4.13 NOISE AND VIBRATION

This section of the Environmental Impact Report (EIR) examines the construction and operational noise and vibration impacts of the Development Project on sensitive uses adjacent to the proposed Development Project and evaluates the effectiveness of mitigation measures. This includes the potential for the proposed Development Project to result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Development Project in excess of noise standards or generation of excessive ground-borne vibration or ground-borne noise levels. The analysis contained in this section is based on the *Sunset Crossroads Project Noise and Vibration Impact Analysis Report, City of Banning, California*. LSA Associates, Inc., September 2023, which is provided in **Appendix I** of this EIR.

While development of the Mt. San Jacinto College (MSJC) Site is not anticipated at this time, a programmatic discussion of potential impacts related to noise that may result from future development is provided in **Chapter 5.0** of this EIR.

4.13.1 Scoping

The City received nine comment letters during the public review period of the Notice of Preparation (NOP). For copies of the NOP comment letters, refer to Appendix A of this Draft EIR. The following are comments from the public scoping meeting that relate to noise and vibration:

- **Ron Roy and Kim Floyd:** The two individuals state that alternative transit methods have been shown to significantly reduce noise pollution. The comment also states that the Draft EIR must explain how noise barriers are used during construction and how the proposed warehouse buildings could reduce noise impacts.

- **Sierra Club (San Gorgonio Chapter):** This group commented that there are State agencies that are willing to assist the City when considering the best applicable noise mitigation measures.

- **California Department of Fish and Wildlife:** The agency commented that the Draft EIR should provide a thorough discussion of potential noise impacts and project-specific avoidance and minimization measures may include monitoring of project-related noise (where applicable) and sound walls, where appropriate.

4.13.2 Methodology

The evaluation of noise and vibration impacts associated with the proposed Development Project includes the following:

- Determine if Development Project construction activity would substantially increase ambient noise levels on off-site noise-sensitive uses in excess of the City's interior construction noise standard. For residences located in the unincorporated areas of the County, the City's interior construction noise standard was used because the County does not have construction noise standards. In addition, determine if Development Project construction traffic would substantially increase ambient noise levels on off-site noise-sensitive uses in excess of conditionally acceptable noise levels established in the City and County's land use compatibility for community noise;

- Determine if the operations of the Development Project, including vehicular traffic and stationary noise sources, would substantially increase ambient noise levels (by 3 dBA or more) on off-site noise-sensitive uses and would result in noise levels that exceed the noise standards in the City/County's General Plan Noise Element, City's Municipal Code, and County Code.

- Determine if Development Project construction activities and operations of the Development Project would generate excessive ground-borne vibration or ground-borne noise levels based on the annoyance (**Table 4.13.D**, provided later) and building damage (**Table 4.13.E**, provided later) criteria recommended by FTA; and

- Evaluate the proposed mitigation measures and their effectiveness to reduce project-related construction and operational noise and vibration impacts.

An increase of 3 dBA or more would be barely perceptible to the human ear in an outdoor environment and is considered to be a substantial noise increase because it is a noticeable change to the noise environment.

4.13.3 Existing Setting

4.13.3.1 Existing Noise Environment

The primary existing noise sources in the Development Project area are transportation facilities. Traffic on I-10, Sunset Avenue, Highland Home Road, and other local streets contributes to the ambient noise levels in the Development Project vicinity. The Union Pacific Railroad (UPRR) line, which also carries Amtrak trains, is located immediately north of the Development Site. Both freight and passenger train operations contribute to the existing noise environment. Noise from motor vehicles is generated by engines, the interaction between the tires and the road, and the vehicles' exhaust systems.

4.13.3.2 Sensitive Land Uses in the Project Vicinity

The Development Site is a large-scale site that is located between multiple residential communities and a nearby MSJC school, which are identified as sensitive receptors. The areas adjacent to the Development Site include the following uses that are located in the City except as noted:

- **North:** Union Pacific Railroad right-of-way, I-10, and commercial uses.
- **South:** Single-family homes and agricultural uses in the unincorporated County.
- **East:** Community of single-family homes, storage facility, and the MSJC school.
- **West:** Age-restricted residences in the Sun Lakes Community and recreation vehicle storage.

4.13.3.3 Ambient Noise Measurements

Short-term and long-term noise level measurements were conducted at adjacent land uses surrounding the Development Site to document the existing noise environment in order to determine noise increase from the Development Project. The details of the short-term and long-term ambient noise level measurements are provided below.

Short-Term Noise Measurements. Short-term (20-minute) noise level measurements were conducted on November 23, 2021, using a Larson Davis Model 831 Type 1 sound level meter. It should be noted that the short-term noise level measurements were conducted during near normal COVID-19 pre-pandemic conditions with students back to school and businesses operating without restrictions. **Table 4.13.A: Short-Term Ambient Noise Level Measurements** shows the results of the short-term noise level measurements along with a description of the measurement locations and noise sources that occurred during the measurements. As shown in **Table 4.13.A**, the measured average noise levels in the Development Project vicinity range from 43.1 to 55.6 dBA L_{eq}, and the calculated CNEL noise levels range from 39.0 to 62.3 dBA based on the noise level profile from the long-term noise level measurements. Short-term noise level measurement survey sheets are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in Appendix I of this EIR. **Figure 4.13-1: Noise Monitoring Locations** shows the short-term monitoring locations.

Long-Term Noise Measurements. The long-term (24-hour) noise level measurements were conducted from November 22 to November 23, 2021, using five Larson Davis Spark 706RC Dosimeters. It should be noted that the long-term noise level measurements were conducted during near normal COVID-19 pre-pandemic conditions with students back to school and normal business operations. **Table 4.13.B: Long-Term Ambient Noise Monitoring Results** summarizes the results of the long-term noise level measurements along with a description of the measurement locations and noise sources that occurred during the measurements. As shown in **Table 4.13.B**, the calculated CNEL noise levels range from 59.5 to 72.7 dBA. The hourly L_{eq} results from the long-term noise level measurements are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in Appendix I of this EIR. **Figure 4.13-1** shows the long-term monitoring locations.

4.13.3.4 Existing Aircraft Noise

The nearest airport to the Development Site is the Banning Municipal Airport, which is located 3 miles east of the Development Site. Based on the Riverside County Airport Land Use Compatibility Plan[1], the Development Site is located outside the 55 CNEL noise contours of Banning Municipal Airport. Additionally, there are no private airstrips located within the vicinity of the Development Site.

4.13.3.5 Existing Train Noise

The UPRR line, which also carries Amtrak trains, is located immediately north of the Development Site. The train crossing data from the Federal Railroad Administration Office of Safety Analysis show that there are a total of 34 freight and passenger trains per day. Noise generated from train operations would be captured in the long-term noise level measurement at LT-1, LT-2, and LT-5.

[1] Riverside County Airport Land Use Commission (ALUC). 2004. Riverside County Airport Land Use Compatibility Plan.

Table 4.13.A: Short-Term Ambient Noise Level Measurements

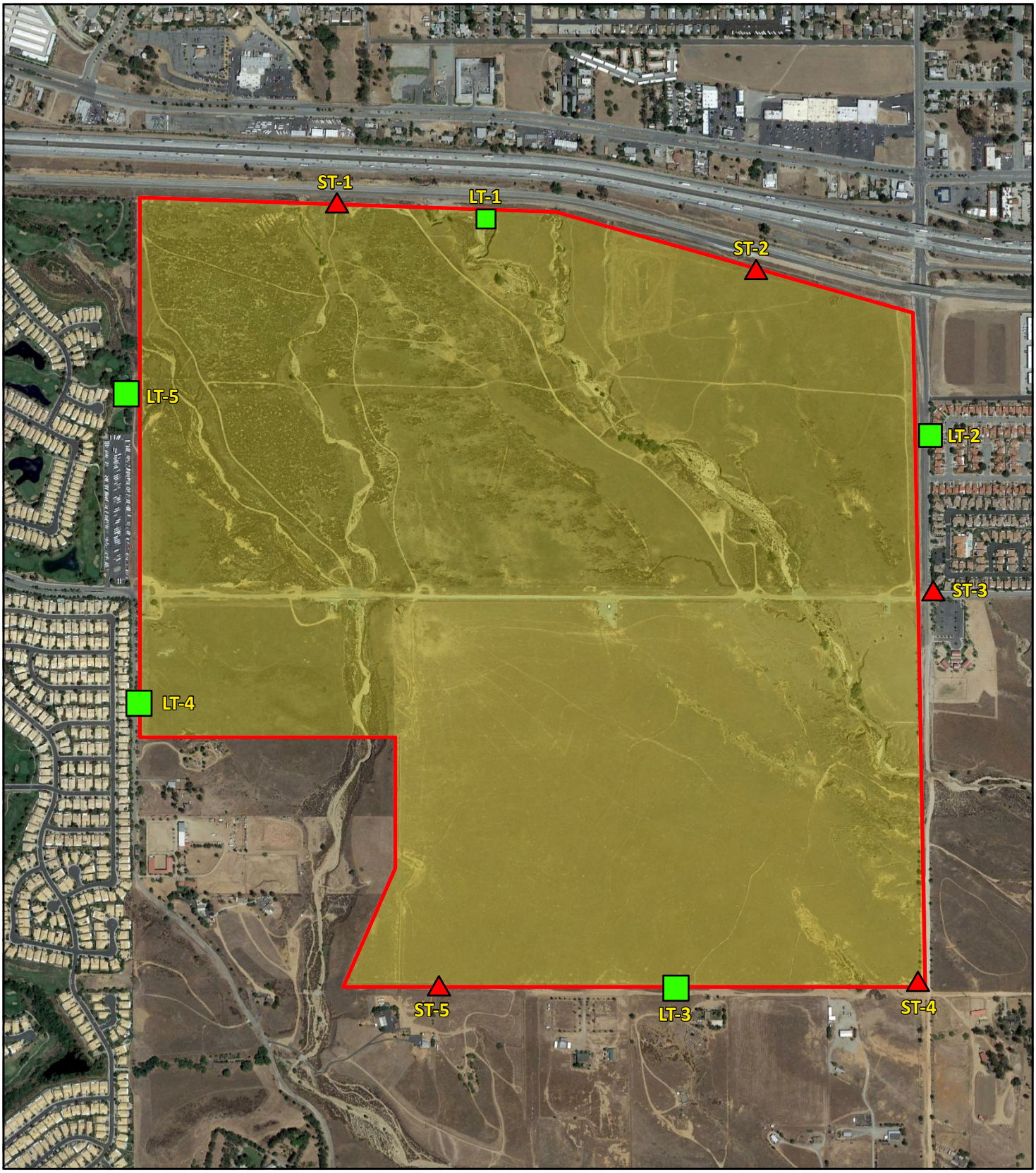
Monitor No.	Location	Start Time	Noise Level (dBA)				Noise Source(s)
			L_{eq}	L_{max}	L_{min}	CNEL	
ST-1	North end of the Development Site, near the first utility pole to the east of the western ravine.	3:52 PM	54.9	61.9	50.1	62.3[1]	Traffic on I-10 and wind noise.
ST-2	Near the northeast corner of the Development Site, south of a large tree near I-10.	3:19 PM	52.7	62.2	47.8	59.0[1]	Traffic on I-10.
ST-3	Northeast corner of Sunset Avenue and Westward Avenue. Approximately 16 ft east of Sunset Avenue and 22 ft north of Westward Avenue.	1:25 PM	55.6	68.8	41.2	55.5[2]	Very light traffic on Sunset Avenue and Westward Avenue. Wind noise.
ST-4	Northwest corner of Sunset Avenue and Bobcat Road. At the southeast corner of Development Site. Approximately 40 ft west of Sunset Avenue.	2:00 PM	48.3	65.4	33.3	42.4[3]	Very light traffic on Sunset Avenue. Wind noise.
ST-5	Southern boundary of the Development Site, near the west end of Bobcat Road.	2:38 PM	43.1	55.3	33.7	39.0[3]	Faint aircraft noise. Wind noise.

Source: Compiled by LSA Associates, Inc. (2022).
Note: Short-term (20-minute) ambient noise level measurements were conducted on November 23, 2021.
[1] The CNEL noise levels for ST-1 and ST-2 were calculated based on the noise level profile from the long-term noise level measurement at LT-1.
[2] The CNEL noise level for ST-3 was calculated based on the noise level profile from the long-term noise level measurement at LT-2.
[3] The CNEL noise level for ST-4 and ST-5 were calculated based on the noise level profile from the long-term noise level measurement at LT-3.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
I-10 = Interstate 10
L_{eq} = equivalent continuous sound level
L_{max} = maximum measured sound level
L_{min} = minimum measured sound level

Table 4.13.B: Long-Term Ambient Noise Monitoring Results

Monitoring No	Location	Noise Level (dBA)					Noise Source(s)
		Daytime		Nighttime		CNEL	
		L_{eq}	L_{max}	L_{eq}	L_{max}		
LT-1	Northern Development Project boundary. On utility pole.	61.5-67.9	71.3-88.4	62.7-69.9	69.6-90.0	72.7	Traffic on I-10.
LT-2	East side of Sunset Avenue, west of 481 Soboba Drive. On utility pole.	59.6-69.4	75.4-86.1	54.0-60.4	74.9-83.8	66.7	Traffic on I-10 and Sunset Avenue. Construction to the north along Sunset Avenue.
LT-3	Southern Development Project boundary. Near 42650 Hill Top Drive. On utility pole on the north side of Bobcat Road.	40.3-66.3	51.1-81.9	40.7-51.0	53.9-66.5	59.5	Occasional traffic on Bobcat Road.
LT-4	Western Development Project boundary. East of 1024 Bay Hill Road. On the utility pole on the east side of Highland Home Road.	52.7-66.1	75.9-87.3	39.5-56.4	53.0-84.1	61.8	Traffic on Highland Home Road.
LT-5	Western Development Project boundary. East of 4730 Salem Circle and golf course. On utility pole.	47.1-61.9	63.3-75.7	49.9-58.1	57.1-67.7	61.6	Traffic on I-10. Faint activity at the golf course.

Source: Compiled by LSA Associates, Inc. (2022).
Note: Long-term (24-hour) noise level measurements were conducted from November 22 to November 23, 2021.
dBA = A-weighted decibels
CNEL = Community Noise Equivalent Level
ft = foot/feet
I-10 = Interstate 10
L_{eq} = equivalent continuous sound level
L_{max} =maximum instantaneous noise level



LSA

LEGEND

- Project Site Boundary
- ST-1 - Short-Term Noise Monitoring Location
- LT-1 - Long-Term Noise Monitoring Location

FIGURE 4.13-1

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SOURCE: Google Earth 2021

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Sunset Crossroads

Noise Monitoring Locations

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4.13.3.6 Existing Traffic Noise

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108)[2] was used to evaluate traffic-related noise conditions along roadway segments in the Development Project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resulting noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The existing average daily traffic (ADT) volumes were obtained from the Sunset Crossroads Traffic Analysis.[3] The standard vehicle mix for Southern California roadways was used for roadways in the Development Project vicinity. **Table 4.13.C: Existing Traffic Noise Levels** lists the existing traffic noise levels on roadways in the Development Project vicinity. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between traffic and the location where the noise contours are drawn. **Table 4.13.C** indicates that the existing traffic noise levels in the Development Project vicinity are moderately low. The specific assumptions used in developing these noise levels and the model printouts are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in Appendix I of this EIR.

4.13.4 Regulatory Setting

4.13.4.1 Federal Guidelines

Federal Transit Administration. Vibration standards included in the Transit Noise and Vibration Impact Assessment Manual[4] are used in this analysis for ground-borne vibration impacts on human annoyance. **Table 4.13.D: Interpretation of Vibration Criteria for Detailed Analysis** provides the criteria for assessing the potential for interference or annoyance from vibration levels in a building.

The criteria for environmental impacts from ground-borne vibration and noise are based on the maximum levels for a single event. **Table 4.13.E: Construction Vibration Damage Criteria** lists the potential vibration building damage criteria associated with construction activities, as suggested in the Transit Noise and Vibration Impact Assessment Manual[5]. Federal Traffic Administration (FTA) guidelines show that a vibration level of up to 102 VdB (equivalent to 0.5 in/sec in PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For non-engineered timber and masonry buildings, the construction building vibration damage criterion is 94 VdB (0.2 in/sec in PPV).[6]

2 FHWA 1977. Highway Traffic Noise Prediction Model, FHWA RD 77-108.
3 Urban Crossroads. 2023. *Sunset Crossroads Traffic Analysis*. City of Banning, California. August 9.
4 FTA. 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. September. Website: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed September 2023).
5 Ibid.
6 Ibid.

Table 4.13.C: Existing Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8

Table 4.13.C: Existing Traffic Noise Levels

Roadway Segment	ADT	Centerline to 70 CNEL (ft)	Centerline to 65 CNEL (ft)	Centerline to 60 CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--

Source: Compiled by LSA Associates, Inc. (2023).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
WB = westbound

Table 4.13.D: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Maximum L_v (VdB)[1]	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100×) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-octave bands of frequency over the frequency range 8 to 80 Hz.
FTA = United States Federal Transit Administration
Hz = hertz
L_v = velocity in decibels
VdB = vibration velocity decibels

Table 4.13.E: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_V (VdB)[1]
Reinforced concrete, steel, or timber (no plaster)	0.50	102
Engineered concrete and masonry (no plaster)	0.30	98
Nonengineered-timber and masonry buildings	0.20	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
µin/sec = microinches per second
FTA = Federal Transit Administration
in/sec = inches per second
L_v = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

4.13.4.2 Local Regulations

City of Banning General Plan Noise Element. Chapter V, Environmental Hazards, of the City's General Plan[7] contains the Noise Element which has established maximum outdoor noise levels in residential areas, the allowable exterior ambient noise levels for various land uses, and contain policies and actions required to meet the City's noise-related goals. The maximum outdoor noise level in residential areas is 65 dBA CNEL. The allowable exterior ambient noise levels for each land use are summarized in the City's land use compatibility categories for community noise environments as shown in **Table 4.13.F: Land Use Compatibility for Community Noise Environments**. Applicable goals, policies, and programs for the Development Project are listed below.

- **Goal:** A noise environment that complements the community's residential character and its land uses.
    - **Policy 1:** The City shall protect noise sensitive land uses, including residential neighborhoods, schools, hospitals, libraries, churches, resorts, and community open space, from potentially significant sources of community noise.
        - **Program 1.A:** The City shall require building setbacks, the installation of wall and window insulation, soundwalls, earthen berms, and/or other mitigation measures in areas exceeding the City's noise limit standards for private development projects as they occur.
        - **Program 1.B:** The City shall maintain and enforce its Noise Control Ordinances that establish community-wide noise standards and identify measures designed to resolve noise complaints.
        - **Program 1.C:** The City shall use the development review process to assure the use of buffers between sensitive receptors and incompatible land uses.
        - **Program 1.D:** The City shall require that commercial compactors, loading zones, and large trash bins be located at a sufficient distance from residential properties to reduce noise impacts to its acceptable standard.
    - **Policy 2:** The relationship between land use designations in the Land Use Element and changes in the circulation pattern of the City, as well as individual developments, shall be monitored and mitigated.
        - **Program 2.A:** The City shall develop guidelines and minimal criteria requirements for noise analyses for proposed development projects. Studies shall evaluate project impacts and the effectiveness of proposed mitigation measures.

[7] City of Banning. 2006. General Plan Noise Element. January 31. Website: http://banning.ca.us/DocumentCenter/View/665/GP-Ch-V-Environmental-Hazards?bidId= (accessed September 2023).

Table 4.13.F: Land Use Compatibility for Community Noise Environments

Land Uses	CNEL (dBA)						
	50	55	60	65	70	75	80
Residential - Single Family Dwellings, Duplex, Mobile Homes	A	B			C	D	
Residential – Multiple Family	A	A	B		C	D	
Transient Lodging: Hotels and Motels	A	A	B		C		D
School Classrooms, Libraries, Churches, Hospitals, Nursing Homes and Convalescent Hospitals	A	A	B		C		D
Auditoriums, Concert Halls, Amphitheaters	B	B		C	C		
Sports Arenas, Outdoor Spectator Sports	B	B	B	B	C		
Playgrounds, Neighborhood Parks	A	A	A	C	D		
Golf Courses, Riding Stables, Water Recreation, Cemeteries	A	A	A	A	C		D
Office Buildings, Business, Commercial and Professional	A	A	A	B	B	D	
Industrial, Manufacturing, Utilities, Agriculture	A	A	A	A	B	D	

Source: *California Department of Health Services, "Guidelines for the Preparation and Content of the Noise Element of the General Plan," 1990*

A **Normally Acceptable**: With no special noise reduction requirements assuming standard construction.

B **Conditionally Acceptable**: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design

C **Normally Unacceptable**: New construction is discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

D **Clearly Unacceptable**: New construction or development should generally not be undertaken.

Source: City of Banning. 2006. General Plan, Chapter V - Environmental Hazards, Table V-4, Land Use Compatibility for Community Noise Environments. Website: http://banning.ca.us/DocumentCenter/View/665/GP-Ch-V-Environmental-Hazards?bidId= (accessed September 2023).

- **Policy 6:** All development proposals within the noise impact area of the Interstate and the railroad shall mitigate both noise levels and vibration to acceptable levels through the preparation of focused studies and analysis in the development review and environmental review process.

- **Policy 8:** The City shall impose and integrate special design features into proposed development that minimize impacts associated with the operation of air conditioning and heating equipment, onsite traffic, and use of parking, loading and trash storage facilities.

City of Banning Municipal Code. Sections 8.44.070 and 8.44.080 of the City's Municipal Code[8] have established exterior maximum noise levels for residential and non-residential (commercial and industrial) uses. **Table 4.13.G: City of Banning Maximum Noise Level Standards** shows the City's exterior maximum noise levels.

Table 4.13.G: City of Banning Maximum Noise Level Standards

Zone Use	Time	Base Ambient Noise Level (dBA)	L_{25}[1] (15 min)	L_8[2] (5 min)	L_2[3] (1 min)	L_{max}[4]
Residential	10:00 PM to 7:00 AM	45	50	55	60	65
	7:00 AM to 10:00 PM	55	60	65	70	75
Industrial and Commercial	Anytime	75	--	--	--	--

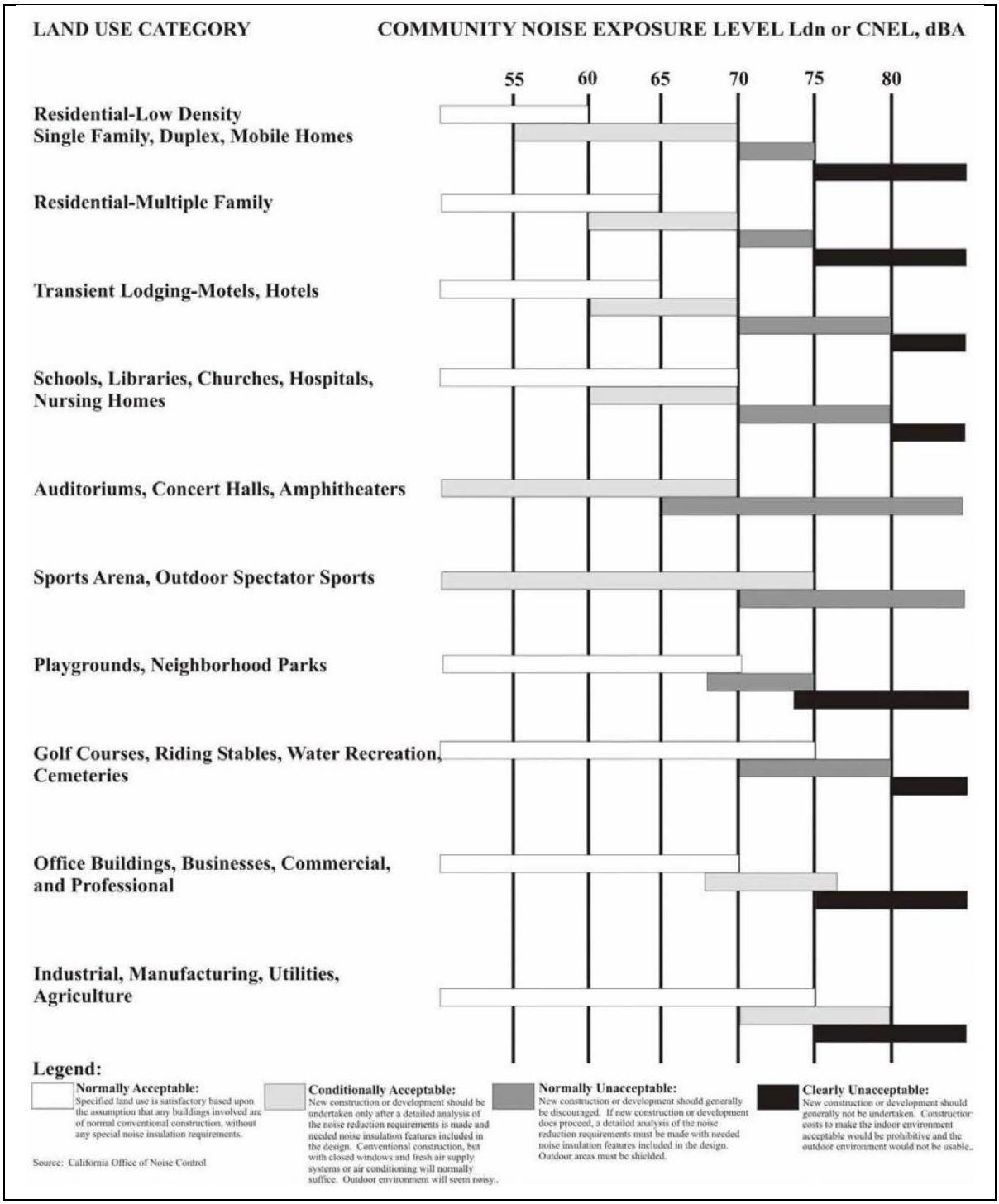
Source: City of Banning. Municipal Code.
[1] The exterior noise standard for a cumulative period of 15 minutes in any hour.
[2] The exterior noise standard for a cumulative period of 5 minutes in any hour.
[3] The exterior noise standard for a cumulative period of 1 minute in any hour.
[4] The exterior maximum noise level that is not permitted.
dBA = A-weighted decibel
L_{max} = maximum instantaneous noise level
min = minute/minutes

Section 8.44.090(E) of the City's Municipal Code[9] permits construction activities to exceed the maximum noise levels as shown in **Table 4.13.G** between the hours of 7:00 a.m. and 6:00 p.m. However, the City prohibits construction activities to exceed 55 dBA for more than 15 minutes per hour as measured in the interior of the nearest occupied residence or school.

County of Riverside General Plan Noise Element. The County of Riverside's General Plan Noise Element[10] contains policies to protect noise-sensitive land uses from noise emitted by outside sources and prevent new projects from generating adverse noise levels on adjacent properties. The County's land use compatibility categories for community noise level exposure are shown in **Table 4.13.H: Land Use Compatibility for Community Noise Exposure**, and stationary source land use noise standards are shown in **Table 4.13.I: Stationary Source Land Use Noise Standards**. The goals, objectives, and policies in the County's General Plan are designed to provide noise-compatible land use relationships by establishing noise standards utilized for design and siting purposes and minimizing noise impacts from significant noise generators. The following policies are applicable to the Development Project:

8 City of Banning. 2023. Municipal Code. June 7.
9 Ibid.
10 County of Riverside. 2015. Noise Element of the County of Riverside General Plan. December 8.

Table 4.13.H: Land Use Compatibility for Community Noise Exposure



Source: County of Riverside General Plan Noise Element, Table N-1 (December 2015).

Table 4.13.I: Stationary Source Land Use Noise Standards

Land Use	Land Use	Interior Standards	Exterior Standards
Residential	10:00 p.m. to 7:00 a.m.	40 dBA L_{eq} (10 minute)	45 dBA L_{eq} (10 minute)
	7:00 a.m. to 10:00 p.m.	55 dBA L_{eq} (10 minute)	65 dBA L_{eq} (10 minute)

Source: County of Riverside General Plan Noise Element, Table N-2 (December 2015).
Note: These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

- **Policy N 1.3:** Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 dBA CNEL: schools; hospitals; rest homes; long-term care facilities; mental care facilities; residential uses; libraries; passive recreation; and places of worship.

- **Policy N 1.5:** Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

- **Policy N 1.6:** Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses.

- **Policy N 2.3:** Mitigate exterior and interior noises to the levels listed in the County's General Plan Noise Element, Table N-2, to the extent feasible, for stationary sources.

- **Policy N 3.3:** Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses.

- **Policy N 4.1:** Prohibit facility-related noise received by any sensitive use from exceeding the following worst-case noise levels:

    - 45 dBA—10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.
    - 65 dBA—10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

- **Policy N 4.2:** Develop measures to control non-transportation noise impacts.

- **Policy N 4.3:** Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed and ensure that the recommended mitigation measures are implemented.

- **Policy N 4.4:** Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources.

- **Policy N 7.1:** New land use development within Airport Influence Areas shall comply with airport land use noise compatibility criteria contained in the corresponding airport land use compatibility plan for the area. Each Area Plan affected by a public-use airport includes one or more Airport

Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix I-1 of the General Plan and summarized in the Policy Area section of the affected Area Plan.

- **Policy N 9.3:** Require development that generates increase traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures.

- **Policy N 13.1:** Minimize the impacts of construction on adjacent uses within acceptable practices.

- **Policy N 13.2:** Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

- **Policy N 13.3:** Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see Policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

  a. Temporary noise attenuation fences;
  b. Preferential location of equipment; and
  c. Use of current noise suppression technology and equipment.

- **Policy N 13.4:** Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Riverside County Code. Section 9.52.020(H) of the County's Code of Ordinances11 exempts sound emanating from private construction projects located 0.25 mile or more from an inhabited dwelling. In addition, Section 9.52.020(I) limits the hours of private construction projects located within 0.25 mile from an inhabited dwelling. Construction shall not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, or between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

Section 9.52.020(L) of the County's Code of Ordinances[12] exempts sound emanating from heating and air conditioning equipment.

4.13.5 Thresholds of Significance

The City has not established local CEQA significance thresholds as described in Section 15064.7 of the CEQA Guidelines. Therefore, significance determinations utilized in this section are from Appendix G

11 County of Riverside. 2023. Code of Ordinances. June 27.
12 Ibid.

of the CEQA Guidelines. The Development Project would have a significant noise and vibration impact if the Development Project would result in:

Threshold 4.13-1: The generation of 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.

Threshold 4.13-2: The generation of excessive ground-borne vibration or ground-borne noise levels.

Threshold 4.13-3: 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 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

4.13.6 Project Impacts

4.13.6.1 Temporary or Permanent Noise Increase in Ambient Noise Levels in Excess of Established Standards

Threshold 4.13.1: Would the Development 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?

Construction Noise Impacts. Two types of construction-related noise impacts could occur with development of the Development Project.

- **Construction Crew Commutes and Transport of Construction Equipment and Materials:** First, construction crew commutes and the transport of construction equipment and materials to the site for the Development Project would incrementally increase noise levels on roadways leading to the Development Site. The pieces of heavy equipment for construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the Development Project vicinity. Construction crew commutes to and from the Development Project would occur on a daily basis for each of the four Development Project phases, beginning in 2023 until completion of the entire Development Project in 2027. It is anticipated that employee light truck and personal vehicle trips during the construction of Phase 1 of the Development Project would generate the most trips out of all of the four project phases, at 2,250 daily trips based on the estimated project construction schedule and the number of construction crew trips estimated by the California Emissions Estimator Model (CalEEMod, Version 2020.4.0) results contained in the Sunset Crossroads Project Air Quality Impact Analysis Report[13] provided in Appendix C of this EIR. The construction of Phase 1 would use Highland Springs Avenue and Sun Lakes Boulevard/Westward Avenue or Sunset Avenue and Bobcat Road to access the Development Site. Exact travel patterns of employees will be based on personal choice of the employee; however, as a reasonable estimate for purposes of this analysis, it is

[13] LSA Associates, Inc. 2023. Sunset Crossroads Project Air Quality Impact Analysis Report. September.

assumed that 1,125 construction trips would use Highland Springs Avenue and Sun Lakes Boulevard/Westward Avenue route to access the Development Site while the other 1,125 construction trips would use Sunset Avenue and Bobcat Road to access the Development Site for a conservative noise analysis. **Table 4.13.J: Existing (2021) Traffic Noise Levels Without and With Phase 1 Construction Traffic** shows the existing traffic noise levels without and with Phase 1 construction traffic. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels and the model printouts are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in Appendix I of this EIR.

As shown in **Table 4.13.J**, the Development Project construction traffic would result in a traffic noise increase of up to 7.4 dBA along Sunset Avenue between Westward Avenue and Bobcat Road. The MSJC campus is the only noise-sensitive use along Sunset Avenue between Westward Avenue and Bobcat Road. The school is located approximately 75 ft from Sunset Avenue centerline and would be exposed to a traffic noise level of 53.7 dBA CNEL based on **Table 4.13.J**. This noise level would not exceed the City's exterior noise standard of 65 dBA CNEL. In addition, ambient noise levels in this area represented by ST-3 have a noise level of 55.5 dBA CNEL shown in **Table 4.13.A**. Based on the above information, the actual noise increase would be 2.2 dBA when ambient noise levels are factored in. A noise increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, noise impacts from construction-related traffic along Sunset Avenue between Westward Avenue and Bobcat Road would be **less than significant**. No mitigation measures are required.

- **Construction Activities:** The second type of construction noise impact is related to noise generated during mass grading, grading, sitework-utilities, building construction, paving, and architectural coating/tenant finishing on the Development Site. Construction of the Development Site would include buildings 1 through 10, retail/restaurant uses, a hotel, a fueling station, and roadway and infrastructure improvements. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases change the character of the noise generated on a project site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. While traffic noise impacts from construction-related trips are evaluated using the CNEL noise level, project construction equipment activities are evaluated using the L_{eq} level calculated from the instantaneous maximum (L_{max}) and the acoustical usage factor. **Table 4.13.K: Typical Construction Equipment Noise Levels** lists the maximum noise levels (L_{max}) recommended for noise impact assessments for typical construction equipment included in the FHWA Highway Construction Noise Handbook[14], based on a distance of 50 ft between the equipment and a noise receptor.

[14] FHWA. 2006. FHWA Highway Construction Noise Handbook. Roadway Construction Noise Model, FHWA HEP-06-015. DOT-VNTSC-FHWA-06-02. NTIS No. PB2006-109012. August.

Table 4.13.J: Existing (2021) Traffic Noise Levels Without and With Phase 1 Construction Traffic

Roadway Segment	Without Phase 1 Construction Traffic Conditions					With Phase 1 Construction Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,525	< 50	81	154	63.8	0.3
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	8,825	< 50	< 50	101	61.9	0.6
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	8,425	< 50	< 50	100	61.4	0.6
Sun Lakes Boulevard West of Highland Home Road	--[1]	--	--	--	--	1,275	< 50	< 50	< 50	53.5	NA
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,150	< 50	< 50	60	59.8	3,200	< 50	< 50	< 50	58.7	-1.1
Sunset Avenue Between Driveway 19 and Lincoln Street	4,200	< 50	< 50	60	60.4	3,225	< 50	< 50	< 50	59.3	-1.1
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	2,700	< 50	< 50	< 50	58.5	2.3
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	1,375	< 50	< 50	< 50	55.6	7.4
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	1,375	< 50	< 50	< 50	55.6	7.4
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	1,375	< 50	< 50	< 50	55.6	7.4
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	1,375	< 50	< 50	< 50	55.6	7.4
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	1,125	< 50	< 50	< 50	53.1	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,125	< 50	< 50	< 50	53.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	1,125	< 50	< 50	< 50	53.1	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	1,125	< 50	< 50	< 50	53.1	N/A

Source: Compiled by LSA Associates, Inc. (2022).

[1] No traffic volumes are reported in the traffic study for the roadway segment.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet
N/A = Not Applicable

Table 4.13.K: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor[1]	Maximum Noise Level (L_{max}) at 50 ft[2]
Backhoe	40	80
Compactor (ground)	20	80
Compressor	40	80
Crane	16	85
Dozer	40	85
Dump Truck	40	84
Excavator	40	85
Flatbed Truck	40	84
Forklift	20	85
Front-End Loader	40	80
Generator	50	82
Grader	40	85
Impact Pile Driver	20	95
Jackhammer	20	85
Paver	50	85
Pickup Truck	40	55
Pneumatic Tools	50	85
Pump	50	77
Rock Drill	20	85
Roller	20	85
Scraper	40	85
Tractor	40	84
Welder	40	73

Source: *FHWA Highway Construction Noise Handbook,* Table 9.1 (FHWA 2006).
Note: The noise levels reported in this table are rounded to the nearest whole number.
[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.
[2] Maximum noise levels were developed based on Spec 721.560 from the CA/T program to be consistent with the City of Boston, Massachusetts, Noise Code for the "Big Dig" project.
CA/T = Central Artery/Tunnel
FHWA = Federal Highway Administration
ft = foot/feet
L_{max} = maximum instantaneous noise level

Table 4.13.L: Summary of Construction Phase, Equipment, and Noise Levels list the anticipated construction equipment for each construction phase based on the CalEEMod results contained in the Sunset Crossroads Project Air Quality Impact Analysis Report[15] in Appendix C of this EIR. **Table 4.13.L** also shows the reference L_{eq} noise level at 50 ft for one piece of equipment based on the reference instantaneous maximum (L_{max}) noise level and the acoustical usage factor. Although multiple pieces of construction equipment would be required for each construction phase, with some involving more than one piece of the same construction equipment, the adjacent land use would be exposed to only one piece of construction equipment at one time because the construction equipment are mobile on the Development Site and certain pieces of construction equipment are used at different stages within the construction phase within different areas of the site. As shown in **Table 4.13.L**, construction noise levels would reach up to 85 dBA L_{max} (82 dBA L_{eq}) at a distance of 50 ft.

15 LSA Associates, Inc. 2023. Sunset Crossroads Project Air Quality Impact Analysis Report. September.

Table 4.13.L: Summary of Construction Phase, Equipment, and Noise Levels

Construction Phase	Construction Equipment	Quantity	Reference Noise Level at 50 ft (dBA L_{max})	Acoustical Usage Factor[1] (%)	Reference Noise Level at 50 ft (dBA L_{eq})
Mass Grading (Phases 1 and 2)	Excavators	2	85	40	81
	Graders	5	85	40	81
	Bulldozers	5	85	40	81
	Scrapers	5	85	40	81
	Front-End Loaders	5	80	40	76
Grading[2]	Excavators	2	85	40	81
	Graders	1	85	40	81
	Bulldozers	1	85	40	81
	Scrapers	2	85	40	81
	Front-End Loaders	2	80	40	76
Sitework-Utilities[2]	Bulldozers	3	85	40	81
	Front-End Loaders	4	80	40	76
Building Construction[3]	Cranes	1	85	16	77
	Forklifts	3	85	20	78
	Generator	1	82	50	79
	Front-End Loaders	3	80	40	76
	Welders	1	73	40	69
Paving[2]	Pavers	2	85	50	82
	Rollers	2	85	20	78
Architectural Coating[3,4]	Air Compressors	1	80	40	76

Source: Compiled by LSA Associates, Inc. (2022).

[1] The acoustical usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

[2] This phase of construction includes the construction of buildings 1 through 10, commercial buildings, and roadway improvements.

[3] This phase of construction includes the construction of buildings 1 through 10, and commercial buildings.

[4] Architectural coating includes tenant finishing.

dBA = A-weighted decibels
ft = foot/feet
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level

Table 4.13.M: Construction Noise Levels shows the calculated interior noise levels generated from Development Project construction activities at the MSJC school and residential buildings adjacent to the Development Site. As shown in **Table 4.13.M**, residential buildings east of the Development Site along Sunset Avenue between Lincoln Street and Westward Avenue and the school building east of the Development Site on the southeast corner of Sunset Avenue and Westward Avenue in the City of Banning would be exposed to interior construction noise levels of 55.7 dBA L_{eq} and 60.4 dBA L_{eq}, respectively, which exceeds the City's interior construction noise standard of 55 dBA for more than 15 minutes per hour. Also, residential buildings south of the Development Site along Bobcat Road in the County of Riverside would be exposed to interior construction noise levels of 56.4 dBA L_{eq}, which exceeds the City's interior construction noise standard of 55 dBA for more than 15 minutes per hour. The City's interior construction noise standard was applied to residences in the County because the County does not have construction noise standards. Therefore, noise generated from Development Project construction activities would be potentially significant at these locations unless mitigation described under **Mitigation Measure NOI-1** is incorporated. All other residential buildings listed in **Table 4.13.M** would not be exposed to interior construction noise levels that exceed the City's interior construction noise standard of 55 dBA for more than 15 minutes per hour. Implementation of **Mitigation Measure NOI-1**, which include the installation of minimum 10 ft high temporary construction barriers when

Table 4.13.M: Construction Noise Levels

Land Use	Jurisdiction	Direction	Reference Noise Level at 50 ft (dBA)		Distance[1] (ft)	Distance Attenuation (dBA)	Shielding (dBA)	Noise Level (dBA L_{eq})	
			L_{max}	L_{eq}				Exterior	Interior[3]
Residential	Banning	East	85	82	58	1.3	5[2]	75.7	55.7
School[4]	Banning	East	85	82	60	1.6	0	80.4	60.4
Residential	Riverside County	Southeast	85	82	365	17.3	0	64.7	44.7
Residential	Riverside County	South	85	82	95	5.6	0	76.4	56.4
Residential	Riverside County	Southwest	85	82	260	14.3	0	67.7	47.7
Residential	Banning	West	85	82	64	2.1	5[2]	74.9	54.9

Source: Compiled by LSA Associates, Inc. (2022).

[1] Distance from Development Project construction boundary to the off-site noise-sensitive building structure.

[2] The backyard of single-family residences has a 6 ft high private property wall that would provide a minimum noise reduction of 5 dBA.

[3] The interior noise level was calculated based on the calculated exterior construction noise level and an exterior-to-interior noise reduction of 20 dBA (FHWA 2011).

[4] Mount San Jacinto College San Gorgonio Pass campus.

dBA = A-weighted decibels ft = foot/feet L_{eq} = equivalent continuous sound level L_{max} = maximum measured sound level

Development Project construction activities are within 100 ft from the nearest residential structure would be necessary to reduce construction noise levels below the City's interior construction noise standard of 55 dBA for more than 15 minutes per hour. A minimum 10 ft high temporary construction barrier at the Development Project construction boundary when Development Project construction activities are within 100 ft from the nearest residential structure would reduce construction noise levels by a minimum of 6 dBA and would reduce construction noise levels to 49.7 dBA L_{eq} (55.7 dBA – 6 dBA = 49.7 dBA), 54.4 dBA L_{eq} (60.4 dBA – 6 dBA = 54.4 dBA), and 50.4 dBA L_{eq} (56.4 dBA – 6 dBA = 50.4 dBA), respectively. Therefore, noise generated from Development Project construction activities would be less than significant with the implementation of **Mitigation Measure NOI-1**.

Operational Traffic Noise Impacts. The FHWA Highway Traffic Noise Prediction Model (FHWA RD-77-108)[16] was used to evaluate traffic-related noise conditions along street segments in the Development Project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resulting noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The Existing (2021), Opening Year (2027), and Horizon Year (2045) ADT volumes were obtained from the Sunset Crossroads Traffic Analysis.[17] The standard vehicle mix for Southern California roadways was used for roadways in the Development Project vicinity under the no project scenario. Under the with project scenarios, the vehicle mix was adjusted based on the project's vehicle mix. **Table 4.13.N** through **Table 4.13.S** list the traffic noise levels for the Existing (2021) Without and With Project Phase 1a, Phase 1b, Phase 1, Phase 1+2, Phase 1+2+3, and Phase 1+2+3+4, respectively. Also, **Table 4.13.T** and **Table 4.13.U** show the Opening Year (2027) and Horizon Year (2045) Without and With Project scenarios, respectively. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels and the model printouts are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in **Appendix I** of this EIR.

16 FHWA. 1977. Highway Traffic Noise Prediction Model, FHWA RD 77-108.

17 Urban Crossroads. 2023. *Sunset Crossroads Traffic Analysis*. City of Banning, California. August 9.

Table 4.13.N: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1a)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	22,550	< 50	88	185	66.3	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	30,650	< 50	107	226	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	34,050	58	121	259	68.9	0.5
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,300	73	140	294	68.5	0.4
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,200	< 50	88	172	64.6	1.1
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	7,950	< 50	< 50	93	61.3	0.0
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,000	< 50	< 50	70	59.6	0.1
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	11,900	< 50	72	148	64.8	0.0
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	13,625	< 50	65	131	64.0	0.1
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	12,700	58	117	250	68.5	5.8
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	9,850	60	128	275	69.8	10.1
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	9,850	59	128	275	70.4	10.1
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	7,700	57	123	265	70.2	14.0
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	650	< 50	< 50	< 50	57.3	9.1
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	500	< 50	< 50	< 50	57.3	9.1

Table 4.13.N: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1a)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	250	< 50	< 50	< 50	49.7	1.5
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	250	< 50	< 50	< 50	49.7	1.5
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,450	< 50	85	166	64.4	0.1
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,550	< 50	91	187	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	13,850	< 50	96	199	66.3	0.0
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,500	< 50	79	159	64.7	0.1
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	8,450	< 50	63	122	62.9	2.1
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	1,450	< 50	< 50	71	59.3	15.1
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	2,650	< 50	< 50	53	59.6	0.4
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	--	--	--	--	--	--
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	--	--	--	--	--	--
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	--	--	--	--	--	--
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	--	--	--	--	--	--

Source: Compiled by LSA Associates, Inc. (2023).
Note: Phase 1a assumes all Phase 1 project traffic would use Westward Avenue only.
[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
WB = westbound

Table 4.13.O: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1b)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	22,550	< 50	88	185	66.3	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	30,650	< 50	107	226	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	33,900	54	111	237	68.4	0.0
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,000	70	133	277	68.1	0.0
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	15,900	< 50	79	149	63.6	0.1
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	7,950	< 50	< 50	93	61.3	0.0
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,000	< 50	< 50	70	59.6	0.1
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	11,900	< 50	72	148	64.8	0.0
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	13,625	< 50	65	131	64.0	0.1
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	13,350	< 50	101	214	67.5	4.8
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	11,125	64	136	293	70.2	10.5
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	11,150	63	136	293	70.8	10.5
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	9,025	62	133	286	70.7	14.5
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	7,650	60	130	279	70.5	22.3
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	7,375	60	128	276	70.4	22.2

Table 4.13.O: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1b)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	7,250	59	126	271	70.3	22.1
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	6,150	55	118	254	69.9	21.7
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,450	< 50	85	166	64.4	0.1
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,550	< 50	91	187	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	13,850	< 50	96	199	66.3	0.0
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,500	< 50	79	159	64.7	0.1
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	7,400	< 50	< 50	91	60.8	0.0
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	150	< 50	< 50	< 50	46.8	2.6
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	2,650	< 50	< 50	53	59.6	0.4
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	1,400	< 50	< 50	92	63.3	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	3,400	< 50	73	156	66.7	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	4,825	< 50	94	202	68.4	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	5,900	< 50	100	215	68.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).
Note: Phase 1b assumes the completion of Bobcat Road and Sunset Avenue, south of Westward Avenue and Phase 1 project traffic would use Bobcat Road and Sunset Avenue only.
[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.P: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	22,550	< 50	88	185	66.3	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	30,650	< 50	107	226	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	34,050	57	117	250	68.7	0.3
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,300	72	139	290	68.5	0.4
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,200	< 50	86	167	64.4	0.9
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	7,950	< 50	< 50	93	61.3	0.0
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,000	< 50	< 50	70	59.6	0.1
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	11,900	< 50	72	148	64.8	0.0
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	13,625	< 50	65	131	64.0	0.1
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	12,700	< 50	98	206	67.2	4.5
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	9,825	61	128	275	69.8	10.1
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	9,850	60	129	278	70.5	10.2
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	7,700	58	124	268	70.2	14.0
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	4,050	< 50	96	207	68.5	20.3
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	3,950	< 50	97	208	68.6	20.4

Table 4.13.P: Existing (2021) Traffic Noise Levels Without and With Project (Phase 1)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	3,800	< 50	95	204	68.5	20.3
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	3,250	< 50	87	187	67.9	19.7
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,450	< 50	85	166	64.4	0.1
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,550	< 50	91	187	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	13,850	< 50	96	199	66.3	0.0
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,500	< 50	79	159	64.7	0.1
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	8,450	< 50	62	118	62.6	1.8
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	1,450	< 50	< 50	69	59.0	14.8
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	2,650	< 50	< 50	53	59.6	0.4
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	750	< 50	< 50	51	59.4	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.Q: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	23,200	< 50	88	184	66.2	0.0
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	31,575	< 50	108	227	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	34,550	59	122	261	69.0	0.6
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,400	72	139	292	68.5	0.4
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,300	< 50	88	171	64.5	1.0
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	8,575	< 50	< 50	98	61.7	0.4
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,300	< 50	< 50	72	59.8	0.3
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	12,550	< 50	73	149	64.9	0.1
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	14,550	< 50	67	136	64.2	0.3
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	17,100	72	150	321	70.1	7.4
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	17,675	103	220	473	73.4	13.7
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	16,350	96	205	442	73.5	13.2
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	8,975	65	140	302	71.0	14.8
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	4,050	< 50	96	207	68.5	20.3
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	3,950	< 50	97	208	68.6	20.4

Table 4.13.Q: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	3,800	< 50	95	204	68.5	20.3
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	3,250	< 50	87	187	67.9	19.7
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,750	< 50	85	165	64.4	0.1
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,900	< 50	92	190	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	14,150	< 50	99	204	66.5	0.2
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,800	< 50	80	161	64.8	0.2
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	9,450	< 50	71	140	63.9	3.1
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	2,750	< 50	< 50	102	62.0	17.8
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	3,450	< 50	< 50	60	60.5	1.3
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	750	< 50	< 50	51	59.4	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.R: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2+3)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	23,250	< 50	88	184	66.2	0.0
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	31,650	< 50	108	228	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	34,700	59	123	262	69.0	0.6
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,600	73	141	296	68.6	0.5
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,500	< 50	90	175	64.7	1.2
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	8,625	< 50	< 50	98	61.7	0.4
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,300	< 50	< 50	72	59.8	0.3
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	12,600	< 50	73	149	64.9	0.1
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	14,625	< 50	80	167	65.6	1.7
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	17,800	72	150	320	70.1	7.4
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	19,075	104	223	480	73.5	13.8
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	17,725	98	210	452	73.7	13.4
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	10,225	68	145	312	71.2	15.0
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	4,050	< 50	96	207	68.5	20.3
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	3,950	< 50	97	208	68.6	20.4

Table 4.13.R: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2+3)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	3,800	< 50	95	204	68.5	20.3
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	3,250	< 50	87	187	67.9	19.7
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,800	< 50	85	164	64.3	0.0
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,900	< 50	92	190	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	14,200	< 50	98	203	66.4	0.1
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,800	< 50	80	161	64.8	0.2
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	9,750	< 50	69	135	63.6	2.8
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	3,050	< 50	< 50	88	60.9	16.7
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	3,550	< 50	< 50	60	60.5	1.3
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	550	< 50	< 50	< 50	58.2	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.S: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2+3+4)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	22,300	< 50	87	182	66.2	23,300	< 50	89	186	66.3	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	30,300	< 50	106	223	67.5	31,750	< 50	107	226	67.6	0.1
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	33,450	54	111	237	68.4	34,800	60	125	268	69.2	0.8
Highland Springs Avenue South of I-10 EB Ramps	41,500	69	132	275	68.1	42,750	74	142	298	68.6	0.5
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	15,400	< 50	78	147	63.5	16,650	< 50	92	180	64.9	1.4
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	7,700	< 50	< 50	93	61.3	8,675	< 50	< 50	98	61.7	0.4
Highland Springs Avenue South of Potrero Boulevard	4,850	< 50	< 50	70	59.5	5,350	< 50	< 50	73	59.9	0.4
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	350	< 50	< 50	< 50	45.8	N/A
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	11,700	< 50	72	148	64.8	12,650	< 50	73	151	64.9	0.1
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	13,275	< 50	64	130	63.9	14,725	< 50	81	169	65.7	1.8
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	9,650	< 50	< 50	105	62.7	18,125	74	155	331	70.3	7.6
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,075	< 50	< 50	59	59.7	20,225	108	232	499	73.7	14.0
Sunset Avenue Between Driveway 19 and Lincoln Street	4,100	< 50	< 50	59	60.3	18,925	103	221	475	74.0	13.7
Sunset Avenue Between Lincoln Street and Westward Avenue	1,575	< 50	< 50	< 50	56.2	10,525	69	147	317	71.3	15.1
Sunset Avenue Between Westward Avenue and Driveway 20	250	< 50	< 50	< 50	48.2	4,050	< 50	95	204	68.5	20.3
Sunset Avenue Between Driveway 20 and Driveway 21	250	< 50	< 50	< 50	48.2	3,950	< 50	97	208	68.6	20.4

Table 4.13.S: Existing (2021) Traffic Noise Levels Without and With Project (Phases 1+2+3+4)

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	250	< 50	< 50	< 50	48.2	3,800	< 50	95	204	68.5	20.3
Sunset Avenue Between Driveway 22 and Bobcat Road	250	< 50	< 50	< 50	48.2	3,250	< 50	87	187	67.9	19.7
6th Street West of Highland Springs Road	18,300	< 50	84	163	64.3	18,800	< 50	85	164	64.3	0.0
Ramsey Street East of Highland Springs Road	16,850	< 50	113	230	66.6	16,850	< 50	113	230	66.6	0.0
Ramsey Street West of Highland Home Road	13,900	< 50	97	201	66.4	13,900	< 50	97	201	66.4	0.0
Ramsey Street East of Highland Home Road	12,450	< 50	91	187	66.0	12,950	< 50	92	190	66.0	0.0
Ramsey Street West of Sunset Avenue	13,750	< 50	97	200	66.3	14,200	< 50	98	203	66.4	0.1
Ramsey Street East of Sunset Avenue	13,100	< 50	78	160	65.2	13,100	< 50	78	160	65.2	0.0
1st Street West of Highland Springs Road	9,350	< 50	78	156	64.6	9,850	< 50	80	160	64.8	0.2
Sun Lakes Boulevard East of Highland Springs Road	7,300	< 50	< 50	91	60.8	10,000	< 50	71	139	63.8	3.0
Sun Lakes Boulevard West of Highland Home Road	150	< 50	< 50	< 50	44.2	3,300	< 50	< 50	94	61.4	17.2
Lincoln Street East of Sunset Avenue	2,300	< 50	< 50	< 50	59.2	3,600	< 50	< 50	61	60.6	1.4
Westward Avenue East of Sunset Avenue	900	< 50	< 50	< 50	53.7	900	< 50	< 50	< 50	53.7	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	750	< 50	< 50	51	59.4	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.T: Opening Year (2027) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	25,150	< 50	94	197	66.7	26,100	< 50	96	201	66.8	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	34,100	57	114	241	68.0	35,550	58	116	246	68.2	0.2
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	37,700	58	120	257	68.9	39,050	64	134	286	69.6	0.7
Highland Springs Avenue South of I-10 EB Ramps	46,750	74	142	298	68.6	48,000	79	154	323	69.2	0.6
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	17,350	< 50	83	158	64.0	18,600	< 50	96	189	65.2	1.2
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	8,700	< 50	< 50	100	61.8	9,650	< 50	< 50	103	62.0	0.2
Highland Springs Avenue South of Potrero Boulevard	5,450	< 50	< 50	75	60.1	5,950	< 50	< 50	78	60.3	0.2
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	350	< 50	< 50	< 50	45.8	N/A
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	150	< 50	< 50	< 50	44.3	150	< 50	< 50	< 50	47.3	3.0
Sunset Avenue North of Ramsey Street	13,150	< 50	77	160	65.3	14,100	< 50	78	163	65.4	0.1
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	14,950	< 50	69	140	64.4	16,400	< 50	85	178	66.0	1.6
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	10,850	< 50	56	114	63.3	19,650	77	160	343	70.5	7.2
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,475	< 50	< 50	63	60.1	20,625	109	233	501	73.7	13.6
Sunset Avenue Between Driveway 19 and Lincoln Street	4,475	< 50	< 50	62	60.7	19,275	102	220	473	73.9	13.2
Sunset Avenue Between Lincoln Street and Westward Avenue	1,800	< 50	< 50	< 50	56.7	10,750	69	148	319	71.4	14.7
Sunset Avenue Between Westward Avenue and Driveway 20	475	< 50	< 50	< 50	51.0	4,275	< 50	96	206	68.5	17.5
Sunset Avenue Between Driveway 20 and Driveway 21	650	< 50	< 50	< 50	52.3	2,850	< 50	73	157	66.8	14.5

Table 4.13.T: Opening Year (2027) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	650	< 50	< 50	< 50	52.3	4,200	< 50	96	205	68.5	16.2
Sunset Avenue Between Driveway 22 and Bobcat Road	475	< 50	< 50	< 50	51.0	3,425	< 50	87	186	67.9	16.9
6th Street West of Highland Springs Road	20,650	< 50	90	176	64.8	21,100	< 50	90	176	64.8	0.0
Ramsey Street East of Highland Springs Road	19,000	67	121	248	67.1	19,000	67	121	248	67.1	0.0
Ramsey Street West of Highland Home Road	15,650	< 50	104	217	66.9	15,650	< 50	104	217	66.9	0.0
Ramsey Street East of Highland Home Road	14,000	< 50	98	202	66.5	14,500	< 50	99	205	66.5	0.0
Ramsey Street West of Sunset Avenue	15,450	< 50	104	216	66.8	15,950	< 50	105	219	66.9	0.1
Ramsey Street East of Sunset Avenue	14,750	< 50	83	172	65.7	14,750	< 50	83	172	65.7	0.0
1st Street West of Highland Springs Road	10,550	< 50	83	169	65.1	11,000	< 50	85	172	65.3	0.2
Sun Lakes Boulevard East of Highland Springs Road	8,200	< 50	< 50	98	61.3	10,900	< 50	73	145	64.1	2.8
Sun Lakes Boulevard West of Highland Home Road	900	< 50	< 50	< 50	52.0	4,050	< 50	< 50	99	61.7	9.7
Lincoln Street East of Sunset Avenue	2,550	< 50	< 50	53	59.7	3,900	< 50	< 50	63	60.8	1.1
Westward Avenue East of Sunset Avenue	1,000	< 50	< 50	< 50	54.2	1,000	< 50	< 50	< 50	54.2	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	750	< 50	< 50	51	59.4	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

Table 4.13.U: Horizon Year (2045) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Highland Springs Avenue North of 6th Street/Ramsey Street	25,150	< 50	94	197	66.7	26,100	< 50	96	201	66.8	0.1
Highland Springs Avenue Between 6th Street/Ramsey Street and I-10 WB Ramps	34,100	57	114	241	68.0	35,550	58	116	246	68.2	0.2
Highland Springs Avenue Between I-10 WB Ramps and I-10 EB Ramps	37,700	58	120	257	68.9	39,050	64	134	286	69.6	0.7
Highland Springs Avenue South of I-10 EB Ramps	46,750	74	142	298	68.6	48,000	79	154	323	69.2	0.6
Highland Springs Avenue North of 1st Street/Sun Lakes Boulevard	17,400	< 50	83	159	64.0	18,650	< 50	97	192	65.3	1.3
Highland Springs Avenue Between 1st Street/Sun Lakes Boulevard and Potrero Boulevard	10,850	< 50	59	115	62.8	11,800	< 50	61	120	63.1	0.3
Highland Springs Avenue South of Potrero Boulevard	10,300	< 50	56	110	62.8	10,750	< 50	56	111	62.8	0.0
Highland Home Road Between Driveway 1 and Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	350	< 50	< 50	< 50	45.8	N/A
Highland Home Road South of Sun Lakes Boulevard/Westward Avenue	--[1]	--	--	--	--	--	--	--	--	--	--
Sunset Avenue North of Ramsey Street	13,150	< 50	77	160	65.3	14,100	< 50	78	163	65.4	0.1
Sunset Avenue Between Ramsey Street and I-10 WB Ramps	15,850	< 50	71	146	64.7	17,250	< 50	88	185	66.3	1.6
Sunset Avenue Between I-10 WB Ramps and I-10 EB Ramps	10,850	< 50	56	114	63.3	19,650	77	160	343	70.5	7.2
Sunset Avenue Between I-10 EB Ramps and Driveway 19	4,950	< 50	< 50	67	60.6	21,100	109	235	505	73.8	13.2
Sunset Avenue Between Driveway 19 and Lincoln Street	4,950	< 50	< 50	67	61.1	19,775	103	222	477	74.0	12.9
Sunset Avenue Between Lincoln Street and Westward Avenue	4,700	< 50	< 50	64	60.9	13,650	71	153	329	71.6	10.7
Sunset Avenue Between Westward Avenue and Driveway 20	1,850	< 50	< 50	< 50	56.9	5,650	< 50	98	211	68.7	11.8
Sunset Avenue Between Driveway 20 and Driveway 21	1,850	< 50	< 50	< 50	56.9	5,500	< 50	98	211	68.7	11.8

Table 4.13.U: Horizon Year (2045) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Sunset Avenue Between Driveway 21 and Driveway 22	1,850	< 50	< 50	< 50	56.9	5,350	< 50	97	209	68.6	11.7
Sunset Avenue Between Driveway 22 and Bobcat Road	1,075	< 50	< 50	< 50	54.5	4,025	< 50	88	189	68.0	13.5
6th Street West of Highland Springs Road	20,650	< 50	90	176	64.8	21,100	< 50	90	176	64.8	0.0
Ramsey Street East of Highland Springs Road	19,000	67	121	248	67.1	19,000	67	121	248	67.1	0.0
Ramsey Street West of Highland Home Road	16,300	< 50	107	223	67.1	16,300	< 50	107	223	67.1	0.0
Ramsey Street East of Highland Home Road	15,200	< 50	103	213	66.8	15,700	< 50	103	215	66.9	0.1
Ramsey Street West of Sunset Avenue	15,450	< 50	104	216	66.8	15,950	< 50	105	219	66.9	0.1
Ramsey Street East of Sunset Avenue	14,750	< 50	83	172	65.7	14,750	< 50	83	172	65.7	0.0
1st Street West of Highland Springs Road	10,550	< 50	83	169	65.1	11,000	< 50	85	172	65.3	0.2
Sun Lakes Boulevard East of Highland Springs Road	8,200	< 50	< 50	98	61.3	10,900	< 50	73	145	64.1	2.8
Sun Lakes Boulevard West of Highland Home Road	3,150	< 50	< 50	< 50	57.4	6,300	< 50	58	114	62.7	5.3
Lincoln Street East of Sunset Avenue	2,550	< 50	< 50	53	59.7	3,900	< 50	< 50	63	60.8	1.1
Westward Avenue East of Sunset Avenue	1,850	< 50	< 50	< 50	56.9	1,850	< 50	< 50	< 50	56.9	0.0
Bobcat Road Between Driveway 5 and Driveway 8	--[1]	--	--	--	--	750	< 50	< 50	51	59.4	N/A
Bobcat Road Between Driveway 8 and Driveway 12	--[1]	--	--	--	--	1,700	< 50	< 50	104	64.1	N/A
Bobcat Road Between Driveway 12 and Driveway 18	--[1]	--	--	--	--	2,450	< 50	67	143	66.2	N/A
Bobcat Road Between Driveway 18 and Sunset Avenue	--[1]	--	--	--	--	3,000	< 50	73	157	66.8	N/A

Source: Compiled by LSA Associates, Inc. (2023).

[1] Roadway segments either do not exist under this scenario or no traffic volumes are reported in the traffic study.

ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
EB = eastbound
ft = foot/feet
I-10 = Interstate 10
N/A = Not Applicable
WB = westbound

The following is a summary of the Existing (2021), Opening Year (2027), and Horizon Year (2045) traffic noise analysis results.

Existing (2021) Traffic Noise Levels. As shown in **Tables 4.13.N through 4.13.S**, the existing (2021) traffic noise conditions with Phases 1a, 1b, 1, 1+2, 1+2+3, and 1+2+3+4 would result in a project-related traffic noise increase of up to 3.0 dBA along Highland Home Road where noise-sensitive land uses are present, 22.3 dBA along Sunset Avenue where noise-sensitive land uses are present, and 17.8 dBA along Sun Lakes Boulevard where noise-sensitive land uses are present. The following is a detailed discussion of the specific roadway segments where potential impacts may occur at noise-sensitive land uses:

- **Highland Home Road South of Sun Lakes Boulevard/Westward Avenue.** Noise-sensitive land uses in this area include residences located along the west side of Highland Home Road south of Sun Lakes Boulevard/Westward Avenue. Residences are located approximately 20 ft from Highland Home Road centerline and would be exposed to traffic noise levels of 54.0 dBA CNEL. Although project-related traffic could increase ambient noise levels by 3 dBA, the existing (2021) with Development Project traffic noise levels would not exceed the City's noise standard of 65 dBA CNEL. Therefore, the Development Project would have a less than significant impact on off-site noise-sensitive land uses.

- **Sunset Avenue between the I-10 Westbound Ramps and Bobcat Road.** Noise-sensitive land uses in this area include residences located along the east side of Sunset Avenue between Lincoln Street and Westward Avenue and the MSJC campus located on the southeast corner of Sunset Avenue and Westward Avenue. Residences are located approximately 35 ft from Sunset Avenue centerline and would be exposed to traffic noise levels of up to 74.3 dBA CNEL without the existing 5 ft to 7.5 ft high private property walls. The existing 5 to 7.5 ft high private property wall along Sunset Avenue would provide a noise reduction of 5 to 8 dBA, which would reduce traffic noise levels to 69.3 and 66.3 dBA CNEL, respectively. Therefore, the Development Project would have a significant impact on off-site residential uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the existing (2021) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

  For the MSJC campus, the school is located approximately 75 ft from Sunset Avenue centerline and would be exposed to a traffic noise level of up to 68.6 dBA CNEL. Therefore, the Development Project would have a significant impact on off-site noise-sensitive land uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the existing (2021) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

- **Sun Lakes Boulevard East of Highland Springs Road.** Noise-sensitive land uses in this area include residences located along the north and south side of Sun Lakes Boulevard east of Highland Springs Road. Residences are located approximately 50 ft from Sun Lakes Boulevard centerline and would be exposed to traffic noise levels of 64.2 dBA CNEL without the existing 5 ft high private property walls. The existing 5 ft high private property wall along Sun Lakes Boulevard would provide a noise reduction of 5 dBA, which would reduce traffic noise levels to 59.6 dBA CNEL. Although project-related traffic could increase ambient noise levels by 3

dBA or more, the existing (2021) with project traffic noise levels would not exceed the City's noise standard of 65 dBA CNEL. Therefore, the Development Project would have a less than significant impact on off-site noise-sensitive land uses.

Opening Year (2027) Traffic Noise Levels. As shown in Table 4.13.T, the Opening Year (2027) with project traffic noise conditions would result in a project-related traffic noise increase of up to 3.0 dBA along Highland Home Road where noise-sensitive land uses are present, 17.5 dBA along Sunset Avenue where noise-sensitive land uses are present, and 9.7 dBA along Sun Lakes Boulevard where noise-sensitive land uses are present. The following is a detailed discussion of the specific roadway segments where potential impacts may occur at noise-sensitive land uses:

- **Highland Home Road South of Sun Lakes Boulevard/Westward Avenue.** Noise-sensitive land uses in this area include residences located along the west side of Highland Home Road south of Sun Lakes Boulevard/Westward Avenue. Residences are located approximately 20 ft from Highland Home Road centerline and would be exposed to traffic noise levels of 54.0 dBA CNEL. Although project-related traffic could increase ambient noise levels by 3 dBA, the Opening Year (2027) with project traffic noise levels would not exceed the City's noise standard of 65 dBA CNEL. Therefore, the Development Project would have a less than significant impact on off-site noise-sensitive land uses.

- **Sunset Avenue between the I-10 Westbound Ramps and Bobcat Road.** Noise-sensitive land uses in this area include residences located along the east side of Sunset Avenue between Lincoln Street and Westward Avenue and the MSJC campus located on the southeast corner of Sunset Avenue and Westward Avenue. Residences are located approximately 35 ft from Sunset Avenue centerline and would be exposed to traffic noise levels of 74.3 dBA CNEL without the existing 5 ft to 7.5 ft high private property walls. The existing 5 to 7.5 ft high private property wall along Sunset Avenue would provide a noise reduction of 5 to 8 dBA, which would reduce traffic noise levels to 69.3 and 66.3 dBA CNEL, respectively. Therefore, the Development Project would have a significant impact on off-site residential uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the Opening Year (2027) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

  For the MSJC campus, the school is located approximately 75 ft from Sunset Avenue centerline and would be exposed to a traffic noise level of 65.9 dBA CNEL. Therefore, the Development Project would have a significant impact on off-site noise-sensitive land uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the Opening Year (2027) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

- **Sun Lakes Boulevard West of Highland Home Road.** Noise-sensitive land uses in this area include residences located along the north and south side of Sun Lakes Boulevard west of Highland Home Road. Residences are located approximately 50 ft from Sun Lakes Boulevard centerline and would be exposed to traffic noise levels of 64.2 dBA CNEL without the existing 5 ft high private property walls. The existing 5 ft high private property wall along Sun Lakes Boulevard would provide a noise reduction of 5 dBA, which would reduce traffic noise levels

to 59.2 dBA CNEL. Although project-related traffic could increase ambient noise levels by 3 dBA or more, the Opening Year (2027) with project traffic noise levels would not exceed the City's noise standard of 65 dBA CNEL. Therefore, the Development Project would have a less than significant impact on off-site noise-sensitive land uses.

Horizon Year (2045) Traffic Noise Levels. As shown in Table 4.13.U, the Horizon Year (2045) with project traffic noise conditions would result in a project-related traffic noise increase of up to 11.8 dBA along Sunset Avenue where noise-sensitive land uses are present, and 5.3 dBA along Sun Lakes Boulevard where noise-sensitive land uses are present. The following is a detailed discussion of the specific roadway segments where potential impacts may occur at noise-sensitive land uses:

- **Sunset Avenue between the I-10 Westbound Ramps and Bobcat Road.** Noise-sensitive land uses in this area include residences located along the east side of Sunset Avenue between Lincoln Street and Westward Avenue and the MSJC campus located on the southeast corner of Sunset Avenue and Westward Avenue. Residences are located approximately 35 ft from Sunset Avenue centerline and would be exposed to traffic noise levels of 74.6 dBA CNEL without the existing 5 ft to 7.5 ft high private property walls. The existing 5 to 7.5 ft high private property wall along Sunset Avenue would provide a noise reduction of 5 to 8 dBA, which would reduce traffic noise levels to 69.6 and 66.6 dBA CNEL, respectively. Therefore, the Development Project would have a significant impact on off-site residential uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the Horizon Year (2045) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

  For the MSJC campus, the school is located approximately 75 ft from Sunset Avenue centerline and would be exposed to a traffic noise level of 66.7 dBA CNEL. Therefore, the Development Project would have a significant impact on off-site noise-sensitive land uses because project-related traffic would increase ambient noise levels by 3 dBA or more and the Horizon Year (2045) with project traffic noise levels would exceed the City's noise standard of 65 dBA CNEL.

- **Sun Lakes Boulevard West of Highland Home Road.** Noise-sensitive land uses in this area include residences located along the north and south side of Sun Lakes Boulevard west of Highland Home Road. Residences are located approximately 50 ft from Sun Lakes Boulevard centerline and would be exposed to traffic noise levels of 66.0 dBA CNEL without the existing 5 ft high private property walls. The existing 5 ft high private property wall along Sun Lakes Boulevard would provide a noise reduction of 5 dBA, which would reduce traffic noise levels to 61.0 dBA CNEL. Although project-related traffic could increase ambient noise levels by 3 dBA or more, the Horizon Year (2045) with project traffic noise levels would not exceed the City's noise standard of 65 dBA CNEL. Therefore, the Development Project would have a less than significant impact on off-site noise-sensitive land uses.

For the residences located along Sunset Avenue between Lincoln Street and south of Westward Avenue, additional off-site noise barriers would not be feasible because there are already walls in place and additional heights to those walls would provide minimal noise reduction and would not

achieve the noise level reduction needed to reduce impacts to less than significant. Also, obtaining consent from all property owners to construct off-site noise barriers would not be possible because the viewpoints of property owners would differ. Classroom buildings at the MSJC campus located along Sunset Avenue south of Westward Avenue are also sensitive receptors and would experience potentially significant noise impacts from traffic noise. Construction of a minimum 6 ft high wall adjacent to the existing school buildings along the Sunset Avenue frontage (see **Mitigation Measure NOI-2**) would provide a 5 dBA CNEL noise reduction, reducing traffic noise levels to below the City's noise standard of 65 dBA CNE and therefore less than significant. However, because construction of the wall would require approval of the property owner, which is outside of the control of the Development Project and the City, and because there is uncertainty if the wall could be constructed, the off-site traffic noise impact remains significant. In addition, rubberized asphalt could be installed but it is not an effective long-term mitigation measure because it degrades over time. Therefore, off-site traffic noise impacts from operation of the Development Project would be significant and unavoidable because the Development Project would result in a substantial permanent increase in ambient noise levels and traffic noise levels would exceed the City's exterior noise standard of 65 dBA CNEL along Sunset Avenue between Lincoln Street and south of Westward Avenue.

Operational Stationary Source Noise Impacts. Truck delivery and truck loading and unloading activities; heating, ventilation, refrigeration equipment, and air conditioning (HVAC) equipment; drive-through speakerphones; parking lot activities, fueling activities, and outdoor eating activities associated with the Development Project could affect the existing off-site sensitive land uses. The following provides a detailed noise analysis and discussion of each stationary noise source at the closest residences and MSJC school in the project vicinity:

- **Truck Delivery and Truck Loading/Unloading Activities:** Truck delivery and truck loading/ unloading activities for the Development Project would occur at the loading docks of the warehouse buildings and at the commercial areas near the retail/restaurant buildings, hotel, and fueling station. These loading docks would be located on one side or both sides of each building and noise-sensitive receptors are predominately shielded by the proposed warehouse building itself. Truck delivery and truck loading/unloading activities at the commercial areas would occur near each of the buildings and near the underground storage tanks for the fueling station. Noise levels generated from these activities include truck movement, backup alarms, air brakes, idling, and loading/unloading activities. The maximum noise level generated from these activities is 75 dBA L_{max} at 50 ft. Although a typical truck loading/unloading process takes an average of 15 to 20 minutes, this maximum noise level occurs in a much shorter period of time (less than 5 minutes). Also, it is estimated that all 10 warehouse buildings would have a maximum of 15 truck deliveries per hour during daytime hours (7:00 a.m. to 10:00 p.m.) and 11 truck deliveries per hour during nighttime hours (10:00 p.m. to 7:00 a.m.) for each side of the warehouse buildings where there are truck loading docks based on the project trip generation in the Sunset Crossroads Traffic Analysis (Urban Crossroads 2021). Assuming each truck delivery and truck loading/unloading would generate the maximum noise level of 75 dBA L_{max} at 50 ft for up to 5 minutes, truck delivery and truck loading/unloading activities would generate a noise level of 76.0 dBA at 50 ft during daytime hours and 74.6 dBA L_{eq} at 50 ft during nighttime hours at each side of the proposed warehouse buildings where there are truck loading docks.

- **HVAC Equipment:** The Development Project would include rooftop HVAC units for the office portion of the warehouse buildings and commercial buildings (retail/restaurant and hotel). The HVAC units could potentially operate 24 hours per day. One rooftop HVAC equipment would generate noise levels of 66.6 dBA L_{eq} at 5 ft.

- **Refrigeration Equipment:** The proposed Development Project would include refrigeration equipment for the proposed cold storage building in the proximity of buildings 5 and 6, which would consist of evaporator coils, 2 gas coolers, and 4 carbon dioxide (CO_2) packages on the rooftop of the cold storage building. The evaporator coils would be within the building's interior and would not generate noise at the exterior of the proposed cold storage building. Each gas cooler and CO_2 package would generate a noise level of 80 dBA and 64 dBA, respectively, at a distance of 50 ft[18].

- **Speakerphone Noise:** The Development Project would include two fast-food restaurants, each with a drive-through speakerphone that is part of the menu board. It is assumed that the two fast-food restaurants would operate during both daytime and nighttime hours. Noise generated from each speakerphone is approximately 84 dBA at 1 ft, which is equivalent to 50 dBA L_{eq} at 50 ft.

- **Parking Activities:** The Development Project would include surface parking for automobiles and truck parking. Parking activities would include noise generated by vehicles traveling at slow speeds, engine start-up noise, car door slams, car horns, car alarms, and tire squeals. In addition, noise generated from truck parking would include backup alarms and air brakes. Representative parking activities would generate approximately 70 dBA L_{max} at 50 ft.

  For the proposed warehouses, automobile and truck parking activities would be located near the proposed warehouse buildings and would generate the maximum noise level for a cumulative period of 10 minutes and 5 minutes in any hour during daytime and nighttime hours, respectively. Based on the assumptions above, automobile and truck parking activities would generate noise levels of 62.2 dBA Leq and 59.2 dBA Leq at 50 ft during daytime and nighttime hours, respectively.

  For the proposed trailer storage and RV storage, truck parking activities would generate the maximum noise level for a cumulative period of 10 minutes in any hour during daytime hours. Based on the assumptions above, truck parking activities would generate a noise level of 62.2 dBA Leq at 50 ft during daytime hours. The trailer storage and RV storage would be closed during nighttime hours and would not generate any noise during nighttime hours.

  For the proposed hotel and retail/restaurant uses, automobile parking activities would generate the maximum noise level for a cumulative period of 15 minutes and 5 minutes in any hour during daytime and nighttime hours, respectively. Based on the assumptions above, automobile parking activities would generate noise levels of 64.0 dBA Leq and 59.2 dBA Leq at 50 ft during daytime and nighttime hours, respectively.

  In addition, truck parking activities would generate the maximum noise level for a cumulative period of 25 minutes and 20 minutes in any hour during daytime and nighttime hours, respectively. Based on the assumptions above, automobile parking activities would generate

[18] LSA Associates, Inc. 2022. *Noise and Vibration Impact Analysis Report for the GTA Cold Storage Project*. December.

noise levels of 66.2 dBA Leq and 65.2 dBA Leq at 50 ft during daytime and nighttime hours, respectively.

- **Fueling Activities:** The Development Project would include a gas station for automobiles and trucks at the northeastern corner of the Development Site. Fueling activities would potentially include engine start-up noise, car door slams, back-up alarms, and tire squeals, which would generate noise levels of approximately 70 dBA L_{max} at a distance of 50 ft. It is estimated that automobile fueling activities would generate the maximum noise level for a cumulative period of 15 and 10 minutes in any hour during daytime and nighttime hours, respectively. Based on the assumptions above, automobile fueling activities would generate noise levels of 64.0 dBA L_{eq} and 62.2 dBA L_{eq} at a distance of 50 ft during daytime and nighttime hours, respectively. In addition, it is estimated that truck fueling activities would generate the maximum noise level for a cumulative period of 20 and 15 minutes in any hour during daytime and nighttime hours, respectively. Based on the assumptions above, truck fueling activities would generate noise levels of 65.2 dBA L_{eq} and 64.0 dBA L_{eq} at a distance of 50 ft during daytime and nighttime hours, respectively.

- **Outdoor Eating Activities:** The Development Project would include restaurants with outdoor eating areas. Noise levels generated from people talking is approximately 65 dBA L_{eq} at a distance of 3 ft when people talk continuously for one hour. With approximately 50 people talking continuously at each outdoor eating area at a distance of 50 ft, noise levels would be 57.6 dBA L_{eq}.

Table 4.13.V: Operational Noise Levels shows the combined calculated daytime and nighttime noise levels at the closest residences and MSJC property lines surrounding the Development Site using SoundPLAN from the individual stationary noise sources discussed above, which include truck delivery and truck loading/unloading activities, HVAC equipment, refrigeration equipment, drive-through speakerphones, parking activities, fueling activities, and outdoor eating activities. The modeled receptor locations are shown in **Figure 4.13-2: Modeled Receptor Locations**, and the SoundPLAN printouts are provided in the Sunset Crossroads Project Noise and Vibration Impact Analysis Report in Appendix I of this EIR.

As shown in **Table 4.13.V**, noise levels generated from project operations would not exceed the City's exterior daytime noise standard of 55 dBA L_{eq} for residences and the MSJC campus located in the City. The school property line was evaluated using the City's noise standards for residences for a conservative analysis because the City does not have noise standards for schools. Also, noise levels generated from project operations would not exceed the City's exterior nighttime noise standard of 45 dBA L_{eq} for residences located in the City except for residences represented by Receptors R-1 through R-6 and the school represented by Receptor R-7. The Development Project would increase ambient noise levels by up to 1.1 dBA at residences represented by Receptors R-1 through R-6 and the school represented by Receptor R-7. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, noise levels generated from project operations at these receptors would be less than significant.

Table 4.13.V: Operational Noise Levels

Receptor No.	Jurisdiction	Land Use	Direction	Project Generated Noise Level[1] (dBA L_{eq})		Noise Standard (dBA)		Exceed Noise Standard?		Average Ambient Noise Level (dBA L_{eq})		Ambient Noise Level Increase (dBA)	
				Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R-1	Banning	Residence	East	53.3	52.8	55	45	No	Yes	65.0	58.0	1.3	1.1
R-2	Banning	Residence	East	48.3	47.7	55	45	No	Yes	65.0	58.0	0.4	0.4
R-3	Banning	Residence	East	51.5	51.3	55	45	No	Yes	65.0	58.0	0.9	0.8
R-4	Banning	Residence	East	50.9	50.6	55	45	No	Yes	65.0	58.0	0.8	0.7
R-5	Banning	Residence	East	50.1	50.9	55	45	No	Yes	65.0	58.0	0.7	0.8
R-6	Banning	Residence	East	49.5	51.2	55	45	No	Yes	65.0	58.0	0.6	0.8
R-7	Banning	School[2]	East	49.8	52.0	55	45	No	Yes	65.0	58.0	0.6	1.0
R-8	County[3]	Residence	Southeast	44.9	45.9	65[4]	45[4]	No	Yes	60.7	45.9	2.5	3.0
R-9	County[3]	Residence	South	44.6	43.7	65[4]	45[4]	No	No	60.7	45.9	2.4	2.0
R-10	County[3]	Residence	South	46.0	45.7	65[4]	45[4]	No	Yes	60.7	45.9	3.1	2.9
R-11	County[3]	Residence	South	47.2	47.1	65[4]	45[4]	No	Yes	60.7	45.9	3.7	3.7
R-12	County[3]	Residence	South	47.3	47.8	65[4]	45[4]	No	Yes	60.7	45.9	3.8	4.1
R-13	County[3]	Residence	Southwest	43.7	44.3	65[4]	45[4]	No	No	60.5	52.9	0.5	0.6
R-14	County[3]	Residence	Southwest	45.1	45.0	65[4]	45[4]	No	No	60.5	52.9	0.7	0.7
R-15	Banning	Residence	West	43.5	43.0	55	45	No	No	60.5	52.9	0.5	0.4
R-16	Banning	Residence	West	43.0	42.1	55	45	No	No	60.5	52.9	0.4	0.3
R-17	Banning	Residence	West	42.8	41.5	55	45	No	No	60.5	52.9	0.4	0.3
R-18	Banning	Residence	West	42.3	41.1	55	45	No	No	55.9	54.9	0.2	0.2
R-19	Banning	Residence	West	42.1	40.8	55	45	No	No	55.9	54.9	0.2	0.2

Source: Compiled by LSA Associates, Inc. (2023).

[1] Noise level at the property line.

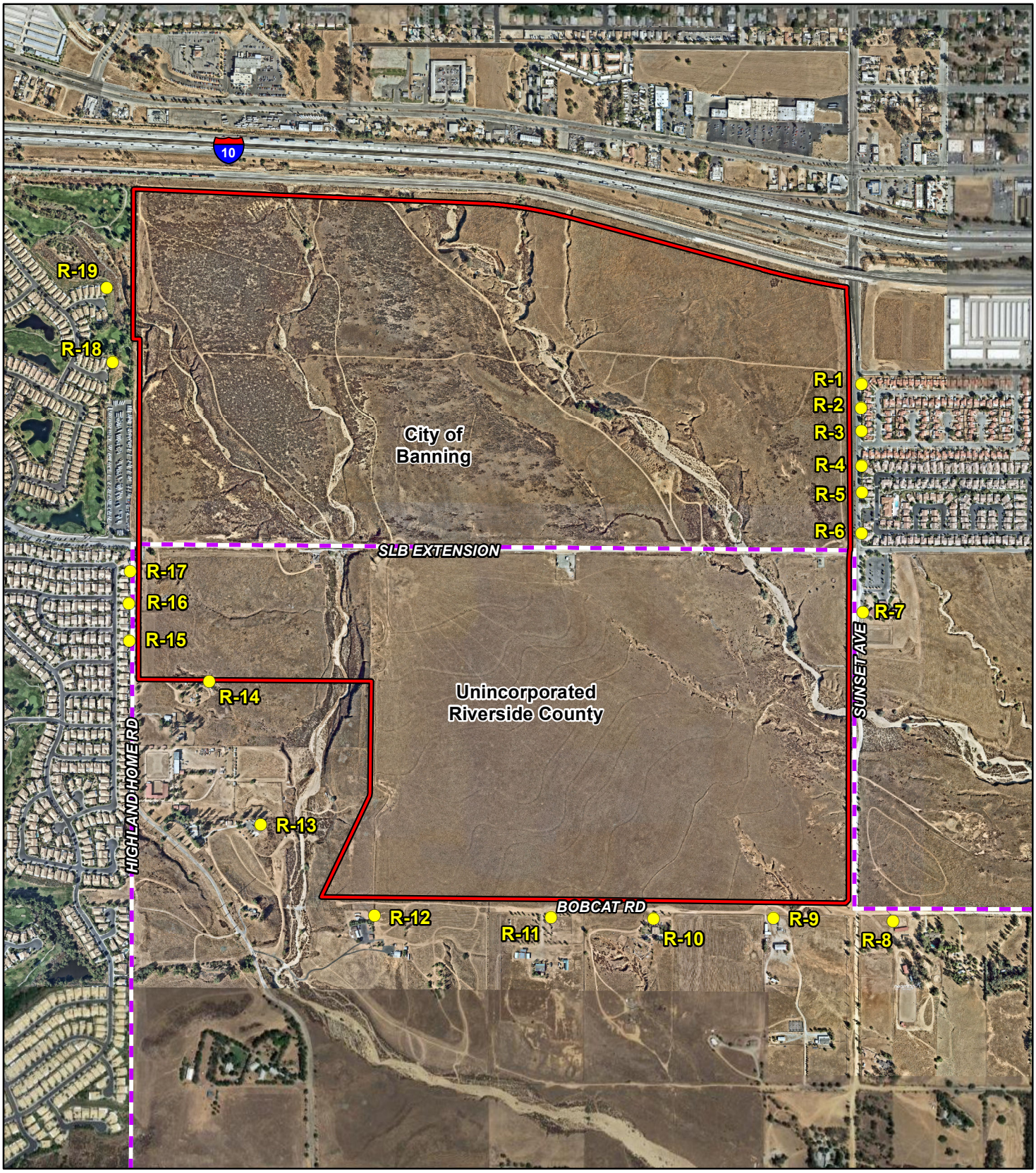
[2] Mount San Jacinto College San Gorgonio Pass campus.

[3] Riverside County.

[4] 10-minute L_{eq} noise standard.

dBA = A-weighted decibels

L_{eq} = equivalent continuous sound level



LSA

LEGEND

Project Location

City Boundary

Modeled Receptor Locations

0 500 1000

FEET

FIGURE 4.13-2

Sunset Crossroads

Modeled Receptor Locations

SOURCE: Nearmap Imagery (10/12/2020); Google (2022)

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Also, the maximum instantaneous noise levels generated from operations of the Development Project would not exceed the City's daytime and nighttime maximum noise standards of 75 dBA and 65 dBA, respectively, for any period of time because residences and the school in the City are located 160 ft or more from noise sources that generate maximum instantaneous noise levels, such as truck delivery and truck loading/unloading activities, speakerphones, parking activities, and fueling activities.

In addition, as shown in **Table 4.13.V**, noise levels generated from operations of the Development Project would not exceed the County's exterior daytime 10-minute noise standard of 65 dBA L_{eq} for residences located in the unincorporated County. Also, noise levels generated from operations of the Development Project would not exceed the County's exterior nighttime 10-minute noise standard of 45 dBA L_{eq} for residences located in the unincorporated County except for residences represented by Receptors R-8, R-10, R-11, and R-12, which would exceed the County's exterior nighttime 10-minute noise standard of 45 dBA L_{eq}. The Development Project would increase ambient noise levels by up to 2.9 dBA at the residence represented by Receptor R-10. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, noise levels at these receptors would be less than significant. However, the Development Project would increase ambient noise levels by up to 4.1 dBA for residences represented by Receptors R-8, R-11, and R-12. Therefore, noise generated from operations of the Development Project would be significant. As the Development Project and residences at Receptors R-8, R-11, and R-12 have driveway access onto Bobcat Road, mitigation measures such as noise barriers would not be feasible because they would not be effective. Therefore, noise impacts from operations of the Development Project would be significant and unavoidable.

Level of Significance Prior to Mitigation: Project construction activities and operations of the Development Project from traffic noise and stationary noise would be Potentially Significant Impacts.

Regulatory Compliance Measures and Mitigation Measures: The following **Mitigation Measure NOI-1** is required:

Mitigation Measure NOI-1 The construction contractor shall limit construction activities to between the hours of 7:00 a.m. and 6:00 p.m.

During grading, site work, paving and utility construction, the construction contractor shall install a minimum 10 ft high temporary construction barrier along the eastern construction boundary to shield residences along Sunset Avenue between Lincoln Street and Westward Avenue, along the southern construction boundary to shield residences along Bobcat Road, and along the eastern construction boundary to shield the school located at the southeast corner of Sunset Avenue and Westward Avenue when project construction activities are within 100 ft from the nearest residential structure to that activity. The temporary construction barrier may be any material that has a minimum Sound Transmission Class (STC) rating of 28. For off-site construction, including for construction of the roadway and utilities, on Sunset Boulevard, the City will

determine whether the noise barrier can be constructed on City right of way without impacting roadway access and the construction contractor shall install such barrier on City-owned property provided that such roadway access can be maintained during construction.

During all Development Site excavation and grading, the Development Project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.

The construction contractor shall locate equipment staging in areas that will create the greatest feasible distance between construction-related noise sources and noise-sensitive receptors nearest the Development Site during all project construction.

The construction contractor shall place all stationary construction equipment so that the emitted noise is directed away from the sensitive receptors nearest the Development Site.

Mitigation Measure NOI-2 A minimum barrier height of 6 ft along the east side of Sunset Avenue south of Westward Avenue adjacent to existing school buildings at the MSJC school to reduce traffic noise levels for these sensitive receptors to the City's noise standard of 65 dBA CNEL or below.

Level of Significance After Mitigation: Noise generated by project construction equipment activities would be reduced to a less than significant level with the implementation of the **Mitigation Measure NOI-1**. However, because it is yet to be determined if a noise barrier can be constructed on City right-of-way, construction noise impacts for construction of the roadway and utilities on Sunset Boulevard would be considered significant and unavoidable.

For the residences located along Sunset Avenue between Lincoln Street and Westward Avenue, additional off-site noise barriers would not be feasible because there are already walls in place and additional heights to those walls would provide minimal noise reduction and would not achieve the noise level reduction needed to reduce impacts to less than significant. Also, obtaining consent from all property owners to construct off-site noise barriers would not be possible because the viewpoints of property owners would differ. Off-site traffic noise impacts at the MSJC school would be reduced to a less than significant level with the implementation of **Mitigation Measure NOI-2.** However, traffic noise impacts would remain significant because the construction of the wall would require approval of the property owner, which is outside of the control of the Development Project and the City, and therefore it is uncertain whether the wall would be constructed. Rubberized asphalt could be installed but it is not an effective long-term mitigation measure because it degrades over time. Therefore, off-site traffic noise impacts from operation of the Development Project would be significant and unavoidable.

In addition, stationary noise from operation of the Development Project would be Significant and Unavoidable because the project would have driveway access onto Bobcat Road and mitigation measures such as noise barriers would not be feasible.

4.13.6.2 Ground-Borne Vibration and Ground-Borne Noise

Threshold 4.13.2: Would the Development Project generate excessive ground-borne vibration or ground-borne noise levels?

Vibration levels calculated in RMS velocity are best for characterizing human response to building vibration, whereas vibration levels in PPV are best for characterizing damage potential. This construction vibration impact analysis discusses the level of human annoyance using vibration levels in VdB, which uses an RMS velocity, and assesses the potential for building damage using vibration levels in PPV (in/sec), which uses peak vibration velocity.

Table 4.13.W: Vibration Source Amplitudes for Construction Equipment shows the reference vibration levels at a distance of 25 ft for each type of standard construction equipment from the Transit Noise and Vibration Impact Assessment Manual.[19] Outdoor site preparation and grading for the Development Project is expected to require the use of a vibratory roller, large bulldozer, and loaded trucks, which would generate ground-borne vibration of up to 94 VdB (0.210 PPV [in/sec], 87 VdB (0.089 PPV [in/sec]), and 86 VdB (0.076 PPV [in/sec] when measured at 25 ft, respectively.

Table 4.13.W: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller[2]	**0.210**	**94**
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks[2]	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Sources: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
[2] Equipment shown in bold is expected to be used on site.
µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

The greatest vibration levels are anticipated to occur during the site preparation and grading phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the Development

[19] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. September. Website: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2023).

Project boundary (assuming the construction equipment would be used at or near the Development Project's boundary) because vibration impacts normally occur within the buildings. The Development Project boundary for the construction vibration analysis would include roadway and infrastructure improvements (including sewer) on Sunset Avenue, Bobcat Road, and Highland Home Road.

The formula for vibration transmission is provided below:

$$L_vdB\ (D) = L_vdB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Table 4.13.X: Potential Construction Vibration Annoyance lists the projected vibration levels from various construction equipment expected to be used on the Development Site from the active construction area, which is the center of the closest on-site building, to the closest off-site buildings in the project vicinity. As shown in **Table 4.13.X**, the closest commercial building structures are located north of the Development Project (across the railroad and I-10) approximately 935 ft from the active construction area and would experience a vibration level of up to 47 VdB. This vibration level would not have the potential to result in community annoyance because vibration levels would not exceed the FTA community annoyance threshold of 84 VdB for land uses that are not as sensitive to vibration. The closest residential building structures are located east of the Development Project (across Sunset Avenue) approximately 400 ft from the active construction area and would experience vibration levels of up to 58 VdB. This vibration level would not have the potential to result in community annoyance because vibration levels would not exceed the FTA community annoyance threshold of 78 VdB for daytime residences. Also, the closest school building structure (MSJC school) is located east of the Development Project (across Sunset Avenue) approximately 320 ft from the active construction area and would experience vibration levels of up to 61 VdB. This vibration level would not have the potential to result in community annoyance because vibration levels would not exceed the FTA community annoyance threshold of 78 VdB and the school would have similar vibration sensitivity as daytime residences. Other building structures surrounding the Development Site would experience lower vibration levels because they are farther away. Therefore, vibration levels generated from project construction activities would be less than significant. No mitigation measures are required.

Table 4.13.Y: Potential Construction Vibration Damage lists the projected vibration levels from various construction equipment expected to be used on the Development Site from the project construction boundary to the closest off-site buildings in the project vicinity. As shown in **Table 4.13.Y**, the closest building structures are located east of the Development Project (across Sunset Avenue) approximately 58 ft from the project construction boundary and would experience a vibration level of up to 0.059 PPV (in/sec). This vibration level would not have the potential to result in building damage because all building structures surrounding the Development Site were observed to be constructed of nonengineered-timber and masonry and vibration levels would not exceed the FTA vibration damage threshold of 0.2 PPV (in/sec). Other building structures surrounding the Development Site would experience lower vibration levels because they are farther away. Therefore, vibration levels generated from project construction activities would be **less than significant**. No mitigation measures are required.

Table 4.13.X: Potential Construction Vibration Annoyance

Land Use	Direction	Equipment/ Activity	Reference Vibration Level (VdB) at 25 ft	Distance to Structure (ft)[1]	Vibration Level (VdB)
Commercial	North	Vibratory roller	94	935	47
		Large bulldozers	87	935	40
		Loaded trucks	86	935	39
Residential	East	Vibratory roller	94	400	58
		Large bulldozers	87	400	51
		Loaded trucks	86	400	50
School[2]	East	Vibratory roller	94	320	61
		Large bulldozers	87	320	54
		Loaded trucks	86	320	53
Residential	Southeast	Vibratory roller	94	1,685	39
		Large bulldozers	87	1,685	32
		Loaded trucks	86	1,685	31
Residential	South	Vibratory roller	94	1,205	44
		Large bulldozers	87	1,205	37
		Loaded trucks	86	1,205	36
Residential	Southwest	Vibratory roller	94	1,050	45
		Large bulldozers	87	1,050	38
		Loaded trucks	86	1,050	37
Residential	West	Vibratory roller	94	935	47
		Large bulldozers	87	935	40
		Loaded trucks	86	935	39

Source: Compiled by LSA (2023).
Note: The FTA-recommended community annoyance threshold is 78 VdB for daytime residences and 84 VdB for land uses not as sensitive to vibration.
[1] Distance from the center of the closest on-site building to the building structure.
[2] Mount San Jacinto College San Gorgonio Pass campus.
ft = foot/feet
FTA = Federal Transit Administration
VdB = vibration velocity decibels

Table 4.13.Y: Potential Construction Vibration Damage

Land Use	Direction	Equipment/Activity	Reference Vibration Level at 25 ft, PPV (in/sec)	Distance to Structure (ft)[1]	Vibration Level, PPV (in/sec)
Commercial	North	Vibratory roller	0.210	455	0.003
		Large bulldozers	0.089	455	0.001
		Loaded trucks	0.076	455	0.001
Residential	East	Vibratory roller	0.210	58	0.059
		Large bulldozers	0.089	58	0.025
		Loaded trucks	0.076	58	0.022
School[2]	East	Vibratory roller	0.210	60	0.056
		Large bulldozers	0.089	60	0.024
		Loaded trucks	0.076	60	0.020
Residential	Southeast	Vibratory roller	0.210	365	0.004
		Large bulldozers	0.089	365	0.002
		Loaded trucks	0.076	365	0.001
Residential	South	Vibratory roller	0.210	95	0.028
		Large bulldozers	0.089	95	0.012
		Loaded trucks	0.076	95	0.010
Residential	Southwest	Vibratory roller	0.210	260	0.006
		Large bulldozers	0.089	260	0.003
		Loaded trucks	0.076	260	0.002
Residential	West	Vibratory roller	0.210	64	0.051
		Large bulldozers	0.089	64	0.022
		Loaded trucks	0.076	64	0.019

Source: Compiled by LSA (2023).
Note: The FTA-recommended building damage threshold is 0.2 PPV (in/sec) for building structures constructed of nonengineered timber and masonry.
[1] Distance from the project construction boundary to the building structure.
[2] Mount San Jacinto College San Gorgonio Pass campus.
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
PPV = peak particle velocity

Once operational, the Development Project would not generate vibration. In addition, vibration levels generated from project-related traffic on the adjacent roadways (i.e., Sunset Avenue, Highland Springs Avenue, Sun Lakes Boulevard/Westward Avenue, and Bobcat Road) would be unusual for on-road vehicles because the rubber tires and suspension systems of on road vehicles provide vibration isolation. Therefore, vibration levels generated from operations of the Development Project would be **less than significant**. No mitigation measures are required.

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Regulatory Compliance Measures and Mitigation Measures: No Regulatory Compliance or Mitigation Measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

4.13.6.3 Airport Noise

Threshold 4.13.3: 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 2 miles of a public airport or public use airport, would the Development Project expose people residing or working in the project area to excessive noise levels?

Based on the Riverside County Airport Land Use Compatibility Plan[20], the Development Site is outside the 55 dBA CNEL noise contours of Banning Municipal Airport. Additionally, there are no private airstrips located within the vicinity of the Development Site. Therefore, the Development Project would not expose people working in the project vicinity to excessive noise levels. **No impact** would occur, and no mitigation measures are required.

Level of Significance Prior to Mitigation: No Impact.

Regulatory Compliance Measures and Mitigation Measures: No Regulatory Compliance or Mitigation Measures are required.

Level of Significance After Mitigation: No Impact.

20 Riverside County Airport Lane Use Commission (ALUC). 2004. Riverside County Airport Land Use Compatibility Plan. October 14. Website: http://www.rcaluc.org/Plans/New-Compatibility-Plan (accessed September 2023).

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