NOISE AND VIBRATION IMPACT ANALYSIS

L AND 10TH COMMERCIAL DEVELOPMENT PROJECT

LANCASTER, CALIFORNIA

December 2023

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Project No. 20231165

December 2023

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LIST OF ABBREVIATIONS AND ACRONYMS

City	City of Lancaster
CNEL	Community Noise Equivalent Level
dB	decibel(s)
dBA	A-weighted decibel(s)
ft	foot/feet
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
L_{max}	maximum instantaneous noise level
L_{min}	minimum instantaneous noise level
LSA	LSA Associates, Inc.
project	L and 10th Commercial Development Project
sf	Square feet
SPL	Sound Power Level
VdB	Vibration velocity decibel

INTRODUCTION

This noise impact analysis has been prepared to evaluate the potential noise impacts and mitigation measures associated with the proposed L and 10th Commercial Development Project (project) in Lancaster, California. This report is intended to satisfy the City of Lancaster's (City) requirement for a project-specific noise impact analysis by examining the impacts of the proposed uses on the project site and identifies whether any noise reduction measures to reduce project noise impacts would be necessary.

PROJECT LOCATION AND DESCRIPTION

The 3.73-acre project site is located at the southwest corner of 10th Street West and West Avenue L in Lancaster, California. A commercial shopping center, a Costco Wholesale and Gas Station, and fast-food operations are in the project vicinity. Access to the project site is provided by West Avenue L and 10th Street. The project location is shown on Figure 1.

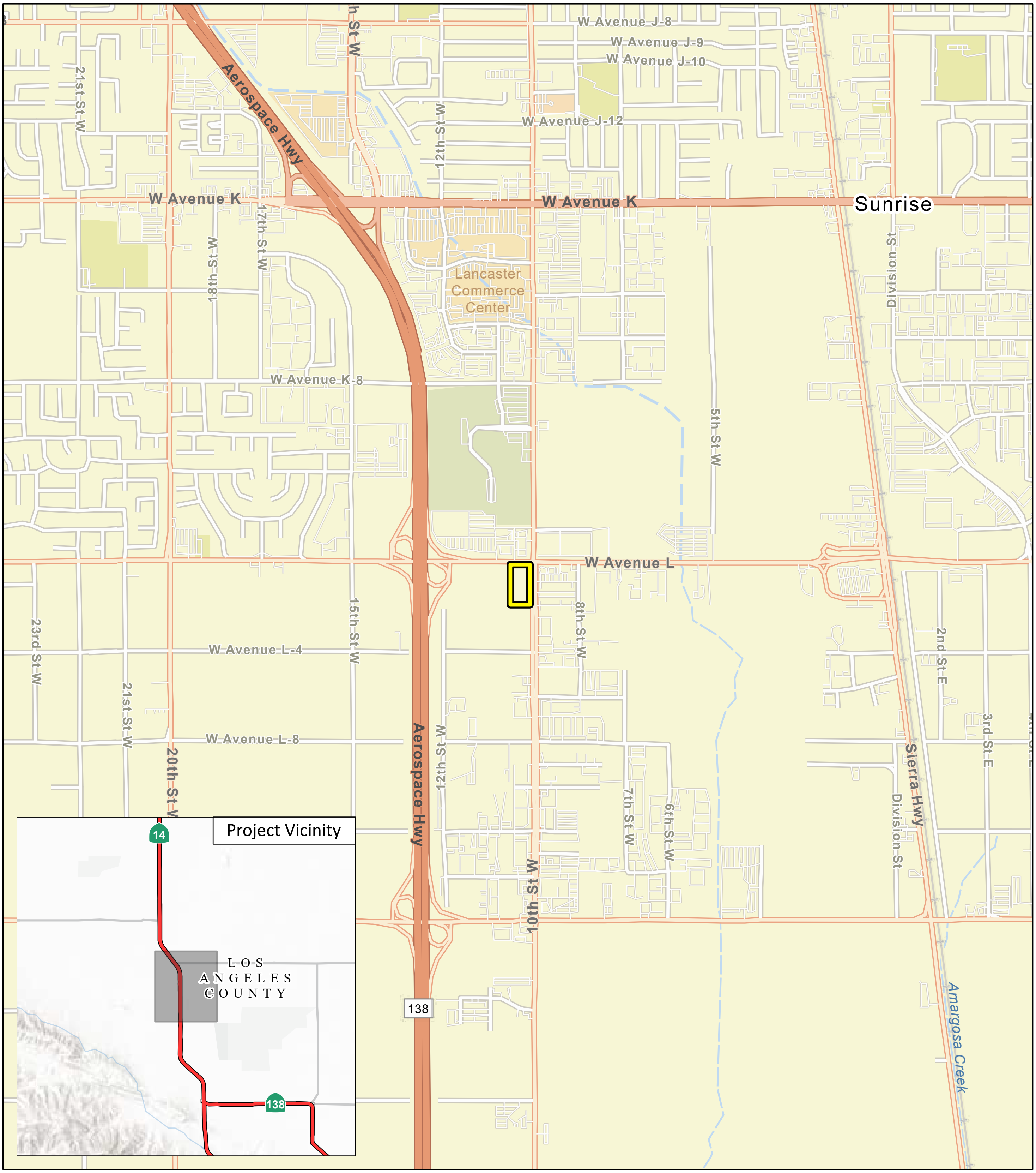
The proposed project would construct a 2,900 square foot (sq ft) fast food restaurant with drive-through, a 2,400 sq ft coffee shop with drive-through, and a 3,600 sq ft car wash. The proposed project would include a total of 80 parking spaces, including 5 accessible parking spaces, 16 electric vehicle (EV) spaces, 4 electric vehicle charging stations (EVCS), and 6 bicycle spaces. Approximately 28 percent or 43,000 sq ft of the total project site area would be designated for landscape. Construction would include site preparation, grading, building construction, paving, and architectural coating activities. Construction of the proposed project is anticipated to begin in April 2024 and would end in 2025. The proposed project would be balanced, and no soil import or export is anticipated. The site is relatively flat and graded with some vegetation. No structures are currently on the property. The project site plan is presented in Figure 2.

The hours of operation for the proposed car wash are 8:00 a.m. to 9:00 p.m. The proposed restaurant and coffee shop would operate 24-hours a day.

EXISTING LAND USES IN THE PROJECT AREA

The project site is surrounded by residential, religious, commercial and vacant uses. The areas adjacent to the project site include the following uses:

- **North:** Existing commercial uses (fast food and gas station) opposite West Avenue L
- **East:** Existing commercial uses (fast food and sit-down restaurant) opposite 10th Street W
- **South:** Vacant land
- **West:** Existing place of worship (Kingdom Hall of Jehovah's Wintesses)
- **Northeast:** Existing multi-family residences (Montecito Apartments)
- **Southwest:** Existing single-family residences along West Avenue L-4



LSA

Project Location

FIGURE 1

0 1000 2000
FEET

SOURCE: ESRI World Street Map (2023)

L and 10th Commercial Development

Project Location

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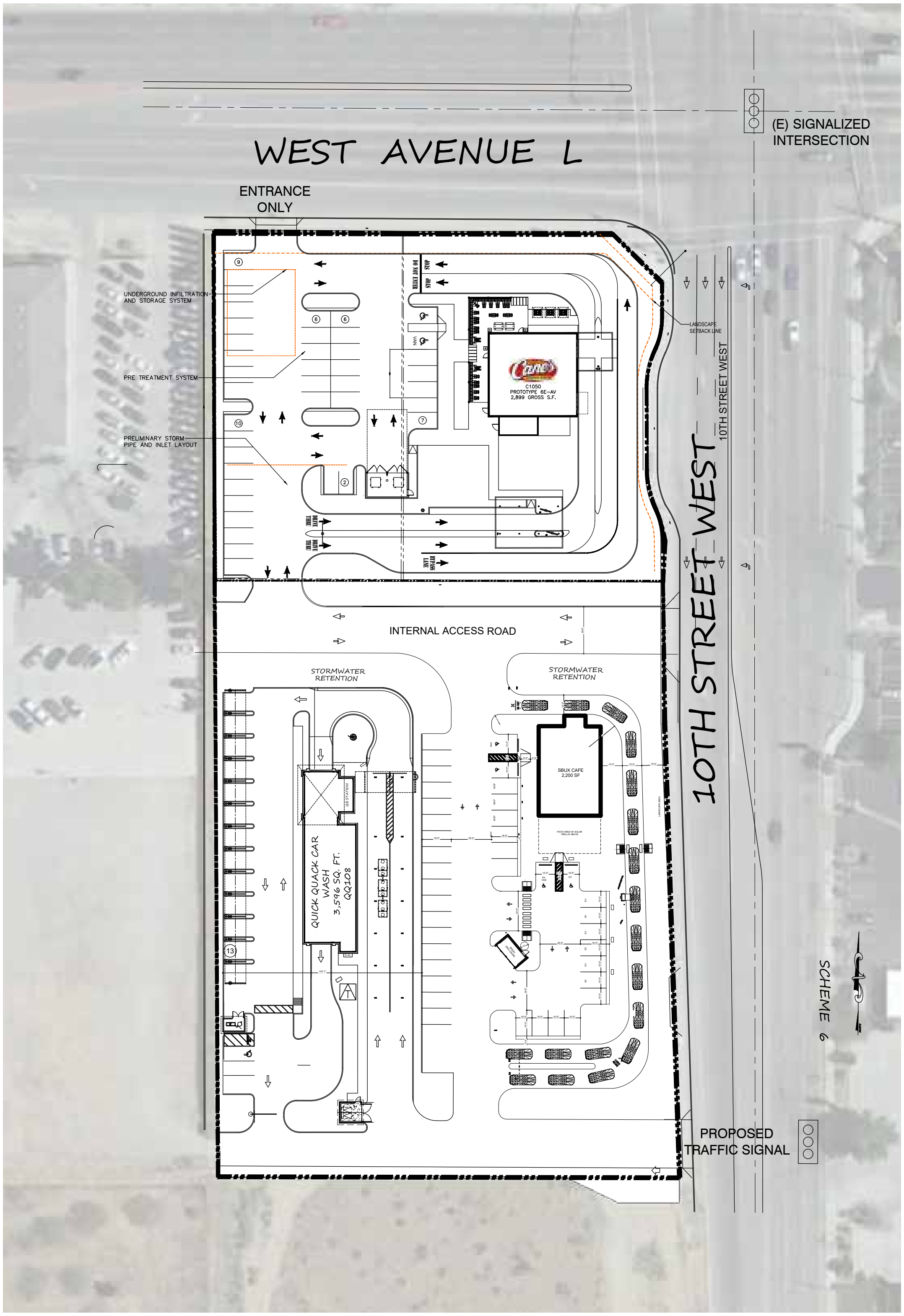

LSA

FIGURE 2

0 50 100

FEET

SOURCE: T&K Development

L and 10th Commercial Development

Site Plan

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NOISE FUNDAMENTALS

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a sound wave, which results in the tone's range from high to low. Loudness is the strength of a sound, and it describes a noisy or quiet environment; it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound wave combined with the reception characteristics of the human ear. Sound intensity refers to the power carried by sound waves per unit area in a direction perpendicular to that area. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound pressure level and its effect on adjacent sensitive land uses.

Measurement of Sound

Sound pressure level is measured with the A-weighted decibel scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound, similar to the human ear's de-emphasis of these frequencies. Decibels, unlike linear units (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the sound's loudness. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations) the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source sound levels decrease 4.5 dB for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noise occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the relaxation and sleeping hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. Additionally, an increase of more than 5 dBA is typically considered readily perceptible in an exterior environment. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas.

Table A lists definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of sound level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. It is usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Sources: California Department of Transportation (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2018).

Table B: Common Sound Levels and Their Noise Sources

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 ft		
	— 100 —	
Gas lawn mower at 3 ft		
	— 90 —	
Diesel truck at 50 ft at 50 mph		Food blender at 3 ft
	— 80 —	Garbage disposal at 3 ft
Noisy urban area, daytime		
Gas lawn mower, 100 ft	**— 70 —**	Vacuum cleaner at 10 ft
Commercial area		Normal speech at 3 ft
Heavy traffic at 300 ft	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing

Source: *Technical Noise Supplement,* California Department of Transportation (September 2013).
dBA = A-weighted decibels
ft = feet
mph = miles per hour

REGULATORY SETTING

The applicable noise standards governing the project site include the criteria in the City's Noise Element of the General Plan (Noise Element) and the City of Lancaster Municipal Code (LMC).

CITY OF LANCASTER NOISE STANDARDS

The following presents the standards utilized by the City of Lancaster for determining potential noise impacts.

City of Lancaster General Plan Noise Element

The Noise Element of the City of Lancaster General Plan (City of Lancaster 2009) includes the following objectives, policies, and specific actions intended to minimize noise through standards, site planning, and noise mitigation:

> **Objective 4.3:** Promote noise compatible land use relationships by implementing the noise standards identified in Table 3-1 [shown in Table C] to be utilized for design purposes in new development and establishing a program to attenuate existing noise problem.

Table C: City Noise Compatible Land Use Objectives

Land Use	Maximum Exterior CNEL	Maximum Interior CNEL
Rural, Single Family, Multiple Family Residential	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

Source: City of Lancaster General Plan, Table 3-1 (City of Lancaster 2009).
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels

> **Policy 4.3.1:** Ensure that noise-sensitive land uses and noise generators are located and designed in such a manner that City noise objectives will be achieved.
>
> **Action 4.31.1(a):** Where new development is proposed for areas within which the exterior or interior noise levels outlined in Table 3-1 [shown in Table C] of Objective 4.3 are likely to be exceeded by existing or planned land uses, require a detailed noise attenuation study to be prepared by a qualified acoustical engineer, in order to determine appropriate mitigation and ways to incorporate such mitigation into project design.
>
> **Action 4.3.1(b):** When proposed projects include uses that could be potentially significant noise generators, require noise analyses to be prepared by an acoustical expert, including specific recommendations for mitigation when: 1) the project is located in close proximity to noise

sensitive land uses or land which is planned for noise sensitive land uses, or 2) the proposed noise source could violate the noise provisions of the General Plan or Municipal Code.

Action 4.3.1(e): For purposes of consistency, require that noise reports incorporate the following methodology:

- Assume three (3) dBA attenuation with doubling of distance for the natural attenuation of noise emanating from roadways (with the exception of freeways where a 4.5 dBA attenuation with doubling of distance may be utilized).

- Use the daily design capacity of roadways as outlined in the City of Lancaster Transportation Master Plan and the posted speed limit to quantify the design noise levels adjacent to master planned transportation routes for mitigation purposes.

Action 4.3.1(g): In areas where existing residential development is heavily impacted by noise from various sources which cannot be mitigated, consider alternative land uses as a potential mitigation measure.

Action 4.3.1(h): 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 III-1 [shown in Table C]).

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 3.3.3(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.

Action 3.3.3(b): Whenever feasible, require the use of noise barriers (walls, berms, or a combination thereof) to reduce significant noise impacts.

City of Lancaster Municipal Code

Section 8.24.040 of the City of Lancaster Municipal Code (City of Lancaster 2009) prohibits construction within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobile home or other place of residence between the hours of 8:00 p.m. and 7:00 a.m., or at any time on Sundays.

Federal Transit Administration

Though the City does not have daytime construction noise level limits for activities that occur within the specified hours of the PMC to determine potential California Environmental Quality Act (CEQA) noise impacts, construction noise was assessed using criteria from the Federal Transit Administration's (FTA) 2018 *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual). Table D shows the FTA's Detailed Assessment Construction Noise Criteria based on the composite noise levels per construction phase.

Table D: Detailed Assessment Daytime Construction Noise Criteria

Land Use	Daytime 1-hour L_{eq} (dBA)
Residential	80
Commercial	85
Industrial	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

APPLICABLE VIBRATION STANDARDS

Federal Transit Administration

Vibration standards included in the FTA Manual are used in this analysis for ground-borne vibration impacts on human annoyance. The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table E provides the criteria for assessing the potential for interference or annoyance from vibration levels in a building.

Table E: Interpretation of Vibration Criteria for Detailed Analysis

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

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-Octave bands of frequency over the frequency range 8 to 80 Hertz.
FTA = Federal Transit Administration
VdB = vibration velocity decibels
L_V = velocity in decibels
Max = maximum

Table F lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual. FTA guidelines show that a vibration level of up to 0.5 in/sec in PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For non-engineered timber and masonry buildings, the construction building vibration damage criterion is 0.2 in/sec in PPV.

Table F: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
FTA = Federal Transit Administration
PPV = peak particle velocity
in/sec = inch/inches per second

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

This section describes the existing noise environment in the project site vicinity. Noise monitoring was used to quantify existing noise levels at the project site. In the project vicinity, vehicle traffic is the primary source of noise.

EXISTING NOISE LEVEL MEASUREMENTS

Long-Term Noise Measurements

To assess existing noise levels, LSA conducted two long-term noise measurements in the vicinity of the project site. The long-term noise measurements were recorded for 24 hours between October 18 and October 19, 2023. The long-term noise measurements captured hourly L_{eq} data as well as CNEL data, which incorporates the nighttime hours. Sources which dominate the existing noise environment include traffic on West Avenue L, 10th Street W and local place of worship parking lot traffic. Noise measurement data collected during long-term noise monitoring is summarized in Table G and shown on Figure 3. Noise measurement sheets are provided in Appendix A.

Table G: Long-Term Noise Level Measurements

Location	Daytime Noise Levels[1] (dBA L_{eq})	Evening Noise Levels[2] (dBA L_{eq})	Nighttime Noise Levels[3] (dBA L_{eq})	Average Daily Noise Level (dBA CNEL)
LT-1 – 843 W Avenue L, Lancaster, CA 93534. Near the southwest property line of the Montecito Apartments on a tree, approximately 140 feet away from 10th Street West.	63.7-72.3	63.9-64.3	57.5-65.2	69.8
LT-2 – Along the southwest border of the project site on a gated fence. Between the place of worship and single-family home, approximately 330 feet away from the 10th Street West.	53.3-59.6	59.0-59.8	54.1-58.7	63.9

Source: Compiled by LSA Associates, Inc. (November 2023).
[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.
[2] Evening Noise Levels = noise levels during the hours of 7:00 p.m. to 10:00 p.m.
[3] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.

dBA = A-weighted decibels
ft = feet
L_{eq}= equivalent continuous sound level

EXISTING AIRCRAFT NOISE

Aircraft flyovers may be audible on the project site due to aircraft activity in the vicinity. The nearest airport to the project is the Palmdale Regional Airport (PRA), a commercial airport approximately 2.7 miles to the southeast. The project site is well outside the FMA Airport 65 dBA CNEL noise contour (City of Palmdale 2023). Because the project site is outside the 65 dBA CNEL noise contour, no further analysis associated with aircraft noise impacts is necessary.

LSA

LEGEND

- Project Site Boundary
LT-1 - Long-term Noise Monitoring Location

FIGURE 3

0 150 300
FEET

SOURCE: Google Earth, 2023

L and 10th Commercial Development

Noise Monitoring Locations

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PROJECT IMPACTS

SHORT-TERM CONSTRUCTION NOISE IMPACTS

Two types of short-term noise impacts could occur during the construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the site for the proposed project would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single-event noise-exposure potential causing intermittent noise nuisance (passing trucks at 50 ft would generate up to 84 dBA L_{max}), the effect on longer-term ambient noise levels would be small when compared to existing daily traffic volumes on West Avenue L and 10th Street West. The results of the California Emissions Estimator Model (CalEEMod) for the proposed project indicate that during the site preparation phase, an additional 35 vehicles in passenger car equivalent (PCE) volume, consisting of worker and hauling trips, would be added to the roadways adjacent to the project site. Because the existing traffic volumes on West Avenue L and 10th Street West are approximately 29,510 and 26,880, respectively, construction-related vehicle trips would generate less than 0.1 dBA CNEL noise increase. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during construction, which includes site preparation, grading, building construction, paving, and architectural coating on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table H lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor, taken from the Federal Highway Administration's *FHWA Roadway Construction Noise Model* (FHWA 2006).

In addition to the reference maximum noise level, the usage factor provided in Table H is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period.

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft.

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time.

D = distance from the receiver to the piece of equipment.

Table H: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)[1]	Maximum Noise Level (L_{max}) at 50 Ft[2]
Auger Drill Rig	20	84
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Paver	50	77
Pickup Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Trencher	50	80
Welder	40	73

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

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table H, and the construction equipment list provided, the composite noise levels of each construction phase were calculated. The project construction composite noise levels at a distance of 50 ft would range from 74 dBA L_{eq} to 88 dBA L_{eq}, with the highest noise levels occurring during the site preparation phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA while halving the distance would increase noise levels by 6 dBA.

Table I shows the nearest sensitive uses to the project site, their distance from the center of construction activities, and composite noise levels expected during construction. These noise level projections do not consider intervening topography or barriers. Construction equipment calculations are provided in Appendix B.

Table I: Potential Construction Noise Impacts at Nearest Receptor

Receptor (Location)	Composite Noise Level (dBA L_{eq}) at 50 ft[1]	Distance (ft)	Composite Noise Level (dBA L_{eq})
Place of Worship (West)	88	285	73
Commercial Uses (East)		300	72
Commercial Uses (North)		460	68
Residences (Northeast)		550	67
Residences (Southwest)		700	65

Source: Compiled by LSA (2023).
[1] The composite construction noise level represents the site preparation phase which is expected to result in the greatest noise level as compared to other phases.
dBA L_{eq} = average A-weighted hourly noise level
ft = foot/feet

While construction noise will vary, it is expected that composite noise levels during construction at the nearest sensitive use to the west would reach 73 dBA L_{eq} while construction noise levels would approach 72 dBA L_{eq} at the off-site commercial uses to the east during daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously and, therefore, are assumed to be rather conservative in nature. While construction-related short-term noise levels have the potential to be higher than existing ambient noise levels in the project area under existing conditions, the noise impacts would no longer occur once project construction is completed.

As it relates to off-site uses, construction-related noise impacts would remain below the 80 dBA L_{eq} and 85 dBA L_{eq} 1-hour construction noise level criteria for daytime construction noise level criteria as established by the FTA for residential and commercial land uses, respectively; therefore, the impact would be considered less than significant.

SHORT-TERM CONSTRUCTION VIBRATION IMPACTS

This construction vibration impact analysis discusses the level of human annoyance using vibration levels in RMS (VdB) and assesses the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration level in PPV is best for characterizing potential for damage.

Table J shows the PPV and VdB values at 25 ft from the construction vibration source. As shown in Table J, bulldozers, and other heavy-tracked construction equipment (expected to be used for this project) generate approximately 0.089 PPV in/sec or 87 VdB of ground-borne vibration when measured at 25 ft, based on the FTA Manual. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would be used at or near the project setback line).

Table J: Vibration Source Amplitudes for Construction Equipment

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

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

The formulae for vibration transmission are provided below and Tables K and L below provide a summary of off-site construction vibration levels.

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

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

As previously shown in Table D, the threshold at which vibration levels would result in annoyance would be 90 VdB for workshop type uses and 78 VdB for daytime residential uses. As shown in Table E, the FTA guidelines indicate that for a non-engineered timber and masonry building, the construction vibration damage criterion is 0.2 in/sec in PPV.

Table K: Potential Construction Vibration Annoyance Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (VdB) at 25 ft[1]	Distance (ft)[2]	Vibration Level (VdB)
Place of Worship (West)	87	285	55
Commercial Uses (East)		300	55
Commercial Uses (North)		460	49
Residences (Northeast)		550	47
Residences (Southwest)		700	44

Source: Compiled by LSA (2023).

[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

[2] The assessment distance is associated with the average condition, identified by the distance from the center of construction activities to surrounding uses.

ft = foot/feet

VdB = vibration velocity decibels

Table L: Potential Construction Vibration Damage Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (PPV) at 25 ft[1]	Distance (ft)[2]	Vibration Level (PPV)
Place of Worship (West)	0.089	85	0.014
Commercial Uses (East)		150	0.006
Commercial Uses (North)		170	0.005
Residences (Northeast)		240	0.003
Residences (Southwest)		400	0.001

Source: Compiled by LSA (2023).

[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

[2] The assessment distance is associated with the peak condition, identified by the distance from the perimeter of construction activities to surrounding structures.

ft = foot/feet

PPV = peak particle velocity

Based on the information provided in Table K, vibration levels are expected to approach 55 VdB at the closest sensitive use to the west and at the closest commercial uses to the east and would not exceed the annoyance thresholds.

Based on the information provided in Table L, vibration levels are expected to approach 0.014 PPV in/sec at the nearest surrounding structures and would remain below the FTA threshold of 0.2 in/sec PPV for building damage. Vibration levels associated with smaller equipment would be substantially lower than the heavy equipment analyzed. Therefore, construction would not result in any vibration annoyance or damage, and impacts would be less than significant.

LONG-TERM OFF-SITE TRAFFIC NOISE IMPACTS

The FHWA Highway Traffic Noise Prediction Model (1977; FHWA RD-77-108) was used to evaluate highway traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The existing ADT volumes and the vehicle mix for roadways in the project area were obtained from traffic counts. The traffic noise analysis was evaluated for project-related traffic at the intersection of 10th Street West and West Avenue L. Table M shows the existing (2023) traffic noise levels and Table N shows opening year (2025) traffic noise levels, without and with the project along roadways in the project vicinity. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. Attachment C provides the specific assumptions used in developing these noise levels and model printouts.

Also, Table M and Table N shows that the project-related traffic would increase noise by up to 0.2 dBA along 10th Street West south of West Avenue L. Noise level increases of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant. No noise mitigation measures are required.

Table M: Existing (2023) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Without Project Conditions (dBA)
10th Street West North of West Avenue L	23,200	90	276	871	71	23,850	93	284	896	71.1	0.1
10th Street West South of West Avenue L	26,880	107	321	1008	71.1	28,170	112	336	1056	71.3	0.2
West Avenue L East of 10th Street West	27,790	106	331	1044	72	28,220	108	336	1060	72	0.0
West Avenue L West of 10th Street West	29,510	118	352	1106	71.3	29,720	119	354	1114	71.4	0.1

Source: Compiled by LSA (2023).
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet

Table N: Opening Year (2025) Traffic Noise Levels Without and With Project

Roadway Segment	Without Project Traffic Conditions					With Project Traffic Conditions					
	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA CNEL (ft)	Centerline to 65 dBA CNEL (ft)	Centerline to 60 dBA CNEL (ft)	CNEL (dBA) 50 ft from Centerline of Outermost Lane	Increase from Without Project Conditions (dBA)
10th Street West North of West Avenue L	24,540	95	292	922	71.2	25,190	98	300	946	71.3	0.1
10th Street West South of West Avenue L	28,130	111	335	1055	71.3	29,420	116	351	1103	71.5	0.2
West Avenue L East of 10th Street West	30,890	118	368	1161	72.4	31,320	119	373	1177	72.5	0.1
West Avenue L West of 10th Street West	32,780	129	390	1229	71.8	32,990	130	393	1236	71.8	0

Source: Compiled by LSA (2023).
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = foot/feet

LONG-TERM TRAFFIC-RELATED VIBRATION IMPACTS

The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Based on a reference vibration level of 0.076 in/sec PPV, structures greater than 20 ft from the roadways that contain project trips would experience vibration levels below the most conservative standard of 0.12 in/sec PPV; therefore, vibration levels generated from project-related traffic on the adjacent roadways would be less than significant, and no mitigation measures are required.

LONG-TERM OPERATIONAL NOISE IMPACTS

Operational noise can be categorized as mobile source noise and stationary source noise. Stationary source noise includes noise generated by the proposed project, such as parking lot activities, HVAC equipment, drive-through speakers, car wash, and supplementary equipment (i.e. vacuum stations).

Long-Term Off-Site Stationary Noise Impacts

Because ambient noise levels are below the City's exterior noise level standards, noise impacts associated with the long-term operation of the project must comply with the City's General Plan standard of 65 dBA CNEL at surrounding sensitive uses.

In order to calculate the expected impacts due to long-term operational stationary source activities, the software SoundPlan was used. Within the model, the noise library allows for the input of many noise sources and calculates the composite noise levels experienced at any receptor. The results from the calculations are presented in graphic format in Appendix B.

The initial analysis of typical operations assumed in this analysis are conservative in nature (i.e., with all operations occurring simultaneously and for the entirety of each applicable hour). A description of the sources and their respective sound levels, from reference materials as well as measurements gathered by LSA for other projects, included in the analysis is as follows:

- Drive-thru speakers that have a sound pressure noise level of 60 dBA L_{eq} at a distance of 55 feet (HM Electronics 1998). Drive-thru speakers are expected to operate continuously during daytime and nighttime hours.

- The rooftop HVAC equipment on the drive-thru restaurant and coffee shop could operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 feet, based on manufacturer data (Trane). All HVAC equipment are expected to operate continuously during daytime and nighttime hours

- Based on reference noise level measurements gathered by LSA at a similar carwash (LSA 2023), noise levels at the car wash tunnel exit are 78.7 dBA L_{eq} at a distance of 25 ft. Additionally, noise levels at the car wash tunnel entrance are 75.8 dBA L_{eq} at a distance of 25 ft. Carwash operations would only occur operate during daytime hours of 7:00 a.m. to 10:00 p.m.

- Based on reference noise level measurements gathered by LSA at a similar carwash (LSA 2023), the vacuum turbine generates a noise level of 74.9 dBA at 10 ft, including the 6 ft tall enclosure . Carwash operations would only occur operate during daytime hours of 7:00 a.m. to 10:00 p.m.

- Parking lot operations are expected to result in maximum noise levels of 83.4 dBA L_{max} at a distance of 5 ft. For each parking lot area, noise impacts are expected to occur for a period of 5 minutes or less in a given hour. Parking lot activities are expected to operate during daytime and nighttime hours.

- The trash emptying activities would take place for a period of less than 1 minute at each location and would generate SPLs of up to 118.6 dBA SPL or 84 dBA L_{eq} at 50 feet, based on reference information within SoundPLAN. Trash bin emptying activities would only occur during daytime hours.

The results on Sheet 1, presented in Appendix C, show that the noise levels at the existing residential uses to the west and south would experience noise level impacts that would remain below the exterior noise level standard of 65 dBA CNEL, resulting in a less than significant impact.

CONCLUSION

The proposed project would not generate on-site stationary noise from car wash operations, speakerphone operations, HVAC operations, trash pick-up operations, and parking lot activities resulting in noise level greater than 65 dBA CNEL. Therefore, potential project operational noise impacts would be less than significant.

REFERENCES

City of Lancaster. 2009. *General Plan Noise Element*. July 14.

________. 2023. Municipal Code. July 18. Website: https://library.municode.com/ca/lancaster/codes/code_of_ordinances?nodeId=16042 (accessed December 2023).

City of Palmdale. 2023. *General Plan 2045 Safety Element*. March 15.

Federal Highway Administration (FHWA). 2006. *Roadway Construction Noise Model User's Guide.* January. Washington, D.C. Website: www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf (accessed December 2023).

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*. Office of Planning and Environment. Report No. 0123. September.

HM Electronics. 1998. Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post. December.

LSA Associates, Inc. (LSA). 2023. *Noise Impact Analysis Mister Car Was Sartell.*

Trane. *Fan Performance - Product Specifications RT-PRC023AU-EN.*

APPENDIX A

NOISE MEASUREMENT SHEETS

Noise Measurement Survey – 24 HR

Project Number: 20231665
Project Name: L and 10th ph1

Test Personnel: Kevin Nguyendo
Equipment: Spark 706RC (SN:906)

Site Number: LT-1 Date: 10/18/23

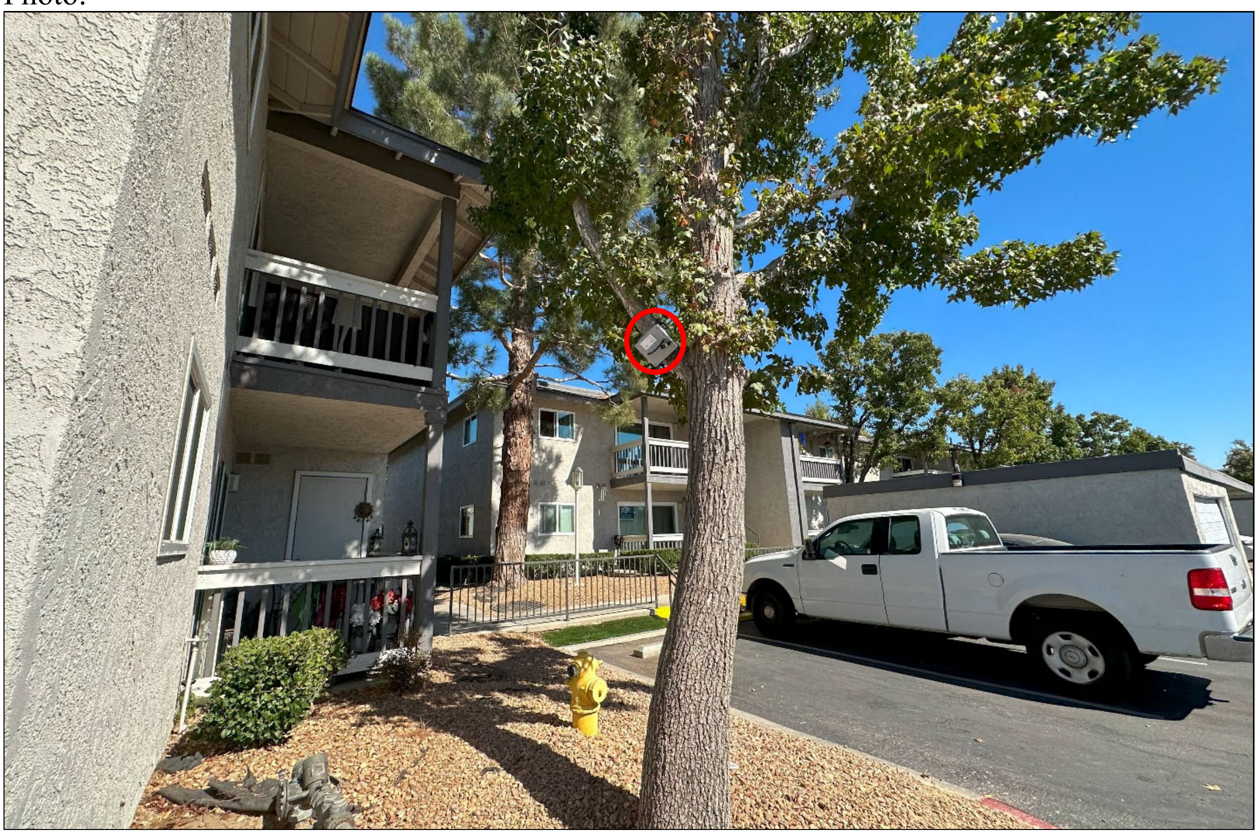
Time: From 12:00 p.m. To 12:00 p.m.

Site Location: 843 W Avenue L, Lancaster, CA 93534. Near the southwest property line of of the Montecito Apartments on a tree.

Primary Noise Sources: Traffic on 10th Street and W Avenue L.

Comments:

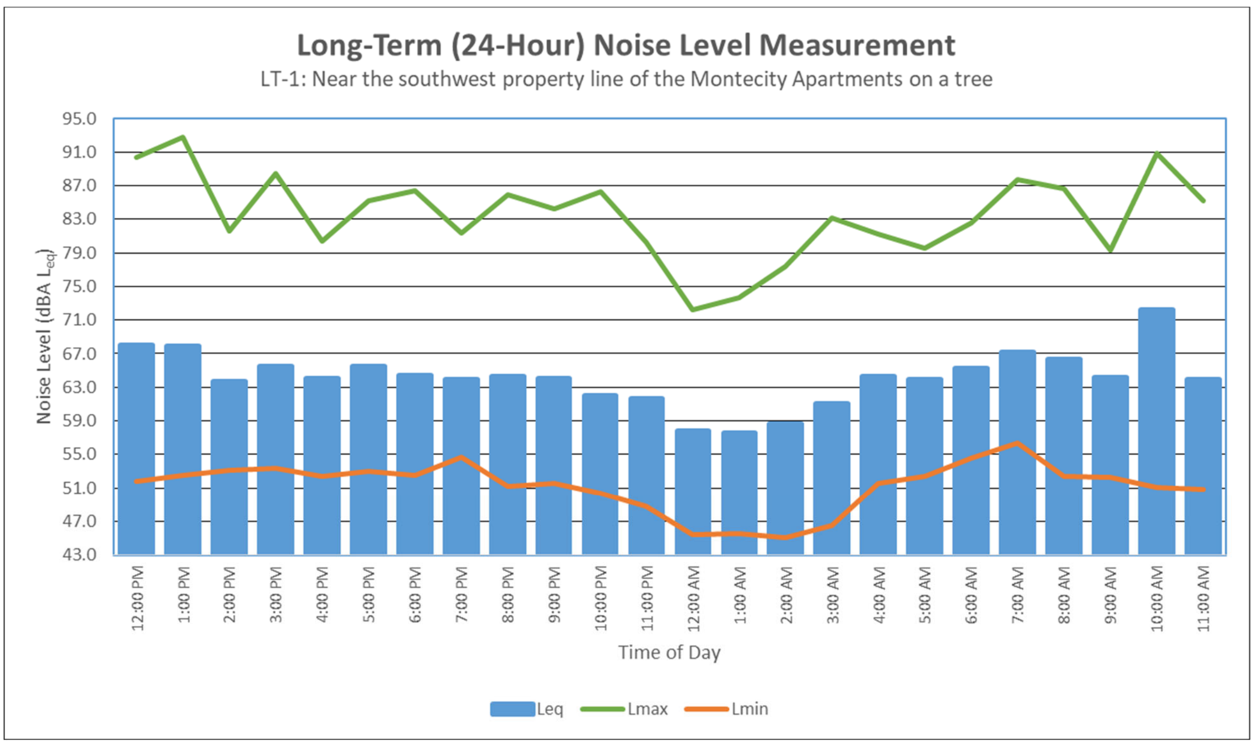
Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
12:00 PM	10/18/23	68.0	90.4	51.8
1:00 PM	10/18/23	67.9	92.8	52.5
2:00 PM	10/18/23	63.7	81.6	53.1
3:00 PM	10/18/23	65.5	88.4	53.3
4:00 PM	10/18/23	64.1	80.4	52.4
5:00 PM	10/18/23	65.5	85.2	53.0
6:00 PM	10/18/23	64.4	86.4	52.5
7:00 PM	10/18/23	63.9	81.4	54.7
8:00 PM	10/18/23	64.3	85.9	51.2
9:00 PM	10/18/23	64.1	84.3	51.6
10:00 PM	10/18/23	62.0	86.3	50.3
11:00 PM	10/18/23	61.6	80.3	48.8
12:00 AM	10/19/23	57.8	72.2	45.4
1:00 AM	10/19/23	57.5	73.7	45.6
2:00 AM	10/19/23	58.6	77.4	45.1
3:00 AM	10/19/23	61.1	83.2	46.5
4:00 AM	10/19/23	64.3	81.2	51.6
5:00 AM	10/19/23	63.9	79.6	52.4
6:00 AM	10/19/23	65.2	82.6	54.6
7:00 AM	10/19/23	67.2	87.7	56.4
8:00 AM	10/19/23	66.4	86.6	52.4
9:00 AM	10/19/23	64.2	79.3	52.3
10:00 AM	10/19/23	72.3	90.8	51.1
11:00 AM	10/19/23	64.0	85.2	50.8

Source: Compiled by LSA Associates, Inc. (2023).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level



Noise Measurement Survey – 24 HR

Project Number: 20231665

Project Name: L and 10th ph1

Test Personnel: Kevin Nguyendo

Equipment: Spark 706RC (SN:908)

Site Number: LT-2 Date: 10/18/23

Time: From 12:00 p.m. To 12:00 p.m.

Site Location: Along the southwest border of the project site on a gated fence. Between The church and single-family home.

Primary Noise Sources: Traffic on 10th Street W.

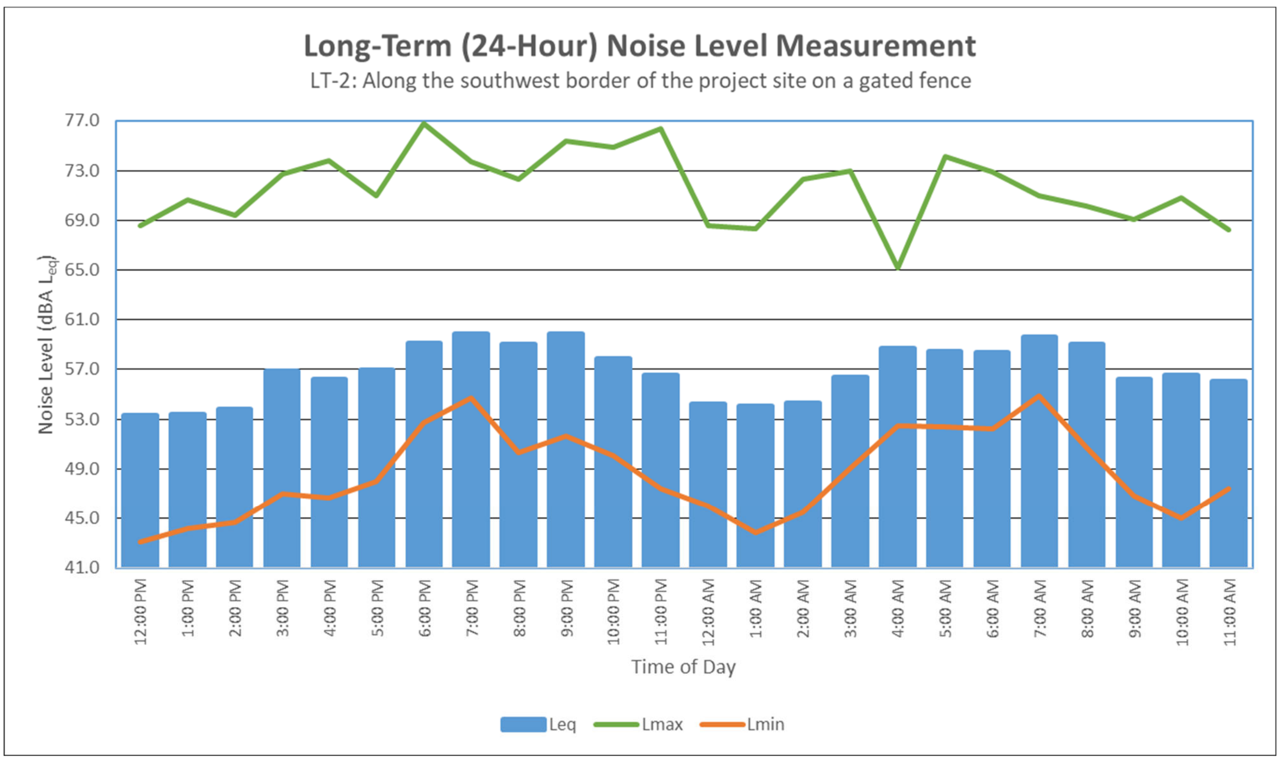
Comments:

Photo:

Long-Term (24-Hour) Noise Level Measurement Results at LT-2

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
12:00 PM	10/18/23	53.3	68.6	43.1
1:00 PM	10/18/23	53.4	70.6	44.2
2:00 PM	10/18/23	53.8	69.4	44.7
3:00 PM	10/18/23	56.9	72.7	47.0
4:00 PM	10/18/23	56.2	73.8	46.7
5:00 PM	10/18/23	57.0	71.0	48.0
6:00 PM	10/18/23	59.1	76.8	52.7
7:00 PM	10/18/23	59.8	73.7	54.7
8:00 PM	10/18/23	59.0	72.3	50.3
9:00 PM	10/18/23	59.8	75.4	51.6
10:00 PM	10/18/23	57.8	74.9	50.1
11:00 PM	10/18/23	56.5	76.4	47.4
12:00 AM	10/19/23	54.2	68.6	46.0
1:00 AM	10/19/23	54.1	68.3	43.8
2:00 AM	10/19/23	54.3	72.3	45.5
3:00 AM	10/19/23	56.4	73.0	49.1
4:00 AM	10/19/23	58.7	65.2	52.5
5:00 AM	10/19/23	58.4	74.1	52.4
6:00 AM	10/19/23	58.4	72.9	52.2
7:00 AM	10/19/23	59.6	71.0	54.9
8:00 AM	10/19/23	59.0	70.1	50.7
9:00 AM	10/19/23	56.2	69.1	46.8
10:00 AM	10/19/23	56.6	70.8	45.0
11:00 AM	10/19/23	56.1	68.2	47.4

Source: Compiled by LSA Associates, Inc. (2023).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level



APPENDIX B

CONSTRUCTION CALCULATIONS

Construction Calculations

Phase: Site Preparation

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Dozer	3	82	40	50	0.5	82	83
Tractor	4	84	40	50	0.5	84	86
					Combined at 50 feet	**86**	**88**
					Combined at Receptor 285 feet	**71**	**73**
					Combined at Receptor 300 feet	**71**	**72**
					Combined at Receptor 460 feet	**67**	**68**
					Combined at Receptor 550 feet	**65**	**67**
					Combined at Receptor 700 feet	**63**	**65**

Phase: Grading

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Scraper	2	84	40	50	0.5	84	83
Tractor	2	84	40	50	0.5	84	83
					Combined at 50 feet	**87**	**86**

Phase:Building Construstion

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Tractor	4	84	40	50	0.5	84	86
					Combined at 50 feet	**84**	**86**

Phase:Paving

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Paver	1	77	50	50	0.5	77	74
All Other Equipment > 5 HP	2	85	50	50	0.5	85	85
Roller	2	80	20	50	0.5	80	76
					Combined at 50 feet	**87**	**86**

Phase:Architectural Coating

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Compressor (air)	1	78	40	50	0.5	78	74
					Combined at 50 feet	**78**	**74**

Sources: RCNM

[1]- Percentage of time that a piece of equipment is operating at full power.
dBA – A-weighted Decibels
Lmax- Maximum Level
Leq- Equivalent Level

APPENDIX C

SOUNDPLAN NOISE MODEL PRINTOUTS

L and 10th Lancaster

Project No. 20231165

Project Operational Noise Levels

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