozers	3	81.7
	Crawler Tractors	4	84.0
Grading	Graders	1	85.0
	Excavators	2	80.7
	Rubber Tired Dozers	1	81.7
	Crawler Tractors	2	84.0
	Scraper	2	83.6
Building Construction	Cranes	1	80.6
	Forklift	3	74.7
	Tractors/Loaders/Backhoe	3	84.0
	Generator Sets	1	80.6
	Welders	1	74.0
Paving	Pavers	2	77.2
	Paving Equipment	2	89.5
	Rollers	2	80.0
Architectural Coating	Air Compressors	1	77.7

Source:
1. The equipment list at each construction phase is based on the California Emissions Estimator Model and questionnaire filled by the applicant.
2. Federal Highway Administration. (2006). *Construction Noise Handbook*.
3. The noise levels are based on Table 9.1 of the Construction Noise Handbook. If the exact equipment listed is not available, a default noise level of 85 dBA, representative of typical construction equipment, is used. Specifically, the Forklift is modeled using this default value. Additionally, for the category of Tractors/Loaders/Backhoes, the noise level of a Tractor (84 dBA) is used, as it represents the loudest among the three.

The nearest noise sensitive receptors are single-family residences adjacent to the Project site to the east. The geographic center of the Project site is approximately 625 feet from the closest single-family residences to the east. The individual noise levels of the construction equipment are listed in Table 6-1, *Construction Equipment Noise Levels*, above. As discussed above, to provide a conservative analysis, this analysis assumes all pieces of equipment would be operating together and located at the geographic center of the Project site. Consistent with the City's Municipal Code, operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 6:00 PM and 7:00 AM, including Saturdays, or at any time on Sundays or holidays, such

that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work by public service utilities, the city or another governmental entity. Further, based on the information provided and confirmed by the applicant, the building construction would overlap with paving and architectural coating individually. As shown in Table 6-2, *Composite Noise Level by Phase*, the composite noise level of each phase would range from 51.8 dBA L_{eq} to 65.7 dBA L_{eq} at the nearest single-family residences from the geographic center of the Project site to the east, which would not exceed the FTA threshold of 80 dBA for residential properties. As such, impacts related to on-site construction noise would be less-than-significant.

Table 6-2: Composite Noise Level by Phase

Activity	Maximum Noise Level @ 50 Feet	Maximum Noise Level @ 625 Feet
	dBA L_{eq}	dBA L_{eq}
Site Preparation	87.6	65.7
Grading	87.6	65.6
Building Construction	86.1	64.1
Building Construction and Paving	89.3	67.4
Paving	86.5	64.6
Building Construction and Architectural Coating	86.3	64.4
Architectural Coating	73.7	51.8

Off-Site Construction Noise

Project construction would result in additional traffic on adjacent roadways over the period that construction occurs. According to the California Emissions Estimator Model (CalEEMod), which is used to predict the number of construction-related automotive trips, the maximum number of Project construction trips traveling to and from the Project site during an overlapping construction phase (building construction and architectural coating) would be expected to be 194 daily worker trips and 52 vendor trips in total. According to the *Caltrans Traffic Noise Analysis Protocol*, a doubling of traffic on a roadway results in an increase of 3 dB (Caltrans, 2020a). A 3 dBA change is considered a just perceptible difference. The Project site would be accessible via West Pioneer Avenue and West San Bernardino Avenue during construction. Traffic count data indicates that West Pioneer Avenue and West San Bernardino Avenue currently accommodate 4,675 and 6,450 daily vehicle trips (EPD Solutions, 2026), respectively. Therefore, the Project's construction trips (194 worker trips and 53 vendor trips) would not result in a doubling of traffic on the transportation network and therefore would not be perceptible. Additionally, construction is temporary, and construction trips would cease upon completion of Project construction. As such, impacts related to off-site construction noise would be less than significant.

6.2 Operational Noise

Long-term operational noise would be generated from day-to-day residential operational activities including:

- Off-site mobile sources: automobiles traveling to and from the Project site.
- On-site noise sources:
    - Stationary sources including HVAC units and parking activities.
    - Mobile sources including passenger vehicles, daily delivery trucks, and weekly garbage trucks moving on-site.

Off-Site Mobile Noise

Roadway segment noise levels for the "Existing" and "Existing with Project" scenarios were compared to evaluate Project-related operational noise impacts. As shown in Table 6-3, *Existing Plus Project Traffic Noise Levels*, noise levels under the "Existing" scenario at the curbside from the roadway centerline range from 59.8 to 70.2 dBA. The increase in noise levels due to the Project would range from 0.5 to 1.5 dBA, which would not exceed the 3 dB threshold based on the measured ambient noise level. As such, impacts would be less than significant.

Table 6-3: Existing Plus Project Traffic Noise Levels

Roadway Segment	Existing		Existing Plus Project				Increase over Existing Scenario (dBA)	Thresholds[2]	Exceed Threshold?
	Existing ADT[1]	dBA @ curbside from Roadway Centerline	Existing Plus Project ADT[2]	dBA @ curbside from Roadway Centerline	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)			
W Pioneer Avenue									
West of Future New York Street	4,675	67.8	6,880	69.5	-	50	1.5	3.0	No
East of Future New York Street	6,450	68.7	7,240	69.2	-	47	0.5	3.0	No
W San Bernadino Avenue									

Between W Pioneer Avenue and W San Bernardino Avenue	9,105	70.2	10,410	70.8	-	61	0.6	3.0	No
West of New York Street	7,665	67.8	9,840	68.9	42	91	1.1	3.0	No
New York Street/Tennessee Street									
Between W Pioneer Avenue and W San Bernardino Avenue	2,420	59.8	2,720	60.7	-	-	0.9	3.0	No

Notes: ADT= average daily traffic; CNEL=Community Noise Equivalent Level; dBA=A-weighted decibels.
1. EPD Solutions, Inc. (2026). *Pioneer Park Traffic Impact Analysis.*
2. The threshold is based on the ambient noise level measured in the Project vicinity, which is between 60-65 dBA.

On-Site Noise

Heating, Ventilation, and Air Conditioning

Typically, mechanical equipment, such as HVAC units, would be located in the backyard of the proposed units, adjacent to the structure. The Project proposes both single-family and multi-family developments. For this analysis, it was assumed that the residences would have the most common and currently available HVAC unit with standard sound performance (or similar), which is Air Conditioner Model 26TPA8-C from Carrier. This model would generate 67 dB at the source based on the specification sheet. Based on research online, residential AC could run from 12 to 16 hours per day during an extremely hot day (Craig Air Conditioning, 2025). The HVAC units were modelled to be in the backyard of the proposed residences, and it was assumed that the HVAC units would operate for 585 minutes during the daytime and 250 minutes during the nighttime, resulting a total of 14 hours per day, which is the average running hours on a hot day with a PWL of 67 as discussed above. As a proposed Specific Plan project, the specific buildings and design of the residential units are not yet confirmed. However, the modeling assumed that each lot would have an operating HVAC system on-site as a conservative analysis. Based on the modeling results from CadnaA (refer to Appendix B, *Noise Modeling Data*), the noise generated from HVACs operating concurrently on-site would be 29.3 dBA during the daytime and 28.2 dBA during the nighttime, which would not exceed the City's thresholds of 60 dBA and 50 dBA at the nearest residential property, respectively.

On-Site Mobile Noise

There are two components of on-site mobile noise: vehicles traveling on internal roads, including regular automobile vehicles, occasional delivery trucks, and weekly garbage trucks, and parking activities. As a conservative analysis, it was assumed that there would be 260 vehicles per hour during the day trips in the driveway area, which is the highest peak hour trips based on the Traffic Impact Analysis prepared for the Project. It was assumed truck activity would make up one percent of the vehicle activity per hour on-site to account for occasional delivery trucks and weekly garbage trucks.

The Project includes two garage spaces for each single-family residential unit and one and half spaces per multi-family unit, plus one guest space per two units. The noise generated by the proposed Project would be consistent with that of the surrounding single-family residential properties to the east and school to the north. Based on the Noise Navigator Sound Level Database with Over 1700 Measurement Values, light traffic would generate 50.8 dBA at 50 feet (Berger, E. H. et al, 2015), which is within the "normally acceptable" level for multi-family land uses based on the community noise standards (see Table 3-3). As such, traffic associated within the residential development is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale.

Cumulative Operational Increases in Ambient Noise

To identify Project operational ambient noise level increases, the Project operational noise levels (from the sources described above) are combined with the existing ambient noise level measurements. The difference between the combined Project and the existing ambient noise levels identifies the Project noise level increase. Based on the modeling results from CadnaA (refer to Appendix B, *Noise Modeling Data*), the noise generated from stationary sources and vehicle activities on-site would be 63.8 dBA. As shown in Section 4.0, *Existing Conditions*, the ambient noise level in the Project vicinity is 62.7 dBA CNEL. As such, the Project's incremental increase from operation would be 1.1 dBA, which would not exceed the threshold of 3 dBA. Therefore, the incremental increase in ambient noise from operation of the proposed Project would be less than significant.

6.3 Vibration

Construction Vibration

Construction activities can generate varying levels of ground vibration depending on the equipment used and the methods employed. These vibrations propagate through the ground and decrease in intensity with distance. Table 6-5, *Construction Equipment Vibration Levels*, presents typical vibration levels associated with various types of construction equipment.

Table 6-4: Construction Equipment Vibration Levels

Equipment	Reference Vibration Level at 25 Feet (PPV [inches/second])[1]	Vibration Level at 15 Feet (PPV [inches/second])[2]	Vibration Level at 650 Feet (PPV [inches/second])[2]
Large Bulldozer	0.089	0.191	0.001
Loaded Trucks	0.076	0.164	0.001
Small Bulldozer	0.003	0.140	<0.001
Highest Vibration		0.191	0.001
Thresholds		**0.3**	**0.5**
Exceed thresholds?		No	No

Source:
1. FTA. (2018). *Transit Noise and Vibration Impact Assessment Manual*.
2. $PPV_{equip} = PPV_{ref} \times \left(\frac{25}{D}\right)^{1.5}$, D=distance between the equipment to the sensitive receptors.

Based on the equipment list in Table 6-1, *Construction Equipment Noise Levels*, the Project construction would use the following vibration-heavy equipment on-site, that includes rubber-tired dozers, loaded trucks, and graders (generates similar vibration as large bulldozer). The nearest structure would be the single-family structure to the east, which would be located as close as 15 feet to the construction activities. A large bulldozer, the most vibrating piece of equipment used for Project construction, would generate 0.191 PPV (inches/second) at 15 feet distance, which would not exceed the threshold of 0.3 inches per second established by Caltrans for new structures. As shown in Table 6-4, *Construction Equipment Vibration Levels*, the overall vibration levels at the nearest structures would range from 0.001 to 0.037 PPV (inches per second), which would not exceed the thresholds established by Caltrans. The existing school structures (institutional use) located north of the Project would receive minimal vibration impacts due to setbacks from the curbside. Furthermore, the vibration impact from construction would be short-term and temporary, and cease after completion. As such, the vibration impacts during construction would be less than significant.

Operational Vibration

The Project proposes a residential development, which would not involve railroads or substantial heavy truck operations that are typically associated with significant operational vibration. Operation of the residences would include heavy trucks for residents moving in and out of the units and garbage trucks for solid waste disposal, which would not be frequent daily activities. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Garbage trucks and delivery trucks on-site would be travelling at very low speeds, so it is expected that garbage truck vibration at nearby sensitive receptors would not be noticeable. Therefore, operational vibration impacts would be less than significant.

Additionally, the increase in heavy trucks and garbage trucks due to implementation of the proposed Project would be minimal compared to the existing urban condition, which has existing heavy trucks and garbage trucks in the area. As such, the Project would not result in a cumulative vibration impact.

7 CONCLUSION

During construction, the Project would be required to comply with the rules and regulations set forth in the City's Healthy Community Element of the General Plan and the Municipal Code. Construction noise from the Project would not exceed the 80 dBA threshold. In addition, construction vibration would not exceed the threshold of 0.3 inches per second. As such, the Project would not result in a significant impact related to noise and vibration from construction.

During operation, sources of noise would include those from mobile and stationary sources. The operation of the future residential uses on the Project site would result in an up to 1.5 dBA increase over existing traffic conditions along West Pioneer Avenue. On-site noise would include HVAC units and on-site vehicle activities from automobiles, delivery trucks, and garbage trucks. On-site noise from operation of the future HVAC units would be 29.3 dBA during the daytime and 28.2 dBA during the nighttime, which would not exceed the City's thresholds of 60 dBA and 50 dBA at the nearest residential property, respectively. Additionally, based on the modeling results from CadnaA (refer to Appendix B, *Noise Modeling Data*), noise generated from stationary sources and vehicle activities on-site would be 63.8 dBA. As shown in Section 4.0, *Existing Conditions*, the ambient noise level in the Project vicinity is 62.7 dBA CNEL. As such, the Project's incremental increase from operation would be 1.1 dBA, which would not exceed the threshold of 3 dBA. Finally, a residential development would only involve occasional delivery and garbage trucks on-site, which would not cause significant vibrations to the surrounding structures. As such, the Project would not result in a significant short-term and cumulative impact related to noise and vibration from operation.

Additionally, the Project is located outside of the noise contour and airport influence area of the nearby airports and would not expose people residing or working in the Project area to excessive airport noise levels. Impacts related to airport noise would therefore be less than significant.

Table 7-1, *Summary of Noise Levels at the Nearest Sensitive Receptors*, provides the summary of noise levels at the surrounding land uses due to the implementation of the Project. Overall, the proposed Project would result in less-than-significant impacts related to noise and vibration.

Table 7-1: Summary of Noise Levels at the Nearest Sensitive Receptors

Receptors	Construction (Highest)		Operation (dBA)		
	Noise (dBA)	Maximum Vibration Level (PPV)	(Daytime)	(Nighttime)	Maximum Increase to the Ambient
Residences to the East	69.6	0.191	29.3	28.2	1.5
Threshold	***80***	***0.3***	***60***	***50***	***3***
Exceed the Threshold?	**No**	**No**	**No**	**No**	**No**

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APPENDIX A – NOISE MEASUREMENT DATA

Noise Measurement Survey – 24 HR

Project Number: CRX2202
Project Name: Lugonia Village

Test Personnel: Kevin Nguyendo
Equipment: Spark 706RC (SN:224)

Site Number: LT-1 Date: 12/7/22

Time: From 4:00 p.m. To 4:00 p.m.

Site Location: Located on the southeast corner of Karon Street and Pennsylvania Avenue. On a utility pole. Approximately 22 ft from Pennsylvania Avenue centerline.

Primary Noise Sources: Traffic on Pennsylvania Avenue and Karon Street.

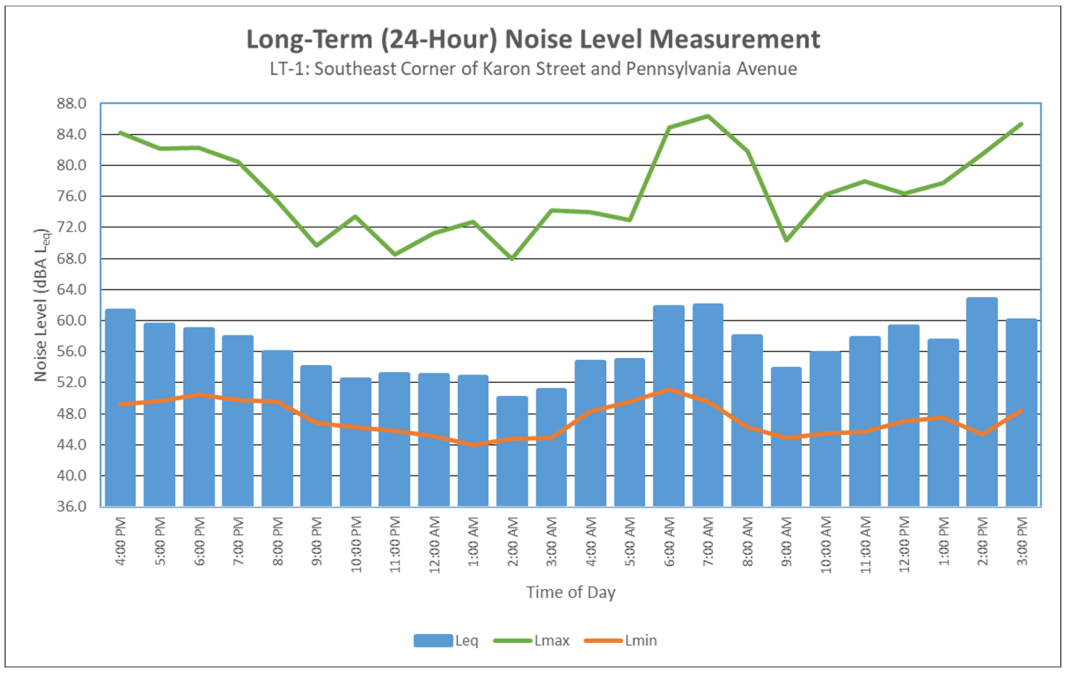
Comments:

Photo:

Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
4:00 PM	12/7/22	61.3	84.2	49.2
5:00 PM	12/7/22	59.5	82.1	49.7
6:00 PM	12/7/22	58.9	82.3	50.5
7:00 PM	12/7/22	57.9	80.5	49.8
8:00 PM	12/7/22	56.0	75.5	49.5
9:00 PM	12/7/22	54.0	69.6	46.8
10:00 PM	12/7/22	52.3	73.4	46.2
11:00 PM	12/7/22	53.0	68.5	45.8
12:00 AM	12/8/22	53.0	71.2	45.1
1:00 AM	12/8/22	52.7	72.7	44.0
2:00 AM	12/8/22	50.0	67.9	44.8
3:00 AM	12/8/22	51.1	74.2	44.9
4:00 AM	12/8/22	54.7	74.0	48.3
5:00 AM	12/8/22	54.9	73.0	49.6
6:00 AM	12/8/22	61.7	84.9	51.1
7:00 AM	12/8/22	61.9	86.4	49.5
8:00 AM	12/8/22	58.0	81.8	46.2
9:00 AM	12/8/22	53.7	70.3	44.9
10:00 AM	12/8/22	55.8	76.2	45.5
11:00 AM	12/8/22	57.7	77.9	45.7
12:00 PM	12/8/22	59.2	76.4	47.0
1:00 PM	12/8/22	57.3	77.7	47.5
2:00 PM	12/8/22	62.8	81.5	45.3
3:00 PM	12/8/22	60.0	85.3	48.4

Source: Compiled by LSA Associates, Inc. (2022).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level



Noise Measurement Field Data

Project Number:	25-124		
Site Number:	NMST-1		
Investigator(s):	Cameron Lukos, Tina Yuan		
Date:	2/12/2026		
Time:	12:20 p.m. -- 12:35 p.m.		
Measurement Location:	Intersection of Half Moon Avenue and Camelia Lane, facing Pioneer Avenue		
Peak Noise:	Traffic within the community and Pioneer Avenue		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Clear	66	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
57.3	69.6	51.8

Site Photo

Project Number:	25-124		
Site Number:	NMST-2		
Investigator(s):	Cameron Lukos, Tina Yuan		
Date:	2/12/2026		
Time:	12:45 p.m. – 1:00 p.m.		
Measurement Location:	West of 912 Elise Drive, facing the site		
Peak Noise:	Traffic along Winchester		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Clear	66	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
56.6	73.2	51.1

Site Photos

APPENDIX B – NOISE MODELING DATA

Roadway segments	Existing	Existing + PP
W Pionner Avenue		
West of New York Street	4,675	6,880
East of New York Street	6,450	7,240
W San Bernadino Avenue	-	-
Between Tennessee Street and New York Street	9,105	10,410
West of New York Street	7,665	9,840
New York Street/Tennessee Street		-
Between W Pioneer Avenue and W San Bernadino Avenue	2,420	2,720

Project
2,205
790
-
1,305
2,175
-
300

			Intersection	Going North	Going East	Going South	Going West
	1	W. Poineer Avenue	New York Street/Citrus Valley High School Entrance	279	293	0	468
	2	W. San Bernadino A	210 EB Ramps/Citrus Plaza Drive	379	813	508	702
	3	W. San Bernadino A	210 WB Ramps/Tennesse Street	874	681	185	650
	4	W. San Bernadino A	New York Street (Future Intersection)	0	0	0	0
	5	W. Lugonia Avenue	Tennesse Street	360	407	327	559
Existing AM	6	Tennesse Street	1-10 WB Ramps	532	0	616	338
	7	Tennesse Street	1-10 EB Ramps	668	479	994	0
	8	W. Poineer Avenue	Project Driveway 1	0	0	0	0
	9	New York Street	Project Driveway 2	0	0	0	0
	10	New York Street	Project Driveway 3	0	0	0	0
	11	W. San Bernadino A	Project Driveway 4	242	465	0	935

Coeffient 10

	1	W. Poineer Avenue	New York Street/Citrus Valley High School Entrance	118	645	0	163
	2	W. San Bernadino A	210 EB Ramps/Citrus Plaza Drive	162	1410	767	453
	3	W. San Bernadino A	210 WB Ramps/Tennesse Street	1327	911	227	417
	4	W. San Bernadino A	New York Street (Future Intersection)	0	0	0	0
	5	W. Lugonia Avenue	Tennesse Street	567	1224	592	690
Existing PM	6	Tennesse Street	1-10 WB Ramps	889	0	703	285
	7	Tennesse Street	1-10 EB Ramps	932	683	870	0
	8	W. Poineer Avenue	Project Driveway 1	0	0	0	0
	9	New York Street	Project Driveway 2	0	0	0	0
	10	New York Street	Project Driveway 3	0	0	0	0
	11	W. San Bernadino A	Project Driveway 4	150	767	0	599

	Existing AM	Existing PM	Maximum	
W Pionner Avenue				
West of New York Street	4675		1625	4675
East of New York Street	2925		6450	6450
W San Bernadino Avenue				
Between W Pioneer Avenue and W San Bernadino Avenue	6810		9105	9105
West of New York Street	4650		7665	7665
New York Street/Tennessee Street				
Between W Pioneer Avenue and W San Bernadino Avenue	2420		1500	2420

			Intersection	Going North	Going East	Going South	Going West
	1	W. Poineer Avenue	New York Street/Citrus Valley High School Entrance	279	326	5	688
	2	W. San Bernadino A	210 EB Ramps/Citrus Plaza Drive	416	833	525	724
	3	W. San Bernadino A	210 WB Ramps/Tennesse Street	889	724	214	726
	4	W. San Bernadino A	New York Street (Future Intersection)	267	480	0	984
	5	W. Lugonia Avenue	Tennesse Street	370	413	339	570
Existing AM	6	Tennesse Street	1-10 WB Ramps	536	0	622	344
	7	Tennesse Street	1-10 EB Ramps	671	483	997	0
	8	W. Poineer Avenue	Project Driveway 1	0	10	6	4
	9	New York Street	Project Driveway 2	3	1	5	0
	10	New York Street	Project Driveway 3	16	0	62	23
	11	W. San Bernadino A	Project Driveway 4	23	21	0	118

Coeffient: 10

	1	W. Poineer Avenue	New York Street/Citrus Valley High School Entrance	118	724	5	250
	2	W. San Bernadino A	210 EB Ramps/Citrus Plaza Drive	186	1470	779	468
	3	W. San Bernadino A	210 WB Ramps/Tennesse Street	1337	1041	247	468
	4	W. San Bernadino A	New York Street (Future Intersection)	227	777	0	636
	5	W. Lugonia Avenue	Tennesse Street	599	1229	601	699
Existing PM	6	Tennesse Street	1-10 WB Ramps	901	0	708	289
	7	Tennesse Street	1-10 EB Ramps	941	685	872	0
	8	W. Poineer Avenue	Project Driveway 1	0	7	17	3
	9	New York Street	Project Driveway 2	6	3	4	0
	10	New York Street	Project Driveway 3	16	0	43	71
	11	W. San Bernadino A	Project Driveway 4	0	0	0	0

	Existing AM	Existing PM	Maximum	
W Pionner Avenue				
West of New York Street	6880		2500	6880
East of New York Street	3260		7240	7240
W San Bernadino Avenue				
Between W Pioneer Avenue and W San Bernadino Avenue	7240		10410	10410
West of New York Street	9840		6360	9840
New York Street/Tennessee Street				
Between W Pioneer Avenue and W San Bernadino Avenue	2720		2320	2720

Traffic Noise levels and Noise Contours

Project Number 25-124
Project Name Pioneer Park
Scenario Exsiting

Background Information
Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise Emission Levels.
Source of Traffic Volumns: Streetlight Data
Coomunity Noise Descriptors: Ldn _____ CNEL x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night	Total
Total ADT Volumns	77.50%	12.90%	9.60%	100.00%
Medium-Duty Trucks	84.80%	4.90%	10.30%	100.00%
Heavy-Duty Trucks	86.50%	2.70%	10.80%	100.00%

Analysis						Vehicle Mix			Distance from Centerline of Roadway to Contour			
Roadway Segment	Lanes	Median Width	ADT Volume	sign Speed (mi	Alpha Factor	Medium Trucks (MT)	Heavy Trucks (HT)	CNEL at Curbside	70 CNEL	65 CNEL	60 CNEL	55 CNEL
W Pionner Avenue												
West of Future New York Street	2	10	4,675	45	0.5	1.8%	0.7%	67.8	-	38	83	178
East of Future New York Street	2	0	6,450	45	0.5	1.8%	0.7%	68.7	-	44	95	204
W San Bernadino Avenue												
Between W Pioneer Avenue and W San Bernadino Avenue	2	0	9,105	45	0.5	1.8%	0.7%	70.2	-	55	119	257
West of New York Street	2	0	7,665	60	0.5	1.8%	0.7%	67.8	36	77	167	359
New York Street/Tennessee Street												
Between W Pioneer Avenue and W San Bernadino Avenue	2	0	2,420	45	0.5	1.8%	0.7%	59.8	-	-	48	104

Traffic Noise levels and Noise Contours

Project Number 25-124
Project Name Pioneer Park
Scenario Exsiting+Project

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise Emission Levels.			
Source of Traffic Volumns:	Streetlight Data			
Coomunity Noise Descriptors:	Ldn		CNEL	x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night	Total
Total ADT Volumns	77.50%	12.90%	9.60%	100.00%
Medium-Duty Trucks	84.80%	4.90%	10.30%	100.00%
Heavy-Duty Trucks	86.50%	2.70%	10.80%	100.00%

Analysis						Vehicle Mix			Distance from Centerline of Roadway to Contour			
Roadway Segment	Lanes	Median Width	ADT Volume	sign Speed (mi	Alpha Factor	Medium Trucks (MT)	Heavy Trucks (HT)	CNEL at Curbside	70 CNEL	65 CNEL	60 CNEL	55 CNEL
W Pionner Avenue												
West of Future New York Street	2	10	6,880	45	0.5	1.8%	0.7%	69.5	-	50	107	230
East of Future New York Street	2	0	7,240	45	0.5	1.8%	0.7%	69.2	-	47	102	220
W San Bernadino Avenue												
Between W Pioneer Avenue and W San Bernadino Avenue	2	0	10,410	45	0.5	1.8%	0.7%	70.8	-	61	130	281
West of New York Street	2	0	9,840	60	0.5	1.8%	0.7%	68.9	42	91	197	424
New York Street/Tennessee Street												
Between W Pioneer Avenue and W San Bernadino Avenue	4	0	2,720	45	0.5	1.8%	0.7%	60.7	-	-	55	119

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2026
Case Description: Site Prep

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	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	50	0
Dozer	No	40		81.7	50	0
Dozer	No	40		81.7	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	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
Dozer		81.7	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
Dozer		81.7	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
Dozer		81.7	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
Tractor		84	80	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		84	80	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		84	80	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		84	80	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	84	87.6	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
Project Center	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	625	0
Dozer	No	40		81.7	625	0
Dozer	No	40		81.7	625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	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
Dozer		59.7	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		59.7	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		59.7	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		62.1	58.1	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		62.1	58.1	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		62.1	58.1	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		62.1	58.1	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	62.1	65.7	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: 3/16/2026
Case Description: Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		50	0
Excavator	No	40		80.7	50	0
Dozer	No	40		81.7	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Excavator	No	40		80.7	50	0
Scraper	No	40		83.6	50	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
Grader	85	81	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	80.7	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
Dozer	81.7	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
Tractor	84	80	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	84	80	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	80.7	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
Scraper	83.6	79.6	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	85	87.6	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
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		625	0
Excavator	No	40		80.7	625	0
Dozer	No	40		81.7	625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Excavator	No	40		80.7	625	0
Scraper	No	40		83.6	625	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
Grader	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
Excavator	58.8	54.8	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	59.7	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.1	58.1	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	62.1	58.1	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	58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61.6	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.1	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

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2026
Case Description: Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Generator	No	50		80.6	50	0
Crane	No	16		80.6	50	0
Welder / Torch	No	40		74	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	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
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	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	74	70	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	84	80	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	84	80	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	84	80	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	84	86.1	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 #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Generator	No	50		80.6	625	0
Crane	No	16		80.6	625	0
Welder / Torch	No	40		74	625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	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
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.7	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58.6	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	52.1	48.1	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	62.1	58.1	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	62.1	58.1	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	62.1	58.1	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	62.1	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: 3/16/2026
Case Description: Building Construction_Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Generator	No	50		80.6	50	0
Crane	No	16		80.6	50	0
Welder / Torch	No	40		74	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Compressor (air)	No	40		77.7	50	0

Equipment	Results Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	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	74	70	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	84	80	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	84	80	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	84	80	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)	77.7	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
Total	84	86.3	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 #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Generator	No	50		80.6	625	0
Crane	No	16		80.6	625	0
Welder / Torch	No	40		74	625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Compressor (air)	No	40		77.7	625	0

Equipment	Results Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.7	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58.6	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	52.1	48.1	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	62.1	58.1	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	62.1	58.1	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	62.1	58.1	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)	55.7	51.8	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	62.1	64.4	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2026
Case Description: Building Construction_Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Generator	No	50		80.6	50	0
Crane	No	16		80.6	50	0
Welder / Torch	No	40		74	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0
Pavement Scarafier	No	20		89.5	50	0
Pavement Scarafier	No	20		89.5	50	0
Paver	No	50		77.2	50	0
Paver	No	50		77.2	50	0
Roller	No	20		80	50	0
Roller	No	20		80	50	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
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	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	74	70	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	84	80	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	84	80	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	84	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	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
Roller	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
Total	89.5	89.3	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 #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Man Lift	No	20		74.7	625	0
Generator	No	50		80.6	625	0
Crane	No	16		80.6	625	0
Welder / Torch	No	40		74	625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Tractor	No	40	84		625	0
Pavement Scarafier	No	20		89.5	625	0
Pavement Scarafier	No	20		89.5	625	0
Paver	No	50		77.2	625	0
Paver	No	50		77.2	625	0
Roller	No	20		80	625	0
Roller	No	20		80	625	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
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.7	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58.6	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	52.1	48.1	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	62.1	58.1	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	62.1	58.1	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	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	67.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	67.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roller		58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		58.1	51.1	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	67.6	67.4	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2026
Case Description: Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pavement Scarafier	No	20		89.5	50	0
Pavement Scarafier	No	20		89.5	50	0
Paver	No	50		77.2	50	0
Paver	No	50		77.2	50	0
Roller	No	20		80	50	0
Roller	No	20		80	50	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
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	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
Roller	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
Total	89.5	86.5	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 #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pavement Scarafier	No	20		89.5	625	0
Pavement Scarafier	No	20		89.5	625	0
Paver	No	50		77.2	625	0
Paver	No	50		77.2	625	0
Roller	No	20		80	625	0
Roller	No	20		80	625	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
Pavement Scarafier	67.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	67.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.3	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.1	51.1	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	67.6	64.6	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/16/2026
Case Description: Architecutal Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Reference at 50 feet	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	50	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)	77.7	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
Total	77.7	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
Project Center	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	625	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)	55.7	51.8	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	55.7	51.8	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.