
5.9 - Noise

5.9.1 - Introduction

Purpose

The purpose of this section is to describe the existing noise setting and potential effects from the proposed project implementation on the site. This section also identifies mitigation measures to reduce any potentially significant impacts and describes the residual impact, if any, after imposition of the mitigation.

Sources

Information in this section is based on the following sources:

- Noise Impact Analysis Ridgeline Equestrian Estates, Vista Environmental, Inc., September 8, 2009. The complete study is contained in Appendix M.
- Comments received during the public review period. These comments are contained in Appendix A.
- Comments received at the public scoping meeting. These comments are contained in Appendix A.

5.9.2 - Existing Setting

The project site is located in a developed area surrounded by residential uses. The ambient noise in the project vicinity is generally characterized by vehicle traffic on the nearby roadways, maintenance activities associated with an equestrian community, various animals, and from aircraft over flights at John Wayne Airport located approximately 10 miles south of the project site. The tennis courts, swimming pool, and clubhouse are still in use as of the date the Notice of Preparation was published and work on the Draft EIR began, but the golf course and driving range ceased operations in November 2006.

Noise Description and Standards

Various noise rating scales, noise standards, and community noise assessment criteria are discussed below to provide an overview of noise evaluation and the various noise standards used in the City of Orange (City).

Noise Descriptors

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility is subjective, and the physical response to sound complicates the analysis of its effect on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.” Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB).

The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human, frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The A-weighted sound level is expressed in dBA or dB(A). When sound is measured for distinct time intervals, the statistical distribution of the overall sound level can be obtained during that period.

A-weighted decibels or dBA are the most common units used for measuring the loudness of a noise event. The human ear has different sensitivity to different frequencies of sound or noise. A-weighting is an attempt to give the noise monitor the same frequency sensitivity as the human ear. Technically, it is the measurement of the energy being received when listening to (or monitoring) a source of noise. For example, the loudness of a highway may be 65 dBA when measured 50 feet away. The sound decreases as one moves away from the source and the same highway would have a noise level of 62 dBA at 100 feet. The relationship between how one perceives a sound and the actual sound energy emitted by the source of noise is very complex. However, a good method of estimation is, if a noise increases 10dBA, its apparent loudness will double. Therefore, a noise that is 70 dBA will appear twice as loud as a noise that is 60 dBA.

A number of noise rating scales are used in California for land use compatibility assessment. These scales are Equivalent Noise Level (L_{eq}), Day-Night Noise Level (L_{dn}), and Community Noise Equivalent Noise Level (CNEL). These scales are described as follows:

- The L_{eq} scale represents the energy average noise level over a sample period of time. It represents the decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.
- The L_{dn} scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to noise occurring during certain sensitive time periods is penalized for occurring at those times. For the L_{dn} scale, nighttime period (10:00 PM and 7:00 AM) noises are penalized by 10 dBA.
- The CNEL scale is similar to the L_{dn} scale except that it also includes an additional 5 dBA penalty for the evening time period (7:00 PM to 10:00 PM).

Vibration Descriptors

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that

carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or “side-to-side and perpendicular to the direction of propagation.”

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations which spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels.

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (RMS) amplitude of the vibration velocity. Although PPV is appropriate for evaluating potential of building damage, the RMS is more suitable for evaluating human response perception threshold takes more time for the human body to respond to vibrations. Due to the typically small amplitudes of vibrations, vibration is often expressed in decibels and is based on the RMS amplitude. A commonly used abbreviation is VdB, or vibration decibels.

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans where the perception threshold is approximately 65 VdB. Typical off-site vibration sources are construction, trains, and traffic on rough roads.

Noise Standards

The City has adopted noise standards as part of its General Plan Noise Element. The City uses the CNEL scale as the criterion for assessing the compatibility of residential land uses with transportation-related noise sources by utilizing an interior noise standard of 45 dBA CNEL and an exterior noise standard of 65 dBA CNEL.

The City has noise requirements which control on-site generated noise during short-term construction activities and long-term project operation excluding traffic-related noise. Construction noise is a short-term condition and is permitted as long as it occurs within the specified timeframes of the respective noise requirements. Other, on-site stationary source noise is subject to the provisions of the City’s noise requirements. This includes specified noise levels that cannot be exceeded for certain time intervals.

Vibration Standards

The City has not adopted vibration impact criteria for construction-related vibration levels. The Federal Transit Administration's ground borne noise and vibration impact thresholds presented in the "Transportation Noise and Vibration Impact Analysis," May 2006, were utilized. The report recommends a threshold of 78 VdB (dB re: 1 micro-inch per second) as the significance level for nearby residential annoyance during construction. The report also establishes a threshold of 94 VdB of damage to non-engineered timber and masonry buildings is also recommended.

Community Noise Assessment Criteria

Transportation-Related Noise

In community noise assessment, changes in noise levels greater than three dBA are often identified as significant, while changes less than one dBA will not be discernible to the human ear. In the range of one dBA to three dBA, people who are very sensitive to noise may perceive a slight change in noise level. No scientific empirical evidence is available to support the use of three dBA as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than one dBA. However, in a community situation the noise exposure is extended over a long time period and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. The level at which changes in community noise levels become discernible is likely to be some value greater than one dBA and, therefore, three dBA appears to be appropriate for most people and is generally considered an appropriate level that can be perceived by more people.

Because neither the State CEQA Guidelines, nor the City General Plan, provide a definition of what constitutes a substantial noise increase, the City's Draft General Plan Noise Element (2009) has been utilized, which provides the following guidance for determining if a project's increase to the ambient noise levels is significant. A project will have a significant noise-related impact if it would:

- Increase noise levels by 5 dB or more where the without project noise level is less than 60 dBA CNEL.
- Increase noise levels by 3 dB or more where the without project noise level is greater than 65 dBA CNEL.

Because the City's Draft General Plan has not provided a maximum noise level where any increase would be considered significant, this noise analysis has utilized the Land Use Compatibility Matrix in the Noise Element, which shows that the maximum noise exposure level allowed for residential development with noise reducing mitigation is 75 dBA CNEL.

Stationary Noise Sources

The City's Noise Ordinance (Chapter 8.42 of the Municipal Code) states the following criteria for stationary noise sources.

Maximum Permissible Sound Levels by Receiving Land Use:

- The noise standards for the various categories of land use identified by the Noise Control Officer as presented below shall, unless otherwise specifically indicated, apply to all such property within a designated zone.
- No person shall operate or cause to be operated, any source of sound at any location within the City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed:
 - The noise standard for that land use as specified below for a cumulative period of more than thirty minutes in any hour; or
 - The noise standard plus five dBA for a cumulative period of more than fifteen minutes in any hour; or
 - The noise standard plus ten dBA for a cumulative period of more than five minutes in any hour; or
 - The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or,
 - The noise standard plus 20 dBA or the maximum measured ambient, for any period of time.

Table 5.9-1: City of Orange Noise Limits for Residential Land Uses

Cumulative Number of Minutes in any One-Hour Time Period	Daytime Threshold (7 AM to 10 PM)	Nighttime Threshold (10 PM to 7 AM)
Exterior		
30	55 dBA	50 dBA
15	60 dBA	55 dBA
5	65 dBA	60 dBA
Cumulative Number of Minutes in any One-Hour Time Period	Daytime Threshold (7 AM to 10 PM)	Nighttime Threshold (10 PM to 7 AM)
Exterior		
1	70 dBA	65 dBA
0	75 dBA	70 dBA
Interior		
5	55 dBA	55 dBA
1	60 dBA	60 dBA
0	65 dBA	65 dBA

Source: Noise Impact Analysis, Vista Environmental, September 8, 2009.

Field Survey

Measurement Procedure and Criteria

To determine the existing noise at and adjacent to the project site, field monitoring was conducted on Tuesday, January 15, 2008 and Wednesday, January 16, 2008. Table 5.9-2 provides the results of the field survey for the calculated CNEL noise levels. Exhibit 5.9-1 depicts the on-site noise measurement locations. Site location No. 1 was chosen to represent the nearest proposed residential unit to Meads Avenue and Site location 2 to represent the existing ambient noise level where traffic noise is not the predominant noise source.

Table 5.9-2: Existing (Ambient) Noise Level Measurements

Site No.	Primary Noise Source	Duration (hour: minimum)	Noise Levels			
			dBA eq	dBA CNEL	Minimum (L _{eq} 10 min)	Maximum (L _{eq} 10 min)
1	Meads Avenue	24:00	51.6	53.9	34.1 at 2:24 AM	64.3 at 2:15 PM
2	Aircraft	18:00	45.8	50.0	33.6 at 2:19 AM	53.6 at 4:30 PM

Source: Noise Impact Analysis, Vista Environmental, September 8, 2009.

Measurement Results

The primary noise sources ranged from traffic-related noise emanating from Meads Avenue and aircraft related noise from John Wayne Airport. Existing, individual noise level measurements ranged from a low of 60.1 dBA Leq to a high of 69.4 dBA Leq. These individual readings are included within the calculated CNEL noise levels. The highest noise readings occurred at Site 1. The following describes the noise measurements results for each location.

Site 1

Site 1 was located on the northwest side of the project site approximately 80 feet southeast of the centerline of Meads Avenue and approximately 120 feet south of the centerline of the existing project driveway. The measured level was 51.6 dBA L_{eq} which converted to an estimated CNEL of 53.9 dBA.

Site 2

Site 2 was located on the project site approximately 370 feet south of Site 1. The measured level was 45.8 dBA L_{eq} which converted to an estimated CNEL of 50.0 dBA.

The highest noise levels occur in the afternoon. The CNEL values are generally within plus or minus two (2) dBA of the measured peak hour Leq dBA.

Construction Related Noise

Construction noise represents a short-term increase in ambient noise and vibration levels. Noise and vibration impacts from construction activities associated with the proposed project would be a function of the noise and vibration generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities.

The General Plan Noise Element places restrictions on hours of activity for construction-related noise. Construction may only take place between 7 AM and 8 PM on weekdays including Saturdays, excluding Sundays and federal holidays. This restriction includes engine “warm-up” or starting prior to 7 AM. The City Municipal Code implements these standards to control construction-related noise on the project site.

In the context of this Noise Impact Analysis, the noise impacts from construction activities associated with the proposed project are controlled by the Municipal Code.

5.9.3 - Regulatory Setting

All levels of government have responsibilities for exercising control to mitigate the annoyances caused by noise.

Federal

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three (3) purposes:

- Promulgating noise emission standards for interstate commerce.
- Assisting state and local abatement efforts.
- Promoting noise education and research.

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies.

The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately that

the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the Federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

State

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regulatory tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix,” which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

Article 4 of the California Administrative Code (California Noise Insulation Standards, Title 25, Chapter 1) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold.

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable.

Local

City of Orange Municipal Code

Chapter 8.24 of the City of Orange Municipal Code is the City’s noise ordinance. The noise ordinance applies to noise on one property impacting a neighboring property. It sets limits on noise levels that can be experienced at the neighboring property. The noise ordinance is part of the City’s Municipal Code and is enforceable throughout the City. The noise ordinance specifies dBA noise levels that cannot be exceeded in residential areas for a specified period of time.

The noise ordinance states that the daytime noise level for a noise source measured at an outdoor area of a residential property cannot exceed 75 dBA ever, 70 dBA for more than 1 minute of any hour, 65 dBA for more than five minutes of any hour, 60 dBA for more than 15 minutes of any hour, or 55 dBA for more than 30 minutes of any hour. Nighttime noise level limits are reduced by 5 dB to reflect the increased sensitivity to noise occurring during this time period. The noise ordinance also states that the noise level for a source measured at an indoor area of a residential property cannot

exceed 65 dBA ever, 60 dBA for more than 1 minute of any hour, and 55 dBA for more than five minutes of any hour. The nighttime interior noise level limits are reduced by 10 dB. In the event that the ambient noise level exceeds any of the noise limit categories, the cumulative period applicable to that category shall be increased to reflect the ambient noise level.

For daytime noise, the outdoor standard is more stringent than the interior standard. This is because a typical residence achieves 12 dB of noise reduction with windows open. That is, the interior noise levels will be at least 12 dB lower than the exterior noise levels. The noise ordinance requires the levels to only be 10 dB lower. This is not so for nighttime noise levels. Depending on the characteristics of the noise source, either the interior or exterior noise standards may be the most stringent.

Section 8.24.070 of the City's noise ordinance exempts several activities from the noise ordinance. Exempted activities relevant to the project include:

- Construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 PM and 7:00 AM on weekdays, including Saturday, or at any time on Sunday or a federal holiday.
- Activities conducted on public parks, public playgrounds, and public or private school grounds.
- Maintenance of real property provided such activities take place between the hours of 7:00 AM and 8:00 PM on any day except Sunday or a federal holiday, or between the hours of 9:00 AM and 8:00 PM on Sunday or a federal holiday.

City of Orange General Plan Noise Element

The purpose of the City General Plan Noise Element is “to identify noise sources in the community, to describe anticipated future noise levels, and to put forth policies and programs designed to minimize the effect of noise on people living and working in the City.” Several policies in the Noise Element relate to the proposed project; these are shown below.

- Policy 1.1: Consider noise impacts in future land use planning and decision making.
- Policy 1.3: Protect identified noise-sensitive land uses, especially residential neighborhoods, from significant noise sources.

The Noise Element states, “The noise/land use compatibility standards are those recommended by the State Department of Health Services, modified to reflect the City's established standard for residential areas.” Based on the noise/land use compatibility standards, outdoor and indoor noise limits for various land uses impacted by transportation noise sources are defined. The noise limits specified in the Noise Element are in terms of the CNEL. The standard states that for residential land use, the exterior noise exposure level shall not exceed 65 CNEL and the interior noise exposure level shall not exceed 45 CNEL. The City's General Plan Noise Element provides the following noise standards in order to identify areas where future noise levels may present land use constraints or may threaten

public health and welfare, noise standards must first be established. The City hereby adopts two types of noise standards as follows:

- Noise/land use compatibility standards which will be used to mitigate existing noise ambient problems and to guide future land use decisions; and
- Point source noise standards for all areas of the City designed to protect residential properties from excessive noise.

These noise standards are those recommended by the State Department of Health Services, modified to reflect the City's established standard for residential areas. Noise standards for point source noise in all areas of the City will continue to be those established in the City's noise ordinance. These standards are as follows:

It shall be unlawful for any person at any location within the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other residential property, to exceed:

1. The noise standard for a cumulative period of more than 30 minutes in any hour; or
2. The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour; or
3. The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour; or
4. The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or
5. The noise standard plus 20 dBA for any period of time. (City Ordinance No. 17-74, Section 9500.5)

The noise standard applies to all residential properties in the City. The exterior noise standard is 55 dBA between the hours of 7:00 a.m. and 10:00 p.m., and 50 dBA between 10:00 p.m. and 7:00 a.m. For interior noises, the standards are 55 dBA between 7:00 a.m. and 10:00 p.m., and 45 dBA between 10:00 p.m. and 7:00 a.m.

5.9.4 - Significance Thresholds

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if it would result in the following:

- 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;

- b.) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- c.) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- d.) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- 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, and/or:?
- 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.

5.9.5 - Project Impacts

Impacts Not Found To Be Significant

The Initial Study determined that no impacts would result from exposure to excessive groundborne vibration, or noise exposure from proximity to airports. Refer to the Initial Study in Appendix A for a complete discussion.

Potentially Significant Impacts

Potentially significant impacts are associated with exposure to noise levels in excess of established standards, a permanent increase in noise levels, and a temporary increase in noise levels during the short-term construction phase and long-term operational phase.

Noise Levels in Excess of Standards

Impact 5.9-1	The project has the potential to result in 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. [CEQA Noise Threshold 11(a)]
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Short-Term Construction Phase

The proposed project could potentially expose sensitive receptors (see Exhibit 5.9-2) to or generate noise levels in excess of standards established in the City General Plan, its noise ordinance, or applicable standards of other agencies due to construction related activities.

Demolition noise impacts were evaluated and shown in Table 5.9-3 and grading noise impacts on the nearby sensitive receptors were evaluated as shown in the Table 5.9-4. The noise level emitted from each piece of equipment was based on the SoundPlan model's library of equipment noise emission levels of: 115.5 dBA for a loader, 130 dBA for a hydraulic breaker, and 110 dBA for a dump truck. The demolition equipment was placed on the site based on where the demolition is to occur and the possible crushing plant locations (see Exhibit 5.9-3). The following equipment would be used: two Cat 963 crawler loaders, a Cat 950 rubber tired loader, a Cat 426 backhoe with 2,000 pound hydraulic

breaker, two Cat D8 dozers, one Cat 140 blade, three Cat 627 scrapers, one water truck, one dozer with a ripper, and six of assorted tractors, loaders, and backhoes, and two haul trucks operating onsite simultaneously.

Table 5.9-3: Demolition Noise Impacts at Nearby Homes

Receiver	Construction dBA L _{eq}	Existing dBA L _{eq}	Increase Over Existing
Off-Site No. 1	64.0	51.5	12.5
Off-Site No. 2	66.5	48.1	18.4
Off-Site No. 3	66.6	47.6	19.0
Off-Site No. 4	69.5	47.6	21.9
Off-Site No. 5	71.3	49.4	21.9
Off-Site No. 6	64.3	48.4	15.9
Off-Site No. 7	59.6	49.1	10.5
Off-Site No. 8	57.8	49.1	8.7
Off-Site No. 9	60.8	49.2	11.6
Off-Site No. 10	62.5	49.8	12.7
Off-Site No. 11	63.9	46.7	17.2

Note: Receiver noise level based on worst-case noise for either first or second floor.
Source: Noise Impact Analysis, Vista Environmental, September 8, 2009.

Table 5.9-4: Grading Noise Impacts at Nearby Homes

Receiver	Construction dBA L _{eq}	Existing dBA L _{eq}	Increase Over Existing
Off-Site No. 1	70.3	51.5	18.8
Off-Site No. 2	67.5	48.1	19.4
Off-Site No. 3	59.9	47.6	12.3
Off-Site No. 4	66.9	47.6	19.3
Off-Site No. 5	66.4	49.4	17.0
Off-Site No. 6	62.2	48.4	13.8
Off-Site No. 7	66.4	49.1	17.3
Off-Site No. 8	57.1	49.1	8.0
Off-Site No. 9	65.1	49.2	15.9
Off-Site No. 10	68.0	49.8	18.2
Off-Site No. 11	71.9	46.7	25.2

Note: Receiver noise level based on worst-case noise for either first or second floor.
Source: Noise Impact Analysis, Vista Environmental, September 8, 2009.

Table 5.9-3 shows that the noise levels during the demolition operations may be as high as 71.3 dBA Leq and increase by as much as 21.9 dBA over the existing noise levels. Table 5.9-4 shows that the noise level during the grading operations may be as high as 71.9 dBA Leq and increase by as much as 25.2 dBA over the existing noise levels at the facades of the nearby homes. The construction noise levels at the nearby residential uses would be below the 75 dBA CNEL threshold of significance based on the City's Draft General Plan that utilizes Land Use Compatibility Matrix in the Noise Element. However, depending on the placement of activities related to crushing concrete may be in excess of the predicted construction noise levels shown above in Table 5.9-3. Therefore, a potentially significant construction noise impact may occur for specific construction activities.

Because the City's Draft General Plan has not provided a maximum noise level where any increase would be considered significant, this noise analysis has utilized the Land Use Compatibility Matrix in the Noise Element, which shows that the maximum noise exposure level allowed for residential development with noise reducing mitigation is 75 dBA CNEL.

Mitigation Measures NOI-1 and NOI-2 would result in the crushing/processing equipment being located as far away as practical from any nearby homes, and for the contractor to adhere to the City's standards on construction activities to 7 AM to 8 PM on weekdays including Saturdays and excluding Sundays and federal Holidays.

With the incorporation of these mitigation measures, the potential construction-related noise impacts related to demolition and grading would be reduced to a less than significant level.

Permanent Increase in Ambient Noise Levels

Impact 5.9-2	The project has the potential to result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. [CEQA Noise Threshold 11(c)]
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Long-Term Operational Noise

Potential noise impacts associated with the operations of the proposed project are a result of project-generated vehicular traffic on the project vicinity roadways and from stationary noise sources associated with the project site.

Long-Term Off-Site Vehicular Noise

In order for off-site roadway noise impacts created by the proposed project's operations to be considered significant, the roadway noise levels would have to increase by 1) 5 dBA CNEL, where the without project noise level is less than 60 dBA CNEL; 2) 3 dBA CNEL, where the without project noise level is greater than 65 dBA CNEL; or 3) any noise increase where the without project noise level is greater than 75 dBA CNEL. For a project to increase by 3 dBA CNEL, the traffic volume would need to double. The project traffic would decrease as a result of implementation of the Ridgeline project (refer to Section 5.13, Transportation and Traffic). Because the project would

generate less traffic, there would be a corresponding reduction in vehicular-generated noise on nearby roadways.

Long-Term Stationary Noise

The proposed project would consist of the development of 39 single-family homes with equestrian uses and recreation trails. The equestrian uses would include a Ride-In Only Arena located on the western portion of the project site. The Ride-In Only Arena would be improved with seating benches, fencing, tie-up posts, picnic tables, and water for horses.

The project site is located in an equestrian community with existing equestrian accessible recreation trails located throughout the community. Since no organized events would be held at the Ride-In Only Arena, the noise created by the Ride-In Only Arena would be similar to the noise generated by the use of the existing and proposed recreation trails, which would be minimal. Use of the Ride-In Only Arena is not scheduled or coordinated and any noise generated from this activity may be greater than noise generated by equestrian use on trails in the vicinity of the project site but would not be excessive. Therefore, no long-term stationary noise impacts are anticipated from the on-going operations of the proposed project.

Temporary or Periodic Increase in Ambient Noise Levels

Impact NOI-3	The project has the potential to result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
	[CEQA Noise Threshold 11(d)]

Refer to the discussion under Impact 5.9-1 for a discussion of construction-related impacts. The Ridgeline project proposes 39 residential dwellings and an equestrian Ride-In Only Arena. Noise generated from the proposed residential uses would be typical of a rural, equestrian-oriented development and would be similar to the ambient noise levels generated on the project site (See Table 5.9-2). These observations are consistent with the City’s Noise Element that identifies urban ambient sound at approximately 40 dB (A-Scale Weighted Sound Level). No activities or uses are proposed that would result in substantial temporary or periodic increase in ambient noise levels. The Ride-In Only Arena is available for residents of the Ridgeline development and available to area residents who would access the arena from off-site trails. Use of the arena excludes sanctioned or organized events that would produce noise. Therefore, implementation of the proposed project would not result in substantial temporary or temporary increase in the ambient noise levels from implementation of the Ridgeline project.

Construction activities can produce ground-borne noise and vibration that may be heard and/or felt by adjacent properties. The primary sources of vibration and noise during construction would be from bulldozers, jackhammers, backhoes, crawler tractors, and scrapers. During demolition activities the greatest source of vibration would be from a backhoe with a hydraulic breaker and during grading activities the greatest source of vibration would be from a large bulldozer. A backhoe with a

hydraulic breaker would produce similar vibration levels to a hoe ram, which produces the same vibration level as a large bulldozer, with a vibration level of 0.089 PPV or 87 VdB at 25 feet from the source. Based on the list of source levels for construction contained in the Noise Study, the equipment used on the project would be below 94 VdB at 25 feet from the source.

The closest noise sensitive land uses are the nearby single-family homes, with the nearest residential structures located approximately 40 feet from the proposed area to be graded and as near as 300 feet from the location of the crushing plant during demolition (see Exhibit 5.9-3). During demolition activities, it is anticipated that the vibration levels caused by a backhoe with hydraulic breaker at the nearest residence would be around 0.003 PPV or 65 VdB. A vibration level of 65 VdB is approximately the threshold of human perception. During grading activities, it is anticipated that the vibration levels caused by a large bulldozer operating on the edge of the area to be graded during construction of the proposed project at the nearest structure will be around 0.024 inches per second or 83 VdB and create residential annoyance.

The vibration level during grading activities is in excess of the 78 VdB threshold for nearby inhabited structures and is below the 94 VdB threshold for nearby non-engineered timber or masonry buildings. Therefore, the proposed project may create a significant short-term construction-related vibration impact for the nearby inhabited structures. The incorporation of the mitigation measure NOI-3 would reduce the potential significant ground-borne noise and vibration impacts to a less than significant level.

With the incorporation of this mitigation measure, the potential vibration impacts associated with grading activities would be reduced to a less than significant level.

5.9.6 - Mitigation Measures

Noise Levels in Excess of Standards

- NOI-1** Prior to beginning demolition and grading activities, the project applicant shall submit a location diagram to the Community Development Director or designee depicting the location of the crushing/processing equipment to verify the equipment will be placed as far away as practical and a minimum of 300 feet away from any nearby homes.
- NOI-2** Prior to beginning demolition and grading activities, the project applicant and all contractors shall submit to the Community Development Director or designee written documentation that the demolition and grading contractors have been notified of and agreed to comply with the City's limitation on construction activities of 7 AM to 8 PM on weekdays including Saturdays and excluding Sundays and federal Holidays.
- NOI-3** Prior to beginning demolition and grading activities, the project applicant shall submit to the Community Development Director or designee written documentation

that the demolition and grading contractors have been notified of and agreed to comply with limiting the use of equipment in the area of the project site that is within 75 feet of an inhabited structure, to only small bulldozers (less than 150 horsepower) and similar sized equipment.

NOI-4 Prior to beginning demolition and grading activities, the project applicant shall notify surrounding residents within 300 feet two weeks in advance of the commencement of construction activities.

Permanent Increase in Ambient Noise Levels

No mitigation measures are required.

Temporary or Periodic Increase in Ambient Noise Levels

Refer to Mitigation Measures NOI-1 through NOI-4 above.

5.9.7 - Project Design Features

There are no Project Design Features associated with this topical environmental issue area.

5.9.8 - Level of Significance After Mitigation

All potentially significant impacts are able to be reduced below the level of significance with implementation of the recommended mitigation measures.

Noise Levels in Excess of Standards

With the implementation of recommended mitigation measures NOI-1 through NOI-4, potentially significant impacts related to noise and vibration in excess of standards related to construction activities, which include demolition, grading during the short-term construction period would be reduced below the level of significance.

Permanent Increase in Ambient Noise Levels

Impacts were determined to be less than significant and did not require mitigation.

Temporary or Periodic Increase in Ambient Noise Levels

With the implementation of recommended mitigation measures NOI-1 through NOI-4, potentially significant impacts related to temporary or periodic increase in noise levels related to construction activities, which include demolition, grading during the short-term construction period would be reduced below the level of significance.