

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE – Would the project result in:					
a.	Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
b.	Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels?			X	
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
e.	For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Impact a: Less Than Significant With Mitigation. Residential uses developed at the project site would be exposed to exterior noise levels exceeding the “satisfactory” noise and land use compatibility standards presented in the City’s General Plan for residential land uses. Interior noise levels would exceed acceptable levels without the incorporation of noise insulation features into the project’s design.

MO’C Physics Applied performed a noise study for the proposed project¹. The noise study summarized applicable regulatory criteria and the results of noise measurements made on the project site. This study then evaluated the noise and land use compatibility of the project with respect to State Building Code and City of Redwood City acoustical standards. The results of this study indicated that exterior noise levels throughout the site would exceed “satisfactory” levels for residential noise and land use compatibility and interior noise levels within proposed residential units would require the incorporation of noise insulation features in the project’s design to reduce interior noise levels below 45 dBA CNEL. The report states that air conditioning would be provided at residential units to allow occupants to control noise by closing

¹ 885 Woodside Road (Woodside Villas Condominuims) Noise Study, MO’C Physics Applied, March 9, 2006.

the windows. Sound rated exterior wall construction methods or sound rated windows were not identified as necessary noise insulation features to be included in the project design.

Illingworth & Rodkin, Inc. performed an additional monitoring survey in August 2006 to document the daily trend in noise levels at a location near the east property line of the project site, common with single-family residential land uses to the east, and at a second location approximately 100 feet from the center of Woodside Road near the service station. The noise environment at the site results primarily from local vehicular traffic along Woodside Road as stated in the *MO'C Physics Applied* study. Noise generated on neighboring commercial properties is also audible on occasions, but were not a significant contributor to the noise environment at the project site. Existing noise levels at the project site range from approximately 60 dBA CNEL at the east property line of the project site to about 74 dBA CNEL at a distance of 50 feet from the center of Woodside Road (the approximate setback of the proposed residential building).

Future noise levels at the project site are anticipated to increase by about 1 decibel with anticipated growth in the community. Future noise levels at patios and balconies nearest Woodside Road are anticipated to range from about 72 to 75 dBA CNEL. Exterior noise levels in well-shielded areas of the project site furthest from Woodside Road would range from about 55 to 60 dBA CNEL. The exterior noise and land use compatibility guidelines are not normally assessed at small outdoor use areas such as upper-story decks associated with apartments or condominiums recognizing the relative infrequency of use by residents, the feasibility of mitigation, and other design considerations such as aesthetics. Although exterior noise levels would exceed the City's "satisfactory" noise and land use compatibility standard, the impact would not be considered significant recognizing that interior noise levels would be controlled within residential units with the incorporation of noise control features in the project design.

Interior noise levels within proposed residential units are required to be maintained at or below 45 dBA CNEL per the requirements of the State Building Code. In residential units of standard construction, interior noise levels are approximately 15 decibels lower than exterior noise levels with the windows partially open. Where exterior noise levels exceed 60 dBA CNEL, compliance with State Building Code requires a report to be submitted with the building plans identifying the noise attenuation features included in the project's design to maintain interior noise levels at or below 45 dBA CNEL.

Typically, standard construction with forced air ventilation (allowing the occupant to control noise by maintaining the windows shut) provides approximately 20 to 25 dBA of noise reduction in interior spaces. This method of reducing interior noise levels is normally used in noise environments ranging from 60 to 65 dBA CNEL. Where noise levels exceed 65 dBA CNEL, forced-air mechanical ventilation systems and sound-rated construction methods are normally required. The exact noise insulation requirements cannot be identified at this point in the planning process, but preliminary calculations indicate that sound ratings of 28 to 35 STC would be required for windows and doors with direct line-of-sight to Woodside Road. Feasible construction techniques such as these would adequately reduce interior noise levels to 45 dBA CNEL or lower with an adequate margin of safety.

Mitigation Measure a: The following mitigation measures shall be included in the project to reduce the impact to a less-than-significant level:

1. The California Building Code requires project-specific acoustical analyses to achieve interior noise levels of 45 dBA CNEL or lower in residential units exposed to exterior noise levels greater than 60 dBA CNEL. Building sound insulation requirements would need to include the provision of forced-air mechanical ventilation in noise environments exceeding 60 dBA CNEL, so that windows could be kept closed at the occupant's discretion to control noise. Special building construction techniques (e.g., sound-rated windows and building facade treatments) may be required where exterior noise levels exceed 65 dBA CNEL. These treatments include, but are not limited to sound rated windows and doors, sound rated exterior wall assemblies, acoustical caulking, etc. The specific determination of what treatments are necessary will be conducted on a unit-by-unit basis during project design. Results of the analysis, including the description of the necessary noise control treatments, will be submitted along with the building plans and approved prior to issuance of a building permit.

Impact b: Less Than Significant Impact. The project is not located within the immediate vicinity of any known producers of groundborne vibration (e.g., an active railroad line). Vibration levels associated with the construction of the project would at times be perceptible at neighboring residences when vibration generating activities occur near the easternmost property line of the project site (e.g., passing of a heavy-track construction equipment, etc.), but would not be high enough to result in cosmetic or structural damage to buildings.

Impact c: Less Than Significant Impact. Noise sources associated with the operation of the project would primarily include vehicular traffic assessing the site and intermittent noise generated by automobiles in the proposed parking garage. The *MO'C Physics Applied* study stated that vehicular traffic generated by the proposed project would have an insignificant effect on local traffic noise levels given that the existing and future noise environment at noise sensitive receivers in the vicinity of the project site results primarily from traffic along Woodside Road. Traffic noise generated by the project is projected to increase noise levels by less than 1dBA CNEL above the existing noise environment². The project does not propose changes in traffic that are substantial enough to provide a noticeable increase in the noise environment at the nearby residential receivers (noise level increases of less than 1 dBA are not noticeable to human hearing).

Noises generated within the proposed sub-grade parking garage would include the sounds of engine starts, door slams, alarms, horns, tire noise, etc. The parking structure would be naturally ventilated and would not require fans that would normally generate noise. Intermittent noises generated within the parking garage would be audible at times at neighboring residential uses but would be at levels that currently exist from vehicular traffic in the project vicinity. The duration of these noises is generally limited to a few seconds. Typically, the sound of a passing car at 15 mph, engine starts, and door slams range from 50 dBA to 60 dBA L_{max} at 50 feet. The shielding provided by the parking structure and existing noise barriers would reduce these maximum noise levels by about 5 dBA. The infrequent sounds generated within the parking structure would be

² 885 Woodside Road Traffic Assessment, Hexagon Transportation Consultant, Inc., August 2006.

at levels that would generally be below the sounds of vehicular traffic along Woodside Road and would not substantially increase noise level over a permanent basis.

Impact d: Less Than Significant With Mitigation. The *MO'C Physics Applied* study briefly mentions construction noise as a potential project impact. The construction of the proposed project would generate noise levels that would exceed ambient noise levels at noise sensitive receptors in the vicinity of the project site. Construction activities would include significant amounts of excavation for the sub-grade parking garage, site grading, and construction of the new residential building. Noise impacts from these activities depend on noise generated by various pieces of construction equipment, the timing and length of noise generating activities, and the distance between the noise generating construction activities and receptors that would be affected by the noise. The highest noise levels would be generated during excavation and grading of the site, with lower noise levels occurring during building construction. Large pieces of earth-moving equipment, such as graders, scrapers, and bulldozers, generate maximum noise levels of 86 to 91 dBA at a distance of 50 feet. Typical hourly average construction-generated noise levels are about 81 to 88 dBA measured at a distance of 50 feet from the site during busy construction periods. These noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor.

Noise sensitive land uses are located immediately north and east of the project site. Construction noise levels at adjacent residences would range from 81 to 88 dBA L_{eq} when activities are located near these receivers. Construction noise levels would exceed 60 dBA L_{eq} and existing ambient levels by more than 5 dBA throughout the project site. At times, noise levels produced by heavy equipment may interfere with normal residential activities.

Typically, residential construction projects do not generate significant noise impacts when standard construction noise control measures are enforced at the project site and when the duration of noise at a particular receiver or group of receivers is limited to one construction season (typically one year) or less. Construction noises associated with projects of this type are disturbances that are necessary, and reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction materials is effective in reducing impacts to a level that is less than significant.

Mitigation Measure d: The following construction noise control measures are recommended to limit the amount of noise generated during the construction period. These measures would mitigate the impact to a less than significant level:

1. Limit construction to daytime hours (7:00 am to 8:00 pm) Monday through Friday, with no construction activities on Weekends or holidays per Sec. 24.32 of the City of Redwood City Municipal Code.
2. Construction activities or equipment shall not generate noise levels exceeding 110 dBA per Sec. 24.31 of the City of Redwood City Municipal Code.
3. Utilize “quiet” models of air compressors and other stationary noise sources where technology exists.

4. Prohibit unnecessary idling of internal combustion engine.
5. Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
6. Locate stationary noise generating equipment as far as possible from noise sensitive receptors.
7. Designate a noise disturbance coordinator who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaints (e.g., starting too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site.

Impact e-f: No Impact. The project is not located within two miles of a public or private airport. Therefore, this is not a potential impact.

Mitigation Measure e-f: None required.