

3.8. NOISE

3.8.1 INTRODUCTION

This section focuses on the project's potential to expose persons to noise and vibration impacts. This section is based on the project's Noise Impact Analysis prepared by Giroux and Associates in May 2006. The project's Noise Impact Analysis is included in this EIR as Appendix F.

Noise Descriptors

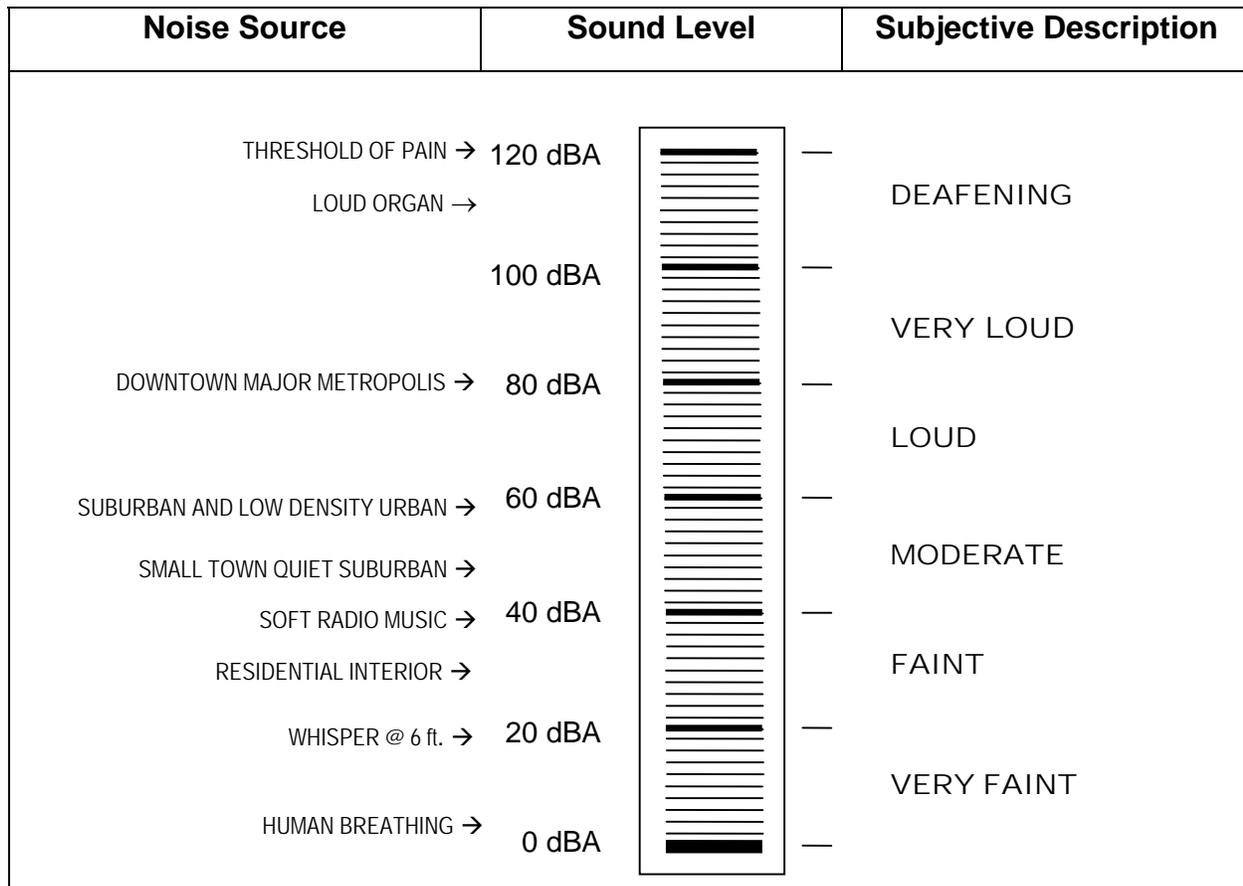
Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is commonly defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of 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 ratioed to the level barely detectable by a young person with good auditory acuity 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 for earthquake magnitude 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 "dBA." Any further reference to decibels written as "dB" 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 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).

In general, all streets with traffic exceeding 10,000 vehicles per day have sufficient traffic to result in noise levels at the property line greater than 65 CNEL or Ldn. Such levels are normally acceptable for construction of office, commercial, or high density multi-family residential uses. A level of 65 dB is also the threshold where noise begins to intrude significantly into normal activities such as a conversation. Although people may express annoyance if traffic noise levels in usable exterior space such as yards, patios, porches, etc. are below 65 dB, the percentage of "highly annoyed" people increases dramatically when noise exceeds 65 dB. Figure 1 shows Examples of Sound levels that different activities produce.

FIGURE 3.8.1: EXAMPLES OF SOUND LEVELS



3.8.2. ENVIRONMENTAL SETTING

The site is currently an agricultural operation with mostly vineyard, orchards and fallow cropland. Remaining uses include several single-family residences and a Moose Lodge. Surrounding land uses include heavy industrial and residential uses to the north and existing agricultural use to west, east and south. The primary existing noise sources in the project area are transportation facilities. These transportation facilities include The Union Pacific Railroad, State Route 99, and vehicle traffic along Harney Lane as the dominant sources contributing to area ambient noise levels.

Existing Sensitive Land Uses in the Project Area

For purposes of noise impact analyses, sensitive receptors include residences, schools, hospitals, and similar uses sensitive to noise. In the proposed project, existing sensitive receptors located adjacent to project site include single-family residences north of Harney Lane. Additionally, within this residential neighborhood, an existing elementary school is located approximately 500 feet north of the project site. Sensitive receptors presently located on-site include scattered single-family residences among the agricultural use. Most of these residences are located on the western portion of the project site, with proposed retail and office uses along the eastern project boundary and adjacent to SR 99. These sensitive land uses may be potentially affected by the noise

generated during construction of the proposed project, as well as increased traffic along Harney Lane and neighboring arterials streets due to increased travel demand for new residential and commercial uses as part of the project and future growth in the area.

Existing Rail and Traffic Noise

Existing traffic noise levels in the project area are listed in Table 3.8.1, as a result of a 24-hour noise measurement program conducted in March 2006. Existing noise levels near the proposed project site derive mainly from the Union Pacific Railroad corridor to the west and vehicular sources on the adjacent freeway and roads in the area. The measured noise levels along the railroad tracks and the freeway substantially exceed City of Lodi standards. The peak noise levels close to the tracks occur late at night when track utilization is highest. Every train from 10 p.m. to 7 a.m. is the “noise equivalent” of ten daytime trains in calculating CNEL. The weighted CNEL is therefore 4 dB higher than even the noisiest hours of the day, which occur around midnight, and from 5-6 a.m. Any homes adjacent to the tracks will require either distance separation from the tracks or a noise wall. As near the railroad, the high percentage of nocturnal traffic, especially heavy trucks, creates a CNEL that is several dB higher than the noisiest hour of the day. However, this area has a planned commercial use and will not have any residential receivers.

The measured noise levels are already excessive in terms of City of Lodi standards for existing noise sensitive land uses. Any usable outdoor space at the nearest homes without noise walls facing Harney Lane, the railroad tracks, or that are adjacent to SR-99 are already noise impacted. Interior noise levels are likely also high, unless windows are tightly closed and central air conditioning is used on warmer days. Any modified roadway geometries or increased traffic volumes due to projected traffic growth may further impact these areas.

**TABLE 3.8.1: ONSITE NOISE MONITORING RESULTS (DBA)
REYNOLDS RANCH PROJECT
SOUTH OF HARNEY LANE (WEST OF HIGHWAY 99)**

Parameter	Property Line		
	Meter placed between 2 nd and 3 rd houses, South of Harney Lane	Southwest Corner of Parcel, Near Train Tracks	Houses, Northeast Corner of Parcel (18 yards to Highway 99 Fence)
24-hour CNEL	68	76	74
Maximum 1-Hour LEQ	69	72	72
When (?)	6:00 a.m. to 7:00 a.m.	11 p.m. to midnight*	7:00 a.m. to 8:00 a.m.
2 nd Highest 1-Hour LEQ	63	71	72
When (?)	5:00 p.m. to 6:00 p.m.*	5:00 a.m. to 6:00 a.m.	8:00 a.m. to 9:00 a.m.
Minimum 1-Hour LEQ	52	45	63
When (?)	4:00 a.m. to 5:00 p.m.	9:00 a.m. to 10:00 a.m.	1:00 a.m. to 2:00 a.m.*
1-Second Maximum	93	96	93
1-Second Minimum	43	39	44

* Measurement occurs at other hours as well.

3.8.3. REGULATORY FRAMEWORK

The City of Lodi has established guidelines for acceptable community noise levels that are based upon the CNEL rating scale. The guidelines rank noise/land use compatibility in terms of four noise level categories; “presumed to be acceptable” (required no mitigation), “conditionally acceptable” (with acceptability depending on the land use and the extent of mitigation required), “normally unacceptable” (new construction or development should be discouraged, although mitigation may be possible), and “presumed to be unacceptable” (mitigation measures unlikely to be available). The City of Lodi noise/land use compatibility guidelines have been used as the evaluation criteria for land uses that may be affected by the proposed project.

CNEL-based standards are used to make land use decisions as to the suitability of a given site for its intended use. They apply to those noise sources not amenable to local control such as on-road traffic, aircraft, trains, etc. Because cities cannot regulate the noise created by such sources, they control the types of land use or levels of mitigation required by the receiving property. The City’s Land Use Compatibility Table for Community Noise Environments, as identified in the City of Lodi General Plan, is shown as Figure 3.8.2

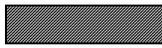
The noise/land use compatibility standards considers exterior exposures up to 60 dB CNEL “presumed to be acceptable” for residential use, and exposures of 60-65 dB CNEL are “conditionally acceptable”. For commercial uses proposed in this project, average daily noise levels of up to 65 dB CNEL are “presumed to be acceptable”. Exterior levels up to 75 dB CNEL are considered “conditionally acceptable” for office or retail uses. Because such uses rarely have any usable outdoor space (except perhaps for a courtyard or dining patio), ambient noise levels are typically not issues for offices or stores. Schools are considered “presumed to be acceptable” with exterior noise levels of up to 60 dB CNEL and 60-70 dB CNEL are “conditionally acceptable”.

The Lodi Municipal Code also addresses interior noise levels through extension of the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code to all new convalescent facilities, hospitals, and single-family residential developments, in addition to the multifamily and transient lodging developments already covered by the State Noise Insulation Standards. A 45 dB CNEL interior exposure is required for single and multi-family residential uses for the City of Lodi.

For purposes of this analysis, an exterior level of up to 65 dBA CNEL will be allowed for residential use. The allowable interior noise level will be 45 dBA CNEL, which can be achieved through the application of best available noise reduction technology and with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level, however, will necessitate the use of air conditioning and/or mechanical ventilation. The City of Lodi noise standards do not address retail/commercial interior noise levels.

FIGURE 3.8.2: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

	Community Noise Exposure Ldn or CNEL, dB							
	50	55	60	65	70	75	80	85
Residential – Low Density Single-Family Duplex, Mobile Homes	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Residential – Multi-Family	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Transient Lodging – Motels, Hotels	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Sports Arena, Outdoor Spectator Sports	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Playgrounds, Neighborhood Parks	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Office Buildings, Business Commercial and Professional	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		
Industrial Manufacturing Utilities, Agriculture	Normally Acceptable		Conditionally Acceptable			Normally Unacceptable		

-  **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.

CNEL-based standards are the land use planning standards that are applied to noise sources for which the City of Lodi is pre-empted from exercising local control. Those noise sources that are amenable to local control are regulated by the City of Lodi Municipal Code. The ordinances therein establish allowable levels of sound that may cross any adjacent property line, as well as prohibiting general nuisance noise and identifying a number of specific prohibitions. The City of Lodi Municipal Code regulations relevant to this project include:

- 9.24.020 a. General Noise Regulations. Notwithstanding any other provision of this chapter, and in addition thereto, it is unlawful for any persons to willfully make or continue or permit or cause to be made or continued, any loud, unnecessary or unusual noise which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal noise sensitivity.
- 9.24.030 c. It is unlawful for any person, firm or corporation to cause, permit or generate any noise or sound as described herein between the hours of 10:00 p.m. and 7:00 a.m. which exceeds the ambient noise levels at the property line of any residential property as determined at the time of such reading by more than five decibels. This section shall be applicable whether such noise or sound is of a commercial or noncommercial nature.

The City of Lodi Municipal Code exempts any sound equipment that has a valid City license or permit. Construction activities would need authorization under City issuance of construction permits before any work could commence on-site. The municipal code does not establish the time period that this exempted activity may occur. However, limits to construction hours would be determined in the special provisions for construction activities by the City Building Inspector.

3.8.4. THRESHOLDS OF SIGNIFICANCE

The California Environmental Quality Act (CEQA) Guidelines, Appendix G indicates the following thresholds for which a project may be deemed to have a significant effect on the environment:

- a) 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, the project would expose people residing or working in the project area to excessive noise levels;
- b) For a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels;
- c) Result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- d) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

- e) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- f) Result in the 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.

3.8.5. PROJECT IMPACTS

No Impact

The proposed project would have no impacts related to the following topics.

Airport-Related Noise – The proposed project would have no airport-related impacts.

The proposed project would not expose people residing or working in the project area to excessive noise levels generated by public, public use airports, or private airstrips. There is not an airport located within two (2) miles of the project site. The closest airport to the project site is the Lodi Airpark, located approximately four (4) miles southwest of the project site, and supports twenty to thirty (20-30) operations per day. The airport's noise "footprint" does not extend beyond the immediate airport boundary. Therefore, the project would have no impact from airport-generated noise.

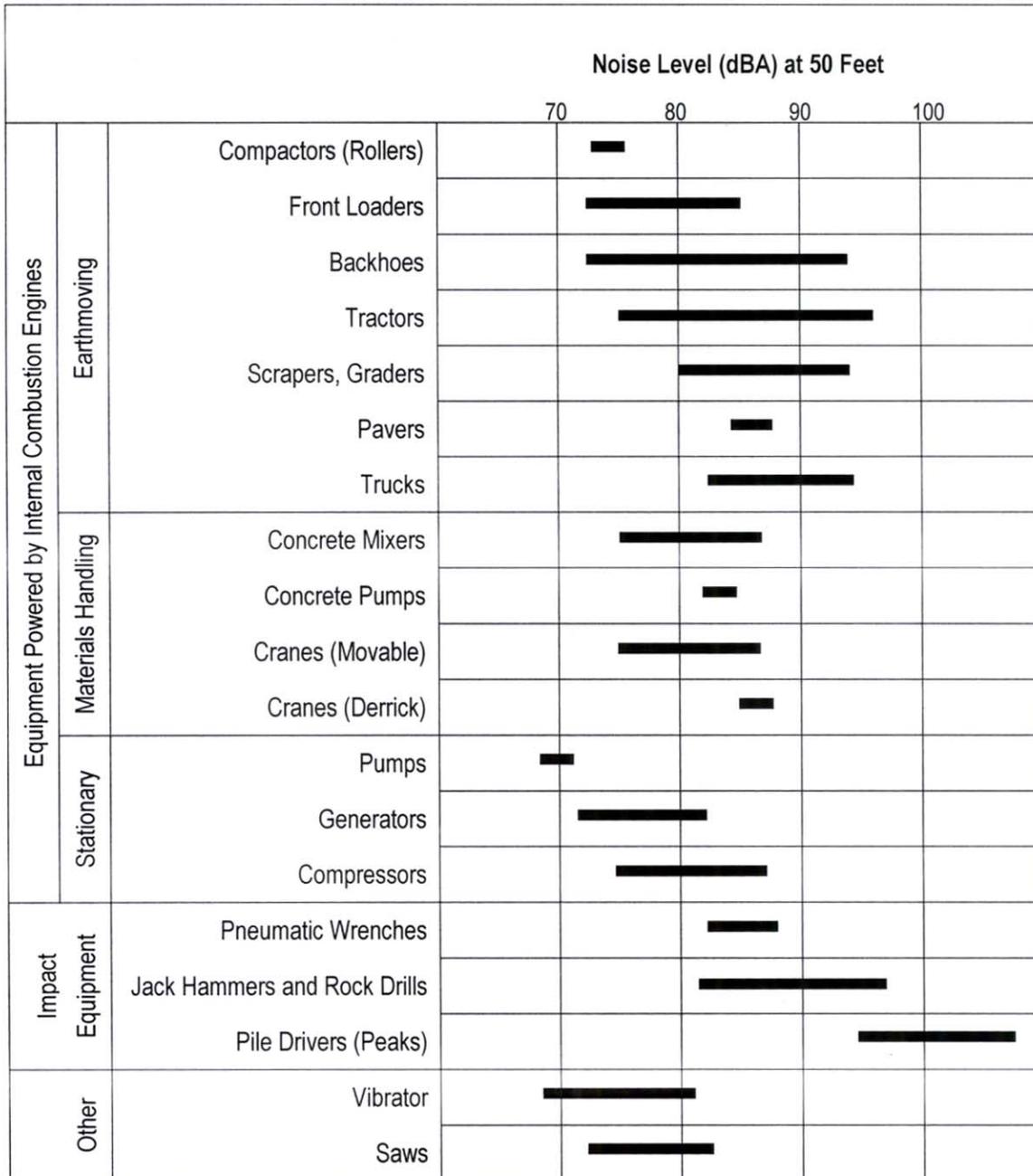
Impact 3.8.1: Construction of the Proposed Project Would Temporarily Generate Noise Above Levels Existing Without the Project – Less than Significant Impact After Mitigation

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by demolition of existing structures and large earth-moving sources, then by foundation and parking lot construction, and finally for finish construction.

Figure 3.8.3 shows the typical range of construction activity noise generation as a function of equipment used in various building phases. The earth-moving sources are seen to be the noisiest with equipment noise ranging up to about 90 dBA at 50 feet from the source. The demolition and earth-moving sources are the noisiest with equipment noise ranging up to 90 dB at 50 feet from the source. Several pieces of equipment operating in close proximity to each other may create a combined noise level of around 93 dB. Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance, or about 20 dB in 500 feet of propagation. The loudest earth-moving noise sources will therefore sometimes be detectable above the local background beyond 1,000 feet from the construction area. An impact radius of 1,000 feet or more pre-supposes a clear line-of-sight and no other machinery or equipment noise that would mask project construction noise. With buildings and other barriers to interrupt line-of-sight conditions, the potential "noise

envelope” around individual construction sites is reduced. Construction noise impacts are, therefore, somewhat less than that predicted under idealized input conditions.

FIGURE 3.8.3: TYPICAL CONSTRUCTION EQUIPMENT NOISE GENERATION LEVELS



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

Because of close proximity, construction noise impacts would most likely affect the exterior nearby residential uses to the north of the property, along Harney Lane. Additionally, because site development is phased, any existing tenants of an already completed phase could be subject to construction noise from subsequent phases. Discretionary scheduling of noisiest activities may be required to minimize such possible construction noise intrusion. Locating all stationary noise generating construction equipment as far as practical from existing residences can also mitigate noise. If impulsive noise generation such as pile driving or jackhammers is necessary close to noise-sensitive users, activity scheduling to minimize off-site impacts, or erection of temporary barriers, may be necessary. Construction activity noise impacts are considered less-than-significant with proper impact mitigation planning.

Section 9.24.030 (c) of the Municipal Code considers any noise generated between 10 p.m. and 7 a.m. that exceeds ambient levels by more than five (5) dB at any residential property to be “excessive, offensive or disturbing.” Construction activity noise near existing or future noise sensitive uses may exceed ambient levels by more than five (5) dB. A construction activity restriction time of 7 a.m. to 10 p.m. for allowable operation of any heavy equipment within 500 feet of any residence is recommended to mitigate this impact.

Impact 3.8.2: Increased Traffic Would Generate Noise Levels above Levels Existing Without the Project – Less than Significant Impact After Mitigation

Long-term noise concerns from the increase of residential, retail, and office uses at the project site center primarily on mobile source emissions on project area roadways. These concerns were addressed 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, roadway speeds, or noise barriers.

Table 3.8.2 summarizes the 24-hour CNEL level at 50 feet from the roadway centerline along eighteen (18) roadway segments for existing conditions and for future conditions, with and without the project. Specifically, five time frames were examined (existing, interim year 2008 with and without project, and build-out year 2030 with and without project). The data represent traffic only and do not include noise generated from train movements, addressed later in this document.

Existing traffic noise levels in the project vicinity are somewhat elevated; with almost half of the 18 roadway segments analyzed currently exceeding 65 dB CNEL at 50 feet from the centerline. The interim time frame (2008) will see little change from the existing noise environment, with or without the project. Only a portion of Phase I is scheduled for completion by 2008.

By 2030, at area-wide build-out, road noise will have increased substantially along many roadways. Traffic volume changes from infill development and from conversion of existing agricultural uses will substantially increase in the future and will modify the area’s acoustic environment. The noise-level difference between “with project” versus

“no project” scenarios is, however, less-than-significant. At any off-site roadway the maximum project-related increase in 2008 will be +0.5 dB, and +2.9 dB CNEL in 2030. The 2.9 dB increase is directly adjacent to SR-99, and is not near any noise sensitive land uses. The maximum off-site project traffic noise impact near any residential uses is +1.4 dB along Harney Lane, directly north of the project site. Individual traffic noise impacts will be well below the adopted +3.0 dB CNEL significance threshold.

On-site traffic noise exposure for any proposed residential use will result primarily from Harney Lane or from internal collector roads. One segment, Stockton Street south of Harney Lane, will experience a very large increase of +13.2 dB. However, this link will be an entrance to the new Reynolds Ranch Project. Even with this substantial increase, on-site traffic noise at 50 feet from the Stockton Street centerline of 60.6 dB CNEL will be well below the City’s 65 dB CNEL exterior standard. This will not create any constraint for siting noise-sensitive land uses.

On-site noise levels at proposed residential uses south of Harney Lane may be exposed to noise levels exceeding City of Lodi standards at the first tier of development closest to the roadway. Under acoustically “soft” conditions (landscaping and irregular surfaces), the 65 dB CNEL contour will extend 145 feet south of the centerline. Exterior recreational uses within 145 feet would require shielding from traffic noise. Perimeter noise walls of 6-7 feet in height would reduce rear yard noise levels to within City Standards.

If exterior levels exceeded 65 dB CNEL, enhanced structural protection is needed to allow the 45 dB CNEL interior standard to be met. The 65 dB CNEL contour at any upstairs building façade would be characterized by acoustically “hard” propagation conditions. The upstairs 65 dB CNEL contour distance will extend up to 245 feet from the Harney Lane centerline. Any two-story residential uses within 245 feet will require dual-paned windows and supplemental ventilation/air conditioning. In order to meet City of Lodi noise standards the following measures are thus required along the northern site perimeter:

1. Outdoor recreational space within 145 feet of the Harney Lane centerline must be shielded by solid perimeter walls of 6-7 feet in height, and,
2. Habitable second-story residential space within 245 feet of the Harney Lane centerline must have upgraded structural protection to include dual-paned windows and supplemental ventilation to allow for window closure.

A few existing homes north of Harney Lane will experience traffic noise increases at area build-out that will be greater than the +3 dB significance threshold. The individual project contribution (future project versus no project) is well below the +3 dB threshold. The proposed project would be responsible for a fair share contribution for any mitigation that might be afforded to existing homes not already shielded by any sound walls. These existing homes face Harney Lane and take their access from the front of their homes. Erection of a sound wall is not feasible because of access constraints. The homes are setback from Harney Lane, and their rear-yard recreational area is shielded by the house itself. Any cumulative noise impact mitigation would therefore focus only

on achieving acceptable interior exposures in livable space. Such mitigation would be in the form of installing dual-paned windows in living or bedrooms facing Harney Lane, and insuring that air conditioning is available to shut out roadway noise in the future.

**TABLE 3.8.2:
TRAFFIC NOISE IMPACT ANALYSIS
(dBA CNEL at 50 feet from centerline)**

	Existing	2008	2008/ w Project	2030	2030/w Project
North-South Segments					
Hutchins St/					
N of Harney	68.4	68.5	68.7	69.5	70.0
Harney-Armstrong	70.3	70.4	70.4	72.4	72.5
West Ln/					
S of Harney	69.5	69.5	69.6	72.1	72.3
Stockton St/					
N of Harney	65.9	66.0	66.0	66.9	67.8
S of Harney	46.9	46.9	49.3	47.4	60.6
Cherokee Ln/					
N of Harney	65.8	66.3	66.4	66.5	65.9
W Frontage Rd/					
Harney-SR-99 SB Ramp	58.3	58.3	56.6	59.0	61.9
SR-99 SB Ramp- Armstrong	62.6	62.6	62.9	64.9	65.8
S of Armstrong	57.8	57.8	57.8	60.1	60.1

**TABLE 3.8.2: (continued)
TRAFFIC NOISE IMPACT ANALYSIS
(dBA CNEL at 50 feet from centerline)**

East-West Segments

Harney Ln/					
Ham-Hutchins	67.3	68.5	68.7	70.1	71.0
Hutchins-Stockton	68.7	69.4	69.7	70.7	71.9
Stockton-W Frontage Rd	67.9	68.8	69.3	70.2	71.6
W Frontage-E Frontage	67.1	67.8	68.3	69.1	70.2
E of E Frontage Rd	65.2	65.8	65.9	67.2	67.6
Armstrong Rd/					
W of Hutchins	64.1	64.1	64.1	66.4	66.5
Hutchins-W Frontage Rd	62.2	62.2	62.3	64.5	65.0
W Frontage-E Frontage	60.7	60.7	60.9	63.0	63.6
E of E Frontage Rd	55.9	55.9	55.9	58.2	58.7

Source: Reynolds Ranch Traffic Study, April 2006

Impact 3.8.3: Location of Residential Uses in Proximity to Noise Sources – Less than Significant Impact After Mitigation

In areas where commercial and residential uses share a common property line, it is often not the overall magnitude of the noise that leads to conflict. It is more typically some unique aspect of the noise (music, amplified voice, whine or hum, etc.), or, most commonly, the time of day of the noise event that causes conflicts. Early morning deliveries, back-up alarms, rumbling and idling diesel trucks, late night fast-foot outlet loudspeakers, young persons assembling in shopping center parking lots with loud car music late in the evening, or very early trash pick-up or parking lot sweeping, are sources that can engender noise conflicts in a mixed use environment. Since planned on-site commercial activities will be located near residences, nocturnal on-site activities could be audible late at night when background noise levels are lowest.

Such impacts would possibly derive from unloading activities at the rear of the major stores from site maintenance such as sweeping or trash pick-up, from mechanical equipment on building roofs, and from on-site traffic patterns. The menu board loudspeakers at fast food restaurants could also impact noise.

Phase I anticipates construction of office space in the southeastern corner of the site, west of SR-99 and the Frontage Road as well as the construction of 150 medium density residential units. However, the nearest sensitive receptor to the office use will

be the high-density residential development located to the west, which will be constructed in Phase II. Commercial uses will be sited to the north, SR-99 is to the east and agricultural uses exist south of the site. The only potential nuisances for the nearby future residences from office building operations would be trash pick up and HVAC equipment. Because trash pick up would only be a daytime event this would not cause a siting constraint. The distance from the western building wall to the boundary of the high-density residential parcel is 260 feet.

Mechanical equipment noise was presumed to be typical of comparable HVAC sources. Commercial air conditioners (“package units”) are typically rated at around 55 dB at 50 feet from the equipment. Distance separation to the nearest homes at 260 feet will reduce HVAC noise to well below the ambient “hum” from SR-99 traffic.

The office building will work two shifts. The arrival of the early shift and the departure of the late shift may occur during noise-sensitive hours. However, more of the parking will be on the eastern side of the building with the building itself creating a noise barrier. Highway 99 traffic also creates an elevated baseline that will mask any employee arrival/departure. The semi-trucks traveling at 70 mph on SR-99 are many times louder than slow-speed passenger cars within the office parking lot. Any mitigation measures used within the proposed high density residential west of the office building (dual-pane windows, extra insulation, etc.) to block out freeway noise will also shield the parking lot activity from any shift changes.

Phase II involves construction of a commercial/retail parcel at the northeast corner of the property. This parcel is bounded by SR-99 to the east, off-site residential uses to the north, across Harney Lane, and medium-density, high-density and senior high-density developments on the west and southwest, across “A” Street.

The medium-density housing just south of Harney Lane will have the least setback from any of the retail buildings, about 125 feet. The high-density senior housing will have approximately 125 feet of separation from the closest shops and the high-density residential bounding the office parcel will have about 140 feet of separation from the nearest commercial/retail space.

As noted above, all residential parcels experience sufficient distance separation from the buildings to prevent HVAC equipment from being a nuisance. Only the major stores would have loading docks, and none are sited near the on-site residential parcels. Although not currently planned as part of the project, sound boards for fast food restaurants where ordering takes place can be a nuisance especially at night. Many fast food restaurants keep late hours or are open 24-hours. If the sound boards cannot be oriented away from nearby residences then sound walls may have to be erected around the order boards. Additionally, time restrictions may be necessary. These details must be dealt with during the design stage.

On all office and commercial sites, maintenance activities such as refuse collection or parking lot sweeping, or stacking or retrieval of temporary outdoor storage could be a noise source. Possible mitigation would include time restrictions on these activities or sound walls. These details also must be dealt with during the design stage.

Any current or future residential uses opposite Harney Lane are anticipated to be approximately 300 feet from the nearest major retail use. Measured noise levels at this site are currently in excess of 65 dB CNEL due to Freeway proximity. This background noise, in addition to the setback distance, will serve to mask any potential noise associated with truck delivery and unloading at the planned major retailers for off-site residential uses.

Impact 3.8.4: Placement of Sensitive Receptors in the Vicinity of Train Noise – Less than Significant Impact After Mitigation

Train noise is not well characterized by the CNEL descriptor. The train noise pattern will be approximately 59 minutes of very quiet conditions with one minute of loud rumble. However, federal noise compatibility standards are based upon 1- or 24-hour exposures. A measurement of train noise was conducted using data collected by sound meters placed on site March 9-10, 2006. The meter positioned on the southwest corner of Parcel 058-130-24 near the train tracks determined a CNEL of 75.8 dB. According to Wayne Horiuchi of the Union Pacific Railway Company, in a letter dated March 13, 2006, it is difficult to predict future usage as demand for services are driven by shippers needs for goods.

In order to gauge a worst case scenario for train noise, for the purposes of the study, a doubling of train movements was assumed for the future. Because of the logarithmic nature of noise, a 100% increase in train movement would translate into a +3 dB growth, raising the daily CNEL to 79 dB (76 dB + 3).

Currently all planned residential uses adjacent to the train tracks will be separated by a proposed mini-storage facility. If the mini-storage facility is constructed as a continuous structure, it will replace the need for a sound wall. If there are continuity breaks, a sound wall and/or landscaped berm will be required in those areas. As currently laid out, residential uses adjacent to the train tracks will benefit from approximately 300 feet of distance separation.

If a sound wall is the preferred option, at the nearest homes for outdoor recreational uses, at 300 feet from the track, a 6 foot sound wall would provide the necessary attenuation. The sound wall would provide the needed mitigation for usable outdoor space and the first story of a residence. If the home were two stories, then upgraded acoustical windows and ventilation would be required to achieve an interior sound level of 45 dB CNEL. In residential construction, the structural noise level reduction (in dB) is almost equal to the rated sound transmission class (STC) of any openable windows. Sound-rated windows with an STC of 31 or 32 will likely be required for the second stories of western perimeter units.

Train passage may also create perceptible vibrations. According to the US Department of Transportation Transit Noise and Vibration Impact Assessment, the screening distance for train vibration for a heavy railway is 200 feet. All planned residential development is well outside this distance and therefore will not be subject to vibration perception.

Impact 3.8.5: Detention Basin Pump Noise Results in Permanent Increases in Ambient Noise Levels above Levels Existing Without the Project – Less than Significant Impact After Mitigation

A Detention Basin is planned in the southwest corner of the property. A pumping system will be required to drain the basin after winter rainstorms, however, the location and size of the associated pump has not yet been determined. If the pump is located on the north, or east side of the basin it could be as close as 70 feet to future residential development. Depending on the size of the pump, noise levels could range from 68-80 dBA at a distance of 50 feet from the source. Therefore, even at the lower end of this range the noise from a pump located in a worst-case location along the east or north of the basin would be audible at the nearest future dwellings. Pump noise at a distance of 70 feet will be 65-77 dBA. For this analysis it is assumed that a 55 dBA nighttime noise threshold for residential uses was appropriate. Even with a quiet pump, the 55 dB standard would be exceeded to 225 feet from the unit under line-of-sight conditions. With several pumps in simultaneous operation, the noise “envelope” could be greater.

An open-top walled enclosure of the pump array would reduce off-site noise levels, but likely not for second story residences. Noise level reductions of 5-10 dB from walled enclosures would still create an audible “hum” during pumping operations. Therefore, if the pumps are located near any to the residential dwellings the pump station would need to be enclosed. This would provide approximately 30-35 dBA of noise attenuation and render pumping activities inaudible.

Impact 3.8.6: Agricultural Noise Resulting from Existing On-going Agricultural Operations in the Vicinity of the Project Site – Less than Significant Impact After Mitigation

Early morning or nighttime farm operations may also create a perceptible noise intrusion at proposed residential uses. Irrigation pumps, crop duster airplanes, or harvesting equipment can be noisy in residential bedrooms when operating during typical “quiet times”. A buffer zone will be created along the southern site perimeter, the mini-storage will shield activities in the west, and the Harney Lane project frontage will have sound walls to the north. Site development will gradually isolate the site from agricultural activity noises. It is recommended that all real estate transfer documents notify the buyer that noise, dust, and odor or other nuisance may be experienced as residential use encroaches into agricultural areas. However, the agricultural activities will gradually be pushed further away from such uses as the site develops. The expanding set-back distance will ultimately minimize any nuisance perception from agriculture.

Impact 3.8.7: Location of School Uses in Proximity to Noise Sources – Less than Significant Impact

An elementary school is proposed in the future within the Reynolds Ranch Project. Schools are considered “sensitive receivers” due to possible noise interference with instructional programs. Schools may also be noise generators. Title 5 of the California Code of Regulations (Section 14030), based upon the California Education Code,

contains acoustical standards for siting and construction of new schools. School noise criteria are very "open-ended." These standards deal mainly with building interior sound control, and do not identify the exterior noise level that would typically be acceptable for siting school campuses. Local guidelines are therefore the most appropriate means by which to assess site suitability relative to noise.

The exterior noise standard of 70 dB CNEL for schools generally applies to usable outdoor space such as assembly, lunch, or recreation areas. Noise levels up to 70 dB CNEL would be the most appropriate standard by which to determine site suitability for various noise-sensitive elementary school activity areas.

The existing traffic noise levels adjacent to the proposed school uses are below the 70 dB CNEL exterior noise standard. The school will be more than 1,000 feet of SR 99, U.P.R.R., and Harney Lane. Thus, exterior noise impacts on outdoor school use are therefore anticipated to be less than significant.

Although schools themselves can be considered generators of noise that effect surrounding areas, especially residential areas, the noise generated is of generally of a low level and occurs usually only during limited periods of outdoor activities such as during class recess and during outdoor athletic activities.

Impact 3.8.8: Potential to Temporarily Generate Vibration and Ground Borne Noise During Construction – Less than Significant Impact

Retail center activities typically do not generate groundborne noise or vibrations. Construction activities could temporarily generate groundborne vibrations and noise. However, construction of the proposed project does not involve activities that are typically the source of groundborne noise and vibration, such as demolition and large-scale excavation. As such, construction of the proposed project is not expected to generate groundborne noise or vibration, other than occasional, low-level, occurrences. Therefore, the proposed project would not have significant impacts from exposing persons to or generation of excessive ground borne vibration or ground borne noise levels.

Train passage may also create perceptible vibrations. According to the US Department of Transportation Transit Noise and Vibration Impact Assessment, the screening distance for train vibration for a heavy railway is 200 feet. All planned residential development is well outside this distance and therefore will not be subject to vibration perception.

Impact 3.8.9: Operation of the Project Will Result in New Noise Sources – Less Than Significant Impact

The proposed commercial offices would not be a sensitive noise receptor. However, the proposed center would generate noise from vehicle trips and delivery truck trips, as well as typical urban noises from the congregation of people at a retail center. The proposed project will be built in an area that currently has an elevated ambient noise environment at and near the project site due to the adjacent State Route 99 and Union

Pacific Railroad. Operational activity noise will be generally inaudible due to the masking effects of the elevated baseline and freeway background traffic noise levels and the attenuation loss created by the retaining/screen walls, and the distance between the site and adjacent sensitive receptors. Although, the project has the potential to generate noise sources detectable above the local background beyond 1,000 feet from the construction area.

As mentioned in Impact 3.8.2 and further detailed in the following discussion of Cumulative Impacts, the project, in combination with other cumulative growth projects, would contribute to an immediately perceptible increase in noise levels along Harney Lane north of the project site. The proposed project would increase the CNEL along this segment by +1.4 dB, with other cumulative development causing an additional +2.2 dB increase. These increases would result in a 65.8 – 69.4 dB CNEL along Harney Lane north of the project site.

The proposed residential dwellings would be a sensitive noise receptor. A perceptible increase in noise levels along Stockton Street south of Harney Lane would increase the CNEL along this segment by +2.4dB, with other cumulative development causing an additional +0.8 dB increase. These increases would result in a 49.3 dB CNEL along Stockton Street south of Harney Lane.

According to the City's land use compatibility matrix (See Table 3.8.1) this noise level is within the "Conditionally Acceptable" range for office buildings. In the "Conditionally Acceptable" range, conventional construction only needs air conditioning or a fresh air supply with closed windows to suffice. Additionally, this noise level is in the "Presumes to be Acceptable" range for residential dwellings. Thus, the future noise level along Harney Lane north of the project site does not exceed standards; none of the other involved roadway segments would experience a notable increase in noise levels (>3.0 dB). Therefore, the proposed project would not cause noise exposure in excess of established standards, and the project would have no related significant impacts.

3.8.6. CUMULATIVE IMPACTS

Cumulatively, a number of roadway segments will experience significant noise level increases compared to existing noise levels at the same locations. Comparison of existing conditions to conditions in 2030 without the project (Table 3.8.3) show some segments experiencing an increase of up to +2.8 dB from cumulative growth without the project. About 60 percent of the segments analyzed will exceed the 65 dB CNEL threshold, even without implementation of the proposed project.

The proposed project will, however, cause cumulative noise levels at off-site locations to increase by more than +3.0 dB CNEL when project traffic and cumulative growth are combined. Cumulatively significant traffic noise level increases will occur in 2030 along Frontage Road and Harney Lane as shown in Table 3.8.3.

TABLE 3.8.3: CUMULATIVE TRAFFIC NOISE LEVELS

Roadway Segment	Increase from Existing (dB)	
	w/o Project	w/Project
W. Frontage Road*		
Harney Lane-SR 99 SB Ramp	+0.7	+3.6
Harney Lane		
Ham-Hutchins	+2.8	+3.7
Hutchins-Stockton	+2.0	+3.2
Stockton-Frontage	+2.3	+3.2

*Dominated by freeway noise, not considered significant

Project traffic noise impacts are considered cumulatively significant. The impact is mitigated by the required inclusion of perimeter walls on new residential development that abuts Harney Lane. However, traffic noise impact analyzed at a “project” versus “no project” condition in the interim year and at build-out in 2030 shows project-related noise is not individually significant.

Traffic noise is cumulatively significant from this project and from forecasted growth, when comparing build-out in 2030 with existing conditions. Cumulatively significant traffic noise impacts are forecasted to occur along Harney Lane from west of the project site to SR-99. Cumulative impacts will be mitigated by the installation of adequate sound walls for new residential development both north and south of Harney Lane.

Proposed residential uses south of Harney Lane may be exposed to traffic noise in excess of 71 dB CNEL.

3.8.7. MITIGATION MEASURES

The following measures will further reduce less than significant construction noise effects:

Mitigation Measure 3.8.1: All construction shall require a permit and shall be limited to the hours of 7 a.m. to 10 p.m. Staging areas shall be located away from existing residences, and all equipment shall use properly operating mufflers.

Mitigation Measure 3.8.2: The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

Mitigation Measure 3.8.3: Habitable second-story residential space, located within 245 feet of the Harney Lane centerline, must have upgraded structural protection including dual-paned windows and supplemental ventilation (air conditioning) allowing for window closure.

Mitigation Measure 3.8.4: Outdoor recreational space within 145 feet of the Harney Lane centerline must be shielded by solid perimeter walls of 6-7 feet in height or by landscape berms or any combination of the two to achieve the desired noise attenuation.

Mitigation Measure 3.8.5: New residential development both north and south of Harney Lane shall require installation of 6-7 foot high sound walls or landscape berming, or any combination of the two to achieve the desired noise attenuation. Current and future homes located across Harney Lane will be masked from noise associated with major retail uses by the already elevated ambient background freeway noise and by setback distances of approximately 300 feet.

Mitigation Measure 3.8.6: Homes situated adjacent to the train tracks require either a setback distance of 430 feet or a 6 foot sound wall, landscape berming, or any combination of the two to mitigate train noise to 65 dB at the residential exterior and ground floor interior. This attenuation may be achieved by the design of the mini-storage facility. An interior noise analysis should be submitted in conjunction with building plan check, to verify that structural noise reduction will be achieved in a livable upstairs space, at the perimeter tier of homes by the specified structural components (windows, walls, doors, roof/ceiling assembly) shown on building plans. Disclosure of the presence of the tracks should be included in all real estate transfer documents to anyone buying or leasing a property within 500 feet of the train tracks.

Mitigation Measure 3.8.7: A detention basin pump system will be required to empty the detention basin. The planned proximity of homes to the basin would likely require substantial shielding if such pumps were to operate at night. To the satisfaction of the City of Lodi, noise levels at residences in proximity to any required basin pump system shall be attenuated to meet the City's noise standards. Said attenuation can be achieved through enclosing the pump system or using upgraded sound rating building materials in nearby residences.

Mitigation Measure 3.8.8: Noisiest agricultural activities will have substantial setback from onsite residences, particularly as the site is progressively developed. Buyer notification of the presence of possible agricultural activity noise shall be made as part of any property transfer documents.

3.8.8. LEVEL OF SIGNIFICANCE AFTER MITIGATION

The following table is a summary of the thresholds of significance, potential impacts, and associated mitigation measures:

**TABLE 3.8.4
SUMMARY OF NOISE THRESHOLDS OF SIGNIFICANCE, IMPACTS, AND
MITIGATION MEASURES**

Threshold of Significance	Mitigation Measure	Level of Significance
<p>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, if the project exposes people residing or working in the project area to excessive noise levels. For a project within the vicinity of a private airstrip, if the project exposes people residing or working in the project area to excessive noise levels.</p>	<p>None required.</p>	<p>No Impact</p>
<p>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.</p>	<p>Mitigation Measure 3.8.3: Habitable second-story residential space, located within 245 feet of the Harney Lane centerline, must have upgraded structural protection including dual-paned windows and supplemental ventilation (air conditioning) to allow for window closure, in compliance with the City of Lodi Compatibility Standards.</p> <p>Mitigation Measure 3.8.4: Outdoor recreational space within 145 feet of the Harney Lane centerline must be shielded by solid perimeter walls of 6-7 feet in height or by landscape berms or any combination of the two to achieve the desired noise attenuation.</p> <p>Mitigation Measure 3.8.5: New residential development both north and south of Harney Lane shall require installation of 6-7 foot high sound walls or landscape berming, or any combination of the two to achieve the desired noise attenuation. Current and future homes located across Harney Lane will be masked from noise associated with major retail uses by the already elevated ambient background freeway noise and by setback distances of approximately 300 feet.</p> <p>Mitigation Measure 3.8.6: Homes situated adjacent to the train tracks require either a setback distance of 430 feet or a 6 foot sound wall, landscape berming, or any combination of the two to mitigate train noise to 65 dB at the residential exterior and ground floor interior. This attenuation may be achieved by the design of the mini-storage facility. An interior noise analysis should be submitted in conjunction with building plan check, to verify that structural noise reduction will be achieved in a livable upstairs space, at the perimeter tier of homes by</p>	<p>Less Than Significant Impact After Mitigation</p>

**TABLE 3.8.4
SUMMARY OF NOISE THRESHOLDS OF SIGNIFICANCE, IMPACTS, AND
MITIGATION MEASURES**

Threshold of Significance	Mitigation Measure	Level of Significance
	<p>the specified structural components (windows, walls, doors, roof/ceiling assembly) shown on building plans. Disclosure of the presence of the tracks should be included in all real estate transfer documents to anyone buying or leasing a property within 500 feet of the train tracks.</p> <p>Mitigation Measure 3.8.7: A detention basin pump system will be required to empty the detention basin. The planned proximity of homes to the basin would likely require substantial shielding if such pumps were to operate at night. To the satisfaction of the City of Lodi, noise levels at residences in proximity to any required basin pump system shall be attenuated to meet the City's noise standards. Said attenuation can be achieved through enclosing the pump system or using upgraded sound rating building materials in nearby residences.</p> <p>Mitigation Measure 3.8.8: Noisiest agricultural activities will have substantial setback from onsite residences, particularly as the site is progressively developed. Buyer notification of the presence of possible agricultural activity noise shall be made as part of any property transfer documents.</p> <p>This impact would also be lessened through project design features, including the placement of sensitive receptors in relation to noise-generating land uses.</p>	
Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.	None required. See the discussion of Impact 3.8.8 on pages 3.8-17.	Less Than Significant Impact
Permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	Mitigation Measures 3.8.3 – 3.8.8	Less Than Significant Impact After Mitigation
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	<p>Mitigation Measure 3.8.1: All construction shall require a permit and shall be limited to the hours of 7 a.m. to 10 p.m. Staging areas shall be located away from existing residences, and all equipment shall use properly operating mufflers.</p> <p>Mitigation Measure 3.8.2: The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.</p>	Less Than Significant Impact After Mitigation