4.9 NOISE

4.9.1 Issues

Implementation of the DSP would result in additional vehicle traffic on certain area roadways, increasing the ambient noise along those corridors. Buildout of the land uses allowed in the DSP would increase the population and number of residences exposed to existing sources of noise in the planning area. Construction activity would result in localized noise throughout the planning area which may temporarily exceed standards.

4.9.2 Setting

General Information on Noise
Noise is generally defined as unwanted or objectionable sound. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

Noise levels are measured on a logarithmic scale because of the physical characteristics of sound transmission and reception. Noise energy is typically reported in units of decibels (dB). Decibels and other technical terms are defined in Table 4.9-1.

Noise levels diminish (or attenuate) as distance from the source increases according to the inverse square rule, but the rate constant varies with the type of sound source. Sound attenuation from point sources, such as industrial facilities, is about 6 dB per doubling of distance. Heavily traveled roads with few gaps in traffic behave as continuous line sources and attenuate at 3 dB per doubling of distance. Noise from more lightly traveled roads attenuates at 4.5 dB per doubling of distance.

Community noise levels are measured in terms of the A-weighted decibel (dBA). A-weighting is a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear. Equivalent noise level (Leq) is the average noise level on an energy basis for a specific time period.

The duration of noise and the time of day at which it occurs are important factors in determining the impact on communities. Figure 4.9-1 provides a graphical representation of sound energy and potential adverse effects of common sounds.

Noise is more disturbing at night, and noise indices have been developed to account for the time of day and duration of noise generation. The Community Noise Equivalent (CNEL) and Day Night Average Level (L_{dn}) are such indices. These indices are time-weighted average values equal to the amount of acoustic energy equivalent to a time-varying sound over a 24-hour period. The CNEL index penalizes nighttime noise (10 p.m. to 7 a.m.) by adding 10 dB to account for increased sensitivity of the community after dark. The Ldn index penalizes nighttime noise the same as the CNEL index, but does not penalize evening noise.

Table 4.9-1. Definition of Acoustical Terms	
Terms	**Definitions**
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Source: *Illingworth & Rodkin, Inc./Acoustical Engineers*	

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Perception of noise has no simple correlation with acoustical energy. Different noise sources cannot be added directly to give a dB rating for the combined noise sources. For example, two noise sources producing an equal dB level at a given location will produce a combined noise level of 3 dB greater than each sound alone.

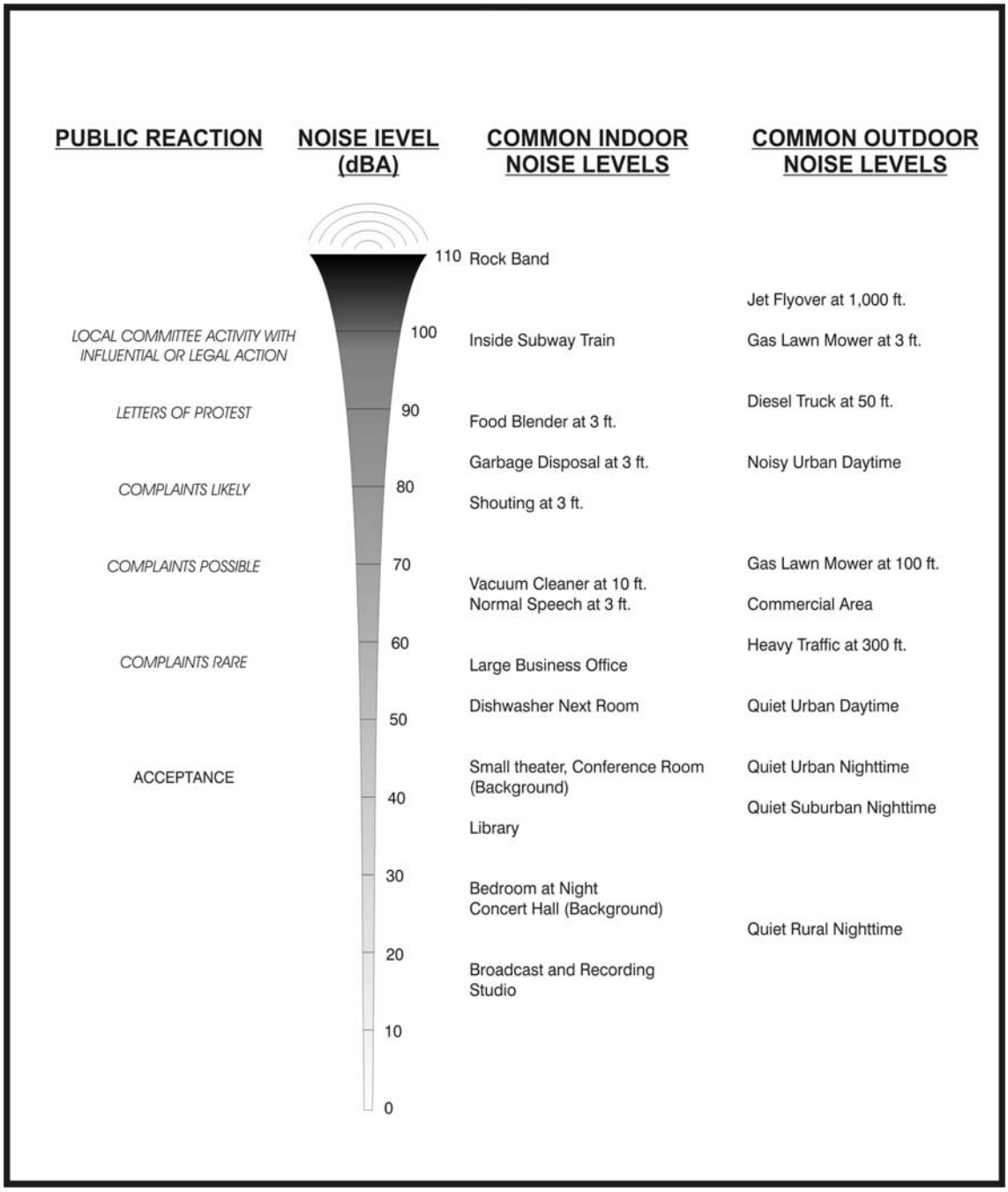

Figure 4.9-1. Magnitude of Common Sounds

Effects of Noise

People are subject to a multitude of sounds in the environment. Typical noise levels of indoor/outdoor environments and public response to these sounds are shown in Figure 4.9-1. Excessive noise cannot only be undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon three factors: (1) the amount and nature of the noise; (2) the amount of ambient noise present before the intruding noise; and (3) the activity of the person working or living in the noise source area.

Although there has been some dispute in the scientific community regarding the detrimental effects of noise, a number of general conclusions have been reached:

- Noise of sufficient intensity can cause irreversible hearing damage;
- Noise can interfere with speech and other communication; and,
- Noise can be a major source of annoyance by disturbing sleep, rest, and relaxation.

Hearing Damage. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated by chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard, which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Sleep and Speech Interference. The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, and those facing major roadways and freeways typically need special glass windows.

Annoyance. Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In

these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn}. At an L_{dn} of about 60 dBA, approximately two percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase of about one percent per dBA between an L_{dn} of 60-70 dBA. Between an L_{dn} of 70-80 dBA, each decibel increase increases the percentage of the population highly annoyed by about two percent.

People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about two percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a three percent increase in the percentage of the population highly annoyed.

Noise Sensitive Land Uses
For the purposes of land use planning, noise sensitive land uses generally include:[1]

- Schools (e.g., preschool to secondary, college and university, specialized education and training)
- Hospitals
- Libraries
- Group care facilities
- Convalescent homes
- Residential areas

Existing Noise Environment
The primary noise source in Cotati is vehicle traffic on Highway 101 and major roads such as Gravenstein Highway, Old Redwood Highway, West Sierra Avenue, East Cotati Avenue, and Commerce Avenue. Traffic on local streets, as well as aircraft overflights, are also audible but do not contribute significantly to overall noise levels. Other noise sources include the fire station, and general maintenance, business, and entertainment activities, and all of which typically only affect adjacent or nearby properties. Commercial uses generate noise via mechanical systems (which may run constantly), alarms, and loading activity (which usually are intermittent). Noise sources pose greater concern when close to sensitive receptors, such as homes, schools, and care facilities. The existing noise sensitive land uses within this area generally occur to the north and west of the planning area boundaries.

The noise contour map illustrates that roadways are the primary local noise source (see Figure 4.9-2). The lines showing areas of equal sound levels are based on October 2005 measurements using meters accurate to within about 1 dBA (see Table 4.9-2). Levels along Highway 101 may be lower where features such as buildings or the hill north of West Sierra Avenue block noise, or higher in areas with no obstructions such as north of Gravenstein Highway.

[1] 1998 General Plan Update, Community Development Chapter, page 35.

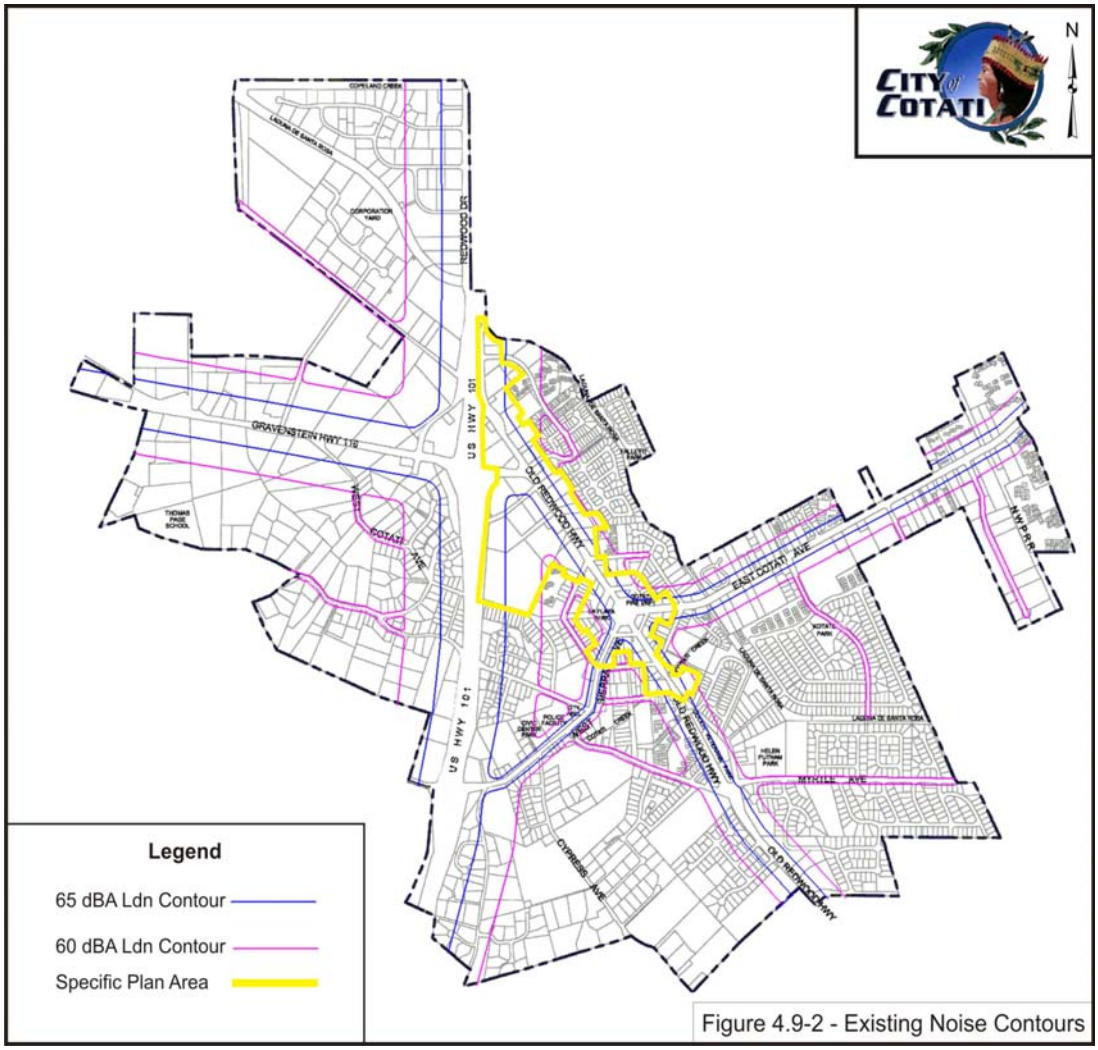

Figure 4.9-2 - Existing Noise Contours

Existing noise levels within the City were surveyed and evaluated in 2005 using long-term noise measurements (over a continuous 24-hour period)[2]. Ten locations were selected to represent noise levels along both large and small thoroughfare transportation corridors. For the purpose of this analysis, seven of those locations are evaluated, based on their relevance to the planning area as either falling within the planning area or in close proximity. Close proximity locations are included primarily for the purpose of highlighting Highway 101 noise. Table 4.9-2 shows the 2005 noise levels at these locations. The 24-hour day/night average noise level (L_{dn}) is shown for each of the long-term measurements. The equivalent sound level (Leq) during each hour, as well as selected statistical descriptors representing near maximum noise levels (L01 and L10), median noise levels (L50) and background noise levels (L90), are also provided to describe the range of noise levels that occurred during the measurements. Charts containing the noise measurement data are included in Appendix 4.9-A.

[2] City of Cotati Noise Assessment (2005).

Table 4.9-2:Noise Measurement Summary							
Location	**Time of Day**	**Sound Levels, dBA**					
		L_{01}	L_{10}	L_{eq}	L_{50}	L_{90}	L_{dn}
***L-1**:* 50 feet from the centerline of Old Redwood Highway south of Myrtle Avenue	Daytime	78	74	70	68	58	**72**
	Nighttime	74	67	64	60	50	
***L-2**:* 45 feet from the centerline of Old Redwood Highway, north of Page Street	Daytime	79	71	69	66	58	**72**
	Nighttime	76	67	64	59	50	
***L-3**:* 45 feet from the centerline of West Sierra Avenue between Page and Olaf Streets	Daytime	74	68	65	62	54	**67**
	Nighttime	70	63	59	53	49	
***L-4**:* 100 feet from the centerline of East Cotati Avenue between La Plaza and Charles Street	Daytime	70	66	63	62	57	**66**
	Nighttime	67	62	59	56	51	
***L-5**:* 205 feet from the centerline of Hwy 101 near lane at the end of St. Joseph Street	Daytime	73	69	66	66	62	**70**
	Nighttime	71	66	63	61	57	
***L-6**:* 170 feet from the centerline of Old Redwood Highway south of Hwy 116	Daytime	67	63	61	60	57	**64**
	Nighttime	63	59	56	55	51	
***L-7**:* 30 feet from the centerline of Wilford Lane	Daytime	66	59	56	53	51	**61**
	Nighttime	62	55	54	52	50	

Other noise sources in the planning area include noise resulting from residential maintenance activities and commercial business activities. These non-transportation noise sources are local and typically only affect their adjacent neighbors.

Stationary noise sources associated with commercial uses also create noise within the planning area. Commercial uses can generate noise due to regular operations, such as fans, blowers, chillers, compressors, boilers, pumps, and air conditioning systems which may run for 24 hours a day. Other sources of noise in these areas, such as horns, buzzers, and loading activities, may be intermittent. These noise sources are of greatest concern when they are close to noise sensitive receptors, since the combination of transportation and commercial noise has the potential for producing noise impacts on these receptors. Other potentially significant sources of noise within the planning area include entertainment venues and the fire station. When located near residential or other noise sensitive uses, such noise sources can often lead to irritation and complaints.

4.9.3 Regulatory Setting

Noise within the City of Cotati is addressed in the guidelines established in the General Plan and in the noise section of the City's Municipal Code. A review of these noise guidelines and regulations are presented below.

Cotati General Plan
The City of Cotati has adopted the following objectives and policies related to community noises in the Community Development Chapter of the General Plan. The policies are designed to ensure compatible developments within the City.

Objective: Minimize noise levels to enhance the quality of existing and future land uses.

Policies and Implementation

Noise and Land Use Compatibility Standards. Encourage the maintenance of the Noise and Land Use Compatibility Standards indicated in Table 3. (See Table 4.9-3)

a) Review all land use and development proposals for compliance with the Noise and Land Use Compatibility Standards.

b) The City shall use a standard of 45 dBA L_{dn} for indoor noise levels for all new residential development, including hotels and motels.

c) The City shall require an acoustical study for all new projects with potential noise impacts. The study shall describe how the project will comply with Noise and Land Use Compatibility Standards and indoor noise level standards.

3.3.2 Control Non-Transportation Related Noise from Site Specific Noise Sources. a) The City shall ensure that the noise resulting from new sources shall not exceed the standards [See Table 4.9-4] as measured at the exterior property line of an affected residential land use.

3.3.4 Local truck traffic, including loading and unloading, shall be limited to specific routes, times and speeds appropriate to each zoning district. a) The Police Department shall continue to implement the truck ordinance which limits truck traffic routes, times, and speeds in areas where it will effectively reduce noise pollution.

3.3.5 Encourage the enforcement of sections of the California Vehicle Code relating to adequate vehicle mufflers, and modified exhaust systems. a) The Police Department shall work with the California Highway Patrol to actively enforce the California Vehicle Code as it relates to adequate vehicle mufflers, and modified exhaust systems.

Table 4.9-3: Land Use Compatibility for Community Noise Environment						
Land Use Category	**Exterior Noise Exposure L_{dn} or CNEL, dB**					
	55	**60**	**65**	**70**	**75**	**80**
Residential, Hotels, and Motels						
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds						
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches						
Office Buildings, Business Commercial, and Professional						
Auditoriums, Concert Halls, Amphitheaters						
Industrial, Manufacturing, Utilities and Agriculture						

NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements.

CONDITIONALLY ACCEPTABLE
Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.

UNACCEPTABLE
New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies

Table 4.9-4: Allowable Noise Exposure From Non-Transportation Noise Sources		
Measurement	**Daytime (7:00 am - 10:00 pm)**	**Nighttime (10:00 pm - 7:00 am)**
Hourly Leq, dB	50	45
Maximum Level, dB	70	65
Maximum Level, dB (Impulsive Noise)	65	60

Guidelines for Use of Table:
1. The measurements are made at the property line of the receiving land use. The effectiveness of noise mitigation measures should be determined by applying the standards on the receptor side of noise barriers or other property line noise mitigation measures.
2. The nighttime standards apply only when the receiving land use operates or is occupied during nighttime hours.
3. Sound level measurements to determine maximum level noise shall be made with "slow" meter response.
4. Sound level measurements for impulsive noise sources shall be made with "fast" meter response. Impulsive noises are defined as those which have sharp, loud peaks in decibel levels, but which quickly disappear. Examples include a dog's bark, a hammer's bang and noise with speech or music content.

3.3.6 Work with Caltrans to ensure that adequate noise studies are prepared and alternative noise mitigation measures are considered in State projects. a) Planning staff shall remain in communication with Caltrans requesting that Caltrans obtain City concurrence prior to initiating any noise mitigation project in Cotati or affecting Cotati.

3.3.7 Require acoustical studies and mitigation measures for new developments and transportation improvements which affect noise sensitive uses such as schools, hospitals, libraries, group care facilities, convalescent homes, and residential areas. a) Planning staff, through the environmental review process, shall ensure that acoustical studies are performed and mitigation measures implemented when noise sensitive uses are affected.

3.3.8 Stationary equipment, such as air compressors, shall be located as far away as feasible from sensitive noise receptors, and shall be shielded. Construction equipment shall be fitted with effective mufflers. The hours for construction operations shall be limited to the weekdays and the daytime where extreme noise sources are found. a) The Building inspector shall determine, during the environmental review process, if proposed construction will constitute a significant impact on nearby residents and require limited construction hours.

Cotati Municipal Code

Section 17.30.050 of the City of Cotati Municipal Code addresses noise standards for all development and land uses. This section implements the noise related policies of the General Plan and provides standards for noise mitigation that are intended to protect the community by limiting exposure to the unhealthy effects of noise. It includes maximum allowable noise level standards (see Table 4.9-5).

Table 4.9-5:
Maximum Allowable Noise Level by Receiving Land Use

Noise Sensitive Land Use	Outdoor Activity Areas[1,2]	Interior Spaces	
	dBA L_{dn}	dBA L_{dn}	dBA L_{sq}
Residential	65	45	NA
Transient lodging	65	45	NA
Hospital, extended care	65	45	NA
Theater, auditorium	[3]	45	35
Meeting facility, public or private	65	45	40
Offices	75	45	45
School, library, museum	65	45	45
Playground park	70	NA	NA

Source: City of Cotati Municipal Code, Section 17.30.042.
Notes:

1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. Where it is not possible to reduce noise in outdoor activity areas to 65 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
3. Subject to an acoustical analysis in compliance with subsection (C)(2) of Municipal Code Section 17.30.042

This section of the Municipal Code also establishes requirements for the preparation of acoustical analyses for certain types of projects, and sets a limitation on hours of construction. Unless otherwise established as conditions of approval, the allowable hours of construction in Cotati are:

Monday through Friday: 7:00 a.m. to 7:00 p.m.
Saturdays, Sundays, Holidays: 9:00 a.m. to 5:00 p.m. (only as condition of approval)

4.9.4 Methodology

The 2005 Noise Assessment prepared by Illingworth & Rodkin for the General Plan update (referred to as the 2005 Assessment) provided the baseline conditions for the existing noise levels for input into the noise model used in the assessment of the DSP. The noise model identifies the change in noise levels, which is directly related to the change in peak hour trips (developed by the traffic analysis, see Section 4.12). The model input and results can be found in Appendix 4.9-B.

4.9.5 Significance Thresholds

According to the CEQA Guidelines, a project would have a significant noise impact if it would:

a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels.
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
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, expose people residing or working in the project area to excessive noise levels.
f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

CEQA does not define what noise level increase would be considered substantial. Typically, in high noise environments, if the Average Day-Night Noise Level (Ldn) would increase by more than 3 dBA due to the project, the impact would be considered significant. Where the existing noise level is lower, a somewhat higher increase can be tolerated before significance occurs. For the proposed project, an increase in the L_{dn} resulting from the project at noise sensitive land uses of 3 dBA or greater would be considered a significant impact when projected noise levels currently exceed those considered acceptable for the affected land use. Where noise levels would remain below acceptable levels for the affected land use, an increase of 5 dBA would be considered a significant impact.

4.9.6 Impacts and Mitigation Measures

Less than Significant Impacts
The DSP is not within an airport land use plan nor within the vicinity of a private airstrip. Therefore, noise from these sources would not affect the DSP area (thresholds e and f).

To determine if the DSP would result in a permanent increase in ambient noise levels related to traffic generation (threshold c), a noise analysis was performed. It should be noted that circulation improvements associated with the DSP are intended to have an overall slowing effect on traffic; slowing traffic has the potential to decrease traffic-generated noise along roadway corridors. Results from the traffic model for the largest area streets were used to calculate the percent change in daily traffic on major road segments within the planning area. Traffic noise increases were determined using the model developed by Brown-Buntin Associates (Appendix 4.9-C), which relates percent increases in traffic volumes to increases in Ldn. The results of the noise analysis are shown in Table 4.9-6. The increase in noise levels as a result of the DSP is projected to be slightly less than for existing conditions. This indicates that the proposed roadway improvements under the DSP would result in less traffic-generated noise. No roadway segments analyzed resulted in an increase above 3 dBA at DSP buildout. Therefore, permanent impacts from traffic-generated noise are less than significant and no mitigation is required. This is consistent with the findings of the General Plan EIR which found no significant noise impacts for a population greater than that proposed here. Noise impacts from operations,

especially impacts of commercial uses truck delivery, HVAC units will be similar to existing conditions because the types of uses will be the same, and are discussed below.

Significant Impacts
Development of the DSP could result in three significant noise impacts, as described below.

Table 4.9-6:
Traffic-Related Noise Effects[1]

Roadway Segments	Change From 2007 - 2025			
	No Project		Downtown Specific Plan	
	Traffic Level Change	dBA increase	Traffic Level Change	dBA increase
Old Redwood Highway south of Myrtle Avenue	31.7%	1.0	25.4%	0.9
Old Redwood Highway north of Page Street	31.7%	1.0	25.4%	0.9
East Cotati Avenue	67.4%	2.2	59.4%	2.2
Hwy 101 near lane at the end of St. Joseph Street	72.0%	2.5	69.9%	2.4
Old Redwood Highway south of Hwy 116	49.9%	1.9	49.1%	1.9
Wilford Lane[2]	24.5%	1.0	24.0%	1.0

Notes:
1. West Sierra Roadway (see Table 4.9-2) not included because no current traffic data for the roadway segment was available.
2. Based on the traffic study for the project, the closest traffic data available to the Wilford Lane segment was the roadway segment along Redwood Hwy between Commerce and Hwy 116.

Impact NOISE-1: Construction activities in the planning area could generate short-term noise and vibration impacts on existing residential properties and noise sensitive land uses (thresholds b and d).

Construction activities could generate noise and vibration associated with heavy equipment and vehicles. Due to the programmatic level of the proposed project, no specific construction noise impact models were generated. The current uncertainty with respect to project phasing and specific project design does not allow for a precise estimate of short-term noise impacts associated with construction. However, the following general assessment is appropriate at this phase.

U.S. EPA guidelines indicate that average construction noise is 95 dBA at a 50-foot distance from the source. Considering this fact and because a 6 dBA drop in noise level occurs with a doubling of the distance from the source, locations within 1,600

feet of construction sites could be affected by noise levels over 65 dBA. Noise from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. Construction activities associated with the proposed project could also temporarily expose persons in the vicinity of construction sites to excessive groundborne vibration. These would be temporary and within the normal range of construction related activities.

Existing sensitive receptors in the project area that would likely be affected by project construction noise and vibration at some phase of project development include, but are not limited to, single-family neighborhoods located around La Plaza Park, the Charles Street Village Senior Housing, and the senior housing development located in the northern portion of the planning area east of the Old Redwood Highway. Additionally, as new sensitive uses are developed within the Downtown area, future phases of construction will also have the potential to impact these new uses.

Mitigation NOISE-1: All construction activities associated with the DSP shall comply with existing City standards and policies established within the City's General Plan and Municipal Code. In addition, the following measures shall be implemented:

- The construction contractor shall post a sign at all entrances to the work site prior to commencement of the work informing all contractors and subcontractors, their employees, agents, delivery personnel and all other persons at the property of the basic limitations upon noise and construction activities provided in the City's General Plan and Municipal Code.
- The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

Significance after Mitigation: Implementation of the measures identified in Mitigation NOISE-1 would reduce potential construction noise and vibration impacts to a less than significant level.

Impact NOISE-2: The buildout of the Downtown Specific Plan will potentially introduce sensitive land uses in areas with noise levels above acceptable levels (threshold a).

The Downtown Specific Plan proposes several new blocks of housing in some areas that are currently not developed with sensitive land uses such as residential. An area that is at risk of exposure to traffic-generated noise is the Northern Gateway District because of its proximity to Old Redwood Highway. New residential development fronting Old Redwood Highway has the potential to expose residents to traffic-generated noise. Based on the contours identified in Figure 4.9-2, exterior noise levels at proposed residential locations may exceed 70 decibels due to roadway traffic (see Table 4.9-2).[3] In residential units of standard construction, interior noise

[3] Because the noise model did not indicate a decrease in traffic generated noise (which would have been indicated with a negative change in dBA) it is assumed that noise effects will be similar, however not significantly greater, to those provided in Table 4.9-2.

levels are approximately 15 decibels lower than exterior noise levels with the windows partially open. Therefore, employing standard construction methods will succeed in reducing interior noise to approximately 55 decibels, above the interior standard of 45 decibels. New development also at risk is that proposed adjacent to Highway 101 between W. Cotati Avenue and Gravenstein Highway 116. Residential uses have the potential to be exposed to exterior noise levels higher than 65 dBA generated from Highway 101 traffic.

U. S. Highway 101 is scheduled to be widened with a interior third lane. The *Highway 101 HOV Lane Widening and Improvement Project* has been adopted by the Sonoma County Transportation Authority (SCTA), in cooperation with the Caltrans. It includes the widening of Highway 101 from four lanes to six lanes by adding one high-occupancy vehicle (HOV) lane in each direction. The project area spans 6.4 miles from Old Redwood Highway in Petaluma to Rohnert Park Expressway in Rohnert Park.

A Noise Study Report was completed for the project in September 2005. The Noise Study Report predicted noise levels at various locations along Highway 101 for project and no project scenarios. The report included recommendations for mitigating noise impacts for the project scenario. Mitigation includes the construction of sound walls where highway noise exceeded the acceptable exterior sound levels. It then identified the areas where it was feasible and reasonable to construct these barriers.[4] No locations directly within the planning area were determined to meet the feasible and reasonable criteria for a barrier to future noise levels from the Highway 101 expansion. Future development, including that proposed in the DSP, was not analyzed in the Noise Study Report. As stated above, pursuant to the Cotati Municipal Code, all development located in an area where noise levels exceeds the established noise standards will require acoustical analysis.

Mitigation NOISE-2: Where exterior noise levels are expected to exceed noise standards, development projects are required to prepare an acoustical analysis to identify the noise attenuation features that need to be included in the project's design to maintain interior noise levels at or below 45 dBA. Compliance with the recommendations of a qualified acoustical expert will ensure that interior noise standards are met. 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 occupant's discretion to control noise. Special building construction techniques (such as sound-rated windows and/or building façade 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 for applicable projects 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.

Significance after Mitigation. Implementation of the measures identified in Mitigation NOISE-2 would reduce noise impacts to a less than significant level.

[4] *Reasonable and feasible* represents locations where soundwalls are feasible (based on site constraints) and where they meet the Caltrans criteria for calculated Reasonable Allowance.

Impact NOISE-3: Noise from retail components of mixed use projects may adversely impact the residential component (threshold a).

The Downtown Specific Plan proposes retail and commercial uses adjacent to noise sensitive uses, such as residential, in the La Plaza Park District and Northern Gateway District. Deliveries, loading and unloading, as well as the use of heating and ventilation systems associated with commercial uses, can create nuisance noise impacts for the residential component of mixed-use developments.

Mitigation NOISE-3: Mitigation for noise impacts of mixed-use developments shall be developed and applied as specific projects are proposed, based on acoustical analyses for these projects. Measures may include but are not limited to:

- Operating hour limitations
- Mechanical system design and location modifications
- Limits on some combinations of tenants

The acoustical analysis shall identify the noise attenuation features that need to be included in the project's design to maintain interior noise levels at or below 45 dBA for residential uses. The following noise insulation features, or their equivalent, shall be used to provide acceptable interior noise levels for residential uses in mixed use developments and residential development along heavily used transportation routes. Such features include:

- Batting or resilient channels in exterior walls
- Double paned windows
- Air conditioners to enable occupants to keep their windows closed
- Fixed windows with mechanical ventilation systems
- Noise baffles on exterior vents
- Windows and sliding glass doors mounted in low air infiltration rate frames
- Solid core exterior doors with perimeter weather stripping and threshold seals

Significance after Mitigation: Implementation of measures identified in Mitigation N-3 would reduce noise impacts to a less than significant level.

4.9.7 Cumulative Impacts

Implementation of the DSP would not make a cumulatively considerable contribution to any significant cumulative noise impacts in the region.

The existing cumulative impact is not significant. This conclusion is based in part on the conclusion in the EIR for the current Cotati General Plan. The General Plan EIR concluded that there would not be significant impacts to these resources and the DSP will have a lower buildout population than the General Plan estimated.

The DSP's impacts are less than significant and it does not result in a significant cumulative impact. Specifically, the impact of the project will not make a cumulatively considerable contribution to the significant cumulative impact. The reason for this conclusion is the project-specific evaluation provided above takes into consideration future development in the region.

4.9.8 References

California Department of Transportation District 4. (not dated). *Highway 101 Petaluma to Rohnert Park HOV Lane Widening Project Draft EA/EIR* obtained from http://www.dot.ca.gov/dist4/documents/101_hov_widen_petaluma/chapter_3.pdf accessed on 9/12/07.

City of Cotati Municipal Code. http://municipalcodes.lexisnexis.com/codes/cotati/index.htm accessed 6/15/07

Illingworth & Rodkin, Inc. (October 2005). *City of Cotati General Plan Update Noise Assessment*.

Parsons. September 2005. *Noise Study Report: Highway 101 HOV Lane Widening and Improvements Project.*