IV. ENVIRONMENTAL IMPACT ANALYSIS
J. NOISE

INTRODUCTION

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential noise and groundborne vibration impacts associated with the implementation of the proposed Big Wave Wellness Center and Office Park project ("proposed project"). The purpose of this analysis is twofold: (1) to evaluate the project in terms of its design to ensure that noise levels at the project site will not exceed standards adopted by the County of San Mateo; and (2) to evaluate the noise and groundborne vibration impacts of the project on the surrounding (offsite) areas.

Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources, such as an occasional aircraft or train passing by to virtually continuous noise sources like traffic on a major highway. Table IV.J-1 below illustrates representative noise levels in the environment.

Table IV.J-1
Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 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 Area during Daytime	—50—	Dishwasher in Next Room

Table IV.J-1
Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, Technical Noise Supplement, October 1998.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- L_{eq} – The equivalent energy noise level is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

- L_{min} – The minimum instantaneous noise level experienced during a given period of time.

- L_{max} – The maximum instantaneous noise level experienced during a given period of time.

- CNEL – The Community Noise Equivalent Level is a 24-hour average L_{eq} with a 10 dBA "penalty" added to noise during the hours of 10:00 P.M. to 7:00 A.M., and an additional 5 dBA penalty during the hours of 7:00 P.M. to 10:00 P.M. to account for noise sensitivity in the evening and nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70 dBA. Noise levels greater than 85 dBA can cause temporary or permanent hearing loss. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet suburban residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather and reflecting or shielding, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally more than 30 dBA.

Fundamentals of Environmental Groundborne Vibration

Vibration is sound radiated through the ground. Vibration can result from a source (e.g., train operations, motor vehicles, machinery equipment, etc.) causing the adjacent ground to move, thereby, creating vibration waves that propagate through the soil to the foundations of nearby buildings. This effect is referred to as groundborne vibration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration levels. PPV is defined as the maximum instantaneous peak of the vibration level, while RMS is defined as the square root of the average of the squared amplitude of the level. PPV is typically used for evaluating potential building damage, while RMS velocity in decibels (VdB) is typically more suitable for evaluating human response.

The background vibration velocity level in residential and commercial areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

The general human response to different levels of groundborne vibration velocity levels is described below in Table IV.J-2.

Table IV.J-2
Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006.

METHODOLOGY

The potential noise and groundborne vibration impacts associated with the implementation of the project are evaluated using noise level measurements, noise prediction modeling, and empirical observations. The existing (ambient) daytime noise levels within and around the project site were measured using a Larson Davis 820 precision sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Sources of construction related noise and groundborne vibration, which include construction equipment and various construction activities, were estimated using information provided by the United States Environmental Protection Agency (U.S. EPA) and the Federal Transit Administration (FTA). Noise modeling procedures involved the calculation of existing and future vehicular noise levels along individual roadway segments in the site vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Noise Prediction Model (FHWA-RD-77-108) and traffic volumes presented in Section IV.M, Transportation/Traffic of this DEIR. The FHWA Model was used to evaluate future noise levels along roadway segments in the vicinity that would be primarily affected by traffic generated by the project. This model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans. The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels.

ENVIRONMENTAL SETTING

Nearby Sensitive Receptors

Sensitive receptors are populations that are more susceptible to the effects of noise and vibration than others, such as the elderly and children. Locations that may contain high concentrations of sensitive receptors include long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, child care centers, and libraries. The nearest sensitive receptors to the project site are the residents in the El Granada Mobile Home Park located to the immediate north of the site.

Existing Conditions

Ambient Daytime Noise Levels

Existing daytime noise levels were measured at five locations within and in the immediate vicinity of the project site. At each of these locations, the microphone was placed at a height of approximately five feet above the local grade and the sound level meter was programmed to record the average sound levels over a cumulative period of 15 minutes. The average noise levels and sources of noise measured at these locations are shown in Table IV.J-3, with the locations identified in Figure IV.J-1. Although other noise sources occur in the vicinity, vehicular traffic on Airport Street and aircraft activity at Half Moon Bay Airport are the primary sources of noise at, and around, the project site.

Table IV.J-3
Existing Daytime Noise Levels at Sensitive Offsite Locations

Noise Measurement Location	Primary Noise Sources	Noise Level Statistics		
		L_{eq}	L_{min}	L_{max}
1. Southeast corner of site, along Airport Street (north of Stanford Ave.)	Birds chirping; sparse vehicular traffic on Airport Street; aircraft overhead	64.6	49.2	83.3
2. Along Airport Street (opposite side of the street from the project site), north of W. Point Ave.	Sparse vehicular traffic on Airport Street; sprinklers	61.9	50.2	78.3
3. Corner of El Granada Mobile Park Home Entrance and Airport Street	Sparse vehicular traffic on Airport Street, aircraft overhead	64.5	54.1	86.7
4. El Granada Mobile Home Park, Barranca Lane	Birds chirping, background plane noise	57.4	45.8	70.5
5. El Granada Mobile Home Park, corner of Barranca Lane and Codo Lane	Sparse vehicular traffic on Barranca Lane, dogs barking, background aircraft noise	57.1	46.4	72.4

Source: Christopher A Joseph & Associates, 2009. Noise measurement data are provided in Appendix I of this DEIR.

Existing Airport and Roadway Noise Levels

Half Moon Bay Airport is located northeast of the project site, directly across Airport Street. The airport is home to approximately 80 aircraft and several aviation related businesses. In addition, this airport provides a variety of emergency service and response functions including: Air-Ambulance and Medivac flights; law enforcement and homeland security patrols; Coast Guard sea-rescue operations; and use as a disaster relief staging site for the airlifting of emergency supplies. In an effort to reduce the airport's potential noise impact on nearby uses, the following noise abatement procedures have been implemented:[1]

- No intersection takeoffs.
- No turns until reaching 500' MSL.

[1] *Half Moon Bay – Noise Abatement Procedures brochure, 1992.*

- Reduce power/rpm as soon as safe and practical.
- Pattern work, especially touch-and-goes, is discouraged at night and on weekend and holiday mornings.
- No stop and goes.
- Fly Right Traffic for Runway 30 and Left Traffic for Runway 12.
- Avoid flying over Seton-Coastside Hospital, located just North of the airport.
- Maintain pattern altitude (1000' MSL) until necessary to descend for landing.
- Avoid flying over homes whenever possible.
- No straight-in arrivals.
- Arrivals from the west fly overhead the airport at or above 1,500 MSL; continue outbound until clear of the traffic pattern and make a normal 45° entry into the downwind leg at 1000' MSL.
- Aircraft over 12,500 pounds prohibited without prior approval from the airport manager.
- Use common sense and be considerate to airport neighbors.

According to the San Mateo County Comprehensive Airport Plan (1981) and the Noise Element of the San Mateo County General Plan, noise levels associated with operations at Half Moon Bay Airport are less than 60 dBA CNEL at the project site.

Within the vicinity of the project site, existing ambient noise levels were calculated for the study-area roadway segments that have existing sensitive receptors located along their frontage. The roadway segments selected for analysis are those that are expected to be most directly impacted by project-related traffic, which is based on the information provided in Section IV.M, Transportation/Traffic of this DEIR. The average daily noise levels along these roadway segments are presented in Table IV.J-4.

Source: Google Earth Pro, 2009.

CHRISTOPHER A. JOSEPH & ASSOCIATES
Environmental Planning and Research

Figure IV.J-1
Noise Measurement Locations

Table IV.J-4
Existing (2009) Roadway and Airport Noise Levels at Location Offsite

Roadway	Roadway Segment	Existing Land Uses Located Along Roadway Segment	dBA CNEL[a]
Cabrillo Highway (SR 1)	Between Cypress Ave and Capistrano Rd (north)	Residential	70.0[b]
	Between Capistrano Rd (north) and Capistrano Rd (south)	Residential	69.3
	North of Cypress Ave	Residential	70.0[b]
	South of Capistrano Rd (south)	Residential	69.8
Airport Street	Between Los Banos Ave and La Granada Ave	Residential	62.0[b]
	Between La Granada Ave and Stanford Ave	Residential	61.8[b]
	North of Los Banos Ave	Residential	61.0[b]

[a] *Values represent noise levels at 50 feet from the centerline of each roadway.*
[b] *Includes noise levels from aircraft operations at Half Moon Bay Airport.*

Source: Christopher A. Joseph & Associates, 2009. Calculation data and results provided in Appendix I of this DEIR.

Groundborne Vibration Levels

The only sources of groundborne vibration in the vicinity of the project site are heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways and the occasional small aircraft at the Half Moon Bay Airport. Trucks and buses typically generate groundborne vibration velocity levels of around 63 VdB, and these levels could reach 72 VdB where trucks and buses pass over bumps in the road.[2] In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

REGULATORY SETTING

Federal

There are no federal standards that are applicable to the proposed project.

State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new residential dwelling units, hotels, motels, and dormitories. The noise limit is a maximum interior noise level of 45 dBA CNEL.

[2] *Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006.*

Where exterior noise levels exceed 60 dBA CNEL, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the interior noise limit.

Local

San Mateo County General Plan

The California Government Code requires that a noise element be included in the general plan of each county and city in the state. Each local government's goals, objectives, and policies for noise control are established by the noise element of the general plan and the passage of specific noise ordinances.

The Noise Element of the San Mateo County General Plan takes into consideration the Land Use Compatibility Guidelines established by the California Department of Health Services in the State of California General Plan Guidelines.[3] These guidelines for land use and noise exposure compatibility are shown in Table IV.J-5.

The following policies from the Noise Element of the San Mateo County General Plan are applicable to this project:

16.11 Regulate Distribution of Land Uses

- Regulate the distribution of land uses to attain noise compatibility. Measures may include preference toward locating: (1) noise sensitive land uses within quiet areas, removed from Noise Impact Areas, and (2) noise generating land uses separate from noise sensitive land uses.

16.12 Regulate Noise Levels

- Regulate noise levels emanating from noise generating land uses through measures which establish maximum land use compatibility and nuisance thresholds.

16.14 Noise Barriers Noise Control

- Promote measures which incorporate use of noise barriers into the design of new development, particularly within Noise Impact Areas. Noise barriers may include earth berms, walls, fencing, or landscaping.

---

[3] *Office of Planning and Research, State of California Genera Plan Guidelines, October 2003 (in coordination with the California Department of Health Services).*

16.16 Construction Techniques Noise Control

- Promote measures which incorporate noise control into the construction of existing and new buildings, including, but not limited to, use of dense noise insulating building materials.

16.17 Promote Transportation Related Noise Reduction

- Promote measures which reduce transportation related noise, particularly aircraft and vehicle noise, to enhance the quality of life within San Mateo County.

Table IV.J-5
Land Use Compatibility Guidelines

Land Use	Noise Levels in dBA CNEL			
	Normally Acceptable[a]	**Conditionally Acceptable[b]**	**Normally Unacceptable[c]**	**Clearly Unacceptable[d]**
Single-family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 75
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 75
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 75
Auditoriums, Concert Halls, Amphitheaters	–	50 - 70	–	above 70
Sports Arena, Outdoor Spectator Sports	–	50 - 75	–	above 75
Playgrounds, Neighborhood Parks	50 - 70	–	67 - 75	above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	–	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	–
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	–

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

Source: Office of Planning and Research, State of California General Plan Guidelines, October 2003 (in coordination with the California Department of Health Services).

San Mateo County Ordinance Code

In order to control unnecessary and excessive noise in the incorporated and unincorporated portions of the County of San Mateo, the Board of Supervisors approved the noise provisions as outlined in Chapter 4.88 (Noise Control) in the San Mateo County Ordinance Code. The sections of Chapter 4.88 that are applicable to this project are as follows:

Section 4.88.330 Exterior Noise Standards: It is unlawful for any person at any location within the unincorporated area of the County 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 exterior noise level when measured at any single or multiple family residence, school, hospital, church, public library situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in Table IV.J-6:

Table IV.J-6
Noise Level Standards (dBA) for Single or Multiple Family Residence, School, Hospital, Church, or Public Library Properties

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 A.M.–10 P.M.	Nighttime 10 P.M.–7 A.M.
1	30	55	50
2	15	60	55
3	5	65	60
4	1	70	65
5	0	75	70
In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in five (5) dBA increments so as to encompass the background noise level.			

Section 4.88.340 Interior Noise Standards: No person shall, at any location within the unincorporated area of the County operate, or cause to be operated within a dwelling unit, any source of sound, or create, or allow the creation of, any noise which causes the noise level when measured inside a receiving dwelling unit with windows in their normal seasonal configuration to exceed the following noise level standards as set forth in Table IV.J-7:

Table IV.J-7
Interior Noise Level Standards – Dwelling Unit Noise Level Standards (dBA)

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 A.M.–10 P.M.	Nighttime 10 P.M.–7 A.M.
1	5	45	40
2	1	50	45
3	0	55	50
In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in five (5) dBA increments so as to encompass the background noise level.			

Section 4.88.360 Exemptions: The following activities are exempt from Chapter 4.88 of the San Mateo County Ordinance Code:

- Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 6:00 P.M. and 7:00 A.M. weekdays, 5:00 P.M. and 9:00 A.M. on Saturdays or at any time on Sundays, Thanksgiving and Christmas.

- Mobile noise sources associated with agricultural operations provided such operations do not take place between the hours of 8:00 P.M. and 7:00 A.M.

- Mobile noise sources associated with agricultural pest control through pesticide application provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

- Noise sources associated with the maintenance of real property used for residential purposes provided said activities take place between the hours of 7:00 A.M. and 8:00 P.M.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Based on the Appendix G of the State *CEQA Guidelines*, a project could have a significant noise impact if it would cause any of the following conditions to occur:

(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 airstrip, expose people residing or working in the project area to excessive noise levels; or

(f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

County Noise Standards

The noise standards adopted by the County of San Mateo are discussed previously in this DEIR section. These standards would apply to the proposed land uses at the project site. Specifically, noise levels within the exterior activity areas of the proposed residential uses may not exceed 70 dBA CNEL and interior noise levels within the proposed residential uses may not exceed 45 dBA CNEL. This would include the noise levels associated with Half Moon Bay Airport. Noise levels within the exterior activity areas of the proposed office uses may not exceed 75 dBA CNEL.

Groundborne Vibration Levels

The State *CEQA Guidelines* also do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." In addition, the County of San Mateo has not adopted any thresholds for groundborne vibration impacts. Therefore, this analysis uses the Federal Transit Administration (FTA) vibration impact thresholds for potential building damage and human reaction. The vibration damage criteria adopted by the FTA are shown below in Table IV.J-8.

Table IV.J-8
Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12
Source: Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006.	

The FTA has adopted standards associated with human annoyance for groundborne vibration impacts for the following three land-use categories: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional. The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any other buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference. The groundborne vibration thresholds for these three land-use categories are shown in Table IV.J-9.

Table IV.J-9
Human Annoyance Groundborne Vibration Thresholds (VdB)

Frequency of Events	Groundborne Vibration Threshold (VdB)		
	Category 1	Category 2	Category 3
Infrequent	65	80	83
Occasional	65	75	78
Frequent	65	72	75

"Infrequent events" is defined by the Federal Transit Administration as being fewer than 30 vibration events of the same kind per day.
"Occasional events" is defined by the Federal Transit Administration as between 30 and 70 vibration events of the same source per day.
"Frequent events" is defined by the Federal Transit Administration as over 70 vibration events of the same kind per day.
Source: Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006.

Permanent Increase in Noise Levels

The State *CEQA Guidelines* also do not define the levels at which a permanent increase in ambient noise is considered "substantial." As discussed previously in this report, a noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. Based on this information, the following thresholds would apply to permanent increases in noise due to the operational characteristics of the proposed project:

- Less than 3 dBA: not discernable, not significant.
- Between 3 dBA and 5 dBA: noticeable but not significant if noise levels remain below the normally acceptable noise level standards of the County of San Mateo General Plan; significant if the noise increase would meet or exceed these noise level standards.
- 5 dBA or greater: significant.

Temporary or Periodic Increase in Noise

The State *CEQA Guidelines* do not define the levels at which a temporary increase in noise is considered "excessive." In addition, the County of San Mateo has not adopted any thresholds for construction noise impacts. Therefore, this analysis uses the FTA construction noise impact criteria for residential, commercial, and industrial land uses to determine if a potentially significant impact would occur. These criteria are identified in Table IV.J-10. According to the FTA, there may be adverse community reaction if these criteria are exceeded.[4]

[4] *Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006, pp. 12-7 and 12-8.*

Table IV.J-10
FTA General Construction Noise Criteria

Land Use	One-Hour L_{eq} (dBA)		Eight-Hour L_{eq} (dBA)	
	Day	Night	Day	Night
Residential	90	80	80	70
Commercial	100	100	85	85
Industrial	100	100	90	90

Source: Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006.

Airport Noise

As discussed in Section V.D (Impacts Found To Be Less Than Significant) of this DEIR, the project site is not located within the vicinity of a private airstrip; therefore, the proposed project would have no impact under threshold of significance (f). Hence, only Thresholds (a-e) listed above are addressed in the following discussion.

Project Details

As stated in Section III (Project Description) of the DEIR, the project site includes a northern parcel of approximately 14.25 acres in size and a southern parcel consisting of approximately 5.28 acres. The two primary components of the proposed project include: (1) the Office Park property (northern parcel) development consisting of four, three-story buildings (225,000 sf total) planned for mixed office use, and a 640-space parking lot; and (2) the Wellness Center property development with a maximum of 70 units for approximately 50 DD adults and 20 live-in staff members, other onsite living and recreation facilities for residents, associated fencing, a separate storage building, and a 73-space parking lot.

The primary sources of noise and groundborne vibration associated with the proposed project would be construction activities at the project site, and project-related traffic volumes and new stationary sources (such as heating, ventilation, and air conditioning units) associated with operation of the proposed mixed-use development.

Project Impacts and Mitigation Measures

Impact NOISE-1 Construction Noise

Construction of the proposed project would require grading and excavation, installation of utilities, and construction and finishing of the proposed structures and facilities. The project construction time schedule would be between approximately 30 and 36 months to fully complete the Wellness Center and Office Park property development. Overall, the initial grading and sorting of materials would take approximately three weeks, utilities installation approximately one month, and foundation construction approximately two months. After the construction of the foundations, the placement of the prefabricated Wellness Center units and the erection of the structures for the Office Park would take approximately 18 months. It would take another 12 months for finish work, including the installation of the water recycling system and the solar system. The construction of the permeable parking lots and wetland trails would take

about three weeks to complete while the construction of the wetlands and landscaping would take approximately six months (assumed to begin after the completion of the Wellness Center and Office Park construction).

These types of construction activities would require the use of heavy equipment, smaller power tools, generators, and other sources of noise. During each stage of development, there would be a different mix of equipment operating and noise levels would vary based on the amount of equipment operating and the location of the activity. The proposed activity, time schedule, and anticipated construction equipment is listed in Table IV.J-11.

Table IV.J-11
Construction Schedule and Equipment

Activity	Schedule	Equipment
Initial Grading/Material Sorting	3 weeks	2 Push-Pull Scrapers, 1 Cat Crawler, 2 Pickup Trucks, 1 Water Truck
Utilities Installation	1 month	2 Excavators, 1 Backhoe, 3 Dump Trucks, Two Pickup Trucks, 1 Water Truck
Foundation Construction	2 months	2 Excavators, 1 Backhoe, 3 Dump Trucks, 10 Pickup Trucks, 1 Water Truck, 1 Pile Driver
Wellness Center/Office Park	30 months	2 Cranes, 5 Extended-Lift Trucks, 15 Small Vehicles
Permeable Parking Lot/Fire Trails	3 weeks	1 Concrete Pump Truck, 5 Concrete Trucks
Wetlands/Landscaping	6 months	2 Backhoes, 4 Pickup Trucks
Source: Big Wave, LLC, Facilities Plan: Draft #2, Big Wave Property, January 2009.		

The U.S. EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. The U.S. EPA's data pertaining to the typical noise range of construction equipment is presented in Table IV.J-12 and the data pertaining to the typical outdoor noise levels for specific construction activities is presented in Table IV.J-13.

Table IV.J-12
Noise Range of Typical Construction Equipment

Construction Equipment	Noise Level in dBA L_{eq} at 50 Feet [a]
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Cranes (derrick)	86-89
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88

Table IV.J-12
Noise Range of Typical Construction Equipment

Construction Equipment	Noise Level in dBA L_{eq} at 50 Feet [a]
Concrete Pumps	81-85
Back Hoe	73-95
Pile Driver (Impact)	95-107
Pile Driver (Sonic)	90-102
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88

[a] *Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.*

Source: United States Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

Table IV.J-13
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet (dBA L_{eq})	Noise Levels at 50 Feet with Mufflers (dBA L_{eq})
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

Source*: United States Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.*

The noise levels shown in Table IV.J-13 represent composite noise levels associated with typical construction activities, which take into account both the number and spacing of heavy construction equipment that are typically used during each phase of construction. As shown in Table IV.J-13, on average (with installation of mufflers), construction noise can reach a maximum of 86 dBA L_{eq} when measured at a reference distance of 50 feet from the center of the construction activities. Noise levels such as these would be generated at the project site during the construction phases of development. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA to 7.5 dBA per doubling of distance for acoustically hard and soft sites, respectively.

The nearest and most notable offsite sensitive receptors would be the residential uses located approximately 20 feet north of the project site boundary (El Granada Mobile Home Park). The nearest building to the residential area is proposed to be located about 225 from the property line. Based on the information presented above, construction noise levels could exceed the 80 dBA L_{eq} eight-hour daytime threshold of significance used for this analysis during the three-week periods when grading and paving activities occur within 100 feet of the nearest existing residences. In addition, the possible use of impact pile drivers during the foundation construction phase could result in noise levels of up to 95 dBA L_{eq} at the nearest residential and non-residential (to the south of the site) units during the three month foundation construction phase. Construction activities would be limited to the hours of 7:00 A.M. to 6:00

P.M. on weekdays and 9:00 A.M. and 5:00 P.M. on Saturdays in accordance with Section 4.88.360 of the San Mateo County Ordinance Code, so no nighttime construction would be generated at the project site.

The Wellness Center property is proposed to be constructed and occupied prior to construction of the Office Park property. As such, residents and employees of the Wellness Center would also be exposed to noise levels associated with construction of the Office Park property. The southern-most Wellness Center building would be approximately 150 feet from the nearest Office Park grading area and 225 feet from the nearest construction area. The resulting noise levels at the residential building would be less than 80 dBA L_{eq} for grading and general construction activities, but up to 95 dBA L_{eq} when impact pile drivers operate.

It should be noted that the increase in noise levels at the nearby locations during construction at the project site would be temporary in nature and would not generate continuously high noise levels, although occasional single-event disturbances from construction are possible, with the exception of pile driving. Additionally, the majority of the construction activities would take place at a distance farther than 100 feet from the residences to the north and the occupied Wellness Center buildings. In the later phases of project construction (during interior building construction), noise levels are typically reduced due to the newly erected physical structures that interrupt noise transmission from the project to nearby receptors. Thus, the highest noise levels that would be experienced by the sensitive receptors would only occur for a limited duration during construction of the proposed project. General construction activities occurring more than 100 feet from the existing residences would not exceed 80 dBA and would not be significant. However, the temporary or periodic impact when grading or construction activities (e.g. paving and concrete installation) occur within 100 feet of an occupied residence would generate noise levels of up to 86 dBA, which would be ***significant***. Also, the noise levels generated by pile driving operations at the site would generate substantial noise levels at the nearby residential units that would be highly disturbing and result in a ***significant*** impact. Therefore, the implementation of the following mitigation measure is required, to reduce construction noise impacts to a less-than-significant level:

Mitigation Measure NOISE-1 Construction Noise

The construction contractor shall implement measures to reduce the noise levels generated by construction equipment operating at the project site during project grading and construction phases. The construction contractor shall include in construction contracts the following requirements or measures shown to be equally effective:

- All construction equipment shall be equipped with improved noise muffling, and maintain the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine isolators in good working condition.

- Stationary construction equipment that generates noise levels in excess of 65 dBA L_{eq} shall be located as far away from existing residential areas as possible. The equipment shall be shielded from noise sensitive receptors by using temporary walls, sound curtains, or other similar devices.

- Heavy-duty vehicle storage and start-up areas shall be located a minimum of 150 feet from occupied residences where feasible.

- All equipment shall be turned off if not in use for more than five minutes.

- Drilled piles or the use of sonic or vibratory pile drivers shall be used instead of impact pile drivers. The driving heads of sonic or vibratory pile drivers shall be screened on all sides by acoustic blankets capable of reducing noise levels by at least 15 dBA.

- Temporary barriers such as flexible sound control curtains shall be erected between the proposed project and the El Granada Mobile Home Park to minimize the amount of noise during construction. The sound control curtains shall reduce construction-related noise levels at the El Granada Mobile Home Park to less than 80 dBA L_{eq}.

- Two weeks prior to the commencement of grading or construction at the project site, notification must be provided to the immediate surrounding offsite residential uses that discloses the construction schedule, including the various types of activities and equipment that would be occurring throughout the duration of the grading and construction periods.

- Two weeks prior to the commencement of grading or construction at the project site, an information sign shall be posted at the entrance to each construction site that identifies the permitted construction hours and provides a telephone number to call and receive information about the construction project or to report complaints regarding excessive noise levels. The applicant shall rectify all reasonable complaints within 24 hours of their receipt. The County may be required to determine whether a complaint is reasonable and subject to being rectified. Should the applicant consider a complaint to be unreasonable, the applicant shall contact the County Planning Department within 24 hours of the receipt of the complaint to discuss how the complaint should be addressed.

Impact NOISE-2 Construction-Related Groundborne Vibration

Project-related construction activities would include grading, excavation, and building construction, which would have the potential to generate low levels of groundborne vibration. In addition, Section IV.F, Geology and Soils of this DEIR also states that pile driving may be required to offset the potential liquefaction-induced ground failures. Table IV.J-14 identifies various PPV and RMS velocity (in VdB) levels for the types of construction equipment that would operate during the construction of the proposed project. Based on the information presented in Table IV.J-14, vibration velocities could reach as high as approximately 0.031 inches per second PPV at a distance of 50 feet from the source activity. This corresponds to a RMS velocity level (in VdB) of 78 VdB at 50 feet from the source activity.

Table IV.J-14
Vibration Source Levels for Typical Construction Equipment

Equipment	Approximate PPV (in/sec)					Approximate RMS (VdB)				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Caisson Drilling	0.089	0.031	0.024	0.017	0.011	87	78	76	73	69
Loaded Trucks	0.076	0.027	0.020	0.015	0.010	86	77	75	72	68
Jackhammer	0.035	0.012	0.009	0.007	0.004	79	70	68	65	61
Small Bulldozer	0.003	0.001	0.0008	0.0006	0.0004	58	49	47	44	40

Note: in/sec = inches per second.
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, Final Report, 2006; Christopher A. Joseph & Associates, July 2009.

General construction activities associated with the project would have the potential to impact the nearest surrounding offsite sensitive receptors and existing structures, which would include the residents/residences at the El Granada Mobile Home Park approximately 20 feet north of the project site and the commercial buildings approximately 50 feet south of the project site. The potential exposure to 0.031 inches per second PPV and a RMS velocity level of 78 VdB at 50 feet from the source activity would not exceed the FTA existing structure threshold of 0.5 PPV for reinforced-concrete, steel or lumber buildings such as the existing structures in the vicinity of the project site. However, the RMS velocity level of 78 VdB could exceed the FTA occasional residential vibration exposure (human annoyance) threshold of 75 VdB. This would occur when heavy construction equipment operates within about 75 feet of an occupied residential unit.

As to the use of pile drivers at the project site, this machinery would operate at a given location for the majority of a day. Therefore, the evaluation of this impact to the nearby residences uses the 72 VdB FTA threshold for frequent events. The nearest building to the residential area is proposed to be located about 225 from the property line. The use of an impact pile driver at this distance would generate vibration levels of approximately 75.4 VdB, which would exceed the 72 VdB threshold. It would not be until the pile driving activity occurs about 300 feet from the nearest residence that the vibration levels would be less than 72 VdB. Therefore, as Building A would be located within 300 feet of the mobile home park, impact pile driving activities for Building A of the Office Park could result in a significant noise impact to sensitive receptors at the mobile home park. The use of sonic or vibratory pile drivers at a distance of 225 would generate groundborne vibration levels of approximately 65 VdB, which would not exceed the 72 VdB threshold of significance.

Residents and employees of the Wellness Center would also be exposed to substantial groundborne vibration levels associated construction of the Office Park property. The southern-most Wellness Center building would be approximately 225 feet from the nearest construction area (Building D) and, similar to the mobile home park to the north, could be exposed to a significant impact if vibration levels exceed the 72 VdB threshold.

As stated previously, construction activities would be limited to the hours of 7:00 A.M. to 6:00 P.M. on weekdays and 9:00 A.M. and 5:00 P.M. on Saturdays in accordance with Section 4.88.360 of the Mateo County Ordinance Code. Construction activities are also prohibited at any time on Sundays, Thanksgiving and Christmas. While the use of impact pile drivers at the project site would not occur during recognized sleep hours for residences, the impact of daytime groundborne vibration levels during construction of Building A or the Office Park would still be considered ***significant***. However, Mitigation Measure NOISE-1 identified above requires the use of drilled piles or the use of sonic or vibratory pile drivers instead of impact pile drivers if at all feasible based on geological conditions. With implementation of this mitigation measure, the potential groundborne vibration impacts would be reduced to a less-than-significant level.

Impact NOISE-3 Operational Noise Levels at the Project Site

Airport and Roadway Noise Levels

Noise levels at the project sites would continue to be dominated by vehicular traffic on Airport Street and aircraft activity at Half Moon Bay Airport. Table IV.J-15 presents the future average daily exterior and interior noise levels for the nearest proposed residential (Building 1) and office buildings (Building A) to Airport Street. As discussed previously, the exterior-to-interior noise reduction of new residential units in California is more than 30 dBA. Similar reductions are typically provided for new office buildings. With this assumption, Table IV.J-15 indicates that future exterior and interior noise levels associated with roadway traffic would not exceed County standards at the project site. The future noise levels at the site would also be well below the 75 dBA exterior standard for warehouse uses. This is a ***less-than-significant*** impact and no mitigation measures are required.

Table IV.J-15
Predicted Future Airport and Roadway Noise Levels at the Project Site

Roadway Segment	Proposed Land Use	Noise Levels in dBA CNEL				
		Future Exterior Noise Level	County Exterior Noise Standards	Assumed Exterior-to-Interior Reduction	Future Interior Noise Level	County Interior Noise Standard
Airport Street, Between La Granada Ave and Stanford Ave	Residential	58.8	70.0	-30.0	<45.0	45.0
	Office	58.5	75.0	-30	<45.0	–

Source: Christopher A. Joseph & Associates, 2009. Calculation data and results are provided in Appendix I of this DEIR.

Mechanical Equipment Noise levels

As part of the proposed project, new rooftop mechanical equipment and heating, ventilation, and air conditioning (HVAC) units and exhaust fans may be installed on the proposed buildings. Large HVAC systems can result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. Standard building parapets typically reduce these noise levels by around 10 to 15 dBA and this type of equipment is generally not audible from nearby uses. The noise levels from this equipment would be less than the ambient noise levels associated with automobile and aircraft traffic and would not exceed the 'Normally Acceptable' noise level standard of 60 dBA CNEL for residential uses or the County of San

Mateo Ordinance Code noise threshold of 55 dBA (Category 1: cumulative 30 minute noise level increase in a 1 hour period). Therefore, the potential impacts to residents of the Wellness Center or the mobile home park would be ***less than significant***.

MBR Wastewater Treatment Plant

The project would also involve the construction and operation of a membrane bioreactor (MBR) wastewater treatment plant (i.e., MBR plant; with associated mechanical equipment). However, the MBR plant would be completely covered with aluminum plates and hatches, and sealed with rubber gaskets. Therefore, the potential noise associated with the MBR plant would be negligible.

Parking Lot Noise

Onsite vehicular noise would be generated mainly by activities within the Office Park parking lot and the Wellness Center parking lot. The Office Park parking lot is located along the northern border of the site adjacent to the El Granada Mobile Home Park, and consists of 640 parking spaces. The Wellness Center parking lot is located in the southern parcel along Airport Street and consists of 73 parking spaces. Sources of noise within the parking areas would include engines accelerating, doors slamming, car alarms, and people talking. Noise levels within the parking areas would fluctuate based on the amount of automobile and human activity, with noise levels highest in the early morning and evening when the largest number of people would enter and exit the project site.

Based on methodology provided by the FTA,[5] the maximum hourly L_{eq} and 24-hour L_{eq} for the Office Park parking lot and the Wellness Center parking lot at 50 feet away would be approximately 51.1 dBA (assuming 2,123 daily trips, with 292 trips during the AM peak hour and 268 trips during the PM peak hour). The identified threshold of significance for the mobile home 'Normally Acceptable' noise level established by the California Department of Health Services is 60 dBA (based on a 24-hour average) and the infrequent noise level threshold established under Section 4.88.330 of the County of San Mateo Ordinance Code is 55 dBA (Category 1: A cumulative 30 minute exposure in a 1 hour period; most conservative). Since the maximum hourly L_{eq} and 24-hour L_{eq} for the Office Park parking lot and the Wellness Center parking lot at 50 feet away are less than these established thresholds of significance, the potential noise impacts associated with parking from implementation of the proposed project would be ***less than significant***.

Impact NOISE-4 Operational Roadway Noise Levels

Locations in the vicinity of the project site would experience a slight increase in noise resulting from the additional traffic generated by the proposed project. As stated in Section IV.M, Transportation/Traffic of this DEIR, the proposed project would generate approximately 2,123 vehicle trips per day. The changes in future noise levels along the study-area roadway segments in the project vicinity are identified in Table

[5] *Harris Miller Miller & Hanson, Transit Noise and Vibration Impact Assessment, May 2006, p. 5-11.*

IV.J-16. As shown, the traffic generated by the proposed project would increase local noise levels by a maximum of 1.0 dBA CNEL, which would be imperceptible to most people and would not exceed the 3.0 dBA threshold of significance. Therefore, this impact would be ***less than significant***.

Table IV.J-16
Predicted Future Roadway Noise Level Impacts at Locations Offsite

Roadway Segment	Existing Sensitive Land Uses Along Roadway Segment	Noise Levels in dBA CNEL			
		Future Traffic Without Project	Future Traffic With Project	Increase	Significance Threshold
Cabrillo Highway (SR 1), between Cypress Ave and Capistrano Rd (north)	Residential	70.8	70.8	0.0	3.0
Cabrillo Highway (SR 1), between Capistrano Rd (north) and Capistrano Rd (south)	Residential	70.4	70.4	0.0	3.0
Cabrillo Highway (SR 1), north of Cypress Ave	Residential	70.7	70.9	0.2	3.0
Cabrillo Highway (SR 1), south of Capistrano Rd (south)	Residential	71.0	71.2	0.2	3.0
Airport Street, between Los Banos Ave and La Granada Ave	Residential	62.2	63.1	0.9	5.0
Airport Street, between La Granada Ave and Stanford Ave	Residential	62.2	63.2	1.0	3.0
Airport Street, north of Los Banos Ave	Residential	61.1	62.0	0.9	3.0

Source: Christopher A. Joseph and Associates, 2009. Calculation data and results are provided in Appendix I of this DEIR.

CUMULATIVE IMPACTS

This cumulative impact analysis considers development of the proposed project in combination with ambient growth and other development projects within the vicinity of the proposed project. As noise is a localized phenomenon, and drastically reduces in magnitude as distance from the source increases, only projects and ambient growth in the nearby area could combine with the proposed project to result in cumulative noise impacts.

Future construction associated with the related projects could result in a cumulatively significant impact with respect to temporary or periodic increases in ambient noise levels and/or groundborne vibration. As stated before, construction noise and groundborne vibration is localized in nature and decreases substantially with distance. Consequently, in order to achieve a substantial cumulative increase in construction noise levels, more than one source emitting high levels of construction noise would need to be in close proximity to the proposed project. As shown in Table III-1 on page III-19, the nearest related project to the site is the proposed industrial development at 151 Vassar Avenue, which is located approximately 0.13 miles (685 feet) southeast of the project site. Due to this distance, and along with the numerous intervening structures located between these two sites, a substantial increase in construction noise levels and/or groundborne vibration would not occur should construction for this related project

occur at the same time as the proposed project. Therefore, this cumulative impact would be ***less than significant***.

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and related projects within the study area. Therefore, cumulative traffic-generated noise impacts have been assessed based on the contribution of the proposed project to the future cumulative base traffic volumes on the roadway segments in the project vicinity. The noise levels associated with existing traffic volumes and cumulative base traffic volumes with the proposed project (i.e., future cumulative traffic volumes) along with airport noise levels are identified in Table IV.J-17.

Table IV.J-17
Cumulative Roadway Noise Level Impacts at Locations Offsite

Roadway Segment	Existing Sensitive Land Uses Along Roadway Segment	Noise Levels in dBA CNEL			
		Existing Traffic Volumes	Future Traffic With Project	Increase	Significance Threshold
Cabrillo Highway (SR 1), between Cypress Ave and Capistrano Rd (north)	Residential	70.0	70.8	0.8	3.0
Cabrillo Highway (SR 1), between Capistrano Rd (north) and Capistrano Rd (south)	Residential	69.3	70.4	1.1	3.0
Cabrillo Highway (SR 1), north of Cypress Ave	Residential	70.0	70.9	0.9	3.0
Cabrillo Highway (SR 1), south of Capistrano Rd (south)	Residential	69.8	71.2	1.4	3.0
Airport Street, between Los Banos Ave and La Granada Ave	Residential	62.0	63.1	1.1	5.0
Airport Street, between La Granada Ave and Stanford Ave	Residential	61.8	63.2	1.4	3.0
Airport Street, north of Los Banos Ave	Residential	61.0	62.0	1.0	3.0

Source: Christopher A. Joseph and Associates, 2009. Calculation data and results are provided in Appendix I of this DEIR.

As shown in Table IV.J-16, cumulative development along with the proposed project would increase local noise levels by a maximum of 1.4 dBA CNEL at the roadway segment of Airport Street, between Los Banos Avenue and Stanford Avenue. The increases in noise levels at the existing residential areas located along the study area roadways would not exceed the thresholds of significance utilized for this analysis and the cumulative impact would be ***less than significant***.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

By complying with Sections 4.88.330, 4.88.340, and 4.88.360 of the San Mateo County Noise Ordinance and the implementation of the Mitigation Measure NOISE-1, construction-related noise and groundborne vibration impacts associated with the proposed project would be reduced to ***less-than-significant*** levels.