4.13 NOISE

4.13.1 Introduction

This section evaluates the potential noise impacts resulting from the proposed project, including whether the project would result in exposure of persons to, or generation of, noise levels in excess of applicable noise standards, exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels, a substantial permanent increase in ambient noise levels, a substantial temporary or periodic increase in ambient noise levels, or exposure of persons residing or working in the project area to excessive noise levels related to operation of a public airport.

Information in this section is based on the County of Santa Barbara Noise Element (1986), the University Natural Areas Plan (Ferren and Thomas, 1995), Fugro West (1996, 2003), and the Faculty and Family Student Housing, Open Space Plan and LRDP Amendment EIR (Wallace, Roberts and Todd, 1997) and confirmatory fieldwork during July and August 2003. Full bibliographic entries for all reference materials appear in Section 4.13.6 (References) of this section.

Comments related to noise were received in response to the NOP circulated for the proposed project, including a letter from the Santa Barbara Airport (SBA). The NOP, comments on the NOP, and a summary of issues raised during scoping are included in Appendix A of this EIR. The SBA's letter requests that the EIR consider the possibility of a construction internal noise level at 45 decibels (dB) or lower and an aviation easement for potential owners, and states that development on the North Parcel area borders an area projected for an airport runway expansion, and is also in an undeveloped area used as a noise abatement corridor for departing aircraft.

Comments on the NOP and at the Public Scoping meeting included suggestions that the EIR address: (1) increased noise levels generated from new traffic near the proposed development entryway as well as from new roadways within the North Parcel housing project; (2) noise impacts from the amphitheater; (3) the necessity of a sound wall; (4) the noise level at 45 dB as a significant impact rather than less than significant; (5) the need for sound walls along the Hollister Avenue developments; and (6) noise levels from housing developments at the Storke-Whittier Parcel.

4.13.2 Existing Conditions

4.13.2.1 Fundamentals of Sound, Environmental Noise and Vibration

Sound. 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. Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 4.13-1 lists representative noise levels for the environment.

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_{dn} – The Day-Night Average Noise 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. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- 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. Because noise level measurements of L_{dn} and CNEL are typically within 1 dBA of each other, the two scales are interchangeable.
- 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.

Table 4.13-1. 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
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, 1998.

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 L_{dn} or CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated natural settings that can provide noise levels as low as 20 dBA, and quiet suburban residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of low-moderate level noise environments are urban residential or semi-commercial areas (typically 55 to 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 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely-perceptible increase to most people (FHWA, 1980). A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness (FHWA, 1987). Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.

Noise levels from a particular source generally 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 normal 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 are also generally reduced by 1 dBA for each 1,000 of distance due to air absorption. 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 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more.

Vibration. Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the U.S. is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB (FRA, 1998). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximately 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, and 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (FRA, 1998).

The general human response to different levels of groundborne vibration velocity levels is described in Table 4.13-2.

Table 4.13-2. 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: Federal Railroad Administration, 1998.

4.13.2.2 Noise Analysis Methodology

The analysis of the existing and future noise environments presented in this analysis is based on noise level monitoring, noise prediction modeling, and empirical observations. Existing noise levels were monitored at selected locations within the campus and surrounding area using a Larson-Davis Model 720 precision sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. 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). The 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 (Hendriks, 1987). 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 (Hendriks, 1987). Traffic volumes utilized as data inputs in the noise prediction model were provided by the project traffic engineer.

4.13.2.3 Existing Noise Levels

North Campus. The following paragraphs describe both the existing roadway noise and aircraft noise levels on the various University parcels involved in this project. In the discussions of airport noise contours, it is important to note that the mapping of airport noise contours provides only an approximation of actual noise levels, and that the aircraft noise is much more episodic than roadway traffic noise. As the volume of air traffic fluctuates, the 24-hour average noise levels represented by the CNEL values will also change. Over time, the total number of aircraft operations may change slowly, and newer jets used by the airlines are subject to more stringent noise limits set by the Federal Aviation Administration (FAA). For this reason, slight changes in the mapping of noise contours are always normal. The noise contours do provide a good general guidance and are an accepted source of information for land use planning and evaluating noise impacts.

The primary source of noise in the North Campus is vehicular traffic on local roadways. Existing 24-hour noise levels have been calculated for the roadway segments adjacent to the North Parcel and the Storke-Whittier Parcel. The calculated noise levels are presented in Table 4.13-3 along with the distances to various noise level contours.

The North Parcel is located just south of the current western terminus of Phelps Road. As shown in Table 4.13-3, existing noise levels in the north eastern-most corner of the parcel adjacent to Phelps Road average approximately 57.9 dBA L_{dn}. Distant traffic noise can also be heard from Storke Road and Hollister Boulevard, but the roadway noise levels heard throughout the parcel are fairly quiet – generally below 60 dBA L_{dn}.

Because of the distance to the nearest roadway, the South Parcel experiences even less roadway traffic noise than the North Parcel.

The Storke-Whittier site is primarily affected by traffic noise along Storke Road and, to a lesser extent, Whittier Drive. As shown in Table 4.13-3, existing noise levels along Storke Road average more than 65 dBA L_{dn} at distances of more than 100 feet from the roadway. Noise levels along Whittier Drive are relatively quiet.

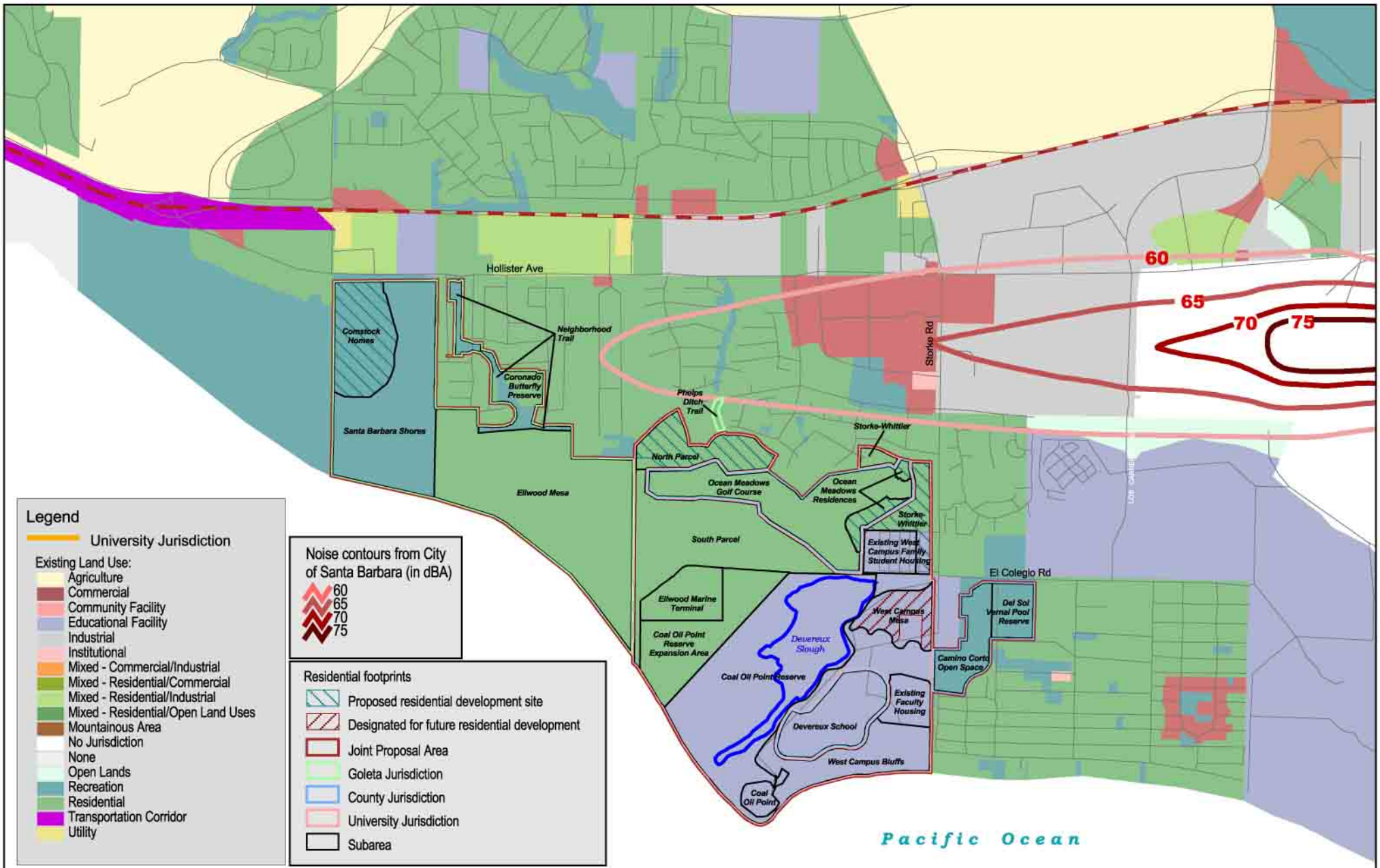
Table 4.13-3. Existing Traffic Noise Levels on the North Campus

	dBA L_{dn}		Distance to L_{dn} Contour (feet)			
Roadway Segment	**At 50 ft.**	**At 100 ft.**	**70 dBA**	**65 dBA**	**60 dBA**	**50 dBA**
Phelps Road west of Pacific Oaks	57.9	54.9	8	17	36	78
Storke Road north of El Colegio Rd.	68.9	65.9	42	92	197	425
Whittier Drive west of Storke Rd.	56.3	53.3	6	13	28	61

Source: URS Corporation, 2004.

As shown on Figure 4.13-1, the 60 dBA CNEL contour of SBA runs generally east-west, approximately near the alignment of Phelps Road. All of the University parcels of land associated with this project are located outside of the limits of the 60 dBA CNEL contour. The North Campus Faculty Housing Site (North Campus – North Parcel) is the closest, and it is approximately 250 feet south from the contour. Large aircraft, including commuter aircraft and regional jets, usually depart the airport on Runway 25 towards the west, passing to the north of the University parcels. Departing aircraft are certainly audible in this area, but at this location one mile west of the airport, the average noise levels are not incompatible with residential uses based on the Noise Element standards, as discussed below. The South Parcel is affected by less aircraft noise than the North Parcel.

The Storke-Whittier site adjacent to Whittier Drive is approximately 400 feet outside of the 60 dBA CNEL contour from the airport. As one moves to the south, the distance from 60 dBA CNEL contour increases, so the Student Family Housing Site is somewhat less affected by airport noise.



t:\ellwood_devereux\deliverables\land_use_maps.apr

Faculty & Family Student Housing,
Open Space Plan & LRDP Amendment EIR

University of California, Santa Barbara

Figure 4.13-1. Noise Contours

April 2004

The Union Pacific railroad tracks in this part of Santa Barbara County are located parallel to and just south of U.S. Highway 101, approximately 0.75 mile north of the northernmost point in the University parcel. At this distance, neither noise nor ground vibration from railroad operations is of concern.

West Campus. The entire West Campus parcel is located well outside of the 60 dBA CNEL contour associated with the SBA operations. At the southern terminus of Storke Road, the roadway splits into Devereux Road, which runs along the northerly boundary of the West Campus Mesa parcel and West Campus Lane. Just north of this split, the ADT volume is about 3,500. This is a relatively low traffic volume, and results in an existing noise level of about 60 dBA L_{dn} at 50 feet. The actual noise levels along Devereux Road adjacent to the West Campus Mesa parcel is somewhat less, since a portion of the traffic takes the other fork. The existing roadway noise levels at the West Campus Mesa parcel are compatible with residential uses, based on the Noise Element standard.

The West Campus Bluffs parcel is located approximately 1 mile south of the 60-dBA CNEL contour associated with the SBA. Although not mapped, the estimated CNEL from airport operations at this location would be between 50 and 55 dBA CNEL. As with the surrounding areas, aircraft operations are audible in this location. Discussions in the County Noise Element (County of Santa Barbara, 1986:33) indicate that peak noise levels from passing aircraft can typically range up to 10 dBA louder than the average noise levels represented by the CNEL contours. Thus for the entire undeveloped area, even though average aircraft noise levels may be appropriate for vacant land and passive recreational uses, some people may still be disturbed by occasional aircraft overflights.

Roadway noise levels in the West Campus Bluffs originate from distant roads and are generally low—in the range of 50 to 55 dBA L_{dn}. At these relatively low noise levels, the sounds from wind and nearby waves are also notable, so the roadway noise levels are less invasive.

Noise levels within the COPR and adjacent areas are very similar to those described above for the West Campus Bluffs area. Much of the preserve and undeveloped areas are closer to the westbound departure track of aircraft leaving SBA, but the area is well outside of the 60 dBA CNEL contour. The low volume of vehicle traffic using Devereux Road to access the Devereux School and Coal Oil Point also causes some noise. The existing noise level from this vehicle traffic was conservatively (high) estimated at 60 dBA L_{dn} in the vicinity of the West Campus Mesa parcel. It is probably in the 55 to 60 dBA L_{dn} range at distances of 50 feet from Devereux Road where it provides access to the Coal Oil Point area. Noise from single loud vehicles may cause brief disturbances, but the overall roadway noise over most of the Coal Oil Point area is consistent with the 55 dBA L_{dn} guidance mentioned above.

The Ellwood Marine Terminal area in the expansion area portion of the COPR includes storage tanks and ancillary facilities. While not a substantial source of noise, occasional maintenance activities and traffic to and from the facility may cause brief noise disturbance. It is difficult to quantify this noise source, but it should be considered in planning passive recreational uses.

Off-Campus. Existing roadway noise levels were also calculated for the highway and roadway segments in the vicinity of the project area. The average daily noise levels along these roadway segments are presented in Table 4.13-4.

Table 4.13-4. Existing Off-Campus Traffic Noise Levels

Roadway Segment	dBA L_{dn}		Distance to L_{dn} Contour (feet)			
	At 50 ft.	At 100 ft.	70 dBA	65 dBA	60 dBA	50 dBA
US Highway 101 west of Glen Annie/Storke Rd.	78.3	75.2	178	383	825	1,777
US Highway 101 west of Los Carneros	80.2	77.2	241	519	1,118	2,409
Hollister Avenue west of Cannon Green Dr.	70.5	67.5	54	116	251	540
Hollister Avenue west of Storke Rd.	72.3	69.3	71	152	328	708
Hollister Avenue west of Los Carneros Rd.	70.3	67.3	52	112	242	521
Hollister Avenue east of Los Carneros Rd.	71.0	68.0	58	126	270	583
Hollister Avenue west of Fairview Ave.	69.8	66.8	48	104	224	483
Phelps Road west of Pacific Oaks	57.9	54.7	8	17	36	78
Phelps Road west of Storke Rd.	61.2	58.2	13	28	60	129
Whittier Drive west of Storke Rd.	56.3	53.3	6	13	28	61
El Colegio Road west of Los Carneros Rd.	70.1	67.1	51	109	235	507
El Colegio Road east of Los Carneros Rd.	69.3	66.3	45	96	207	447
El Colegio Road northwest of Ocean Rd.	66.5	63.5	29	63	135	291
Cannon Green Drive south of Hollister Ave.	60.6	57.6	12	25	55	117
Pacific Oaks south of Hollister Ave.	60.4	57.4	12	25	54	115
Pacific Oaks south of Phelps Rd.	56.2	53.2	6	13	28	60
Glen Annie Road north of Calle Real	66.0	63.0	27	58	125	269
Storke Road north of Hollister Ave.	73.9	70.9	91	196	422	910
Storke Road south of Hollister Ave.	72.4	69.4	73	157	337	727

Table 4.13-4. Existing Off-Campus Traffic Noise Levels

Roadway Segment	dBA L_{dn}		Distance to L_{dn} Contour (feet)			
	At 50 ft.	At 100 ft.	70 dBA	65 dBA	60 dBA	50 dBA
Storke Road south of Phelps Rd.	71.3	68.3	61	131	282	608
Storke Road north of El Colegio Rd.	68.9	65.9	42	92	197	425
Los Carneros Road north of Hollister Ave.	71.8	68.8	66	142	306	658
Los Carneros Road south of Hollister Ave.	72.8	69.8	77	166	357	770
Los Carneros Road north of El Colegio Rd.	70.9	67.9	58	124	267	576

Source: URS Corporation, 2004.

4.13.2.4 Existing Vibration Environment

Aside from seismic events, the greatest regular sources of groundborne vibration at the University campus and within the immediate vicinity are construction activities and roadway truck traffic. At the time that this EIR was prepared, no construction activities likely to generate high groundborne vibration velocity levels (e.g., demolition, pile driving, or blasting) were occurring in the vicinity of the proposed project sites.

Heavy trucks currently transport materials to and from the University campus and surrounding land uses. These trucks typically generate groundborne vibration velocity levels of around 63 vibration decibels (VdB). These levels could reach 72 VdB where trucks pass over bumps in the road.

4.13.3 Regulatory Framework

4.13.3.1 Federal

Federal agencies that have developed noise standards include the FHWA, the Department of Housing and Urban Development (HUD), the Federal Interagency Committee on Urban Noise (FICUN), and the FAA. Of these, only the noise standards adopted by the FAA are applicable to the University campus.

The FAA has prepared guidelines for acceptable noise exposure in its CFR Part 150 Noise Compatibility Planning Program. According to the Part 150 guidelines, exterior aircraft exposures of 65 dBA L_{dn} or less and interior exposure of 45 dBA L_{dn} or less are considered acceptable for residential uses. These standards apply to new housing developed at the University campus in close proximity to the SBA.

4.13.3.2 State

Title 24 of the CCR codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Dwellings are to be designed so that interior noise levels will meet this standard for at least 10 years from the time of building permit application. This standard applies to all new housing developed at the University campus.

The California Airport Noise regulations, contained in the CCR, Title 21, establish an airport compatibility standard of 65 dBA CNEL. This standard is intended to ensure an interior noise level of 45 dBA CNEL in residences, assuming standard construction practices. This standard applies to new housing developed at the University campus in close proximity to SBA.

4.13.3.3 Local

There are no local noise regulations applicable to the proposed project. For consistency with the policies of the GCP, refer to Section 4.6, Land Use.

4.13.4 Project Impacts and Mitigations

4.13.4.1 Methodology

The analysis in this section focuses on the nature and magnitude of the change in the noise environment due to proposed residential development and open space improvements. The primary sources of noise associated with the proposed project would be construction activities and project-related traffic volumes. Noise levels associated with anticipated construction activities are identified and compared with adopted standards to determine whether temporary or periodic noise impacts would occur. Noise levels associated with increased traffic and additional stationary equipment and activities are identified and compared with standards of significance to determine whether substantial permanent increases in ambient noise levels would occur.

4.13.4.2 LRDP Policies

The Coastal Act Element of the LRDP included a range of policies and standards (herein termed LRDP policies) to demonstrate consistency of the LRDP, and projects implemented under the LRDP, with the statutory requirements of Chapter 3 of the Coastal Act (commencing with Section 30200). The following LRDP policies are relevant to Noise.

30240(b)16. A maximum allowable sound level of 65 decibels on the A-weighted scale shall not be exceeded measured from the West Campus property line.

30240(b)17. At Coal Oil Point, the maximum allowable sound level shall not exceed 60 decibels on the A-weighted scale.

30240(b)18. The following noise sources are not subject to the maximum sound levels established in policy nos. 30240(b).16 and 30240(b).17:

(a) Noises from construction and maintenance activities between 7 am and 8 pm; and

(b) Noise of safety signals, warning devices and emergency pressure relief valves; and

(c) Noise from moving sources such as tractors, automobiles, trucks, airplanes, etc.

4.13.4.3 Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the proposed project may have a significant adverse noise impact if it would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- 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
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

The state standard for interior noise levels within new dwellings other than detached single-family dwellings (such as dormitories) is 45 dBA CNEL.

The CEQA Guidelines do not define the levels at which groundborne vibration or groundborne noise is considered "excessive." This analysis uses the Federal Railway Administration's vibration impact thresholds for sensitive buildings, residences, and institutional land uses. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations (e.g., sensitive on-campus research buildings), 80 VdB at residences and buildings where people normally sleep (e.g., student housing buildings and nearby residences), and 83 VdB at other institutional buildings (FRA, 1998).

The CEQA Guidelines also do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." For the purposes of this analysis, noise impacts would be considered significant if the project resulted in the following:

- Construction activities lasting more than one day that increase the ambient noise levels by 10 dBA or more at any on-campus or off-campus noise-sensitive location
- A permanent (i.e., long-term operational) increase of 5 dBA L_{dn} over ambient noise levels at any on-campus or off-campus noise-sensitive land use
- A permanent (i.e., long-term operational) increase of 3 dBA L_{dn} over ambient noise levels at any on-campus or off-campus noise-sensitive land use location where the future resulting noise level would exceed 70 dBA L_{dn} (i.e., the noise levels would be considered unacceptable for noise-sensitive uses by most public agencies)

As discussed previously in this section, 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.

4.13.4.4 Effects Not Found to Be Significant

The Initial Study did not identify any noise impacts as Effects Not Found to Be Significant; therefore, all potential noise impacts (identified in Appendix G of the CEQA guidelines) are discussed in this EIR.

4.13.4.5 Impacts and Mitigation Measures

Impact 4.13-1. Implementation of the proposed project would not expose new on-campus residential uses to noise levels in excess of the state's 45 dBA CNEL interior noise standard. This impact would be *less than significant*.

Amendment of the LRDP to permit residential development on the North Campus, coastal access improvements, and open space management activities could increase ambient noise levels, but would not expose occupants of new on-campus residential development to noise levels in excess of the state's 45 dBA CNEL interior noise standard.

Development of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would increase vehicular trips in the project vicinity (as discussed below in Impact 4.13-4) and introduce new sources of stationary noise (as discussed below in Impact 4.13-5), and result in the exposure of residential occupants to increased ambient noise levels. Implementation of the portion of the Open Space Plan under the University's jurisdiction would result in coastal access improvements and management of open space resources, including restoration of degraded habitat, could increase recreational use of undeveloped areas, which would contribute to increases in vehicular traffic noise and intermittent noise from recreational use of the Open Space Plan areas. In addition, residential

development on the North Campus would be exposed to intermittent noise from aircraft operations from the SBA (as discussed below in Impact 4.13-7).

Future noise levels within the North Campus would continue to be dominated by vehicular traffic on adjacent roadways. Other sources of noise would include new stationary sources (such as rooftop heating, ventilation, and air conditioning equipment) and increased activity throughout the site. Table 4.13-5 presents the future average daily exterior and interior noise levels associated with these roadways. As discussed previously, exterior-to-interior reduction of newer residential units is generally 30 dBA or more. With this assumption, Table 4.13-5 indicates that future noise levels associated with the surrounding roadways would be less than 40 dBA L_{dn}. Because the L_{dn} and CNEL noise scales are interchangeable, these future noise levels would not exceed the 45 dBA CNEL interior noise standard for residential uses.

Table 4.13-5. Predicted Future Traffic Noise Levels on the North Campus

	Noise Levels in dBA L_{dn} at 50 feet From the Roadways			
Analysis Location	**Future Exterior Noise Levels[1]**	**Assumed Exterior to Interior Noise Reduction**	**Future Interior Noise Levels**	**State Interior Noise Standard**
Faculty Housing in the North Parcel located closest to Phelps Road	60.3	30.0	<40.0	45.0
Student Housing in the Storke-Whittier Parcel located closest to Storke Road	69.0	30.0	<40.0	45.0
Student Housing in the Storke-Whittier Parcel located closest to Whittier Drive	57.9	30.0	<40.0	45.0

[1]Future traffic condition is the Cumulative + Project Traffic volumes identified in the Traffic Impact Study conducted by Associated Transportation Engineers, 2004.

Source: URS Corporation and EIP Associates, 2004.

~~Residential structures would include mechanical heating, ventilation, and air conditioning (HVAC) equipment, which could be located on the rooftop, or adjacent to new structures. Residential HVAC systems typically result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment. These noise levels would not cause interior noise levels within the new residential units to exceed 45 dBA CNEL.~~

Residential structures would include rooftop or adjacent to structure mechanical equipment. The residential scale of mechanical equipment that would be on the roof is not anticipated to create a significant noise impact.

As shown on Figure 4.13-1, the 60 dBA CNEL contour from aircraft operations at the SBA runs generally east-west, approximately near the alignment of Phelps Road, and both the North Parcel and the Storke-Whittier Parcel are located outside of the limits of the 60 dBA CNEL

contour. Therefore, interior noise levels within the new residential units would not exceed 45 dBA CNEL as a result of aircraft operations.

Based on this information, implementation of the proposed project would not expose persons to or generate noise levels in excess of applicable standards and this impact would be *less than significant*.

Impact 4.13-2. Construction of residential structures and open space improvements could generate and expose persons to excessive groundborne vibration or groundborne noise levels. With implementation of the identified mitigation measure, this impact would be reduced to a *less-than-significant* level.

Amendment of the LRDP to permit residential development on the North Parcel and the Storke-Whittier Parcel, improve coastal access, and manage and restore open space areas could result in construction activities that would generate groundborne vibration and noise that could affect adjacent residential land uses.

Construction of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would result construction activities (such as clearance and grading of residential sites) that would result in the generation of groundborne noise and vibration. Implementation of the portion of the Open Space Plan under the University's jurisdiction would result in coastal access improvements, including trail improvement and development of public parking lots, which could also generate some levels of groundborne noise and vibration. Table 4.13-6 identifies various vibration velocity levels for the types of construction equipment that could operate at construction sites during construction of various project components.

Table 4.13-6. Vibration Source Levels for Construction Equipment

Construction Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998; EIP Associates, 2003.

Construction activities would primarily impact the existing residences located adjacent to the north campus housing sites (e.g., the existing West Campus Family Student Housing Apartments). Some of these residences are located within 50 feet from the edge of the residential construction sites. Based on the information presented in Table 4.13-6, vibration levels could reach up to 81 VdB at the properties located in close proximity the project sites. This would exceed the 80 VdB threshold for residences and buildings where people normally sleep.

Therefore, this impact would be potentially significant if it occurs during the hours when most people sleep.

Heavy trucks would transport materials to and from the project site when construction activities occur. These trucks typically generate groundborne vibration velocity levels of around 63 VdB, although these levels could reach 72 VdB where trucks pass over bumps in the road. These levels would not exceed the identified thresholds of significance for sensitive uses.

The following mitigation measure would be implemented during project construction to limit the hours of construction:

MM 4.13-2. Construction activities shall be limited to the hours between 7:00 A.M. and 5:00 P.M, and shall not occur on weekends or federal holidays. Non-vibration generating construction activities such as interior finishes are not subject to these time restrictions.

With implementation of MM 4.13-2, construction of the proposed project would not result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels, and this impact would be reduced to a *less-than-significant* level.

Impact 4.13-3. Operational impacts of the proposed project would not generate and expose persons to excessive groundborne vibration or groundborne noise levels. ~~This is considered a *less-than-significant* impact.~~ This impact would be *less than significant.*

Amendment of the LRDP to permit residential development on the North Parcel and the Storke-Whittier Parcel, improve coastal access, and manage and restore open space areas could result in increased vehicular traffic in the project vicinity and additional stationary equipment; however, no excessive groundborne vibration of groundborne noise is anticipated to result.

Construction of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would result in construction activities that would generate groundborne vibration and noise that could affect adjacent residential land uses. Implementation of the portion of the Open Space Plan under the University's jurisdiction would result in coastal access improvements, including trail improvement and development of public parking lots that could also generate groundborne noise and vibration. When the project is completed and operational, background vibration levels would be expected to average around 50 VdB, as discussed previously in this section. This is substantially less than the 80 VdB threshold for residential buildings.

Operational activities associated with the proposed project would not expose (on- or off-campus) persons to excessive groundborne vibration or groundborne noise levels, and this impact would be *less than significant*.

Impact 4.13-4. Operation of the proposed project would generate increased local traffic volumes, but would not cause a substantial permanent increase in noise levels above existing noise levels. This impact would be *less than significant*.

Amendment of the LRDP to permit residential development on the North Campus, coastal access improvements, and open space management activities could increase ambient noise levels related to project-related vehicular traffic.

Development of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would result in the generation of approximately 3,061 average daily vehicular trips in the project vicinity. Implementation of the portion of the Open Space Plan under the University's jurisdiction would result in coastal access improvements including new coastal access public parking, which could generate an additional 335 average daily trips, for a total of 3,396 average daily project-related vehicle trips. This increase in traffic in the local vicinity would slightly increase ambient noise levels.

Locations in the project vicinity could experience slight changes in noise levels as a result of an increase in the student and faculty population, and resulting changes in motor vehicle trips to and from the campus. The changes in future noise levels at the selected noise-sensitive locations along the study-area roadway segments in the project vicinity are identified in Table 4.13-7. As shown, the proposed project would increase local noise levels by a maximum of 1.8 dBA L_{dn}, which is inaudible/imperceptible to most people and would not exceed the identified thresholds of significance. Therefore, implementation of the proposed project would not result in traffic increases that would cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and this impact would be *less than significant*.

Table 4.13-7. Project Traffic Noise Impacts

Roadway Segment	Noise Level in dBA L_{dn} at 50 Feet			
	Existing Traffic Volumes	Existing + Project Traffic Volumes	Increase	Significance Threshold
US Highway 101 west of Glen Annie/Storke Rd.	78.3	78.3	0.0	3.0
US Highway 101 west of Los Carneros	80.2	80.3	0.1	3.0
Hollister Avenue west of Cannon Green Dr.	70.5	70.5	0.0	3.0
Hollister Avenue west of Storke Rd.	72.3	72.4	0.1	3.0
Hollister Avenue west of Los Carneros Rd.	70.3	70.4	0.1	3.0
Hollister Avenue east of Los Carneros Rd.	71.0	71.1	0.1	3.0
Hollister Avenue west of Fairview Ave.	69.8	69.8	0.0	5.0
Phelps Road west of Pacific Oaks	57.9	59.7	1.8	5.0
Phelps Road west of Storke Rd.	61.2	62.0	0.8	5.0
Whittier Drive west of Storke Rd.	56.3	56.7	0.4	5.0
El Colegio Road west of Los Carneros Rd.	70.1	70.2	0.1	3.0
El Colegio Road east of Los Carneros Rd.	69.3	69.4	0.1	5.0
El Colegio Road northwest of Ocean Rd.	66.5	66.6	0.1	5.0

Table 4.13-7. Project Traffic Noise Impacts

Roadway Segment	Noise Level in dBA L_{dn} at 50 Feet			
	Existing Traffic Volumes	Existing + Project Traffic Volumes	Increase	Significance Threshold
Cannon Green Drive south of Hollister Ave.	60.6	61.2	0.6	5.0
Pacific Oaks south of Hollister Ave.	60.4	60.9	0.5	5.0
Pacific Oaks south of Phelps Rd.	56.2	56.8	0.6	5.0
Glen Annie Road north of Calle Real	66.0	66.0	0.0	5.0
Storke Road north of Hollister Ave.	73.9	74.1	0.2	3.0
Storke Road south of Hollister Ave.	72.4	72.7	0.3	3.0
Storke Road south of Phelps Rd.	71.3	71.4	0.1	3.0
Storke Road north of El Colegio Rd.	68.9	69.2	0.3	5.0
Los Carneros Road north of Hollister Ave.	71.8	71.8	0.0	3.0
Los Carneros Road south of Hollister Ave.	72.8	72.8	0.0	3.0
Los Carneros Road north of El Colegio Rd.	70.9	70.9	0.0	3.0

Sources: URS Corporation and EIP Associates, 2004.

Impact 4.13-5. Operation of the proposed project could add new stationary sources of noise, but would not cause a substantial permanent increase in ambient noise levels. This impact would be *less than significant*.

Amendment of the LRDP to permit residential development on the North Campus, coastal access improvements, and open space management activities could increase ambient noise levels related to increased vehicular traffic in the project vicinity and new sources of stationary noise.

Development of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would introduce new sources of stationary noise (e.g., building mechanical equipment). ~~HVAC systems would be installed for the new buildings located within the project site. Residential HVAC systems result in noise levels that average between 40 and 50 dBA L_{eq} at 50 feet from the equipment.~~ Residential structures would include rooftop or adjacent to structure mechanical equipment. These noise levels would not cause a substantial increase in existing noise levels by 5 dBA or more.

Thus, new stationary equipment introduced by the proposed project would not cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and this impact would be *less than significant*.

~~**Threshold.** 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?~~

Impact 4.13-6. Construction of the proposed project could result in substantial temporary or periodic increases in ambient noise levels. Even with implementation of identified mitigation measures, ~~T~~this impact would ~~be~~ remain *significant and unavoidable*.

Amendment of the LRDP to permit residential development on the North Campus, coastal access improvements, and open space management activities could result in construction activities that result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity.

Construction of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would result in the temporary or periodic increases in ambient noise levels associated with typical construction activities, including clearance and grading of sites, and framing of structures. Implementation of coastal access improvements and management of open space resources, including restoration of degraded habitat, could also result in temporary noise impacts associated with the construction or implementation of such activities.

Construction activities associated with the residential components of the proposed project are expected to occur over a period of approximately 30 months. During construction, three basic types of activities would be expected to occur and generate noise. First, the site of residential development and coastal access parking lots would be cleared and graded to accommodate new structures, roads, and parking. Second, the buildings and parking lots would be constructed and readied for use. Finally, the area around the new buildings would be landscaped. 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 in operation and the location of the activity.

The EPA has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 4.13-8 and Table 4.13-9. Noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 to 7.5 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA to 72 dBA L_{eq} at 200 feet from the source to the receptor.

Construction activities would primarily impact the existing residential land uses near the project site. Some of these existing uses would be located within 100 feet of a construction site. Based on the information presented in Table 4.13-9, construction noise levels could reach up to 80 dBA L_{eq} during the daytime at these buildings. This could be a temporary or periodic increase of more than 10 dBA L_{eq} over the existing daytime noise levels at these existing residences. As such, construction noise levels could substantially increase existing noise levels at existing residential uses. This would be a significant impact.

Table 4.13-8. Noise Ranges of Typical Construction Equipment

Construction Equipment	*Noise Levels in dBA L_{eq} at 50 feet*[1]
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
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
Concrete Pumps	81–85
Back Hoe	73–95
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

[1]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: U.S. EPA, 1971 as presented in City of Los Angeles, 1998.

Table 4.13-9. 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: U.S. EPA, 1971 as presented in City of Los Angeles, 1998.

MM 4.13-2, discussed above under Impact 4.13-2, would be implemented to limited construction to the hours between 7:00 A.M. and 5:00 P.M, with not construction on weekends or federal holidays. Non-noise generating construction activities such as interior finishes are not subject to these time restrictions.

In addition, the following mitigation measures shall be implemented throughout project construction.

MM 4.13-6(a). 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. If required to minimize potential noise conflicts, the equipment shall be shielded from noise sensitive receptors by using temporary walls, sound curtains, or other similar devices.

MM 4.13-6(b). 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.

Implementation of MMs 4.12-2, MM 4.13-6(a) and MM 4.13-6(b) would minimize construction noise impacts to nearby locations. They would not, however, ensure that construction noise levels do not result in a temporary or periodic increase by less than 10 dBA at noise sensitive uses located in close proximity to the construction sites. Therefore, this impact would be *significant and unavoidable*.

Impact 4.13-7. Implementation of the proposed project would not expose people residing in the project area to excessive noise levels related to aircraft operations. This impact would be *less than significant*.

Amendment of the LRDP to permit residential development on the North Campus, coastal access improvements, and open space management activities would increase the residential population of the project area, but would not expose new or existing residential to excessive noise levels associated with aircraft operations.

Development of 236 units of faculty housing on the North Parcel and 151 units of family student housing on the Storke-Whittier Parcel would increase the number of persons residing on the University North Campus. As discussed in Section 4.13.2.3, all portions of North and West Campuses are located outside of the limits of the 60 dBA CNEL contour for the SBA. Thus occupants of the new residential structures would not be exposed to excessive noise levels associated with aircraft operations. Further, as discussed previously in this section, the exterior-to-interior reduction of newer homes is generally 30 dBA or more. Interior noise levels within the proposed residential units would not exceed the state's 45 dBA CNEL standard.

Although future residents of the proposed residential development would reside within two miles of a public airport, the proposed project would not expose people residing or working in the project area to excessive noise levels, and this impact would be *less than significant*.

Impact 4.13-8. The proposed project would not occur within the vicinity of a private airstrip. *No impact* would result.

The proposed project is not located within the vicinity of a private airstrip, and *no impact* would result. Noise impacts from operation of the SBA are addressed in Impact 4.13-7.

4.13.5 Cumulative Impacts

The geographic context for cumulative noise impacts is the coastal area of Santa Barbara County that is evaluated under the Goleta Traffic Model. The Goleta Traffic Model was calibrated in November 2003 and then used to forecast future traffic volumes assuming the approved and pending developments in the Goleta area. The cumulative model includes projects within the City of Goleta, as well as projects located in the County areas, the City of Santa Barbara, and UCSB. Noise by definition is a localized phenomenon, and drastically reduces in magnitude as distance from the source increases. Consequently, only projects and growth due to occur in the Goleta area would be likely to contribute to cumulative noise impacts.

Cumulative development is not expected to result in the exposure of persons to noise levels in excess of applicable standards. Cumulative development would be subject to the California Noise Insulation Standards, which require that new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings achieve interior noise levels of 45 dBA CNEL. Future development is expected to comply with this requirement. Thus, the cumulative impact is less than significant. Additionally, the proposed project would be less than significant, as all residential construction under the amendment of the LRDP would be designed to be in compliance with this standard. This is considered to be a *less-than-significant* impact.

Cumulative development in the Goleta area should not result in the exposure of people to or the generation of excessive groundborne vibration, due to the localized nature of vibration impacts and the fact that all construction would not occur at the same time and at the same location. With regard to cumulative construction impacts on the Goleta area, Table 4.13-6 lists the groundborne vibration velocity levels of various types of construction equipment. Not included in the Table are figures for more intensive activities that are not contemplated for the amendment of the LRDP but may occur in connection with off-campus development, such as pile-driving and the use of explosives, which may be assumed to be significant sources of groundborne vibration. Even though groundborne vibration impacts are not expected to be cumulatively considerable, because the nature and extent of construction in connection with future Goleta area projects is uncertain, it will be assumed for the purposes of this analysis that future development could result in a *cumulatively significant* impact.

The proposed project would nevertheless not result in a cumulatively considerable impact with regard to excessive groundborne vibration. Construction activities under the amendment of the LRDP would not utilize explosives or pile driving, which are the most intensive ground-shaking activities associated with construction. Additionally, trucks associated with construction will typically generate only 63 VdB while traveling on roads, and 72 VdB when passing over bumps in the road. This is well below the 80 VdB standard established by the Federal Railway Administration for impacts on residences. Since vibration decreases substantially with distance, groundborne vibration caused by the proposed project construction would not contribute to any

cumulatively excessive groundborne vibration. Therefore, the amendment of the LRDP would not result in a cumulatively considerable contribution with respect to groundborne vibration from construction. This is considered to be a *less-than-significant* impact.

With regard to cumulative groundborne vibration due to operations, it is not expected that growth in the Goleta area would lead to a cumulatively significant impact. The Goleta area is a mixture of residential, retail, and commercial land uses, and no industrial land uses are allowed. These land uses will not result in excessive groundborne vibration, and consequently a cumulatively significant impact in this area would not occur. Because background operational vibration levels under the proposed project are expected to be about 50 VdB, which is well below the sensitivity threshold for even sensitive scientific equipment, the amendment of the LRDP contribution will also be less than significant. This is considered to be a *less-than-significant* impact.

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the Goleta 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 in the project vicinity. The noise levels associated with existing traffic volumes, cumulative base traffic volumes without the project, and cumulative base traffic volumes with the project are identified in Table 4.13-10 along with the contribution of traffic noise generated by the proposed project.

As shown in Table 4.13.10, cumulative development would result in noise level increases of up to 2.4 dBA L_{dn} along the studied roadways, with the maximum increase occurring along Phelps Road west of Pacific Oaks. The proposed project would contribute a maximum of 0.6 dBA L_{dn}, which is inaudible/imperceptible to most people. Neither the increase associated with cumulative development nor the proposed project would exceed the identified thresholds of significance. Therefore, cumulative development in the Goleta area would not result in traffic increases that would cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without these projects, and this impact would be *less than significant*.

With regard to stationary sources, it is also not expected that there would be a cumulatively significant impact. The major stationary source of noise that will be introduced into the Goleta area, due to the land use restrictions that the City and County have in place, is rooftop machinery on new commercial development. This type of equipment generally produces noise levels of around 69 to 73 dBA L_{eq} at a distance of fifty feet. Shielding, required by the City, County, and by CEQA mitigation, reduces these noise levels about 15 dBA, to around 54 to 68 dBA L_{eq}. Since this shielding would be expected to be utilized on new development in the commercial areas of Goleta, and commercial areas tend to have higher ambient noise levels, it is not expected that these stationary sources would result in a significant cumulative increase in permanent ambient noise levels and the impact would be less than significant. The proposed project impact is also less than significant. Development under the amendment of the LRDP will occur on campus, as opposed to within the commercial areas of the Goleta area. Because of

Table 4.13-10. Cumulative Project Roadway Traffic Noise Impacts

Roadway Segment	Noise Levels in dBA L_{dn} at 50 Feet					
	Existing Traffic Volumes	Cumulative Base Traffic	Cumulative + Project Traffic	Cumulative Increase[1]	Project Contribution[2]	Significance Threshold
US Highway 101 west of Glen Annie/Storke Rd.	78.3	78.8	78.8	0.5	0.0	3.0
US Highway 101 west of Los Carneros	80.2	80.7	80.8	0.6	0.1	3.0
Hollister Avenue west of Cannon Green Dr.	70.5	70.9	70.9	0.4	0.0	3.0
Hollister Avenue west of Storke Rd.	72.3	72.5	72.6	0.3	0.1	3.0
Hollister Avenue west of Los Carneros Rd.	70.3	70.2	70.3	0.0	0.1	3.0
Hollister Avenue east of Los Carneros Rd.	71.0	71.6	71.7	0.7	0.1	3.0
Hollister Avenue west of Fairview Ave.	69.8	71.2	71.3	1.5	0.1	3.0
Phelps Road west of Pacific Oaks	57.9	59.7	60.3	2.4	0.6	5.0
Phelps Road west of Storke Rd.	61.2	62.3	62.9	1.7	0.6	5.0
Whittier Drive west of Storke Rd.	56.3	57.6	57.9	1.6	0.3	5.0
El Colegio Road west of Los Carneros Rd.	70.1	70.4	70.5	0.4	0.1	3.0
El Colegio Road east of Los Carneros Rd.	69.3	70.2	70.2	0.9	0.0	3.0
El Colegio Road northwest of Ocean Rd.	66.5	67.0	67.0	0.5	0.0	5.0
Cannon Green Drive south of Hollister Ave.	60.6	60.7	61.3	0.7	0.6	5.0
Pacific Oaks south of Hollister Ave.	60.4	63.1	63.4	3.0	0.3	5.0
Pacific Oaks south of Phelps Rd.	56.2	56.6	57.2	1.0	0.6	5.0
Glen Annie Road north of Calle Real	66.0	66.4	66.4	0.4	0.0	5.0
Storke Road north of Hollister Ave.	73.9	74.0	74.2	0.3	0.2	3.0
Storke Road south of Hollister Ave.	72.4	72.8	73.0	0.6	0.2	3.0
Storke Road south of Phelps Rd.	71.3	71.5	71.5	0.2	0.0	3.0
Storke Road north of El Colegio Rd.	68.9	68.8	69.0	0.1	0.2	5.0
Los Carneros Road north of Hollister Ave.	71.8	72.9	72.9	1.1	0.0	3.0
Los Carneros Road south of Hollister Ave.	72.8	73.2	73.2	0.4	0.0	3.0
Los Carneros Road north of El Colegio Rd.	70.9	71.8	71.8	0.9	0.0	3.0

Sources: URS Corporation and EIP Associates, 2004.

the rapid decrease in magnitude of noise as distance increases, the stationary sources due to the proposed project cannot be expected to contribute to the ambient noise levels existing within those commercial districts. Consequently, the proposed project would not contribute a substantial permanent increase in ambient noise levels and its impact is less than significant. This is considered to be a *less-than-significant* impact.

Future construction in the Goleta area is not expected to result in a cumulatively significant impact in terms of substantial temporary or periodic increases in ambient noise levels. Noise impacts are localized in nature and decrease substantially with distance. Consequently, in order to achieve a cumulative increase in noise of 10 dBA, more than one source emitting high levels of noise would need to be in close proximity to the noise receptor location in question. Because the probability of future construction sites being located in close enough proximity to one another to raise ambient noise levels more than 10 dBA is considered to be remote and unlikely, the cumulative impact is *less than significant*.

4.13.6 References

Barry, T.M. and J.A. Regan. 1978. FHWA Highway Traffic Noise Prediction Model. U.S. Department of Transportation, Federal Highway Administration, Washington D.C. December.

City of Los Angeles. 1998. Draft L.A. CEQA Thresholds Guide.

County of Santa Barbara. 1986. Santa Barbara County Comprehensive Plan Noise Element. Santa Barbara County Resource Management Department, Santa Barbara, California. February.

Federal Railroad Administration (FRA). 1998. High-Speed Ground Transportation Noise and Vibration Impact Assessment.

Ferren, W. and Thomas. 1995. University of California, Santa Barbara. Natural Areas Plan, Pages 31-40.

Federal Highway Administration (FHWA). 1980.

1987.

Fugro West, Inc. 1996. Supplemental Fault and Liquefaction Evaluation Report, North Campus UCSB, Project Number 95-92-7212, 10 pp.

2003. Preliminary Geotechnical Engineering Report, Ocean Meadows Housing Development, Goleta, California, Prepared for Bermant Development Company, 18 pp. July.

Hendriks. 1987.

Wallace, Roberts & Todd. 1997. North & West Campus Housing LRDP Amendment Environmental Impact Report. Prepared for University of California, Santa Barbara.