



Rincon Consultants, Inc.

250 East 1st Street
Los Angeles, California 90012

213 788 4842

info@rinconconsultants.com
www.rinconconsultants.com

August 23, 2023

Rincon Project No. 23-14483

Kevin Harbison

Ravello Holdings, Inc

211 Village Commons, Suite 11

Camarillo, California 93012

Via email: kevin@ravelloholdings.com

Subject: Acoustical Analysis for the Maison's Sierra Project in Lancaster, California

Dear Mr. Harbison:

Rincon Consultants, Inc. (Rincon) is pleased to provide this technical memorandum that has been prepared to recommend conditions of approval for the Maison's Sierra Project ("project" or "proposed project") to ensure that it is designed by the Applicant and conditioned by the City of Lancaster (City) to mitigate all exterior and interior noise in accordance with the U.S. Department of Housing and Urban Development's (HUD) noise standards.

This acoustical analysis reviews detailed architectural plans provided by Bassenian Lagoni Architects, dated July 28, 2023, and makes recommendations for sound-rated windows, doors, and walls and backyard barriers to ensure that habitable rooms and outdoor living areas of the project will meet HUD's interior noise standard of 45 dBA DNL and exterior noise standard of 65 dBA DNL. Fundamentals of noise, ambient noise data, and sound transmission loss calculations are included in Attachment A.

Project Location

The 45.5-acre project site is located in the City of Lancaster in Los Angeles County. The project site is located southwest of the intersection of Sierra Highway and West Avenue H and is currently vacant and undeveloped. The project site is surrounded by the West Avenue H off-ramp and single-family residences to the north; Sierra Highway, vacant and undeveloped land, and a metals service center to the east; Whit Carter Park to the south; and Mariposa Park, Mariposa Computer Science Magnet School, and single-family residences to the west. Figure 1 shows the regional location of the project site and Figure 2 shows the project site and neighboring land uses. The primary source of noise affecting the project site is from vehicular traffic on Sierra Highway and West Avenue H. The project site is located adjacent to and at approximately the same elevation as Sierra Highway.



Project Description

The project involves the construction and occupation of a 499-unit housing development¹ that would be 100 percent affordable and multi-generational. Additional site amenities would include a recreation center, pool, spa, tot lot, parks, and walking trails. The residential portion of the project would include all electric appliances and would not consume natural gas. Solar photovoltaic (PV) panels would be installed on all roofs of the residential units in compliance with the Lancaster Municipal Code. The project would provide at least six electric vehicle (EV) charging stalls.

Construction of the project would commence in March 2024 and would be completed in approximately 24 months. Construction staging and laydown areas would occur within the project site. The project site would be balanced and would not require cut and fill soil.

HUD Noise Criteria

HUD's environmental noise regulations are set forth in 24 CFR Part 51, Sub-part B. Exterior noise goals from Section 51.101, Policy 8 establish the following Site Acceptability Standards shown in Table 1.

Table 1 Site Acceptability Standards

	Day-night Average Sound Level	Special Approvals and Requirements
Acceptable	Not Exceeding 65 dB ¹	None.
Normally Acceptable	Above 65 dB but not exceeding 75 dB	Special Approvals ² Environmental Review ³ Attenuation ⁴
Unacceptable	Above 75 dB	Special Approvals ² Environmental Review ³ Attenuation ⁵

¹ Acceptable threshold may be shifted to 70 dB in special circumstances pursuant to §51.105(a).

² See § 51.104(b) for requirements.

³ See § 51.104(b) for requirements.

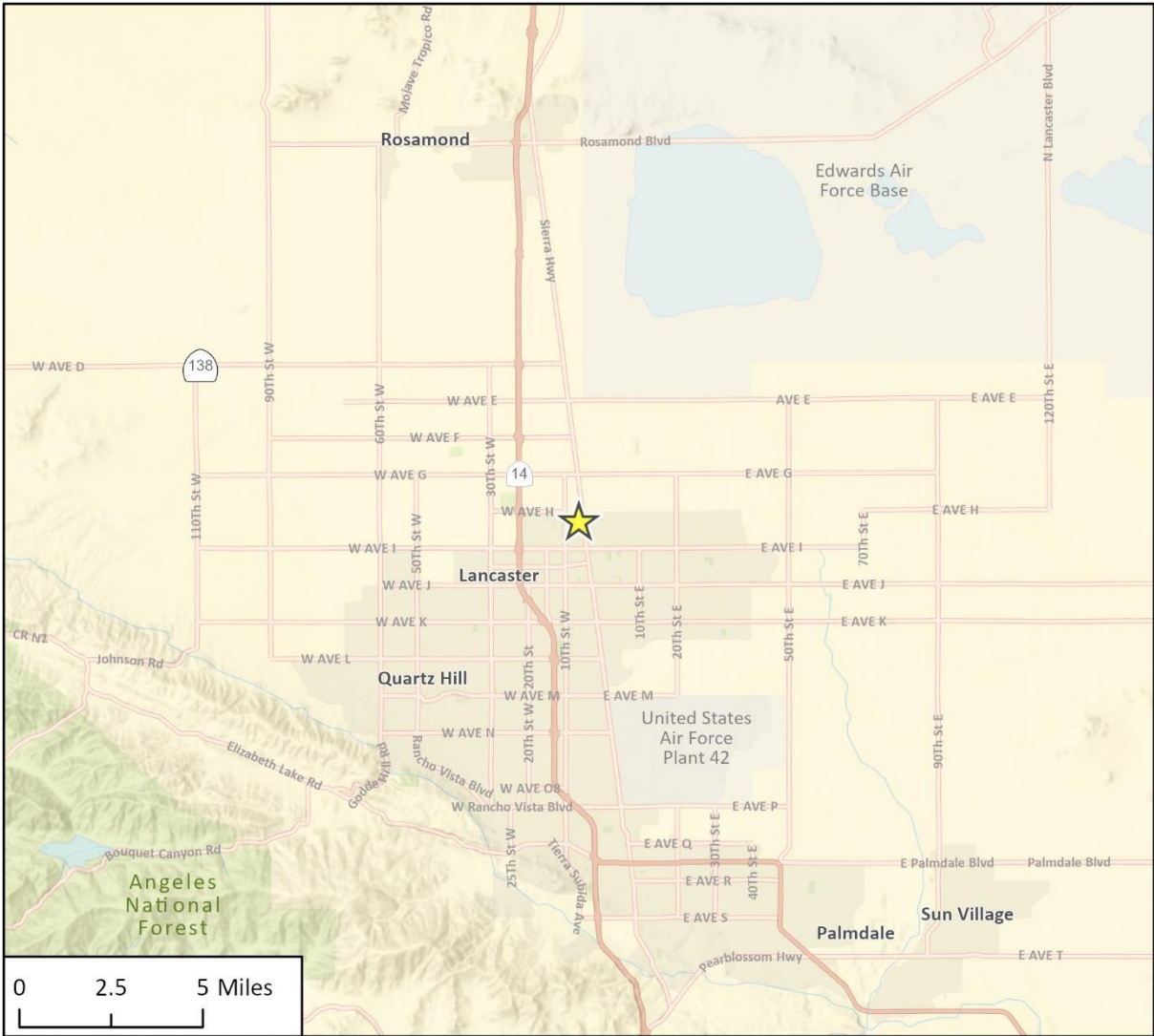
⁴ 5 dB additional attenuation required for sites above 65 dB but not exceeding 70 dB and 10 dB additional attenuation required for sites above 70 dB but not exceeding 75 dB. (See § 51.104(a).)

⁵ Attenuation measures to be submitted to the Assistant Secretary for CPD for approval on a case-by-case basis.

Section 51.101, Policy 9 establishes that for HUD projects "the interior auditory environment shall not exceed 45 dBA DNL." Attenuation measures to meet these interior goals shall be employed where feasible. Emphasis shall be given to noise sensitive interior spaces such as bedrooms. It is assumed that with standard construction techniques, buildings provide sufficient exterior-to-interior noise attenuation to achieve an interior noise level of 45 dBA DNL or less if the exterior level is more than 65 dBA DNL.

¹ 401 homes and 98 ADUs.

Figure 1 Regional Location Map



Imagery provided by Esri and its licensors © 2023.

29-14483 EPS

Fig 1 Regional Location

★ Project Location

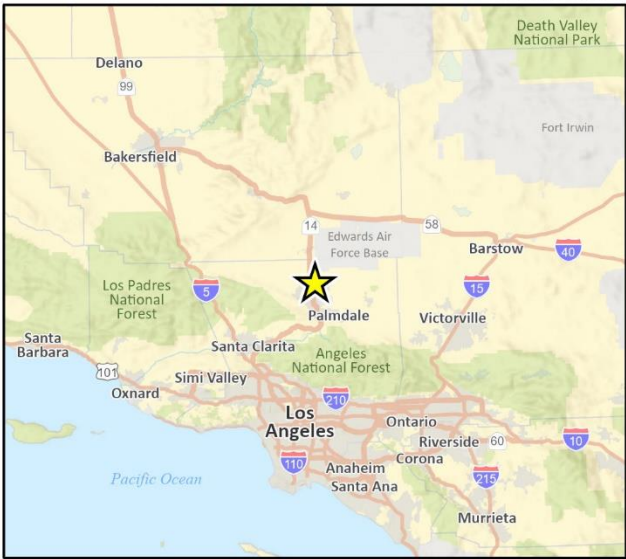


Figure 2 Project Site



Methodology

Rincon conducted ambient noise measurements, as described below, at the project site. This acoustical analysis relies on detailed project features provided by Bassenian Lagoni Architects, including the site plans and architectural plans that include the building footprints and elevations for the proposed project.

To assess long-term noise impacts to the proposed residences, the HUD Day/Night Noise Level (DNL) Calculator was used to estimate 24-hour average weighted noise levels along Sierra Highway in comparison with measured noise levels during ambient noise monitoring. Average daily traffic (ADT) data and posted travel speed limits were obtained from the City of Lancaster General Plan 2030 Program Environmental Impact Report (City of Lancaster 2008). Based on traffic counts during the on-site noise measurements, the percentage of vehicle trips was assumed to be 97 percent passenger cars, 1.5 percent medium trucks (2 axles), and 1.5 percent heavy trucks (3+ axles). Where necessary, noise reduction measures are recommended to meet the HUD's 45 dBA DNL interior noise standard for habitable rooms and 65 dBA DNL exterior noise standard for outdoor living areas. This study does not review inter-dwelling sound isolation.

Existing Noise Setting

To determine existing noise levels at various locations at the project site, Rincon conducted ambient noise monitoring. The noise monitoring included three short-term (ST) noise measurements. Short-term measurements were conducted during the afternoon peak commute period on Thursday, April 27, 2023, and Thursday, August 10, 2023. ST-1 was located approximately 50 feet from the edge of Sierra Highway to capture traffic noise at the future proposed residential units that would be located adjacent to Sierra Highway. ST-2 was located in the approximate center of the site, approximately 555 feet from Sierra Highway to capture ambient noise levels at the future proposed recreation center outdoor use area of the project. ST-3 was located in the northeast corner of the project site at the intersection of Sierra Highway and the West Avenue H offramp.

Traffic from Sierra Highway and West Avenue H were the primary influence on the noise measurements. During short-term measurements, conditions included clear skies and average wind speeds of up to 2 miles per hour from the north. The sound level meter was equipped with a windscreen during measurements. The sound level meter used for noise monitoring (Extech 407780A) satisfies the American National Standards Institute (ANSI) standard for Type 2 instrumentation. The sound level meter was set to "slow" response and "A" weighting (dBA). The meter was calibrated before and after the monitoring period. All measurements were at least five feet above the ground and away from reflective surfaces. The approximate noise measurement locations are shown in Figure 3.

Ambient Noise Results

Table 2 summarizes the results of the short-term noise measurements. Table 3 lists the recorded traffic volumes observed during the short-term noise measurements.

Table 2 Short-Term Noise Level Measurement Results

Measurement Location	Measurement Location	Sample Times	Approximate Distance to Primary Noise Source	L _{eq} (dBA)	L _{min} (dBA)	L _{max} (dBA)
ST-1	Northern property boundary, adjacent Sierra Highway	3:45 – 4:00 p.m.	Approximately 50 feet to the edge of Sierra Highway	70	45	91
ST-2	Approximate center of the project site	3:21 – 3:36 p.m.	Approximately 555 feet to edge of Sierra Highway	50	42	62
ST-3	Intersection of Sierra Highway and W. Avenue H offramp	5:55 – 6:10 p.m.	Approximately 50 feet to the edge of Sierra Highway	67	48	79

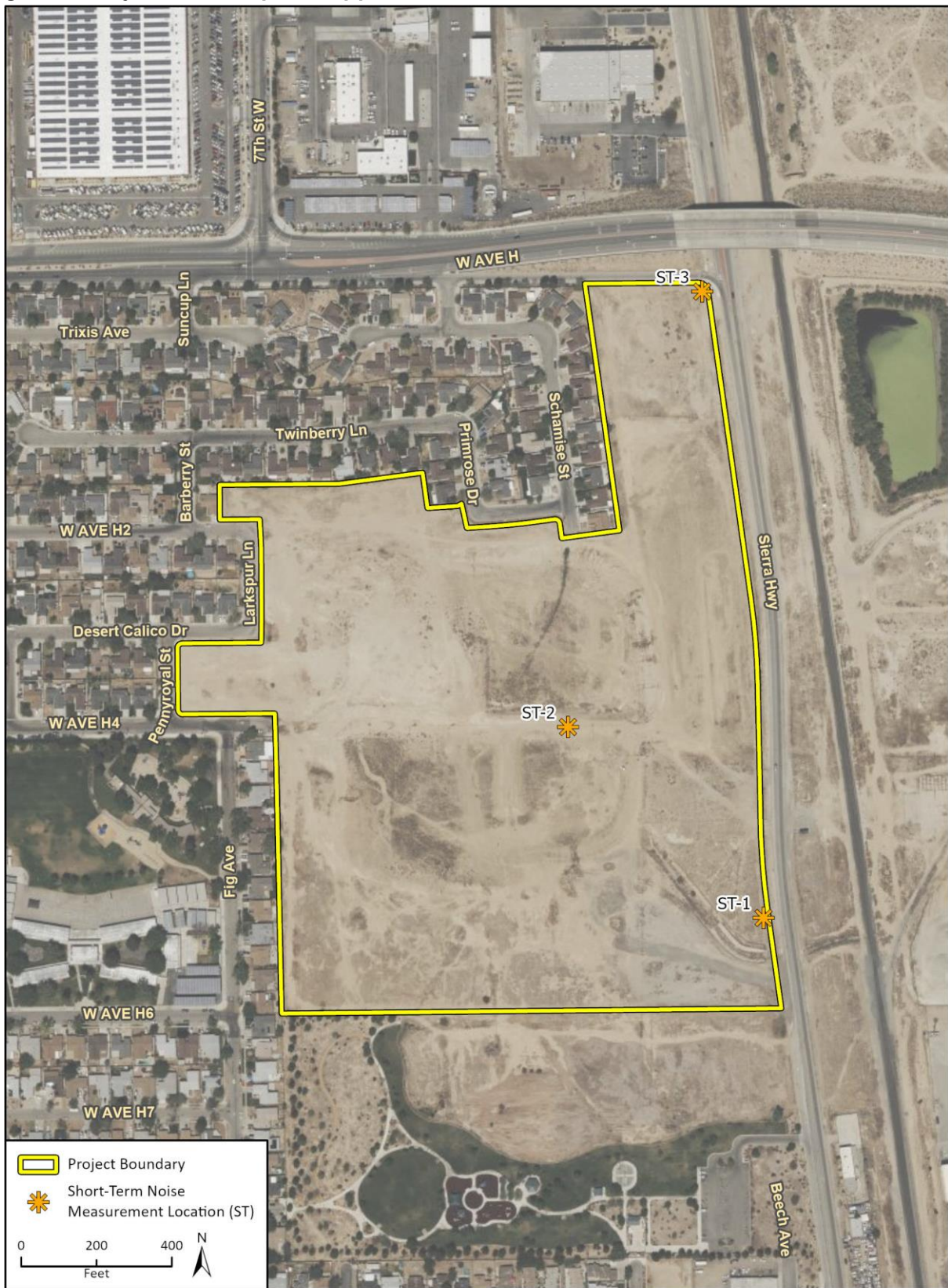
dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{min} = minimum noise level, L_{max} = maximum noise level
Detailed sound level measurement data are included in Attachment A.

Table 3 Traffic Counts During On-site Noise Measurements

Measurement	Roadway	Traffic	Autos	Medium Trucks	Heavy Trucks
ST-1	Sierra Highway	15-minute count	136	2	2
		One-hour equivalent	544	8	8
Percent			97%	1.5%	1.5%

Note: Detailed sound level measurement data are included in Attachment A.

Figure 3 Project Boundary and Approximate Noise Measurement Locations





Impact Analysis

Exterior Noise

The nearest proposed building façade and private backyards would be located approximately 55 feet from the nearest Sierra Highway travel lane centerline. Exterior noise at these outdoor living areas of the project would be approximately 72 dBA DNL, which would exceed HUD's standard of 65 dBA DNL. At the northern end of the project closest to West Avenue H, exterior noise at outdoor living areas would be approximately 69 dBA DNL, which would also exceed HUD's standard of 65 dBA DNL.

To meet HUD's 65 dBA DNL exterior noise standard, the construction of barriers is recommended along the property line of the first row of residential backyards with direct line-of-sight to Sierra Highway and West Avenue H. The barriers should be continuous from grade to top, with no cracks or gaps, and have a minimum surface density of four pounds per square foot. A barrier height of 7 feet, as measured from the base elevation, would be sufficient. With implementation of the barrier, as described in Mitigation Measure NOI-1, exterior noise levels at the proposed outdoor living areas of the project would be in compliance with HUD's exterior noise standard for residences.

Traffic noise from Sierra Highway and West Avenue H is estimated to attenuate to 66 dBA DNL at the second row of houses with no shielding. For backyards and communal outdoor areas beyond the first row of residential buildings, the residential buildings in the first row would provide at least 5 dBA reduction from shielding. Therefore, noise levels at outdoor areas behind the first row of buildings would attenuate to 61 dBA DNL or less, and no barriers or additional measures are needed to meet HUD's exterior noise standard at the second row of buildings.

Interior Noise

Future noise levels affecting the compatibility of the project site were estimated using the HUD DNL Calculator, which uses traffic noise-reference levels and algorithms, in comparison with measured noise levels during ambient noise monitoring. No train noise is present in the vicinity of the project site. All project traffic was modeled on the proposed adjacent roadway, with noise levels calculated at the proposed backyards and at the nearest building façade. Future exterior roadway noise levels at the project site would range up to 72 dBA DBL at the nearest building façades.

Therefore, portions of the project site closest to Sierra Highway and West Avenue H would be within HUD's "Normally Unacceptable" range for exterior noise levels (above 65 dBA DNL). This indicates that interior noise levels could exceed the acceptable limit of 45 dBA DNL without sufficient noise insulation. Implementation of Mitigation Measure NOI-1 would ensure that interior noise levels are less than 45 dBA DNL. With implementation of Mitigation Measure NOI-1, the project would include modern building features such as double-paned windows and interior noise levels would be reduced to approximately 42 dBA DNL or less, which would not exceed the HUD "Acceptable" range of up to 45 dBA DNL for residential units. Attachment A contains the transmission loss calculations. Since the project would not expose residents to excessive interior noise with mitigation, the project would not conflict with noise control standards. Therefore, interior noise levels would meet the HUD interior noise standard of 45 dBA DNL and interior noise exposure would be acceptable.



Mitigation Measures

Mitigation Measure NOI-1

Prior to issuance of building permits, plans shall depict implementation of the following noise attenuation features:

1. Provide 7-foot-high barriers (as measured from the base elevation) along the eastern and northern property lines for all residential backyards with direct line-of-sight to Sierra Highway and West Avenue H. The barriers should be continuous from grade to top, with no cracks or gaps, and have a minimum surface density of four pounds per square foot.
2. Provide mechanical ventilation so that windows may be left closed by occupants. This can be achieved passively with z-ducts, fresh air ducts, or an approved equal.
3. Exterior walls shall meet a Sound Transmission Class (STC) rating of at least 46. One method to achieve this would be standard exterior walls with 6-inch studs, R-13 insulation or thicker, a minimum 7/8-inch exterior surface stucco plaster, and interior finish with 5/8-inch drywall.
4. All windows shall be rated STC 26 (assumed to be standard dual-pane windows required per Title 24 energy standards) or higher.
5. All exterior doors shall be rated STC 26 or higher.
6. All entry doors shall be insulated against weather and sound with nonporous seals. Caulk entry door thresholds as they are placed.
7. Use permanently nonhardening sealant around perimeters of window frames.
8. Window assemblies shall be constructed with effective nonporous gaskets or weatherstripping to minimize air infiltration and sound leakage.
9. Provide airtight construction at all exterior walls with acoustical or other nonhardening sealant at floor plates.
10. Use door jamb and head gasketing and door bottom gasketing at entry doors to seal the solid core doors against weather and sound.



References

- Lancaster, City of. 2008. General Plan 2030 Program Environmental Impact Report Technical Appendices.
<https://www.cityoflancasterca.org/home/showpublisheddocument/17259/638035898881670000> (accessed May 2023).
- U.S. Department of Housing and Urban Development (HUD). 2023. DNL Calculator.
<https://www.hudexchange.info/programs/environmental-review/dnl-calculator/> (accessed May 2023).

Attachment A

Supporting Noise Information

Noise Background

Noise

Setting

a. Overview of Sound Measurement

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz (Kinsler, et. al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dBA; reducing the energy in half would result in a 3 dBA decrease (Crocker 2007).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (eight times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (half) as loud (10.5 times the sound energy) (Crocker 2007).

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from simply the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA’s guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest sound pressure level within the sampling period, and L_{min} is the lowest sound pressure level within the measuring period (Crocker 2007).

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{dn}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours; it is also measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013a). Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the L_{dn} /CNEL depends on the distribution of traffic during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

b. Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hz and goes to a high of about 200 Hz (Crocker 2007).

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec) PPV is

defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

c. Existing Noise Setting

Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Sensitive receivers are defined as places where noise could interfere with regular activities such as sleeping, talking, and recreating, which include hospitals, residences, convalescent homes, schools, churches, libraries, and religious institutions. Noise sensitive receivers near the site include single-family residences to the north, west and south, Mariposa Park and Mariposa Computer Science Magnet School to the west, and Whit Carter Park to the south.

Vibration sensitive receivers are similar to noise sensitive receivers, such as residences, and institutional uses, such as schools, churches, and hospitals. However, vibration sensitive receivers also include buildings where vibrations may interfere with vibration-sensitive equipment, affected by levels that may be well below those associated with human annoyance.

Noise Measurement Data

ST-1

Freq Weight : A
 Time Weight : SLOW
 Level Range : 40-100
 Max dB : 90.6 - 2023/04/27 15:35:49
 Level Range : 40-100
 SEL : 99.5
 Leq : 70.0

No.s	Date Time		(dB)				
1	2023/04/27	15:25:16	71.2	75.1	65.9	57.5	57.6
6	2023/04/27	15:25:31	68.8	67.4	62.6	61.3	57.4
11	2023/04/27	15:25:46	56.4	64.5	75.3	74.1	64.6
16	2023/04/27	15:26:01	54.5	49.4	48.3	50.1	67.1
21	2023/04/27	15:26:16	71.6	60.5	57.5	75.6	72.6
26	2023/04/27	15:26:31	61.5	52.5	56.2	71.6	70.5
31	2023/04/27	15:26:46	65.1	74.7	66.3	58.9	52.7
36	2023/04/27	15:27:01	50.7	65.3	71.7	75.4	73.5
41	2023/04/27	15:27:16	68.0	69.9	64.3	57.9	61.9
46	2023/04/27	15:27:31	75.4	75.5	69.9	63.7	75.4
51	2023/04/27	15:27:46	67.8	69.0	71.6	69.1	74.2
56	2023/04/27	15:28:01	64.7	55.2	56.8	74.5	72.9
61	2023/04/27	15:28:16	74.4	67.3	69.0	73.6	66.7
66	2023/04/27	15:28:31	77.3	68.0	57.6	52.9	55.0
71	2023/04/27	15:28:46	69.5	69.1	60.4	57.4	54.4
76	2023/04/27	15:29:01	71.5	67.1	56.3	50.0	50.3
81	2023/04/27	15:29:16	61.0	71.4	70.1	73.7	72.0
86	2023/04/27	15:29:31	70.6	72.7	73.6	73.3	64.6
91	2023/04/27	15:29:46	70.5	68.3	73.4	68.9	63.7
96	2023/04/27	15:30:01	73.1	69.5	59.6	56.7	52.2
101	2023/04/27	15:30:16	59.5	70.9	63.5	60.8	73.8
106	2023/04/27	15:30:31	68.3	58.7	54.9	73.8	71.7
111	2023/04/27	15:30:46	73.9	66.8	57.7	70.3	65.5
116	2023/04/27	15:31:01	55.4	52.6	57.4	77.1	71.7
121	2023/04/27	15:31:16	68.4	62.3	58.7	72.2	72.5
126	2023/04/27	15:31:31	69.5	66.0	72.1	67.4	69.4
131	2023/04/27	15:31:46	65.5	72.4	74.3	74.5	75.6
136	2023/04/27	15:32:01	66.4	71.4	70.9	70.4	67.4
141	2023/04/27	15:32:16	61.3	54.3	50.7	50.0	52.9
146	2023/04/27	15:32:31	64.5	74.4	72.0	63.5	70.4
151	2023/04/27	15:32:46	70.5	62.8	58.8	65.1	75.6
156	2023/04/27	15:33:01	75.2	67.4	58.2	52.3	48.9
161	2023/04/27	15:33:16	55.0	68.2	66.7	69.2	62.3
166	2023/04/27	15:33:31	60.4	73.6	69.1	61.1	58.5
171	2023/04/27	15:33:46	73.5	63.7	53.7	50.0	58.5
176	2023/04/27	15:34:01	75.4	74.8	67.2	62.3	68.1
181	2023/04/27	15:34:16	70.4	63.6	56.3	61.0	70.6
186	2023/04/27	15:34:31	68.7	61.5	55.5	68.0	64.9
191	2023/04/27	15:34:46	67.8	72.9	74.8	67.9	77.0
196	2023/04/27	15:35:01	74.4	65.5	75.2	67.9	57.8
201	2023/04/27	15:35:16	57.8	76.4	75.2	65.9	55.4
206	2023/04/27	15:35:31	60.5	74.2	65.2	71.4	71.8
211	2023/04/27	15:35:46	85.9	81.3	69.2	60.1	55.6
216	2023/04/27	15:36:01	59.7	72.4	73.6	72.3	73.3
221	2023/04/27	15:36:16	69.9	67.7	60.5	56.0	71.7
226	2023/04/27	15:36:31	71.3	71.2	66.5	70.5	73.8
231	2023/04/27	15:36:46	71.7	67.9	67.7	71.2	66.4
236	2023/04/27	15:37:01	65.5	68.8	70.9	71.7	69.1
241	2023/04/27	15:37:16	63.0	60.5	67.8	61.2	70.7
246	2023/04/27	15:37:31	63.4	69.1	69.6	70.4	70.6
251	2023/04/27	15:37:46	70.0	61.6	55.3	54.7	70.3
256	2023/04/27	15:38:01	72.8	61.3	57.7	72.3	65.8
261	2023/04/27	15:38:16	56.2	63.1	70.0	67.2	73.1
266	2023/04/27	15:38:31	63.9	54.9	55.9	73.5	69.6
271	2023/04/27	15:38:46	73.2	72.3	62.0	59.4	69.2
276	2023/04/27	15:39:01	60.0	52.3	64.9	74.9	64.6
281	2023/04/27	15:39:16	55.5	63.3	71.4	71.3	61.4
286	2023/04/27	15:39:31	63.3	73.8	70.1	59.9	52.3
291	2023/04/27	15:39:46	49.8	50.3	66.2	70.4	60.4
296	2023/04/27	15:40:01	52.8	47.2	45.6	44.9	44.6

ST-2

Freq Weight : A
 Time Weight : SLOW
 Level Range : 40-100
 Max dB : 61.8 - 2023/04/27 15:15:23
 Level Range : 40-100
 SEL : 79.4
 Leq : 49.9

No.s	Date Time		(dB)				
1	2023/04/27	15:00:37	51.4	50.5	50.6	51.7	51.2
6	2023/04/27	15:00:52	48.5	47.6	47.4	48.0	48.3
11	2023/04/27	15:01:07	47.0	50.6	52.9	53.1	50.0
16	2023/04/27	15:01:22	48.8	49.8	50.5	49.5	51.2
21	2023/04/27	15:01:37	49.3	49.0	51.1	49.6	49.8
26	2023/04/27	15:01:52	48.2	45.9	46.3	47.1	46.1
31	2023/04/27	15:02:07	44.7	46.4	48.2	47.7	45.8
36	2023/04/27	15:02:22	45.1	47.5	43.9	41.9	45.2
41	2023/04/27	15:02:37	47.4	45.8	45.1	45.7	49.6
46	2023/04/27	15:02:52	47.6	46.9	45.2	43.8	48.7
51	2023/04/27	15:03:07	47.1	45.7	45.8	44.1	46.2
56	2023/04/27	15:03:22	47.2	47.9	47.3	46.7	46.5
61	2023/04/27	15:03:37	45.5	43.8	43.7	42.4	43.3
66	2023/04/27	15:03:52	43.6	43.5	44.3	45.4	46.5
71	2023/04/27	15:04:07	47.0	46.5	47.1	47.7	48.5
76	2023/04/27	15:04:22	52.7	58.7	48.9	55.8	47.3
81	2023/04/27	15:04:37	50.0	48.5	46.4	49.9	47.0
86	2023/04/27	15:04:52	44.3	44.1	46.1	43.9	42.9
91	2023/04/27	15:05:07	49.1	45.5	45.3	45.8	48.8
96	2023/04/27	15:05:22	43.6	44.3	45.7	50.9	46.9
101	2023/04/27	15:05:37	46.9	47.1	47.6	48.5	49.3
106	2023/04/27	15:05:52	49.2	47.7	45.3	46.7	46.6
111	2023/04/27	15:06:07	45.7	45.8	48.1	46.7	46.0
116	2023/04/27	15:06:22	46.3	46.1	47.1	47.0	47.7
121	2023/04/27	15:06:37	48.0	49.0	49.0	47.8	47.9
126	2023/04/27	15:06:52	47.0	45.4	46.3	46.8	46.9
131	2023/04/27	15:07:07	50.2	49.5	50.3	51.1	48.4
136	2023/04/27	15:07:22	46.4	43.8	43.5	44.1	45.8
141	2023/04/27	15:07:37	48.4	46.8	47.4	50.7	49.7
146	2023/04/27	15:07:52	50.7	48.4	46.7	46.0	44.9
151	2023/04/27	15:08:07	45.0	46.6	48.2	51.1	50.2
156	2023/04/27	15:08:22	48.7	47.3	47.2	46.6	49.3
161	2023/04/27	15:08:37	47.9	46.5	48.0	49.2	49.4
166	2023/04/27	15:08:52	49.5	48.6	47.6	46.3	45.8
171	2023/04/27	15:09:07	44.8	45.6	45.9	46.9	46.8
176	2023/04/27	15:09:22	47.6	48.8	48.0	48.1	48.2
181	2023/04/27	15:09:37	49.9	52.4	52.7	51.6	50.8
186	2023/04/27	15:09:52	50.8	52.0	51.8	51.8	48.6
191	2023/04/27	15:10:07	45.8	43.6	42.9	42.6	43.0
196	2023/04/27	15:10:22	42.9	42.9	43.6	45.3	46.4
201	2023/04/27	15:10:37	46.0	46.0	44.9	44.3	47.7
206	2023/04/27	15:10:52	49.4	48.0	47.6	48.0	48.7
211	2023/04/27	15:11:07	47.9	48.6	49.6	48.8	50.1
216	2023/04/27	15:11:22	50.4	50.2	48.0	47.2	45.5
221	2023/04/27	15:11:37	45.7	45.3	45.8	46.8	45.9
226	2023/04/27	15:11:52	45.5	47.1	48.3	46.3	48.3
231	2023/04/27	15:12:07	49.1	50.1	48.9	49.4	50.7
236	2023/04/27	15:12:22	49.8	47.8	47.8	48.5	47.1
241	2023/04/27	15:12:37	46.9	45.9	46.7	47.5	48.5
246	2023/04/27	15:12:52	48.1	49.0	49.2	49.3	50.1
251	2023/04/27	15:13:07	51.1	52.6	57.0	54.0	52.4
256	2023/04/27	15:13:22	52.6	52.8	51.3	50.0	50.5
261	2023/04/27	15:13:37	50.9	51.8	52.7	51.1	49.1
266	2023/04/27	15:13:52	48.5	49.2	49.9	50.7	51.0
271	2023/04/27	15:14:07	49.3	49.1	51.1	52.1	50.5
276	2023/04/27	15:14:22	51.9	52.4	49.5	49.1	47.6
281	2023/04/27	15:14:37	48.8	52.7	55.9	55.6	51.1
286	2023/04/27	15:14:52	52.5	52.1	55.0	56.4	54.4
291	2023/04/27	15:15:07	54.6	58.6	58.7	60.2	60.0
296	2023/04/27	15:15:22	59.1	59.5	55.8	54.8	54.3

Sound Transmission Loss Calculations

Maison's Sierra - Rear

<i>A-weighting Corrections</i>	<i>-16.1</i>	<i>-13.4</i>	<i>-10.9</i>	<i>-8.6</i>	<i>-6.6</i>	<i>-4.8</i>	<i>-3.2</i>	<i>-1.9</i>	<i>-0.8</i>	<i>0</i>	<i>0.6</i>	<i>1</i>	<i>1.2</i>	<i>1.3</i>	<i>1.2</i>	<i>1</i>			
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>	Flat	A-wht	DNL
DNL Source Spectrum	73	68	67	63	61	62	62	63	65	65	63	61	59	56	54	50	77	72.0	72.0
Maison's Sierra Rear																			
Total Area=	151.75																		
Window Area =	19.5	0.13																	
Door Area =	25.5	0.17																	
Equivalent Wall Area =	107	0.70	1.00																
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>			
Window (Dbl Glaze) -STC 26	18	21	21	23	25	26	27	27	27	25	23	26	28	27	27	30			
Stucco ext 1 lyr. Int insulated wood stud wall STC 46	25	30	42	41	44	43	45	45	46	45	46	48	50	50	50	55			
STC 26 Door	22	24	25	25	28	28	29	29	27	25	25	26	26	26	27	28			
Derate for Field Construction	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-4	-4			
Actual TL	25	29	41	40	43	42	44	44	44	43	44	46	47	47	46	51			
Composite TL =	22.5	26.0	27.9	29.1	31.5	32.0	33.0	33.0	32.1	30.1	29.2	31.2	31.9	31.6	32.2	34.0			
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>	Flat	A-wht	DNL
DNL INTERIOR LEVEL	50.6	41.7	38.8	33.9	29.3	29.7	29.4	29.5	32.9	34.5	34.0	30.2	27.1	24.5	21.8	15.7	52	42.0	42.0
																	Reduction =	30.0	

Maison's Sierra - Sides

<i>A-weighting Corrections</i>	<i>-16.1</i>	<i>-13.4</i>	<i>-10.9</i>	<i>-8.6</i>	<i>-6.6</i>	<i>-4.8</i>	<i>-3.2</i>	<i>-1.9</i>	<i>-0.8</i>	<i>0</i>	<i>0.6</i>	<i>1</i>	<i>1.2</i>	<i>1.3</i>	<i>1.2</i>	<i>1</i>			
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>	Flat	A-wht	DNL
DNL Source Spectrum	73	68	67	63	61	62	62	63	65	65	63	61	59	56	54	50	77	72.0	72.0
Maison's Sierra - Sides																			
Total Area=	203.5																		
Window Area =	33.55	0.16																	
Door Area =	10.5	0.05																	
Equivalent Wall Area =	159	0.78	1.00																
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>			
Window (Dbl Glaze) -STC 26	18	21	21	23	25	26	27	27	27	25	23	26	28	27	27	30			
Stucco ext 1 lyr. Int insulated wood stud wall STC 46	25	30	42	41	44	43	45	45	46	45	46	48	50	50	50	55			
STC 26 Door	22	24	25	25	28	28	29	29	27	25	25	26	26	26	27	28			
Derate for Field Construction	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-4	-4			
Actual TL	25	29	41	40	43	42	44	44	44	43	44	46	47	47	46	51			
Composite TL =	22.4	26.2	28.2	29.7	31.9	32.6	33.7	33.7	33.4	31.4	29.9	32.5	33.9	33.2	33.5	36.0			
	<i>125</i>	<i>160</i>	<i>200</i>	<i>250</i>	<i>315</i>	<i>400</i>	<i>500</i>	<i>630</i>	<i>800</i>	<i>1000</i>	<i>1250</i>	<i>1600</i>	<i>2000</i>	<i>2500</i>	<i>3150</i>	<i>4000</i>	Flat	A-wht	DNL
DNL INTERIOR LEVEL	50.7	41.6	38.6	33.2	28.9	29.0	28.7	28.9	31.6	33.2	33.2	28.9	25.1	22.8	20.5	13.7	52	41.2	41.2
																	Reduction =	30.8	