Appendix F

Noise Analysis

Kimley»Horn

MEMORANDUM

To: Meghan Karadimos, Kimley-Horn and Associates, Inc.

From: Danielle Millar, Kimley-Horn and Associates, Inc.
Tanay Pradhan, Kimley-Horn and Associates, Inc.

Date: July 9, 2024

Subject: Sage Senior Apartments, City of Temecula, CA – Noise Analysis

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Purpose

The purpose of this memorandum is to identify the noise impacts associated with construction and operations of the proposed Sage Senior Apartments Development Project ("project" or "proposed project"), located in the City of Temecula, California.

Project Location

The project site is a vacant 5.93-acre lot located within Assessor's Parcel Number (APN) 920-110-005 in the City of Temecula, Riverside County, California. The project site fronts vacant land to the north, vacant land and Tucalota Creek Channel to the east, Santa Gertrudis Creek Channel to the south, and Winchester Road (State Highway 79) to the west. The project site is surrounded by vacant land and a park to the north, single family residential dwelling units to the east and west, as well as commercial uses to the south.

Project Description

The proposed project involves the construction of a four-story apartment building with 143 rental apartments for a population that is 55 and older. The project would total approximately 202,000 square feet (SF) of building space and would include living spaces on all four floors of the building. The project would include 207 parking spaces, pedestrian walkways, fitness facilities, and outdoor recreational areas (i.e., pickleball courts, a dog park, and a central courtyard with a pool and spa). See Exhibit 1: Conceptual Site Plan for more details. The City General Plan has two land use designations for the site, Neighborhood Commercial (NC) for the southerly portion and Open Space (OS) for the northerly portion. However, the City Zoning Map designates the entire site as Neighborhood Commercial (NC) of which "Senior Citizen Housing" is a permitted use. Since a portion of the project site is designated as OS, a conditional use permit would be required to permit project uses including pickle ball and a dog park located within the OS area.

Site Access

Regional access to the project site is provided on Interstate 15 (I-15) via the Winchester Road ramps. Local access to the project site is provided via Winchester Road (Highway 79). The main project site vehicular access would be provided via two paved driveways located along the west face of the project site on Winchester Road.

Parking

The project would provide 207 automobile parking spaces. Eighty-nine of the parking spaces would be covered parking spaces and 118 would be outdoor parking spaces. Parking spaces would be mainly consolidated along the northern portion of the site with the balance of the outdoor parking spaces throughout the site. The project would also provide five motorcycle parking spaces and five bicycle parking spaces.

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Exhibit 1: Conceptual Site Plan

LEGEND

1. Open Space
2. 2 Pickleball Courts
3. Dog Area with Turf
4. Primary Project Entry
5. Primary Building Entry with Enhanced Paving
6. Senior Apartment Building
7. Interior Courtyard
8. Outdoor Exercise Equipment on Decomposed Granite
9. Secondary Project Entry
10. Trash Enclosure
11. Basin
12. Covered Parking
13. Retaining Wall

Noise Background

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of various distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from traffic on a major highway.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise as well as the time of day when the noise occurs. For example, the equivalent continuous sound level (L_{eq}) is the average acoustic energy content of noise for a stated period of time; thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. The Day-Night Sound level (L_{dn}) is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The Community Noise Equivalent Level (CNEL) is a 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. and an additional 5 dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. to account for noise sensitivity in the evening and nighttime.

Regulatory Setting

<u>Federal Noise and Vibration Standards</u>

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the project. Under the Occupational Safety and Health Act of 1970 (29 United States Code [U.S.C.] Section 1919 et seq.), the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, ensuring that workers are made

aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

State of California Noise Standards

The State of California does not have standards for environmental noise, but the Governor's Office of Planning and Research (OPR) has established general plan guidelines for evaluating the compatibility of various land uses as a function of community noise exposure.[1] The purpose of these guidelines is to maintain acceptable noise levels in a community setting for different land use types. Noise compatibility by different land use types is categorized into four general levels: "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable."

For instance, a noise environment ranging from 50 dBA CNEL to 65 dBA CNEL is considered to be "normally acceptable" for multi-family residential uses, while a noise environment of 75 dBA CNEL or above for multi-family residential uses is considered to be "clearly unacceptable. In addition, California Government Code Section 65302(f) requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with California Government Code Section 65302(f) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

City of Temecula General Plan

The Noise Element of the *City of Temecula General Plan* (General Plan) provides a comprehensive program for including noise control in the planning process. The Noise Element is used to ensure land uses are compatible with environmental noise levels and residents are protected from excessive noise intrusion. Land use compatibility noise criteria are provided to make decisions on the location of land uses in relation to noise sources and for determining noise mitigation requirements. Table 1: City of Temecula Noise Compatibility Matrix shows the land use compatibility noise standards for the City. Additionally, exterior and interior noise standards for various land uses throughout the City are identified in Table 2: City of Temecula Exterior and Interior Noise Standards. Noise standards shown in Table 2 represents the maximum acceptable exterior noise level, as measured at the property boundary.

[1] State of California Governor's Office of Planning and Research, General Plan Guidelines, Appendix D: Noise Element Guidelines, 2017, page 374, https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf. Accessed June, 2024.

Table 1: City of Temecula Noise Compatibility Matrix				
Land Use Category	**Community Noise Exposure (CNEL)**			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential	50-60	60-70	70-75	75-85
Transient Lodging – Motel, Hotels	50-60	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-70	NA	70-85
Sports Arenas, Outdoor Spectator Sports	NA	50-75	NA	75-85
Playgrounds, Neighborhood Parks	50-70	NA	70-75	75-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85
Office Buildings, Business Commercial, and Professional	50-65	65-75	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-80	80-85	NA
CNEL = community noise equivalent level; NA = not applicable. NORMALLY ACCEPTABLE: Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements. CONDITIONALLY ACCEPTABLE: New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design. NORMALLY UNACCEPTABLE: New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design. CLEARLY UNACCEPTABLE: New construction or development clearly should not be undertaken.				
Source: City of Temecula, City of Temecula *General Plan*, *Table N-2*, *Noise/Land Use Compatibility Matrix*, 2005.				

Table 2: City of Temecula Exterior and Interior Noise Standards			
Type of Use	**Land Use Designation**	**Interior Noise Limits (dBA CNEL)**	**Exterior Noise Limits[3] (dBA CNEL)**
Residential	Hillside Rural Very Low Low Low Medium	45	65
	Medium	45	65 / 70[1]
	High	45	70[1]
Commercial and Office	Neighborhood Community Highway Tourist Service	--	70
	Professional Office	50	70
Light Industrial	Industrial Park	55	75
Public/Institutional	Schools	50	65
	All others	50	70

Table 2: City of Temecula Exterior and Interior Noise Standards			
Type of Use	**Land Use Designation**	**Interior Noise Limits (dBA CNEL)**	**Exterior Noise Limits[3] (dBA CNEL)**
Open Space	Vineyards/Agriculture	--	70
	Open Space	--	70 / 65[2]
CNEL = Community Noise Exposure Level 1. Maximum exterior noise levels up to 70 dB CNEL are allowed for Multiple-Family Housing. 2. Where quiet is a basis required for the land use. 3. Regarding aircraft-related noise, the maximum acceptable exposure for new residential development is 60 dB CNEL.			
Source: City of Temecula, *City of Temecula General Plan*, *Table N-1*, *Temecula Land Use/Noise Standards*, 2005.			

City of Temecula Municipal Code

The City of Temecula Municipal Code (TMC), Chapter 9.20, establishes the following noise provisions relative to the project:

TMC Section 9.20.040- General sound level standards. No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set fourth in Table 1 and Table 2.

TMC Section 9.20.060.D – Construction noise. No person shall engage in or conduct construction activity, when the construction site is within one-quarter mile of an occupied residence, between the hours of six-thirty p.m. and seven a.m., Monday through Friday, and shall only engage in or conduct construction activity between the hours of seven a.m. and six-thirty p.m. on Saturday. No construction activity shall be undertaken on Sundays and nationally recognized holidays unless exempted by Section 9.20.070 of the TMC.

Existing Environmental Setting

Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in the City. Other sources of noise are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise. The existing mobile noise sources in the project area are generated by motor vehicles traveling on Winchester Road to the west of the project site. The primary sources of stationary noise in the project vicinity are those associated with the surrounding commercial and residential uses. Such noise sources include idling vehicles, music playing, mechanical equipment (e.g., air conditioning equipment), dogs barking, and people talking and are typical of urban areas. The noise associated with these sources may represent a single-event noise occurrence or short-term noise.

Noise Measurements

To determine ambient noise levels in the project area, three 10-minute noise measurements were taken using a Larson Davis SoundExpert® LxT Sound Level Meter between 2:53 p.m. and 4:56 p.m. on June 26, 2024; refer to Appendix A for existing noise measurement data. Noise Measurement 1 (NM-1) and NM-3 were taken to represent the ambient noise level in the existing residential neighborhoods to the east and west of the project site, while NM-2 was taken to represent the ambient noise level at the nearby commercial uses to the south of the project site. Table 3: Noise Measurements provides the ambient noise levels measured at these locations.

Table 3: Existing Noise Measurements

Site	Location	Measurement Period	Duration	Daytime Average L_{eq} (dBA)[1]
NM-1	Adjacent to 27290 Cresta Del Norte	3:34 p.m. - 3:44 p.m.	10 min	55.6
NM-2	East of Rodrigo's Mexican Grill	2:53 p.m. - 3:03 p.m.	10 min	62.5
NM-3	Adjacent to 39411 Canyon Rim Circle	3:56 p.m. - 4:56 p.m.	10 min	49.8

Source: Noise measurements taken by Kimley-Horn and Associates, June 26, 2024. See Appendix A for noise measurement results.

Noise Impacts

Construction Noise

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the sensitive receptors near the construction site. Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities may require graders, dozers, and tractors during site preparation and grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical noise levels associated with individual construction equipment are listed in Table 4: Typical Construction Noise Levels.

Table 4: Typical Construction Noise Levels	
Equipment	**Typical Noise Level (dBA) at 50 feet from Source**
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Shovel	82
Truck	84
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.	

Following the methodology for quantitative construction noise assessments in the FTA's *Transit Noise and Vibration Impact Assessment Manual* (September 2018) (FTA Noise and Vibration Manual), the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to predict construction noise at the nearest receptors to the project's boundary (i.e., single-family residences located approximately 200 feet to the east, single-family residences 240 feet to the west, and commercial uses located approximately 210 feet to the south of the project site). Table 5: Project Construction Noise Levels shows the estimated exterior construction noise levels at the nearest receptors.

Following FTA methodology, when calculating construction noise, all equipment is assumed to operate at the center of the project site while equipment would operate throughout the project site and not at a fixed location for extended periods of time. Therefore, the distances used in the RCNM model were 400 feet for single-family residences to the east, 420 feet for the single-family residences located to the west, and 620 feet for commercial uses to the south. As shown in Table 5, the highest anticipated construction noise level of 69.6 dBA (during the site preparation phase) would not exceed the FTA noise threshold of 80 dBA for residential uses or 90 dBA for commercial uses. In addition, compliance with TMC would further minimize impacts from construction noise, as construction would be limited to the hours of 7:00 a.m. to 6:30 p.m. Therefore, because project construction noise levels

would not exceed FTA noise standards and construction activities would be required to comply with TMC provisions, noise impacts would be less than significant. Although construction noise levels may exceed the existing ambient noise levels in the project area, construction would be temporary and would not result in a permanent increase in ambient noise levels.

Table 5: Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq})	Noise Threshold (dBA L_{eq})[2]	Exceeded?
	Land Use	Direction	Distance (feet)[1]			
Site Preparation	Single-family Residences	East	400	69.6	80	No
	Single-family Residences	West	420	69.1	80	No
	Commercial	South	620	65.8	90	No
Grading	Single-family Residences	East	400	69.2	80	No
	Single-family Residences	West	420	68.8	80	No
	Commercial	South	620	65.4	90	No
Building Construction	Single-family Residences	East	400	68.0	80	No
	Single-family Residences	West	420	67.6	80	No
	Commercial	South	620	64.2	90	No
Paving	Single-family Residences	East	400	68.5	80	No
	Single-family Residences	West	420	68.0	80	No
	Commercial	South	620	64.7	90	No
Architectural Coating	Single-family Residences	East	400	55.7	80	No
	Single-family Residences	West	420	55.2	80	No
	Commercial	South	620	51.9	90	No

Notes:
1. Per the methodology described in the FTA Noise and Vibration Manual (September 2018), distances are measured from the nearest receptors to the center of the project construction site.
2. The City does not have a quantitative noise threshold for construction. Therefore, the construction noise thresholds from the FTA Noise and Vibration Manual (September 2018) are conservatively used for this analysis.

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

Operational Noise

The project site is currently vacant. Implementation of the proposed project would create new sources of noise in the project vicinity. The primary noise sources associated with the project that could potentially impact nearby sensitive uses include mechanical equipment (e.g., air conditioners, etc.), pickleball and dog park activities, typical stationary noise from residential uses (e.g., dogs

barking, use of landscape equipment, people talking, outdoor recreation etc.), and off-site traffic noise.

Mechanical Equipment

Mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[2] Sound levels decrease by 6 dBA for each doubling of distance from the source.[3] The nearest sensitive receptors (single-family residences to the northwest) would be located as close as 280 feet from the HVAC equipment at the project site. At this distance, mechanical equipment noise levels would be approximately 37 dBA and would not exceed the City's 65 dBA residential exterior noise standard. Therefore, impacts from mechanical equipment would be less than significant.

Pickleball Courts/Dog Park

The project would include pickleball courts and a dog park on the northern portion of the project site. Pickleball activities typically generate noise levels of 54.9 dBA at a distance of 125 feet and dog park activities typically generate noise levels of 42.8 dBA at a distance of 50 feet.[4] The nearest sensitive receptors (single-family residences to the west) would be located as close as 300 feet from the proposed pickleball courts and dog park. At this distance, noise levels could reach 47.3 dBA at the nearest sensitive receptor, which would not exceed the City's 65 dBA residential exterior noise standard. It should be noted that exterior noise levels conservatively do not account for attenuation from intervening barriers, structures, or topography. Noise levels generated at the proposed pickleball courts and dog park would be less than significant.

Residential Stationary Noise

The project would also result in stationary noise that is typical of residential uses/neighborhoods, including the use of landscaping equipment, dogs barking, music playing, outdoor recreation, people talking, etc. These noise sources can generate noise levels up to 65 dBA at a distance of 50 feet.[5] However, noise events from these stationary sources are generally sporadic, short in duration, and would not last for extended periods of time. In addition, stationary noise is generated by residences to the north, east, and west, and by the existing commercial uses to the south under existing

[2] Elliott H. Berger, Rick Neitzel1, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

[3] Cyril M. Harris, *Noise Control in Buildings*, 1994.

[4] Pickleball Activities Noise Source: Kimley-Horn and Associates, Inc., *Autumwood Pickleball and Tennis Courts Noise Monitoring*, March 20, 2023.; Dog Park Activities Noise Source: Urban Crossroads, *Phelan Community Park Noise Impact Analysis*, April 7, 2023.

[5] Elliott H. Berger, Rick Neitzel1, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

conditions. Therefore, project stationary noise levels would not result in a noticeable increase in ambient noise and would comply with the City's noise standards. Thus, impacts would be less than significant impact.

Mobile Traffic Noise

Project implementation would result in an increase of traffic trips to project area roadways. According to the *Winchester Road Senior Apartments Traffic Memorandum* (Jano Baghdanian & Associates, July 2023) (Traffic Impact Analysis), the project would generate 492 daily trips, with 30 morning peak hour trips and 38 evening peak hour trips. In general a 3-dBA increase in traffic noise is barely perceptible to people, while a 5-dBA increase is readily noticeable. Traffic volumes on project area roadways would have to approximately double for the resulting traffic noise levels to generate a barely perceptible 3-dBA increase.[6] According to Temecula Roadway Plan[7], Winchester Road is designated as an urban arterial which has approximately 70,000 average daily trips (ADT). The proposed project would result in approximately 492 daily trips, which is not enough to double the existing traffic volumes on Winchester Road (the primary access roadway to the project site). Therefore, the proposed project would not generate enough traffic to result in a noticeable 3-dBA increase in ambient noise levels. Impacts would be less than significant.

Vibration Impacts

Increases in ground-borne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction on the project site would have the potential to result in varying degrees of temporary ground-borne vibration, depending on the specific construction equipment used and the operations involved.

The FTA has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.50 in/sec is considered safe and would not result in any construction

[6] According to the California Department of Transportation, *Technical Noise Supplement to Traffic Noise Analysis Protocol* (September 2013), it takes a doubling of traffic to create a noticeable (i.e., 3 dBA) noise increase.

[7] According to the Orange County Transportation Authority, *Traffic Flow Map*, 2021.

vibration damage. This evaluation uses the FTA architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 inch-per-second peak particle velocity (PPV) and human annoyance criterion of 0.4 inch-per-second PPV in accordance with Caltrans guidance.[8]

Table 6: Typical Construction Equipment Vibration Levels lists vibration levels at 25 feet for typical construction equipment. Vibration levels at 200 feet, the distance from the project boundary to the nearest existing structure to the east, is also included in Table 6. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 6, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from less than 0.001 to 0.004 in/sec PPV at 200 feet from the source of activity. Therefore, groundborne vibration levels would be below the FTA's 0.20 PPV structural damage threshold and Caltrans' 0.4 in/sec PPV human annoyance threshold. It is also acknowledged that construction activities would occur throughout the project site and would not be concentrated at the point closest to the nearest off-site structure. Additionally, once operational, the project would not be a source of groundborne vibration. Therefore, vibration impacts associated with the proposed project would be less than significant.

Table 6: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 200 Feet (in/sec)
Large Bulldozer	0.089	0.004
Loaded Trucks	0.076	0.003
Small Bulldozer/Tractors	0.003	<0.001

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

Airport Noise

The nearest airport to the project site is the French Valley Airport located approximately 2.1 miles to the northeast. According to the *Riverside County Airport Land Use Compatibility Plan*, the project site is not located within the French Valley Airport 60 CNEL noise contour.[9] As such, French Valley Airport noise would not exceed the City's normally acceptable noise standard (60 dBA CNEL) for residential uses; refer to Table 1. Additionally, the project site is not located within the vicinity of a private

[8] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, September 2013.

[9] Riverside County, *Riverside County ALUCP – West County Airports Background Data (April 2010)*, *Exhibit FV-5*, *Future Noise Impacts*, https://rcaluc.org/sites/g/files/aldnop421/files/migrated/Portals-13-37-20--20Vol.-202-20French-20Valley-20Amd-202011.pdf, accessed July 2024.

airstrip. Thus, the project would not expose substantial numbers of people to excessive noise levels from airports and impacts would be less than significant.

Conclusion

Project implementation would result in less than significant short-term and long-term noise and vibration impacts. No mitigation measures would be required. Therefore, the proposed project would not result in significant effects related to noise and vibration.

Appendix A

Noise Data and Modeling

Noise Measurement Field Data

Project:	Sage Senior Apartments	**Job Number:**	095382006
Site No.:	ST-1	**Date:**	6/26/2024
Analyst:	Sabrina Marquez	**Time:**	3:34 PM
Location:	Adjacent to 27290 Cresta Del Norte		
Noise Sources:	Cars, plane, birds, dogs barking		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
55.6	47.3	68.3	82.0

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

Weather	
Temp. (degrees F):	82
Wind (mph):	7
Sky:	Clear
Bar. Pressure:	29.95
Humidity:	51%

Photo:

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Summary

File Name on Meter	ST-1.063.s
File Name on PC	LxTse_0007061-20240626 153431-ST-1.063.ldbin
Serial Number	0007061
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2024-06-26 15:34:31
Stop	2024-06-26 15:44:31
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre-Calibration	2024-06-26 14:34:57
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	FF:90 2116
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.6 dB

	A	C	Z
Under Range Peak	**79.1**	76.1	81.1 dB
Under Range Limit	**24.3**	25.3	31.4 dB
Noise Floor	15.1	16.2	22.3 dB

	First	Second	Third
Instrument Identification		1100 W. Town&Country Rd, #700	Orange, CA 92868

Results

L_{Aeq}	55.6 dB	
LAE	83.4 dB	
EA	24.205 µPa²h	
$L_{Apk\ (max)}$	2024-06-26 15:36:48	82.0 dB
L_{ASmax}	2024-06-26 15:37:33	68.3 dB
L_{ASmin}	2024-06-26 15:44:26	47.3 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
L_{Apk} > 135.0 dB	0	0.0 s
L_{Apk} > 137.0 dB	0	0.0 s
L_{Apk} > 140.0 dB	0	0.0 s

Community Noise	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00
	55.6	55.6	-99.9	55.6	55.6	-99.9

L_{Ceq}	65.8 dB	
L_{Aeq}	55.6 dB	
L_{Ceq} - L_{Aeq}	10.2 dB	
L_{Aleq}	57.7 dB	
L_{Aeq}	55.6 dB	
L_{Aleq} - L_{Aeq}	2.1 dB	

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	55.6		65.8			
$L_{S(max)}$	68.3	2024/06/26 15:37:33				
$L_{S(min)}$	47.3	2024/06/26 15:44:26				
$L_{pk(max)}$	82.0	2024/06/26 15:36:48				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles		
LA 5.00	60.0	dB
LA 10.00	58.0	dB
LA 33.30	55.1	dB
LA 50.00	53.3	dB
LA 66.60	52.2	dB
LA 90.00	50.3	dB

Calibration History						
Preamp	**Date**	**dB re 1V/Pa**	**mV/Pa**	**6.3**	**8.0**	**10.0**
Direct	2023-11-08 12:10:28	-28.52	37.50	45.48	45.42	43.49
Direct	2023-11-08 12:09:58	-28.53	37.47	158.35	159.86	152.29
Direct	2023-11-08 11:37:00	-132.33	0.00	110.44	108.06	107.44
Direct	2023-11-08 11:36:39	-132.53	0.00	5.25	4.22	6.48
Direct	2023-11-07 15:35:32	-28.69	36.76	70.57	67.61	48.98
Direct	2023-11-01 08:51:15	-28.59	37.18	48.93	58.04	58.33
Direct	2023-10-11 12:43:45	-28.61	37.11	79.30	66.89	69.64
Direct	2023-10-04 09:46:14	-28.55	37.39	54.78	60.05	65.72
Direct	2023-09-28 08:21:35	-28.98	35.56	55.11	60.64	64.35
Direct	2023-09-18 22:55:29	-28.60	37.17	75.26	86.35	76.50
Direct	2023-09-17 01:32:53	-28.58	37.23	67.80	75.07	67.89
PRMLxT1L	2024-06-26 14:34:57	-28.81	36.27	72.38	65.78	74.40
PRMLxT1L	2024-06-15 14:05:02	-28.31	38.42	46.11	58.88	63.93
PRMLxT1L	2024-06-14 11:10:45	-28.37	38.14	59.28	73.00	56.58
PRMLxT1L	2024-06-12 10:11:04	-28.47	37.73	64.28	49.56	53.93
PRMLxT1L	2024-06-04 13:42:31	-28.27	38.57	51.92	50.17	49.24
PRMLxT1L	2024-06-04 10:51:57	-28.08	39.46	82.94	79.20	78.43
PRMLxT1L	2024-05-31 09:29:43	-28.08	39.42	64.99	62.94	66.45
PRMLxT1L	2024-05-01 16:04:11	-28.23	38.77	59.66	58.72	58.23
PRMLxT1L	2024-05-01 08:15:27	-28.30	38.47	79.63	68.65	55.76
PRMLxT1L	2024-04-23 15:32:10	-28.27	38.58	2.23	1.20	22.39
PRMLxT1L	2024-04-11 09:49:24	-28.35	38.23	67.12	71.29	55.68

Noise Measurement Field Data

Project:	Sage Senior Apartments	**Job Number:**	095382006
Site No.:	ST-2	**Date:**	6/26/2024
Analyst:	Sabrina Marquez	**Time:**	2:53 PM
Location:	East of Rodrigo's Mexican Grill		
Noise Sources:	Cars, plane, people talking		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
62.5	49.7	77.3	95.7

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

Weather	
Temp. (degrees F):	82
Wind (mph):	7
Sky:	Clear
Bar. Pressure:	29.95
Humidity:	54%

Photo:

Kimley»Horn

Summary

File Name on Meter	ST-1.062.s
File Name on PC	LxTse_0007061-20240626 145327-ST-1.062.ldbin
Serial Number	0007061
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2024-06-26 14:53:27
Stop	2024-06-26 15:03:27
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre-Calibration	2024-06-26 14:34:57
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	FF:90 2116
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.6 dB

	A	**C**	**Z**
Under Range Peak	**79.1**	76.1	81.1 dB
Under Range Limit	**24.3**	25.3	31.4 dB
Noise Floor	15.1	16.2	22.3 dB

	First	**Second**	**Third**
Instrument Identification		1100 W. Town&Country Rd, #700	Orange, CA 92868

Results

LA_{eq}	62.5 dB	
LAE	90.3 dB	
EA	118.552 µPa²h	
$LA_{pk\ (max)}$	2024-06-26 14:55:29	95.7 dB
LAS_{max}	2024-06-26 14:55:26	77.3 dB
LAS_{min}	2024-06-26 14:57:10	49.7 dB
SEA	-99.9 dB	

	Exceedance Counts	**Duration**
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LA_{pk} > 135.0 dB	0	0.0 s
LA_{pk} > 137.0 dB	0	0.0 s
LA_{pk} > 140.0 dB	0	0.0 s

Community Noise	**LDN**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**LDEN**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**
	62.5	62.5	-99.9	62.5	62.5	-99.9

LC_{eq}	73.8 dB	
LA_{eq}	62.5 dB	
LC_{eq} - LA_{eq}	11.3 dB	
LAI_{eq}	64.8 dB	
LA_{eq}	62.5 dB	
LAI_{eq} - LA_{eq}	2.3 dB	

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	62.5		73.8			
$L_{S(max)}$	77.3	2024/06/26 14:55:26				
$L_{S(min)}$	49.7	2024/06/26 14:57:10				
$L_{pk(max)}$	95.7	2024/06/26 14:55:29				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles		
LA 5.00	68.3	dB
LA 10.00	62.5	dB
LA 33.30	56.2	dB
LA 50.00	54.4	dB
LA 66.60	52.8	dB
LA 90.00	50.7	dB

Calibration History						
Preamp	**Date**	**dB re 1V/Pa**	**mV/Pa**	**6.3**	**8.0**	**10.0**
Direct	2023-11-08 12:10:28	-28.52	37.50	45.48	45.42	43.49
Direct	2023-11-08 12:09:58	-28.53	37.47	158.35	159.86	152.29
Direct	2023-11-08 11:37:00	-132.33	0.00	110.44	108.06	107.44
Direct	2023-11-08 11:36:39	-132.53	0.00	5.25	4.22	6.48
Direct	2023-11-07 15:35:32	-28.69	36.76	70.57	67.61	48.98
Direct	2023-11-01 08:51:15	-28.59	37.18	48.93	58.04	58.33
Direct	2023-10-11 12:43:45	-28.61	37.11	79.30	66.89	69.64
Direct	2023-10-04 09:46:14	-28.55	37.39	54.78	60.05	65.72
Direct	2023-09-28 08:21:35	-28.98	35.56	55.11	60.64	64.35
Direct	2023-09-18 22:55:29	-28.60	37.17	75.26	86.35	76.50
Direct	2023-09-17 01:32:53	-28.58	37.23	67.80	75.07	67.89
PRMLxT1L	2024-06-26 14:34:57	-28.81	36.27	72.38	65.78	74.40
PRMLxT1L	2024-06-15 14:05:02	-28.31	38.42	46.11	58.88	63.93
PRMLxT1L	2024-06-14 11:10:45	-28.37	38.14	59.28	73.00	56.58
PRMLxT1L	2024-06-12 10:11:04	-28.47	37.73	64.28	49.56	53.93
PRMLxT1L	2024-06-04 13:42:31	-28.27	38.57	51.92	50.17	49.24
PRMLxT1L	2024-06-04 10:51:57	-28.08	39.46	82.94	79.20	78.43
PRMLxT1L	2024-05-31 09:29:43	-28.08	39.42	64.99	62.94	66.45
PRMLxT1L	2024-05-01 16:04:11	-28.23	38.77	59.66	58.72	58.23
PRMLxT1L	2024-05-01 08:15:27	-28.30	38.47	79.63	68.65	55.76
PRMLxT1L	2024-04-23 15:32:10	-28.27	38.58	2.23	1.20	22.39
PRMLxT1L	2024-04-11 09:49:24	-28.35	38.23	67.12	71.29	55.68

Noise Measurement Field Data

Project:	Sage Senior Apartments	**Job Number:**	095382006
Site No.:	ST-3	**Date:**	6/26/2024
Analyst:	Sabrina Marquez	**Time:**	3:56 PM
Location:	Adjacent to 39411 Canyon Rim Circle		
Noise Sources:	Cars, plane, people talking, birds		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
49.8	44.1	62.7	83.8

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

Weather	
Temp. (degrees F):	82
Wind (mph):	7
Sky:	Clear
Bar. Pressure:	29.95
Humidity:	51%

Photo:

Kimley»Horn

Summary

File Name on Meter	ST-1.064.s
File Name on PC	LxTse_0007061-20240626 155620-ST-1.064.ldbin
Serial Number	0007061
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2024-06-26 15:56:20
Stop	2024-06-26 16:06:53
Duration	00:10:03.7
Run Time	00:10:01.8
Pause	00:00:01.9
Pre-Calibration	2024-06-26 14:34:57
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	FF:90 2116
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.6 dB

	A	C	Z
Under Range Peak	**79.1**	76.1	81.1 dB
Under Range Limit	**24.3**	25.3	31.4 dB
Noise Floor	15.1	16.2	22.3 dB

	First	Second	Third
Instrument Identification		1100 W. Town&Country Rd, #700	Orange, CA 92868

Results

L_{Aeq}	49.8 dB	
LAE	77.6 dB	
EA	6.386 µPa²h	
$L_{Apk\ (max)}$	2024-06-26 15:56:26	83.8 dB
L_{ASmax}	2024-06-26 16:03:25	62.7 dB
L_{ASmin}	2024-06-26 16:05:00	44.1 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
L_{Apk} > 135.0 dB	0	0.0 s
L_{Apk} > 137.0 dB	0	0.0 s
L_{Apk} > 140.0 dB	0	0.0 s

	LDN	LDay 07:00-22:00	LNight 22:00-07:00	LDEN	LDay 07:00-19:00	LEvening 19:00-22:00
Community Noise	49.8	49.8	-99.9	49.8	49.8	-99.9

L_{Ceq}	63.2 dB
L_{Aeq}	49.8 dB
L_{Ceq} - L_{Aeq}	13.4 dB
L_{Aleq}	51.1 dB
L_{Aeq}	49.8 dB
L_{Aleq} - L_{Aeq}	1.3 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L_{eq}	49.8		63.2			
$L_{S(max)}$	62.7	2024/06/26 16:03:25				
$L_{S(min)}$	44.1	2024/06/26 16:05:00				
$L_{pk(max)}$	83.8	2024/06/26 15:56:26				

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Ln Percentiles		
LA 5.00	52.2	dB
LA 10.00	51.4	dB
LA 33.30	49.8	dB
LA 50.00	49.3	dB
LA 66.60	48.4	dB
LA 90.00	46.7	dB

Calibration History						
Preamp	**Date**	**dB re 1V/Pa**	**mV/Pa**	**6.3**	**8.0**	**10.0**
Direct	2023-11-08 12:10:28	-28.52	37.50	45.48	45.42	43.49
Direct	2023-11-08 12:09:58	-28.53	37.47	158.35	159.86	152.29
Direct	2023-11-08 11:37:00	-132.33	0.00	110.44	108.06	107.44
Direct	2023-11-08 11:36:39	-132.53	0.00	5.25	4.22	6.48
Direct	2023-11-07 15:35:32	-28.69	36.76	70.57	67.61	48.98
Direct	2023-11-01 08:51:15	-28.59	37.18	48.93	58.04	58.33
Direct	2023-10-11 12:43:45	-28.61	37.11	79.30	66.89	69.64
Direct	2023-10-04 09:46:14	-28.55	37.39	54.78	60.05	65.72
Direct	2023-09-28 08:21:35	-28.98	35.56	55.11	60.64	64.35
Direct	2023-09-18 22:55:29	-28.60	37.17	75.26	86.35	76.50
Direct	2023-09-17 01:32:53	-28.58	37.23	67.80	75.07	67.89
PRMLxT1L	2024-06-26 14:34:57	-28.81	36.27	72.38	65.78	74.40
PRMLxT1L	2024-06-15 14:05:02	-28.31	38.42	46.11	58.88	63.93
PRMLxT1L	2024-06-14 11:10:45	-28.37	38.14	59.28	73.00	56.58
PRMLxT1L	2024-06-12 10:11:04	-28.47	37.73	64.28	49.56	53.93
PRMLxT1L	2024-06-04 13:42:31	-28.27	38.57	51.92	50.17	49.24
PRMLxT1L	2024-06-04 10:51:57	-28.08	39.46	82.94	79.20	78.43
PRMLxT1L	2024-05-31 09:29:43	-28.08	39.42	64.99	62.94	66.45
PRMLxT1L	2024-05-01 16:04:11	-28.23	38.77	59.66	58.72	58.23
PRMLxT1L	2024-05-01 08:15:27	-28.30	38.47	79.63	68.65	55.76
PRMLxT1L	2024-04-23 15:32:10	-28.27	38.58	2.23	1.20	22.39
PRMLxT1L	2024-04-11 09:49:24	-28.35	38.23	67.12	71.29	55.68

Project: Sage Senior Apartments

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
Leq to L10 factor		3

	Receptor (Land Use)	Average Distance (feet)	Distance to Property Line (feet)	Shielding	Direction
1	Single Family Residences	400	200	0	E
2	Single Family Residences	420	240	0	W
3	Commercial	620	210	0	S

						RECEPTOR 1		RECEPTOR 2		RECEPTOR 3	
Construction Phase	**Equipment Type**	**No. of Equip.**	**Acoustical Usage Factor**	**Reference Noise Level at 50ft per Unit, Lmax**	**Noise Level at Receptor 1, Lmax**	**Noise Level at Receptor 1, Leq**	**Noise Level at Receptor 2, Lmax**	**Noise Level at Receptor 2, Leq**	**Noise Level at Receptor 3, Lmax**	**Noise Level at Receptor 3, Leq**
Site Preparation										
	Dozer	3	40%	82	68.4	64.4	68.0	64.0	64.6	60.6
	Tractor	4	40%	84	72.0	68.0	71.5	67.6	68.2	64.2
Combined LEQ						**69.6**		**69.1**		**65.8**
Grading										
	Excavator	1	40%	81	62.6	58.7	62.2	58.2	58.8	54.9
	Grader	1	40%	85	66.9	63.0	66.5	62.5	63.1	59.2
	Dozer	1	40%	82	63.6	59.7	63.2	59.2	59.8	55.9
	Tractor	3	40%	84	70.7	66.7	70.3	66.3	66.9	62.9
Combined LEQ						**69.2**		**68.8**		**65.4**
Building Construction										
	Crane	1	16%	81	62.5	54.6	62.1	54.2	58.7	50.8
	Man Lift	3	20%	75	61.4	54.4	61.0	54.0	57.6	50.6
	Generator	1	50%	81	62.5	59.5	62.1	59.1	58.7	55.7
	Tractor	3	40%	84	70.7	66.7	70.3	66.3	66.9	62.9
	Welder/Torch	1	40%	74	55.9	52.0	55.5	51.5	52.1	48.2
Combined LEQ						**68.0**		**67.6**		**64.2**
Paving										
	Paver	2	50%	77	62.1	59.1	61.7	58.7	58.3	55.3
	Pavement Scarafier	2	20%	90	74.4	67.5	74.0	67.0	70.6	63.7
	Roller	2	20%	80	64.9	58.0	64.5	57.5	61.1	54.2
Combined LEQ						**68.5**		**68.0**		**64.7**
Architectural Coating										
	Compressor (air)	1	40%	78	59.6	55.7	59.2	55.2	55.8	51.9
Combined LEQ						**55.7**		**55.2**		**51.9**

Source for Ref. Noise Levels: RCNM, 2005

Receptor	Phase	Direction	Distance to Center of Site	Ambient (dBA Leq)	Project Construction Noise Level dBA Leq	Threshold	Exceeds Threshold?	over threshold	Notes
1 Single Family Residences	Site Preparation	E	400	55.6	69.6	80.0	No	--	
	Grading				69.2		No	--	
	Building Construction				68.0		No	--	
	Paving				68.5		No	--	
	Architectural Coating				55.7		No	--	
2 Single Family Residences	Site Preparation	W	420	49.8	69.1	80.0	No	--	
	Grading				68.8		No	--	
	Building Construction				67.6		No	--	
	Paving				68.0		No	--	
	Architectural Coating				55.2		No	--	
3 Commercial	Site Preparation	S	620	62.5	65.8	90.0	No	--	
	Grading				65.4		No	--	
	Building Construction				64.2		No	--	
	Paving				64.7		No	--	
	Architectural Coating				51.9		No	--	