

## Appendix F

### Environmental Noise Assessment



# Environmental Noise Assessment

## Ramona Opportunity Industrial

City of Sacramento, California

July 17, 2025

Project #250603

Prepared for:



**Acorn Environmental**

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## INTRODUCTION

The Ramona Opportunity Industrial project is located in the City of Sacramento, California. The project includes the construction of a warehouse and adjacent office building. The project will be bordered by commercial and industrial space to the north, south and west, residential land use to the east, and the Union Pacific Railroad to the west.

**Figure 1** shows the project site plan. **Figure 2** shows an aerial photo of the project site.

## ENVIRONMENTAL SETTING

### BACKGROUND INFORMATION ON NOISE

#### *Fundamentals of Acoustics*

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

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

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

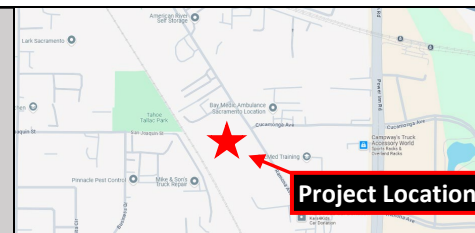
The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

[illegible]

**AS101-SPR**

12/20/2024

**Figure 1**  
**Project Site Plan**







## Ramona Opportunity Industrial

City of Sacramento, California

Figure 2

Noise Measurement Sites

### Legend

— Project Site

▲ Noise Measurement - Long Term



Projection: UTM Zone 10 / WGS84 / meters  
Rev. Date: 06/18/2025





The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60-dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor,  $L_{dn}$ , and shows very good correlation with community response to noise.

The day/night average level (DNL or  $L_{dn}$ ) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

**Table 1** lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

**TABLE 1: TYPICAL NOISE LEVELS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.



### ***Effects of Noise on People***

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regards to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate.

## EXISTING NOISE AND VIBRATION ENVIRONMENTS

### EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise-sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residential uses to the east of the project site, and commercial and office uses to the west, north and south of the project site.

### EXISTING GENERAL AMBIENT NOISE LEVELS

The existing noise environment in the project area is primarily defined by traffic on Ramona Avenue and Cucamonga Avenue. To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted continuous (24-hr.) noise level measurements at two locations on the project site. Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted  $L_{max}$ , represents the highest noise level measured. The average value, denoted  $L_{eq}$ , represents the energy average of all the noise received by the sound level meter microphone during the monitoring period. The median value, denoted  $L_{50}$ , represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

**TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA**

Location	Date	$L_{dn}$	Daytime $L_{eq}$	Daytime $L_{50}$	Daytime $L_{max}$	Nighttime $L_{eq}$	Nighttime $L_{50}$	Nighttime $L_{max}$
LT-1: 175 ft. to CL of Ramona Ave.	6/11/25	66	63	58	78	59	53	76
LT-2: 165 ft. to CL of Ramona Ave.	6/11/25	60	55	48	72	53	46	68

- All values shown in dBA
- Daytime hours: 7:00 a.m. to 10:00 p.m.
- Nighttime Hours: 10:00 p.m. to 7:00 a.m.
- Source: Saxelby Acoustics, 2025.

## EVALUATION OF PROJECT OPERATIONAL NOISE ON EXISTING SENSITIVE RECEPTORS

Project site traffic circulation, loading docks and HVAC noise are considered to be the primary noise sources for this project. The following is a list of assumptions used for the noise modeling. The data used is based upon a combination of project provided data and Saxelby Acoustics data from similar operations.

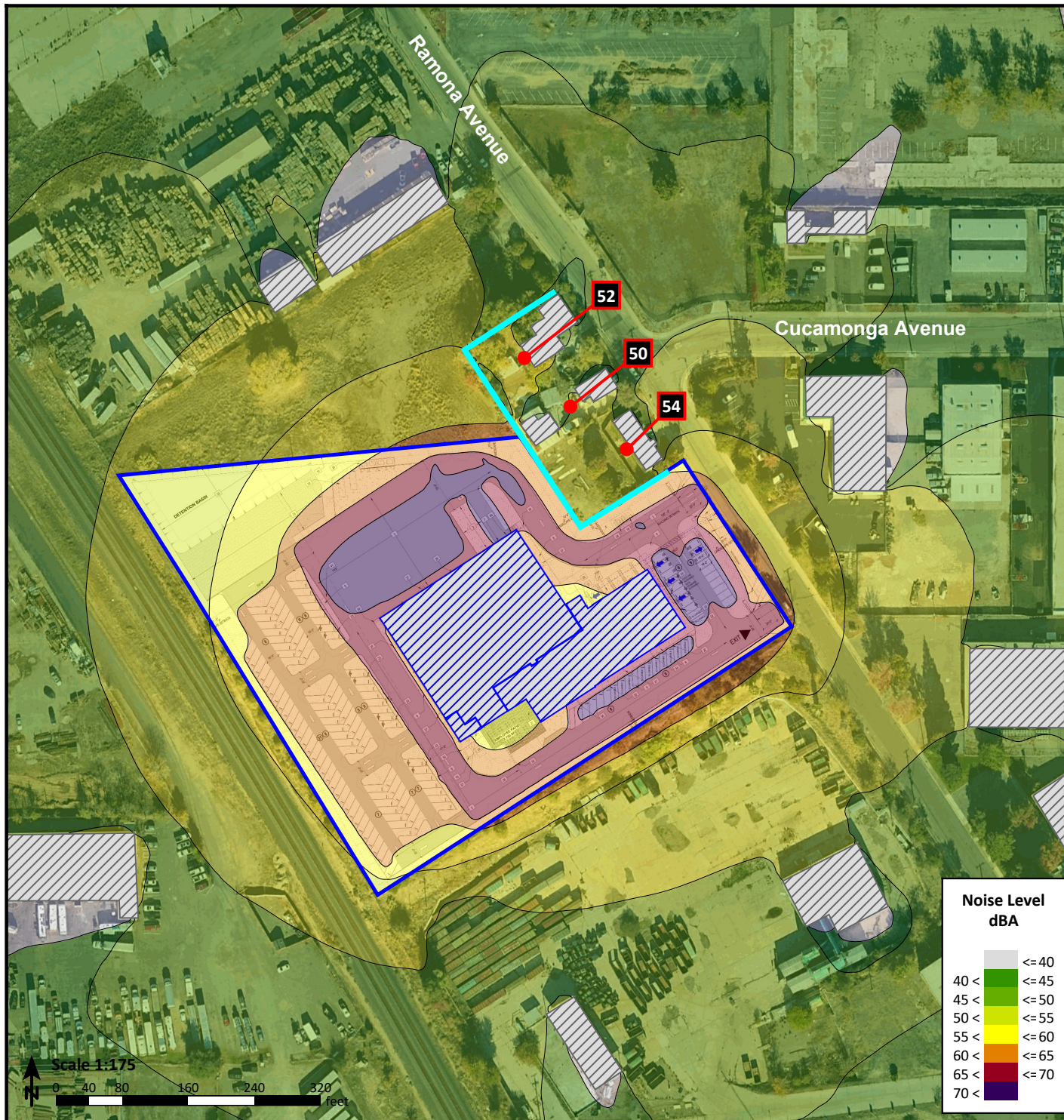
**On-Site Circulation:** The project is projected to generate 442 daily trips. Saxelby Acoustics assumed 44 vehicles during the peak hour, 2 of these trips could be heavy trucks. Parking lot movements are predicted to generate a sound exposure level (SEL) of 71 dBA SEL at 50 feet for cars and 85 dBA SEL at 50 feet for trucks. Nighttime traffic outside of the AM or PM peak hour is estimated to be approximately 1/4 of daytime trips during nighttime hours (10:00 p.m. to 7:00 a.m.).

**Loading Docks:** Saxelby Acoustics assumes the proposed loading docks would generate an average noise level of 61 dBA  $L_{eq}$  and 81 dBA  $L_{max}$  at a distance of 100 feet from the center of the loading dock truck maneuvering lanes. Activities during the peak hour of loading dock activities include truck arrival/departures, truck idling, truck backing, air brake release, and operation of truck-mounted refrigeration units. Saxelby Acoustics data.

**Rooftop HVAC:** Three ten-ton packaged units and two ten-ton air-cooled chiller package operating continuously during the daytime, and 50% of the time at night. Saxelby Acoustics data.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed amenities, existing and proposed buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. **Figure 3** and **Figure 4** show the noise level contours resulting from operation of the project.









## Ramona Opportunity Industrial

City of Sacramento, California

Figure 3

Project Generated Noise Levels Daytime  
(L50, dBA)

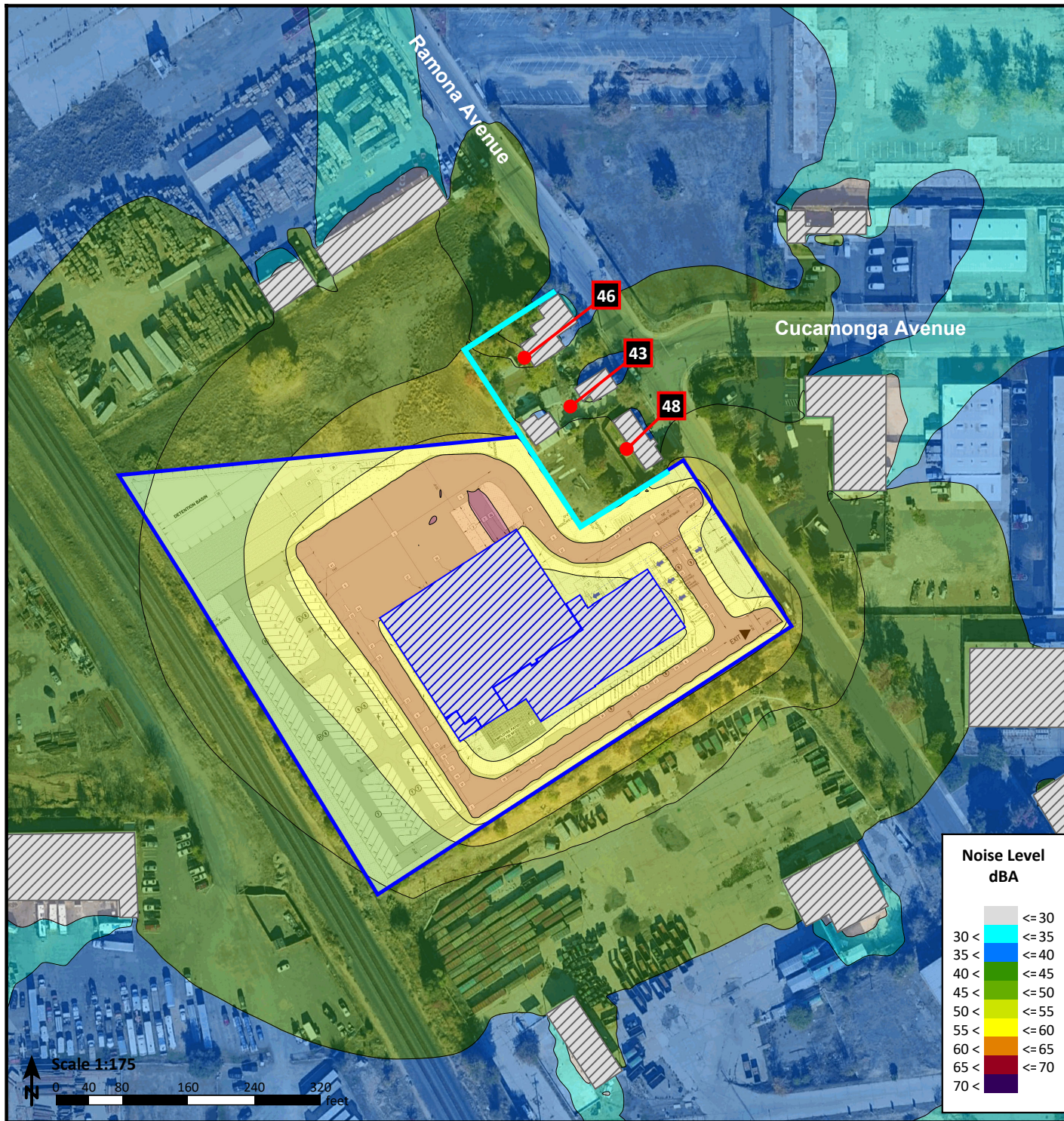
### Legend

-  Project Boundary
-  Project Building
-  Existing Building
-  Noise Level
-  8-foot Sound wall

### Noise Level dBA

	≤ 40
40 <	≤ 45
45 <	≤ 50
50 <	≤ 55
55 <	≤ 60
60 <	≤ 65
65 <	≤ 70
70 <	







# Ramona Opportunity Industrial

City of Sacramento, California

Figure 4

Project Generated Noise Levels Nighttime  
(L50, dBA)

## Legend

-  Project Boundary
-  Project Building
-  Existing Building
-  Noise Level
-  8-foot Sound wall

## Noise Level dBA

	<= 30
30 <	<= 35
35 <	<= 40
40 <	<= 45
45 <	<= 50
50 <	<= 55
55 <	<= 60
60 <	<= 65
65 <	<= 70
70 <	

## CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project, noise from construction activities would temporarily add to the noise environment in the project vicinity. As shown in **Table 3**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

**TABLE 3: CONSTRUCTION EQUIPMENT NOISE**

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: Roadway Construction Noise Model User's Guide. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

## CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. **Table 4** shows the typical vibration levels produced by construction equipment.

**TABLE 4: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT**

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.



## REGULATORY CONTEXT

### FEDERAL

There are no federal noise standards which apply to the proposed project.

### STATE

#### ***California Environmental Quality Act***

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed in more detail under the Thresholds of Significance section.

### LOCAL

#### ***City of Sacramento General Plan***

#### **NOISE ELEMENT GOALS AND POLICIES**

- Goal 1** To protect the existing and future citizens of Sacramento County from the harmful effects of exposure to excessive noise. More specifically, to protect existing noise-sensitive land uses from new uses that would generate noise levels which are incompatible with those uses, and to discourage new noise sensitive land uses from being developed near sources of high noise levels.
- Goal 2** To protect the economic base of Sacramento County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent by-product of many land uses and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses.
- Goal 3** To provide the County with flexibility in the development of infill properties which may be located in elevated noise environments.
- Goal 4** To provide sufficient noise exposure information so that existing and potential future noise impacts may be effectively addressed in the land use planning and project review processes.

#### **Traffic and Railroad Noise Sources**

NO-1. The noise level standards for noise-sensitive areas of new uses affected by traffic or railroad noise sources in Sacramento County are shown by Table 1. Where the noise level standards of Table 1 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 1 standards.

### Non-Transportation Noise Sources

- NO-5. The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 2 (**Table 5**). Where the noise level standards of Table 2 (**Table 5**) are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 2 (**Table 5**) standards within sensitive areas.
- NO-6. Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards of Table 2 (**Table 5**) at existing noise-sensitive areas in the project vicinity.
- NO-7. The “last use there” shall be responsible for noise mitigation. However, if a noise generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 2 (**Table 5**) standards at the property line of the generating use in anticipation of the future neighboring development.

### Construction Noise

- NO-8. Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

### General Noise Policies

- NO-12. All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3.
- NO-13. Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.
- NO-15. The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 1 and 2 (**Table 5**) in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 1 or 2 (**Table 5**) standards. In such cases, the rationale for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 1 and 2 (**Table 5**) would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.



**TABLE 5: NON-TRANSPORTATION NOISE STANDARDS**

**SACRAMENTO COUNTY NOISE ELEMENT**

**MEDIAN(L50)/MAXIMUM(LMAX)<sup>1</sup>**

Receiving Land Use	Outdoor Area <sup>2</sup>		Interior <sup>3</sup>	
	Daytime	Nighttime	Day & Night	Notes
All Residential	55/75	50/70	35/55	
Transient Lodging	55/75	---	35/55	4
Hospital and Nursing Homes	55/75	---	35/55	5, 6
Theatres and Auditoriums	---	---	30/50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55/75	---	35/60	6
Office Buildings	60/75	---	45/65	6
Commercial Buildings	---	---	45/65	6
Playgrounds, Parks, etc.	65/75	---	---	6
Industry	60/80	---	50/70	6
<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1. The Table 2 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 2, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.</li> <li>2. Sensitive areas are defined acoustic terminology section.</li> <li>3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.</li> <li>4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.</li> <li>5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.</li> <li>6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.</li> <li>7. Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.</li> </ol>				

**City of Sacramento Municipal Code**

**8.68.060 Exterior Noise Standards**

- A. The following noise standards unless otherwise specifically indicated in this article shall apply to all agricultural and residential properties.
1. From seven a.m. to ten p.m. the exterior noise standard shall be fifty-five (55) dBA.
  2. From ten p.m. to seven a.m. the exterior noise standard shall be fifty (50) dBA.
- B. It is unlawful for any person at any location to create any noise which causes the noise levels when measured on agricultural or residential property to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

<b>Cumulative Duration of the Intrusive Sound</b>	<b>Allowance Decibels</b>
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time pe hour	+20

- C. Each of noise limits specified in the subsection B of this shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.
- D. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection B of this section, the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum noise level shall be the noise limit for that category. (Prior code § 66.02.201)

## CRITERIA FOR ACCEPTABLE VIBRATION

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 6**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

**Table 6** indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

**TABLE 6: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS**

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Transportation Related Earthborne Vibrations. Caltrans. TAV-02-01-R9601. February 20, 2002.

## IMPACTS AND MITIGATION MEASURES

### THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-c]).

Would the project:

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

### ***Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases***

The City of Sacramento General Plan establishes thresholds of significance for project related increases. These thresholds are reproduced below:

In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are have a substantial increase. Generally, a 3 dB increase in noise levels is barely perceptible, and a 5 dB increase in noise levels is clearly perceptible. Therefore, increases in noise levels shall be considered to be substantial when the following occurs:

#### Transportation Noise

- When existing noise levels are less than 60 dB, a 5 dB increase in noise will be considered substantial;
- When existing noise levels are between 60 dB and 65 dB, a 3 dB increase in noise will be considered substantial;
- When existing noise levels exceed 65 dB, a 1.5 dB increase in noise will be considered substantial.

#### Non-Transportation Noise

- A 5dB increase in noise will be considered substantial.



### **Temporary Construction Noise Impacts**

With temporary noise impacts (construction), identification of “substantial increases” depends upon the duration of the impact, the temporal daily nature of the impact, and the absolute change in decibel levels. Per the City of Sacramento Municipal Code Section 8.68.080 (D), construction activities operating between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. and 6:00 p.m. on Sunday are exempt from the ordinance.

The City of Sacramento General Plan doesn’t establish a significance criterion for short-term noise level increases due to construction noise. The FICON criteria was used for this project, it states that an increase in 12 dBA in noise is considered substantial.

### **PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES**

**Impact 1:** *Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

### **Operational Noise at Existing Sensitive Receptors**

#### Compliance with City of Sacramento Standards

The City of Sacramento establishes noise level standards of 55 dBA  $L_{50}$  and 75 dBA  $L_{max}$  during daytime (7:00 a.m. to 10:00 p.m.) hours and 50 dBA  $L_{50}$  and 70 dBA  $L_{max}$  during nighttime (10:00 p.m. to 7:00 a.m.) hours. Per the City of Sacramento Municipal Code Chapter 8.68.060 Noise Standards, if the ambient noise level exceeds the  $L_{50}$  noise limit, the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the  $L_{max}$  noise limit, the maximum ambient noise level shall be the noise limit for that category. Based on the measured noise levels of 58 dBA  $L_{50}$  and 78 dBA  $L_{max}$  during daytime hours and 53 dBA  $L_{50}$  and 76 dBA  $L_{max}$  during nighttime hours, the applicable standards shall become 60 dBA  $L_{50}$  and 78 dBA  $L_{max}$  during daytime hours and 55 dBA  $L_{50}$  and 76 dBA  $L_{max}$  during nighttime hours.

As shown on **Figure 3**, the project is predicted to expose nearby residences to noise levels up to 54 dBA  $L_{50}$  during daytime hours. This complies with the adjusted noise level standard of 60 dBA  $L_{50}$ .  $L_{max}$  noise levels are predicted to be up to 20 dBA higher than  $L_{50}$  noise levels for the proposed project noise sources. Therefore, maximum noise levels would be up to 74 dBA  $L_{max}$ . This complies with the adjusted  $L_{max}$  noise level standard of 78 dBA  $L_{max}$ .

As shown on **Figure 4**, the project is predicted to expose nearby residences to noise levels up to 48 dBA  $L_{50}$  during nighttime hours. This complies with the adjusted noise level standard of 55 dBA  $L_{50}$ .  $L_{max}$  noise levels are predicted to be up to 20 dBA higher than  $L_{50}$  noise levels for the proposed project noise sources. Therefore, maximum noise levels would be up to 68 dBA  $L_{max}$ . This complies with the adjusted  $L_{max}$  noise level standard of 76 dBA  $L_{max}$ .

It should be noted that this analysis assumes the construction of 8-foot-tall minimum sound walls constructed between the industrial uses and residential uses as depicted on **Figures 3 and 4**. The sound walls provide approximately 5-8 dBA of sound attenuation ensuring that the project will not exceed the City’s noise level

standards at the adjacent residences. The wall must be constructed to achieve compliance with the City of Sacramento Municipal Code noise level standards.

Therefore, no additional noise control measures would be required to comply with City standards.

#### *Analysis of Significance of Long-Term Project-Related Noise Increases*

The City of Sacramento does not establish a significant threshold for increases in stationary noise sources. In the absence of a specific threshold, Saxelby Acoustics utilizes the FICON criteria to assess increases in ambient noise environment.

At the nearby residences, the average daytime ambient noise level is 58 dBA  $L_{50}$  based upon the ambient noise level survey. An increase of +5.0 dBA or greater would constitute a significant increase. The resulting sum of ambient noise (58 dBA  $L_{50}$ ) plus project generated noise (54 dBA  $L_{50}$ ) would be 59.5 dBA. This would represent an increase of 1.5 dBA over ambient, which is less than the +5 dBA increase criterion.

The average nighttime ambient noise level is 53 dBA  $L_{50}$  based upon the ambient noise level survey. An increase of +5.0 dBA or greater would constitute a significant increase. The resulting sum of ambient noise (53 dBA  $L_{50}$ ) plus project generated noise (48 dBA  $L_{50}$ ) would be 54.2 dBA. This would represent an increase of 1.2 dBA over ambient, which is less than the +5 dBA increase criterion.

Therefore, this is a ***less-than-significant*** impact, and no mitigation is required.

#### ***Construction Noise***

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. As indicated in **Table 3**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA  $L_{max}$  at a distance of 50 feet. Construction activities would also be temporary in nature and are anticipated to occur during normal daytime working hours.

Per the City of Sacramento Municipal Code Section 8.68.080 (D), construction activities operating between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. and 6:00 p.m. on Sunday are exempt from the ordinance. Therefore, construction noise would not violate the City's standards.

Caltrans defines a significant increase due to noise as an increase of 12 dBA over existing ambient noise levels; Saxelby Acoustics used this criterion to evaluate increases due to construction noise associated with the project. As shown in **Table 3**, construction equipment is predicted to generate noise levels of up to 90 dBA  $L_{max}$  at 50 feet. Construction noise is evaluated as occurring at the center of the site to represent average noise levels generated over the duration of construction across the project site. The nearest residential uses are located approximately 250 feet as measured from the center of the project site. At this distance, maximum construction noise levels would be up to 76 dBA. The average daytime maximum noise level in the vicinity of the sensitive receptors was measured to be 78 dBA. Therefore, project construction would not cause an increase of greater than 12 dBA over existing ambient noise levels.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur during daytime hours.

Although construction activities are temporary in nature and would occur during normal daytime working hours, construction-related noise could result in sleep interference at existing noise-sensitive land uses in the vicinity of the construction if construction activities were to occur outside the normal daytime hours. Therefore, impacts resulting from noise levels temporarily exceeding the threshold of significance due to construction would be considered **potentially significant**. Mitigation measure 1(a) would reduce construction noise impacts to **less-than-significant**.

#### Mitigation Measures

- 1(a) The City shall establish the following as conditions of approval for any permit that results in the use of construction equipment:
- Construction shall be limited to between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. and 6:00 p.m. on Sunday.
  - All construction equipment powered by internal combustion engines shall be properly muffled and maintained.
  - Quiet construction equipment, particularly air compressors, are to be selected whenever possible.
  - All stationary noise-generating construction equipment such as generators or air compressors are to be located as far as is practical from existing residences. In addition, the project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
  - Unnecessary idling of internal combustion engines is prohibited.
  - The construction contractor shall, to the maximum extent practical, locate on-site equipment staging areas to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

*Timing/Implementation:* Implemented prior to approval of grading and/or building permits

*Enforcement/Monitoring:* City of Sacramento Community Development Services Department

Implementation of mitigation measures 1(a) would help to reduce construction-generated noise levels. With mitigation, this impact would be considered **less-than-significant**.

#### Recommended Condition of Approval

*Prior to approval of project improvement plans, the plans for the proposed project shall show that the eastern area of the project site shall shield residential uses through the use of minimum eight-foot-tall sound walls per the approval of the City Engineer. Sound wall may include a combination of earthen berm and masonry wall to achieve the required wall height. Wall heights shall be measured relative to either pad or roadway centerline elevations, whichever is higher. The approximate locations of these barriers are shown on **Figure 3** and **Figure 4**. Other types of barrier may be employed but shall be reviewed by an acoustical engineer prior to being constructed.*

**Impact 2:      *Would the project generate excessive groundborne vibration or groundborne noise levels?***

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 4** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located further than 26 feet from typical construction activities. At distances greater than 26 feet construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact and no mitigation is required.

**Impact 3:      *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?***

This impact is not applicable to the proposed project.



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