V. ENVIRONMENTAL IMPACT ANALYSIS
H. NOISE

The following section is based on the *Air Quality and Noise Impact Technical Report* prepared by Terry A. Hayes Associates, LLC in January 2005 to analyze the potential noise impacts associated with the Proposed Project. A summary of the Noise Technical Report with respect to potential noise impacts is set forth below. The Noise Technical Report, which is incorporated herein by this reference, is included in its entirety as Appendix C to this ~~Draft~~ Final EIR.

ENVIRONMENTAL SETTING

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment range from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source. Studies have shown that the smallest perceptible change in sound level for a person of normal hearing sensitivity is approximately three decibels. A change of at least five decibels would be noticeable and would likely evoke a community reaction. A ten-decibel increase is subjectively heard as approximately a doubling in loudness and would most certainly cause a community response. Land uses that are considered sensitive to noise impacts are referred to as "sensitive receptors." Noise sensitive receptors consist of, but are not limited to, schools, residences, libraries, hospitals, and other care facilities.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately six decibels over hard surfaces and nine decibels over soft surfaces for each doubling of the distance. For example, if a noise sources produce a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on.

This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL) and Equivalent Noise Level (L_{eq}). CNEL is an average sound level during a 24-hour day. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually five decibels higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level.

Hence, the CNEL is obtained by adding an additional five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and 10 dBA to sound levels in the night before 7:00 a.m. and after 10:00 p.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

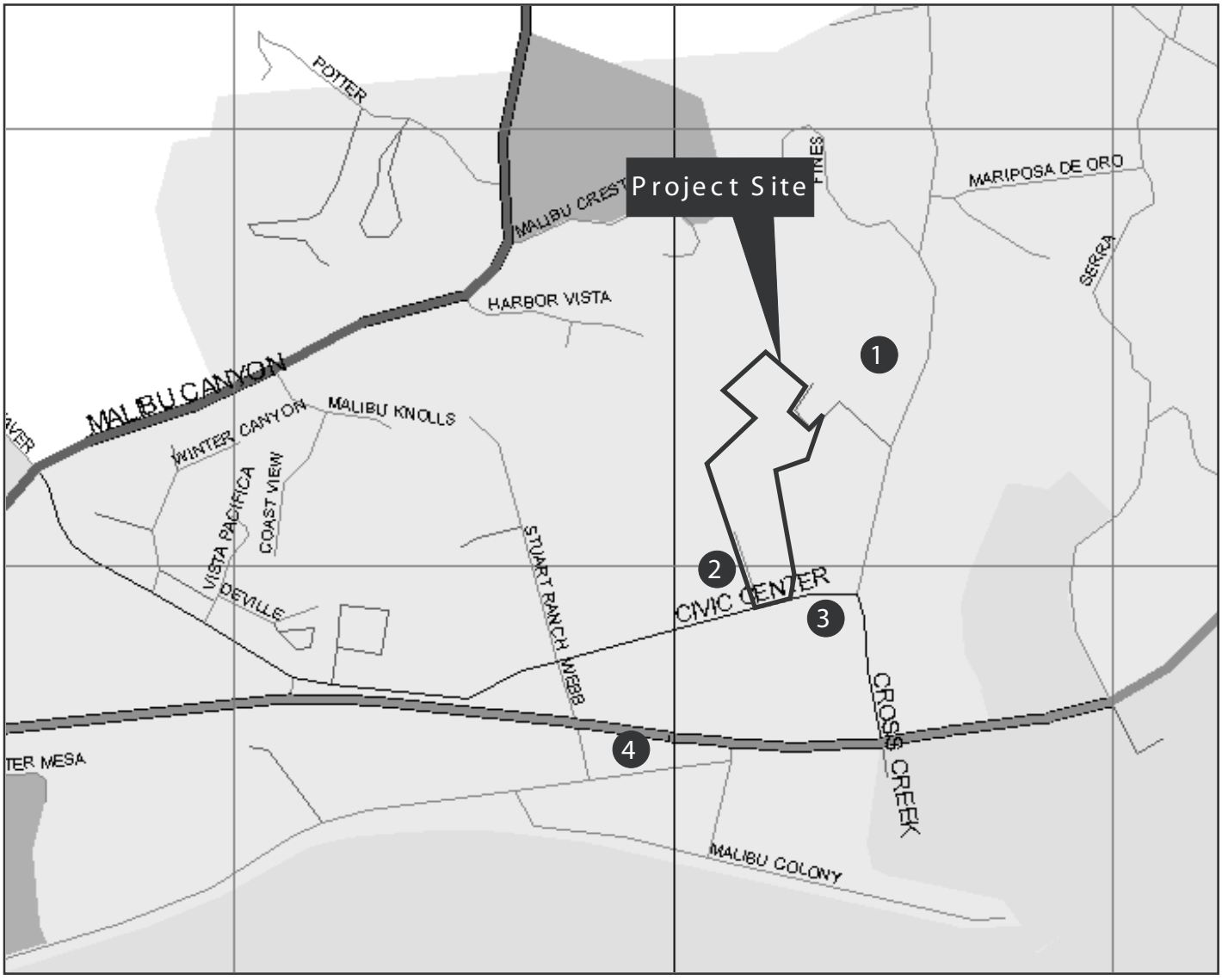
Existing Noise Environment

The existing noise environment of the project area and its vicinity is characterized by vehicular traffic, animals (birds), and weather (wind). Vehicular traffic is the primary source of noise in the project vicinity and is the largest consistent noise source in the project vicinity. Sound measurements were taken using a Quest Q-400 Noise Dosimeter during the hours between 9:00 a.m. and 12:00 p.m. on June 11, 2003 at various sensitive receptor locations within the vicinity of the Project Site. These readings were used to establish existing ambient conditions and provide a baseline from which to evaluate construction noise impacts. The locations of the noise monitoring positions are shown in Figure V.~~I~~H-1. These locations consist of representative noise sensitive land uses, which include nearby residences, community facilities, and schools. The existing noise levels, as recorded, are listed in Table V.H-1. As shown, existing ambient sound levels range between 55 and 66 dBA (L_{eq}).

Table V.H-1
Existing Noise Levels

Noise Sensitive Receptors	Existing Sound Level (dBA, L_{eq})
1. Single-Family Residences north of Project Site	55
2. Malibu Public Library	66
3. Colin McEwen High School	62
4. St. John's Malibu Urgent Care	65
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).	

As stated earlier, vehicular traffic is the predominant noise source in the project vicinity. Using existing traffic volumes provided by the project traffic consultant and noise calculation formulas from the Federal Highway Administration (FHWA) RD-77-108, CNEL has been calculated for sensitive receptors 1 through 4 during the weekday and weekend. The CNEL is used as a baseline to measure the Proposed Project's operational noise impacts at each receptor location (Table V.H-2). The estimated noise levels represent the most conservative scenario, which assume that no shielding is provided between the traffic and the location of each sensitive receptor.



LEGEND:

1. Single-Family Residences north of Project Site
2. Malibu Public Library
3. Colin McEwin High School
4. St. John's Malibu Urgent Care

Source: Terry A. Hayes Associates LLC, January 2005.

Table V.H-2
Existing Estimated Community Noise Equivalent Level

Noise Sensitive Receptors	Estimated dBA, CNEL	
	Weekday	Weekend
1. Single-Family Residences north of Project Site	60	59
2. Malibu Public Library	67	66
3. Colin McEwen High School	67	66
4. St. John's Malibu Urgent Care	74	74
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).		

ENVIRONMENTAL IMPACTS

Thresholds of Significance

Construction Thresholds of Significance

Section 4.2.04(G) of the Municipal Code prohibits the operation of any tools, equipment, impact devices, derricks of hoists used in construction, drilling, repair, alteration, demolition or earthwork, on weekdays between the hours of 7:00 p.m. and 7:00 a.m., and before 8:00 a.m. or after 5:00 p.m. on Saturday, or at any time on Sundays or holidays~~, except as exempted elsewhere in the Chapter~~. If construction activities associated with the project were to occur during the prohibited hours identified in the Municipal Code, a significant noise impact would occur.

A significant construction impact would also result if the Proposed Project would add 5 dBA or more to the current ambient exterior noise level at a sensitive receptor location.[1]

Operational Thresholds of Significance

The Proposed Project would result in a significant impact during the operational phase if it would cause the ambient noise level measured at the property line of an affected use to increase by 3 dBA (CNEL) to or within the "Normally Unacceptable" or "Clearly Unacceptable" category (see Table V.H-3), or if the Proposed Project would cause any 5 dBA or more increase in the existing ambient noise level.

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[1] *The City of Malibu does not have noise level standards for construction. Other cities, such as Los Angeles and Beverly Hills, typically use a 5 dBA increase over existing ambient noise levels as the significance criterion for construction. Additionally, studies have shown that a change of at least 5 dBA would be noticeable and would likely evoke a community reaction. Thus, a 5 dBA or more increase over the current ambient exterior noise level is used as the significance criterion for construction in this analysis.*

Table V.H-3
Land Use Compatibility for Community Noise Environments

Land Use Category	Normally Acceptable[a] (dBA, CNEL)	Conditionally Acceptable[b] (dBA, CNEL)	Normally Unacceptable[c] (dBA, CNEL)	Clearly Unacceptable[d] (dBA, CNEL)
Residential – Low Density Single-Family, Duplex, Mobile Homes	50-60	55-70	70-75	Above 70
Residential – Multi-Family	50-65	60-70	70-75	Above 70
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	Above 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	-	50-75	-	Above 65
Sports Arena, Outdoor Spectator Sports	-	50-80	-	Above 70
Playgrounds, Neighborhood Parks	50-70	-	67-75	Above 70
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	-	70-80	Above 80
Office Buildings, Business, Commercial and Professional	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: California Office of Noise Control, Department of Health Services, City of Malibu General Plan Noise Element (1995).

Project Impacts

Construction Noise Impacts

Construction of the Proposed Project would result in temporary increases in ambient noise levels in the project area on an intermittent basis. The increase in noise would likely result in a temporary annoyance to nearby residents. Noise levels would fluctuate depending on the construction phase, the type of equipment and duration of use, the distance between the noise source and receptor, and the presence or absence of noise attenuation barriers.

Construction activities require the use of numerous noise-generating equipment, such as jack-hammers, pneumatic impact equipment, saws, and tractors. Typical noise levels from various types of equipment that may be used during construction are listed in Table V.H-4, which shows noise levels of each piece of equipment at distances of 50 and 100 feet from the construction noise source.

Table V.H-4
Maximum Noise Levels of Common Construction Machines

Noise Source	Noise Level (dBA)[a]	
	50 Feet	100 Feet
Jackhammer	82	76
Steamroller	83	77
Street Paver	80	74
Backhoe	83	77
Street Compressor	67	61
Front-end Loader	79	73
Street Cleaner	70	64
Idling Haul Truck	72	66
Cement Mixer	72	66

[a] *Assumes a six decibel drop-off rate for noise generated by a "point source" and traveling over hard surfaces. Actual measured noise levels of the equipment listed in this table were taken at distances of 10 and 30 feet from the noise source.*

Source: Cowan, James P., Handbook of Environmental Acoustics, 1994.

Whereas Table V.H-4 shows the noise level of each piece of equipment, the noise levels shown in Table V.H-5 take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. These noise levels are based on surveys conducted by the USEPA in the early 1970s. Since 1970, regulations have been enforced to improve noise generated by certain types of construction equipment to meet worker noise exposure standards. However, many older pieces of equipment are still in use. Thus, the construction phase noise levels indicated in Table V.H-5 represent worst-case conditions. As the table shows, the highest noise levels are expected to occur during the grading/excavation and finishing phases of construction.

Table V.H-5
Outdoor Construction Noise Levels

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

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

Table V.H-5 also takes into account the use of noise-attenuating devices such as mufflers. The sound level reduction attributable to the use of mufflers can range from 1 dBA to 3 dBA. With muffler utilization, the grading and finishing phases of construction would have the greatest noise impacts, producing noise levels of up to 86 dBA at a reference distance of 50 feet.

To ascertain worst-case noise impacts at sensitive receptor locations during the construction phase of the Proposed Project, construction noise has been modeled by introducing the noise level associated with the grading phase of a typical development. The noise source is assumed to be active for forty percent of the eight-hour work day (consistent with the EPA studies of construction noise). The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. In addition, it was assumed that noise-attenuating mufflers would be utilized. The estimated construction noise levels at sensitive receptors are shown in Table V.H-6.

As indicated in Table V.H-6, the new ambient noise level during the construction phase of the Proposed Project (with the use of mufflers) would be at least 17 dBA greater than the existing ambient noise level at Receptor 1 and at least 9 dBA greater than existing ambient noise levels at Receptors 2 and 3. At Receptor 4, an incremental increase of less than 1 dBA is anticipated during construction. The new ambient noise levels at Receptors 1, 2, and 3 would exceed the significance threshold of a 5 dBA or more increase over the existing ambient noise level, even with the use of mufflers. Thus, a significant impact would occur at Receptors 1, 2, and 3 under Proposed Project conditions, and mitigation measures would be required.

Table V.H-6
Construction Noise Impact for the Proposed Project with Muffler Utilization

Noise Receptor	Distance (Feet)[a]	Maximum Construction Sound Level[b] (dBA)	Existing Ambient[c] (dBA, Leq)	New Ambient[d] (dBA, Leq)	Increase	Significance Threshold	Impact
1	100	80	55	72	17	≥ 5 dBA	**Yes**
2	80	82	66	75	9	≥ 5 dBA	**Yes**
3	120	78	62	71	9	≥ 5 dBA	**Yes**
4	1,120	59	65	65	0	≥ 5 dBA	No

[a] *Distance of noise source from receptor.*
[b] *Construction noise source's sound level at receptor location, with distance adjustment.*
[c] *Pre-construction activity ambient sound level at receptor location.*
[d] *New sound level at receptor location during the construction period, including noise from construction activity.*
Source: Terry A. Hayes Associates LLC, January 2005 (see Appendix C).

Operational Noise Impacts

The predominant long-term noise source associated with the Proposed Project would be vehicular traffic. According to the project Traffic Study (see Section V.K, Transportation/Circulation), the Proposed Project is forecasted to generate an additional ~~2,863~~2,850 daily weekday vehicle trips and ~~2,241~~2,250 weekend vehicle trips.[2]

Utilizing Federal Highway Administration (FHWA) RD77108 noise calculation formulas, predicted traffic volumes can be used to estimate project-related traffic noise impacts. Based on daily peak hour traffic volumes provided in the project traffic report, a CNEL was calculated for sensitive receptors located near the Project Site (see Table V.H-7).

[2] *Traffic and Circulation Study for the Malibu La Paz Project, KAKU Associates, Inc., December 2004.*

Table V.H-7
2004 and 2007 Estimated Community Noise Equivalent Level

Noise Sensitive Receptors	Estimated dBA, CNEL					
	Weekday			Weekend		
	Existing (2004)	No Project (2007)	Project (2007)	Existing (2004)	No Project (2007)	Project (2007)
1. Single-Family Residences on Cross Creek Road	60	60	60	59	59	59
2. Malibu Public Library	67	69	70	66	68	69
3. Colin McEwen High School	67	69	70	66	68	69
4. St. John's Malibu Urgent Care	74	74	74	74	74	74

Assumptions:
Vehicular traffic is the predominate noise source. The 24-hour distribution is 75, 13, and 12 percent for 7:00 a.m. to 7:00 p.m., 7:00 p.m. to 10:00 p.m. to 7:00 a.m., respectively. The vehicle distribution is approximately 87 percent, 7 percent, and 6 percent for auto, medium truck, and heavy truck, respectively.
Source: Terry A. Hayes Associates LLC, January 2005.

As indicated in V.I-7, the Proposed Project would cause vehicular noise in the area to fall within the range of 60 to 74 dBA (CNEL) during the weekday. Under "Existing" and "No Project" conditions, weekday noise levels are within the "Conditionally Acceptable" category of the Land Use Compatibility for Community Noise Environments table (see Table V.H-3) at Receptors 1 through 3. Under "Project" conditions, noise levels would remain within the "Conditionally Acceptable" category at Receptor 1 but would increase to the "Normally Unacceptable" category at Receptors 2 and 3. At Receptor 4, noise levels would be within the "Normally Unacceptable" category under "Existing," "No Project," and "Project" conditions.

According to the significance threshold, a significant impact would occur if the Proposed Project would cause ambient noise levels at the affected uses to increase by three decibels to or within the "Normally Unacceptable" or "Clearly Unacceptable" category. If ambient noise levels remain within the "Conditionally Acceptable" category under "Project" conditions, than an incremental increase of 5 dBA or more would be considered a significant impact. At Receptor 1, the Proposed Project would incrementally increase ambient noise levels by less than 1 dBA within the "Conditionally Acceptable" category. At Receptors 2 and 3, the Proposed Project would incrementally increase ambient noise levels by approximately 1 dBA to the "Normally Unacceptable" category. At Receptor 4, the Proposed Project would incrementally increase ambient noise levels by less than 1 dBA within the "Normally Unacceptable" category. The incremental increase of less than 1 dBA and 1 dBA would not exceed the significance threshold. Thus, less than significant impacts are anticipated during the weekday.

During the weekend, the Proposed Project would cause vehicular noise in the area to fall within the range of 59 to 74 dBA (CNEL). Under "Existing," "No Project," and "Project" conditions, noise levels are within the "Conditionally Acceptable" category at Receptors 1 through 3. At Receptor 4, noise levels are within the "Normally Unacceptable" category under "Existing," "No Project," and "Project" conditions. When compared to "No Project" conditions, the Proposed Project would incrementally increase noise

levels by less than 1 dBA at Receptors 1 and 4 and by 1 dBA at Receptors 2 and 3. The incremental increase of less than 1 dBA would not exceed the significance threshold of a 3 dBA or more increase to or within the "Normally Unacceptable" category at Receptor 4. At Receptors 1 through 3, the incremental increase of less than 1 dBA and 1 dBA would not exceed the significance threshold of a 5 dBA or more increase within the "Conditionally Acceptable" category. Thus, less than significant impacts are anticipated during the weekend.

CUMULATIVE IMPACTS

When calculating future traffic impacts, the traffic consultant took 14 additional projects into consideration. Thus, the future traffic results with and without the Proposed Project already account for the cumulative impacts from these other projects. Since the noise impacts are generated directly from the traffic analysis results, future "No Project" and "Project" noise impacts described in this report already reflect cumulative impacts.

Under "Existing" and "No Project" conditions, weekday noise levels are within the "conditionally acceptable" category of the Land Use Compatibility for Community Noise Environments table (Table V.H-3) at Receptors 1 through 3. Under "Project" conditions, noise levels would remain within the "Conditionally Acceptable" category at Receptor 1 but would increase to the "Normally Unacceptable" category at Receptors 2 and 3. At Receptor 4, noise levels would be within the "Normally Unacceptable" category under "Existing," "No Project," and "Project" conditions. According to the significance threshold, a significant impact would occur if the Proposed Project causes ambient noise levels at the affected uses to increase by 3 dBA to or within the "Normally Unacceptable" or "Clearly Unacceptable" category. If ambient noise levels remain within the "Conditionally Acceptable" category under "Project" conditions, then an incremental increase of 5 dBA or more would be considered a significant impact. At Receptors 1, the Proposed Project would incrementally increase ambient noise levels by less than 1 dBA within the "Conditionally Acceptable" category when compared to "Existing" conditions. At Receptor 4, the Proposed Project would incrementally increase ambient noise levels by less than 1 dBA within the "Normally Unacceptable" category when compared to "Existing" conditions (Table V.H-7). The incremental increase of less than 1 dBA would be less than significant as it would not exceed the significance threshold.

At Receptors 2 and 3, the Proposed Project would incrementally increase ambient noise levels by approximately 3 dBA to the "Normally Unacceptable" category during the weekday. The incremental increase of 3 dBA to the "Normally Unacceptable" category would be considered significant as it would exceed the significance threshold. Thus, the Proposed Project would significantly contribute to cumulative noise impacts during the weekday.

During the weekend, the Proposed Project would not incrementally increase ambient noise levels 3 dBA to or within the "Normally Unacceptable" category or by 5 dBA within the "Conditionally Acceptable" category when compared to existing conditions. Thus, the Proposed Project would not significantly contribute to cumulative noise impacts during the weekend.

MITIGATION MEASURES

Construction

The following mitigation measures shall be implemented to address construction noise impacts:

1. Construction contracts shall specify that all construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.

2. All residential units located within 700 feet of the construction site shall be sent a notice regarding the construction schedule of the Proposed Project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

3. The Project Developer shall designate a "noise disturbance coordinator" who shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to residential units within 700 feet of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.

4. Consistent with the City of Malibu Noise Ordinance (Section 4204 G), construction shall be limited to the hours of 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, and prohibited on Sundays and holidays. Special circumstances may arise where construction activities are permitted during prohibited hours by expressed written permission of the City Manager, or if construction is necessary to preserve life or property when such necessity arises (Section 4205 D).

Operation

During the operational phase, no mitigation measures are required since operation of the Proposed Project would not exceed the significance criteria.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction

With the use of mufflers and the application of the prescribed Mitigation Measures listed above, a decrease of approximately 3 dBA in the new ambient sound level is anticipated at Receptor 1, and a decrease of approximately 2 dBA in the new ambient sound level is anticipated at Receptors 2 and 3. However, a significant and unavoidable temporary noise impact during construction would remain at Receptors 1, 2 and 3. In the event the project is approved despite these significant noise impacts, a statement of overriding considerations will be required to be adopted by the Decision-Makers.

Operation

Noise levels associated with increased traffic volumes during the Proposed Project's operation would incrementally increase by less than 1 dBA over "No Project" conditions. This incremental increase would not result in a discernable difference in CNEL from "No Project" conditions to "Project" conditions. Therefore, a less-than-significant noise impact is anticipated for the operational phase of the Proposed Project.