4.10 NOISE

This section describes the existing noise setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Villa Storia Planned Development (PD) Plan (proposed project). The following analysis is based upon the Villa Storia Project Noise Technical Report (noise report) that was prepared for the proposed project by Atkins in October 2014 and is incorporated by reference herein (Atkins 2014). The noise report is included in Appendix I of this EIR.

4.10.1 Noise Background

Noise Definitions

Noise is commonly defined as unwanted sound. 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). Sound pressures in the environment have a wide range of values and the sound pressure level was developed as a convenience in describing this range as a logarithm of the sound pressure. The sound pressure level is the logarithm of the ratio of the unknown sound pressure to a reference quantity of the same kind. To account for the pitch of sounds and the corresponding sensitivity of human hearing to them, the raw sound pressure level is adjusted with an A-weighting scheme based on frequency that is stated in units of decibels (dBA). Typical A-weighted noise levels are listed in Table 4.10-1.

Table 4.10-1
Typical A-Weight Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)

Table 4.10-1
Typical A-Weight Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

dBA = a-weighted decibels
Source: Atkins 2014.

A given level of noise may be more or less tolerable depending on the sound level, duration of exposure, character of the noise sources, the time of day during which the noise is experienced, and the activity affected by the noise. For example, noise that occurs at night tends to be more disturbing than that which occurs during the day because sleep may be disturbed. Additionally, rest at night is a critical requirement in the recovery from exposure to high noise levels during the day. In consideration of these factors, different measures of noise exposure have been developed to quantify the extent of the effects anticipated from these activities. For example, some indices consider the 24-hour noise environment of a location by using a weighted average to estimate its habitability on a long term basis. Other measures consider portions of the day and evaluate the nearby activities affected by it as well as the noise sources. The most commonly used indices for measuring community noise levels are the Equivalent Energy Level (Leq), and the Community Noise Equivalent Level (CNEL).

Leq, the Equivalent Energy Level, is the average acoustical or sound energy content of noise, measured during a prescribed period, such as 1 minute, 15 minutes, 1 hour, or 8 hours. It is the decibel sound level that contains an equal amount of energy as a fluctuating sound level over a given period of time.

CNEL, Community Noise Equivalent Level, is the average equivalent A-weighted sound level over a 24-hour period. This measurement applies weights to noise levels during evening and nighttime hours to compensate for the increased disturbance response of people at those times. CNEL is the equivalent sound level for a 24-hour period with a +5 dBA weighting applied to all sound occurring between 7:00 p.m. and 10:00 p.m. and a +10 dBA weighting applied to all sound occurring between 10:00 p.m. and 7:00 a.m. Similar to the CNEL, Ldn, the day-night average noise level is a 24-hour average Leq with a +10 dBA weighting applied to noise during

the hours of 10:00 p.m. to 7:00 a.m. Ldn and CNEL are typically within one dBA of each other and, for most intents and purposes, are interchangeable.

L_{50}, the 50th percentile-exceeded sound level is the sound level exceeded 50% of a prescribed period.

L_{min}, the minimum sound level is the lowest instantaneous sound level measured during a prescribed period.

L_{max}, the maximum sound level is the highest instantaneous sound level measured during a prescribed period.

The decibel level of a sound decreases (or attenuates) exponentially as the distance from the source of that sound increases. For a single point source such as a piece of mechanical equipment, the sound level normally decreases by about 6 dBA for each doubling of distance from the source. Sound that originates from a linear, or "line" source such as a heavily traveled traffic corridor, attenuates by approximately 3 dBA per doubling of distance, provided that the surrounding site conditions lack ground effects or obstacles that either scatter or reflect noise. Noise from roadways in environments with major ground effects due to vegetation and loose soils may either absorb or scatter the sound yielding attenuation rates as high as 4.5 dBA for each doubling of distance. Other contributing factors that affect sound reception include meteorological conditions and the presence of manmade obstacles such as buildings and sound barriers. Barriers between a noise source and a receiver can substantially reduce noise levels at the receiver. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction. Taller barriers provide increased noise reduction.

Noise Effects

Noise has a significant effect on the quality of life. An individual's reaction to a particular noise depends on many factors such as the source of the noise, its loudness relative to the background noise level, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 5 dBA change in community noise levels is clearly noticeable, and a 3 dBA change is the smallest increment that is perceivable by most receivers. Generally, 1 to 2 dBA changes are not detectable. Although the reaction to noise may vary, it is clear that noise is a significant component of the environment, and excessively noisy conditions can affect an individual's health and well-being. The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on a community can be organized into six broad categories: sleep disturbance,

permanent hearing loss, human performance and behavior, social interaction or communication, extra-auditory health effects, and general annoyance.

Vibration

Vibration is defined as any oscillatory motion induced in a structure or mechanical device as a direct result of some type of input excitation. Vibration consists of waves transmitted through solid material. There are several types of wave motion in solids, unlike in air, including compressional, shear, torsional, and bending. The solid medium can be excited by forces, moments, or pressure fields. This leads to the terminology of "structure-borne/ground-borne" vibration.

Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building there is usually a ground-to-foundation coupling loss, but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves or the motion of building surfaces. The vibration of building surfaces can also be radiated as sound and heard as a low-frequency rumbling noise, known as groundborne noise.

Ambient and source vibration information for this study are expressed in terms of the peak particle velocity (PPV) in inches per second (in/sec) that correlates best with human perception. The particle velocity is the velocity of the soil particles resulting from a disturbance. Agencies such as California Department of Transportation (Caltrans) use the PPV descriptor because it correlates well with damage or complaints. Caltrans estimates that the threshold of perception is approximately 0.006 in/sec PPV and the level at which continuous vibration begins to annoy people is approximately 0.010 in/sec PPV.

4.10.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Aviation Administration Standards

Enforced by the Federal Aviation Administration (FAA), Code of Federal Regulations (CFR) Title 14, Part 150 prescribes the procedures, standards and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. Title 14 also identifies those land uses which are normally compatible with various levels of exposure to noise by individuals. The FAA has determined that interior sound levels up to 45 dBA Ldn (or CNEL) are acceptable within residential buildings. The FAA also considers residential land uses to be compatible with exterior noise levels at or less than 65 dBA Ldn (or CNEL).

Federal Highway Administration Standards

CFR Title 23, Part 772 sets procedures for the abatement of highway traffic noise and construction noise. Title 23 is implemented by the Department of Transportation Federal Highway Administration (FHWA). The purpose of this regulation is to provide procedures for noise studies and noise abatement measures to help protect the public health and welfare, to supply noise abatement criteria, and to establish requirements for information to be given to local officials for use in the planning and design of highways. All highway projects which are developed in conformance with this regulation shall be deemed to be in conformance with the Department of Transportation FHWA Noise Standards. Title 23 establishes 67 dBA as the worst-case hourly average noise level standard for impacts of federal highway projects to land uses including residences, recreational uses, hotels, hospitals, and libraries.

Federal Transit Administration Standards and Federal Railroad Administration Standards

Although the Federal Transit Administration (FTA) standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA Transit Noise and Vibration Impact Assessment Manual (May 2006) are routinely used for projects proposed by local jurisdictions. The FTA and Federal Railroad Administration have published guidelines for assessing the impacts of groundborne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects. The FTA measure of the threshold of architectural damage for conventional sensitive structures from groundborne vibration is 0.2 inches/second PPV.

State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

California Noise Insulation Standards (California Code of Regulations, Title 24)

Title 24 establishes an interior noise standard of 45 dBA for multi-family residential structures. The State Department of Health Services has developed guidelines for outdoor community noise acceptability for use by local agencies (OPR 2003). Selected relevant levels are listed below:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use
- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational and medical facilities

Local

City of Oceanside General Plan Noise Element

The City of Oceanside General Plan Noise Element establishes acceptable noise levels within the City's jurisdiction. The Noise Element establishes the following noise level regulations for construction related noise:

1. It should be unlawful for any person within any residential zone of 500' therefrom to operate any pile driver, power shovel, pneumatic, power hoist, or other construction equipment between 8:00 PM and 7:00 AM generating an ambient noise level of 50 dBA at any property line, unless an emergency exists.
2. It should be unlawful for any person to operate any construction equipment at a level in excess of 85 dBA at 100 feet from the source.
3. It should be unlawful for any person to engage in construction activities between 6:00 PM and 7:00 AM when such activities exceed the ambient noise level by 5 dBA. A special permit may be granted by the Director of Public Works if extenuating circumstances exist.

The Noise Element also outlines general noise policies as follows:

- Noise levels shall not be so loud as to cause danger to public health in all zones except manufacturing zones where noise levels may be greater.
- Noise shall be controlled at the source where possible.
- Noise shall be intercepted by barriers or dissipated by space where the source cannot be controlled.

- Noise shall be reduced from structures by the use of soundproofing where other controls fail or are impractical.
- Noise levels shall be considered in the approval of any projects or activities, public or private, which requires a permit or other approval from the City.
- Noise levels shall be considered in any changes to the Land Use and Circulation Elements of the General Plan.
- Noise levels of City vehicles, construction equipment, and garbage trucks shall be reduced to acceptable levels.

City of Oceanside Noise Ordinance

Chapter 38 of the Oceanside Municipal Code governs operational noise and contains the maximum one-hour average sound levels for various land uses for operational noise. The Noise Ordinance sets an allowed level for single-family and medium-density residential areas to 50 dBA Leq from 7:00 a.m. to 9:59 p.m., and 45 dBA Leq from 10:00 p.m. to 6:59 a.m. High density residential areas are limited to 55 dBA Leq from 7:00 a.m. to 9:59 p.m. and 50 dBA Leq from 10:00 p.m. to 6:59 a.m. Table 4.10-2 outlines these acceptable limits.

Table 4.10-2
City of Oceanside Exterior Noise Standards

Zone	Applicable Limit (decibels) (1)	Time Period
Residential Estate, Single-Family Residential, Medium Density	50	7:00 am to 9:59 pm
Residential, Agricultural, Open Space	45	10:00 pm to 6:59 am
High Density, Residential Tourist	55	7:00 am to 9:59 pm
	50	10:00 pm to 6:59 am
Commercial	65	7:00 am to 9:59 pm
	60	10:00 pm to 6:59 am
Industrial	70	7:00 am to 9:59 pm
	65	10:00 pm to 6:59 am
Downtown	65	7:00 am to 9:59 pm
	55	10:00 pm to 6:59 am

One-hour average sound level
Source: Atkins 2014.

Construction work may be exempt from the noise level limits established in Table 4.10-2 by the City Manager upon a determination that the authorization furthers the public interest. However, Section 38.17 specifically prohibits the operation of any pneumatic or air hammer, pile driver, steam shovel, derrick, steam, or electric hoist, parking lot cleaning equipment or other appliance, the use of which is attended by loud or unusual noise, between the hours of 10:00 p.m. and 7:00 a.m.

Section 38.16 prohibits nuisance noise as recommend in the General Plan Noise Element. It is unlawful for any person to make, continue, or cause to be made or continued, within the limits of the City of Oceanside, any disturbing, excessive, or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity.

City of Oceanside Engineering Manual

Construction noise in Oceanside is governed by the City Engineering Manual. Construction is normally limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday.

4.10.3 Existing Conditions

Existing Site Conditions

The 35.59-acre project site is currently undeveloped. The project site is surrounded by single-family residential development to the north and east (San Luis Rey Homes and River Ranch Homes), the Alano Club community center to the north, Mission San Luis Rey and associated facilities to the west, and the Ivey Ranch Park Association equestrian and recreational facility and State Route 76 (SR-76) to the south. Facilities at Mission San Luis Rey include the historical Mission San Luis Rey, including places of worship, Mission San Luis Rey Parish, and the Old Mission Montessori School. The portion of the Mission grounds adjacent to the project site is a storage area. The Ivey Ranch Park is an equestrian center that also includes a preschool and community garden. The portion of the facility closest to the project site consists of the garden, barn, and administrative buildings. Residences, religious services, and the equestrian facility and community center are not sources of substantial operational noise. Occasional nuisance noise may result from residences and parking lots, such as loud music or car alarms, or events at the Ivey Ranch or Alano Club. Children at the elementary and preschools may generate temporary increases in noise level during recess and outdoor play times. The closest playground to the project site is the Old Mission Montessori playground, located approximately 250 feet west of the project site.

Existing Noise Levels

An ambient sound level survey was conducted on February 26, 2013, to quantify the noise environment on the project site and in the surrounding area. A total of two short-term and one long-term measurements were taken. The monitoring locations are shown on Figure 4.10-1. The short-term measurements were taken during the daytime (1:00 p.m. to 2:00 p.m.) and were 15 minutes in duration. The long-term measurement was taken over a 24-hour period, from 3:00 p.m. on February 16, 2013, to 3:00 p.m. on February 17, 2013. A Larson Davis 820 ANSI (American National Standards Institute) Type I Integrating Sound Level Meter calibrated with a Larson Davis CAL200 calibrator was used to record ambient sound levels. Daytime weather conditions during the measurements were calm with a warm temperature and partly cloudy to

clear skies. Table 4.10-3 summarizes the measured short-term Leq and noise sources for the monitoring locations. The 24-hour noise measurement resulted in a CNEL of 63.1 dBA.

Table 4.10-3
Ambient Sound Level Measurements (dBA)

Site	Location	Daytime Noise Sources	Date/Time	Leq	L50	Lmax	Lmin
1	Northeast corner of the portion of the project site west of Academy Road	Traffic on SR-76, intermittent aircraft flyover, recesses at Old Mission Montessori School	2-26-13 / 1:18 p.m.	52.3	49.9	67.6	45.1
2	Southern boundary of portion of project site east of Academy Road	Traffic on Rancho Bernardo Road and Matinal Road	2-26-13 / 1:45 p.m.	58.0	56.8	72.3	47.4

Ambient measurements were 15 minutes in duration
Source: Atkins 2014

The results of the ambient noise survey reflect daytime noise levels that range between 52 dBA in the area of the site farthest from SR-76 and Mission Avenue, and 58 dBA Leq at the southern edge of the project site adjacent to SR-76. Existing noise currently exceeds the City's Noise Ordinance for residential land uses daytime threshold of 50 dBA Leq. The primary noise source at both locations was traffic. Ambient 24-hour noise levels at the project site on a typical weekday are 63.1 dBA CNEL. State standards consider noise levels up to 60 dBA CNEL to be compatible, and noise levels up to 70 dBA CNEL conditionally compatible, with the construction of new residential uses. Based on the State Department of Health Services noise compatibility guidelines, ambient noise levels measured within the project site are conditionally compatible with existing land uses in the area surrounding the project site.

Transportation Noise Sources

Aviation

The nearest airport to the project site is Oceanside Municipal Airport, located approximately two miles west of the project site in the city of Oceanside. The 43-acre Oceanside Municipal Airport is a public airport with one runway. It is used primarily for general aviation. Due to distance, the project site is not located within the 60 dBA CNEL noise contour for the airport.

Roadways

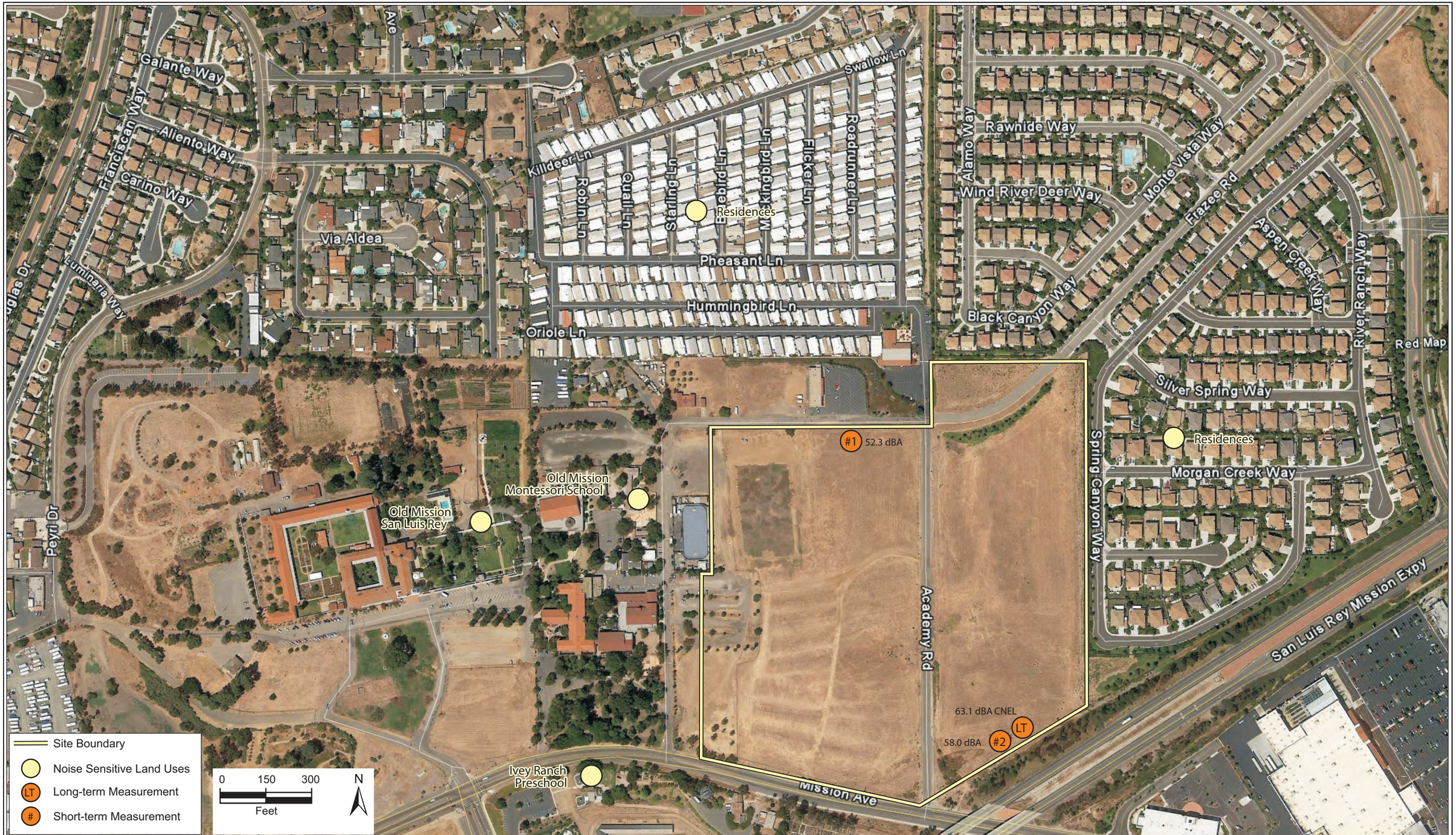
The project site is situated on Mission Avenue between Frazee Road and Spring Canyon Way. A portion of the southern boundary of the project site is adjacent to SR-76. Academy Road and Frazee Road traverse the project site. The segment of Frazee Road that traverses the project site is currently closed to traffic. Table 4.10-4 shows the existing noise levels generated by the roadways surrounding the project site. No existing traffic volumes are available for Academy Road; however, this road is a two-lane collector street that does not provide access to

development other than an existing mobile home community (San Luis Rey Homes), and an alternative route to Alano Club and Old Mission Montessori School. It is not anticipated to generate noise levels greater than those of Frazee Road, which would provide similar access through development of the proposed project. The City of Oceanside has not established noise compatibility standards; however, California Department of Health Services considers roadway noise levels up to 60 dBA CNEL to be normally compatible with noise sensitive land uses such as residences, and noise levels up to 70 dBA to be conditionally compatible with residences with additional noise attenuations. As shown in Table 4.10-4, all roadways currently generate noise levels at 50 feet from the roadway centerline that exceed 60 dBA CNEL, with the exception of Frazee Road from Academy Road to Old Grove Road. All segments of SR-76 and Mission Avenue from El Camino Real to Rancho Del Oro Drive exceed 70 dBA CNEL. College Boulevard from Frazee Road to Mesa Drive and El Camino Real from SR-76 to Mesa Drive also exceed 70 dBA CNEL at 50 feet from the roadway centerline.

Table 4.10-4
Existing Roadway Noise Levels

Roadway	Segment	Existing Average Daily Trips	Noise Level at 50 feet from Roadway Centerline (dBA CNEL)
SR-76	Canyon Drive to Foussat Road	54,000	80
	Foussat Road to El Camino Real	51,000	80
	El Camino Real to Rancho Del Oro Drive	45,500	82
	Rancho Del Oro Drive to Old Grove Road	44,000	79
	Old Grove Road to College Boulevard	44,000	79
Mission Avenue	El Camino Real to Douglas Drive	17,490	72
	Douglas Drive to Rancho Del Oro Drive	16,270	72
	Rancho Del Oro Drive to Academy Road	13,590	65
	Academy Road to Old Grove Road	11,000	65
Frazee Road	Academy Road to Old Grove Road	1,630	58
	Old Grove Road to SR-76	4,200	62
El Camino Real	Highway 76 to Mesa Drive	21,600	71
Rancho Del Oro Drive	Highway 76 to Mesa Drive	14,060	69
Old Grove Road	Mission Avenue to Mesa Drive	11,690	68
College Boulevard	Frazee Road to Mesa Drive	24,680	73

Source: Atkins 2014



DUDEK

7624

SOURCE: ATKINS 2014

FIGURE 4.10-1

Noise Measurement Locations and Sensitive Land Uses

Villa Storia PD Plan Draft Environmental Impact Report

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Noise Sensitive Land Uses

Noise sensitive land uses (NSLU) are land uses that may be subject to stress and/or interference from excessive noise, such as residences, schools, hospitals, libraries, parks, and places of worship. Industrial and commercial land uses are generally not considered sensitive to noise. The term "noise receptor" is often used to represent a specific location where individuals would be exposed to noise, such as a specific residence. The nearest NSLU to the project site are the residences located approximately 75 feet west the project site across Spring Canyon Way (River Ranch Homes), the residences located approximately 40 feet north of the project site (San Luis Rey Homes, the Mission San Luis Rey places of worship and Old Mission Montessori School approximately 250 feet to the west, and the Ivey Ranch preschool approximately 400 feet to the southwest of the site. The locations of these NSLU are identified on Figure 4.10-1.

Vibration Sensitive Land Uses

Land uses in which groundborne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations are considered "vibration-sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the groundborne vibration. Excessive levels of groundborne vibration of either a regular or an intermittent nature can result in annoyance to residential uses. The land uses surrounding the project site are not vibration sensitive; however, historic properties associated with the Mission San Luis Rey may be susceptible to damage from excessive vibration.

4.10.4 Thresholds of Significance

The significance criteria used to evaluate the project impacts to noise are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to noise would occur if the project would:

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.

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.

4.10.5 Impacts Analysis

A. Would the project 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?

Construction Noise Impacts

Construction of the proposed project would generate noise that could expose nearby NSLU to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures. Sound levels from typical construction equipment range from 74 dBA to 85 dBA Leq at 50 feet from the source, as shown in Table 4.10-5. Noise from construction equipment generally exhibits point source acoustical characteristics. Strictly speaking, a point source sound decays at a rate of 6 dBA per doubling of distance from the source. The rule applies to the propagation of sound waves with no ground interaction.

Table 4.10-5
Typical Noise Levels for Construction Equipment

Construction Equipment	Typical Noise Level at 50 feet (dBA)
Air Compressor	77.7
Backhoe	77.6
Concrete Mixer Truck	78.8
Crane	80.6
Dozer	81.7
Dump Truck	76.5
Excavator	80.7
Generator	80.6
Grader	85.0
Loader	79.1
Paver	77.2
Roller	80.0
Scraper	83.6
Tractor	84.0
Welder	74.0

Source: Atkins 2014

Standard equipment, including front-end loaders, backhoes, graders, and dozers, would be used for construction of the proposed project. Noise levels from construction on the project site

were determined based on the construction equipment list provided by the applicant and typical equipment noise levels determined by the Roadway Construction Noise Model (RCNM). The City of Oceanside restricts construction equipment that generates more than 85 dBA L_{eq} at 100 feet from the source. The six noisiest pieces of construction equipment (crane, grader, dozer, tractor, scraper, and excavator) that could be required for the project were assumed to operate simultaneously in the same location, which would have the potential to generate noise levels up to 80 dBA at 100 feet from the construction site. This estimate is conservative because construction equipment would be spread out over several acres and would not be operating all at once. Therefore, the worst-case construction equipment scenario would not exceed the 85 dBA L_{eq} threshold.

The City of Oceanside also prohibits construction between the hours of 6:00 p.m. of any day and 7:00 a.m. of the following day, and on Saturdays and Sundays. The proposed project would comply with these restrictions. No evening or nighttime construction would be necessary. As identified in Section 4.3, Biological Resources, construction noise would potentially impact migratory birds that may utilize adjacent ornamental trees; provision of mitigation measures would ensure that impacts to wildlife would be less than significant. Therefore, because construction would comply with the applicable regulation for construction noise, temporary increases in noise levels from typical construction activities would be less than significant.

Operational Noise Impacts

Impacts to Off-Site Uses

A total of 420 single-family and multi-family residences would be developed across the project site. Noise generated from residential uses is generally described as nuisance noise. Nuisance noise is defined as intermittent or temporary neighborhood noise from sources such as amplified music, barking dogs, and landscape maintenance equipment that may be disturbing to other residents. Nuisance noise impacts are more likely to occur in the more densely developed areas of the project site (such as the multi-family structures) where residences would be closer together and neighbors would be more likely to hear a neighbor's dog or music. However, single-family development would also likely be exposed to occasional nuisance noise. Section 38.16 of the Oceanside Municipal Code prohibits nuisance noise at any time which causes discomfort or annoyance to reasonable persons of normal sensitivity. Compliance with the noise ordinance would limit exposure to excessive nuisance noise. The Oceanside Police Department enforces the nuisance noise provisions of the noise ordinance. Additionally, nuisance noises would be different from each other in kind, duration, and location, so that the overall effects would be separate and in most cases would not affect the receptors at the same time. Instances of nuisance noise would be addressed on an individual case basis by the Oceanside Police Department. Therefore, nuisance noise from the proposed residence would not result in significant impact.

The project site would be landscaped; therefore, regular maintenance would be required. Maintenance activities would include the use of gasoline-powered mowers, trimmers, and blowers, which would result in intermittent short-term temporary noise increases. Maintenance activities are permitted uses and would be subject to the daytime one-hour Leq noise limits of 50 dBA in residential neighborhoods. Additionally, maintenance equipment would not be operating at any one location for more than a few minutes and, due to the limited size of the landscape areas, it is likely that equipment would not be operating simultaneously. Due to the limited amount of time equipment would be operating in one location, operation of landscape equipment would generally not exceed the hourly noise level limit at a particular receptor. Therefore, landscape maintenance would result in a less than significant impact.

The multi-family residential portion of the project would involve parking areas. Noise sources from parking areas include car alarms, door slams, radios, and tire squeals. These sources typically range from about 30 to 66 dBA at a distance of 100 feet, and are generally short-term and intermittent. However, noise sources from the parking areas would be different from each other in kind, duration, and location, so that the overall effects would be separate and in most cases would not affect noise-sensitive receptors at the same time. Therefore, noise generated from the parking areas would be less than significant.

As described above, the proposed project would not result in new sources of noise that would expose surrounding land uses to excessive noise levels. Impacts would be less than significant.

Impacts to On-Site Uses

The main source of noise on the project site is traffic noise. As discussed in Section 4.10.2, traffic noise and other ambient noise sources generate a noise level of 63.1 dBA CNEL on the project site on a typical weekday. This noise level is conditionally compatible with the proposed residential use, according to State Department of Health Services compatibility standards. As discussed in greater detail in response (c), and shown in Table 4.10-6, future noise levels on SR-76 are not anticipated to increase by a perceptible amount in the future under project buildout conditions. Noise levels along Mission Avenue in the proximity of the project site are anticipated to increase by 1 to 2 dBA CNEL, a change that would not be generally perceptible compared to existing conditions. Therefore, ambient noise levels on the project site are anticipated to remain conditionally compatible under project buildout conditions.

Typical building construction that includes closed double-glazed windows can reduce exterior noise levels up to 30 dBA in the building interior. Therefore, it is reasonable to assume that interior noise levels could be reduced from approximately 65 dBA CNEL to 45 dBA CNEL or below with the installation of industry standard double-glazed windows. Additionally, a six-foot wall is proposed along the perimeter of the project site that would attenuate exterior noise from

Mission Avenue by approximately 5 dBA, and residential buildings adjacent to Mission Avenue and SR-76 would provide additional noise attenuation for the proposed buildings to the north. Use of typical building practices, including industry standard double glazed windows and structural attenuation from adjacent buildings would reduce interior noise levels to acceptable levels at most proposed residences. However, SR-76 is elevated in the vicinity of the project site; therefore, the perimeter wall would not attenuate traffic noise from SR-76 at the residences closest to Highway 76 in Planning Area 2.Therefore, this impact would be potentially significant at residences adjacent to SR-76. With incorporation of mitigation measure MM-NOI-1, impacts would be less than significant. See response (c) below for a detailed discussion on traffic noise.

In addition to roadways, the project site is surrounded by residential development, Mission San Luis Rey, Old Mission Montessori School, the Alano Club community center, and Ivey Ranch Park, which includes equestrian facilities, a preschool, and a community garden. Residences, religious services, the community center, and the equestrian facility are not sources of substantial operational noise and would not expose the proposed residences to excessive noise levels. Occasional nuisance noise may result from residences and parking lots, such as loud music or car alarms. Children at the Old Mission Montessori School and the preschool may generate temporary increases in noise levels during recess and outdoor play times. Children were at recess during the short-term ambient noise measurements at the project site on February 26, 2012. Recess activities were audible on the portion of the project site west of Academy Road. As shown in Table 4.10-3, noise levels did not exceed 50 dBA more than 50% of the time during the noise measurement. Therefore, recess would generally not generate noise levels that would result in an hourly Leq above 50 dBA at the project site. The proposed project would not be exposed to excessive noise levels from nearby play areas. Therefore, impacts from surrounding land uses other than roadways would be less than significant.

B. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

The main concerns associated with groundborne vibration from this type of project are annoyance and damage; however, vibration-sensitive instruments and operations can be disrupted at much lower levels than would typically affect other uses. In extreme cases, the vibration can cause damage to buildings, particularly those that are old or otherwise fragile. No vibration-sensitive land uses are proposed as part of the project or currently exist on the project site. Therefore, this analysis focuses on the potential for the project to generate vibration at surrounding land uses. Groundborne vibration occurring as part of the project would result from construction equipment. Following construction, the proposed residences would not generate groundborne vibration.

As a guide, major construction activity within 200 feet may be potentially disruptive to sensitive operations. The FTA damage thresholds indicate that, for buildings not extremely sensitive to vibration, a damage threshold of between 0.2 in/sec to 0.5 in/sec would apply depending on the type of building. Construction equipment does not typically generate vibration greater than 0.2 in/sec beyond 25 feet of construction, as shown in Table 4.10-6.

Table 4.10-6
Vibration Source Levels for Construction Equipment

Construction Equipment	Peak Particle Velocity (in/sec)	
	At 25 feet	*At 100 feet(1)*
Large Bulldozer	0.089	0.011
Loaded Trucks	0.076	0.010
Jackhammer	0.035	0.004
Small Bulldozer	0.003	0
Caisson Drilling	0.089	0.011
Roller	0.210	0.026

Based on the formula PPVequip = PPVref (25D)1.5
Source: Atkins 2014

The land uses surrounding the project site include residences, places of worship, schools, a community center, and recreational facilities. There are no vibration sensitive land uses within 200 feet of the project site. The historic Mission San Luis Rey buildings, which may be susceptible to damage from vibration, are located more than 1,000 feet from the project site. Construction equipment does not typically generate vibration greater than 0.2 in/sec beyond 25 feet of construction. Therefore, vibration from construction of the project would not generate vibration at the historic mission buildings that could result in damage. Vibration impacts attributable to heavy duty construction equipment would be less than significant.

C. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Traffic Noise

In addition to the operational impacts discussed in response (a) above, the proposed project has potential to permanently increase traffic noise generated in the surrounding roadways as a result of increasing residential development and population. The noise report utilized the Traffic Impact Analysis prepared by Linscott, Law, and Greenspan, Engineers (LLG) (utilized for Section 4.14, Traffic and Circulation, and found in Appendix J) in order to properly assess an “Existing + Project” scenario as well as the cumulative effects in “Future (Year 2030)” scenario. Noise levels for area roadways were calculated using standard noise modeling equations adapted from the FHWA noise prediction model. The modeling calculations take into account the posted

vehicle speed, average daily traffic volume, and the estimated vehicle mix. The estimates are conservative because the model does not take into account buildings or topography that would provide noise attenuation. Noise levels at distances further from the source than the specific receptor would be lower due to attenuation provided by increased distance from the noise source. Generally, noise from heavily traveled roadways would experience a decrease of approximately 3 dBA for every doubling of distance from the roadway.

Existing + Project

Table 4.10-7 outlines Existing and Existing + Project noise levels. The Existing + Project scenario is conservative for estimating the project's contribution to area traffic noise because additional growth in the city would occur prior to operation of the project, which would generate increased ambient traffic noise.

As shown in Table 4.10-7, all modeled segments currently generate noise levels that exceed 60 dBA CNEL, which is the noise level considered generally compatible with NSLU, with the exception of Frazee Road from Academy Road to Old Grove Road. With implementation of the proposed project, noise levels on these segments would continue to exceed 60 dBA CNEL. The project would not result in an increase of more than 1 dBA CNEL on any segment that currently exceeds 60 dBA CNEL. However, the project would cause the noise level on Frazee Road to exceed 60 dBA CNEL. Therefore, the project would result in a potentially significant traffic noise impact to Frazee Road under the Existing + Project scenario. However, as discussed under the Future (Year 2030) scenario, a potentially significant impact on Frazee Road would no longer occur, therefore impacts to Frazee Road would not be permanent. Impacts would be less than significant.

Table 4.10-7
Existing + Project Traffic Noise Levels

Roadway	Segment	Existing (dBA)	Exceeds 60 dBA without proposed project?	Existing + Project (dBA)	Increase in Noise Level	Significant Impact?
SR-76	Canyon Drive to Foussat Road	80	Yes	80	0	No
	Foussat Road to El Camino Real	80	Yes	80	0	No
	El Camino Real to Rancho Del Oro Drive	82	Yes	82	0	No
	Mission Gate Drive to Old Grove Road	79	Yes	79	0	No
	Old Grove Road to College Boulevard	79	Yes	79	0	No

Table 4.10-7
Existing + Project Traffic Noise Levels

Roadway	Segment	Existing (dBA)	Exceeds 60 dBA without proposed project?	Existing + Project (dBA)	Increase in Noise Level	Significant Impact?
Mission Avenue	El Camino Real to Douglas Drive	72	Yes	72	0	No
	Douglas Drive to Rancho Del Oro Drive	72	Yes	72	0	No
	Rancho Del Oro Drive to Academy Road	65	Yes	66	+1	No
	West of Old Grove Road	65	Yes	65	+1	No
Frazee Road	Academy Road to Old Grove Road	58	No	61	+3	Yes
	Old Grove Road to SR-76	62	Yes	63	+1	No
El Camino Real	SR-76 to Mesa Drive	71	Yes	71	0	No
Rancho Del Oro Drive	SR-76 to Mesa Drive	69	Yes	70	+1	No
Old Grove Road	Mission Avenue to Mesa Drive	68	Yes	68	0	No
College Boulevard	Frazee Road to Mesa Drive	73	Yes	73	0	No

Note: Noise levels calculated at 50 feet from roadway centerline. Noise levels area based upon traffic data from the Traffic Impact Analysis prepared by LLG. Decibel levels are rounded to the nearest whole number.
Source: Atkins 2014

Future (Year 2030)

The Future (Year 2030) scenario includes buildout of the project as well as the cumulative growth and development in Oceanside anticipated by the Year 2030. Future increases in traffic, with and without the project, are provided in Table 4.10-8. As shown in Table 4.10-8, all modeled roadway segments would exceed 60 dBA CNEL without implementation of the project. The project would not result in an increase of more than 1 dBA CNEL on any segment that currently exceeds 60 dBA CNEL. Implementation of the project would not result in a discernable increase in noise levels along any of the modeled roadway segments. Therefore, the project would not result in a permanent increase in ambient noise levels and impacts would be less than significant.

Table 4.10-8
Future (Year 2030) Traffic Noise Levels

Roadway	Segment	Future (dBA)	Exceeds 60 dBA without proposed project?	Future (Year 2030) + Project (dBA)	Increase in Noise Level	Significant Impact?
SR-76	Canyon Drive to Foussat Road	81	Yes	81	0	No
	Foussat Road to El Camino Real	81	Yes	81	0	No

Table 4.10-8
Future (Year 2030) Traffic Noise Levels

Roadway	Segment	Future (dBA)	Exceeds 60 dBA without proposed project?	Future (Year 2030) + Project (dBA)	Increase in Noise Level	Significant Impact?
	El Camino Real to Rancho Del Oro Drive	83	Yes	83	0	No
	Mission Gate Drive to Old Grove Road	80	Yes	80	0	No
	Old Grove Road to College Boulevard	80	Yes	80	0	No
Mission Avenue	El Camino Real to Douglas Drive	73	Yes	73	0	No
	Douglas Drive to Rancho Del Oro Drive	74	Yes	74	0	No
	Rancho Del Oro Drive to Academy Road	67	Yes	67	0	No
	West of Old Grove Road	66	Yes	66	0	No
Frazee Road	Academy Road to Old Grove Road	62	Yes	63	+1	No
	Old Grove Road to SR-76	64	Yes	64	0	No
El Camino Real	SR-76 to Mesa Drive	72	Yes	72	0	No
Rancho Del Oro Drive	SR-76 to Mesa Drive	72	Yes	72	0	No
Old Grove Road	Mission Avenue to Mesa Drive	69	Yes	69	0	No
College Boulevard	Frazee Road to Mesa Drive	75	Yes	75	0	No

Note: Noise levels calculated at 50 feet from roadway centerline. Noise levels area based upon traffic data from the Traffic Impact Analysis prepared by LLG. Decibel levels are rounded to the nearest whole number.
Source: Atkins 2014

Cumulative Traffic Noise

Buildout of the proposed project, along with future cumulative growth in the Oceanside, would result in increases in traffic that would cumulatively increase traffic noise. The cumulative analysis compares future noise levels to existing noise levels to determine if a significant cumulative increase in noise level would occur. A significant cumulative impact would occur if cumulative projects would cause a roadway to exceed 60 dBA CNEL. The potential noise impacts that would result from cumulative projects and cumulative growth are included in the Future (Year 2030) scenario. Table 4.10-9 compares Future (Year 2030) traffic noise levels to existing conditions. As shown in Table 4.10-8, noise levels along all modeled roadway segments would exceed the applicable noise threshold under the future scenario. The noise level along Frazee Road from Academy Road to Old Grove Road is the only segment that would not exceed 60 dBA under existing conditions, but would exceed 60 dBA in the future. Therefore, a cumulative impact would occur along this roadway as result of future cumulative development, including the proposed project. A cumulatively

considerable increase in noise level would also occur on Rancho Del Oro Drive from SR-76 to Mesa Drive. However, the proposed project would not contribute to an increase in noise level on these roadway segments that would result in discernable increase in noise and exceed the 3 dBA CNEL impact threshold. Therefore, the proposed project would not result in a cumulatively considerable contribution to a significant cumulative impact. Cumulative traffic noise impacts directly resulting from the proposed project would be less than significant.

Table 4.10-9
Cumulative Traffic Noise Impacts

Roadway	Segment	Existing (dBA)	Future (Year 2030) + Project (dBA)	Increase in Noise Level	Significant Cumulative Impact?	Increase Attributable to Proposed Project(1)	Cumulatively Considerable Contribution?
SR-76	Canyon Drive Foussat Road	80	81	+1	No	0	No
	Foussat Road to El Camino Real	80	81	+1	No	0	No
	El Camino Real to Rancho Del Oro Drive	82	83	+1	No	0	No
	Mission Gate Drive to Old Grove Road	79	80	+1	No	0	No
	Old Grove Road to College Boulevard	79	80	+1	No	0	No
Mission Avenue	El Camino Real to Douglas Drive	72	73	+1	No	0	No
	Douglas Drive to Rancho Del Oro Drive	72	74	+2	No	0	No
	Rancho Del Oro Drive to Academy Road	65	67	+2	No	0	No
	Academy Road to Old Grove Road	65	66	+1	No	0	No
Frazee Road	Academy Road to Old Grove Road	58	63	+5	Yes	+1	No
	Old Grove Road to SR-76	62	64	+2	No	0	No
El Camino Real	SR-76 to Mesa Drive	71	72	+1	No	0	No
Rancho Del Oro Drive	SR-76 to Mesa Drive	69	72	+3	Yes	0	No
Old Grove Road	Mission Avenue to Mesa Drive	68	69	+1	No	0	No
College Boulevard	Frazee Road to Mesa Drive	73	75	+2	No	0	No

Based on the results from Table 4.10-7. The project's contribution to the cumulative noise impact is based on the increase in traffic noise attributable to the proposed project under the Future (Year 2030) scenario. If the project's contribution is less than three decibels, the project's contribution is not cumulatively considerable

Note: Noise levels calculated at 50 feet from roadway centerline. Noise levels area based upon traffic data from the Traffic Impact Analysis prepared by LLG. Decibel levels are rounded to the nearest whole number.

Source: Atkins 2014

Other Permanent Impacts

As discussed in response (a), the operational phase of the proposed project involves residential development and an overall increase in human presence. Noise associated with residential neighborhoods such as nuisance noise, landscaping, and parking areas would likely occur at different times, durations, and locations. Noise is a localized phenomenon and is progressively reduced as the distance from the source increases; specifically, noise levels from stationary noise sources decrease by approximately 6 dB for every doubling of distance. Due to this, noise levels would not be expected to exceed noise ordinance standards. Therefore, the overall permanent noise impact resulting from the operational phase of the proposed project would be less than significant.

D. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

As discussed in response (a), the construction phase would result in temporary increases in noise levels. Different NSLUs surround the proposed project site. Construction equipment that generates noise would likely be used in different locations on the proposed project site and at different times resulting in an increase of ambient noise level below the significance threshold. Construction would also adhere to City of Oceanside ordinances that prohibit construction between the hours of 6:00 pm and 7:00 am and on weekends. Therefore, temporary noise impacts resulting from construction on the proposed project site would be less than significant.

Also as discussed in response (a), residences are not considered to be substantial noise sources. General nuisance noise and landscaping maintenance noise would not result in substantial temporary increases in noise levels. Therefore, impacts during the operational phase of the proposed project would be 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?

The nearest airport to the proposed project site is Oceanside Municipal Airport is located approximately 2.4 miles east/southeast. According to the Oceanside Municipal Airport Land Use Compatibility Plan, the project site does not lie within the 60 dBA CNEL noise contour of the airport (San Diego County Regional Airport Authority 2010). Impacts would be less than significant.

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?

The project site does not lie in the vicinity of a private airstrip. Therefore, no impacts as they relate to aircraft or airports would result from the proposed project.

4.10.6 Mitigation Measures

The following mitigation measure would ensure interior noise levels would be reduced to 45 dBA CNEL or below as residences :

MM-NOI-1 Prior to issuance of a certificate of occupancy Planning Area 2 residences located in the first row north of SR-76, the applicant shall prepare an acoustical analysis ensuring that interior noise levels due to exterior noise sources will be at or below 45 dBA CNEL. One or a combination of the following measures will be incorporated as necessary to ensure interior noise will be at or below 45 dBA CNEL:

1. Utilize roof-ceiling assemblies making up the building envelope that have a sound transmission class value of at least 50, and exterior windows shall have a minimum sound transmission class of 30, as recommended in the California Green Building standards code for non-residential development within 1,000 feet of a freeway;
2. Install dual-paned windows to reduce sound transmission; and/or
3. Locate common areas and yards along the street frontage to provide a setback for residences.

4.10.7 Level of Significance After Mitigation

With implementation of mitigation measure MM-NOI-1, noise impacts would be less than significant.