

Appendix D

NOISE TECHNICAL REPORT

NOISE IMPACT ASSESSMENT

FOR

THE PARKWAY VILLAGE SPECIFIC PLAN PROJECT LANCASTER, CA

OCTOBER 2024

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TABLE OF CONTENTS

Introduction	1
Proposed Project Summary	1
Acoustic Fundamentals	1
Amplitude.....	1
Frequency	5
Addition of Decibels.....	5
Sound Propagation & Attenuation.....	5
Geometric Spreading.....	5
Shielding by Natural or Human-Made Features	5
Noise Descriptors	6
Human Response to Noise.....	7
Effects of Noise on Human Activities	8
Speech Communication.....	8
Annoyance & Sleep Disruption.....	8
Existing Setting.....	9
Existing Noise Environment.....	9
Roadway Traffic Noise	11
Noise-Sensitive Land Uses	12
Groundborne Vibration	12
Regulatory Framework	12
Noise	12
The City of Lancaster General Plan	12
Lancaster Municipal Code	15
Los Angeles County Airport Land Use Plan.....	15
Groundborne Vibration	15
Impact Analysis.....	16
Standards of Significance.....	16
Methodology	17
Impacts and Mitigation Measures	18
Short-term Exposure to Construction Noise	18
Long-term Exposure to Non-Transportation Noise	19
Long-term Exposure to Increased Roadway Traffic Noise	23
Compatibility of Proposed Land Uses with Roadway Traffic Noise	23
References	30

LIST OF TABLES

Table 1 Common Acoustical Terms and Descriptors	7
Table 2 Short-Term Noise Measurement Data	11
Table 3 Existing Roadway Traffic Noise Levels & Contour Distances	11
Table 4 Noise Compatible Land Use Objectives	13
Table 5 Summary of Groundborne Vibration Levels and Potential Effects Associated with Typical Construction Activities.....	16
Table 6 Typical Construction Equipment Noise Levels	18
Table 7 Predicted Increases in Existing (2024) Roadway Traffic Noise Levels	23
Table 8 Predicted Increases in Buildout Year Roadway Traffic Noise Levels	24
Table 9 Buildout Year Roadway Traffic Noise Levels & Contour Distances.....	24
Table 10 Representative Vibration Source Levels for Construction Equipment	26

LIST OF FIGURES

Figure 1 Project Location	2
Figure 2 Proposed Parkway Village Specific Plan	3
Figure 3 Project Community Park Design	4
Figure 4 Typical Community Noise Levels.....	6

Figure 5 Noise Measurement Locations.....	10
Figure 6 Roadway Traffic Noise Contours (Buildout Year With Project).....	25
Figure 7 Palmdale Airport / USAF Plant 42 Airport Influence Area	27
Figure 8 Palmdale Airport/USAF Plant 42 65 CNEL Noise Contour	28

APPENDICES

Appendix A: Noise Modeling & Support Documentation

INTRODUCTION

This report provides an analysis of noise and groundborne vibration associated with the proposed Parkway Village Specific Plan Project (PVSP or Project). This report also provides a summary of existing conditions in the Project area and the applicable regulatory framework.

PROPOSED PROJECT SUMMARY

The Parkway Village Specific Plan (PVSP or Plan) is a plan developed by the City of Lancaster (City) pursuant to California Government Code Section 65450 to guide the future development of a 434.7-acre area located between 10th Street West and Sierra Highway and Avenue K and Avenue L in the City. The Project location and site plan are depicted in Figures 1 and 2 respectively.

The PVSP proposes land use and circulation plans for the area and presents development standards and regulations to guide future development of the land within the Specific Plan Area. The overall area will be known as Parkway Village. The PVSP provides a regulatory framework for the development of a master-planned community that contains residential neighborhoods, parks and other recreational facilities, a school site, open space, and medical, office, and commercial uses. The Plan sets forth standards and guidelines to regulate development by establishing permitted uses, property development standards, and general development criteria.

The following is a summary of the key features of the PVSP:

- 3,462 residential units.
- 130 hotel rooms in one or more hotels.
- 150,000 square feet of commercial uses in areas designated Town Center (TC).
- 415,000 square feet of office, medical office, assisted/supportive living, and uses supportive of office including restaurants, financial institutions, professional services, etc., in areas designated Business (B). Planning Area 43 may include a transit hub to supplement the nearby Owen Memorial Park Transfer Station.
- 185,000 square feet of commercial uses including indoor technical schools, fitness centers, and gymnasiums in areas designated Workshop (W).
- 8.7 acres for school uses.
- 27.8 acres for parks of varying sizes.
- A 200-bed hospital and up to 500,000 square feet of medical-related uses including skilled nursing and assisted living supporting Kaiser Permanente's needs.

The PVSP is consistent with the applicable goals and policies of the City of Lancaster General Plan.

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave because of a disturbance or vibration.

Amplitude

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

**Figure 1
Project Location**



Figure 2
Proposed Parkway Village Specific Plan

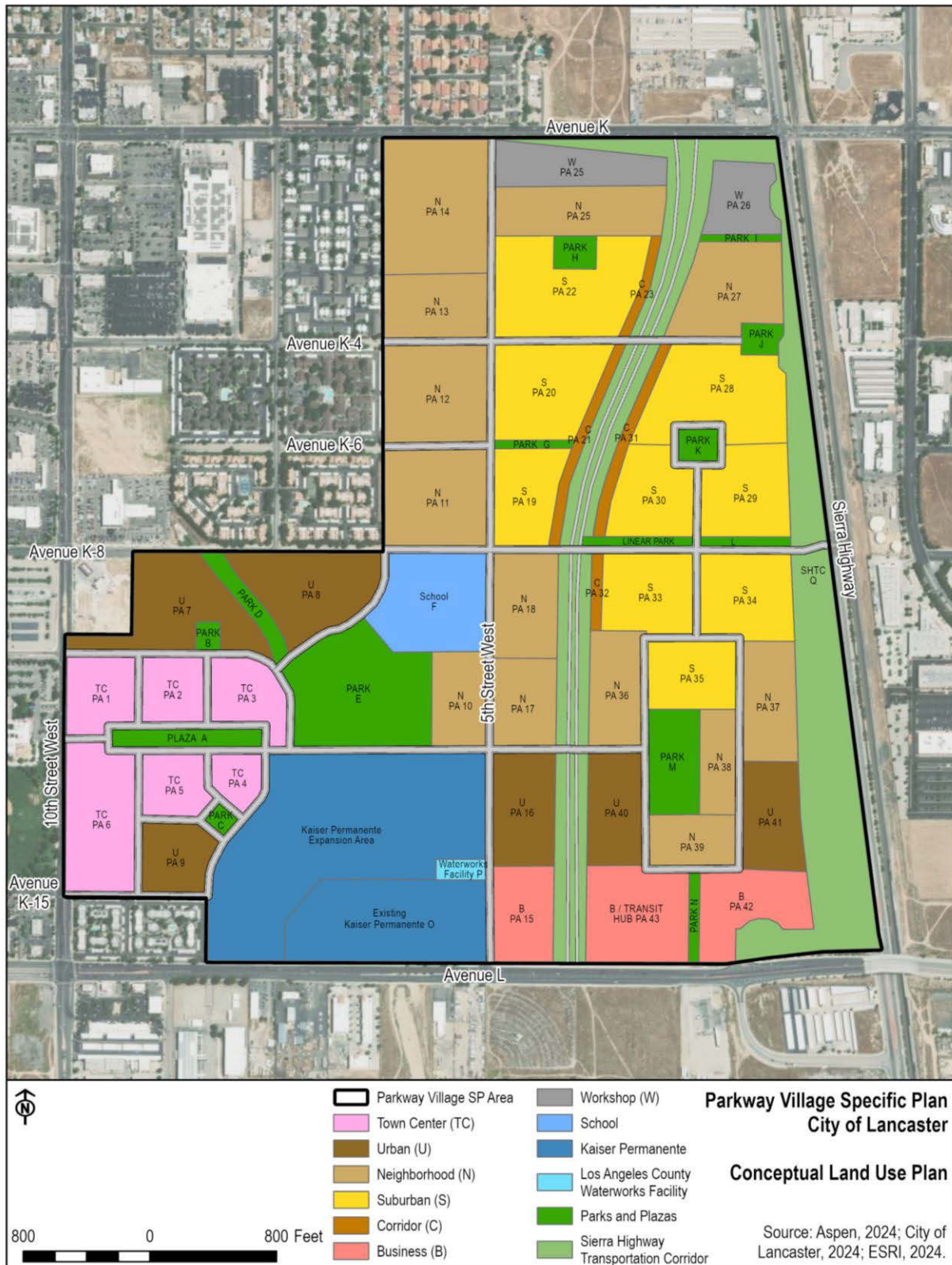


Figure 3
Project Community Park Design



Frequency

Frequency is the number of fluctuations in the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sounds of different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, the environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and noise levels are depicted in Figure 4.

Addition of Decibels

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Sound Propagation & Attenuation

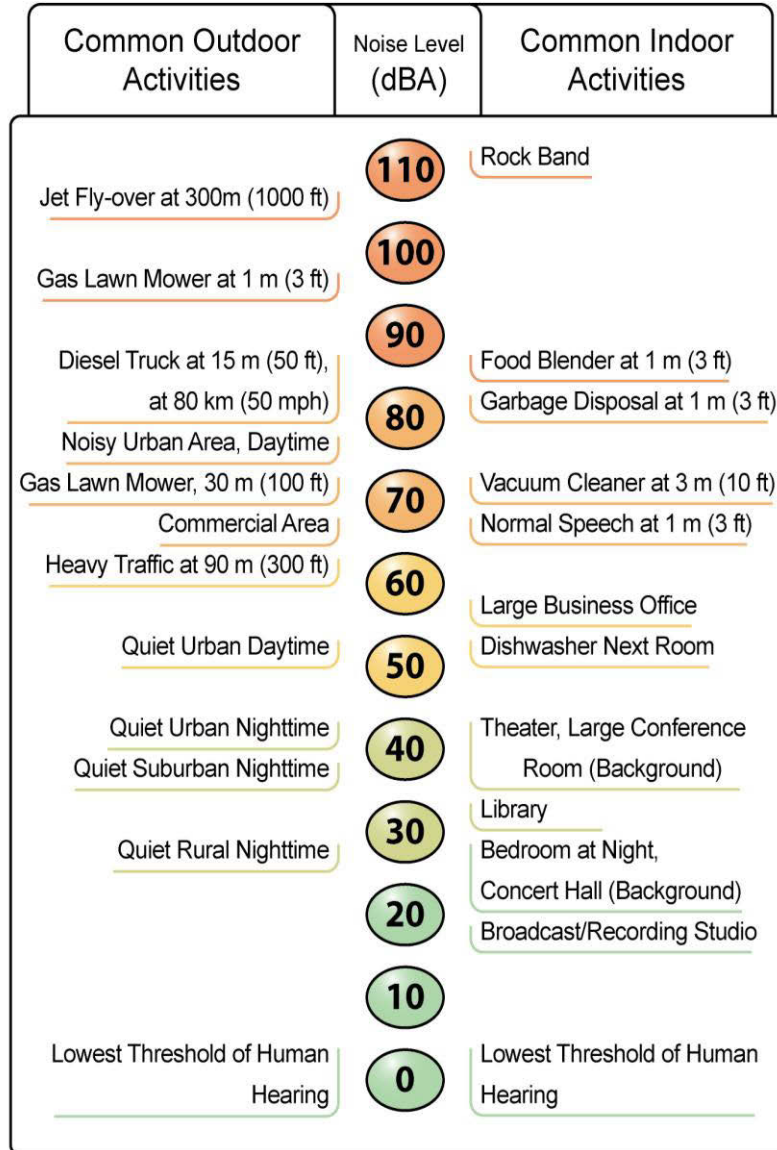
Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between a line source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 dB per doubling of distance from a line source.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver would typically result in an approximate 5 dB of noise reduction. Taller barriers provide increased noise reduction.

Figure 4
Typical Community Noise Levels



Source: Caltrans 2018

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the sound-pressure level in that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies, which is referred to as the "A-weighted" sound level (expressed in units of dBA). The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments

of the relative loudness or annoyance of a sound, their judgments correlate well with the A-weighted noise scale. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with environmental noise.

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are L_{eq} , L_{dn} , and CNEL. The energy-equivalent noise level, L_{eq} , is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn} , is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds a 5-dBA penalty for evening noise (7 p.m. to 10 p.m.) Common noise descriptors are summarized in Table 1.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Table 1
Common Acoustical Terms and Descriptors

Descriptor	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to referenced sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated. The average-hourly noise descriptor is typically used to characterize noise sources whose operational characteristics are limited to certain periods of the day (e.g., hours).
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time. This noise descriptor is commonly used to characterize noise levels associated with instantaneous noise events.
Day-Night Average Noise Level (DNL or L_{dn})	The 24-hour L_{eq} with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increased sensitivity to noise during these hours. This noise descriptor is commonly used to characterize noise sources whose operational characteristics generally occur over a 24-hour period, such as transportation noise sources (e.g., roadway traffic, airports).
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the L_{dn} described above but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn} . As with the DNL/ L_{dn} descriptor, this noise descriptor is commonly used to characterize noise sources whose operational characteristics generally occur over a 24-hour period, such as transportation noise sources (e.g., roadway traffic, airports). CNEL is more commonly used in California.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will help understand this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in a level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on Human Activities

The extent to which environmental noise is deemed to result in increased levels of annoyance, activity interference, and sleep disruption varies greatly from individual to individual depending on various factors, including the loudness or suddenness of the noise, the information value of the noise (e.g., aircraft overflights, a child crying, fire alarm), and an individual's sleep state and sleep habits. Over time, adaptation to noise events and increased levels of noise may also occur. In terms of land use compatibility, environmental noise is often evaluated in terms of the potential for noise events to result in increased levels of annoyance, sleep disruption, or interference with speech communication, activities, and learning. Noise-related effects on human activities are discussed in more detail, as follows (Caltrans 2011):

Speech Communication

For most noise-sensitive land uses, an interior noise level of 45 dB L_{eq} is typically identified for the protection of speech communication in order to provide for 100-percent intelligibility of speech sounds. Assuming an average 20-dB reduction in sound level between outdoors and indoors (which is an average amount of sound attenuation that assumes windows are closed), this interior noise level would equate to an exterior noise level of 65 dBA L_{eq} . For outdoor voice communication, an exterior noise level of 60 dBA L_{eq} allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility. Based on this information, speech interference begins to become a problem when steady noise levels reach approximately 60 to 65 dBA.

Annoyance & Sleep Disruption

With regard to potential increases in annoyance, activity interference, and sleep disruption, land use compatibility determinations are typically based on the use of the cumulative noise exposure metrics (i.e., CNEL or L_{dn}). Perhaps the most comprehensive and widely accepted evaluation of the relationship between noise exposure and the extent of annoyance was one originally developed by Theodore J. Schultz in 1978. In 1978 the research findings of Theodore J. Schultz provided support for L_{dn} as the descriptor for environmental noise. Research conducted by Schultz identified a correlation between the cumulative noise exposure metric and individuals who were highly annoyed by transportation noise. The Schultz curve, expressing this correlation, became a basis for noise standards. When expressed graphically, this relationship is typically referred to as the Schultz curve. The Schultz curve indicates that approximately 13 percent of the population is highly annoyed at a noise level of 65 dBA L_{dn} . It also indicates that the percentage of people describing themselves as being highly annoyed accelerates smoothly between 55 and 70 dBA L_{dn} . A noise level of 65 dBA L_{dn} is a commonly referenced dividing point between lower and higher rates of people describing themselves as being highly annoyed.

The Schultz curve and associated research became the basis for many of the noise criteria subsequently established for federal, state, and local entities. Most federal and California regulations and policies related

to transportation noise sources establish a noise level of 65 dBA CNEL/L_{dn} as the basic limit of acceptable noise exposure for residential and other noise-sensitive land uses. For instance, with respect to aircraft noise, both the Federal Aviation Administration (FAA) and the State of California have identified a noise level of 65 dBA L_{dn} as the dividing point between normally compatible and normally incompatible residential land use generally applied for the determination of land use compatibility. For noise-sensitive land uses exposed to aircraft noise, noise levels in excess of 65 dBA CNEL/L_{dn} are typically considered to result in a potentially significant increase in levels of annoyance.

Allowing for an average exterior-to-interior noise reduction of 20 dB, an exterior noise level of 65 dBA CNEL/L_{dn} would equate to an interior noise level of 45 dBA CNEL/L_{dn}. An interior noise level of 45 dB CNEL/L_{dn} is generally considered sufficient to protect against activity interference at most noise-sensitive land uses, including residential dwellings, and would also be sufficient to protect against sleep interference. Within California, the California Building Code establishes a noise level of 45 dBA CNEL as the maximum acceptable interior noise level for residential uses (other than detached single-family dwellings). Use of the 45 dBA CNEL/L_{dn} threshold is further supported by recommendations provided in the State of California Office of Planning and Research's *General Plan Guidelines* (2017), which recommend an interior noise level of 45 dB CNEL/L_{dn} as the maximum allowable interior noise level sufficient to permit normal residential activity.

The cumulative noise exposure metric is currently the only noise metric for which there is a substantial body of research data and regulatory guidance defining the relationship between noise exposure, people's reactions, and land use compatibility. However, when evaluating environmental noise impacts involving intermittent noise events, such as aircraft overflights and trains passing by, the use of cumulative noise metrics may not provide a thorough understanding of the resultant impact. The general public often finds it difficult to understand the relationship between intermittent noise events and cumulative noise exposure metrics. In such instances, supplemental use of single-event noise metrics, such as the SEL descriptor, may be helpful as a means of increasing public understanding regarding the relationship between these metrics and the extent of the resultant noise impact.

Although the use of supplemental noise descriptors can provide an increased understanding of intermittent noise events and their relationship to the cumulative noise metrics, current environmental regulations do not identify quantitative criteria, metrics, or computation methods pertaining to single-event noise exposure for the determination of land use compatibility. However, with regard to aircraft noise exposure, FICAN has provided non-regulatory guidance for estimating the expected percent of awakenings that may result from single aircraft noise events. For example, at an indoor sound exposure level (SEL [a metric that describes the total acoustic energy of a single noise event]) of SEL 80 dBA, the FICAN data indicates that approximately 10 percent of exposed individuals would be awakened. Although some estimates of the percentage of people expected to be awakened when exposed to specific single-event noise levels inside a home have been provided, no quantitative determination as to what frequency of awakening would be acceptable has been made by Federal, State, or local entities. Although no quantitative thresholds have yet been identified with regard to single-event noise exposure, the indication from several studies is that the noise threshold for significant occurrence of sleep disruption is higher than for speech interference.

EXISTING SETTING

Existing Noise Environment

To document the existing noise environment in the vicinity of the PVSP area, seven short-term noise measurements were conducted. Ambient noise measurement surveys were conducted on August 14, 2024, using a Larson Davis LxT Type I sound-level meter. Noise measurement locations are depicted in Figure 5. Measured short-term noise measurements are summarized in Table 2. As noted in Table 2, measured short-term daytime average-hourly noise levels in the project area generally range from approximately 44.3 dBA L_{eq} to approximately 75.4 dBA L_{eq}. Nighttime noise levels are typically 5-10 dBA lower than daytime noise levels. Existing ambient noise levels are primarily influenced by vehicular traffic on area roadways, including Avenue K to the north, the Sierra Highway to the east, Avenue L to the south, 10th Street West to the west, and Avenue K-8 along the northern boundary of the southwest portion of the plan area. The noise associated with these sources usually represent a continuous occurrence.

Figure 5
Noise Measurement Locations



Locations are approximate. Not to Scale.

Table 2
Short-Term Noise Measurement Data

Measurement Identifier	Measurement Period	Measurement Location	Major Noise Sources Noted	Average-Hourly Noise Level (dBA L _{eq})
ST1	10:20-10:40	10th Street West, east side of the road on the roadway sidewalk.	Roadway traffic noise along 10 th Street West.	68.8
ST2	10:45-10:55	Avenue K-4 end of the cul-de-sac.	Landscaping in Distance.	49.3
ST3	11:00-11:15	Avenue K-8, south side of the road along the roadway edge.	Roadway traffic noise along Avenue K-8.	64.8
ST4	11:20-11:35	Avenue K, south side of the road on the roadway sidewalk.	Roadway traffic along Avenue K	67.8
ST5	11:45-12:00	Sierra Highway, west side of the highway on the sidewalk.	Roadway traffic noise from Sierra Highway and aircraft overflight in the distance.	75.4
ST6	12:10-12:25	Avenue L, north side of the road on the roadway sidewalk.	Roadway traffic noise along Avenue L.	67.9
ST7	12:40-12:55	Bike and pedestrian path between Sierra Highway and Avenue K-8.	Distant Traffic	44.3
Noise measurements were conducted on August 15, 2024, using a Larson Davis LxT Type I sound-level meter. Refer to Figure 5 for measurement locations.				

Roadway Traffic Noise

Existing roadway traffic noise levels were calculated using the Federal Highway Administration (FHWA) Roadway Noise Prediction Model (FHWA RD-77-108) based, in part, on traffic data obtained from the traffic analysis prepared for this project (Garland 2024). Predicted traffic noise levels and distances to projected traffic noise contours for major roadways are summarized in Table 3. It is important to note that projected traffic noise contours do not include attenuation or shielding provided by intervening structures. Based on the modeling conducted, existing traffic noise levels along area roadways range from approximately 57 to 73 dBA CNEL at 50 feet from the near-travel-lane centerline.

Table 3
Existing Roadway Traffic Noise Levels & Contour Distances

Roadway Segment	CNEL at 50 ft. from Near-travel-lane Centerline	Distance to CNEL Contour (Feet from Road Centerline)		
		70	65	60
Avenue K				
10 th Street West to 5 th Street West	68.1	66	128	267
5 th Street West to Sierra Highway	70.3	88	178	378
Avenue L				
10 th Street West to 5 th Street West	73.3	145	301	643
5 th Street West to Sierra Highway	73.3	144	299	638
10 th Street W				
Avenue K to Avenue K-8	70.8	92	187	398
Avenue K-8 to Avenue L	70.1	84	170	361
Gadsden Avenue				
North of Avenue K	57.0	0	0	0
South of Avenue K	61.6	0	0	78.4
Sierra Highway				
Avenue K to Avenue K-8	72.0	94	199	427
Avenue K-8 to Avenue L	72.0	94	199	427
Traffic noise levels for area roadways were calculated based on data obtained from the traffic analysis prepared for this project (Garland 2024). Predicted noise contours do not include shielding by intervening structures.				

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are also considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

Nearby off-site noise-sensitive land uses in the vicinity include but are not limited to single-family and multi-family residential dwellings, churches, and the Sgt. Steve Owen Memorial Park. The nearest existing residential land uses include multi-family apartments located south of Avenue K adjacent to the project site and the multi-family apartments located at the northeast corner of Avenue L and 10th Street West. These existing multi-family residential land uses are shielded from the Plan Area by an existing approximately 6-foot-high masonry block wall. On-site noise-sensitive existing land uses include the Kaiser Permanente Antelope Valley Medical Offices, a retirement village, a trailer park, and a supportive residential housing use (formerly a motel). In addition, St. Paul's Episcopal Church is located along the northern boundary of the Plan Area, along Avenue K. Worship services at St. Paul's Episcopal Church are typically held on Sunday mornings (St. Paul's Episcopal Church, 2024). Existing development within the Plan Area is expected to remain and is not proposed to be demolished or removed due to the implementation of the PVSP. Nearby land uses are depicted in Figure 1.

Groundborne Vibration

No major existing sources of groundborne vibration were identified in the Plan Area. Vehicle traffic on area roadways, particularly heavy-duty trucks, can result in increased groundborne vibration. However, groundborne vibration levels associated with vehicle traffic are typically considered minor and would not exceed applicable criteria at the Project site boundaries.

REGULATORY FRAMEWORK

Noise

The City of Lancaster General Plan

A major focus of the City's General Plan Safety Element is to "define "quiet" and set standards that would ensure an appropriately quiet environment for the Lancaster various land uses proposed within the General Plan study area, recognizing the varying noise sensitivity of these uses" (City of Lancaster 2022). The Noise section contained within the Safety Element specifies the maximum exterior and interior levels allowable for new developments and establishes several goals, policies, and actions aimed at protecting noise-sensitive land uses. The Air Installation and Land Use Compatibility section within the Safety Element contains goals, policies, and actions aimed at ensuring the safety of Lancaster residents and the compatibility of land uses with airport operations, consistent with the noise-related policies identified in the Los Angeles County Airport Land Use Plan. Goals, policies, and action items relevant to the proposed Project include, but are not limited to, the following:

NOISE

Goal 4.3: Promote noise-compatible land use relationships by implementing the noise standards identified in Table 4 to be utilized for design purposes in new development and establishing a program to attenuate the existing noise problem.

Policy 4.3.1: Ensure that noise-sensitive land uses and noise generators are located and designed so that city noise objectives will be achieved.

Action 4.3.1(a): Require a detailed noise attenuation study to be prepared by a qualified acoustical engineer to determine appropriate mitigation and ways to incorporate such mitigation into project design for the following:

- Where new development is proposed for areas within which the exterior or interior noise levels outlined in Table 4 are likely to be exceeded by existing or planned land uses
- When proposed projects include uses that could be potentially significant noise generators.

Action 4.3.1(b): Minimize motor vehicle noise impacts from streets and highways through proper route location and sensitive roadway design.

- Consideration shall be given to the location of truck routes, effects of truck mix, and future motor vehicle volumes on noise levels adjacent to master-planned roadways when improvements to the circulation system are planned.
- Traffic volumes and speed through residential neighborhoods shall be minimized.
- Street or street improvements that exceed the ultimate right-of-way width specified in the City of Lancaster Transportation Master Plan shall be required to evaluate potential noise impacts on existing and future land uses in the area.

The City will work closely with Caltrans in the early stages of freeway improvements and design modifications to ensure that proper consideration is given to potential noise impacts on the city.

Action 4.3.1(c): Ensure that new commercial and industrial activities (including the placement of mechanical equipment) are designed so that activities comply with the maximum noise level standards at the property line of adjacent uses, thereby minimizing impacts on adjacent uses (see Table 4).

Action 4.3.1(d): Ensure that the design and placement of air conditioning units and pool equipment within residential areas is accomplished in a manner that does not intrude upon the peace and quiet of adjacent noise-sensitive areas.

Table 4
Noise Compatible Land Use Objectives

Land Use	Maximum Exterior CNEL	Maximum Interior CNEL
Rural, Single-Family, Multi-Family	65 dBA	45 dBA
Schools: Classrooms Playgrounds	65 dBA 70 dBA	45 dBA --
Libraries	--	50 dBA
Hospitals/Convalescent Facilities: Living Areas Sleeping Areas	-- --	50 dBA 40 dBA
Commercial and Industrial Office Areas	70 dBA --	-- 50 dBA

Policy 4.3.2: Wherever feasible, manage the generation of single event noise levels (SENL) from motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities such that SENL levels are no greater than 15 dBA above the noise objectives included in the Plan for Public Health and Safety.

Action 4.3.2(d): As a condition of approval, limit non-emergency construction activities to daylight hours between sunrise and 8:00 pm.

Policy 4.3.3 Ensure that the provision of noise attenuation does not create significant negative visual impacts.

Action 4.3.3(a): In reviewing noise impacts, utilize site and architectural design features to mitigate impacts on sensitive land uses in conjunction with the provision of noise barriers. Design techniques to be considered in mitigating potential noise impacts include:

Site Design

- The use of building setbacks, landscaping and walls and dedication of noise easements to increase the distance between the noise source and receiver.
- The location of uses and orientation of buildings which are compatible with higher noise levels adjacent to noise generators or in clusters to shield more noise sensitive areas and uses.
- The placement of noise tolerant land uses, such as parking areas, between the noise source and receiver.
- The placement of noise tolerant structures such as garages or carports to shield noise-sensitive areas.
- Clustering of office, commercial, or multiple family residential structures to reduce interior open space noise levels.

Architectural Design

- The use of dense building materials, tight fitting doors, ceilings, and floors.
- The use of noise reducing windows and the placement of entry doors on the side of the building facing away from the major roadway.
- Avoid balconies and patio areas facing major transportation routes.

Action 4.3.3(b): Whenever feasible, require the use of noise barriers (walls, berms, or a combination thereof) to reduce significant noise impacts.

- Noise barriers must be massive enough to prevent significant noise transmission and high enough to shield the receiver from the noise source.
- The barrier must be carefully constructed so that there are no cracks or openings.
- Require landscaping treatment to be provided in conjunction with noise barriers to provide visual relief and to reduce aesthetic impacts.

AIR INSTALLATION AND LAND USE COMPATIBILITY

Goal 4.4: Establish procedures for compatibility between land uses in the City of Lancaster and air operations from U.S. Air Force Plant 42 (Palmdale Regional Airport), Fox Field, and Edwards Air Force Base.

Policy 4.4.1: Limit the type and intensity of development surrounding Air Force Plant 42, consistent with the recommendations of the Joint Land Use Committee's study and the AICUZ Report for Plant 42.

Action 4.4.1(b): To protect residents from aircraft-generated noises prohibit the redesignation of land within the 65-CNEL contour and the Overflight Area currently designated industrial or commercial on the General Plan map to residential or other incompatible land uses.

Action 4.4.1(c): Discourage the development of noise-sensitive receptors, such as hospitals and schools, within the 65-CNEL contour and the Overflight Area.

Action 4.4.1(d): Discourage higher-density residential uses and encourage, in order of priority, industrial, commercial, and low-density residential land use designations within the 65-CNEL contour and the Overflight Area.

Policy 4.4.3: Ensure that adequate public notification regarding aircraft activities is provided to new residents in areas subject to aircraft overflights around Plant 42 and Fox Field.

Action 4.4.3(a): For new residential development require that aviation easements be granted to the following entities in the specific situations specified below:

- To Air Force Plant 42 and the Los Angeles Department of Airports: Lands within the projected 65 CNEL, the accident potential zone (APZ- II), and the designated Overflight Area.
- To Los Angeles County or any successor in interest therein: Lands within the projected 65- CNEL noise contour of Fox Field.

Lancaster Municipal Code

The City's Noise Regulation Ordinance is contained in the Municipal Code, Chapter 8.24. Sections 8.24.010 to Section 8.24.070. The City's municipal code specifies hourly restrictions on construction activities. Municipal Code Section 8.24.040, Loud, unnecessary, and unusual noises prohibited – Construction and Building states the following (City of Lancaster 2024):

Except as otherwise provided in this chapter, a person at any time on Sunday or holidays or any day between the hours of eight p.m. and seven a.m. shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling or moving where any of the foregoing entails the use of any air compressor, jackhammer, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth-moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobile home or other place of residence.

Los Angeles County Airport Land Use Plan

The Los Angeles County Airport Land Use Plan was developed to “protect the public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public use airports” (County of Los Angeles 2004). The Los Angeles County Airport Land Use Plan establishes policies and programs to ensure the compatibility of nearby land uses with airport noise. The City of Lancaster General Plan aviation-related noise policies and standards are consistent with the policies identified in the Los Angeles County Airport Land Use Plan. Refer to the above discussion of relevant Air Installation and Land Use Compatibility policies and noise standards identified in the City of Lancaster General Plan.

Groundborne Vibration

There are no federal, state, or local regulatory standards for groundborne vibration. However, Caltrans has developed vibration criteria based on potential structural damage risks and human annoyance. Caltrans-recommended criteria for the evaluation of groundborne vibration levels, with regard to structural damage and human annoyance, are summarized in Table 5. The criteria apply to continuous vibration sources, which include vehicle traffic and most construction activities. All damage criteria for buildings are in terms of ground motion at the buildings' foundations. No allowance is included for the amplifying effects of structural components (Caltrans 2020). As shown in Table 5 the criteria for structural damage commonly applied to construction activities is a peak particle velocity (ppv) of 0.25 inches/sec (in/sec) for historic structures, 0.3 in/sec ppv for older residential structures, and 0.5 in/sec ppv for newer structures. Groundborne vibration levels of 0.2 in/sec ppv may result in increased levels of annoyance for people in buildings (Caltrans 2020).

Table 5
Summary of Groundborne Vibration Levels and Potential Effects
Associated with Typical Construction Activities

Potential Impact	Maximum Groundborne Vibration Level (in/sec ppv)
Structural Damage Risk	
Extremely fragile historic buildings, ruins, ancient monuments	0.08
Fragile buildings	0.1
Historic and some old buildings	0.25
Older residential structures	0.3
New residential structures	0.5
Modern industrial/commercial buildings	0.5
Human Response	
Barely perceptible	0.01
Distinctly perceptible	0.04
Strongly perceptible Level may begin to annoy people in outdoor areas	0.1
Level may begin to annoy people in buildings	0.2
Severe	0.4
Note: The vibration levels are based on peak particle velocity in the vertical direction for continuous vibration sources, which includes most construction activities. Source: Caltrans 2020	

IMPACT ANALYSIS

Standards of Significance

Criteria for determining the significance of air quality impacts were developed based on information contained in the California Environmental Quality Act (CEQA) Guidelines (Appendix G). According to those guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or
2. Generation of excessive groundborne vibration or groundborne noise levels; or
3. Located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or private-use airport, that exposes people residing or working in the project area to excessive noise levels.

The CEQA Guidelines do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this section, a noise level increase of 3 dBA is barely perceptible to most people, an increase of 5 dBA is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. For purposes of this analysis, a substantial increase in ambient noise levels associated with long-term operational activities would be defined as an increase of 3 dBA, or greater.

As per Policy 4.3.2 in the City's General Plan noise levels associated with single-event noise sources, including construction activities, shall be limited to no greater than 15 dBA above the noise objectives specified in Table 4 (City of Lancaster 2022). Accordingly, construction-generated instantaneous noise levels that exceed 15 dBA above the exterior noise objectives outlined in Table 4 at nearby noise-sensitive land uses would be determined to have a potentially significant impact. For instance, with regard to existing residential land uses, predicted exterior construction-generated noise levels in excess of 80 dBA L_{max} at nearby existing residential land uses would be considered to have a potentially significant impact.

Exposure to non-instantaneous, non-transportation noise generated by stationary sources would be considered potentially significant if predicted noise levels would exceed applicable City noise exposure standards (refer to Table 4). The City's general plan establishes exterior and interior noise standards. These

noise exposure standards are based on average-daily noise levels (i.e., CNEL). As previously noted, the CNEL noise descriptor is more commonly used to characterize noise sources/events that occur over a 24-hour period. Applying the CNEL descriptor to assess impacts associated with noise sources whose operational characteristics are typically limited to certain periods of the day, rather than over a 24-hour period, may result in an under-representation of operational noise levels. In such instances, predicted operational noise levels for a given period of time may be higher than the overall 24-hour average. For this reason, and to be conservative, the standards in Table 4 are adapted to an average-hourly (L_{eq}) noise descriptor for the evaluation of non-instantaneous, non-transportation (i.e., stationary) noise sources. Exposure to non-instantaneous noise from stationary sources would be considered significant if predicted non-instantaneous noise levels would exceed the City's noise objectives outlined in Table 4, based on an average-hourly (L_{eq}) noise descriptor. Exposure to instantaneous noise from stationary sources would be considered significant if predicted instantaneous noise levels would exceed 15 dBA L_{max} above the noise objectives outlined in Table 4.

Noise Goal 4.3 of the City's general plan aims to promote noise-compatible land-use relationships by implementing the noise standards identified in Table 4 to be utilized for design purposes in new development and establishing a program to attenuate the existing noise problem (City of Lancaster 2022). For the determination of land use compatibility with roadway traffic, predicted future-year traffic noise levels at proposed land uses that would exceed the City's noise-compatible land use objectives would be considered to have a potentially significant impact (refer to Table 4).

Land use compatibility with aircraft noise was determined by assessing consistency with the County's Airport Land Use Plan and the City's Air Installation and Land Use Compatibility policies and noise standards. Accordingly, proposed noise-sensitive land uses located within the projected 65 dBA CNEL noise contour of an airport or that would conflict with the applicable City/County noise-related policies would be considered to have a potentially significant impact.

Groundborne vibration levels would be considered potentially significant if predicted short-term construction or long-term operational groundborne vibration levels attributable to the proposed Project would exceed normally applied groundborne vibration criteria at nearby structures (refer to Table 5). No existing historic or fragile structures were identified in the PVSP area. Therefore, for purposes of this analysis, groundborne vibration levels would be considered to have a potentially significant impact if predicted levels would exceed 0.2 in/sec ppv with regard to human annoyance or 0.5 in/sec ppv for structural damage.

Methodology

Construction Impacts

Short-term noise impacts associated with construction activities were analyzed based on typical construction equipment noise levels and distances to the nearest noise-sensitive land use. Noise levels were predicted based on representative off-road equipment noise levels derived from the Federal Highway Administration's (FHWA) Roadway Construction Noise Model based on average equipment usage rates and assuming a noise-attenuation rate of 6 dB per doubling of distance from the source. Predicted groundborne vibration levels were assessed based on typical construction equipment vibration levels and evaluation criteria. Predicted construction vibration levels are included in Appendix A.

Operational Impacts

Stationary source (non-transportation) operational noise levels were predicted based on representative noise levels for similar activities/equipment and assuming an average noise-attenuation rate of 6 dB per doubling of distance from the source. Noise levels associated with proposed parking lots were modeled using the Federal Transit Administration's *Noise Impact Assessment Spreadsheet*, version 1/29/2019.

Traffic noise levels were calculated using the Federal Highway Administration roadway prediction model (FHWA RD-77-108), based on California vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this Project (Garland 2024). Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. The project's contribution to traffic noise levels along area roadways was determined by comparing the predicted noise levels with and without project-generated traffic for Existing and Buildout

year conditions. The compatibility of proposed land uses with roadway traffic noise was evaluated based on a comparison of predicted future-year traffic noise levels at on-site proposed land uses with the City's applicable noise-compatible land use standards (refer to Table 4). The compatibility of proposed noise-sensitive land uses with aircraft noise was assessed based on consistency with the City's Air Installation and Land Use Compatibility standard of 65 dBA CNEL for noise-sensitive land uses.

Impacts and Mitigation Measures

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

Short-term Exposure to Construction Noise

Construction noise typically occurs intermittently and varies depending upon the nature or phase (e.g., demolition/land clearing, grading, excavation, and erection) of construction. Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Although noise ranges were found to be similar for all construction phases, the initial site preparation phase tended to involve the most equipment.

Typical noise levels associated with construction equipment are summarized in Table 6. As noted in Table 6, instantaneous noise levels generated by individual pieces of construction equipment typically range from approximately 78 to 85 dBA L_{max} at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Assuming the loudest piece of equipment could be operating noise levels associated with construction could reach up to 85 dBA L_{max} at 50 feet. Construction would be temporary and episodic, occurring at various locations throughout the PVSP area. Predicted construction-generated noise levels would vary depending on multiple factors, such as the equipment being used and activities being conducted.

Table 6
Typical Construction Equipment Noise Levels

Equipment	Noise Level (dBA at 50 feet)	
	L_{max}	L_{eq}
Backhoes	78	74
Bulldozers	82	78
Excavator	81	77
Generator	81	78
Gradall	83	79
Grader	85	81
Front End Loaders	79	75
Pneumatic Tools	85	82
Scrapers	84	80
Tractor	84	80
Compressor	80	73.7
<i>Based on measured instantaneous noise levels (L_{max}), average equipment usage rates, and calculated average-hourly (L_{eq}) noise levels derived from the FHWA Road Construction Noise Model (FHWA 2008)</i>		

As previously noted, nearby existing noise-sensitive land uses consist predominantly of residential land uses. Other nearby noise-sensitive land uses include a church, medical offices, and a supportive housing development (formerly a motel). Depending on the final Project site design, construction activities could occur within 50 feet of existing noise-sensitive land uses. Predicted noise levels at sensitive land uses within 50 feet of construction activities could potentially exceed the City's applicable exterior noise standard of 80 dBA L_{max} . With regard to nearby existing residential land uses and motel, construction activities occurring during the more noise-sensitive evening and nighttime hours could result in increased levels of annoyance and potential sleep disruption to building occupants. In addition, construction-generated noise occurring on Sundays could potentially interfere with worship services at nearby churches. For these reasons, this impact would be considered **potentially significant**.

Mitigation Measures

Mitigation Measure Noise-1: The following measures shall be implemented to reduce short-term construction noise impacts:

- a. Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7 a.m. and 8 p.m., Monday through Saturday. Construction activities shall be prohibited on Sundays and federal holidays.
- b. The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to the owner shall be established prior to construction commencement that will allow for resolution of noise problems that cannot be immediately solved by the site supervisor.
- c. Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.
- d. Material stockpiles and mobile equipment staging, parking and maintenance areas shall be located as far away as practicable from noise-sensitive receptors.
- e. The use of noise producing signals, including horns, whistles, alarms, and bells shall be for safety warning purposes only.
- f. No project-related public address or music system shall be audible at any adjacent receptor.
- g. All noise producing construction equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specifications. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors, etc.) shall be equipped with shrouds and noise control features that are readily available for the type of equipment.
- h. Construction equipment shall be properly maintained and equipped with exhaust mufflers and engine shrouds in accordance with manufacturers' recommendations.
- i. When not in use, all construction equipment shall be turned off and shall not be allowed to idle. Provide clear signage that posts this requirement for workers at the entrances to the site.

Significance after Mitigation

Mitigation Measure Noise-1 would limit the construction activities to between the hours of 7:00 a.m. and 8:00 p.m., Monday through Saturday, and would be prohibited on Sundays and federal holidays. Additional measures would also be required to further reduce the potential for noise exposure, including the use of alternatively powered equipment, exhaust mufflers, and engine shrouds. Implementation of these noise-reduction features can reduce construction noise levels by approximately 10 dBA, or more (FHWA 2017). With the implementation of the above mitigation measures, predicted construction noise levels at nearby noise-sensitive land uses would not exceed the City's applicable noise standards or hourly restrictions. With mitigation and given that construction activities would be short-term, this impact would be considered **less than significant**.

Long-term Exposure to Non-Transportation Noise

The PVSP includes a variety of proposed land uses, including residential land uses, commercial land uses, a school, parks and plazas, and medical/office uses. A discussion of noise sources commonly associated with these land uses and potential impacts to nearby noise-sensitive land uses is provided below:

RESIDENTIAL LAND USES

The PVSP includes the development of various residential land uses such as single-family units, condominiums/apartments, townhomes, duplexes, and live/work units. Exterior noise sources commonly associated with residential developments include air conditioning units. Residential air conditioning units typically operate within a range of 50-75 dBA L_{eq} at 3 feet (Carrier 2022). Typical operational cycles for residential units occur for periods of approximately 10 to 30-minute intervals. When averaged over an hour, taking into account normal operating cycles, a residential-use air conditioner typically averages approximately 60-65 dBA L_{eq} at 3 feet (Ambient 2016). As noted in the residential architectural design guidelines found in the PVSP, all

exposed residential-use air conditioning equipment shall be hidden from view in vaults, wells, enclosures, behind walls/fences, or screened by the landscape. Given this requirement and typical building setbacks, predicted noise levels from residential AC units at nearby noise-sensitive land uses would not exceed the City's minimum exterior noise standard of 65 dBA. Assuming a maximum exterior noise level of 65 dBA L_{eq} and a typical average exterior-to-interior noise reduction of 25 dBA, predicted interior noise levels at the nearest existing land uses would be 40 dBA L_{eq} , or less. Predicted interior noise levels at nearby existing land uses would not exceed the City's interior noise standards of 45 dBA for residential land uses or 40 dBA at the nearby medical offices. As a result, this impact would be considered **less than significant**.

COMMERCIAL LAND USES

The PVSP includes the development of various commercial land uses including office, workshop, and medical land uses as well as a hotel. Noise sources commonly associated with these land uses include commercial air conditioning units/chillers, mechanical equipment (e.g., trash compactors, generators), and material unloading and loading activities. Noise levels commonly associated with these sources and associated noise impacts are discussed, as follows:

- **Commercial Air Conditioning Units:** Commercial-use air conditioning units and chillers typically generate noise levels of approximately 68-88 dBA at 3 feet (Rheem 2019, BAC 2007). Assuming a maximum operational noise level of 88 dBA L_{eq} at 3 feet predicted operational noise levels could exceed 65 dBA L_{eq} at approximately 40 feet. The final location of the proposed commercial air conditioning units and chillers has not yet been determined. Depending on the final project site design and the type and size of equipment installed, predicted noise levels at nearby noise-sensitive land uses could exceed the City's exterior and interior noise standards. As a result, this impact would be considered **potentially significant**.
- **Mechanical Equipment:** Mechanical equipment commonly associated with commercial uses includes trash compactors and back-up power generators. Noise levels associated with mechanical equipment can range from approximately 68 to 73 dBA L_{eq} at 5 feet (Marathon 2022). Assuming a maximum operational noise level of 73 dBA L_{eq} at 5 feet predicted average-hourly operational noise levels could exceed the City's minimum exterior noise standard of 65 dBA at approximately 11 feet from the source. Depending on the final site design, location, and equipment installed, predicted operational noise levels at nearby noise-sensitive land uses could potentially exceed the City's exterior and interior noise standards. As a result, this impact would be considered **potentially significant**.
- **Unloading and Loading Activities:** Average-hourly noise levels associated with commercial material handling activities can generate noise levels of approximately 65 dBA L_{eq} at 50 feet. Material handling activities may also be a source of instantaneous noise, such as the sounding of truck backup alarms and the release of air brakes. Instantaneous noise levels associated with material handling activities can reach levels of approximately 90 dBA L_{max} at 50 feet (Ambient 2018). Based on the noise levels noted above, predicted average-hourly operational noise levels could exceed the City's minimum exterior noise standard of 65 dBA at approximately 47 feet from the source. Predicted instantaneous noise levels could exceed the City's minimum exterior noise standard of 80 dBA at approximately 149 feet from the source. The location of the proposed material loading and unloading areas has not yet been determined. Depending on the final site design, predicted operational noise levels at nearby noise-sensitive land uses could potentially exceed the City's exterior and interior noise standards. As a result, this impact would be considered **potentially significant**.

PARKS AND PLAZAS

The PVSP includes the development of various parks and plazas such as an Open-Air Plaza, Neighborhood Parks, and Linear Parks. A larger community park featuring a centralized plaza and sports park is also proposed (the conceptual design of this park is depicted in Figure 3). Noise sources commonly associated with these land uses include recreational noise associated with playgrounds at neighborhood parks and the use of sports fields and ball courts at larger community parks. Plazas may also be a source of noise associated with the occasional use of amplified sound systems. Noise levels and associated impacts associated with these land uses are discussed, as follows:

- **Neighborhood Parks:** Noise generated by smaller neighborhood parks are typically associated with the use of playgrounds. Noise associated with playgrounds typically includes elevated children's

voices and occasional adult voices. Noise levels associated with small playgrounds can generate intermittent noise levels of approximately 55-60 dBA L_{eq} at 50 feet (Ambient 2017). Assuming a maximum operational noise level of 60 dBA L_{eq} at 50 feet, predicted operational noise levels could exceed 65 dBA L_{eq} at approximately 26 feet. Given this distance, predicted 65 dBA noise contours for neighborhood parks are typically confined to within the park boundaries. In addition, noise generated by neighborhood parks would not be uncharacteristic of noise commonly associated with residential land uses, would be intermittent, and would be limited primarily to the daytime hours. For these reasons, this impact would be considered **less than significant**.

- **Community Park:** The proposed community park (Planning Area E) includes the development of a centralized plaza and sports park. Sports parks typically include ball courts and ball fields. Based on noise measurements conducted for similar projects, average-hourly noise levels associated with recreational-use facilities, including ball fields and ball courts, typically average 60 dBA L_{eq} , or less, at the field edge and at approximately 50 feet from spectator areas. Intermittent noise events typically associated with such uses include individuals yelling and the intermittent sound of the hitting and bouncing of balls. The nearest existing noise-sensitive land uses are residential apartments located to the north of Avenue K-8 approximately 550 feet or more from the proposed community park. Based on this distance and assuming an uninterrupted noise level of 60 dBA L_{eq} at 50 feet from the site boundary, predicted recreational noise levels at the exterior of the nearest noise-sensitive land uses would be 39 dBA L_{eq} , or less, and would be largely masked by existing ambient noise levels. Assuming a maximum exterior noise level of 39 dBA L_{eq} and an average exterior-to-interior noise reduction of 25 dBA, predicted interior noise levels at these nearest residential land uses would be 14 dBA L_{eq} and would not exceed the City's interior standards. Predicted noise levels would not exceed the City's exterior or interior noise standards of 65 dBA and 45 dBA, respectively. As a result, this impact would be considered **less than significant**.
- **Plazas (Special Events):** The centralized plaza and community park are also intended to serve as a venue for special events. These areas may include activities such as art and craft fairs, farmers markets, festivals, and other agri-commercial and community-based events. It is anticipated that some onsite events may also include the use of portable amplified sound systems. Based on measurements obtained from similar events with live amplified music, measured noise levels were approximately 86 dBA L_{eq} at 50 feet (Ambient 2024a). Assuming a maximum operational noise level of 86 dBA L_{eq} at 50 feet, predicted operational noise levels could exceed 65 dBA L_{eq} at approximately 529 feet. As noted above, the nearest noise-sensitive land uses are existing residential dwellings located approximately 550 feet north of the proposed community park. Based on this distance, predicted noise levels from event noise would be 65 dBA L_{eq} , or less, at these residential dwellings. Predicted noise levels would not exceed the City's exterior noise standard of 65 dBA. Assuming a maximum exterior noise level of 63 dBA L_{eq} and an average exterior-to-interior noise reduction of 25 dBA, predicted interior noise levels at these nearest residential land uses would be 40 dBA L_{eq} and would not exceed the City's interior standards. As a result, this impact would be considered **less than significant**.

EDUCATIONAL LAND USES

The PVSP includes the development of an 8.7-acre school site (Planning Area F). This planning area provides for the development of public, charter, private, or nursing schools. Noise sources commonly associated with schools typically include noise generated by playgrounds and exterior air conditioning units.

- **School Playgrounds:** Noise generated by playgrounds typically includes elevated children's voices and occasional adult voices. Noise levels associated with playgrounds can generate intermittent noise levels of approximately 55-60 dBA L_{eq} at 50 feet (Ambient 2017). The nearest noise-sensitive land uses are residential apartments located approximately 130 feet, or more, from the edge of the proposed school planning area. Based on this distance and assuming a maximum operational noise of 60 dBA L_{eq} at 50 feet, predicted noise levels at the nearest existing dwellings would be approximately 52 dBA L_{eq} and would not exceed the City's exterior noise standard of 65 dBA. Assuming a maximum exterior noise level of 52 dBA L_{eq} and an average exterior-to-interior noise reduction of 25 dBA, predicted interior noise levels at the nearest residential dwelling would be approximately 27 dBA L_{eq} . Predicted interior noise levels at the nearest existing residential dwelling

would not exceed the City's interior noise standard of 45 dBA. As a result, this impact would be considered **less than significant**.

- **Air Conditioning Units:** As noted above, larger commercial-grade air conditioning units typically generate noise levels of up to 88 dBA L_{eq} at 3 feet when operating. The nearest existing noise-sensitive land uses are residential land uses located approximately 130 feet from the proposed school property. Based on this distance and a maximum operational noise level of 88 dBA L_{eq} at 3 feet, predicted noise levels associated with educational use of exterior air conditioning units would be 55 dBA L_{eq} , or less, at the nearest existing noise-sensitive land use. Assuming an exterior noise level of 55 dBA L_{eq} and an average exterior-to-interior noise reduction of 25 dBA, predicted interior noise levels at these nearest residential land uses would be 30 dBA L_{eq} , or less. Predicted noise levels would not exceed the City's exterior or interior standards of 65 dBA and 45 dBA, respectively. As a result, this impact would be considered **less than significant**.

PARKING AREAS

The PVSP would allow for include parking dispersed throughout the project site although there are no set locations for the parking to occur or minimum parking standards. Noise levels associated with parking areas typically include vehicle operations, the opening and closing of vehicle doors, and the operation of vehicle sound systems. Parking lot noise levels can vary depending on a number of factors, including the number of parking spaces and site design. Parking areas for commercial and public land uses generally range from approximately 50 to 200 parking spaces. Assuming that all spaces would be accessed over an approximate one-hour period, average-hourly noise levels would range from approximately 52 to 58 dBA L_{eq} at 50 feet. Assuming a maximum noise level of 58 dBA L_{eq} at 50 feet, parking lot noise levels could exceed 65 dBA L_{eq} at approximately 21 feet. Parking lots are also a source of instantaneous noise, associated with the opening and closing of vehicle doors, car alarms, and the operation of vehicle sound systems. Based on a noise measurement survey conducted, maximum intermittent noise levels can range from 67 to 81 dBA L_{max} at 50 feet associated with the occasional sounding of car alarms and amplified music (Ambient 2024b). Based on a reference level of 81 dBA L_{max} at 52 feet, predicted instantaneous noise levels could exceed the City's minimum exterior noise standard of 80 dBA at approximately 55 feet. Depending on the final design, the proximity to nearby noise-sensitive land uses, and the size of proposed parking areas, predicted parking area noise levels could potentially exceed the City's exterior and interior noise standards at the nearest existing land uses. As a result, this impact would be considered **potentially significant**.

Mitigation Measures

Mitigation Measure Noise-2: The following measures shall be implemented to reduce long-term exposure to stationary-source noise levels associated with proposed on-site operations:

- a. Air conditioning units for residential and non-residential land uses shall be located in areas shielded from direct line-of-sight of nearby noise-sensitive land uses. To the extent allowed per building code requirements, commercial-use air conditioning units should be located on building rooftop areas and shielded by a rooftop parapet. Rooftop parapets should be constructed to a minimum height of approximately 3 feet.
- b. Prior to the issuance of a building permit, an acoustical analysis shall be prepared to evaluate potential noise impacts associated with proposed commercial land uses. The analysis shall be performed by an individual with experience related to the assessment of noise-related impacts. The analysis shall, at a minimum, include an evaluation of commercial parking areas, commercial mechanical equipment (e.g., compactors, generators), air conditioning equipment, and material loading/unloading areas. Noise-reduction measures shall be incorporated sufficiently to ensure that operational noise levels would not exceed applicable City noise standards at primarily affected existing land uses (refer to Table 4). Such measures may include but are not limited to the installation of noise barriers, setbacks, and site design features.

Significance After Mitigation

Mitigation Measure Noise-1 would require that exterior air conditioning units associated with residential and non-residential land uses be shielded from direct line-of-sight of nearby existing noise-sensitive land uses. Mitigation Measure Noise-2 would require acoustical assessments for proposed commercial land uses and that noise-reduction measures be incorporated sufficient to demonstrate compliance with applicable City

noise standards. As noted above, such measures may include but are not limited to the installation of noise barriers, setbacks, and site design features. Noise-reduction measures can reduce operational noise levels by approximately 5 dBA, or more, depending on the measures selected. With mitigation, this impact would be considered **less than significant**.

Long-term Exposure to Increased Roadway Traffic Noise

Predicted traffic noise levels and increases attributable to the PVSP for existing year 2024 and future-year buildout conditions, are discussed, as follows:

EXISTING YEAR 2024 CONDITIONS

Predicted traffic noise levels and increases attributable to the PVSP for existing year 2024 conditions are summarized in Table 7. As depicted in Table 7, implementation of the proposed Project would result in predicted increases in existing traffic noise levels of approximately 2 dBA CNEL/L_{dn} along 10th Street West. Predicted increases along other area roadways would be less. In comparison to existing conditions, implementation of the proposed Project would not result in substantial increases in traffic noise levels (i.e., 3 dBA, or greater) along area roadways. As noted earlier in this report, perceptible changes in ambient noise levels do not typically occur at levels below 3 dBA. As a result, this impact would be considered **less than significant**.

Table 7
Predicted Increases in Existing (2024) Roadway Traffic Noise Levels

Roadway/Roadway Segment	Predicted CNEL/L _{dn} , 50 Feet from Near-Travel Lane Centerline		Predicted Change	Substantial Increase?
	Without Project	With Project		
Avenue K				
10th Street West to 5th Street West	68.1	68.7	0.6	No
5th Street W to Sierra Highway	70.3	70.9	0.6	No
Avenue L				
10th Street West to 5th Street West	73.3	74.8	1.4	No
5th Street West to Sierra Highway	73.3	73.7	0.5	No
10th Street W				
Avenue K to Avenue K-8	70.8	72.7	1.9	No
Avenue K-8 to Avenue L	70.1	72.2	2.0	No
Gadsden Avenue				
North of Avenue K	57.0	57.8	0.8	No
South of Avenue K	61.6	61.7	0.1	No
Sierra Highway				
Avenue K to Avenue K-8	72.0	72.5	0.5	No
Avenue K-8 to Avenue L	72.0	72.3	0.4	No
Traffic noise levels were calculated using the FHWA traffic noise prediction model (FHWA RD-77-108) based on data obtained from the traffic analysis prepared for this project.				
Substantial increase is defined as an increase of 3 dBA, or greater.				

FUTURE BUILDOUT YEAR CONDITIONS

Predicted traffic noise levels and increases attributable to the proposed Project for future buildout year conditions are summarized in Table 8. As depicted in Table 8, implementation of the proposed Project would result in increased traffic noise levels of up to approximately 1.7 dBA CNEL along 10th Street W. Predicted increases along other area roadways would be less. In comparison to no-project conditions, implementation of the PVSP would not result in substantial increases in traffic noise levels (i.e., 3 dBA, or greater) along area roadways. As a result, this impact would be considered **less than significant**.

Compatibility of Proposed Land Uses with Roadway Traffic Noise

The compatibility of proposed land uses with roadway traffic noise was determined based on predicted traffic noise levels for future-year buildout conditions with implementation of the proposed Project. Predicted

future-year traffic noise levels and distances to projected traffic noise contours for area roadways are depicted in Table 9. It is important to note that projected traffic noise contours do not include attenuation or shielding provided by intervening structures. As depicted in Table 9, predicted future-year traffic noise levels would range from approximately 58 to 75 dBA CNEL at 50 feet from the near-travel-lane centerline of nearby roadways.

Table 8
Predicted Increases in Buildout Year Roadway Traffic Noise Levels

Roadway/Roadway Segment	Predicted CNEL/L _{dn} , 50 Feet from Near-Travel Lane Centerline		Predicted Change	Substantial Increase?
	Without Project	With Project		
Avenue K				
10th Street West to 5th Street West	68.2	68.8	0.6	No
5th Street West to Sierra Highway	70.8	71.3	0.5	No
Avenue L				
10th Street West to 5th Street West	73.7	75.1	1.3	No
5th Street West to Sierra Highway	73.7	74.1	0.4	No
10th Street W				
Avenue K to Avenue K-8	71.6	73.2	1.6	No
Avenue K-8 to Avenue L	71.2	72.8	1.7	No
Gadsden Avenue				
North of Avenue K	57.4	58.1	0.8	No
South of Avenue K	62.0	62.1	0.1	No
Sierra Highway				
Avenue K to Avenue K-8	74.1	74.4	0.3	No
Avenue K-8 to Avenue L	74.1	74.3	0.2	No
Traffic noise levels were calculated using the FHWA traffic noise screening tool noise prediction model (FHWA RD-77-108) based on data obtained from the traffic analysis prepared for this project. Buildout year is estimated to occur between the years 2040 and 2050. Substantial increase is defined as an increase of 3 dBA, or greater.				

Table 9
Buildout Year Roadway Traffic Noise Levels & Contour Distances

Roadway Segment	CNEL at 50 ft. from Near-travel-lane Centerline	Distance to CNEL Contour (Feet from Road Centerline)		
		70	65	60
Avenue K				
10 th West Street to 5 th Street West	68.8	71	140	295
5 th Street West to Sierra Highway	71.3	100	204	435
Avenue L				
10 th Street West to 5 th Street West	75.1	185	390	837
5 th Street West to Sierra Highway	74.1	161.8	338	724
10 th Street W				
Avenue K to Avenue K-8	73.2	128.5	270	577
Avenue K-8 to Avenue L	72.8	122	255	546
Gadsden Avenue				
North of Avenue K	58.1	0	0	0
South of Avenue K	62.1	0	0	84.4
Sierra Highway				
Avenue K to Avenue K-8	74.4	135	288	619
Avenue K-8 to Avenue L	74.3	133	285	612
Traffic noise levels for area roadways were calculated based on data obtained from the traffic analysis prepared for this project (Garland 2024). Predicted noise contours do not include shielding by intervening structures or terrain. Refer to Figure 6 for predicted noise contours. Buildout Year is estimated to occur between the years 2040 and 2050.				

Figure 6 depicts predicted traffic noise contours at the Project site for future-year buildout conditions. As depicted in Figure 6, predicted roadway traffic noise levels along the Project boundaries could reach levels of approximately 70 dBA CNEL, or more. As previously noted, the City's land use compatibility noise

standards for proposed land uses would range from 65 dBA CNEL for residential and school land uses to 70 dBA CNEL for commercial land uses (refer to Table 4). Depending on the final site design, traffic noise levels at proposed onsite land uses could potentially exceed the City's noise standards for land use compatibility (Refer to Table 4). As a result, this impact would be considered **potentially significant**.

Figure 6
Roadway Traffic Noise Contours (Buildout Year With Project)



Locations are approximate. Not to Scale. Depicts noise contours for future Buildout year. Buildout year estimated to occur between the years 2040 and 2050.

Mitigation Measures

Mitigation Measure Noise-3: Prior to the issuance of a building permit, an acoustical analysis shall be prepared to evaluate the compatibility of proposed residential land uses located within the projected 65 dBA CNEL noise contour of area roadways, proposed residential land uses located within the projected 65 dBA CNEL noise contour of the Palmdale Regional Airport/USAF Plant 42, as well as commercial land uses located within the projected 70 dBA CNEL noise contour of area roadways. The analysis shall be performed by an individual with experience related to the assessment of noise-related impacts. Noise-reduction measures shall be incorporated sufficient to ensure that operational noise levels would not exceed applicable City noise standards at primarily affected existing land uses (refer to Table 4). Such measures may include but are not limited to the installation of noise barriers, building setbacks, and site design features.

Significance After Mitigation

Implementation of the Mitigation Measure Noise-3 would require the preparation of acoustical assessments for proposed land uses located within areas that could potentially exceed applicable City noise standards. Noise-reduction measures would be incorporated sufficient to demonstrate consistency with the City's applicable noise standards for land use compatibility. As noted above, such measures may include but are not limited to the installation of noise barriers, setbacks, and site design features. Noise-reduction measures can reduce operational noise levels by approximately 5 dBA, or more, depending on the measures selected. With mitigation, this impact would be considered **less than significant**.

Impact Noise-2: Generation of excessive groundborne vibration or groundborne noise levels.

Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction activities. Implementation of the proposed Project would not result in the addition of major stationary sources of groundborne vibration, that would result in the long-term exposure of existing land uses to unacceptable levels of ground vibration. However, construction activities associated with the proposed Project would require the use of various tractors, trucks, and jackhammers that could result in intermittent increases in groundborne vibration levels. The use of major groundborne vibration-generating construction equipment/processes (i.e., blasting, pile driving) is not anticipated to be required for the construction of future on-site land uses. Groundborne vibration levels commonly associated with construction equipment are summarized in Table 10.

Table 10
Representative Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity at 25 Feet (In/Sec)
Large Bulldozers	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozers	0.003
Source: FTA 2018, Caltrans 2020	

As identified in Table 10, groundborne vibration levels generated by construction equipment would be approximately 0.089 in/sec ppv, or less, at 25 feet. Based on a maximum level of 0.089 in/sec ppv at 25 feet, predicted vibration levels could potentially exceed the threshold for human annoyance of 0.2 in/sec ppv at approximately 13 feet and the threshold for potential structure damage of 0.5 in/sec ppv at approximately 6 feet from construction activities. Major construction activities involving the use of heavy-duty off-road equipment would not be anticipated to occur within 6 feet of existing occupied structures. As a result, construction activities would not exceed the commonly applied threshold for structural damage of 0.5 in/sec ppv. However, predicted vibration levels at the nearest occupied structures located within 13 feet of onsite construction activities could potentially exceed the commonly applied criteria for the human annoyance of 0.2 in/sec ppv. As a result, construction of the PVSP could result in increased levels of annoyance to occupants of nearby structures. With regard to existing residential land uses and the existing motel, increases in groundborne vibration levels during the more sensitive nighttime hours could result in increased levels of sleep disruption. As a result, this impact would be considered **potentially significant**.

Mitigation Measures

Implement **Mitigation Measure Noise-1**.

Significance After Mitigation

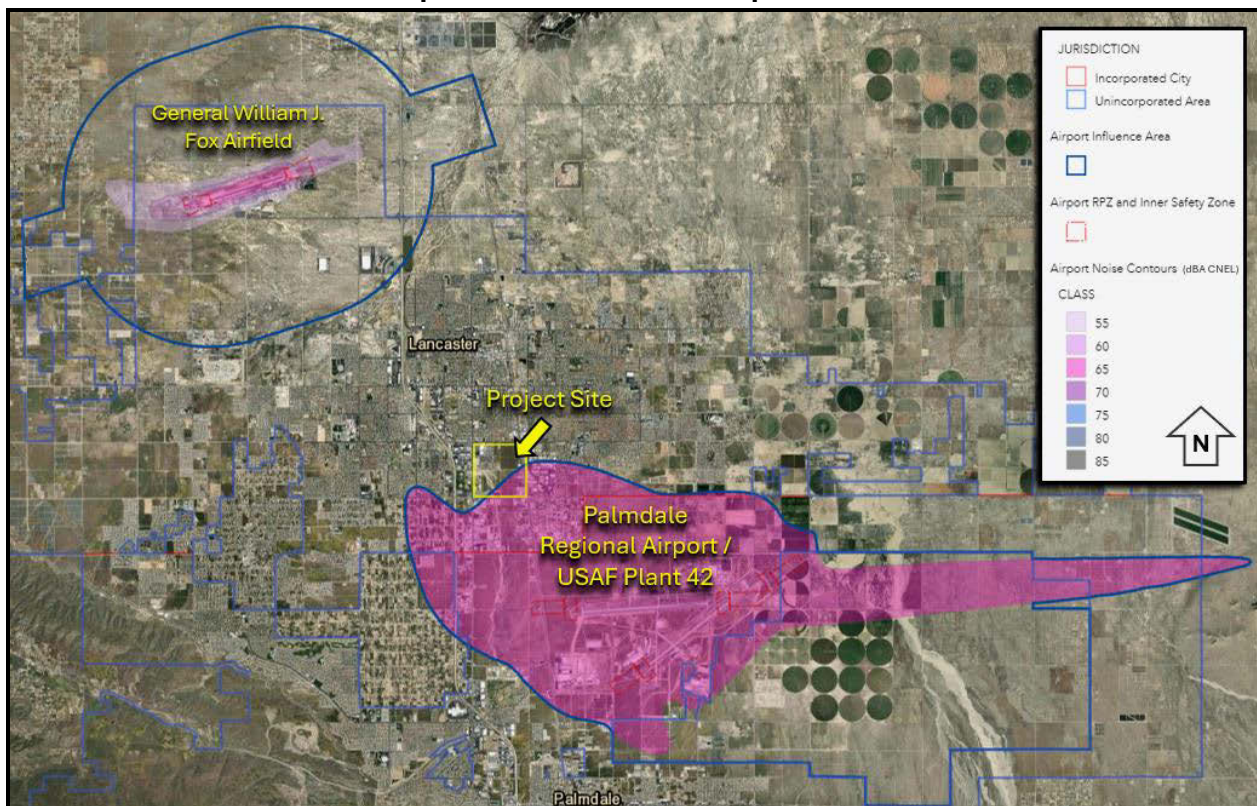
Implementation of the Mitigation Measure Noise-1 would require construction equipment and material staging areas would be located at the furthest distance possible from nearby residential land uses. In

addition, construction activities would be limited to the less sensitive weekday daytime hours of between 7 am and 8 pm, which would further reduce potential human annoyance and sleep disruption to occupants of nearby existing residential land uses. Mitigation Measure Noise-1 would also prohibit construction activities on Sundays, which would minimize impacts to worship services at nearby churches. With the implementation of Mitigation Measure Noise-1, this impact would be considered **less than significant**.

Impact Noise-3: *Located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or private-use airport, that exposes people residing or working in the project area to excessive noise levels.*

The PVSP is not located within two miles of a public airport or private use airstrip. The nearest airport/airstrip is the Palmdale Airport/USAF Plant 42 which is located approximately 2.5 miles south of the project site. As depicted in Figure 7, the PVSP is located within the Palmdale Airport planning boundary. The PVSP is not located within the planning boundary or influence area of any other nearby airports.

Figure 7
Palmdale Airport / USAF Plant 42 Airport Influence Area

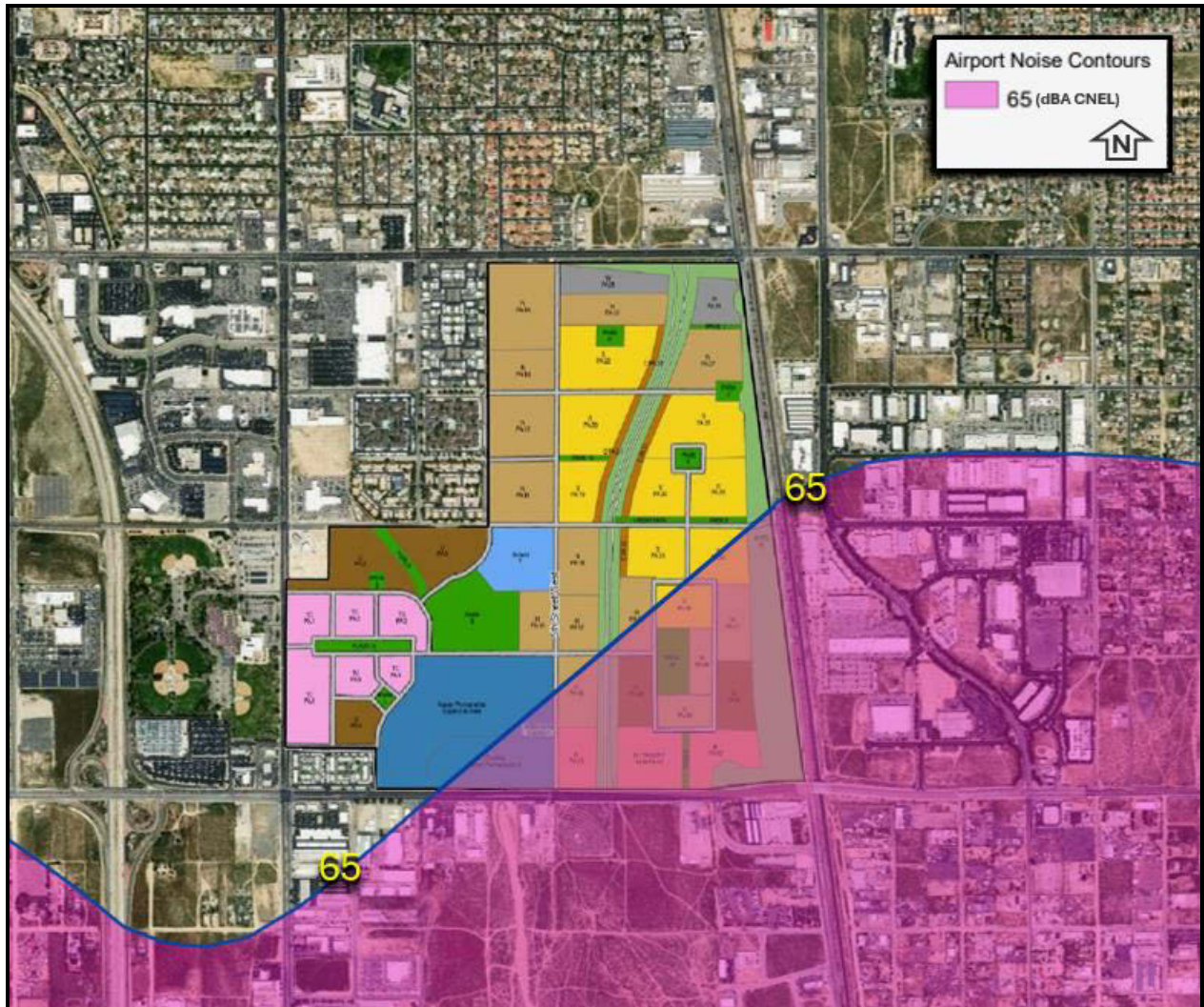


Locations are approximate. Not to Scale.

The predicted 65 dBA CNEL noise contour for the Palmdale Regional Airport/USAF Plant 42 is depicted in Figure 8 (LA County Planning 2024). As shown in Figure 8 the southern portion of the PVSP is within the 65 dBA CNEL contour. Noise-sensitive land uses proposed within the 65 dBA CNEL contour include a mix of residential land uses including but not limited to single-family homes, townhouses, condominiums, and apartments, as well as the Kaiser Permanente Antelope Valley Medical Offices. Predicted exterior aircraft noise levels at these proposed land uses could exceed the City's exterior standard of 65 dBA CNEL. In addition, these land uses could be subject to exterior instantaneous noise levels associated with aircraft overflights that could potentially exceed the City's applicable noise standards.

With regard to aircraft noise, residential land uses within the 65 dBA CNEL noise contour would typically be considered incompatible if predicted interior noise levels would exceed 45 dBA CNEL. With compliance with current building insulation standards, exterior to interior noise levels are typically reduced by approximately 25-30 dBA. Assuming a maximum exterior noise level of 65 dBA CNEL and a minimum exterior-to-interior reduction of 25 dBA, predicted interior aircraft noise levels would be approximately 40 dBA CNEL, or less. Predicted interior noise levels would not exceed the commonly applied interior noise standard of 45 dBA CNEL. Nonetheless, implementation of the proposed Project could expose workers or residents to aircraft noise levels in excess of the City's applicable standards. As a result, this impact would be considered **potentially significant**.

Figure 8
Palmdale Airport/USAF Plant 42 65 CNEL Noise Contour



Locations are approximate. Not to Scale.

Mitigation Measures

Mitigation Measure Noise-4: In accordance with City General Plan Policy 4.4.3, the Project shall require aviation easements for proposed residential land uses located within the 65 dBA CNEL contour of Palmdale Regional Airport/USAF Plant 42.

Significance After Mitigation

With the implementation of the proposed Mitigation Measure Noise-3, an acoustical assessment would be required to evaluate the compatibility of proposed land uses, including residential land uses, located within the projected 65 dBA CNEL noise contour of Palmdale Regional Airport/USAF Plant 42. In addition, aviation easements shall be required for residential developments within the 65 CNEL contour of Palmdale Regional Airport/USAF Plant 42. With mitigation, this impact would be considered ***less than significant***.

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APPENDIX A

Noise Modeling & Support Documentation

Existing Without Project

Predicted Traffic Noise Levels - Weekdays							
Existing Noise Level - dBA CNEL/Ldn							
Roadways	Avg Speeds	ADT	at 50ft NTLCL	Distance to Contours			
				55 CNEL	60 CNEL	65 CNEL	70 CNEL
Avenue K							
10 th Street W to 5 th Street W	40.0	27700.0	68.1	572.0	267.2	127.5	66.2
5 th Street W to Sierra Highway	45.0	35300.0	70.3	811.2	377.8	178.0	88.0
Avenue L							
10 th Street W to 5 th Street W	55.0	37900.0	73.3	1382.2	642.9	301.0	145.0
5 th Street W to Sierra Highway	55.0	37500.0	73.3	1372.5	638.4	298.9	144.1
10th Street W							
Avenue K to Avenue K-8	50.0	25600.0	70.8	854.3	397.7	186.9	91.5
Avenue K-8 to Avenue L	50.0	22100.0	70.1	774.7	360.8	170.0	84.1
Gadsden Avenue							
North of Avenue K	25.0	5500.0	57.0	78.6	0.0	0.0	0.0
South of Avenue K	35.0	7500.0	61.6	167.3	78.4	0.0	0.0
Sierra Highway							
Avenue K to Avenue K-8	55.0	22600.0	72.0	919.6	427.3	199.3	94.4
Avenue K-8 to Avenue L	55.0	22600.0	72.0	919.6	427.3	199.3	94.4

Existing With Project

Predicted Traffic Noise Levels - Weekdays								
Existing with project Noise Level - dBA CNEL/Ldn								
Roadways	Avg Speeds	ADT	at 50ft NTCL	Distance to Contours				Change at 50 NTCL Build-NoBuild
				55 CNEL	60 CNEL	65 CNEL	70 CNEL	
Avenue K								
10 th Street W to 5 th Street W	40.0	31510.0	68.7	623.1	290.8	138.2	70.6	0.6
5 th Street W to Sierra Highway	45.0	40110.0	70.9	883.2	411.1	193.3	94.7	0.6
Avenue L								
10 th Street W to 5 th Street W	55.0	52560.0	74.8	1718.6	798.8	372.9	177.4	1.4
5 th Street W to Sierra Highway	55.0	41580.0	73.7	1470.2	683.7	319.8	153.4	0.5
10th Street W								
Avenue K to Avenue K-8	50.0	39720.0	72.7	1144.6	532.2	248.8	119.1	1.9
Avenue K-8 to Avenue L	50.0	35370.0	72.2	1059.5	492.7	230.6	110.9	2.0
Gadsden Avenue								
North of Avenue K	25.0	6650.0	57.8	89.1	0.0	0.0	0.0	0.8
South of Avenue K	35.0	7650.0	61.7	169.5	79.4	0.0	0.0	0.1
Sierra Highway								
Avenue K to Avenue K-8	55.0	25270.0	72.5	990.6	460.3	214.5	101.3	0.5
Avenue K-8 to Avenue L	55.0	24530.0	72.3	971.2	451.3	210.3	99.4	0.4

Buildout Year Without Project

Predicted Traffic Noise Levels - Weekdays							
Build Out Year No Project Noise Level - dBA CNEL/Ldn							
Roadways	Avg Speeds	ADT	at 50ft NTLCL	Distance to Contours			
				55 CNEL	60 CNEL	65 CNEL	70 CNEL
Avenue K							
10 th Street W to 5 th Street W	40.0	28350.0	68.2	580.8	271.3	129.4	66.9
5 th Street W to Sierra Highway	45.0	38830.0	70.8	864.3	402.4	189.3	92.9
Avenue L							
10 th Street W to 5 th Street W	55.0	41690.0	73.7	1482.8	684.9	320.3	153.7
5 th Street W to Sierra Highway	55.0	41250.0	73.7	1462.4	680.0	318.1	152.7
10th Street W							
Avenue K to Avenue K-8	50.0	30800.0	71.6	966.3	449.5	210.7	102.0
Avenue K-8 to Avenue L	50.0	28050.0	71.2	907.9	422.5	198.3	96.5
Gadsden Avenue							
North of Avenue K	25.0	6050.0	57.4	83.7	0.0	0.0	0.0
South of Avenue K	35.0	8250.0	62.0	178.2	83.4	0.0	0.0
Sierra Highway							
Avenue K to Avenue K-8	55.0	36800.0	74.1	1272.6	591.1	275.1	129.0
Avenue K-8 to Avenue L	55.0	36800.0	74.1	1272.6	591.1	275.1	129.0

Buildout Year With Project

Predicted Traffic Noise Levels - Weekdays								
Build Out Noise Level - dBA CNEL/Ldn								
Roadways	Avg Speeds	ADT	at 50ft NTLCL	Distance to Contours				Change at 50 NTCL Build- NoBuild
				55 CNEL	60 CNEL	65 CNEL	70 CNEL	
Avenue K								
10 th Street W to 5 th Street W	40.0	32160.0	68.8	631.6	294.7	140.0	71.4	0.6
5 th Street W to Sierra Highway	45.0	43640.0	71.3	934.2	434.8	204.1	99.5	0.5
Avenue L								
10 th Street W to 5 th Street W	55.0	56350.0	75.1	1800.2	836.6	390.3	185.3	1.3
5 th Street W to Sierra Highway	55.0	45330.0	74.1	1557.3	724.0	338.4	161.8	0.4
10th Street W								
Avenue K to Avenue K-8	50.0	44920.0	73.2	1242.4	577.5	269.7	128.5	1.6
Avenue K-8 to Avenue L	50.0	41320.0	72.8	1175.1	546.3	255.3	122.0	1.7
Gadsden Avenue								
North of Avenue K	25.0	7200.0	58.1	93.9	0.0	0.0	0.0	0.8
South of Avenue K	35.0	8400.0	62.1	180.4	84.4	0.0	0.0	0.1
Sierra Highway								
Avenue K to Avenue K-8	55.0	39470.0	74.4	1333.5	619.3	288.1	135.1	0.3
Avenue K-8 to Avenue L	55.0	38730.0	74.3	1316.7	611.6	284.5	133.4	0.2

Traffic Noise Land Use Compatibility

Roadway	Planning Area	Segment	Distance (ft)	Exterior Noise Level (dBA CNEL)	Interior Noise Level (dBA CNEL)	Threshold Ext/Int	Exceeds (Ext/Int)
Avenue K	N PA 14	10 th Street W to 5 th Street W	76 ft	70	45	65/45	Yes/Yes
	W PA 25	5 th Street W to Sierra Highway	77 ft	72	47	70/50	Yes/No
Tenth Street	TC PA 6	K-8 to Ave L	62 ft	74	49	70/50	Yes/No
	TC PA 1	K-8 to Ave L	63 ft	74	49	70/50	Yes/No
	UPA 7	K-8 to Ave L	65 ft	74	49	65/45	Yes/Yes
	F	K-8 to Ave L	2000 ft	52	27	65/45	No/No
Avenue L	O	10 th to 5 th	102 ft	74	49	NA/40	NA/Yes
	B PA 42	5 th Street to Sierra	124 ft	72	47	70/50	Yes/No
	B PA 43 Transit Hub	5 th Street to Sierra	116 ft	72	47	70/50	Yes/No
	B PA 15	5 th Street to Sierra	118 ft	72	47	70/50	Yes/No
Gadsden Ave	UPA 8	Gasden Ave	80 ft	60	35	65/45	No/No
Sierra Highway	W PA 26	Ave K to K-8	100 ft	72	47	70/50	Yes/No
	N PA 27	Ave K to K-8	130 ft	71	46	65/45	Yes/Yes
	SPA 28	Ave K to K-8	205 ft	69	44	65/45	Yes/No

Predicted traffic noise levels were applied at the parcel boundary. Actual noise levels may vary depending on final site design.

Predicted Stationary Source Noise Levels

Non-instantaneous			
Source	Reference Noise Level (dBA L _{eq})	Distance to impact (feet)	Exterior Noise Level (dBA L _{eq})
Air Conditioning Unit	65 dBA L _{eq} @ 3 feet	2	69
Commercial AC/Chiller	88 dBA L _{eq} @ 3 feet	40	66
Material Loading and Unloading	65 dBA L _{eq} @ 50 feet	47	66
Commercial Mechanical Equipment	73 dBA L _{eq} @ 5 feet	11	66
Outdoor Play Areas	60 dBA L _{eq} @ 50 feet	26	66
Community Event Center and Amphitheater	86 dBA L _{eq} @ 50 feet	529	66
Parking Lot (200 Spaces)	58 dBA L _{eq} @ 50 feet	21	66
Instantaneous			
Source	Reference Noise Level (dBA L _{max})	Distance to impact (feet)	Exterior Noise Level (dBA L _{max})
Material Loading and Unloading (instantaneous)	90 dBA L _{max} @ 50 feet	149	81
Opening and closing of vehicle doors, car alarms, and the operation of vehicle sound systems (instantaneous)	81 dBA L _{max} @ 50 feet	52	81

Predicted Unmitigated Construction Noise Levels

Equipment	Reference Noise Level at 50 feet L_{max}	Distance (feet)	Exterior Noise Level (dBA L_{max})
Backhoes	78	50	78
Bulldozers	82	50	82
Excavator	81	50	81
Generator	81	50	81
Gradall	83	50	83
Grader	85	50	85
Front End Loaders	79	50	79
Pneumatic Tools	85	50	85
Scrapers	84	50	84
Tractor	84	50	84
Compressor	80	50	80

Predicted Mitigated Construction Noise Levels

Equipment	Reference Noise Level at 50 feet L_{max}	Distance (feet)	Exterior Noise Level (dBA L_{max})
Backhoes	78	50	68
Bulldozers	82	50	72
Excavator	81	50	71
Generator	81	50	71
Gradall	83	50	73
Grader	85	50	75
Front End Loaders	79	50	69
Pneumatic Tools	85	50	75
Scrapers	84	50	74
Tractor	84	50	74
Compressor	80	50	70
1. Includes 10 dB reduction for mufflers			

Predicted Construction Vibration Levels

Equipment	Distance (feet)	Predicted Vibration Level (In/Sec ppv)	Threshold ¹ (In/Sec ppv)	Exceeds ¹
Large Bulldozers	13	0.206	0.2/0.5	Yes/No
Loaded Trucks	13	0.176	0.2/0.5	No/No
Jackhammer	13	0.082	0.2/0.5	No/No
Small Bulldozers	13	0.007	0.2/0.5	No/No
1. Human annoyance/Structural damage				



NOISE MEASUREMENT SURVEY FORM

SHEET 1 OF 3

DATE: 5/14/2024
PROJECT: Lancaster Parkway Village Specific Plan
MONITORING STAFF: Kurt Legleiter



NOISE MEASUREMENT CONDITIONS & EQUIPMENT

MET CONDITIONS & MONITORING EQUIPMENT:	TEMP: 84-90°F HUMIDITY: 23-18% WIND SPEED: 3-5 MPH GROUND: DRY				
	COVER BY CLASS (OC-OVERCAST):	3	(1. HEAVY OC, 2. LIGHT OC, 3. SUNNY, 4. CLEAR NIGHT, 5. OC NIGHT)		
NOISE MONITORING EQUIPMENT:	MET. METER:	KESTREL 2500			
	LARSON DAVIS SLM MODEL:	LD LXT TYPE 1			
	CALIBRATOR:	REED R8090 Sound Level Calibrator			
NOISE MONITORING SETUP:	WITHIN 10 FT OF REFLECTIVE SURFACE:	NO	MICROPHONE HEIGHT AGL (FT):		5
	CALIBRATED PRIOR TO AND UPON COMPLETION OF MEASUREMENTS:	YES	METER SETTINGS:	A-WHT	SLOW

NOISE & TRAFFIC MEASUREMENTS

MEASUREMENT LOCATION	DATE/TIME	DURATION (Minutes)	MEASUREMENT LOCATION	PRIMARY NOISE SOURCES NOTED	MEASURED NOISE LEVELS LEQ	MEASURED NOISE LEVELS LMAX
ST-1	10:28-10:48	20	10th Street W, east side of the road on the roadway sidewalk.	Roadway traffic noise along 10th Street W.	69.9	80.5
ST-2	10:45-10:55	15	W Avenue K-8 end of the cul-de-sac.	Landscaping in dirt area.	49.3	55.1
ST-3	11:08-11:15	15	W Avenue K-8, south side of the road along the roadway edge.	Roadway traffic noise along W Avenue K-8.	64.8	81.9
ST-4	11:28-11:35	15	Avenue K, south side of the road on the roadway sidewalk.	Roadway traffic along Avenue K.	67.8	73.4
ST-5	11:45-12:00	15	Sierra Highway, west side of the highway on the sidewalk.	Roadway traffic noise from Sierra Highway and aircraft overflight in the distance.	75.4	85.4
ST-6	12:18-12:25	15	W Avenue L, north side of the road on the roadway sidewalk.	Roadway traffic noise along W Avenue L.	67.9	83.3
ST-7	12:48-12:55	15	Bike and pedestrian path between Sierra Highway and W Avenue K-8.	Distant Traffic	44.3	48.6



NOISE MEASUREMENT SURVEY FORM

SHEET 2 OF 3

DATE: 8/14/2024

PROJECT: Lancaster Parkway Village Specific Plan

MONITORING STAFF: Kurt Leichter

SITE PHOTO(S): (Refer to data sheet for noise measurement locations)

MEASUREMENT LOCATION 1



MEASUREMENT LOCATION 2



MEASUREMENT LOCATION 3



MEASUREMENT LOCATION 4



MEASUREMENT LOCATION 5



MEASUREMENT LOCATION 6



MEASUREMENT LOCATION 7



MEASUREMENT LOCATION 8





NOISE MEASUREMENT SURVEY FORM

		SHEET		3	OF		3
DATE:	8/14/2024						
PROJECT:	Lancaster Parkway Village Specific Plan						
MONITORING STAFF:	Kurt Legleiter						
TRAFFIC COUNTS (Refer to data sheet for noise measurement locations)							
LOCATION/ROADWAY SEGMENT - DURATION (MINUTES)	SPEED	NUMBER OF LANES/MEDIAN WIDTH	LDA/LDT	MDT	HDT	MC	BUS
ST-1 / 10th Street West (10 MINUTES)	45	4 Lanes 15 Foot Median	267	11	1	0	0
ST-3 / West Avenue K-8 (10 MINUTES)	45	Two Lane Road No Median	23	0	0	1	0
ST-4 / Avenue K (10 MINUTES)	40	Two Lanes Eastbound, Three Westbound 15 Foot Median	276	1	2	1	0
ST-5/ Sierra Highway (10 MINUTES)	55	Two lanes in each direction, 12 Foot median	218	7	1	0	0
ST-6/ West Avenue L (10 MINUTES)	55	3 lanes in each direction, 18 Foot median	290	7	6	1	0
Monitoring locations, times, and durations correspond to noise measurement locations and periods of measurement.							