4.6 NOISE

The *Fort Ord Reuse Authority Final Environmental Impact Report* (FORA FEIR) identified on a program level less than significant environmental impacts for noise as related to exposure of existing land uses to noise from construction activities and traffic, exposure of new land uses to traffic-generated noise and airport noise, and exposure of existing and new land uses to noise from non-transportation noise sources.

Site specific details and project-level information for the EGSP project was not known and not analyzed at the time of the FORA FEIR. New information between the time the FORA FEIR was certified and the release of the Notice of Preparation (NOP) for the currently proposed EGSP project includes changes in proposed land uses and intensities, development of a project-specific site plan, changes in traffic on vicinity roadways and preparation of updated traffic modeling and report; and therefore, updated noise modeling and noise impact analysis.

This section provides additional analysis of potential impacts not previously analyzed in the FORA FEIR. Giroux & Associates prepared a *Noise Impact Analysis for the East Garrison Specific Plan* (September 2004) to analyze project-related noise source impacts onsite and to surrounding land uses. This Noise Impact Analysis has been summarized below. This section evaluates short-term construction-related impacts as well as long-term buildout conditions of the project. Appendix G of this DSEIR contains the Noise Impact Analysis in its entirety.

4.6.1 Environmental Setting

NOISE DEFINED

Noise is generally defined as unwanted sound. Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Sound is characterized by various parameters that 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 in relation 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. Examples of various sound levels in different environments are shown in Table 4.6-1.

Table 4.6-1: Weighted Sound Levels and Human Response

Noise Source	Noise Level dB(A)*	Response
	150	
Carrier Jet Operation	**140**	Harmfully Loud

Table 4.6-1 (Cont.): Weighted Sound Levels and Human Response

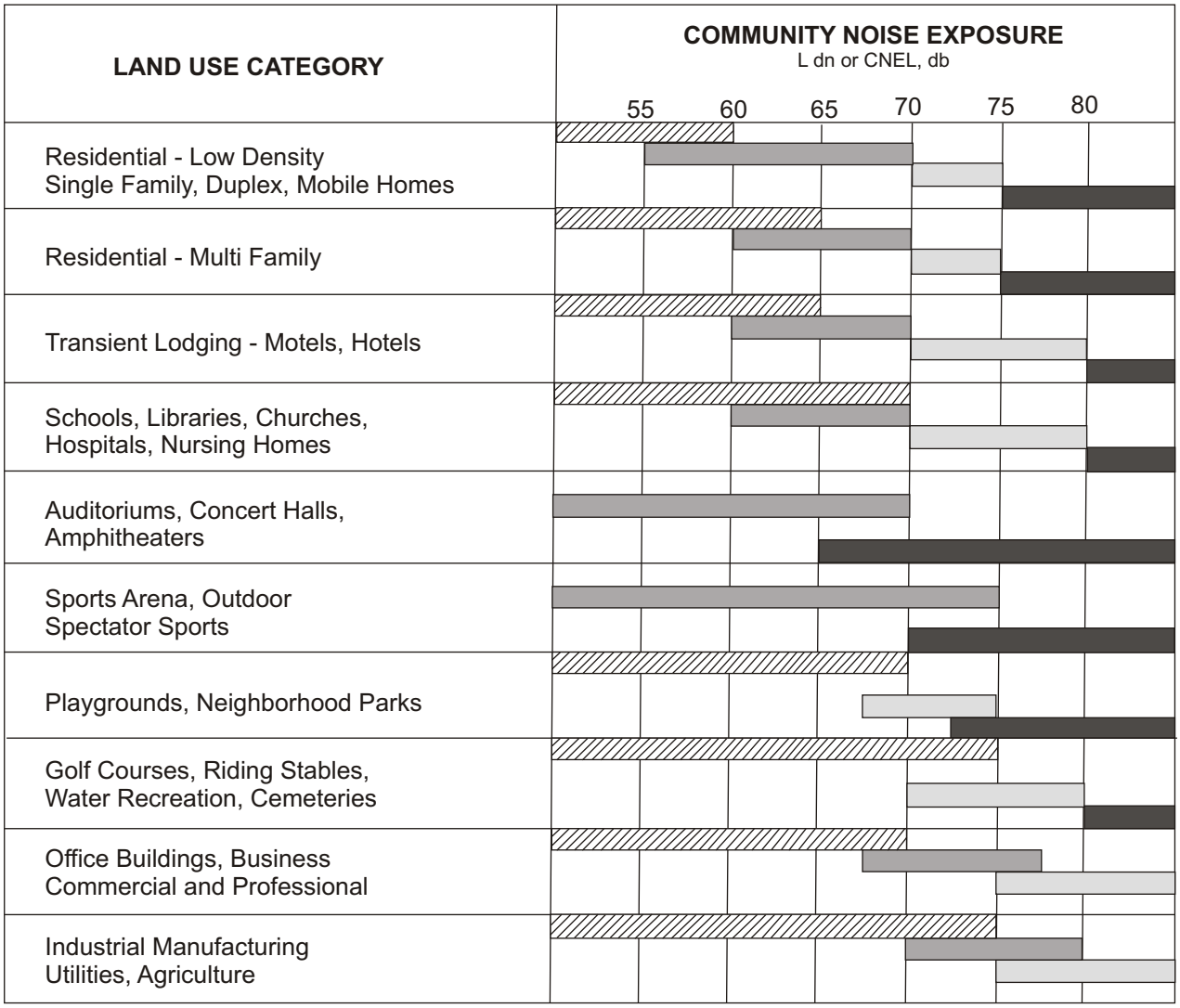
Noise Source	Noise Level dB(A)*	Response
	130	Pain Threshold
Jet Takeoff at 200 feet Discotheque	**120**	
Unmuffled Motorcycle Auto Horn at 3 feet Rock and Roll Band Riveting Machine	**110**	Maximum Vocal Effort Physical Discomfort
Loud Power Mower Jet Takeoff at 2000 feet Garbage Truck Operation	**100**	Very Annoying Hearing Damage (Steady 8-Hour Exposure)
Mobile Heavy Truck at 50 feet Pneumatic Drill at 50 feet	**90**	
Alarm Clock Freight Train at 50 feet Vacuum Cleaner at 10 feet	**80**	Annoying
Freeway Traffic at 50 feet	**70**	Telephone Use Difficult
Dishwashers Air Conditioning Unit at 20 feet	**60**	Intrusive
Light Automobile Traffic	**50**	Quiet
Living Room Bedroom	**40**	
Library Soft Whisper at 15 feet	**30**	Very Quiet
Broadcasting Studio	**20**	
	10	Just Audible
	0	Threshold of Hearing
Source: Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment, 1970, page 2.		

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Numerous methods have been developed to measure sound over a period of time. These methods include:

- Equivalent Sound Level (Leq)
- Community Noise Equivalent Level (CNEL)
- Day/Night Average Sound Level (Ldn)



INTERPRETATION

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.

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.

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.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Source: Monterey County General Plan, 1982.

Exhibit 4.6-1
Land Use Compatibility for Community Noise Environments

These methods are described and defined below.

Leq

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. For example, the noise levels exceeded on ten (10) percent of readings is called "L10." The median (50^{th} percentile) reading is called "L50," etc.

Community Noise Equivalent Level (CNEL)

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 penalty be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

Day Night Average (Ldn)

Another commonly used method is the day/night average level or Ldn. The Ldn is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period call the Leq. The Ldn is calculated by averaging the Leqs for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM) by 10 dBA to account for the increased sensitivity of people to noises that occur at night. The maximum noise level recorded during a noise event is typically expressed as Lmax. The sound level exceeded over a specified time can be expressed as Ln (i.e., L90, L50, L10, etc.). L50 equals the level exceeded 50 percent of the time, L10 equals the level exceeded ten percent of the time, etc.

As previously mentioned, people tend to respond to changes in sound pressure in a logarithmic manner. In general, a 3 dB change in sound pressure level is considered a "just detectable" difference in most situations. A 5 dB change is readily noticeable and a 10 dB change is considered a doubling (or halving) of the subjective loudness. It should be noted that a 3 dB increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume, or by about a 7 mile per hour (mph) increase or decrease in speed.

For each doubling of distance from a point noise source, the sound level will decrease by 6 dB. In other words, if a person is 100 feet from a machine, and moves to 200 feet from that source, sound levels will drop approximately 6 dB. Moving to 400 feet away, sound levels will drop approximately another 6 dB. For each doubling of distance from a line source, like a roadway, noise levels are reduced by 3 to 5 decibels, depending on the ground cover between the source and the receiver.

NOISE ATTENUATION

Noise barriers provide approximately a 5 dB noise reduction (additional reduction may be provided with a barrier of appropriate height, material, location, and length). A row of buildings provides up to

5 dB noise reduction with a 1.5 dB reduction for each additional row up to a maximum reduction of approximately 10 dB. The exact degree of noise attenuation depends on the nature and orientation of the structure and intervening barriers.

NOISE GUIDELINES AND STANDARDS

It is difficult to specify noise levels that are generally acceptable to everyone. What is annoying to one person may be unnoticed by another. Standards may be based on documented complaint activity in response to documented noise levels, or based on studies on the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population.

State Noise Standards

The State of California Office of Noise Control has established guidelines for acceptable community noise levels that are based on the CNEL rating scale. The guidelines rank noise to land use compatibility in terms of "Normally Acceptable," "Conditionally Acceptable," and "Clearly Unacceptable" noise levels for various land use types. As shown in Table 4.6-2, a project in the "Normally Acceptable" category would be acceptable in terms of both its indoor/outdoor noise exposure without special noise abatement measures. Where outdoor noise exposure is less important, projects can be designed to provide acceptable interior environments in the "Conditionally Acceptable" category. This may involve providing air conditioning so that windows remain closed or in areas of higher noise levels, constructing buildings using sound rated windows and walls. Acoustical reports are recommended to be required where the noise exposure is "Conditionally Acceptable" or "Normally Unacceptable."

An interior CNEL of 45 dB is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, § 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 windows closed 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 that have been developed by the State of California are 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 4.6-2 shows the matrix of noise exposures considered acceptable for various land uses in Monterey County. "Normally" and "Conditionally Acceptable" noise levels for proposed noise-sensitive uses (residential, recreation, etc.) extend up to 70 dB CNEL. Although 70 dB CNEL is considered compatible, Monterey County policy as stated in the General Plan, 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 4.6-2: County of Monterey Exterior Community Noise Land Use Compatibility

Land Use Category	Noise Ranges (Ldn or CNEL) dB			
	I	II	III	IV
Passively Used Open Space	50	50-55	55-70	70+
Auditoriums, Concert Halls, Amphitheaters	45-50	50-65	65-70	70+
Residential - Low Density Single-family, Duplex, Mobile Homes	50-60	60-70	70-75	75+
Residential Multi-family	50-60	60-70	70-75	75+
Transient Lodging - Motels, Hotels	50-60	60-70	70-80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-70	70-80	80+
Actively Used Open Spaces-playgrounds, Neighborhood Parks	50-67	—	67-73	73+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	—	70-80	80+
Office Buildings, Business Commercial and Professionals	50-67	67-75	75+	—
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-75	75+	—

Noise Range I: Normally Acceptable. Specific land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Noise Range II: Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of 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.

Noise Range III: 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.

Noise Range IV: Clearly Unacceptable. New construction or development should generally not be undertaken.

Source: Monterey County General Plan, 1984.

EXISTING NOISE LEVELS

Existing noise levels throughout the EGSP area are low except in very close proximity to roadways in the EGSP project vicinity. 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 dB range at night. No receptors currently exist on the project site with the exception of transient recreational users.

There is relatively light travel on roadways near and within the EGSP, but travel speeds and associated noise generation are high. Existing travel speeds are near 60 mph west of the main site entrance, and 45 mph on the winding section east of the main gate. The noise exposure along Reservation Road is shown in Table 4.6-3. Except for along the narrow corridor adjacent to

Reservation Road, there are no existing noise constraints on or adjacent to the project site that would affect implementation of the EGSP.

Table 4.6-3: EGSP Area Existing Noise Levels

Roadway	Segment	CNEL at 100 feet to Centerline (dB)	Distance to 65 dB CNEL from Centerline (feet)	Distance to 60 dB CNEL from Centerline (feet)
Reservation Road	West of Main Site Entrance (60 mph)	66.1	118	255
Reservation Road	East of Main Site Entrance (45 mph)	62.8	71	154
Reservation Road	Main Site Entrance South of Reservation Road (45 mph)	43.3	<50	<50
Source: Giroux & Associates, September 2004.				

In order to confirm the computer model prediction of noise levels calculated in Table 4.6-3, 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 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:

Table 4.6-4: EGSP Area Existing Measurements

Location:	LEQ	Lmax	Lmin	L10	L33	L50	L90
At main gate 60' to C.L.	67	81	45	72	66	62	52
1500' NW of main gate 50' to C.L.	68	80	45	73	67	60	48
1000' East of main gate Top of bluff (roadway visible)	63	69	48	66	62	58	53
1000' East of main gate 15' back from bluff edge	55	60	46	59	56	54	48
Source: Giroux & Associates, September 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.

NOISE SENSITIVE RECEPTORS

Community noise problems typically occur at levels that are well below the threshold for hearing loss. Noise at less than hearing loss levels may 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. Therefore, there are no clear-cut limits that characterize a stress-free noise environment.

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.

Cities surrounding the EGSP site could be subject to noise increases from project-related traffic. In addition to residential areas, the *Noise Element* of the *City of Marina General Plan* identifies additional sensitive receptors within the City, such as churches, schools, and open space/park areas. In the City of Seaside, sensitive receptors include schools, churches, parks, and recreation areas.

Similar residential, park, school, and health care facilities are located in the City of Monterey, directly southwest of FFO, and in the City of Salinas, approximately 5 miles northeast of the northern boundary of FFO. A small number of residential and park uses are in Del Rey Oaks. In addition to residential areas in the unincorporated county, the *Monterey County General Plan* (MCGP) identifies school, park, and recreation areas as noise-sensitive areas.

4.6.2 Project Impacts and Mitigation Measures

THRESHOLDS OF SIGNIFICANCE

The proposed EGSP project is considered to have a significant noise impact if it will:

- Expose persons to or generate noise levels in excess of standards established in the MCGP, *Greater Monterey Peninsula Area Plan*, County noise ordinance, or applicable standards of other agencies; or
- Expose persons to or generate excessive groundborne vibration or groundborne noise; or
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- Cause a substantial temporary or periodic increase in ambient noise levels in the vicinity above levels without the project.

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.

Moreover, 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. Existing traffic heard by any offsite receivers might possibly mask any increases in project-related transportation noise levels minimizing project perceptibility. A clearly perceptible (+3 dB) increase in noise exposure of sensitive receivers is generally considered significant. No sensitive receptors are located within the project site; however, residences across Reservation Road would be considered as sensitive receptors. Moreover, the Monterey County Compatibility Guidelines as described in the General Plan are also used in this evaluation to determine the significance in noise impacts. In developing areas such as East Garrison near a high-speed roadway such as Reservation Road, a noise level of 65 dB-Ldn is considered as the significance threshold for residential uses (see Table 4.6-2). A level of 65 dB Ldn also allows residential interior standards of 45 dB Ldn to be met without any substantial structural upgrades.

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.

METHODOLOGY

This section is based on a review of the *Noise Impact Analysis* prepared by Giroux & Associates for the EGSP. This analysis was conducted using the California Specific Vehicle Noise Curves (CALVENO) in the federal roadway noise model (the Federal Highway Administration's Highway Traffic Noise Prediction Model, FHWA-RD-77-108). The model calculates the Leq noise level or a particular reference set of input conditions, such as roadway cross-section (e.g., number of lanes, the roadway width, percentages of auto and truck traffic, the roadway grade, angle-of-view and site conditions ("hard" or "soft"). The model then makes a series of adjustments for site-specific traffic volumes, average daily traffic, distances, vehicle travel speed, or noise barriers to yield a CNEL estimate. The model does not account for ambient noise levels (i.e., noise from adjacent land uses or topographical differences between the roadway and adjacent land uses). The topographical differences were considered in the mitigation analysis where future traffic noise was considered to potentially impact proposed residential uses. Noise projections are based on modeled vehicular traffic derived from the *Traffic Impact Study for the East Garrison Development* (September 2004), prepared by TJKM Transportation Consultants (see Appendix E of this DSEIR).

IMPACT ANALYSIS AND MITIGATION MEASURES

Short-term Noise Impacts

Impact 4.6-A **Implementation of the EGSP will result in construction-related noise and vibration that may be considered substantial or extensive temporarily affecting nearby sensitive receptors. (Less than Significant After Mitigation)**

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 could 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 above 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 in Table 4.6-5. .

Table 4.6-5: Typical Construction Equipment Noise Levels

Type of Equipment	Typical Level, dB at 50 feet
Scrapers and Pavers	89
Heavy Trucks	88
Bulldozers	85
Combined	92.4
Source: Federal Transit Administration, 1995.	

Mitigation Measures

4.6-A-1 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.

a) Construction activities shall be limited to avoid nighttime construction 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. Construction shall not be allowed on Sundays or national holidays.

b) The contractor shall locate all stationary noise-generating equipment, such as pumps and generators, as far as possible form nearby noise-sensitive shall 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 shall 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. The location of staging and storage areas shall be shown on all improvement and grading plans.

c) The contractor shall 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 shall be permitted to have an unmuffled exhaust.

d) The contractor shall assure that any impact tools used during demolition of existing infrastructure are shrouded or shielded.

e) The contractor shall assure that mobile noise-generating equipment and machinery are shut off when not in use for more than five (5) minutes.

f) Throughout the construction period, the contractor shall 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.

Significance After Mitigation

Less than significant.

Long-term Noise Impacts

Impact 4.6-B **Implementation of the EGSP will generate additional vehicular traffic on the surrounding roadway network, which will result in permanent increases in traffic-related noise that would exceed established noise standards. (Less than Significant After Mitigation)**

According to the *Traffic Impact Study* prepared for this DSEIR by TJKM Transportation Consultants, the EGSP will add approximately 13,692 daily 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 requires a doubling of daily traffic volumes to raise noise levels by a significant amount. 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 offsite traffic noise impacts are, therefore, cumulative in nature.

The EGSP's traffic noise impact analysis was conducted by calculating noise levels for various traffic scenarios (e.g., existing plus project 1,470 homes) based upon traffic volumes forecast in the EGSP's traffic study to determine the project's net acoustical increase over existing ambient conditions. Vehicle mixes that were observed along Reservation Road during noise monitoring, were used in the noise impact comparison and assumed to apply to all roadways within the analysis grid. 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 4.6-6 shows the calculated CNEL at a 100-foot reference distance (i.e., perpendicular) from the centerline of 31 area roadway segments for two scenarios (existing and existing plus project). This is the typical distance to the midpoint of a rear yard for a receptor adjacent to a roadway. The second contour (distance from roadway centerline) illustrates the distances for which various noise levels would be encountered. The distance from centerline, which is the midpoint of the roadway cross section, depicts the spreading effect of the acoustics generated by mobile sources.

Table 4.6-6: Offsite Traffic Noise Impact Analysis (dB CNEL at 100 feet from the centerline)

Segment	Existing	Existing + Project
Abbott Road: Salinas Centerline to Harris Road	64.5	64.7
Blanco Road: Salinas River Bridge to Reservation Road	69.5	69.5
Blanco Road: Salinas River Bridge to Davis Road	70.4	70.3
Blanco Road: Davis Road to West Alisal Street	67.8	68.2
Cooper Road: Blanco Road to State Route (SR) 183	59.2	59.8
Davis Road: Blanco Road to Salinas River Bridge	63.4	65.4
Davis Road: Ambrose to Central Avenue	69.1	69.3

Table 4.6-6 (Cont.): Weighted Sound Levels and Human Response

Segment	Existing	Existing + Project
Reservation Road: (45 mph) **From** Watkin's Gate to Davis Road (project area) (55 mph)	63.7 66.2	66.2 68.7
Reservation Road: Davis Road to Portola Drive	66.6	66.7
Spreckels Boulevard: SR 68 to Spreckels	65.0	64.9
SR 183: Cooper Road to Espinosa Road	70.1	70.1
SR 1: Canyon Del Rey to Del Monte	74.4	74.5
SR 68: Portola I/C to River Road I/C	72.1	72.1
Reservation Road: Imjin Parkway (Marina) to Blanco Road	69.2	69.0
Imjin Parkway: Preston Park to Abrams	64.2	63.3
Inter-Garrison Road: Abrams to 7th Avenue	58.8	61.7
West Laurel Drive: US 101 to Davis Road	70.5	70.5
West Market: Davis Road to Clark Street	67.8	67.8
West Alisal: Blanco Road to Acacia Street	61.0	61.3
Blanco Road: South Main to Pajaro Street	68.9	69.1
General Jim Moore Blvd: Giggling to Normandy	62.5	62.6
General Jim Moore Blvd: Broadway to South Boundary Road	60.9	61.0
General Jim Moore Blvd: Light Fighter to Engineer Drive	64.5	65.1
Reservation Road: Salinas Road (Marina) to Imjin Parkway	69.4	69.4
Davis Road: Market Street to Rossi Street	70.4	70.5
Inter-Garrison Road: West Camp to Abrams	—	60.7
US 101: Laurel I/C to Boronda I/C	75.1	75.1
SR 1: Light Fighter I/C to Freemont I/C	76.0	76.0
SR 68: River Road I/C to Spreckels I/C	72.3	72.4
East Garrison: West Entrance	—	55.9
East Garrison: Central Entrance	—	52.1

CNEL calculated at a 100-foot reference distance from the centerline of area roadway segments acoustically "soft" conditions.
I/C Interchange.
— Indicates no data available.
Source: Giroux & Associates, September 2004.

None of the roadways within the analysis area will experience individual traffic noise increases exceeding +3 dB. This was determined using the difference between existing and existing plus project conditions. Intersections experiencing peak noise level increases are calculated to be as follows:

Inter-Garrison Road: Abrams to 7th Avenue ..... +2.9 dB CNEL
Reservation Road: Watkins Gate to Davis Road..... +2.5 dB CNEL
Davis Road: Blanco Road to River Bridge ..... +2.0 dB CNEL

Source: Urban Design Associates, July 2004. Giroux & Associates, July 2004.

NORTH

815 407.5 0 815

SCALE IN FEET

Michael Brandman Associates

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Exhibit 4.6-2
Traffic Noise Contours at Area-Wide Buildout

Such increases are not considered significant because they will not result in a clearly audible change (e.g., exceeding ±3 dB), especially when spread out over multiple years of project development. Two of these segments (Reservation Road and Davis Road) are below the threshold of 70 dB (they are in agricultural districts), even with the increase. 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, the future buildout 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 buildout 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 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 lay-out 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 thus 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 a 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
Downstairs.....	<65	<20
Upstairs	70	25

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.

Maximally exposed (first-tier) two-story units facing Reservation Road will require upgraded acoustical treatment (production grade dual-paned windows and minor additional insulation). Except for supplemental ventilation (air conditioning or fans), no other acoustical upgrades will be necessary for the remainder of the project in order to meet interior standards.

Mitigation Measures

Although the +3 dB increase standard will not be exceeded with the addition of project-related traffic, the mitigation identified below is required by the MCGP (1982), because the 65 dB exterior noise level will be exceeded at selected roadway segments.

4.6-B-1 Prior to filing of the final tract map or submittal of subdivision improvement plans, whichever occurs first, a preliminary acoustical report shall be prepared by the project applicant to determine requirements for walls, berms, or other barriers to meet the 65 dB CNEL minimum acceptable exterior standard for residential or other noise-sensitive uses. The Monterey County Environmental Health Division (MCEHD) shall review the acoustical report and approve its recommendations. The MCEHD will be responsible for monitoring this mitigation measure.

4.6-B-2 If exterior façade levels are predicted to exceed 60 dB CNEL at area buildout, at plan check for each tract, a final acoustical report shall be submitted by the project application to verify structural attenuation capability to achieve 45 dB CNEL. The MCEHD shall review the final acoustical report and approve its recommendations. The MCEHD will be responsible for monitoring this mitigation measure.

Significance After Mitigation

Less than significant.

Operational Noise

Impact 4.6-C **Implementation of the EGSP will result in the generation of onsite noise associated with the development of three residential neighborhoods, and Town Center noises**

(such as commercial activities, including, but not limited to, loading/unloading activities, mechanical equipment, and activities occurring in parking lots). (Less than Significant After Mitigation)

Noise typically associated with operation activities of residential and commercial uses would be generated by the following sources:

- Trucks traveling on the site, to and from commercial businesses;
- Mechanical equipment (air conditioners, trash compactors, emergency generators, etc.);
- Landscape maintenance;
- Multi-family uses (i.e., TVs, stereos, social gatherings and shouting);
- Typical parking lot activities (i.e., parking lot traffic); and
- Open-air festivals.

Although several noise sources would be introduced, many of them would operate for only very brief times, such as delivery truck movements, trash compactors, and parking lot sweepers. These types of sources usually do not operate concurrently. Other noise sources, such as air conditioning equipment and parking lot traffic operate for comparatively longer periods. Further, it should be noted that the following projected noise levels do not account for any noise attenuation due to existing walls, berms, intervening structures, or topography.

Potential Source Noise Levels

Activities that may occur in parking lots, such as customers conversing, or occupants slamming automobile doors when entering or exiting the vehicle, would generate approximately 60 dB Lmax at 50 feet. Slow moving trucks, at 5 to 10 miles per hour (mph), would generate up to 75 dB Lmax when traveling and braking at 50 feet. Passenger cars generate on average 8 to 10 dB lower than trucks.

Operational Noise Analysis

Parking Areas: The traffic associated with parking lots is not of sufficient volume to exceed community noise standards that are based on a time-averaged scale such as the dB CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, an engine starting-up, and car pass-bys may be an annoyance to adjacent sensitive receptors. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 4.6-7. The maximum noise level generated by parking lots as identified in Table 4.6-7 (dB at 50 feet) was used in this analysis. Since the County of Monterey regulates noise levels in terms of CNEL, which is a timed average measurement, instantaneous noise levels from parking lots would not exceed the noise standard.

Table 4.6-7: Maximum Noise Levels Generated by Parking Lots (dB at 50 feet)

Event	Maximum Noise Level
Door Slam	60 to 70
Engine Start-up	60 to 70
Car Pass-by	55 to 70
Source: Mestre Greve Associates, June 2004.	

Slowly Moving Trucks (Deliveries): It is anticipated that truck deliveries would occur at the proposed commercial uses and/or festival uses. The maximum noise levels of slow moving heavy and small trucks range between 73 and 70 dB CNEL, respectively, at 50 feet. Thus, noise generated by delivery trucks on the project site could exceed the County's 65 dB noise standard and a significant impact could occur unless mitigated. However, it should be noted that delivery truck traffic is not of sufficient volume to exceed community noise standards that are based on a time-averaged scale. In addition, delivery truck noise impacts would be minimized through compliance with the provisions of the Monterey County Noise Ordinance.

Landscape Maintenance: Development of the proposed uses would introduce new landscaping requiring periodic maintenance. Landscaping throughout the residential development would require the greatest amount of landscape services. Noise generated by gas lawnmowers is estimated to be approximately 70 dB at a distance of 5 feet from the source. For each doubling of distance from a point noise source (i.e., lawnmower), the sound level will decrease by 6 dB. Based on the distance between the proposed project site and the nearest residences located north of the project site (over 100 feet), noise levels of up to 44 dB may occur at the nearest resident property line. Although, maintenance activities would operate during daytime hours for brief periods of time and would increase ambient noise levels in the project vicinity, the gas lawnmower noise levels at the nearest resident property line would not exceed the County's 65 dB noise standard. Since the County of Monterey regulates noise levels in terms of CNEL, which is a timed average measurement, instantaneous noise levels from landscape maintenance would not exceed the noise standards.

Mechanical Equipment: Mechanical equipment, such as generator, heating, ventilation and air conditioning (HVAC) units would be included as part of the proposed project. Typically, equipment noise is 55 dB at 50 feet from the source. Residential uses located north, east, and west of the proposed project site are the nearest sensitive receptors. Since the County of Monterey regulates noise levels in terms of CNEL, which is a timed average measurement, instantaneous noise levels from mechanical equipment would not exceed the noise standards.

Residential Land Uses: The types of activities that may occur at the residential uses that may be considered excessive or offensive to adjacent residences include loud televisions, music, and loud voices (i.e., shouting). Proposed residential units will be located over 100 feet from the property lines of the nearest residences situated north of the project site along Reservation Road. Therefore, no adverse effects resulting from potentially excessive/offensive noise at the proposed residential units would occur from implementation of the EGSP. This conclusion is based on the following factors:

- Construction of the proposed residential units would be subject to compliance with the provision of Title 8, Chapter 1, Building Code and Chapter 9, Housing Code requiring an STC rating of 55 for interior walls. This Code provision would minimize sound travel through the interior of the building.

- A typical building with closed windows provides a noise reduction of approximately 20 to 25 dB.

- All activities at the proposed project site would be subject to compliance with the provisions of the California Penal Code relative to disturbing the public peace, health, safety, or welfare, due to the magnitude of a crowd, noise, disturbance, or unruly behavior generated by a gathering.

Overall, analysis indicated that with adherence to County of Monterey requirements, stationary noise impacts from parking areas, deliveries, mechanical equipment, landscaping, and the residential units would eliminate adverse stationary noise impacts resulting from implementation of the EGSP. The Specific Plan requires that any uses that could exceed the noise standards will be required to obtain a discretionary permit and be subject to a use-specific environmental review.

Mitigation Measures

4.6-C-1 Prior to the issuance of a building permit, the project applicant shall demonstrate compliance to the satisfaction of the Monterey County Planning and Building Inspection Department with respect to procedures related to the maintenance, operation, and orientation of mechanical equipment, as described below. The MCPBID is responsible for monitoring the following procedures associated with this mitigation measure:

- Mechanical equipment shall include specifications of quiet equipment;
- Mechanical equipment shall be properly selected and installed, and shall include sound attenuation packages; and
- To the extent possible, mechanical equipment shall be oriented away from the nearest noise sensitive receptor.

Significance After Mitigation

Less than significant.