Noise and Vibration Impact Analysis

E | P | D
SOLUTIONS, INC

techservices@EPDsolutions.com

949.794.1180
3333 Michelson Drive, Suite 500
Irvine, CA 92612

epdsolutions.com

Nerio Farms Chino

Noise and Vibration Impact Analysis

Prepared For

County of San Bernardino

Prepared By

E | P | D SOLUTIONS, INC
3333 Michelson Drive, Suite 500
Irvine, CA 92612
(949) 794-1180

Report Preparer:
Tina Yuan, Sr. Air Quality and Noise Specialist
Abdul Khan Sr. Noise Specialist
Contact: techservices@epdsolutions.com

September 2026

TABLE OF CONTENTS

1 Introduction 1
1.1 Project Description 1
1.2 Purpose of the Report 6
1.3 Summary of Findings 6
2 Noise Scales and Definitions 8
2.1 Terminology 8
2.2 Sound Propagation 10
2.3 Stationary Noise 10
2.4 Mobile Noise 11
2.5 Noise From Multiple Sources 11
2.6 Vibration 12
3 Regulatory Setting 13
3.1 Federal 13
3.2 State 14
3.3 Local 15
4 Existing Conditions 20
4.1 Existing Noise Levels 20
4.2 Sensitive Receptors 23
4.3 Aircraft Noise 23
4.4 Stationary Sources 23
4.5 Existing Traffic Noise 23
5 Thresholds of Significance 25
5.1 CEQA Thresholds 25
5.2 Methodology 25
5.3 Significance Criteria 27
6 Project Impacts 30
6.1 Construction Noise 30
6.2 Operational Noise 34
6.3 Vibration 36
6.4 Land Use Compatibility Assessment 38
7 Conclusion 41
8 References 43

Figures

Figure 1-1: Local Vicinity 3
Figure 1-2: Conceptual Site Plan 4
Figure 2-1: Common Noise Levels 9
Figure 4-1: Noise Measurement Locations 22

Tables

Table 1-1: Existing Land Use and Zoning Designations of Project Site and Surrounding Area 2
Table 1-2: Summary of Findings 6
Table 3-1: Construction Noise Thresholds 13
Table 3-2: Construction Vibration Damage Thresholds 15
Table 3-3: Noise Standards for Stationary Sources 17
Table 3-4: Noise Standards for Adjacent Mobile Noise Sources 18
Table 3-5: Noise Standards for Other Structures 19
Table 4-1: Ambient Noise Measurements 20
Table 4-2: Existing Traffic Noise Levels 24
Table 5-1: Distances Used for Construction Noise Analysis 27
Table 5-2: Significance Criteria Summary 29
Table 6-1: Construction Equipment Noise Levels 31
Table 6-2: Composite Noise Level by Phase 32
Table 7-1: Summary of Noise Levels at the Nearest Sensitive Receptors 41

Appendices

Appendix A – Noise Measurement Data
Appendix B – Noise Modeling Data

1 INTRODUCTION

This Noise and Vibration Impact Analysis evaluates the potential noise impacts of the proposed Nerio Farms Residential Community Project ("Project" or "proposed Project"). The Project is located within the jurisdiction of the County of San Bernardino.

1.1 Project Description

The Project site is located at the southeast corner of Pipeline Avenue and Phillips Boulevard in the southwest portion of the County of San Bernardino. The Project site is bounded by Phillips Boulevard to the north, single-family residential homes and Essex Avenue to the east, single-family residential homes to the south, and Pipeline Avenue to the west. Local access to the Project site is provided via Pipeline Avenue and Philips Boulevard. Regional access to the site is provided via State Route 60 (SR-60) and State Route 71 (SR-71). The site is located within an unsectioned area of Township 1 South, Range 8 West in the Ontario (7.5-minute) Quadrangle. The Project site and the surrounding area are shown in Figure 1-1, *Local Vicinity*.

The Project site encompasses approximately 24.16 gross acres, inclusive of three parcels identified by Assessor's Parcel Numbers (APN) 1013-161-01, 1013-111-01, and 1013-111-02. The Project site currently consists predominantly of disturbed agricultural land, with an active plant nursery located in the southwest corner and several structures located in the northwest and northeast corners of the site. The northwest corner is developed with a cellular communications tower, an emergency generator, and associated ancillary structures, while the northeast corner is developed with one single-family residence and various ancillary structures such as garages and storage sheds.

The Project Applicant proposes to subdivide the approximately 24.16-gross-acre site into 91 lots, including 90 for-sale conventional single-family residential lots and one lot for the existing cell tower on-site. Additionally, the proposed Project includes landscaping, parking, private roadways, open space amenities, and on-site and right-of-way utility and stormwater improvements, and an off-site sewer extension. Figure 1-2, *Conceptual Site Plan*, illustrates the Project as proposed. The Project requires approval of a General Plan Amendment (GPA), Zone Change (ZC), and Tentative Tract Map (TTM) from the County of San Bernardino.

The Project site is not currently served by sanitary sewer infrastructure. To facilitate service, the Project would construct an approximately 3,970-foot-long 8-inch public sewer line extension to connect to the City of Chino's existing sewer system. The proposed off-site sewer extension would connect to an existing sewer main located within Norton Avenue, approximately 0.5-mile south of the Project site. From that connection point, the alignment would extend north within Norton Avenue to Maple Street, continue west along Maple Street to Pipeline Avenue, and then extend north along Pipeline Avenue to the Project site (see Figure 1-3, *Proposed Off-Site Sewer Extension*).

The Project site has a General Plan land use designation of Very Low Density Residential (VLDR) and a zoning designation of Single Residential with a one-acre minimum lot size (RS-1). The VLDR General Plan land use designation allows for very low-density residential uses when developed as single-family neighborhoods that can share common infrastructure, public facilities, and services and has a maximum density of two dwelling units per acre (du/ac). The RS zoning district is intended to provide sites for single-family residential uses, incidental agricultural and recreational uses, and similar and compatible uses. 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.

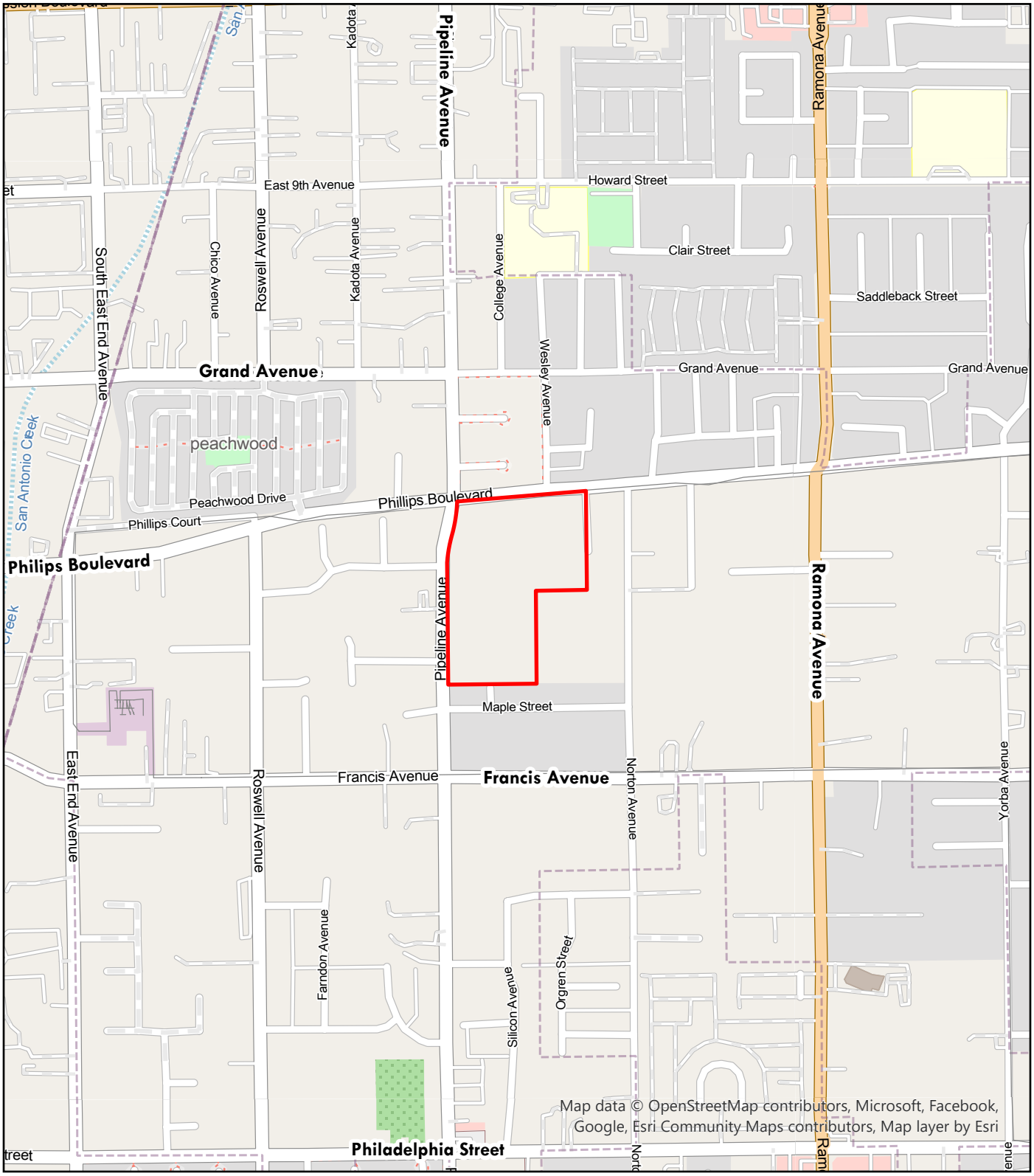
The Project proposes a General Plan Amendment (GPA) to change the site's land use designation from VLDR to Special Development (SD) – Planned Development. The SD – Planned Development land use allows for large-scale, master-planned developments that may include a mix of residential, commercial, and/or manufacturing uses, at a maximum density of 4 du/ac. The proposed GPA would facilitate the development of the Project at the proposed density of 3.7 du/ac, while allowing flexibility in lot sizes, setbacks, and subdivision design for the single-family detached housing product. The GPA would also align with the County's General Plan objectives related to housing supply, infrastructure expansion, and coordinated growth.

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

Direction	General Plan Land Use	Zoning
Proposed Project Site	Very Low Density Residential (VLDR)	Single Residential one acre minimum lot size (RS-1)
North	Low Density Residential (LDR)	Single Residential (RS)
East	Very Low Density Residential (VLDR)	Single Residential one acre minimum lot size (RS-1)
South	Low Density Residential (LDR)	Single Residential (RS)
West	VLDR and Low Density Residential (LDR)	Single Residential (RS) and Single Residential one acre minimum lot size (RS-1)

Source: (County of San Bernardino, 2020)

Figure 1-1: Local Vicinity



Legend

Project Boundary

0 0.15 0.3 Miles

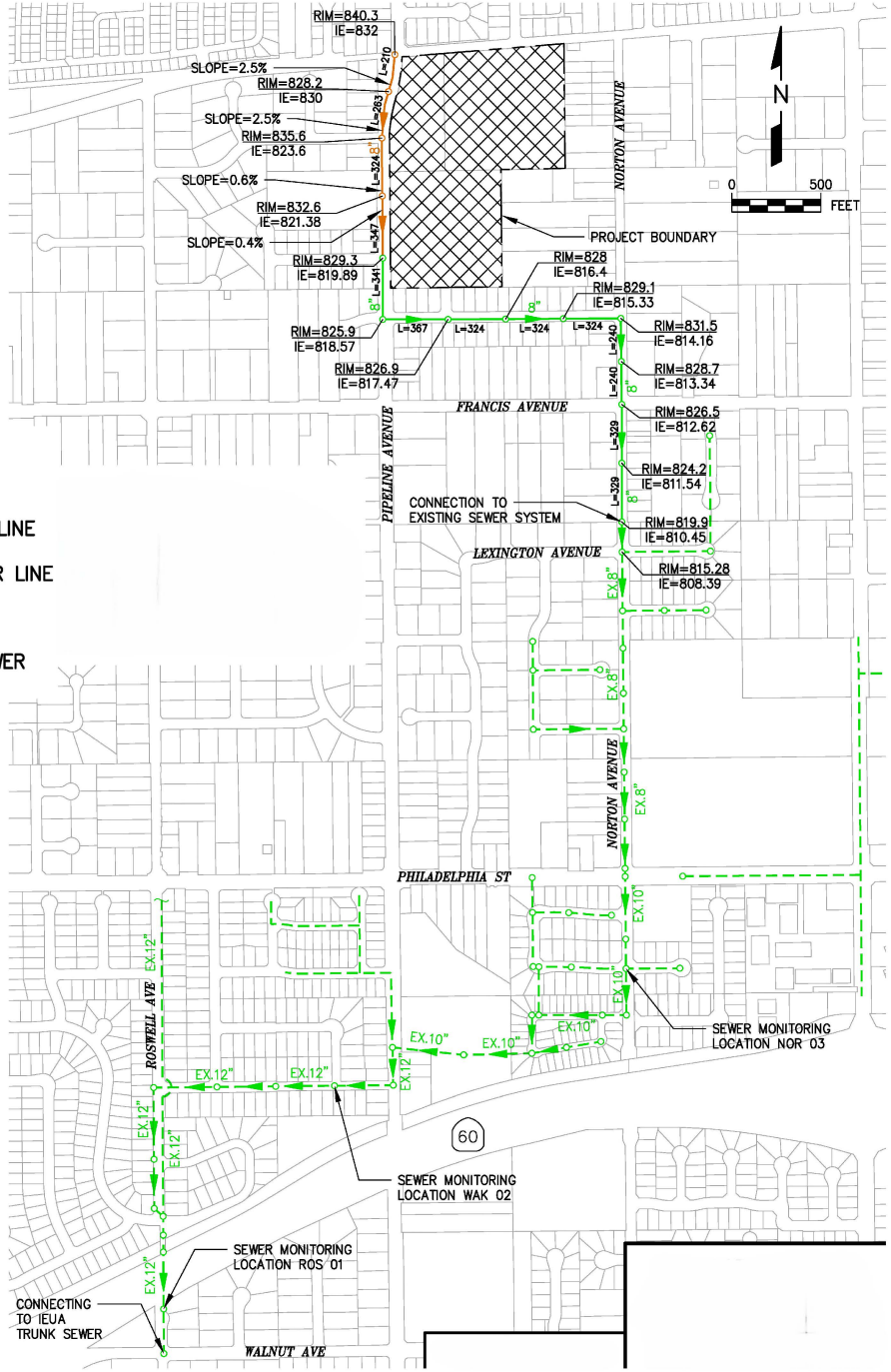
N

Figure 1-2: Conceptual Site Plan



UNITED CIVIL, INC.
30141 AGOURA ROAD, SUITE 215
AGOURA HILLS, CA 91301
PH: (818) 707-8648
FAX: (818) 707-8649

Figure 1-3: Proposed Off-Site Sewer Extension



LEGEND

- PROJECT BOUNDARY
- EXISTING PUBLIC SEWER LINE
- PROPOSED PUBLIC SEWER LINE
- ADDITIONAL EXTENSION

NOTE: ALL SLOPES FOR PROPOSED GRAVITY SEWER PIPING ARE 0.38% UNLESS OTHERWISE NOTED.

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

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 with Mitigation Measure NOI-1 incorporated	Mitigation Measure NOI-1: Construction Equipment Mufflers During Off-Site Trenching Activities
Operation Noise	Less than significant	None
Construction Vibration	Less than significant	None
Operation Vibration	Less than significant	None
Airport Noise	Less than significant	None

Notes: NA = not applicable

Mitigation Measures

NOI-1: Construction Equipment Noise Reduction During Off-Site Trenching Activities

The Project's construction plans, specifications, and permitting shall state that all construction equipment used during trenching activities for the off-site sewer improvements is equipped with properly maintained, manufacturer-recommended, or equivalent upgraded noise suppression mufflers designed to reduce construction equipment noise. The following requirements shall apply:

- All trenching-related construction equipment, whether fixed or mobile, shall be equipped with manufacturer-recommended mufflers, acoustic shielding, or equivalent noise

attenuation devices and shall be maintained in accordance with manufacturer specifications throughout the duration of construction activities.

- Equipment used during trenching activities, including but not limited to excavators, trenchers, backhoes, generators, and other heavy-duty construction equipment, shall utilize noise suppression systems capable of achieving a minimum reduction of 9 dBA relative to the same equipment operating without an installed muffler or equivalent noise attenuation system.
- The construction contractor shall incorporate these noise reduction requirements into construction specifications and shall maintain documentation onsite demonstrating compliance with this measure, including equipment specifications, manufacturer information, or documentation prepared by a qualified noise consultant demonstrating that the required minimum 9 dBA noise reduction performance standard is achieved.
- Prior to the issuance of demolition permits, certification of muffler installation shall be submitted to the County for review.

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.

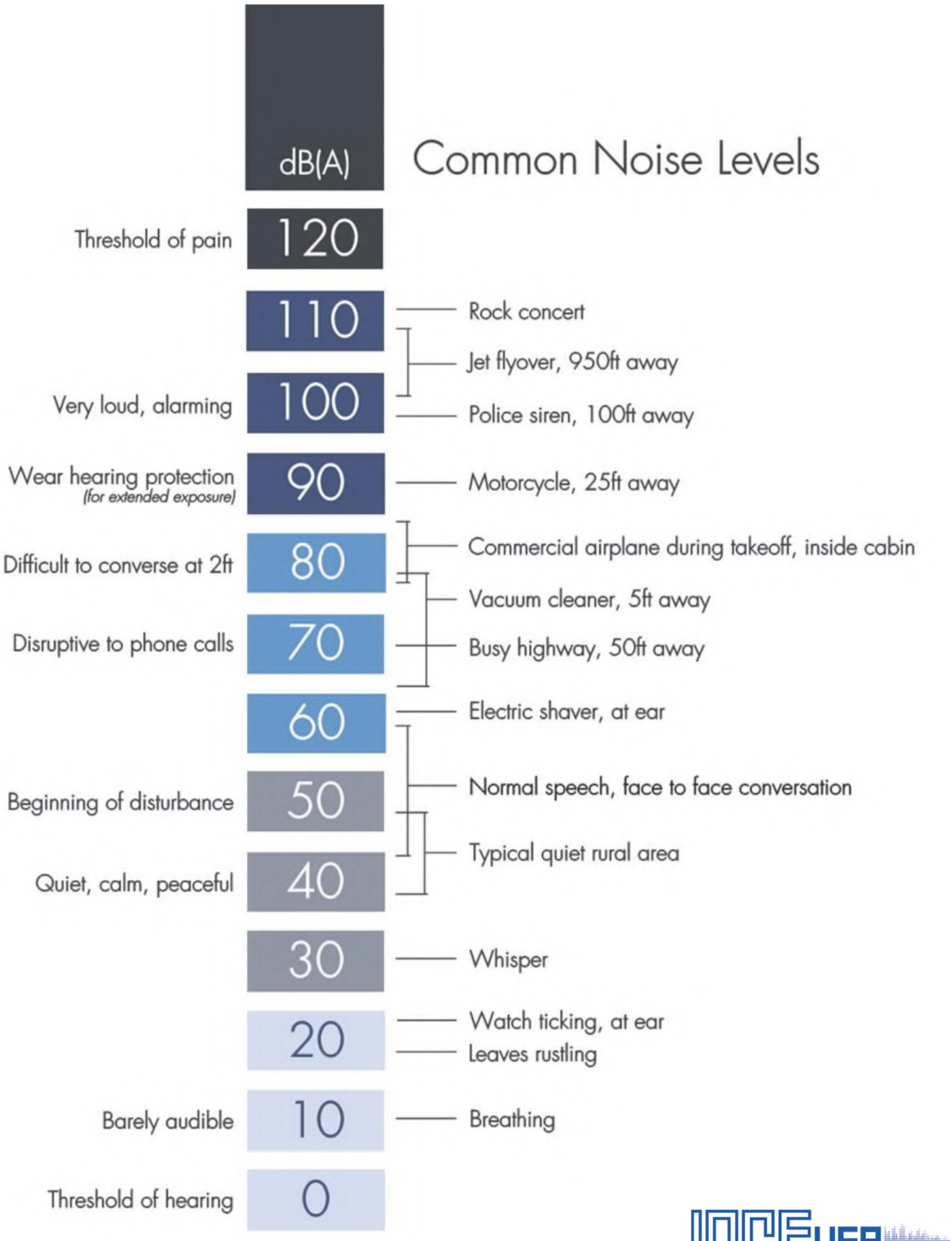
A-weighted decibel (dBA): Unit of sound pressure level in decibels on the “A-weighted” scale.

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 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

County of San Bernardino Noise Element

The County's current General Plan is a comprehensive policy document adopted by the County's Board of Supervisors that serves as a blueprint for future development and long-term growth within the County. The Noise Element of the General Plan contains the policies, goals, and implementation measures for Noise throughout the County. The following are policies categorized by principles and actions that are applicable to the proposed Project.

Policies

N 1.1 Designate areas within San Bernardino County as "noise impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Chapter 83.01 of the Development Code.

N 1.2 Ensure that new development of residential or other noise-sensitive land uses is not permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to the standards of Noise-sensitive land uses

include residential uses, schools, hospitals, nursing homes, places of worship and libraries.

N 1.3 When industrial, commercial, or other land uses, including locally regulated noise sources, are proposed for areas containing noise sensitive land uses, noise levels generated by the proposed use will not exceed the performance standards of Table N-2 within outdoor activity areas. If outdoor activity areas have not yet been determined, noise levels shall not exceed the performance standards listed in Chapter 83.01 of the Development Code at the boundary of areas planned or zoned for residential or other noise-sensitive land uses.

N 1.4 Enforce the state noise insulation standards (California Administrative Code, Title 24) and Chapter 35 of the California Building Code (CBC).

N 1.5 Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.

N 1.6 Enforce the hourly noise-level performance standards for stationary and other locally regulated sources, such as industrial, recreational, and construction activities as well as mechanical and electrical equipment

N 1.7 Prevent incompatible land uses, by reason of excessive noise levels, from occurring in the future.

N 2.1 The County will require appropriate and feasible on-site noise attenuating measures that may include noise walls, enclosure of noise generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.

N 2.2 The County will continue to work aggressively with federal agencies, including the branches of the military, the U.S. Forest Service, BLM, and other agencies to identify and work cooperatively to reduce potential conflicts arising from noise generated on federal lands and facilities affecting nearby land uses in unincorporated County areas.

County of San Bernardino Code of Ordinances

The County regulates noise through Division 3 of the Code of Ordinances (Countywide Development Standards), specifically Chapter 83.01, *General Performance Standards*. Section 83.01.080, *Noise*, establishes standards concerning noise levels for noise-sensitive land uses and noise-generating land uses. Section 83.01.090, *Vibration*, establishes standards concerning vibration.

Section 83.01.080 Noise

(a) *Noise Measurement*. Noise shall be measured:

1) At the property line of the nearest site that is occupied by, and/or designated to allow the development of noise-sensitive land uses;
2) With a sound level meter that meets the standards of the American National Standards Institute (ANSI SI4 1979, Type 1 or Type 2);
3) Using the "A" weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A)

(b) *Noise Impacted Areas*. Ares within the County shall be designated as "noise-impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subdivision (d) (Noise Standards for Stationary Noise Sources) and Subdivision (e) (Noise Standards for Adjacent Mobile Noise Sources), below. New development of residential or other noise-sensitive land uses shall not be allowed in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

(c) *Noise Standards for Stationary Noise Sources*.

1) *Noise Standards*. The noise standards for the categories of land uses identified in Table 3-3, *Noise Standards for Stationary Noise Sources*, of this section shall, unless otherwise indicated, apply to all such property within a designated zone.

Table 3-3: Noise Standards for Stationary Sources

Affecting Land Use Category (Receiving Noise)	7:00 AM - 10:00 PM L_{eq}*	10:00 PM - 7:00 AM L_{eq}*
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Notes:
* L_{eq} (Equivalent Energy Level) – The sound level corresponding to steady-state sound level containing the same total energy as a time varying signal over a given sample period, typically one, eight or 24 hours.
* dB(A) (A-weighted Sound Pressure Level) – The sound pressure level in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

2) No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

A. The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than thirty (30) minutes in any hour.
B. The noise standard specified in Table 3-4 plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour.
C. The noise standard specified in Table 3-4 plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or
D. The noise standard specified in Table 3-4 plus fifteen (15) dB for a cumulative period of more than one (1) minute in any hour; or
E. The noise standard specified in Table 3-4 plus twenty (20) dB or the maximum measured ambient level, for any period of time.

(d) Noise Standards for Adjacent Mobile Noise Sources. Noise from mobile sources may affect adjacent properties adversely. When it does, this noise shall mitigated to any new development to a level that shall not exceed the standards described in Table 3-4, *Noise Standards for Adjacent Mobile Noise Sources*.

Table 3-4: Noise Standards for Adjacent Mobile Noise Sources

Land Use Categories		Community Noise Equivalent Level (CNEL)	
Categories	**Use**	**Interior[1]**	**Exterior[2]**
RESIDENTIAL	Single-Family, Duplex Multiple Family	45	60[3]
COMMERCIAL Regional, District	Hotel, Motel, Transient Housing	45	60[3]
	Commercial Retail, Bank, Restaurant,	50	N/A
	Office Building, Research & Development, Professional Offices	45	65
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	N/A
INSTITUTIONAL Public	Hospital, Nursing Home, , Schools Classroom, Religious Institution, Library	45	65
OPEN SPACE	Parks	N/A	65

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 hospital/office building patios; hotel and motel recreation areas; mobile home parks; multi-family private patios or balconies; park picnic areas; private yard of single-family dwellings; school playgrounds.
3. An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.
Source: County of San Bernardino, General Plan Noise Element

(e) Increases in Allowable Noise Levels. If the measured ambient level exceeds any of the first noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(f) Reduction in Allowable Noise Levels. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 3-5, Noise Standards for Stationary Noise Sources, shall be reduced by five dB(A).

(g) Exempt Noise. The following sources of noise shall be exempt from the regulations of this Section:

1) Motor Vehicles not under the control of the commercial or industrial use.
2) Emergency equipment, vehicles, and devices.
3) Temporary construction, maintenance, repair, or demolition activities between 7:00 AM and 7:00 PM, except Sundays and Federal holidays.

(h) Noise Standards for Other Structures. All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to not exceed the criteria.

Table 3-5: Noise Standards for Other Structures

Typical Uses	12-Hour Equivalent Sound Level (Interior) in dBA Ldn
Educational, Institutions, Libraries, meeting facilities, etc.	45
General Office, Reception, etc.	50
Retail Stores, Restaurants, etc.	55
Other areas for manufacturing, assembly, testing, warehousing, etc.	65

In addition, the average of the maximum levels on the loudest of intrusive sounds occurring during a 24-hour period shall not exceed 65 dBA interior.

Section 83.01.090 Vibration.

(a) *Vibration Standard*. No ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenth (0.2) inches per second measured at or beyond the lot line.

(b) *Vibration Measurement*. Vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity, or acceleration. Readings shall be made at points of maximum vibration along any lot line next to a parcel within a residential, commercial and industrial land use zoning district.

(c) *Exempt Vibration*. The following sources of vibration shall be exempt from the regulations of this Section.

a. Motor vehicles not under the control of the subject use.
b. Temporary construction, maintenance, repair, or demolition activities between 7:00 AM and 7:00 PM, except Sundays and Federal holidays.

4 EXISTING CONDITIONS

4.1 Existing Noise Levels

To assess existing ambient noise levels in the Project area, EPD conducted four short-term noise measurements on March 25, 2026, at locations in the vicinity of the proposed Project. These measurement locations are shown on 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 9:00 AM and 10:30 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 (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)
NM-1	Northwest of Pipeline Avenue and Boyer Street	61.9	77.5	41.3
NM-2	In front of 4136 Maple Street	50.6	79.1	38.6
NM-3	Southwest of Phillips Boulevard and Essex Avenue	63.7	78.9	39.8
NM-4	Southeast corner of 11518 Norton Avenue	54.7	80.8	39.3

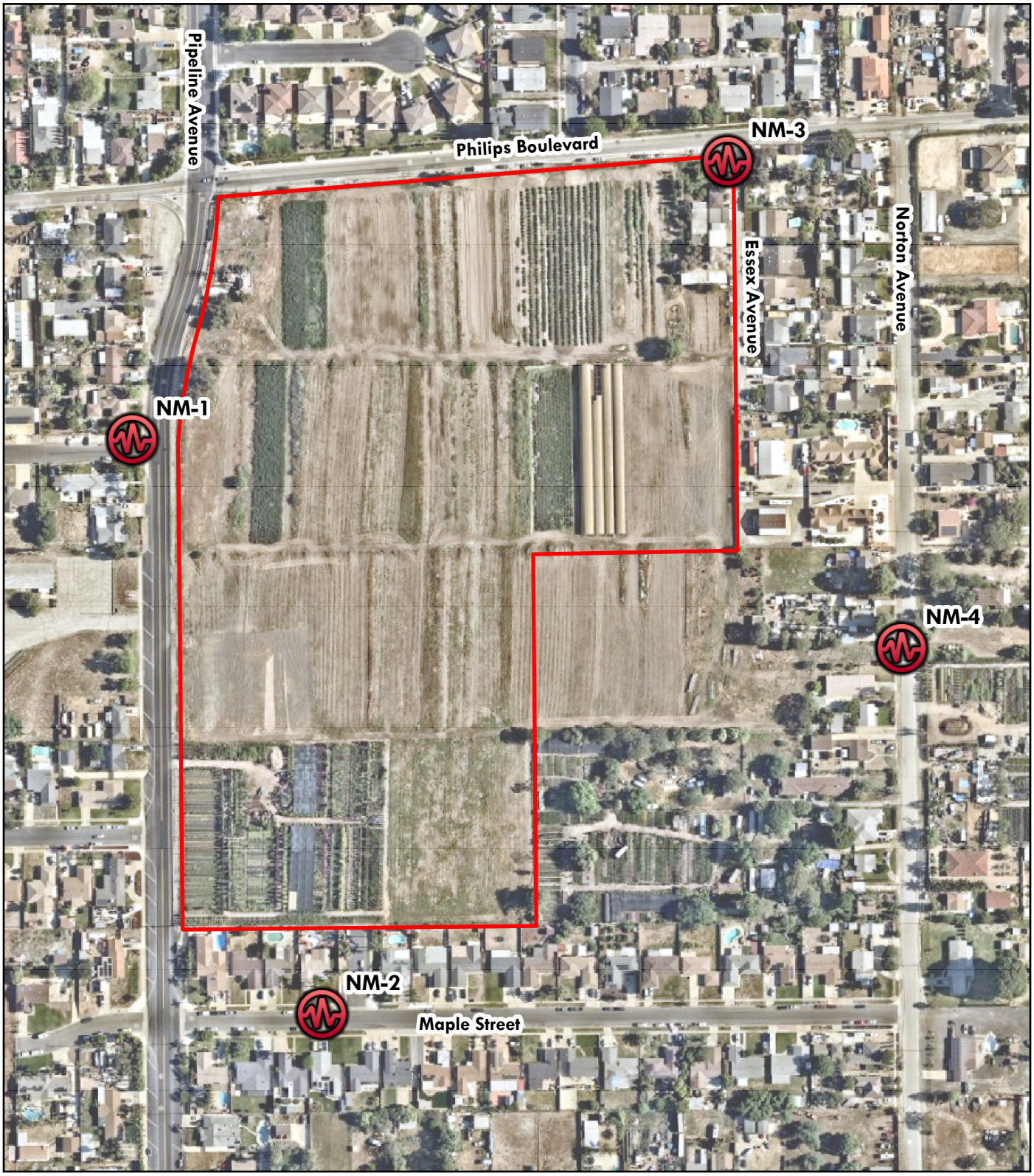
Notes: dBA=A-weighted decibels; L_{eq}=Equivalent Sound Level; L_{min}=Minimum Sound Level; L_{max}=Maximum Sound Level
Source: Refer to Appendix A, *Noise Measurement Data*.

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

Noise Measurement Locations

0 250 500 US Feet

N

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 includes 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 located approximately 15 feet south of the Project site boundary and 16 feet east of the site boundary. There are also sensitive receptors within 25 feet from the Project's proposed off-site sewer extension route along Maple Street and Norton Avenue. 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 Brackett Field Airport, approximately 4.6 miles northwest of the Project site. The second closest airport to the Project site is Ontario International Airport, approximately 5.1 miles to the east 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 4-2, *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 4-2: Existing Traffic Noise Levels

Roadway Segment	ADT[1]	dBA @ curbside from Roadway Centerline[2]	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	Centerline to 55 dBA CNEL (feet)
Pipeline Avenue					
North of Phillips Boulevard	4,020	64.8	-	52	112
South of Philips Boulevard	5,064	65.1	-	55	118
Philips Boulevard					
West of Pipeline Avenue	3,177	63.1	-	40	87
East of Pipeline Avenue	4,676	64.8	-	52	112

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

1. Streetlights. (2026).
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 County's Code of Ordinances does not establish quantified thresholds for increases to noise volumes, 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 source such as heating, ventilation, and air conditioning (HVAC) units, parking lot activities, on-site vehicle moving

including garbage and delivery trucks traveling on the internal roads due to implementation of the Project was compared to the exterior thresholds set in the County of San Bernardino Code of Ordinances 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 is consistent 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. The “Existing with Project” levels would be calculated based on existing trip generation plus the Project daily trips. According to the *Nerio Farms Chino Level of Service (LOS) Screening Analysis* (LOS Analysis), dated February 2026, prepared by EPD Solutions, Inc., the Project would generate an estimated increase of 818 daily trips, including 63 AM peak hour trips and 84 PM peak hour trips. Since the existing ambient noise level is between 50.6 to 63.7 dBA, the mobile noise increase due to implementation of the Project was compared to a threshold of 3 dBA 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 0.2 inch-per-second is applied (see Table 5-2, *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 and south of the Project site. The second-nearest sensitive

receptor uses are the existing church located west of the Project Site across the Pipeline Avenue. 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 South	Adjacent (analysis assumes construction equipment is measured at 15 feet from the receptor)	435	15
Residential Along Off-Site Improvements	25	NA	30

NA=Not Applicable.

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 Brackett Field Airport, approximately 4.6 miles northwest of the Project site. The second closest airport to the Project site is Ontario International Airport, approximately 5.1 miles to the east of the project site. The Project site is not within the Brackett Field Airport Influence Area or within any of the noise safety contours (Los Angeles County Airport Land Use Commission, 2015). Furthermore, the Project is not within the 65 CNEL noise contour of the Ontario International Airport (Southern California Association of Governments, 2023). Because the site is not within the noise safety zones for either airport, no significant impact would occur and no further evaluation of aircraft-related noise impacts is warranted.

5.3 Significance Criteria

The following significance criteria are based on the analysis identified within Appendix G of the CEQA Guidelines. The County's General Plan guidelines and County Code regulations identify noise compatibility and establish noise standards that are implemented as thresholds. However, the existing County

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 are evaluated using the FTA thresholds as well as Development Code Section 83.01.090 are used in this analysis to assess potential construction-related impacts at nearby sensitive receptors. A noise threshold of 80 dBA for residential properties is used in this analysis

Increase in Ambient Noise

Operation

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 thresholds established in the County Code Section 83.01.090, which provides a vibration threshold of 0.2 PPV (in/sec), as listed previously in Table 3-2, *Construction Vibration Damage Thresholds*.

Summary

Table 5-2, *Significance Criteria Summary*, provides a summary of thresholds established by the County of San Bernardino and used in this report.

Table 5-2: Significance Criteria Summary

Analysis	Conditions	Significance Criteria	
		Daytime	**Nighttime**
Off-Site Traffic[1]	If ambient is 60-65 dBA CNEL	≥ 3 dBA CNEL Project Increase	
Operational	Noise Level Standards for Residential Properties[2]	55 dBA	45 dBA
Construction	Temporary construction, maintenance, repair, or demolition activities between 7:00 AM and 7:00 PM, except Sundays and Federal Holidays.[2]		
	Noise Level at Residential Property[3]	80 dB	Not Allowed
	Vibration Damage Criteria[2]	0.2 PPV (inches/second)	

1. FICON. (1992). *Federal Agency Review of Selected Airport Noise Analysis Issue.* Since the existing ambient noise level is between 50.6 to 63.7 dBA, the mobile noise increase due to implementation of the Project was compared to a threshold of 3 dBA to evaluate the significance.
2. County of San Bernardino. (2026). *County of San Bernardino Code of Ordinances.*
3. FTA. (2018). *Transit Noise and Vibration Impact Assessment Manual*.

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. Demolition
2. Site preparation;
3. Grading;
4. Building construction;
5. Paving; and
6. 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 to the nearest sensitive receptors. During construction, noise would be attenuated by distance and existing objects (e.g., walls or buildings) that block line of sight. However, in order to provide a conservative analysis, no attenuation from walls and buildings were incorporated into the analysis. 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]	Maximum Noise Level @ 15 Feet[2,3]
			dBA L_{max}	dBA L_{max}
Demolition	Concrete/Industrial Saws	1	89.6	100.1
	Excavators	3	80.7	91.2
	Rubber Tired Dozers	2	81.7	92.2
Site Preparation	Rubber Tired Dozers	3	81.7	92.2
	Crawler Tractors	4	84.0	94.5
Grading	Graders	1	85.0	95.5
	Excavators	2	80.7	91.2
	Rubber Tired Dozers	1	81.7	92.2
	Crawler Tractors	2	84.0	94.5
	Scraper	2	83.6	94.1
Building Construction	Cranes	1	80.6	91.1
	Forklift	3	74.7	85.2
	Tractors/Loaders/Backhoe	3	84.0	94.5
	Generator Sets	1	80.6	91.1
	Welders	1	74.0	84.5
Paving	Pavers	2	77.2	87.7
	Paving Equipment	2	89.5	100.0
	Rollers	2	80.0	90.5
Architectural Coating	Air Compressors	1	77.7	88.2

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 east and south to the Project site. The geographic center of the Project site is approximately 435 feet from the closest single-family residences to the south and 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 are operating simultaneously and located at the geographic center of the Project site. In addition, construction equipment is not anticipated to be operating directly at the shared property line between the residences to the south and the Project site, therefore; a 15-foot setback is applicable. Furthermore, consistent with the County's Code of Ordinances, the construction noise would exempt as long as it occur between 7:00 AM and 7:00 PM, except Sundays and Federal Holidays. Further, based on the information provided and confirmed by the applicant, the building construction would overlap with paving and architectural coating. As shown in Table 6-2, *Composite Noise Level by Phase*, the composite noise level of each phase would range from 54.9 dBA L_{eq} to 69.4 dBA L_{eq} at the nearest single-family residences from the geographic center of the Project site to the south (a distance of 435 feet), which would not exceed the FTA threshold of 80 dBA for residential properties. As such, the on-site Project construction would result in a less-than-significant impact.

Table 6-2: Composite Noise Level by Phase

Activity	Maximum Noise Level @ 50 Feet	Maximum Noise Level @ 435 Feet
	dBA L_{eq}	dBA L_{eq}
Demolition	86.4	67.6
Site Preparation	87.6	68.8
Grading	88.2	69.4
Building Construction	86.1	67.3
Building Construction and Paving	89.3	69.3
Paving	86.5	67.7
Building Construction and Architectural Coating	86.3	67.5
Architectural Coating	73.7	54.9

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 demolition phase is anticipated to be 30 daily worker trips and 90 loaded hauling trips (EPD Solutions, Inc., 2026b). 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 50.6 to 63.7 dBA, the mobile noise increase due to implementation of the Project was compared to a threshold of 3 dBA to evaluate the significance (Table 5-2). The Project site would be accessible via

Pipeline Avenue and Philips Boulevard during construction. Traffic count data indicates that Pipeline Avenue and Philips Boulevard currently accommodate 5,064 and 4,676 daily vehicle trips, respectively (Streetlight, 2026). Therefore, the Project's construction trips (30 daily worker trips and 90 loaded hauling 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 the Project. As such, the impacts during off-site construction would be less than significant.

Off-Site Improvements Noise

The off-site sewer improvements would occur within the public right-of-way of Norton Avenue, Maple Street, and Pipeline Avenue. Construction activities associated with the installation of the sewer would occur in proximity to existing residences, with active work occurring as close as approximately 25 feet from the existing residential property lines when measured from the roadway centerline. Construction of the off-site sewer line would occur in a linear fashion, with one segment occurring at a time. Thus, construction equipment would not be stationary in one area for a long period of time. For this analysis, construction equipment that would be used for utility trenching is conservatively modeled at a distance of 25 feet to 125 feet from the nearby residences. Based on the CalEEMod trenching phase, representative construction equipment for the off-site sewer would include an excavator, dumper/tender, plate compactor, skid steer loader, and a tractor/loader/backhoe. Estimated construction noise levels associated with this equipment are shown in Table 6-3, *Off-Site Construction Equipment Noise Levels*.

Table 6-3: Off-Site Construction Equipment Noise Levels

Activity	Equipment[1]	Quantities[1]	Distance from Residence (feet)	Estimated Construction Noise Level[2,3]	
				dBA L_{max}	dBA L_{eq}
Trenching	Excavator	1	25	91.0	87.0
	Dump Truck	1	50	84.0	80.0
	Compactor (ground)	1	75	76.5	69.5
	Tractor	1	100	78.0	74.0
	Front End Loader	1	125	72.0	68.1
Cumulative Noise Level				92.1	88.1

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.

As shown in Table 6-3, trenching activities associated with the off-site sewer improvements could result in a maximum noise level as high as 92.1 dBA L_{max}. However, because construction equipment does not operate continuously at maximum power and construction noise impacts are generally evaluated using the time-averaged equivalent noise level (Leq), the average hourly construction noise level provides the more representative metric for assessing potential impacts. The combined operation of all these pieces of equipment consecutively results in a maximum average noise level of 88.1 dBA L_{eq}, which would exceed the 80 dBA L_{eq} established by the FTA (Table 3-1).

Therefore, Mitigation Measure NOI-1 has been included, which requires that construction equipment used for the off-site sewer improvement be equipped with noise mufflers that provide a minimum reduction of 9 dBA compared to the same equipment without an installed muffler system. A study prepared for the US Department of Transportation indicates that properly functioning mufflers can reduce construction equipment noise levels by approximately 6 to 12 dBA compared to equipment without mufflers (Toth, 1979). In addition, the Federal Highway Administration (FHWA) special report also states that a 10 dBA reduction would be possible with the usage of mufflers (FHWA, 2017). For purposes of this analysis, the construction equipment modeled in Table 6-3 was conservatively assumed to not have any mufflers or sound-attenuating devices installed. Accordingly, application of the required 9 dBA reduction through implementation of Mitigation Measure NOI-1 would reduce the combined trenching-related construction noise level from 88.1 dBA to approximately 79.1 dBA at nearby receptors when all modeled equipment is operating within 25 to 125 feet of a receptor. Therefore, with implementation of mitigation, off-site trenching noise levels would be below the 80 dBA threshold, and noise impacts during construction of off-site sewer improvements would be reduced to a less-than-significant level with mitigation incorporated.

6.2 Operational Noise

Long-term operational noise would be generated from the 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 6-4, *Existing Plus Project Traffic Noise Levels*, the noise level under the “Existing” scenario at the curbside from the roadway centerline ranges from 63.1 to 65.1 dBA. The increase due to the Project would range from 0.7 to 1.0 dBA, which would not exceed the 3.0 dB threshold along nearby roadways. Furthermore, the traffic noise with the

Project would be less than the ambient noise level measured off-site. As such, impacts would be less than significant.

Table 6-4: Existing Plus Project Traffic Noise Levels

Roadway Segment	Existing		Existing Plus Project				Increase over Existing Scenario (dBA)
	Existing ADT[1]	dBA @ curbside from Roadway Centerline	Existing Plus Project ADT[2]	dBA @ curbside from Roadway Centerline	Centerline to 60 dBA CNEL (feet)	Centerline to 55 dBA CNEL (feet)	
Pipeline Ave							
North of Philips Blvd	4,020	64.8	4,838	65.6	59	127	0.8
South of Philips Blvd	5,064	65.1	5,882	65.8	61	131	0.7
Phillips Blvd							
West of Pipeline Ave	3,177	63.1	3,995	65.6	47	101	1.0
East of Pipeline Ave	4,676	64.8	5,494	65.8	58	125	0.7

Notes: ADT= average daily traffic; CNEL=Community Noise Equivalent Level; dBA=A-weighted decibels.
1. Streetlights. (2026).
2. As a conservative analysis, the total daily trip increase of 818 trips from the Project are added to each roadway segment.

On-Site Noise

Heating, Ventilation, and Air Conditioning

Typically, mechanical equipment, such as HVAC units, would be located in the backyard of the proposed unit adjacent to the structure. The Project proposes single-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 dB as described above. All HVACs were modeled operating concurrently on-site as a conservative analysis.

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 there would be 84 vehicles per hour during the day in the driveway area, which is the highest peak hour trips based on the VMT Analysis prepared for the Project (EPD

Solutions, Inc., 2026c). It was assumed there that truck activity would account for one percent of 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. The noise generated by the proposed Project would be consistent with that of the surrounding single-family residential properties and the church to the west. Based on 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 clearly acceptable of the residential noise standards established by the Governor's Office of Land Use and Climate Innovation. As such, traffic associated with the residential development is 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 levels measurements. The difference between the combined Project and 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 46.5 dBA during the daytime and 41.1 dBA during the nighttime, which would not exceed the County's exterior thresholds of 55 dBA during the daytime and 45 dBA during the nighttime. As shown in Table 4-1, *Ambient Noise Measurements*, the ambient noise level in the Project vicinity ranges from 50.6 dBA to 63.7 dBA. As such, the Project's incremental increase from operation would be minimal. Therefore, the incremental increase in ambient noise from operation of the proposed Project would be less than significant.

6.3 Vibration

Construction Vibration

On-Site Construction

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 6-5: 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 200 Feet (PPV [inches/second])[2]
Large Bulldozer	0.089	0.191	0.004
Loaded Trucks	0.076	0.164	0.003
Small Bulldozer	0.003	0.006	0.003
Highest Vibration		0.191	0.003
Thresholds		**0.2**	**0.2**
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 vibration-heavy equipment on-site such as rubber-tired dozers, loaded trucks, and graders (which generate similar vibration as a large bulldozer). Per information provided by the applicant, no vibratory roller or pile driver would be used during construction. The nearest structure would be the single-family structure to the south, which would be located as close as 15 feet to the construction activities. A large bulldozer would generate 0.191 PPV (inches/second) at a distance of 15 feet, which would not exceed the threshold of 0.2 inches per second established by County Code. As shown in Table 6-5, *Construction Equipment Vibration Levels*, the overall vibration levels at the nearest structures would range from 0.006 to 0.191 PPV (inches per second), which would not exceed the thresholds established by County Code. The nearest non-residential structure with sensitive receptors is the existing church located 200 feet west of the Project site. At 200 feet, the vibration from construction would be 0.004 PPV inches per second, which would not exceed the threshold of 0.2 PPV inches per second established by County Code. Furthermore, the vibration impact from construction would be short-term and temporary, cease after completion. As such, the vibration impacts during construction would be less than significant.

Off-Site Improvements

The off-site sewer improvements would be located as close as 25 feet to the existing sensitive receptor property line along the roadways. For vibration analysis, the distance would be larger than 30 feet due to building setbacks where vibration impacts are analyzed from. Also, due to the size of the construction, there is only one equipment at one point each time and move along once finished. Small bulldozers would be used for sewer construction to minimize the impact to the surrounding areas. As shown in Table 6-5, *Construction Equipment Vibration Levels*, the small bulldozer would generate 0.003 PPV (inches per second) at 25 feet, which would not exceed the thresholds established by County Code, 0.2 PPV (inches per second). At 30 feet where the residence façade would be located at vibration levels from construction

would be lower. Furthermore, the vibration impact from construction would be short-term and temporary, 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. Specifically, as shown in Table 6-5, a loaded truck would generate 0.076 PPV (inches/second) at 25 feet. Trucks driving on the road could be as close as 15 feet to the existing buildings along the roadways from the main lane. At 15 feet, a loaded truck would generate 0.164 PPV (inches/second) (as indicated in Table 6-5, above), which is less than 0.2 PPV (inches/second). Therefore, operational vibration impacts would be less than significant.

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

6.4 Land Use Compatibility Assessment

The proposed Project is in an urban and developed area where parcels surrounding the Project site are currently used for residential uses. Therefore, this land use compatibility assessment relies on the existing noise measurement as well as the future predicted noise levels to provide the most accurate description of the noise environment related to traffic noise impacts.

The land use compatibility of the Project site was assessed based on the Land Use Compatibility guidelines contained in the County of San Bernadino Countywide Plan. As described in Title 24, Chapter 12, Section 1206.4 of the California Building Code, the State has a noise standard of a 45 CNEL for interior habitable rooms.

On-Site Exterior Noise Impacts

Based on the noise measurement results presented in Table 4-1, *Ambient Noise Measurements*, the existing noise levels within the Project vicinity range from ambient noise level is between 50.6 to 63.7 dBA L_{eq}. The measurement includes daily average off-peak traffic. Short-term ambient noise measurements were conducted between 9:00 a.m. and 3:00 p.m. This time period was intentionally selected because it generally represents stable daytime conditions and is considered appropriate for characterizing the typical ambient sound environment of a residential neighborhood. Midday hours typically reflect steady

background noise levels associated with local roadway traffic, community activity, and natural sources (e.g., wind in vegetation), while avoiding the higher variability and short-term peak conditions that may occur during morning and evening commuter periods.

During each short-term measurement, a field technician remained on-site for the full duration of monitoring to observe site conditions and identify any atypical or transient noise events (e.g., sirens, construction activity, aircraft overflights). If such events occurred and were not representative of the normal ambient environment, they were noted and excluded from consideration, consistent with standard acoustic measurement protocols. Daytime off-peak observation is representative of the ambient environment as it excludes the daytime peak hours and nighttime hours. The result is similar to community noise metrics (e.g., Community Noise Equivalent Level [CNEL] or Day-Night Average Sound Level [Ldn]) that incorporate a 5-dBA penalty during evening hours and a 10-dBA penalty during nighttime hours to account for increased human sensitivity to noise during those periods when calculating.

With an ambient noise level less than 65 dBA, noise levels at the exterior habitable areas (for example, back yard, recreation area) would be below the normally acceptable level of 65 dBA CNEL. “Normally acceptable” with the installation of property walls means that new construction or development should be undertaken only after detailed analysis of noise reduction requirements and are made and needed noise insulation features in the design are determined. Based on the information above, conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice. Since the Project would comply with the California Building Code to install windows and ventilation system, the Project would be compliance with the land use compatibility noise level for single-family residences, and no mitigation measures would be required.

On-Site Interior Noise Impacts

Interior noise levels that are a nuisance are primary affected by noise intrusion from exterior noise sources such as aircraft and roadway traffic. According to the Title 14 Code of Federal Regulations Part 150 Table 1, *Land Use Compatibility* With Yearly Day-Night Average Sound Levels*, normal residential construction can be expected to provide a [noise level reduction] of 20 dB. "Normal residential construction" is defined as conventional building design and construction techniques utilized in standard, modern residential structures, incorporating standard wood or steel framing, exterior siding or stucco, thermal insulation, and double-paned windows, and operating under the assumption that all exterior windows and doors remain closed and that a year-round mechanical ventilation system is provided. As such, exterior noise levels of less than 65 dBA CNEL would meet the City’s interior noise limit of 45 dBA CNEL. Because the Project is located in an area which is outside of the 65 dBA CNEL noise contours for both roadways and aircraft, the interior noise level limits can be met with standard construction design. Furthermore, the Project would comply with the California Building Code and interior noise levels attributable to exterior sources would not exceed 45 dB in any habitable room. As such, no mitigation would be required.

7 CONCLUSION

During construction, the Project would be required to comply with the rules and regulations set forth in the County's Noise Element and Development Code. With implementation of Mitigation Measure NOI-1, construction noise from the Project would not exceed the 80 dBA threshold. In addition, construction vibration would not exceed the threshold of 0.2 inches per second. As such, the Project would not result in a significant impact related to noise and vibration from construction with implementation of Mitigation Measure NOI-1.

During operation, sources of noise would include those from mobile and stationary sources. The operation of the future residential uses on the parcels would result in an up to 0.7 to 1.0 dBA increase over the existing traffic conditions along Pipeline Avenue and Phillips Boulevard. On-site noise sources would include HVAC units and on-site vehicle activities from automobiles, delivery trucks, and garbage trucks. 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 46.5 dBA during daytime and 41.1 dBA during nighttime, which would not exceed the County's exterior thresholds of 55 dBA during daytime and 45 dBA during nighttime. As shown in Table 4-1, *Ambient Noise Measurements*, the ambient noise level in the Project vicinity ranges from 50.6 dBA to 63.7 dBA. As such, operation of the Project would not result in an increase in noise. 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 impact related to noise and vibration from operation.

Additionally, the Project is located outside of the 65 CNEL noise contour 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 and South	69.4	0.191	46.5	41.1	1.0
Residences along Trenching Route	79.1[1]	0.089	NA	NA	NA

Threshold	***80***	***0.3***	***55***	***45***	***3.0***
Exceed the Threshold?	**No**	**No**	**No**	**No**	**No**

1. The Noise Level is with the implementation of Mitigation Measure NOI-1, Construction Equipment Noise Reduction During Off-Site Trenching Activities.

8 REFERENCES

Aircraft Noise Office. (2025). *Community Noise Equivalent Level (CNEL).* Retrieved June 26, 2025, from https://noise.flysfo.com/blog/glossary_term/community-noise-equivalent-level-cnel/#:~:text=SFO%20Noise%20Office-,Community%20Noise%20Equivalent%20Level%20(CNEL),to%20measure%20aircraft%20noise%20levels

Berger, E. H., Neitzel, R., & Kladden, C. A. (2015). *Noise Navigator Sound Level Database.* Retrieved June 9, 2025, from https://multimedia.3m.com/mws/media/888553O/noise-navigator-sound-level-hearing-protection-database.pdf

California Department of Transportation (Caltrans). (2020a). T*echnical Noise Supplement to the Traffic Noise Analysis Protocol*. Retrieved July 29, 2025, from https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf

California Department of Transportation (Caltrans). (2020b). *Transportation and Construction Vibration Guidance Manual*. Retrieved July 29, 2025, from https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

Craig Air Conditioning. (2025). *AC Runs All Day.* Retrieved October 1, 2025, from https://www.craigsair.com/blog/ac-runs-all-day

County of San Bernardino. (2020). *County of San Bernardino Countywide Plan*.

County of San Bernardino. (2026a). *LU-1 Land Use Map.* Retrieved June 9, 2025, from https://www.arcgis.com/apps/webappviewer/index.html?id=f23f04b0f7ac42e987099444b2f46bc2

County of San Bernardino. (2026b). *County of San Bernardino Code of Ordinances*.

EPD Solutions, Inc. (2026a). *Nerio Farms Chino Level of Service (LOS) Screening Analysis.*

EPD Solutions, Inc. (2026b). *Air Quality, Energy, and Greenhouse Gas Impact Analysis for the Nerio Farms Residential Community.*

EPD Solutions, Inc. (2026c). *Nerio Farms Chino Vehicle Miles Traveled (VMT) Screening Analysis.*

Federal Aviation Administration. (2025). *Fundamental of Noise and Sound*. Retrieved June 9, 2025, from https://www.faa.gov/regulations_policies/policy_guidance/noise/basics

Federal Transit Administration (FTA). (2018). *Transit Noise and Vibration Impact Assessment Manual.* Retrieved June 3, 2025, from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-

innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Federal Interagency Committee on Noise. (1992). *Federal Agency Review of Selected Airport Noise Analysis Issue.* Retrieved June 9, 2025, from https://www.faa.gov/sites/faa.gov/files/reports_noise_analysis.pdf

Federal Highway Administration. (2006). *Construction Noise Handbook*. Retrieved June 9, 2025, from https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/

Federal Highway Administration. (2017). *Special Report Chapter 4 Mitigation*. Retrieved May 20, 2026, from https://www.fhwa.dot.gov/environment/noise/construction_noise/special_report/

Hayne, M. J., Rumble, R. H., and Mee, D. J. (2006). *Prediction of Crowd Noise.* Retrieved June 9, 2025, from https://www.acoustics.asn.au/conference_proceedings/AASNZ2006/papers/p46

INCE USA. (2025). *What is Noise?* Retrieved June 9, 2025, from https://www.inceusa.org/about-ince-usa/what-is-noise/#noise

John Hopkins University. (2025). *The Propagation of Sound.* Retrieved June 9, 2025, from https://pages.jh.edu/virtlab/ray/acoustic.htm

Los Angeles County Airport Land Use Commission. (December 9, 2015). *Brackett Air Field Land Use Plan.* Retrieved May 12, 2026, from https://planning.lacounty.gov/wp-content/uploads/2022/10/Brackett-Field-Airport-Land-Use-Compatibility-Plan.pdfSengpielaudio. (2025). *Tontechnik-Rechner.* Retrieved June 9, 2025, from https://sengpielaudio.com/calculator-soundpower.htm.

Southern California Association of Governments. (2023). *Connect SoCAL 2024 Program Environmental Impact Report Appendix F: Aviation Noise Technical Report Figure 23.* Retrieved May 13, 2026, from https://scag.ca.gov/sites/default/files/2024-05/23-3052-peir-2024-appendix-f-complete-110923.pdf

Streetlight Data. (2026). Retrieved April 1. 2026, from https://insight.streetlightdata.com/login?redirect=/analyses

Technicon Acoustics. (2025). *What Is Sound Attenuation?* Retrieved June 9, 2025, from https://www.techniconacoustics.com/blog/what-is-sound-attenuation/#:~:text=Excavators%2C%20bulldozers%2C%20and%20other%20types,material%20composition%2C%20and%20structural%20design

Toth, William J. 1979, August. “Noise Abatement Techniques for Construction Equipment.” Prepared for the National Highway Traffic Safety Administration. US Department of Transportation. Retrieved May 18, 2026, from https://rosap.ntl.bts.gov/view/dot/30592/dot_30592_DS1.pdf.

United States Department of Transportation and Federal Highway Administration. (2018). *Traffic Data Computation Method.*

APPENDIX A – NOISE MEASUREMENT DATA

Noise Measurement Field Data

Project Number:	25-093		
Site Number:	NM-1		
Investigator(s):	Tina Yuan		
Date:	3/25/2026		
Time:	9:00 a.m. – 9:15 a.m.		
Measurement Location:	Northeast corner of the11450 Pipeline Avenue		
Peak Noise:	Traffic along Pipeline Avenue		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Clear	80 degrees F	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
61.9	77.5	41.3

Site Photo



Project Number:	25-093		
Site Number:	NM-2		
Investigator(s):	Tina Yuan		
Date:	3/25/2026		
Time:	9:23 a.m. – 9:38 a.m.		
Measurement Location:	Along Maple Street, north of 4148 Maple Street		
Peak Noise:	Traffic Noise		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Sunny	80 degrees F	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
50.6	79.1	38.6

Site Photos



Project Number:	25-093		
Site Number:	NM-3		
Investigator(s):	Tina Yuan		
Date:	3/25/2026		
Time:	9:32 a.m. – 9:47 a.m.		
Measurement Location:	Southwest corner of the Philips Blvd and Essex Avenue		
Peak Noise:	Traffic along Phillips Blvd		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Sunny	80 degrees F	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
63.7	78.9	39.8

Site Photos



Project Number:	25-093		
Site Number:	NM-4		
Investigator(s):	Tina Yuan		
Date:	03/25/2026		
Time:	10:10 a.m.- 10:25 a.m.		
Measurement Location:	East of 11518 Norton Avenue		
Peak Noise:	Traffic along Norton Avenue		
Noise Meter Model:	PCE-430	**Microphone Model:**	PCE 1/2''
Calibration Date:	3/3/2025		
Weather Conditions:	**Sky**	**Temperature**	**Wind Speed**
	Clear	80 degrees F	1 mph

Measurements Data		
L_{eq} (dB)	**L_{max} (dB)**	**L_{min} (dB)**
54.7	80.8	39.3

Site Photos



APPENDIX B – NOISE MODELING DATA

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
Case Description: Demolition

---- Receptor #1 ----

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

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Concrete Saw	No	20		89.6	50	0
Excavator	No	40		80.7	50	0
Excavator	No	40		80.7	50	0
Excavator	No	40		80.7	50	0
Dozer	No	40		81.7	50	0
Dozer	No	40		81.7	50	0

			Results				
	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Saw	89.6	82.6	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
Excavator	80.7	76.7	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
Dozer	81.7	77.7	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
Total	89.6	86.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

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

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Concrete Saw	No	20		89.6	435	0

Excavator	No	40	80.7	435	0
Excavator	No	40	80.7	435	0
Excavator	No	40	80.7	435	0
Dozer	No	40	81.7	435	0
Dozer	No	40	81.7	435	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Saw	70.8	63.8	N/A	N/A	N/A	N/A	N/A
Excavator	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Excavator	61.9	57.9	N/A	N/A	N/A	N/A	N/A
Dozer	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Dozer	62.9	58.9	N/A	N/A	N/A	N/A	N/A
Total	70.8	67.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Noise Limit Exceedance (dBA)						
	Day		Evening		Night	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Noise Limit Exceedance (dBA)						
	Day		Evening		Night	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
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

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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	435	0
Dozer	No	40		81.7	435	0
Dozer	No	40		81.7	435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	65.2	68.8	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
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
Scraper	No	40		83.6	50	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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
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	88.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- 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		435	0
Excavator	No	40		80.7	435	0
Dozer	No	40		81.7	435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Excavator	No	40		80.7	435	0
Scraper	No	40		83.6	435	0
Scraper	No	40		83.6	435	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Grader		66.2	62.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		64.8	60.8	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		64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.2	69.4	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: 5/20/2026
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

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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	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	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	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	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	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	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	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	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	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	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	435	0
Man Lift	No	20		74.7	435	0
Man Lift	No	20		74.7	435	0
Generator	No	50		80.6	435	0
Crane	No	16		80.6	435	0
Welder / Torch	No	40		74	435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	61.8	58.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	61.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.2	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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: 5/20/2026
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	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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
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	435	0
Man Lift	No	20		74.7	435	0
Man Lift	No	20		74.7	435	0
Generator	No	50		80.6	435	0
Crane	No	16		80.6	435	0
Welder / Torch	No	40		74	435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Tractor	No	40	84		435	0
Compressor (air)	No	40		77.7	435	0

Equipment	Results Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.9	48.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	61.8	58.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	61.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.2	67.5	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
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

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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	435	0
Pavement Scarafier	No	20		89.5	435	0
Paver	No	50		77.2	435	0
Paver	No	50		77.2	435	0
Roller	No	20		80	435	0
Roller	No	20		80	435	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night 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	70.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	70.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	61.2	54.2	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	61.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.7	69.3	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
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)						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
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	435	0
Pavement Scarafier	No	20		89.5	435	0
Paver	No	50		77.2	435	0
Paver	No	50		77.2	435	0
Roller	No	20		80	435	0
Roller	No	20		80	435	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
Pavement Scarafier	70.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	70.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	61.2	54.2	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	61.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.7	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

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/20/2026
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 ----

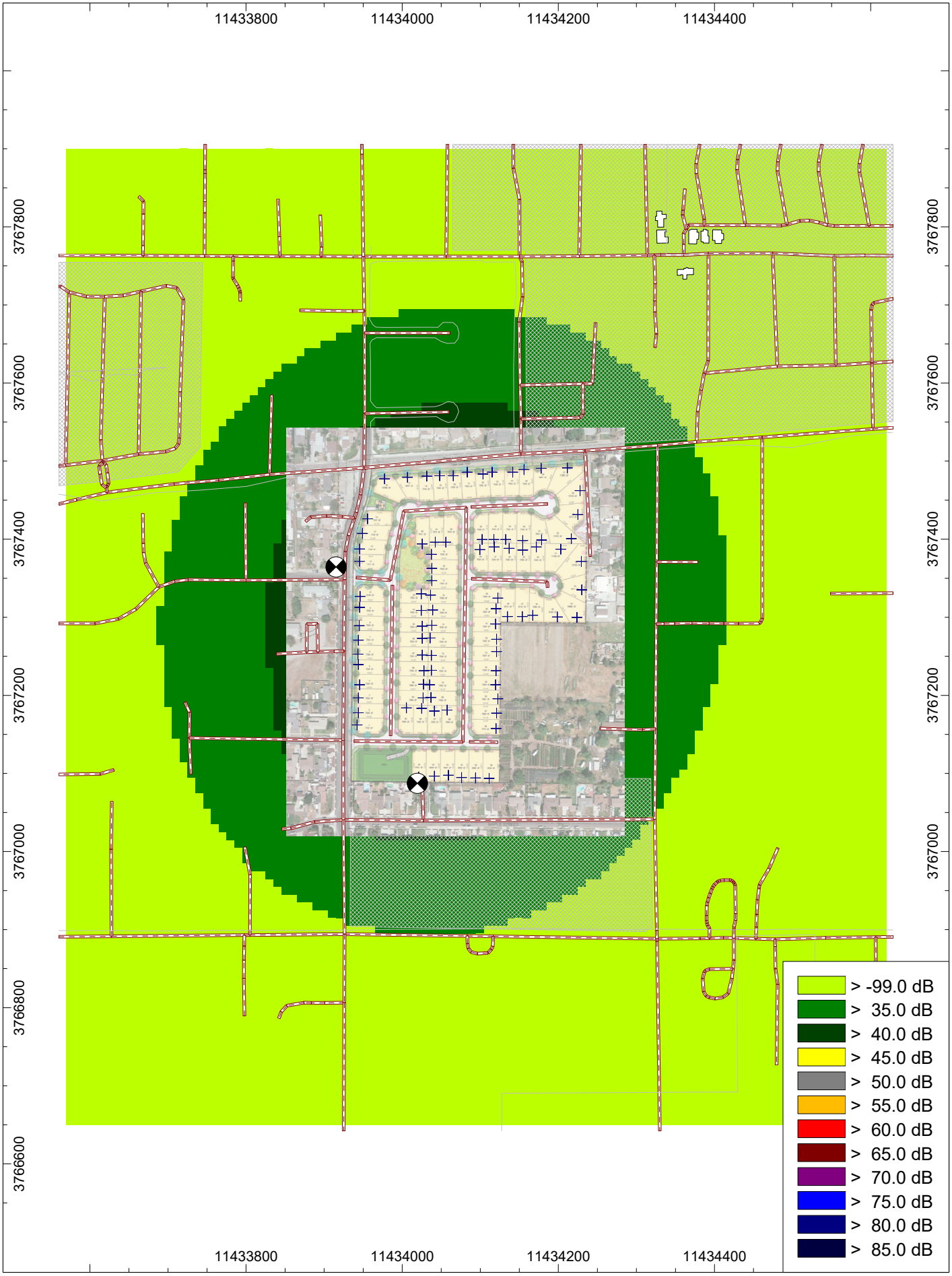
Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Project Center	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	435	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)		58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.


11433800
11434000
11434200
11434400
3767800
3767600
3767400
3767200
3767000
3766800
3766600
> -99.0 dB
> 35.0 dB
> 40.0 dB
> 45.0 dB
> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

Receiver		Land Use	Limiting Value		rel. Axis			Lr w/o Noise Control		dL req.		Lr w/ Noise Control		Exceeding		passive NC
Name	ID		Day	Night	Station	Distance	Height	Day	Night	Day	Night	Day	Night	Day	Night	
			dB(A)	dB(A)	m	m	m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
SR to the south			0	0	46	6.48	4.00	46.5	41.1	46.5	41.1	0.0	0.0	-	-	-
SR to the West			0	0	1237	11.47	4.00	46.5	40.6	46.5	40.6	0.0	0.0	-	-	-