

Appendix F
Noise Study



XII. NOISE -- Would the Project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *Less Than Significant Impact With Mitigation Incorporated.*

Introduction to Noise

Characteristics of Sound

Sound can be described in terms of its loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel, abbreviated dB. Because the human ear is not equally sensitive to sound at all frequencies, the A-weighted scale (dBA) is used to reflect the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. Table 12-1 provides examples of A-weighted noise levels from common sources.

TABLE 12-1: A-WEIGHTED DECIBEL SCALE	
Typical A-Weighted Sound Levels	Sound Level (dBA, L _{eq})
Threshold of Pain	140
Jet Takeoff at 100 Meters	125
Jackhammer at 15 Meters	95
Heavy Diesel Truck at 15 Meters	85
Conversation at 1 Meter	60
Soft Whisper at 2 Meters	35

Source: United States Occupational Safety & Health Administration, Noise and Hearing Conservation Manual, 1999.

Noise Definitions

This noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}) and Community Noise Equivalent Level (CNEL). “Noise” itself is frequently defined as “unwanted sound.”

Equivalent Noise Level

L_{eq} represents the average noise level on an energy basis for a specific time period. Average noise level is based on the energy content (acoustic energy) of sound. For example, the L_{eq} for one hour is the energy average noise level during that hour. L_{eq} can be thought of as a continuous noise level of a certain period equivalent in energy content to a fluctuating noise level of that same period. L_{eq} is expressed in units of dBA.

Community Noise Equivalent Level

CNEL is an adjusted noise measurement scale of average sound level during a 24-hour period. Due to increased noise sensitivities during evening and night hours, human reaction to sound between 7:00 P.M. and 10:00 P.M. is as if it were actually 5 dBA higher than had it occurred between 7:00 A.M. and 7:00 P.M. From 10:00 P.M. to 7:00 A.M., humans perceive sound as if it were 10 dBA higher. To account for these sensitivities, CNEL figures are obtained by adding an additional 5 dBA to evening noise levels between 7:00 P.M. and 10:00 P.M. and 10 dBA to nighttime noise levels between 10:00 P.M. and 7:00 A.M. Because of this, 24-hour CNEL figures are always higher than their corresponding actual 24-hour averages.

Noise Attenuation

Noise levels decrease as the distance from noise sources to receivers increases. For each doubling of distance, noise from stationary sources, commonly referred to as “point sources,” can decrease by approximately 6 dBA over hard surfaces (i.e., reflective surfaces such as parking lots), even greater over soft surfaces (i.e., absorptive surfaces such as soft dirt and grass). For example, if a point source produces a noise level of 89 dBA at a reference distance of 50 feet and over an asphalt surface, its noise level would be approximately 83 dBA at a distance of 100 feet, 77 dBA at 200 feet, etc. Noises generated by mobile sources decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of distance.

Noise is most audible when traveling by direct line of sight, an unobstructed visual path between noise source and receptor. Barriers that break line of sight between sources and receivers, such as walls and buildings, can greatly reduce source noise levels allowing noise to reach receivers by diffraction only. As a result, sound barriers can reduce source noise levels by up to 20 dBA.¹ However, the effectiveness of barriers can be greatly reduced when they are not high or long enough to completely break line of sight from sources to receivers.

It should be noted that because decibels are logarithmic units they cannot be simply added or subtracted. For example, two cars producing 60 dBA of noise each would not produce a combined 120 dBA.

Effects of Noise

The degree to which noise can impact an environment ranges from levels that interfere with speech and sleep to levels that can cause adverse health effects. Most human response to noise subjective. Factors that influence individual responses include the intensity, frequency, and pattern of noise; the amount of background noise present; and the nature of work or human activity exposed to intruding noise.

According to the National Institute of Health (NIH), extended or repeated exposure to sounds at or above 85 dB can cause hearing loss. Sounds of 75 dBA or less, even after continuous exposure, are unlikely to cause hearing loss.² The World Health Organization (WHO) reports that adults should not be exposed to sudden “impulse” noise events of 140 dB or greater. For children, this limit is 120 dB.³

Exposure to elevated nighttime noise levels can disrupt sleep, leading to increased levels of fatigue and decreased work or school performance. For the preservation of healthy sleeping environments, the WHO recommends that continuous interior noise levels not exceed 30 dBA L_{eq} , and that individual noise events of 45 dBA or higher be limited.⁴ Assuming a conservative exterior to interior sound reduction of 15 dBA, continuous exterior noise levels should therefore not exceed 45 dBA L_{eq} . Individual exterior events of 60 dBA or higher should also be limited.

¹ California Department of Transportation, Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

² National Institute on Deafness and Other Communication Disorders, www.nidcd.nih.gov/health/noise-induced-hearing-loss.

³ World Health Organization, Guidelines for Community Noise, 1999.

⁴ Ibid.

Some epidemiological studies have shown a weak association between long-term exposure to noise levels of 65-70 dBA L_{eq} and cardiovascular effects including ischaemic heart disease and hypertension. However, at this time, the relationship is largely inconclusive.

People with normal hearing sensitivity can recognize small perceptible changes in sound levels of approximately 3 dBA. Changes of at least 5 dBA can be readily noticeable and may cause community reactions. Sound level increases of 10 dBA or greater are perceived as a doubling in loudness and can provoke a community response.⁵ However, few people are highly annoyed at noise levels below 55 dBA L_{eq} .⁶

Regulatory Framework

Federal

Currently, no federal noise standards regulate environmental noise associated with short-term construction activities or the long-term operations of development projects. As such, temporary and long-term noise impacts produced by the Project would be largely regulated by and evaluated with respect to State and City of Calabasas standards designed to protect public well-being and health.

State





State of California 2017 General Plan Guidelines

The State's 2017 General Plan Guidelines establish county and city standards for acceptable exterior noise levels based on land use. These standards are incorporated into land use planning processes to prevent or reduce noise and land use incompatibilities. Table 12-2 illustrates State compatibility considerations between various land uses and exterior noise levels.

⁵ Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2006.

⁶ World Health Organization, Guidelines for Community Noise, 1999.

TABLE 12-2: STATE OF CALIFORNIA NOISE/LAND USE COMPATIBILITY MATRIX							
Land Use Category	Community Noise Exposure (dB, L _{dn} or CNEL)						
	55	60	65	70	75	80	
Residential - Low Density Single-Family, Duplex, Mobile Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Residential - Multi-Family	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Transient Lodging - Motels Hotels	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Sports Arena, Outdoor Spectator Sports	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Playgrounds, Neighborhood Parks	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Office Buildings, Business Commercial and Professional	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
Industrial, Manufacturing, Utilities, Agriculture	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	
	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	

	Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
	Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.
	Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable - New construction or development should generally not be undertaken.

Source: California Office of Planning and Research, General Plan Guidelines - Noise Element Guidelines (Appendix D), Figure 2, 2017.

City of Calabasas

Calabasas General Plan Noise Element

The City of Calabasas 2030 General Plan includes a Noise Element that provides policy for the control of noise to protect residents, workers, visitors, and sensitive wildlife from potentially adverse noise impacts. Its primary goal is to regulate long-term noise impacts to preserve acceptable noise environments for all types of land uses, including open space. The Noise Element specifically notes “the desire of the City to prohibit the encroachment of urban noise” into “open space, hillside mountainous, and low density residential areas” in order to retain “the tranquility of open space and low density residential areas as well as the wildlife movement and biological diversity that is present in such areas... [P]rojects that cause a significant adverse effect on open space, hillside management, or low density areas that cannot be mitigated will not be allowed.”

The Element contains a number of policies designed to guide City decision-making. Though these policies would not directly regulate the Project’s noise impacts adherence to them would ensure the Project’s consistency with the City’s 2030 General Plan, they include:

Policy VIII-1: *Use the Land Use Compatibility for Community Noise Environments matrix to determine the compatibility of land use when evaluating proposed new land uses in the City. The matrix shall be used as a guide to assist in determining the acceptability of noise for existing or proposed land use.*

In this matrix, the degree of acceptability is categorized by noise exposures that are normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable. Action on proposed projects shall be guided according to the degree of use/noise acceptability as follows.

land

- **Normally Acceptable:** *The potential for project approval should not be encumbered by land use/noise compatibility issues.*
- **Conditionally Acceptable:** *The potential for project approval should not be encumbered by land use/noise compatibility issues, provided the applicant has included measures or conditions that are acceptable to the Planning Commission or appropriate planning authority and ultimately result in land use/noise compatibility.*
- **Normally Unacceptable:** *The potential for project denial will be considered likely as a result of land use/noise incompatibility, unless extraordinary circumstances are present that do not involve adjacent properties or uses. Overriding project benefits cannot be utilized to justify extraordinary circumstances.*
- **Clearly Unacceptable:** *If a project falls into this category, it shall not be approved due to land use/noise compatibility issues.*

The matrix referenced in the above Policy VIII-1 is reproduced below in Table 12-3. It is based on a 1998 version of the State’s noise and land use compatibility matrix, the current version of which is shown in Table 12-2 above. It should be noted that there are only a few minor differences between the two matrices.

TABLE 12-3: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS							
Land Use Category	Community Noise Exposure (dB, L _{dn} or CNEL)						
	55	60	65	70	75	80	
Residential – Low Density Single-Family, Duplex, Mobile Homes							
Residential – Multi-Family							
Transient Lodging – Motels Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

	Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
	Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.
	Normally Unacceptable – New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable – New construction or development should generally not be undertaken.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, California Office of Planning and Research, 1998.

- Policy VIII-2:** *If a proposed development project that will create or affect existing noise sensitive land uses is proposed in a location that is within a 60 dBA or greater CNEL noise contour, as determined by independent experts or consultants hired by the City, require that the project applicant demonstrate that, unless mitigation is available: (1) the project will not generate noise exceeding the “normally acceptable” range for existing uses on adjacent properties; and (2) adjacent influences will not generate ambient noise on the project site that exceeds the “normally acceptable” range for the proposed use.*
- Policy VIII-3:** *Locate and design noise-sensitive land uses and noise generators in such a manner that noise objectives will be maintained.*
- Policy VIII-4:** *Emphasize the following as the City’s preferred noise management strategies, and as higher priorities than construction of noise barriers:*
- *Avoiding placement of noise-sensitive uses within noise areas*
 - *Increased setbacks from noise sources*
 - *Building orientation that shields noise sensitive portions of a project from noise sources*
 - *Use of sound attenuating architectural design and building features*
- Policy VIII-6:** *Incorporate noise considerations of noise impacts to significant wildlife habitats into the development/environmental review process.*
- Policy VIII-8:** *Use noise standards in the review of proposed developments to determine whether the proposal promotes acceptable noise compatible land uses both during construction and subsequently.*
- Policy VIII-9:** *Pro-actively address noise along the Ventura Freeway and other major corridors.*

City of Calabasas Municipal Code

The City of Calabasas Municipal Code (CMC) contains a number of regulations that would apply to the Project’s temporary construction activities and long-term operations. The following is an outline and brief discussion of CMC regulations that would apply to the Project.

Chapter 17.20.160 outlines a comprehensive set of noise standards and mitigation measures for proposed developments. It should be noted that Subdivision (C)(4) exempts construction noises from the standards of Subdivision (D), provided that construction activities are restricted to between 7:00 A.M. and 6:00 P.M. on weekdays and between 8:00 A.M and 5:00 P.M. on Saturdays. Construction is not allowed on Sundays or federal holidays, though this requirement may be modified by a conditional use permit.

CHAPTER 17.20.160 – Noise.

- A. *Performance Standards. The following noise management performance standards shall apply to all proposed development, except for the construction of one single-family home on an existing lot, the expansion of existing commercial, office and business park projects, and the addition of housing units to an existing multifamily residential project.*

1. *Limit project-related noise to no greater than a sixty (60) dBA CNEL (Community Noise Equivalent Level) within known wildlife nesting or migration areas, as well as within natural open space areas, as necessary to maintain tranquil open space and viable wildlife habitats and mobility.*
2. *One or more of the following mitigation measures shall be provided as necessary to mitigate project-related noise:*

Project Site Planning

- a. *Orient buildings to buffer or attenuate noise.*
- b. *Route or align roadways away from noise sensitive receptors where such routing and alignment can be accomplished without creating other significant impacts.*
- c. *Locate the highest noise sources as far away from adjacent sensitive uses as is feasible.*
- d. *Provide sound attenuation walls (open space buffers and berms are preferred).*
- e. *Utilize landscape materials and "softscape" design to break up hard surfaces for the purpose of minimizing reverberation (mandatory for noise, as well as aesthetic purposes).*

Landscape Treatment

- f. *Utilize open space and landscaped buffers between uses to naturally attenuate noise with distance. Project applicants shall be responsible for providing open space buffers in the form of easements to eliminate noise encroachment from having an adverse effect. The distance shall be sufficient to meet the exterior noise standards established in Sections 17.20.160 (C) and (D).*
- g. *For commercial retail and business park uses place fixed equipment, such as air conditioning units, inside an enclosed space, or in shielded locations.*

Architectural Design

- h. *For commercial, office, and business park uses, place rooftop equipment at an appropriate setback from property lines, or in acoustically treated mechanical rooms or in shielded equipment wells, to meet noise standards and minimize disturbance potential.*
 - i. *Provide one or more of the following: sound rated windows, additional exterior wall or roof insulation, vent or mail slot modifications or relocation, or forced air ventilation.*
- B. *Noise Standards. Sections 17.20.160 (D) and (E) establish standards for acceptable exterior and interior noise levels. These standards are intended to protect persons from excessive noise levels, which are detrimental to the public health, welfare and safety since they have the potential to: (i) interfere with sleep, communication, relaxation and the full enjoyment of property; (ii) contribute to hearing impairment and a wide range of adverse physiological stress conditions; and (iii) adversely*

affect the value of real property. It is the intent of this chapter to protect persons from excessive noise levels within or near various residential development and other specified noise-sensitive land uses.

- C. Exceptions to Noise Standards. The standards of Section 17.20.160 (D) are not applicable to noise from the following sources:*
- 1. Activities conducted in public parks, public playgrounds and public or private school grounds, including school athletic and entertainment events;*
 - 2. The use of any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;*
 - 3. Safety signals, warning devices, and emergency pressure relief valves;*
 - 4. Noise sources associated with construction, including the idling of construction vehicles, provided such activities do not take place before seven a.m. or after six p.m. on any day except Saturday in which no construction is allowed before eight a.m. or after five p.m. No construction is allowed on Sunday's [sic] or federal holidays. These requirements may be modified by a conditional use permit.*
 - 5. Noise sources associated with work performed by private or public utilities in the maintenance or modification of their facilities;*
 - 6. Noise sources associated with the collection of waste or garbage from property devoted to other than residential uses.*
 - 7. Traffic on public roads and any other activity to the extent regulation thereof has been preempted by state or federal law.*
- D. Exterior Noise Level Standards. No person shall cause or allow exterior noise levels to exceed the levels set forth in [Table 12-4] on any property owned, leased, occupied or otherwise controlled by such person.*

TABLE 12-4: EXTERIOR NOISE LEVEL STANDARDS		
Zone	Time Interval	Hourly Equivalent Sound Level (L _{eq} , dBA)
Residential Zones	Monday - Friday	-
RS, RM, RMH, RR, RC, HM, OS	10 p.m. to 7 a.m.	50 dBA
RS, RM, RMH	7 a.m. to 10 p.m.	65 dBA
RR, RC, HM, OS	7 a.m. to 10 p.m.	60 dBA
	Saturday and Sunday	
RS, RM, RMH, RR, RC, HM, OS	10 p.m. to 8 a.m.	50 dBA
	8 a.m. to 10 p.m.	60 dBA
Commercial and Special Purpose Zones	All days of Week	
RD, CL, CR, CO, CMU, CB, CT, PF, REC	10 p.m. to 7 a.m.	60 dBA
PD, CL, CR, CO, CMU, CB, CT, PF	7 a.m. to 10 p.m.	65 dBA
REC with active recreation areas	7 a.m. to 10 p.m.	70 dBA
Source: City of Calabasas Municipal Code, Chapter 17.20.160, Table 3-1.		

E. *Interior Noise Level Standards for Residential Uses. No person shall operate or cause to operate any source of sound within any residential dwelling unit or allow the creation of noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured inside a neighboring dwelling unit to exceed the levels set forth in [Table 12-5].*

TABLE 12-5: INTERIOR NOISE LEVEL STANDARDS		
	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (L _{eq} , dBA)	45	40
Maximum level, dBA	60	55
Source: City of Calabasas Municipal Code, Chapter 17.20.160, Table 3-2.		

F. *Mixed Use Standards. Noise level standards in [12-4 and 12-5] shall be increased by 5 dBA for mixed use projects.*

G. *Noise Level Measurement. For the purposes of evaluating conformance with the standards of this chapter, noise levels shall be measured as follows:*

1. *Use of Meter. Any noise measurement required by this section shall be made with a sound level meter using the A-weighted network (scale). Measurement equipment with an acoustical calibrator shall be calibrated immediately prior to recording any noise data.*

2. *Measuring Exterior Noise Levels. Exterior noise levels shall be measured at the property line. Where practical, a microphone shall be positioned five feet above the ground and away from reflective surfaces.*
3. *Measuring Interior Noise Levels. Interior noise levels shall be measured within the affected residential use at points at least four feet from the wall, ceiling or floor nearest the noise source, with windows in their normal seasonal position. The reported interior noise level shall be the average of the various microphone location readings.*

Though Chapter 12.20.170 does not explicitly refer to any noise-related matter, the screening guidelines it institutes would have direct effect on the Project's operational noise impacts.

CHAPTER 12.20.170 – Screening.

- A. *Screening Between Uses. Wherever a site within a commercial zoning district abuts a residential zoning district, a six-foot high solid decorative masonry wall shall be constructed along the property line abutting the residential zoning district. The wall shall be architecturally treated on both sides, subject to the approval of the director.*
- B. *Screening of Equipment. Any equipment, whether on the roof, side of structure, or ground, shall be properly screened from the public right-of-way and adjacent properties. The method of screening shall be architecturally compatible with other site development in terms of materials, colors, shape and size. Landscaping shall be installed and maintained for screening purposes for all ground-mounted equipment. The screening design and construction shall be subject to the approval of the director and shall blend with the design and construction of the structure(s) on the site. Where feasible, ground-mounting of mechanical equipment shall be required as an alternative to roof mounting.*
- C. *Screening of Loading and Service Areas. Loading, service, storage, special equipment, and maintenance areas should be screen from public right-of-way and adjacent properties with landscaping and architectural elements. Loading docks and service areas should be located on interior side yards, and shall be concealed from public view.*
- D. *Utility equipment and communication devices shall be screened so that the project will appear free of all such devices.*

Chapter 9.8.010 is a general noise regulation banning “loud, unnecessary, and unusual noise” that “disturbs the peace or quiet of any neighborhood” or “causes discomfort or annoyance to any reasonable person of normal sensitiveness.”

CHAPTER 9.28.010 – Loud, unnecessary and unusual noise.

Notwithstanding any other provisions of this chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standard which may be considered in determining whether a violation of the provisions of this section exists may include, but not be limited to, the following:

- A. *The level of noise;*
- B. *Whether the nature of the noise is usual or unusual;*

- C. Whether the origin of the noise is natural or unnatural;
- D. The level and intensity of any background noise;
- E. The proximity of the noise to residential sleeping facilities;
- F. The nature and zoning of the area within which the noise emanates;
- G. The density of the inhabitation of the area within which the noise emanates;
- H. The time of the day or night the noise occurs;
- I. The duration of the noise;
- J. Whether the noise is recurrent, intermittent, or constant; and
- K. Whether the noise is produced by a commercial or noncommercial activity.

Chapter 17.60.060 outlines development impacts that the City would consider potentially significant. Given this, the impacts shown in Table 12-6 are therefore adopted as significance thresholds for this analysis. However, to be discussed in later sections of this report, other significance thresholds are also considered to measure and determine the scope of the Project’s noise and vibration impacts.

CHAPTER 17.60.060 – Environmental assessment.

After acceptance of a complete application, the project shall be reviewed as required by the California Environmental Quality Act (CEQA), and the City of Calabasas CEQA guidelines, to determine whether the proposed project is exempt from the requirements of CEQA or is not a project as defined by CEQA, whether a negative declaration may be issued, or whether an environmental impact report (EIR) must be required. These determinations and, where required, EIRs shall be prepared in accordance with CEQA guidelines.

If the city finds that the significant development impacts identified in [Table 12-6] could potentially have a significant impact on the environment a mitigated negative declaration or environmental impact report shall be prepared.

TABLE 12-6: DEVELOPMENT IMPACTS OF INDIVIDUAL DEVELOPMENT PROJECTS	
Issue	Development Impact
Noise	<ul style="list-style-type: none"> • A discretionary development project that: Would create noise in excess of the standards outlined in the Calabasas Noise Ordinance • Is located in an area that currently exceeds or will exceed the “normally acceptable” range for the proposed use, as outlined on Figure VIII-3 of the General Plan Noise Element [Table 12-3 of this report], unless mitigation can either reduce exterior noise levels to the normally acceptable level or achieve an acceptable interior noise level (45 dBA CNEL for residences) • Would generate traffic noise that would be audible at a sensitive receptor location and would increase the long-term CNEL along a roadway by: <ul style="list-style-type: none"> ○ 7 dB or more where the existing CNEL is less than 50 dBA ○ 5 dB or more where the existing CNEL is between 50 dBA and 55 dBA ○ 3 dB or more where the existing CNEL is between 55 dBA and 60 dBA ○ 2 dBA or more where the existing CNEL is between 60 dBA and 50 dBA ○ 1 dBA or more where the existing CNEL is between 65 dBA and 75 dBA ○ Any amount where the existing CNEL is greater 75 dBA
Source: Chapter 17.60.050 – Initial application review, Table 6-2.	

Construction Noise

Regulated Noise Sources

As shown in Table 12-6, the City would consider an impact to be potentially significant were the Project to “create noise in excess of the standards outlined in the Calabasas Noise Ordinance.” But as noted earlier, Chapter 17.20.160 Subdivision (C)(4) would exempt the Project’s construction noise impacts from the exterior noise level standards outlined in Subdivision (D) of that same Chapter (shown in Table 12-4 above), provided that construction activities occur between the hours of 7:00 A.M. and 6:00 P.M. on weekdays, and between 8:00 A.M. and 5:00 P.M. on Saturdays. Thus, it is anticipated that the Project’s construction activities would occur during these hours only, and the Project would be exempt from the City’s noise level standards. As a result, the Project’s potential to expose people to or generate “noise levels in excess of standards established in the local general plan or ordinance” would be considered **less than significant**.

Mitigation Measures

None required.

Operational Noise

Project Overview

The Project would develop a portion of a 77-acre site located near the intersection of Agoura Road and Las Virgenes Road. Existing uses in the vicinity of the Project site include a Mobil Gas Station just north of the site; commercial businesses across Las Virgenes Road to the east; and “The Colony,” a private residential neighborhood generally located to the Project’s south. Apart from these uses, land surrounding the Project’s north (to the Ventura Freeway), south, and east primarily consist of open space. The Project would include residential, commercial, and open space components. The residential component would consist of 180 units built within 15 3-story buildings, all of which would be located within a 13-acre cluster near Las Virgenes Road. The commercial component would include a 5,705 square foot, two building retail center located near Las Virgenes Road. Proposed commercial uses for this commercial use include a restaurant, coffee shop, and boutique retail shops. The Project’s open space component entails preserving over two-thirds of the site as open space. The Project would provide internal walkways and public sidewalk linkages to existing trail systems surrounding the site and within the Santa Monica Mountains Recreation Area.

Existing Conditions

Figure VIII-2 of the City’s 2030 General Plan Noise Element approximates the extent of 24-hour community noise level (CNEL) contours throughout the City, based on transportation noise sources (i.e., vehicle traffic). As shown on this map, most uses within the vicinity of the Project are located within a 65 dBA CNEL contour due to the influence of noises from Las Virgenes Road and the nearby Ventura Freeway.

Noise Impact Assessment – On-Site Noise Sources

During Project operations, the development would produce noise from both on-and off-site sources. The direct on-site sources would include the following:

Mechanical Equipment

Regulatory compliance with CMC Chapter 12.20.170 would ultimately ensure that mechanical heating, air conditioning, and ventilation systems are screened or otherwise oriented away from the sensitive residential properties to the Project's south. Given this regulation, as well as the relatively quiet operation of modern HVAC systems, on-site noises from this equipment would have no more than a nominal effect on ambient noise levels surrounding the Project site.

Residential Land Uses

Noise from recurrent activities (e.g., conversation, consumer electronics, dog barking) and non-recurrent activities (e.g., social gatherings) would elevate ambient noise levels to differing degrees. The City's noise ordinance would provide a means to address nuisances related to residential noises on a case by case basis, in particular CMC Chapter 9.28.010.

Parkland/Recreational Land Uses

The proposed community park would be centrally located within the Project and oriented away from nearby sensitive residential properties located within "The Colony" neighborhood. Noises such as conversation or dog barking would have a negligible effect on ambient noise levels in the Project's vicinity. Sidewalk linkages to existing trail systems located within nearby open space would also be oriented away from "The Colony," and the use of these systems would have a nominal impact on noise levels in the Project's vicinity.

Commercial/Restaurant Land Uses

The proposed retail, café and restaurant uses would be located north of the Agoura Road intersection, over 400 feet from "The Colony" residences. At this distance, noise from these uses would be inaudible, especially given the greater influence of noise from Las Virgenes Road.

Auto-Related Activities

Operational noises related to the proposed onsite parking would include intermittent noise events such as door slamming and vehicle engine start-ups. However, these noise events are infrequent, instantaneous, and do not substantially increase ambient noise levels, especially considering that nearly half of the Project's parking would be served by garage spaces incorporated within the proposed residential buildings. Though noises from outdoor parking areas may be audible at some "The Colony" residences located within a nearer proximity to the Project, they would not have more than a nominal effect on overall community noise levels at these receptors when assessed on an hourly or daily basis.

Parking for the Project's commercial uses would be located over 400 feet north of "The Colony" residences. At this distance, auto-related noises would likely be inaudible due to the influence of noise from Las Virgenes Road.

These on-site sources of noise would neither individually nor collectively elevate ambient noise level by more than a nominal degree at nearby uses, especially residences located within "The Colony" neighborhood. The impact potential of these on-site operational noise sources would be considered **less than significant**.

Regulated Noise Sources

As illustrated in Table 12-7, there are a number of requirements that the Proposed Project would have to comply with to meet the City's operational noise-related regulations. Table 12-8 is a checklist

outlining the Project’s consistency with Noise Element policies for operational noise. As shown, the Project would comply with all applicable CMC standards and be consistent with all Noise Element policies related to on-site operational noise impacts.

TABLE 12-7: OPERATIONAL NOISE – REGULATORY COMPLIANCE CHECKLIST TABLE		
Regulation	Description	Compliant?
Ch. 17.20.160 (A)	Limit Project-related noise to no greater than 60 dBA CNEL within wildlife nesting or migration areas, as well as within natural open space areas.	Yes. On-site noises from the Project would have a limited influence on ambient noise levels in nearby natural open space areas, especially because development would be clustered near Las Virgenes Road, which has elevated existing noise levels. Additionally, natural open space areas near the Project already experience noise levels of 60-65 dBA CNEL due to the influence of Las Virgenes Road and the Ventura Freeway. In one sense, the Project would actually provide a buffer zone of modest-intensity land use between nearby natural open space areas and noisier areas surrounding Las Virgenes Road.
Ch. 17.20.160 (D)	Limit Project-related exterior noise at nearby RM and RS zoning districts to no greater than: <ul style="list-style-type: none"> • 50 dBA, Monday through Friday, 10 p.m. to 7 a.m. • 65 dBA, Monday through Friday, 7 a.m. to 10 p.m. • 50 dBA, Saturday and Sunday, 10 p.m. to 8 a.m. • 60 dBA, Saturday and Sunday, 8 a.m. to 10 p.m. 	Yes. As discussed, the Project would generate a limited amount of on-site noise, the effect of which would have little to no impact on ambient noise levels at nearby residential uses. On-site sources such as mechanical HVAC systems and auto-related noises would not be capable of generating off-site noise levels in excess of the limits outlined by CH. 17.20.160 (D). The Project’s outdoor commercial and restaurant areas would be located over 400 feet from any residential zones. At this distance, noise from these areas would be inaudible.
Ch. 17.20.160(D)	Limit Project-related exterior noise at nearby CR zoning districts to no greater than: <ul style="list-style-type: none"> • 60 dBA, all days, 10 p.m. to 7 a.m. • 65 dBA, all days, 7 a.m. to 10 p.m. 	Yes. As discussed, The Project would generate a limited amount of on-site noise.
Ch. 17.20.160(E)	Limit Project-related interior noise at nearby residential uses to no greater than: <ul style="list-style-type: none"> • 45 dBA L_{eq}, 7 a.m. to 10 p.m. • 40 dBA L_{eq}, 10 p.m. to 7 a.m. 	Yes. Though noise events such as auto-related status indicators, door slamming, and engine start-ups may be periodically audible at nearby residences, they would have a nominal impact overall when considered on an hourly or greater basis.
Ch. 12.20.170(A)	A six-foot high decorative masonry wall shall be constructed along the property line where a commercial zoning district abuts a residential zoning district.	Yes. Required improvements would be incorporated into the Project design.
Ch. 12.20.170 (B), (C), (D)	All equipment, loading areas, and service areas shall be screened according to the guidelines set forth by Ch.20.170.	Yes. Required improvements would be incorporated into the Project design.
Source: City of Calabasas Municipal Code		

TABLE 12-8: OPERATIONAL NOISE – GENERAL PLAN GUIDELINES CHECKLIST TABLE		
Policy	Description	Consistent?
VIII-1	Would the degree of the Project’s land use and noise be considered acceptable, using the matrix reproduced in Table-3 [Table 12-3 of this report]?	Yes. Residential multi-family land uses are considered “Normally Acceptable” in noise environments up to 65 dBA CNEL. Figure VIII-2 of the City’s 2030 General Plan Noise Element places the Project within a 65 dBA CNEL contour, meaning that noise level in the Project area is not projected to exceed 65 dBA CNEL. Though the “Conditionally Acceptable” category is between 60 dBA CNEL and 70 dBA CNEL, there are no factors to suggest why the Project’s noise environment may be incompatible with its use, especially considering that residential buildings would be setback from the noise influence of Las Virgenes Road. Regarding the Project’s commercial component, these uses are considered “Normally Acceptable” up to 70 dBA CNEL.
VIII-2	If a proposed development project is located within a 60 dBA or greater CNEL noise contour, the project shall not generate noise exceeding the “normally acceptable” range for existing uses on adjacent properties.	Yes. As discussed earlier, the Project’s on-site noise sources would have a limited impact on off-site noise levels. Noise from sources such as HVAC systems and automobiles would not substantially alter the noise profile of nearby properties.
VIII-3	Locate and design noise-sensitive land uses and noise generators in such a manner that noise objectives will be maintained.	Yes. The Project would be located in a “Normally Acceptable” noise environment. Proposed residential buildings would be clustered in such a way so as to reduce the intrusion of noise into nearby natural open space areas. And as discussed, the Project would have a limited impact on off-site noise levels at nearby properties.
VIII-6	Incorporate consideration of noise impacts to significant wildlife habitats into the development/environmental review process.	Yes. This is addressed in the response to Ch. 17.20.160 (A) in Table 12-7.
Source: DKA Planning, 2017 and the City of Calabasas 2030 General Plan Noise Element		

Noise Impact Assessment – Off-Site Noise Sources

The majority of the Project’s operational noise impacts would be from off-site mobile sources associated with its net new daily trips. On a typical weekday, the Project is forecast to generate an estimated 2,209 net new daily trips, including 209 net new A.M. peak hour trips and 162 net new P.M. peak hour trips.⁷ The noise impact of these vehicle trips was modeled using the Federal Highway Administration’s (FHWA) Traffic Noise Model 2.5 (TNM 2.5). This noise prediction software uses traffic volumes, vehicle mix, average speeds, roadway geometry, and other inputs to calculate average noise levels along inputted roadway segments. For this analysis, an existing year (2018) no project scenario was compared to an existing year with project scenario.

As shown in Tables 12-9 and 12-10, Project-related traffic would have a negligible impact on peak hour roadside ambient noise levels in the Project’s vicinity. These increases would not be audible to the human ear.

⁷ Associated Transportation Engineers, West Village at Calabasas Project, November 2018.

TABLE 12-9: EXISTING + PROJECT A.M. PEAK HOUR MOBILE SOURCE NOISE LEVELS				
Roadway Segment	Estimated dBA, L _{eq} 1hr			
	No Project (2018)	With Project (2018)	Project Change	Significant Impact?
N/B Las Virgenes Rd., N of Mureau Rd.	69.9	70.0	0.1	No
S/B Las Virgenes Rd., N of Mureau Rd.	63.5	63.5	< 0.1	No
N/B Las Virgenes Rd., N of Lost Hills Rd.	70.5	70.5	< 0.1	No
S/B Las Virgenes Rd., N of Lost Hills Rd.	72.3	72.3	< 0.1	No
E/B Agoura Rd., W of Las Virgenes Rd.	66.6	66.7	0.1	No
W/B Agoura Rd., W of Las Virgenes Rd.	67.8	67.9	0.1	No

Source: DKA Planning, 2017.

TABLE 12-10: EXISTING + PROJECT P.M. PEAK HOUR MOBILE SOURCE NOISE LEVELS				
Roadway Segment	Estimated dBA, L _{eq} 1hr			
	No Project (2018)	With Project (2018)	Project Change	Significant Impact?
N/B Las Virgenes Rd., N of Mureau Rd.	69.5	69.5	< 0.1	No
S/B Las Virgenes Rd., N of Mureau Rd.	62.1	62.1	< 0.1	No
N/B Las Virgenes Rd., N of Lost Hills Rd.	69.7	69.7	< 0.1	No
S/B Las Virgenes Rd., N of Lost Hills Rd.	70.6	70.6	< 0.1	No
E/B Agoura Rd., W of Las Virgenes Rd.	68.6	68.8	0.2	No
W/B Agoura Rd., W of Las Virgenes Rd.	68.2	68.4	0.2	No

Source: DKA Planning, 2017.

The majority of the Project's long-term noise impacts would result from traffic traveling to and from the Project. This, the addition of future traffic from any new developments in the Project area, and overall ambient traffic growth would elevate ambient noise levels surrounding local roadways. But as shown in Tables 12-11 and 12-12, this would not cumulatively increase noise levels along nearby roadways by greater than 1 dBA during peak hours of travel, let alone over the course of an entire day. As a result, the Project's cumulative operational noise impact would also be considered **less than significant**.

TABLE 12-11: FUTURE + PROJECT A.M. PEAK HOUR MOBILE SOURCE NOISE LEVELS					
Roadway Segment	Estimated dBA, L _{eq} 1hr				
	Existing (2018)	No Project (2023)	With Project (2023)	Total Change	Significant Impact?
N/B Las Virgenes Rd., N of Mureau Rd.	69.9	70.4	70.4	0.5	No
S/B Las Virgenes Rd., N of Mureau Rd.	63.5	63.9	63.9	0.4	No
N/B Las Virgenes Rd., N of Lost Hills Rd.	70.5	70.8	70.9	0.4	No
S/B Las Virgenes Rd., N of Lost Hills Rd.	72.3	72.6	72.6	0.3	No
E/B Agoura Rd., W of Las Virgenes Rd.	66.6	67.0	67.1	0.5	No
W/B Agoura Rd., W of Las Virgenes Rd.	67.8	68.2	68.3	0.5	No

Source: DKA Planning, 2017.

TABLE 12-12: FUTURE + PROJECT P.M. PEAK HOUR MOBILE SOURCE NOISE LEVELS					
Roadway Segment	Estimated dBA, L _{eq} 1hr				
	Existing (2018)	No Project (2023)	With Project (2023)	Total Change	Significant Impact?
N/B Las Virgenes Rd., N of Mureau Rd.	69.5	70.0	70.0	0.5	No
S/B Las Virgenes Rd., N of Mureau Rd.	62.1	62.7	62.7	0.6	No
N/B Las Virgenes Rd., N of Lost Hills Rd.	69.7	70.1	70.1	0.4	No
S/B Las Virgenes Rd., N of Lost Hills Rd.	70.6	71.0	71.0	0.4	No
E/B Agoura Rd., W of Las Virgenes Rd.	68.6	68.9	69.0	0.4	No
W/B Agoura Rd., W of Las Virgenes Rd.	68.2	68.5	68.6	0.4	No

Source: DKA Planning, 2017.

When considering 24-hour exposure to traffic-related noise, 24-hour CNEL impacts would be negligible. As shown in Tables 12-9 and 12-10, noise increases at nearby roadway noise levels would be no more than 0.1 dBA L_{eq} during peak hours of travel. During off-peak hours, the Project would generate far less traffic on local roads, producing 24-hour noise levels that would be lower than the peak-hour averages. As such, there is no potential for Project-generated traffic to generate a 1 dBA CNEL noise increase over the course of any 24-hour period. For any given roadway and time period, an approximate 26 percent increase in average daily traffic volume would be required to increase associated noise levels by 1 dBA CNEL. Roadways in the vicinity of the Project Site, namely Las Virgenes Road and Agoura Road, currently experience thousands of vehicle trips per hour, whereas the Project would generate no more than a maximum net new 209 A.M. peak hour trips and 162 net new P.M. peak hour trips.

As a result, Project traffic’s impact on roadway noise levels would be far below the City’s traffic noise thresholds for development projects, which begin at 1 dBA CNEL for sensitive receptors experiencing less than 75 dBA CNEL (outlined in Table 12-6 of this report). As a result, the Project would have a negligible effect on 24-hour CNEL noise levels surrounding local roadways, and this impact would be considered **less than significant**.

Mitigation Measures

None required.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? *Less Than Significant Impact.*

Introduction to Vibration

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, and acceleration. Unlike noise, vibration is not a common environmental problem, as it is unusual for vibration from vehicle sources to be perceptible. Common sources of vibration include trains, construction activities, and certain industrial operations.

Vibration Definitions

This noise analysis discusses vibration in terms of Peak Particle Velocity (PPV).

Peak Particle Velocity

PPV is commonly used to describe and quantify vibration impacts to buildings and other structures. PPV levels represent the maximum instantaneous peak of a vibration signal and are usually measured in inches per second.⁸

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can disrupt concentration or disturb sleep. Ground-borne vibration can also interfere with certain types of highly sensitive equipment and machines, especially imaging devices used in medical laboratories.

Perceptible Vibration Changes

Unlike noise, ground-borne vibration is not an environmental issue that most people experience every day. Background vibration levels in residential areas are usually well below the threshold of perception for humans, approximately 0.01 inches per second.⁹ Perceptible indoor vibrations are most often caused by sources within buildings themselves, such as slamming doors or heavy footsteps. Common outdoor sources of ground-borne vibration include construction equipment, trains, and traffic on rough or unpaved roads. Traffic vibration from smooth and well-maintained roads is typically not perceptible.

Regulatory Framework

For the evaluation of construction-related vibration impacts, state agency recommendations are used given the absence of applicable federal, County, and City standards specific to temporary construction activities.

State

California Department of Transportation

In 2013, the California Department of Transportation (Caltrans) published the Transportation and Construction Vibration Guidance Manual to aid in the estimation and analysis of vibration impacts. Typically, potential building and structural damages are the foremost concern when evaluating the impacts of construction-related vibrations. Table 12-13 summarizes Caltrans' vibration guidelines for building and structural damage.

⁸ California Department of Transportation, Transportation and Construction Vibration Guidance Manual, September 2013.

⁹ Ibid.

TABLE 12-13: CALTRANS VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA		
Structure and Condition	Threshold Criteria (in/sec PPV)	
	Transient Sources	Continuous/Frequent/ Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation, 2013.

The Caltrans Manual also cites additional criteria for cases where more detailed analysis may be required. For buildings consisting of concrete wall and floor foundations, masonry or concrete walls, or stone masonry retaining walls, continuous vibrations of 0.3 inches per second PPV can be damaging. For buildings consisting of steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers and tunnels with and without concrete alignment, continuous vibrations of 0.5 inches per second PPV can be damaging.

Construction Vibration Impacts

To be discussed later in the response to checklist question (d), construction of the Project would require heavy-duty construction vehicles such as scrapers, graders, and excavators. Other construction vehicles such as backhoes, loaders, haul trucks, and various delivery vehicles would also be required. Table 12-14 shows the distances at which groundborne vibration generated by these vehicles could exceed various Caltrans vibration criteria.

Structures nearest to the Project site include “The Colony” residences located at the terminus of Luna Court. Single family homes in this location would be approximately 10 feet west of the Project site. At this distance, groundborne vibration from large dozer type equipment would not exceed 0.25 inches per second PPV, well below Caltran’s 0.5 inches per second PPV threshold criteria for “New residential structures.”

Other structures would be farther from the Project site and would experience lesser vibration impacts as a result. For example, commercial buildings across Las Virgenes Road are no less than 100 feet west of the Project. At these distances, vibration levels from large dozer type equipment would be well below the 0.5 inches per second PPV threshold criteria for “Modern industrial/commercial buildings.” A Mobil gas station located approximately 150 feet north of the Project also would not experience potentially hazardous vibration levels from the Project’s construction activities.

Given these considerations, the Project’s potential to generate excessive groundborne vibration levels would be considered **less than significant**.

Construction Equipment Vibration Levels	Distance to PPV Vibration Criteria						
	0.01 in/sec	0.04 in/sec	0.1 in/sec	0.2 in/sec	0.25 in/sec	0.3 in/sec	0.5 in/sec
Large Dozer	135 ft.	45 ft.	22 ft.	11 ft.	9 ft.	7.5 ft.	< 5 ft.
Small Dozer	51 ft.	21 ft.	7.5 ft.	3.5 ft.	< 3.5 ft.	< 3.5 ft.	< 3.5 ft.
Loaded Truck	120 ft.	41 ft.	19 ft.	9.5 ft.	7.5 ft.	6 ft.	< 4 ft.

Source: California Department of Transportation, 2013.

Mitigation Measures

None required.

Operational Vibration Impacts

During Project operations, there would be no significant stationary sources of ground-borne vibration, such as heavy equipment or industrial operations. Minimal levels of operational ground-borne vibration in the Project’s vicinity would be generated by its related vehicle travel on local roadways. However as previously discussed, road vehicles rarely create vibration levels perceptible to humans unless road surfaces are poorly maintained and have potholes or bumps. Project-related traffic would expose nearby land uses and other sensitive receptors to vibrations far below levels associated with human annoyance or land-use disruption. As a result, the Project’s long-term vibration impacts would be considered **less than significant**.

c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project? *Less Than Significant Impact.*

As discussed in the response to checklist question (a), the Project’s operational components would have a minimal impact on off-site ambient noise levels. Neither on-site point sources nor off-site transportation sources would be capable of substantially increasing noise levels at off-site land uses in the Project’s vicinity.

d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project? *Less Than Significant Impact With Mitigation Incorporated.*

Noise Impact Assessment

Existing Conditions

Land uses sensitive to noise typically include residences, transient lodgings, schools, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks. Of the uses surrounding the Project, residences located within “The Colony” neighborhood were chosen specifically for detailed construction noise impact analysis given their potential sensitivity to noise and proximity to the Project site. Other residential uses, such as single family homes at 4623 Las Virgenes Road, 4633 Las Virgenes Road, and 4647 Las Virgenes Road are located over 500 feet from the Project and experience existing elevated noise levels from Las Virgenes Road. As a result, the Project’s construction noise would not likely be audible at these receptors, let alone potentially significant. Residences associated with “The

Oaks” neighborhood are located over a half-mile to the Project’s east and would also not experience potentially significant construction noise impacts as a result of the Project, especially given the terrain features separating this neighborhood from the Project area. Other land uses to the west of the Project are primarily commercial in nature and would not be considered sensitive to temporary construction noise impacts. The Mobil gas station to the Project’s north would also not be considered sensitive.

To determine the existing ambient noise conditions of “The Colony” residences nearest to the Project site, DKA Planning took a short-term noise reading at the Project site directly east of the Luna Court terminus.¹⁰ The ambient noise level at this location was measured to be 48.1 dBA L_{eq} . Though this is somewhat inconsistent with the General Plan’s approximately 60 or 65 dBA CNEL projected noise level for this location, it is more understandable given the context of the measurement location, which is setback from Las Virgenes Road at an elevated level, behind residences and a large masonry wall. Here, ambient noise was primarily attributable to traffic along Las Virgenes Road. Distant traffic noises from the Ventura Freeway were only somewhat audible.

Construction Noise

As discussed earlier in the response to checklist question (A), construction activities would be anticipated to occur at the Project site between the hours of 7:00 A.M. and 6:00 P.M., Monday through Friday. On Saturdays, construction may occur between 8:00 A.M. and 5:00 P.M. Construction would be prohibited on Sundays and federal holidays.

On-site construction activities would include the use of heavy equipment such as scrapers, graders, excavators, loaders, backhoes, and similar tractor or dozer-type vehicles. Small equipment such as forklifts, skid steer loaders, trenchers, generators, and various powered hand tools would also be used. This equipment would be operated both in the development area closest to Las Virgenes Road and nearby residences. Equipment associated with earthmoving would be used for landslide remediation work at the southeastern portion of the Project Site.

Off-site secondary noises could be generated by sources such as construction worker vehicles, and vendor deliveries. Table 12-15 lists the hourly noise levels of construction vehicles and equipment that could be utilized for the Project.

¹⁰

Noise measurements were taken using a Quest Technologies SoundPro DL Sound Level Meter. The SoundPro meter complies with the American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) for general environmental measurement instrumentation. The meter was equipped with an omni-directional microphone, calibrated before the day’s measurements, and set at approximately five feet above the ground.

TABLE 12-15: CONSTRUCTION EQUIPMENT NOISE LEVELS						
Noise Source	Noise Level (dBA, 1-hr L _{eq}) ¹					
	50 feet	100 feet	150 feet	200 feet	250 feet	300 feet
Backhoe	73.6	67.6	64.0	61.5	59.6	58.0
Compressor	73.7	67.6	64.0	61.5	59.6	58.0
Concrete Mixer Truck	74.8	68.8	65.3	62.8	60.8	59.3
Concrete Pump Truck	74.4	68.4	64.9	62.4	60.4	58.8
Dozer	77.7	71.7	68.1	65.6	63.7	62.1
Dump Truck	72.5	66.5	62.9	60.4	58.5	56.9
Excavator	76.7	70.7	67.2	64.7	62.8	61.2
Front End Loader	75.1	69.1	65.6	63.1	61.2	59.6
Gradall	79.4	73.4	69.9	67.4	65.4	63.9
Grader	81.0	75.0	71.5	69.0	67.0	65.5
Paver	74.2	68.2	64.7	62.2	60.2	58.6
Roller	73.0	67.0	63.5	61.0	59.0	57.4
Scraper	79.6	73.6	70.1	67.6	65.6	64.0

¹Noise levels derived from the Federal Highway Administration's Roadway Construction Noise Model, version 1.1 (FHWA RCNM 1.1).

The types of heavy equipment required for these activities may include excavators, loaders, and other tractor or dozer-type vehicles. These activities would occur over 35.8 acres that are slated for grading and earthmoving activities. Most of this work will be done as part of landslide remediation activities toward the southeastern portion of the Project Site.

Limiting construction activities to these hours would exempt the Project from the exterior noise standards outlined in Chapter 17.20.160 (D) of the CMC. As a result, the Project's construction noise impact would be considered **less than significant**. Nevertheless, some best practices "project design features" (PDFs) are recommended for consideration to feasibly minimize construction noise impacts on adjacent receptors.

With regard to off-site construction-related noise impacts, construction activities are not expected to require hauling of soil or materials off-site. As a result, the Project's impact from off-site construction noise sources would be considered **less than significant**.

Mitigation Measures

None required.

Construction Noise Impact After Mitigation

The Project's construction-related noise impact at nearby sensitive receptors would be **less than significant** based on compliance with the CMC. Recommended PDFs would further minimize incremental noise impacts at The Colony and other nearby sensitive receptors.

Project Design Features (Recommended)

- PDF1** All compatible diesel-powered construction vehicles shall be equipped with exhaust mufflers or other suitable noise-reduction devices.
- PDF2** Temporary sound barriers capable of achieving a sound attenuation of at least 15 dBA shall be installed along the Project's boundary, where feasible, where it abuts or otherwise faces "The Colony" Residences to obstruct the line of sight travel of noise from the Project to this receptor. Examples of potential placement of sound barriers are illustrated in Figure 1. The solid red line represents the preferred temporary sound barrier location to be installed prior to grading and through construction activities in the immediate area, and the dashed line represents two options for an extended sound barrier to achieve the minimum recommended 15 dba noise reduction. The dashed redline mitigation options are either an extension perpendicular to the preferred sound wall or a linear extension (not both). Two extension recommendations are provided in the event that one may be infeasible due to site constraints.



Figure 1. Potential location of temporary sound barriers for Mitigation Measure N2.

Cumulative Construction Noise Impacts

As discussed earlier, construction activities would temporarily increase ambient noise levels at nearby receptors. Any other future developments that are built concurrently with the Project could further contribute to these temporary increases in ambient noise levels. However, no such developments have been identified within the vicinity of the Project or its receptors. Therefore, it is not anticipated that any nearby receptors would experience cumulatively significant construction noise levels. **Less than significant.**

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels? *No Impact.*

The Project is not located within an airport land use plan, nor is it located within two miles of a public or public use airport. As a result, this criterion is not applicable to this Project, which would have **no impact** on people residing or working in the Project area.

f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels? *No Impact.*

The Project site is not located within the vicinity of a private airstrip. As a result, this criterion is not applicable to this Project, which would have **no impact** on people residing or working in the Project area.

NOISE AND VIBRATION TECHNICAL APPENDIX



DKA Planning

*NOISE RECEPTOR MAP
West Village Project
Imagery via Google*

The Colony Residences – Near Luna Ct.

Noise Report

12/19/2017

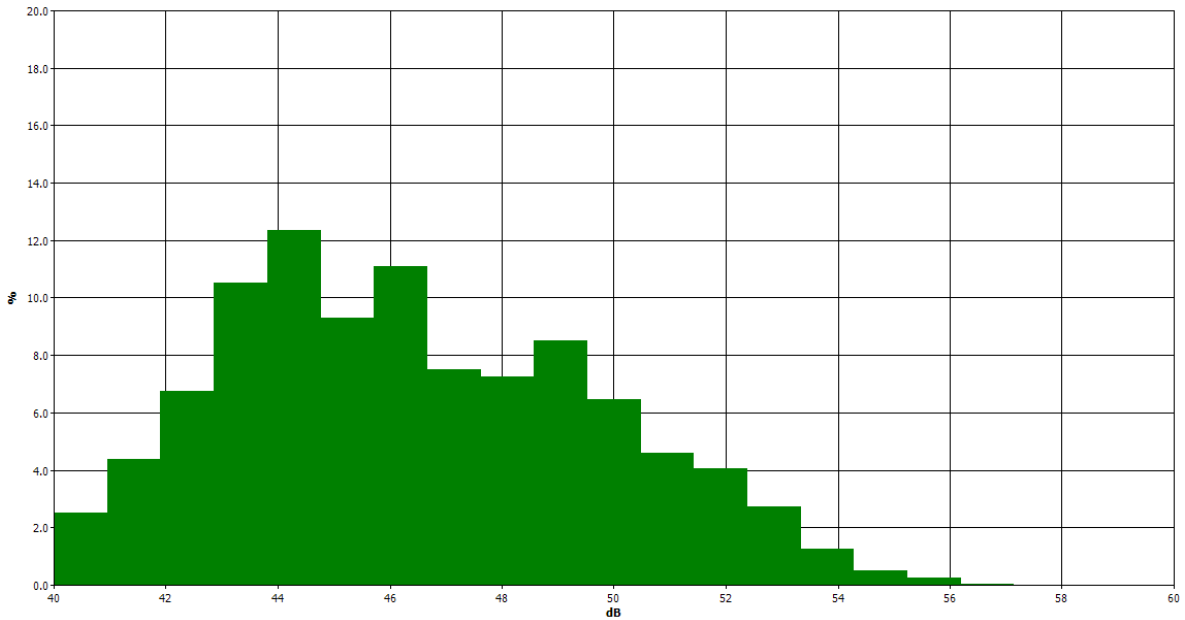
Information Panel

Name S519_BIJ050019_20122017_141926
Start Time Tuesday, December 19, 2017, 1:02pm
Stop Time Tuesday, December 19, 2017, 1:17pm
Device Model Type SoundPro DL

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	48.1dB	Exchange Rate	1	3dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3dB
Weighting	2	C	Response	2	SLOW

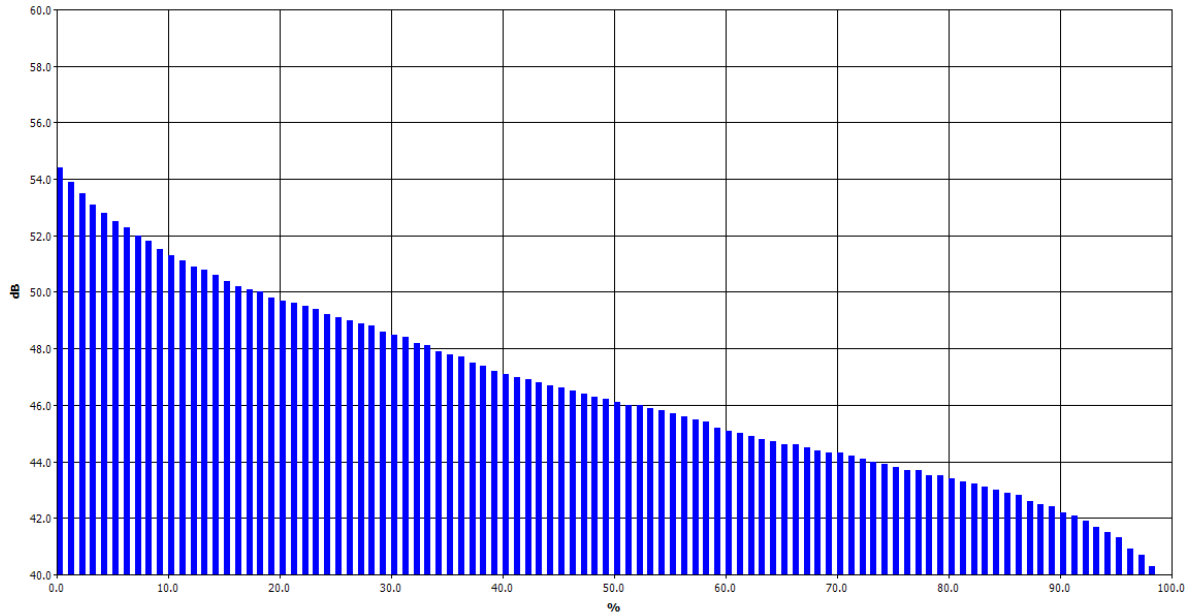
Statistics Chart



Statistics Table

dB	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
40	0.00	0.01	0.35	0.26	0.39	0.32	0.32	0.21	0.31	0.33	2.51
41	0.54	0.33	0.17	0.26	0.47	0.34	0.69	0.65	0.48	0.44	4.37
42	0.42	0.47	0.72	0.66	0.84	0.82	0.76	0.67	0.67	0.72	6.75
43	0.90	1.14	0.97	1.09	1.15	1.02	1.18	0.90	1.07	1.10	10.51
44	1.39	1.44	0.85	1.17	1.30	1.16	1.24	1.40	1.37	1.02	12.34
45	1.11	0.91	0.87	0.68	0.65	0.82	0.86	1.15	1.07	1.20	9.31
46	1.09	1.23	0.98	1.14	1.39	1.20	1.06	0.93	1.11	0.97	11.10
47	0.99	1.08	0.45	0.61	0.69	0.66	0.86	0.68	0.72	0.75	7.49
48	0.89	0.61	0.58	0.62	0.72	0.66	0.86	0.73	0.69	0.88	7.25
49	0.91	0.75	0.75	1.11	0.82	0.79	0.88	0.85	0.77	0.90	8.53
50	0.79	0.82	0.55	0.71	0.78	0.52	0.54	0.48	0.56	0.70	6.45
51	0.78	0.59	0.50	0.47	0.33	0.41	0.39	0.34	0.39	0.41	4.60
52	0.53	0.39	0.39	0.36	0.39	0.45	0.42	0.37	0.37	0.38	4.05
53	0.31	0.29	0.23	0.24	0.24	0.32	0.26	0.28	0.30	0.24	2.72
54	0.24	0.25	0.23	0.14	0.14	0.08	0.05	0.05	0.04	0.03	1.25
55	0.04	0.04	0.08	0.09	0.05	0.03	0.02	0.02	0.02	0.08	0.49
56	0.12	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.25
57	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

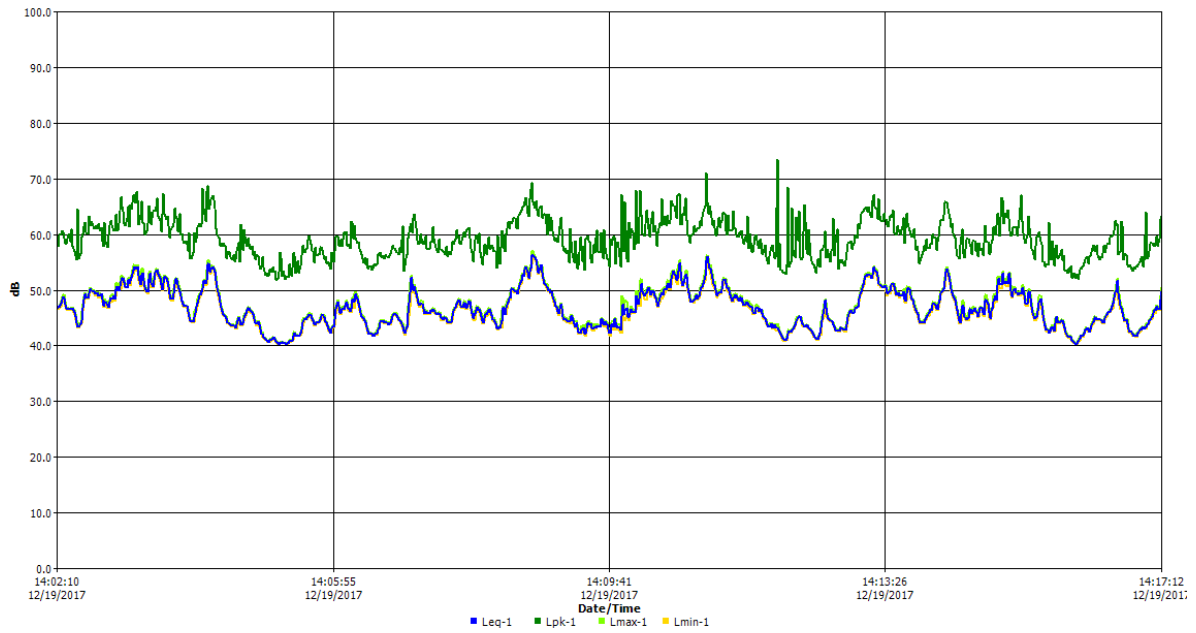
Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		54.4	53.9	53.5	53.1	52.8	52.5	52.3	52	51.8
10%	51.5	51.3	51.1	50.9	50.8	50.6	50.4	50.2	50.1	50
20%	49.8	49.7	49.6	49.5	49.4	49.2	49.1	49	48.9	48.8
30%	48.6	48.5	48.4	48.2	48.1	47.9	47.8	47.7	47.5	47.4
40%	47.2	47.1	47	46.9	46.8	46.7	46.6	46.5	46.4	46.3
50%	46.2	46.1	46	46	45.9	45.8	45.7	45.6	45.5	45.4
60%	45.2	45.1	45	44.9	44.8	44.7	44.6	44.6	44.5	44.4
70%	44.3	44.3	44.2	44.1	44	43.9	43.8	43.7	43.7	43.5
80%	43.5	43.4	43.3	43.2	43.1	43	42.9	42.8	42.6	42.5
90%	42.4	42.2	42.1	41.9	41.7	41.5	41.3	40.9	40.7	40.3
100%	40									

Logged Data Chart



RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X4.1: AM Future
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dB
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	
NB Las Virgenes N of Lost Hills	1	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

RESULTS: SOUND LEVELS

West Village

DKA Planning						20 November 2018						
Noah Tanski						TNM 2.5						
						Calculated with TNM 2.5						
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		West Village										
RUN:		X4.1: AM Future + Project										
BARRIER DESIGN:		INPUT HEIGHTS				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier	Noise Reduction				
			Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Lost Hills	1	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning							20 November 2018					
Noah Tanski							TNM 2.5					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		West Village										
RUN:		X4.1: AM Existing										
BARRIER DESIGN:		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier	Noise Reduction				
			Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Lost Hills	1	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning							20 November 2018					
Noah Tanski							TNM 2.5					
							Calculated with TNM 2.5					
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		West Village										
RUN:		X4.1: AM Existing + Project										
BARRIER DESIGN:		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier	Noise Reduction				
			Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated	minus
											Goal	Goal
			dB	dB	dB	dB		dB	dB	dB	dB	dB
NB Las Virgenes N of Lost Hills	1	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X1: PM Future
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing		No Barrier		Increase over existing		Type Impact	With Barrier			
			LAeq1h	LAeq1h	Calculated	Crit'n	Calculated	Crit'n		Calculated	Noise Reduction		Calculated minus Goal
			dB	dB	dB	dB	dB	dB		Sub'l Inc	LAeq1h	Calculated	
NB Las Virgenes N of Mureau	1	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0	
SB Las Virgenes N of Mureau	2	1	0.0	62.7	66	62.7	10	---	62.7	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X1: PM Future + Project
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing	No Barrier				With Barrier				
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction		Calculated minus Goal
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	
dB	dB	dB	dB	dB	dB	dB	dB	dB	dB			
NB Las Virgenes N of Mureau	1	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
SB Las Virgenes N of Mureau	2	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X1: PM Existing											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Mureau	1	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0	
SB Las Virgenes N of Mureau	2	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X1: PM Existing + Project											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier Calculated	Noise Reduction					
			Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	minus	Goal
			dB	dB	dB	dB		dB	dB	dB	dB	dB	dB
NB Las Virgenes N of Mureau	1	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0	
SB Las Virgenes N of Mureau	2	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X1: AM Future
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier			
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n		Calculated	Noise Reduction	Calculated	Goal
			dB	dB	dB	dB	dB	Impact	LAeq1h	dB	dB	dB
NB Las Virgenes N of Mureau	1	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
SB Las Virgenes N of Mureau	2	1	0.0	63.9	66	63.9	10	---	63.9	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X1: AM Future + Project
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dBA
				Calculated	Crit'n	Calculated	Crit'n			Calculated	Goal	
NB Las Virgenes N of Mureau	1	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
SB Las Virgenes N of Mureau	2	1	0.0	63.9	66	63.9	10	---	63.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	2	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X1: AM Existing											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier Calculated	Noise Reduction					
			Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	Calculated	Goal
			dB	dB	dB	dB		dB	dB	dB	dB	dB	dB
NB Las Virgenes N of Mureau	1	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0	
SB Las Virgenes N of Mureau	2	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning						20 November 2018							
Noah Tanski						TNM 2.5							
						Calculated with TNM 2.5							
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X1: AM Existing + Project											
BARRIER DESIGN:		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name		No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
				dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Mureau		1	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
SB Las Virgenes N of Mureau		2	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: PM Future											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: PM Future + Project											
BARRIER DESIGN:		INPUT HEIGHTS				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.							
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: PM Existing											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier Calculated	Noise Reduction					
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB			dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: PM Existing + Project											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	68.4	66	68.4	10	Snd Lvl	68.4	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X4.2: AM Future
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing LAeq1h	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dB	dB	dB	dB		dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
WB Agoura W of Las Virgenes	2	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: AM Future + Project											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
EB Agoura W of Las Virgenes	1	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: AM Existing											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier Calculated	Noise Reduction					
			Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal		
			dB	dB	dB	dB		dB	dB	dB	dB		
EB Agoura W of Las Virgenes	1	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0	
WB Agoura W of Las Virgenes	2	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.2: AM Existing + Project											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier	Noise Reduction					
			Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated	Goal	Calculated minus Goal
			dB	dB	dB	dB		dB	dB	dB	dB	dB	dB
EB Agoura W of Las Virgenes	1	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8		-8.0
WB Agoura W of Las Virgenes	2	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8		-8.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning
Noah Tanski

11 December 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: West Village
RUN: X4.1: PM Future
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver

Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dB
				Calculated dBA	Crit'n dBA	Calculated dB	Crit'n Sub'l Inc dB			Calculated dB	Goal dB	
NB Las Virgenes N of Lost Hills	1	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning						20 November 2018						
Noah Tanski						TNM 2.5						
						Calculated with TNM 2.5						
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		West Village										
RUN:		X4.1: PM Future + Project										
BARRIER DESIGN:		INPUT HEIGHTS				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier	Noise Reduction				
			Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Lost Hills	1	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

West Village

DKA Planning										20 November 2018			
Noah Tanski										TNM 2.5			
										Calculated with TNM 2.5			
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		West Village											
RUN:		X4.1: PM Existing											
BARRIER DESIGN:		INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier		Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Calculated	Goal	Calculated minus Goal	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
NB Las Virgenes N of Lost Hills	1	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	8	-8.0	
SB Las Virgenes N of Lost Hills	2	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

West Village

DKA Planning						20 November 2018						
Noah Tanski						TNM 2.5						
						Calculated with TNM 2.5						
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		West Village										
RUN:		X4.1: PM Existing + Project										
BARRIER DESIGN:		INPUT HEIGHTS				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier				
				Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated LAeq1h	Noise Reduction		
							Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dB	dB	dB	dB			dB	dB	dB	dB
NB Las Virgenes N of Lost Hills	1	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	8	-8.0
SB Las Virgenes N of Lost Hills	2	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		2	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							