APPENDIX G:
NOISE ASSESSMENT

NOISE IMPACT ANALYSIS

EAST GARRISON SPECIFIC PLAN

MONTEREY COUNTY, CALIFORNIA

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters which describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure ratioed to the faintest sound detectable by a keen human ear is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter Scale describing earthquake intensity is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting" written as dB(A). Any further reference to decibels written as "dB" in this report should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dB(A) is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, Section T25-28) for multiple family dwellings and hotel and motel rooms. A weighted noise exposure of 45 dB CNEL is also the guideline level for single-family interiors used in most California jurisdictions. Since normal noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL is generally the noise land use compatibility guideline for new residential dwellings in California. Because commercial or industrial activities are generally conducted indoors, the exterior noise exposure standard for such less sensitive land uses is less stringent.

Noise exposure standards have been developed by the State of California and recommended for inclusion into the Noise Element of local general plans. Monterey has adopted a modified version of the State guidelines in its Noise Element. Table 1 shows the matrix of noise exposures considered acceptable for various land uses. "Normally Compatible" noise levels for proposed noise-sensitive uses (residential, recreation, etc.) extend up to 70 dB CNEL. Although 70 dB CNEL is considered compatible, County policy is to mitigate exterior exposure in noise-sensitive land uses to 65 dB CNEL, where feasible.

CNEL-based noise standards are used to establish acceptable levels of noise exposure from those sources that are pre-empted from local control, such as on-road traffic or aircraft, those sources that are not re-empted are normally regulated through local ordinances. Monterey County has a

very limited noise ordinance that limits the noise generation of any mechanical contrivance to a limit of 85 dBA at 50 feet from the source if it operates within 2,500 feet of any occupied dwelling unit [County Code, Chapter 10.60 (Noise Control)]. The proposed project would not likely entail use of such sources except during construction.

Table 1
Land Use Compatibility for Community Noise Environments

EXISTING NOISE LEVELS

Existing noise levels throughout the project area are low except in very close proximity to project vicinity roadways. Occasional light aircraft, birds, or wind noise are audible, but mainly because baseline levels are too low to mask these minor noise generators. Based upon monitoring experience at similar nearby locations, baseline noise levels away from traffic sources are in the 40 dB range by day, and in the 30's at night.

Roadways near and within the project site are relatively lightly traveled. The noise exposure along project access roadways is low to moderate seen as follows:

Reservation Road	**CNEL at 100 feet to Centerline (dB)**	**Dist. to 65 dB CNEL (feet)**	**Dist. to 60 dB CNEL (feet)**
W of Main Site Entrance (60 mph)	66.1	118	255
E of Main Site Entrance (45 mph)	62.8	71	154
Main Site Entrance S of Reservation Road (45 mph)	43.3	<50	<50

Source: FHWA-RD-77-108 (Calveno), acoustically "soft" surfaces.

Except for along the narrow corridor adjacent to Reservation Road, there are no existing noise constraints to Specific Plan implementation encompassing any noise-sensitive land uses.

In order to confirm the computer model prediction of noise levels calculated above, a short-term noise measurement was initiated along Reservation Road on July 2, 2004. Monitoring experience has shown that 24-hour weighted Ldns/CNELs are approximately +2 dB or +3 dB higher than the mid-day short-term measurements made at several locations along Reservation Road east and west of the main gate. The results of the noise measurements were as follows:

Location	**Leq**	**Lmax**	**Lmin**	**L_{10}**	**L_{33}**	**L_{50}**	**L_{90}**
At main gate 60 ft to C.L.	67	81	45	72	66	62	52
1,500 ft NW of main gate 50 ft to C.L.	68	80	45	73	67	60	48
1,000 ft East of main gate Top of bluff (roadway visible)	63	69	48	66	62	58	53
1,000 ft East of main gate 15 ft back from bluff edge	55	60	46	59	56	54	48

Source: Giroux & Associates, July 2004.

Along areas of free-flow speed west of, and up to, the main gate, the estimated 24-hour Ldn/CNEL predicted by the computer model is 70.6 dB CNEL at 50 feet from the centerline (66.1 dB at 100 feet +4.5 dB to 50 feet). The measured Leq was 68 dB at 50 feet from the centerline. The estimated CNEL is 70-71 dB at 50 feet from the Reservation Road centerline. The modeling and measurement agree within ±1 dB, East of the main gate, the winding road and the interruption in the line-of-sight reduces the Ldn/CNEL to around 65 dB at the bluff top. The noise reduction benefit of the bluff acting as a berm is seen in the comparison of bluff edge versus a 15-foot setback. The bluff creates a noise reduction of around 7 dB within a few feet setback. Whereas potential development west of the main gate in Phase 1 may need supplemental traffic noise protection to accommodate future proposed residential growth, the bluff edge will be enough of a barrier to preclude any such need in the "Artist Area" development east of the main site entrance.

Sensitive noise receptors in the immediate vicinity of the EGSP consist of the residential uses to the north of the former East Garrison gate along Reservation Road. Sensitive noise receptors located on Former Fort Ord (FFO) include residential housing, schools, and the California State University-Monterey Bay (CSUMB) campus.

Civilian residential uses adjacent to FFO are the most sensitive noise receptors; however, only a few residences are located near the EGSP site, on the north side of Reservation Road. Substantial residential encroachment has occurred on the southwest, south, southeast, and northwest sides of FFO, with more residences planned in the future.

NOISE IMPACTS

Two characteristic noise sources are typically identified with land use intensification such as that planned for the proposed East Garrison development. Initially, construction activities, especially heavy equipment, will create short-term noise increases near the project site. There is considerable setback from anticipated on-site construction and existing off-site sensitive uses. Topographical screening from irregular terrain will also reduce off-site impact potential. The primary source of construction noise impact would likely occur when a new on-site residence is constructed adjacent to an already completed and occupied home.

Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are generally analyzed both to insure that the project will not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting upon the project.

STANDARDS OF SIGNIFICANCE

Community noise problems typically occur at levels that are well below the threshold for hearing loss. Noise at less than hearing loss levels, however, may nevertheless create a variety of negative effects through loss of sleep, interference with communication or lack of concentration. Noise-induced stress varies from one person to another and varies even within the same person from one day to the next. There are therefore no clear-cut limits that characterize a stress-free noise environment.

Noise impacts would be considered significant if they cause standards to be exceeded where they are currently met, or if they create a measurable increase in noise levels in an already noisy environment. Appendix G of CEQA guidelines list the following noise and/or vibration impacts as potentially significant:

- Levels exceeding standards in general plans or noise ordinances.
- Excessive groundborne vibration or groundborne noise.
- A substantial permanent increase.
- A substantial temporary or periodic increase.
- Exposure of sensitive receptors living or working within two miles of a public airport to excessive noise levels.

There are no public-use airports within two miles of the project vicinity that would cause the project site to possibly experience "excessive" noise levels due to airport proximity. Air traffic from general aviation airports is minimal in the project vicinity. No further aircraft noise analysis is provided or necessary.

The County general plan identifies 65 dB Ldn as the acceptable noise exposure for usable outdoor space at residential areas. The County Code also restricts noise from mechanical

equipment to 85 dB at 50 feet from the source if it operates within 2,500 feet of an occupied residence. These numerical thresholds will be used to define “Levels exceeding standards...”

The terms "substantial" or "excessive" are not defined in most environmental compliance guidelines. Noise level increases are considered substantial or exposures are considered excessive if they violate standards or measurably increase an already loud baseline. The issue of standards relates to the first significance criterion above. The issue of a "substantial permanent increase" is less clearly defined.

Noise analysis methodology is accurate only to the nearest whole decibel, and most people only notice a change in the noise environment when pre- and post-project differences are around 3 dB. Masking effects of existing traffic at any off-site receivers possibly affected by increases in project-related transportation may also minimize project perceptibility. A clearly perceptible (+3 dB) increase in noise exposure of sensitive receivers would be considered significant.

Temporary noise generation will result during construction activities. For projects within Monterey County, the duration and intensity of such noise is regulated by time limits on grading and other heavy equipment operations. Compliance with these limits, plus meeting the ordinance limit from the County Code is generally presumed to create a less-than-significant impact.

CONSTRUCTION NOISE IMPACTS

Construction activities, especially from heavy equipment, may create substantial short-term noise increases near the project site. Such impacts might be important for nearby noise-sensitive receptor such as the existing residential uses. Construction periods will be of short duration, and with limited physical improvements planned for the site. The intensity of construction activities will be no more severe than historic heavy equipment operations on the project site.

The most noise-intensive period will be when scrapers and dozers will be involved in moving quantities of earth and rough grades are established for proposed homes and project infrastructure. Equipment noise will reach 90 dB at 50 feet from such equipment when it operates under full load. Under normal atmospheric spreading losses, peak levels up to 65 dB may be heard as far as 1,000 feet from the operating equipment. A level of 65 dB is considered intrusive in normal conversation. Construction activity impacts during the noisiest activities could thus extend as far as approximately 1,000 feet from the activity. However, irregular terrain will limit the extent of any construction noise envelope to well below its theoretical maximum.

Noise impacts would be significant if they caused a violation of any adopted standards. Time limits on construction involving the operation of powered equipment are recommended to extend from 7:00 p.m. to 7:00 a.m. the following morning, and all day on Sundays and holidays. Compliance with these limits is predicted to create a less-than-significant temporary noise impact during construction activities will restrict equipment noise to hours of lesser noise sensitivity.

The County Code standard of 85 dB at 50 feet for mechanical equipment will be exceeded by a variety of equipment when it operates within 2,500 feet of the few occupied homes north of

Reservation Road west of the main site entrance. This is a potentially significant impact. Reduction of construction equipment noise exposures to less than 85 dB at any residence is presumed to reduce impact potential to less-than-significant.

Combined noise from several pieces of equipment will create a greater noise impact envelope than for any single source. As a worst-case, a scraper, dozer and heavy truck were presumed to operate in sufficiently close proximity as to act as one source. Their combined reference level at 50 feet is calculated as follows:

Scraper	89 dB
Heavy Truck	88 dB
Dozer	85 dB
Combined	92.4 dB

Under geometrical spreading losses, the combined noise level reduces to 85 dB at 118 feet from the center of the activities. The off-site residences may be marginally at the outer limits of the noise impact zone during brief periods. Noise mitigation is recommended during heavy equipment operations within 118 feet of any occupied residence as follows.

Mitigation Measure NOISE-1. Limit Hours of Construction Activities. The construction contractor would limit activities to the hours between 7:00 a.m. and 6:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on Saturdays to avoid nighttime construction. Construction will not be allowed on Sundays or national holidays.

Mitigation Measure NOISE-2. Locate equipment as far from noise-sensitive receptors as practicable. The contractor shall locate all stationary noise-generating equipment, such as pumps and generators, as far as possible form nearby noise-sensitive receptors, as practicable. Where possible, noise-generating equipment would be shielded from nearby noise-sensitive receptors by noise-attenuating buffers such as structures or haul truck trailers. Stationary noise sources located less than 500 feet from noise-sensitive receptors would be equipped with noise-reducing engine housings. Portable acoustic barriers would be placed around noise-generating equipment located within 200 feet of residences. Water tanks and equipment storage, staging, and warm-up areas would be located as far from noise-sensitive receptors as possible.

Mitigation Measure NOISE-3. Use sound-control devices on combustion-powered equipment. The contractor would assure that all construction equipment powered by gasoline or diesel engines has sound-control devices at lest as effective as those originally provided by the manufacturer, no equipment would be permitted to have an unmuffled exhaust.

Mitigation Measure NOISE-4. Shield/shroud any impact tools. The contractor would assure that any impact tools used during demolition of existing infrastructure are shrouded or shielded.

Mitigation Measure NOISE-5. Shut off machinery when not in use. The contractor would assure that mobile noise-generating equipment and machinery are shut off when not in use for more than five (5) minutes.

Mitigation Measure NOISE-6. Implementation of additional mitigation measures, as needed and/or required to comply with the County's noise ordinance. Throughout the construction period, the contractor would implement additional noise mitigation measures at the request of Monterey County as needed to comply with the County's noise ordinance. Additional measures may include changing the location of stationary noise-generating equipment, shutting off idling equipment, rescheduling construction activity, installing acoustic barriers around stationary sources of construction noise, temporarily relocating residents were practicable, using alternative equipment or construction methods that produce less noise, and other site-specific measures as appropriate.

PROJECT-RELATED VEHICULAR NOISE IMPACTS

The proposed project at 1,470 dwelling units will add approximately 14,000 vehicle trips to the area-wide roadway system. These trips will be concentrated along primary site access roads, and then gradually disperse to progressively lower volumes farther away from the site. Noise levels are logarithmic. It therefore requires a doubling of daily traffic volumes to raise noise levels by a significant amount (10 * log [2] = +3.0). If a road is already carrying enough traffic to experience elevated noise, any single project typically does not add enough traffic to cause an individually significant noise impact. Most off-site traffic noise impacts are therefore cumulative in nature.

A project traffic noise impact analysis was conducted by calculating noise levels for various traffic scenarios based upon traffic volumes forecast in the project traffic study. Vehicle mixes that were observed during noise monitoring along Reservation Road, were used in the noise impact comparison. Travel speeds along 31 segments analyzed in the traffic study were provided by the project traffic consultant. This analysis was conducted using the California Specific Vehicle Noise Curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108). The model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers to yield a CNEL estimate.

For purposes of analysis, a uniform travel speed of 45 mph was assigned to all 31 analyzed segments. A number of these streets may have higher existing travel speeds, but signalization and increased vehicle entrances will create a future speed decrease. The magnitude of noise levels at a reference distance is shifted with higher traffic speeds, but the difference between future versus existing conditions will be the same regardless of speed assumption relative to the +3 dB significance threshold. However, because 45 mph is likely too slow an assumption for Reservation Road adjacent to the project site, especially west of the main entrance, a higher travel speed was used within the immediate project vicinity.

Table 2 shows the calculated CNEL at a 100-foot reference distance from the centerline of 31 area roadway segments for five scenarios (existing, existing plus project, cumulative without project, and cumulative with project for 1,470 homes and for 2,880 homes.

None of the roadways within the analysis area will experience individual traffic noise increases exceeding +3.0 dB as determined from the difference between existing versus existing plus project conditions. The peak noise level increases would be as follows:

Intergarrison Road: Abrams-7th Ave.	+2.9 dB CNEL
Reservation Road: Watkins Gate-Davis Road	+2.5 dB CNEL
Davis Road: Blanco Road-River Bridge	+2.0 dB CNEL

Such increases would not be considered a significant increase because they would not be considered a clearly audible change, especially when spread out over multiple years of project development.

Table 2

Off-site Traffic Noise Impact Analysis
(dBA CNEL at 50 feet from the centerline)

Segment	Existing	Exist. + Project	2020		
			No Build.	1,470 Homes	2,880 Homes
Abbott Rd. Salinas Centerline-Harris Rd.	64.5	64.7	67.2	67.0	66.9
Blanco Rd. Salinas River Bridge and Reservation Rd.	69.5	69.5	71.3	71.1	71.1
Blanco Rd. Salinas River Bridge and Davis Rd.	70.4	70.3	72.0	71.8	71.8
Blanco Rd. Davis Rd. – W. Alisal St.	67.8	68.2	69.3	69.4	69.4
Cooper Rd. Blanco Rd. – Hwy. 183	59.2	59.8	62.4	62.4	62.3
Davis Rd. Blanco Rd. to Salinas River Bridge	63.4	65.4	67.6	68.6	68.9
Davis Rd. from Ambrose to Central Ave.	69.1	69.3	71.0	71.3	71.3
Reservation Rd. (45 mph) from Watkin's Gate to Davis Rd.(55 mph)	63.7 66.2	66.2 68.7	69.1 71.6	70.4 72.9	70.7 73.2
Reservation Rd. from Davis Rd. to Portola Dr.	66.6	66.7	68.5	68.9	69.0
Spreckles Blvd. Hwy. 68 – Spreckles	65.0	64.9	66.8	66.7	66.8
Hwy. 183 Cooper Rd. – Espinosa Rd.	70.1	70.1	71.1	71.0	71.0
Hwy. 1 Canyon Del Rey – Del Monte	74.4	74.5	75.1	74.8	74.8
Hwy. 68 Portola I/C – River Rd. I/C	72.1	72.1	73.4	73.4	73.4
Reservation Rd. from Imjin Parkway to Blanco Rd.	69.2	69.0	71.8	71.0	71.0
Imjin Parkway Preston Park-Abrams	64.2	63.3	69.0	67.8	67.8
Intergarisson Rd. Abrams – 7th Ave.	58.8	61.7	45.4	63.6	63.8

Table 2
(continued)

Segment	Existing	Exist. + Project	2020		
			No Build.	1,470 Homes	2,880 Homes
W. Laurel Dr. Hwy. 101-Davis Rd.	70.5	70.5	72.0	72.0	72.0
W. Market Davis Rd. – Clark St.	67.8	67.8	69.0	68.8	68.8
W. Alisal Blanco Rd. – Acacia St.	61.0	61.3	62.1	62.3	62.5
Blanco Rd. South Main – Pajaro St.	68.9	69.1	69.8	69.7	69.8
General Jim Moore Blvd. Giggling - Normandy	62.5	62.6	64.8	64.7	64.8
General Jim Moore Blvd. Broadway – S. Boundary Rd.	60.9	61.0	63.0	63.0	63.1
General Jim Moore Blvd. Lightfighter – Engineer Dr.	64.5	65.1	63.7	64.6	64.9
Reservation Rd. from Salinas Rd. to Imjin Parkway	69.4	69.4	68.4	68.4	68.4
Davis Rd. from Market St. to Rossi St.	70.4	70.5	72.2	72.3	72.2
Intergarisson Rd. West Camp to Abrams	xx.x	60.7	45.6	64.8	65.0
Hwy. 101 Laurel I/C – Boronda I/C	75.1	75.1	76.6	76.6	76.6
Hwy. 1 Lightfighter I/C – Freemont I/C	76.0	76.0	77.2	77.3	77.3
Hwy. 68 River Rd. I/C – Spreckles I/C	72.3	72.4	73.5	73.6	73.6
E. Garrison West Entrance	xx.x	55.9	xx.x	61.4	61.0
E. Garrison Central Entrance	xx.x	52.1	xx.x	52.6	56.0

*At 100 feet from each roadway centerline, acoustically “soft” conditions.

Cumulatively, several roadways will experience traffic noise level increases exceeding the +3.0 dB significance threshold. The project contribution to these increases is undetectable, however, seen as follows (dB):

Roadway Segment	CNEL		Increase from:	
	Existing	Cum. (With Project)	Cum. Grow.	Project Only
Cooper Road				
Blanco Road-Hwy. 283	59.2	62.4	+3.2	0.0
Davis Road				
Blanco-River Bridge	63.4	68.6	+4.2	+1.0
Reservation Road				
Watkin's Grate-Davis Rd.	63.7	70.4	+5.4	+1.3
Imjin Parkway				
Watkin's Grate-Davis Rd.	64.2	69.0	+4.8	-1.2(?)
Intergarrison Road				
Abrams-7th Ave.	58.8	63.6	-13.4	+18.2(?)

*At 50 feet to centerline, residential standard is 65 dB CNEL.

The unusual "jump" in project-related noise along Intergarrison Road between Abrams and 7th Ave. is likely due to error in recording traffic ADT forecasts, and is not a "real" cumulative impact. All other significant cumulative impacts are due to non-project traffic by itself.

Whereas project traffic will not create any individually significant noise impacts, the northern perimeter of the project site may experience noise levels exceeding the 65 dB Ldn residential compatibility level in usable outdoor space. The future noise exposure within proposed EGSP development was calculated for a 55 mph travel speed west of the main site entrance for build-out (2020) conditions, and 45 mph along the winding portion east of the main entrance.

The variable terrain and plentiful natural landscaping along most area roadways creates acoustically "soft" underlying surfaces. Noise decreases at a rate of 4.5 dB for each doubling of distance due to geometrical (cylindrical) spreading losses for a line-source of noise generation. Along Reservation Road, west of the main project entrance, the future build-out distance of the 65 dB Ldn/CNEL contour is 170 feet from the roadway centerline under direct line-of-sight conditions. Based upon measurements of the noise mitigating effects of bluff topography (a measured 8 dB reduction), the 65 dB contour will not encroach into the site east of the main gate at any proposed noise-sensitive land uses. All uses beyond 15 feet from the bluff edge east of the main gate will have future build-out noise exposures that are compatible with all candidate land uses.

West of the main gate in the Phase 1 Neighborhood, the tier of homes closest to Reservation Road within 170 feet of the roadway centerline may experience noise levels exceeding the 65 dB

Ldn goal. Reduction of the noise exposure may be accomplished by interrupting the direct line-of-sight between source and receiver, by placement of usable outdoor space outside the 170-foot impact "envelope" or by some combination of these measures. The stringency of any measures will depend upon how close to Reservation Road any usable outdoor space is developed. As a rule of thumb, the noise reduction effectiveness of a typical masonry 6-foot high noise wall is around 6 dB. Some ground attenuation is lost with walls such that the propagation condition becomes an acoustically "hard" surface. However, a 6-foot wall would reduce the zone of noise impact to less than 80 feet from the centerline. If an earthen berm is used instead of a masonry wall, the noise reduction of a 6-foot high berm is around 9 dB. Placement of such a berm shrinks the noise impact zone to less than 50 feet from the centerline. While a 6-foot high berm would require a 24-foot-wide footprint, it would be aesthetically more consistent with the relatively natural character of the area, and would be recommended both in terms of its noise reduction effectiveness and its aesthetic preference.

A site plan that places an internal access parallel to Reservation Road in Phase 1 would also achieve the noise reduction goal by increasing the source-receiver separation, and then using the homes themselves (now facing Reservation Road and the access loop) as noise propagation barriers for their rear yard usable outdoor space. Such a layout would possibly make front yards excessively noise-exposed, but front yards are not areas where patios, spas or other outdoor private assembly is likely to occur. With the use of landscaping between the internal access road and Reservation Road to partially shield the view of passing vehicles, both the berm option or the modified site plan would be equally effective in meeting the noise standard in an aesthetically acceptable manner.

Mitigation of exterior noise at backyards of proposed new homes closest to Reservation Road to 65 dB Ldn or less will also allow interior standards of 45 dB Ldn to be met without any substantial acoustical upgrades. However, second-story building facades may not be shielded from traffic, and may require acoustical treatment. Upstairs exposure will also not experience ground absorption effects (a "hard" versus "soft" site), and upstairs facades may thus require extra noise protection.

At an assumed 100-foot separation between building facades and the roadway centerline, the upstairs noise exposure is calculated to be 70 dB Ldn. Structural noise mitigation requirements for meeting the interior standard of 45 dB Ldn are as follows:

Location	**Façade Level (dB Ldn)**	**Needed Attenuation (dB)**
Upstairs	70	25
Downstairs	<65	<20

The hierarchy of structural noise reduction is as follows:

Needed Reduction (dB)	**Measure(s)**

10	None
10-20	Close single-paned windows facing source. Provide supplemental ventilation.
20-30	Close "standard" dual-paned windows facing source. Add insulation to ducts and vents. Provide supplemental ventilation.

Dual-paned windows and minor acoustical upgrades will be needed for the upstairs of any two-story units along the northern site perimeter. Any other units will have minimal noise constraint relative to meeting the interior noise standard.

Internal traffic noise away from perimeter roadways will be low except along the primary project access points. Along the main and east project access routes, traffic noise was calculated assuming the p.m. peak hour traffic represents ten (10) percent of average daily traffic (ADT). The calculated noise levels at build-out, and the distances to the 65 dB and 60 dB CNEL contours, are as follows:

	CNEL at 50 feet to Centerline (dB)	**Dist. to 65 dB CNEL (feet)**	**Dist. to 60 dB CNEL (feet)**
Main Access:			
1,470 D.U. Alt.	66.0	58	126
2,880 D.U. Alt.	67.0	68	147
East Access			
1,470 D.U. Alt.	65.4	53	115
2,880 D.U. Alt.	70.6	118	255

For the 1,470 D.U. alternative, noise levels along the primary access routes will not exceed 65 dB CNEL (minimum acceptable for residential uses) beyond 60 feet from the centerline. Depending upon location and orientation of any homes near the main or east access roads, any noise mitigation (noise barriers or increases setback) requirements are minimal.

For the 2,880 D.U. alternative, noise levels along the east access road would increase to over 70 dB CNEL close to the roadway. The minimum noise attenuation for any barrier that interrupts the direct line-of-sight from the source to the receiver is 5 dB. Noise barriers would readily achieve an acceptable noise exposure within any noise-sensitive uses close to the east access road. However, while more open usable outdoor space is a feasible option for the 1,470 unit alternative, a more walled site layout would be necessary if homes are built near the east access road as it approaches Reservation Road for the 2,880-unit alternative.

GENERAL PLAN CONSISTENCY

Objective 22.2 of the Monterey County General Plan articulates noise protection goals for all County residents. Implementation policies of this objective, and project compliance with these policies, are incorporated into a two–tiered acoustical review required for residential development. At tract map filing, a preliminary acoustical study will identify any perimeter wall requirements to protect usable outdoor space to achieve at least 65 dB CNEL with an optimum goal of 60 dB CNEL. When building plans are filed, a second acoustical study for interior exposures will be required for any residence with a forecast building façade exposure exceeding 60 dB CNEL. This second study will verify that structural features (upgraded windows, supplemental ventilation, etc.) are adequate to achieve 45 dB CNEL in all habitable rooms.

MITIGATION

The following noise mitigation measures are required to maintain a less-than-significant impact:

1. A construction noise mitigation plan shall be developed and approved containing the following elements:

- Time limits to hours of lesser sensitivity
- Source-receiver separation for noisy equipment
- Properly operating mufflers
- Shields/shrouds on demolition equipment
- Limits on idling times for equipment
- Additional measures on a site-specific basis, if needed.

2. A preliminary acoustical report will be prepared in conjunction with tract map filing to determine requirements for walls, berms or other barriers to meet the 65 dB Ldn minimum acceptable exterior standard for residential or other noise-sensitive uses.

3. A final acoustical report will be submitted at plan check for each tract to verify structural attenuation capability to achieve 45 dB CNEL if exterior façade levels are predicted to exceed 60 dB CNEL at area build-out.