CHAPTER 6
NOISE RESOURCES

CHRONOLOGY OF UPDATES

NOVEMBER 30, 2005—VERSION 1

LAND USE ACTIVITIES IN NAPA COUNTY

PURPOSE

The purpose of this chapter is to provide a summary of existing noise conditions in Napa County. This chapter is the culmination of focused research and review of numerous existing background reports and publications that contain information on noise sources and sensitive receptors in Napa County. This document and the data assembled provide broad tools for site and regional planning as well as the basis for future planning documents relating to the management of noise.

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LIST OF ACRONYMS AND ABBREVIATIONS

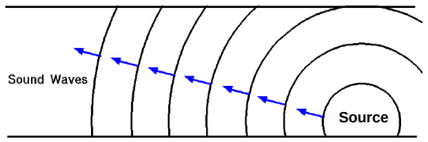
AICUZ	Air Installation Compatible Use Zone
BDR	Napa County Baseline Data Report
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CNEL	community noise equivalent level
County	Napa County
dB	decibel
dBA	A-weighted decibel
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Authority
HUD	Housing and Urban Development
I-80	Interstate 80
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
L_x	percentile-exceeded sound level
SR	State Route

INTRODUCTION

This noise chapter provides a detailed discussion of existing noise conditions for the evaluation areas being considered in the Napa County Baseline Data Report (BDR). This chapter also discusses the federal, state, and local policies that govern environmental noise in Napa County (County), describes the methods used to quantify noise conditions in the County, and identifies noise-sensitive land uses and major noise sources and existing noise conditions.

SPECIALIZED TERMS USED

Sound travels through the air as waves of minute air pressure fluctuations caused by some type of vibration. In general, sound waves travel away from the sound source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the sound source.



Sound travels through the air as waves of minute air pressure fluctuations caused by vibration. The energy contained in a sound wave is spread over an increasing area as it travels away from the source.

- *Decibel (dB):* Sound-level meters measure the pressure fluctuations caused by sound waves. Because of the ability of the human ear to respond to a wide dynamic range of sound pressure fluctuations, loudness is measured in terms of decibels (dB) on a logarithmic scale. This results in a scale that measures pressure fluctuations with a convenient range of values and corresponds to our auditory perception of increasing or decreasing loudness.

- *A-Weighted Decibels (dBA)*: Most sounds consist of a broad range of sound frequencies. Because the human ear is not equally sensitive to all frequencies, several frequency-weighting schemes have been used to develop composite decibel scales that approximate the way the human ear responds to sound levels. The "A-weighted" decibel scale (dBA) is the most widely used for this purpose. Typical A-weighted sound levels for various types of sound sources are summarized in Table 6-1.

- *Equivalent Sound Level (Leq)*: Time-varying sound levels are often described in terms of an equivalent constant decibel level. The equivalent sound level (L_{eq}) is the average of sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that would contain the same acoustical energy in a stated time period as the time-varying sound that actually occurs during the same period. Equivalent sound levels are often used to develop single-value descriptions of average sound exposure over various periods of time. Such average sound exposure values often include additional weighting factors for annoyance potential attributable to time of day or other considerations. The L_{eq} data used for these average sound exposure descriptors are generally based on A-weighted sound-level measurements.

- *Day-Night Average Sound Level (Ldn)*: Average sound exposure over a 24-hour period is often presented as a day-night average sound level (L_{dn}). L_{dn} values are calculated from hourly L_{eq} values, with the L_{eq} values for the nighttime period (10:00 p.m. to 7:00 a.m.) increased by 10 dB to reflect the greater disturbance potential from nighttime noises.

Table 6-1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 300 meters (1,000 feet)		
	— 100 —	
Gas lawn mower at 1 meter (3 feet)		
	— 90 —	
Diesel truck at 15 meters (50 feet) at 80 kph (50 mph)		Food blender at 1 meter (3 feet)
	— 80 —	Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime		
Gas lawn mower, 30 meters (100 feet)	— 70 —	Vacuum cleaner at 3 meters (10 feet)
Commercial area		Normal speech at 1 meter (3 feet)
Heavy traffic at 90 meters (300 feet)	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: California Department of Transportation Noise Protocol Technical Noise Supplement

- *Community Noise Equivalent Level (CNEL)*: The community noise equivalent level (CNEL) is also used to characterize average sound levels over a 24-hour period, with weighting factors included for evening and nighttime sound levels. L_{eq} values for the evening period (7:00 p.m. to 10:00 p.m.) are increased by 5 dB, while L_{eq} values for the nighttime period (10:00 p.m. to 7:00 a.m.) are increased by 10 dB. For given set of sound measurements, the CNEL value will usually be about 1 dB higher than the L_{dn} value. In practice, CNEL and L_{dn} are often used interchangeably.

- *Percentile-Exceeded (Lx), and Maximum and Minimum Sound Levels (Lmax and Lmin)*: The sound level exceeded during a given percentage of a measurement period is the percentile-exceeded sound level (L_x). Examples include L_{10}, L_{50}, and L_{90}. L_{10} is the A-weighted sound level that is exceeded 10% of the measurement period, L_{50} is the level exceeded 50% of the period, and so on. L_{50} is the median sound level measured during the measurement period. $L_{90,}$ the sound level exceeded 90% of the time, excludes high localized sound levels produced by nearby sources such

as single car passages or bird chirps. L_{90} is often used to represent the background sound level. L_{50} is also used to provide a less conservative assessment of the background sound level.

The maximum sound level (L_{max}) and the minimum sound level (L_{min}) are the maximum and minimum sound levels, respectively, measured during the measurement period. When a sound meter is set to the slow response setting, as is typical for most community noise measurements, the L_{max} and L_{min} values are the maximum and minimum levels measured over a 1-second period.

- *Ambient Sound*: Ambient sound is the all-encompassing sound associated with a given community site, including any specific source(s) of interest. It is usually a composite of sounds from many sources, near and far, with no particular sound being dominant.
- *Background Sound*: Background sound is total sound associated with a given community site, independent of the noise source of interest.
- *Noise Contour:* Noise contours are lines drawn on a map around a source indicating constant levels of noise exposure. L_{eq}, L_{dn}, and CNEL are commonly used noise contour metrics.

EQUIVALENCIES BETWEEN VARIOUS SOUND DESCRIPTORS

The L_{dn} value at a site calculated from a set of measurements taken over a given 24-hour period will be slightly lower than the CNEL value calculated over the same period. Except in situations where unusually high evening sound levels occur, the CNEL value will be within about 1.5 dB of the L_{dn} value for the same set of sound measurements.

The relationship between peak hourly L_{eq} values and associated L_{dn} values depends on the distribution of traffic over the entire day. There is no precise way to convert a peak hourly L_{eq} value to an L_{dn} value. However, in urban areas near heavy traffic, the peak hourly L_{eq} value is typically 2–4 dB lower than the daily L_{dn} value. In less heavily developed areas, the peak hourly L_{eq} is often equal to the daily L_{dn} value. For rural areas with little nighttime traffic, the peak hourly L_{eq} value will often be 3–4 dB higher than the daily L_{dn} value.

WORKING WITH DECIBEL VALUES

The nature of the decibel scale is such that the individual sound levels for different sound sources cannot be added directly to give the combined sound level of these sources. Two sound sources producing equal sound levels at a given location will produce a composite sound level that is 3 dB higher than either sound alone. When two sound sources differ by 10 dB, the composite sound level will be only 0.4 dB higher than the louder source alone.

Most people have difficulty distinguishing the louder of two sound sources if they differ by less than 1.5–2.0 dB. Research indicates the following about the human perception of changes in sound level.

- A 3-dB change is just perceptible.
- A 5-dB change is clearly perceptible.
- A 10-dB change is perceived as being twice or half as loud.

A doubling or halving of acoustic energy will change the resulting sound level by 3 dB, which corresponds to a change that is just perceptible. In practice, this means that a doubling of traffic volume on a roadway, doubling the number of people in a stadium, or doubling the number of wind turbines in a wind farm will, as a general rule, only result in a 3-dB, or just perceptible, increase in noise.

OUTDOOR SOUND PROPAGATION

There are a number of factors that affect how sound propagates outdoors. These factors, described by Hoover and Keith (1996), are summarized below.

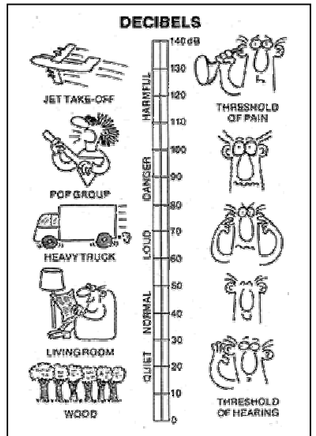
DISTANCE ATTENUATION

As a general rule, sound from localized or point sound sources spreads out as it travels away from the source and the sound level drops at a rate of 6 dB per doubling of distance. If the sound source is long in one dimension, such as traffic on a highway or a long train, the sound source is considered to be a line source. As a general rule, the sound level from a line source will drop off at a rate of 3 dB per doubling of distance. If the intervening ground between a point or line source and the receptor is acoustically "soft" (e.g., ground vegetation, scattered trees, clumps of bushes), the attenuation rate is increased by about 1.5 dB per doubling of distance (i.e., 7.5 dB per doubling of distance for point sources and 4.5 dB per doubling of distance for line sources).

ATTENUATION FROM BARRIERS

Any solid structure such as a berm, wall, or building that blocks the line of sight between a source and receiver serves as a sound barrier and will result in additional sound attenuation. The amount of additional attenuation is a function of the difference between the length of the sound path over the barrier and the length of the direct line of sight path. Thus, the sound attenuation of a barrier between a source and a receiver that are very far apart will be much less than the attenuation that would result if either the source or the receiver is very close to the barrier.

A sound barrier must block the line of sight between the source and receiver to provide attenuation of the direct sound.



Human Response to Sound

Any residential structures located in noise-critical areas, such as proximity to highways, county roads, county streets, railroads, rapid transit lines, airports, or industrial areas, must be designed to prevent the intrusion of exterior noises beyond the interior standard of 45 dBA (L_{dn} or CNEL).

OTHER ATMOSPHERIC EFFECTS

Short-term atmospheric effects relating to wind and temperature gradients can cause bending of sound waves and influence changes in sound levels at large distances. These effects can either increase or decrease sound levels, depending on the orientation of the source and receptor and the nature of the wind and temperature gradient. Because these effects are normally short term, it is generally not practical to include them in sound propagation calculations. Understanding these effects, however, can help explain variations that occur between calculated and measured sound levels.

POLICY CONSIDERATIONS

This section discusses the federal, state, and local policies that are relevant to the analysis of noise in Napa County.

FEDERAL POLICIES

The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given the following responsibilities.

- Provide information to the public regarding identifiable effects of noise on public health or welfare.
- Publish information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety.
- Coordinate federal research and activities related to noise control.
- Establish federal noise emission standards for selected products distributed in interstate commerce.

The federal Noise Control Act also directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations.

Although EPA was given major public information and federal agency coordination roles, each federal agency retains authority to adopt noise regulations pertaining to agency programs. EPA can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements. The following is a summary of key federal agencies and the jurisdiction that they have related to noise.

- Housing and Urban Development (HUD)—Noise standards for federally funded housing project.
- Federal Aviation Administration (FAA)—Noise standards for aircraft noise.
- Federal Highway Administration (FHWA)—Noise standards for federally funded highway projects.
- Federal Transit Authority (FTA)—Noise standards for federally funded transit projects.
- Federal Railroad Administration (FRA)—Noise standards for federally funded railroad projects.

ENVIRONMENTAL PROTECTION AGENCY

In 1974, in response to the requirements of the federal Noise Control Act, EPA identified indoor and outdoor noise limits to protect public health and welfare (communication disruption, sleep disturbance, and hearing damage). Outdoor L_{dn} limits of 55 dB and indoor L_{dn} limits of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Sound-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dB (both outdoors and indoors).

HOUSING AND URBAN DEVELOPMENT

The U.S. Department of Housing and Urban Development has established guidelines for evaluating noise impacts on residential projects seeking financial support under various grant programs (44 FR 135:40860-40866, January 23, 1979). Sites are generally considered acceptable for residential use if they are exposed to outdoor L_{dn} values of 65 dB or less. Sites are considered "normally unacceptable" if they are exposed to outdoor L_{dn} values of 65–75 dB. Sites are considered unacceptable if they are exposed to outdoor L_{dn} values above 75 dB. The HUD goal for the interior noise level in residences is that noise levels should not exceed 45 dB-L_{dn}.

FEDERAL AVIATION ADMINISTRATION

14 CFR Part 150, "Airport Noise Compatibility Planning" prescribes the procedures, standards, and methodology to be applied airport noise compatibility planning activities. Noise levels below 65 L_{dn} are normally considered to be acceptable for noise-sensitive land uses.

FEDERAL HIGHWAY ADMINISTRATION

FHWA regulations (23 CFR 772) specify procedures for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise abatement actions. The FHWA noise abatement criteria are based on worst hourly L_{eq} sound levels, not L_{dn} or CNEL values. The worst-hour 1-hour L_{eq} criteria for residential, educational, and healthcare facilities are 67 dB outdoors and 52 dB indoors. The worst-hour 1-hour L_{eq} criterion for commercial and industrial areas is 72 dB (outdoors).

FEDERAL TRANSIT AUTHORITY

FTA procedures for the evaluation noise from transit projects are specified in the document entitled "Transit Noise and Vibration Impact Assessment" (Federal Transit Authority 1995). The FTA Noise Impact Criteria group noise-sensitive land uses into the following three categories.

- Category 1: Buildings or parks where quiet is an essential element of their purpose.
- Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches and active parks.

L_{dn} is used to characterize noise exposure for residential areas (Category 2). For other noise-sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour L_{eq} during the facility's operating period is used.

The noise impacts are identified based on absolute predicted noise levels and increases in noise associated with the project.

FEDERAL RAILROAD ADMINISTRATION

FRA procedures for the evaluation noise from high-speed (greater than 125 mph) rail projects are specified in the document entitled "High-Speed Ground Transportation Noise and Vibration Impact Assessment" (Federal Railroad Administration 1998). Noise standards pertaining to rail projects are contained in Code of Federal Regulations, Title 49, Section 210.

STATE POLICIES

CALIFORNIA NOISE INSULATION STANDARDS

The California Noise Insulation Standards are found in the California Code of Regulations (CCR), Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code). The standards establish an interior noise (attributable to exterior sources) limit of 45 dBA (L_{dn} or CNEL, with L_{dn} as the preferred metric) for any habitable room within any new hotel, motel, dormitory, long-term care facility, apartment house, or dwelling other than detached single-family dwellings. Any residential structures located in noise-critical areas, such as proximity to highways, county roads, county streets, railroads, rapid transit lines, airports, or industrial areas, must be designed to prevent the intrusion of exterior noises beyond the interior standard of 45 dBA (L_{dn} or CNEL). To determine compliance with the standard, worst-case noise levels, either existing or future, must be used. If future noise levels are used, then they shall be predicted for a period of at least 10 years from the time of building permit application.

When residential structures are proposed within an area exceeding 60 dBA (L_{dn} or CNEL), an acoustical analysis is required to demonstrate that the building design will limit exterior noise to the interior standard of 45 dBA (L_{dn} or CNEL). When residential structures are proposed within an area where the annual noise level from airport operations exceeds 60 dBA (L_{dn} or CNEL), an acoustical analysis is required to demonstrate that the building design will limit exterior noise to the interior standard of 45 dBA (L_{dn} or CNEL). For public use airports or heliports, the noise level shall be determined from the airport land use plan prepared by the county wherein the airport is located. For military bases, the noise level shall be determined from the facility Air Installation Compatible Use Zone (AICUZ) plan. For all other airports or heliports, or public use airports or heliports for which a land use plan has not been developed, the noise level shall be determined from the noise element of the general plan of the local jurisdiction.

If allowable interior noise levels are met by requiring that windows be non-openable or closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment. The system must not compromise the dwelling unit or guest room noise reduction.

CALIFORNIA VEHICLE CODE

Noise generated by motor vehicles including buses is regulated under California Vehicle Code Section 27204. Depending on the weight and date of vehicle manufacture, the noise limit at 50 feet from the centerline of travel cannot exceed sound levels in the range of 80 to 88 dBA.

DIVISION OF AERONAUTICS NOISE STANDARDS

Title 21 Chapter 5000 of the CCR identifies noise compatibility standards for airport operations. Section 5014 of the code states that the standard for the acceptable level of aircraft noise for persons living in the vicinity of airports is established to be a community noise equivalent level of 65 decibels. Land uses such a residences, schools, hospitals, or places of worship exposed to aircraft noise exceeding 65 dB CNEL are deemed to be in a noise impact area. This standard forms the basis for the limitation that no airport proprietor of an airport shall operate an airport with a noise impact area based on the standard of 65 dB CNEL unless the operator has applied for or received a variance.

CALIFORNIA GENERAL PLAN GUIDELINES

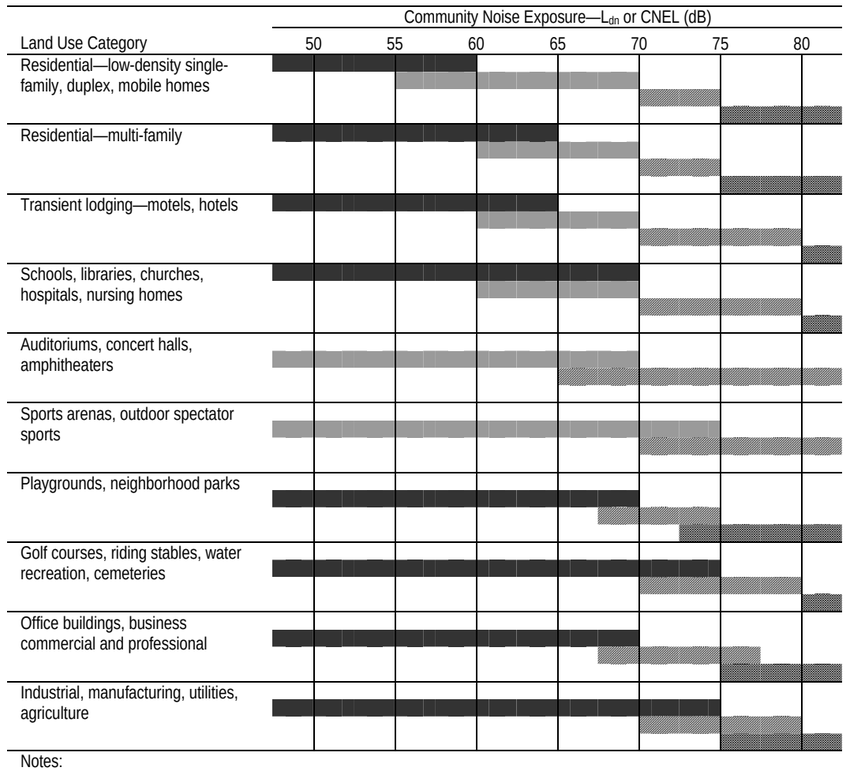
California Government Code Section 65302(f) requires that cities and counties include a noise element in their general plans. The purpose of the noise element is to provide a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise. The California Governor's Office of Planning and Research has published general plan guidelines that include guidelines for noise land use compatibility (Table 6-2).

Napa County Airport

The California Code of Regulations states that the standard for the acceptable level of aircraft noise is 65 dB CNEL.

Napa County's noise ordinance prohibits "any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area."

Table 6-2. State Land Use Compatibility Standards for Community Noise Environment



Notes:

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 are 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 generally should not be undertaken.

Source: California Governor's Office of Planning and Research 2003.

LOCAL POLICIES

The County has established policies concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The Napa County General Plan is a document required by state law that serves as the County's "blue print" for land use and development. The General Plan provides an overall framework for development in the County and protection of its natural and cultural resources by providing a comprehensive, long-term document that provides details for the physical development of the County, sets out policies, and identifies ways to put the policies into action. The Noise Element of the General Plan contains planning guidelines relating to noise and identifies goals and policies to support achievement of those goals. Noise Element guidelines relate primarily to land use compatibility with noise sources that are regulated at the local level, such as traffic, aircraft, and trains.

The County's noise ordinance, Chapter 8.16 from the County's code, is the primary noise enforcement tool for noise generated by locally regulated noise sources such a mechanical equipment and construction activity.

The following is a brief discussion of the General Plan policies and noise ordinance regulations implemented by the County to protect its citizens from the adverse impacts of noise.

NOISE ELEMENT OF THE GENERAL PLAN

The County's currently adopted Noise Element (amended on August 1, 1990, and reformatted in December 1996) establishes policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The County has established guidelines to assist in determining compatibility with surrounding land uses. These land use compatibility guidelines are summarized in Table 6-3.

The County's Noise Element further establishes noise level criteria for intermittent noise, where the "intermittent noise standards should receive special attention when projects are considered in 'Tentatively Compatible' or 'Normally Incompatible' areas as determined by the L_{dn} criteria, but, ideally, they would be considered in all cases" (Napa County Conservation Development and Planning Department 2002). These standards are summarized in Table 6-4.

Table 6-3. Napa County Land Use Compatibility Guidelines (dBA, L_{dn})

Land use	Completely Compatible	Tentatively Compatible	Normally Incompatible	Completely Incompatible
Residential	<55	55–60	60–75	>75
Commercial	<65	65–75	75–80	>80
Industrial	<70	70–80	80–85	>85

Notes:

Completely compatible: The noise exposure is such that both the indoor and outdoor environments are pleasant.

Tentatively compatible: The noise exposure is great enough to be of some concern, but common building construction practices will make the living indoor environment acceptable, even for sleeping quarters, and the outdoor environment will be reasonably pleasant for recreation and play.

Normally incompatible: The noise exposure is so severe that unusual and costly building construction is necessary to ensure some tranquility inside one's home, and barriers must be erected between the site and prominent noise sources to make the outdoor environment tolerable.

Completely incompatible: The noise exposure at the site is so severe that construction costs to make the indoor living environment acceptable would be prohibitive and the outdoor environment would still be intolerable.

Source: Napa County Conservation Development and Planning Department 2002.

Table 6-4. Napa County Recommended Maximum Interior Noise Level Criteria for Intermittent Noise

	Generalized Land Use (occupancy)	Maximum Interior Intermittent Noise (dBA)	Basis for Criteria
A.	Residential		
	1. Living areas		
	a. Daytime (7:00 a.m. to 7:00 p.m.)	60	Conversation – 9 ft – normal voice
	b. Nighttime (7:00 p.m. to 7:00 a.m.)	55	Conversation – 10 ft. – normal voice
	2. Sleeping areas	50	Sleeping
B.	Residential		
	Multiple family apartments	Same as A	Same as A
C.	Educational facilities, etc.		
	1. Concert hall	25	Intrusion of noise may spoil artistic effect
	2. Legitimate theater	30	Intrusion of noise may spoil artistic effect
	3. School auditorium	35	Minimize intrusion into artistic performance
	4. School classroom	55	Speech communication – 20 ft. – raised voice
	5. School laboratory	60	Speech communication – 6 ft. – normal voice
	6. Church sanctuaries	45	Speech communication – 50 ft. – raised voice
	7. Library	55	Speech communication – 3 ft. – normal voice
D.	Recreational facilities		
	1. Motion picture theater	45	Minimize intrusion into artistic performance
	2. Sports arena	75	Conversation – 2 ft. – raised voice
	3. Bowling alley	75	Conversation – 2 ft. – raised voice
E.	Commercial, miscellaneous		
	1. Hotel, motel sleeping	50	Sleeping
	2. Hospital sleeping	50	Sleeping
	3. Executive offices, conference rooms	55	Speech communication – 12 ft. – normal voice
	4. Staff offices	60	Speech communication – 6 ft. – normal voice
	5. Sales, secretarial	65	Satisfactory telephone use
	6. Restaurants	65	Conversation – 4 ft. – normal voice
	7. Markets, retail stores	65	Conversation – 4 ft. – normal voice
F.	Light industrial		
	1. Office areas	See E-3, -4, -5	See E-3, -4, -5
	2. Laboratory	60	Speech communications – 6 ft. – normal voice
	3. Machine shop	75	Speech communications – 3 ft. – raised voice
	4. Assembly, construction	75	Speech communications – 2 ft. – raised voice
G.	Heavy industrial		
	1. Office areas	See E-3, -4, -5	See E-3, -4, -5
	2. Machine shop	75	Speech communications – 3 ft. – raised voice
	3. Assembly, construction	75	Speech communications – 2 ft. – raised voice

Source: Napa County Conservation Development and Planning Department 2002.

COUNTY OF NAPA NOISE ORDINANCE

Napa County's noise ordinance, Chapter 8.16 from the County's code, prohibits "any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area." To help establish what constitutes a violation of the County's noise ordinance, the County has established maximum interior and exterior noise limits. The limits are summarized in Tables 6-5 and 6-6.

Table 6-5. Napa County Noise Ordinance Interior Noise Limits[1]

Interior Noise Zone	Type of Land Use	Time Interval	Allowable Noise Level (dBA)[2]
All	Residential	10:00 p.m.–7:00 a.m.	55
		7:00 a.m.–10:00 p.m.	60

Notes:

The standard limits set forth in this table shall be reduced by 5 dB, but not to lower than 45 dB, for any offensive noise that contains a steady, audible tone such as a whine, screech, or hum, or that is a repetitive noise such as hammering or riveting, or that contains music or speech.

1 As measured inside a neighboring receiving dwelling unit and applies to all properties within a designated zone.

2 The following noise standards apply to the maximum allowable noise level.

- For cumulative periods more than 5 minutes in any hour, 0 dB shall be added to the standards above.
- For cumulative periods more than 1 minute in any hour, 5dB shall be added to the standards above.
- For any period of time, 10 dB shall be added to the standards above.
- For any period of time, the maximum measured ambient noise level may not be exceeded.

Table 6-6. Napa County Noise Ordinance Exterior Noise Limits[1]

Receiving Land Use Category[3]	Time Period	Noise Level (dBA) Noise Zone Classification[2] Rural	Suburban	Urban
Residential[4]	10:00 p.m.–7:00 a.m.	45	45	50
Single and double[4]	7:00 a.m.–10:00 p.m.	50	55	60
Residential multiple and country[4]	10:00 p.m.–7:00 a.m.	45	50	55
	7:00 a.m.–10:00 p.m.	50	55	60
Commercial[4]	10:00 p.m.–7:00 a.m.	—	60	—
	10:00 p.m.–7:00 a.m.	—	65	—
Industrial, including wineries	Anytime	—	75	—

Notes:

If the measurement location is on a boundary between two different zones, the sound level limit applicable to the quieter noise zone shall apply.

The standard limits set forth in this table shall be reduced by 5 dB, but not to lower than 45 dB, for any offensive noise that contains a steady, audible tone such as a whine, screech or hum, or that is a repetitive noise such as hammering or riveting, or that contains music or speech.

1 Applies to unincorporated areas of the County, as measured on any other property, either incorporated or unincorporated.

2 The following noise standards apply to the maximum allowable noise level.

- For cumulative periods longer than 30 minutes in any hour, 0 dB shall be added to the standards above.
- For cumulative periods longer than 15 minutes in any hour, 5 dB shall be added to the standards above.
- For cumulative periods longer than 5 minutes in any hour, 10 dB shall be added to the standards above.
- For cumulative periods longer than 1 minute in any hour, 15 dB shall be added to the standards above.
- For any period of time, 20 dB shall be added to the standards above.
- For any period of time, the maximum measured ambient noise level may not be exceeded.

3 These standards apply to all properties within a designated zone.

4 If the measured ambient noise level differs from that identified as permissible by this table, the allowable noise exposure standard shall be the ambient noise level.

Sensitive receptors — Places where people live, sleep, recreate, worship, and study are generally considered sensitive to noise because intrusive noise can be disruptive to these activities.

Napa County Noise Ordinance prohibits construction activities between 7:00 p.m. and 7:00 a.m. Domestic power tool use is prohibited between 10:00 p.m. and 7:00 a.m.

To control noise from construction activities, the County has established noise limits for construction activities (Table 6-7). The County's ordinance further prohibits the use of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of 7:00 p.m. and 7:00 a.m. to prevent construction activity-related noise from creating a noise disturbance across a residential or commercial real property line. However, the operation of domestic power tools or emergency work of public service utilities or by variance issued by the appropriate authority is exempt from this stipulation. The use of domestic power tools (i.e., any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool) is prohibited between the hours of 10:00 p.m. and 7:00 a.m. so as to not create a noise disturbance across a residential or commercial property line. Any motor, machinery, or pump (i.e., swimming pool equipment, etc.) shall be sufficiently enclosed or muffled and maintained so as to not exceed the County's noise standards summarized in Tables 6-5 and 6-6.

Table 6-7. Napa County Noise Ordinance Noise Limits for Construction Activities

Interior noise zone	Residential	Commercial	Industrial
Daily: 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily: 7:00 p.m. to 7:00 a.m.	60 dBA	65 dBA	70 dBA

Warning devices necessary for the protection of public safety, such as emergency vehicle sirens and train horns, are not required to comply with the County noise ordinance.

The County's noise ordinance prohibits any animal noise (including from farm livestock and fowl and dogs maintained on agricultural property) that would cause annoyance or discomfort to two or more reasonable persons of normal sensitiveness who reside in separate residences, including apartments and condominiums. However, if it is determined that a noise disturbance caused by an animal affects only one individual, a complaint from only one person may be accepted. The County's noise ordinance further stipulates that any noise that is audible continuously for 10 minutes, or intermittently for 30 minutes, shall be *prima facie* evidence of such annoyance or discomfort.

Loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects in such a manner as to cause a noise disturbance across a residential property line or violate the County's noise standards summarized in Tables 6-5 and 6-6 is prohibited between the hours of 10:00 p.m. and 6:00 a.m. The use of loudspeakers, amplified sound devices, radios, television sets, musical instruments and similar devices, and powered motor vehicles are also subject to the County's noise standards summarized in Tables 6-5 and 6-6.

The County has exempted the following from compliance with the noise ordinance.

- Sound associated with emergency work or alerting persons to the existence of an emergency.
- Warning devices necessary for the protection of public safety (e.g., police, fire, and ambulance sirens, and train horns).
- Temporary outdoor activities and special events on roadways, provided that the events are conducted in accordance with the licenses issued for them.
- All mechanical devices, apparatus or equipment associated with agricultural operations conducted on agricultural property. However, wineries are not exempt, and are subject to the provisions of the County's noise ordinance.
- Commercial and industrial operations in existence prior to the date of adoption of the ordinance codified in Chapter 8.16 of the General Plan, if in compliance with local zoning statutes, shall be granted a 5-year period from the date of adoption within which to comply with the provisions of Chapter 8.16. If, at the end of the 5-year period, it can be shown that compliance with the provisions in this chapter constitutes a hardship in terms of technical and economic feasibility, a variance may be granted until such time as compliance may be effected.

METHODOLOGY

For this BDR analysis of noise in Napa County, the following techniques were used to identify existing noise conditions.

- Noise sources were identified, and, to the extent possible, noise from these sources was quantified.
- Existing land uses that are sensitive to noise were identified.
- Conflicts between existing noise sources and noise-sensitive land uses were identified.

DEFINITION OF STUDY AREA

The study area for this noise analysis is Napa County, and includes all jurisdictions and municipalities contained within the County.

RESOURCES CONSULTED

Existing studies and relevant information regarding noise and environmental acoustics were reviewed. Those sources are cited where appropriate, and full references are provided below in the *References Cited* section of this chapter.

EXISTING NOISE CONDITIONS

This section identifies noise-sensitive land uses, major noise sources, and existing noise conditions in Napa County.

NOISE-SENSITIVE LAND USES

General noise practice identifies noise-sensitive land uses as being land uses where noise can adversely affect use of the land. These are often places where people live, sleep, recreate, worship, and study; they are generally considered sensitive to noise because intrusive noises can be disruptive to these activities. The following specific areas are considered sensitive to noise.

- Residences.
- Hospitals, healthcare facilities, and assisted living facilities.
- Parks, wildlife areas, and recreation areas.
- Places of worship.
- Libraries.
- Schools.

Noise-sensitive areas have been identified in the County based on consultation with County staff and a review of web resources. Noise-sensitive resources are discussed by category in the following sections.

RESIDENCES

Napa County is generally rural, with concentrated populations of residences located primarily within cities and towns located within the County. These cities and towns are indicated in Map 6-1. Maps 6-2 and 6-3 show the location of noise-sensitive land uses within each of the cities and towns. (All maps appear at the end of the chapter.)

- Map 6-2: Angwin, Calistoga, Deer Park, St. Helena.
- Map 6-3: American Canyon, Napa, Yountville.

HOSPITALS, HEALTHCARE FACILITIES, AND ASSISTED LIVING FACILITIES

Hospitals, healthcare facilities, and assisted living facilities within the County are identified in Appendix Noise-A. The locations of these facilities are shown in Maps 6-1 through 6-3.

PARKS, WILDLIFE AREAS, AND RECREATION AREAS

Public parks, wildlife areas, and other recreation areas, including campgrounds and picnic areas, within the County are identified in Appendix Noise-B. The locations of these areas are shown in Maps 6-1 through 6-3.

PLACES OF WORSHIP

Churches, synagogues, and other places of worship within the County are identified in Appendix Noise-C. The locations of these facilities are shown in Maps 6-1 through 6-3.

LIBRARIES

Libraries within the County are identified in Appendix Noise-D. The locations of these facilities are shown in Maps 6-1 through 6-3.

SCHOOLS

Public and private schools within the County are identified in Appendix Noise-E. The locations of these facilities are shown in Maps 6-1 through 6-3.

Noise-sensitive land uses are areas where noise can adversely affect use of the land, including residences, health car facilities, recreation areas, places of worship, libraries, and schools.

MAJOR NOISE SOURCES (MOBILE AND STATIONARY)

The dominant sources of noise in the County are related to transportation, and include automobile and truck traffic, aircraft, and trains. Stationary sources in the County include construction sites, agricultural activities, and commercial and industrial facilities.

ROADWAY TRAFFIC

Interstate 80 (I-80), State Route 12 (SR 12), SR 29, SR 121, SR 128, and Silverado Trail are major sources of traffic noise in the County. Some County roads, primarily those that serve as collectors and arterials, are also significant sources of traffic noise. Major county roads and freeways that currently have traffic volumes in excess of 3,000 vehicles per day are listed in Table 6-8.

Noise levels produced by traffic on state highways and county roads with more than 3,000 vehicles per day have been calculated using the FHWA Traffic Noise Prediction Model (FHWA-ROAD-77-108). The model estimates traffic noise levels based on roadway geometrics; traffic volumes for automobiles, medium trucks (vehicles with two axles and six tires), and heavy trucks (vehicles with three or more axles); vehicle speeds; and a noise-attenuation-rate parameter. A computer-based implementation of the model was used to directly calculate L_{dn} values based on hourly traffic patterns, hourly truck percentages, and posted speeds.

I-80, SR 12, SR 9, SR 121, SR 128, and Silverado Trail are major sources of traffic noise in the County.

Table 6-8. Summary of Traffic Data and Noise Modeling Results for County Roads and Freeways for Existing Conditions

Roadway	Segment Limit North/East	Segment Limit South/West	Number of Lanes	Daily Traffic Volume	Speed (mph)	L_{dn} at 100 Feet	Distance to 70 L_{dn} contour (feet)	Distance to 65 L_{dn} contour (feet)	Distance to 60 L_{dn} contour (feet)
State Highway 29	American Canyon Rd	Napa/Solano Co Line	4	35,695	55	72	140	301	650
State Highway 29	Green Island Rd	American Canyon Rd	4	47,664	55	73	170	366	788
State Highway 29	South Kelly Rd	Green Island Rd	4	44,391	50	72	143	307	662
State Highway 29	Jamieson Cyn Rd (SR 12)	South Kelly Rd	4	44,566	60	74	191	411	885
State Highway 29	Kelly Rd	Jamieson Cyn Rd (SR 12)	4	65,211	60	76	247	532	1145
State Highway 29	Napa-Vallejo Hwy (SR 221)	Kelly Rd	5	27,288	60	72	138	297	641
State Highway 29	Napa-Vallejo Hwy (SR 221)	Carneros Hwy(SR 121/12)	4	43,159	60	74	195	420	904
State Highway 29	Imola Ave (SR 121)	Carneros Hwy(SR 121/12)	4	34,199	60	73	153	330	711
State Highway 29	Old Sonoma Rd	Imola Ave	4	52,855	60	74	196	422	910
State Highway 29	Lincoln Ave	Old Sonoma Rd	4	52,380	60	74	186	400	862
State Highway 29	Trancas St	Lincoln Ave	4	45,105	60	73	168	362	780
State Highway 29	Salvador Ave	Trancas St	4	37,678	55	72	131	282	607
State Highway 29	Oak Knoll Ave	Salvador Ave	4	28,677	60	71	124	268	577
State Highway 29	California Dr	Oak Knoll Ave	4	29,321	65	72	143	308	663
State Highway 29	Madison St	California Dr	4/2	29,321	50	70	96	207	446
State Highway 29	Oakville Grade	Madison St	2	23,417	55	70	95	205	442
State Highway 29	Rutherford Cross Rd (SR 128)	Oakville Grade	2	22,892	55	70	104	224	483
State Highway 29	Zinfandel Ln	Rutherford Cross Rd	2	20,944	50	70	96	207	445
State Highway 29	Chaix Ln	Zinfandel Ln	2	23,154	50	70	103	221	476
State Highway 29	Pope St	Chaix Ln	2	20,070	35	67	63	136	294
State Highway 29	Madrona St	Pope St	2	18,099	20	65	44	95	204
State Highway 29	Deer Park Rd	Madrona St	2	17,700	45	68	72	155	333
State Highway 29	Lodi Lane	Deer Park Rd	2	15,257	50	68	74	159	342
State Highway 29	Dunaweal Ln	Lodi Ln	2	14,865	50	68	72	156	336
State Highway 29	Lincoln Ave (SR 29)	Dunaweal Ln	2	11,456	50	67	61	131	283
State Highway 29	Silverado Trail	Foothill Blvd (SR 128)	2	9,914	20	59	19	40	86
State Highway 29	Tubbs Ln	Silverado Trail	2	4,358	45	61	27	57	123
State Highway 29	Napa/Lake Co Line	Tubbs Ln	2	7,458	30	62	28	61	132
Napa Vallejo Hwy	Kaiser Rd	Highway 29(SR 29/12)	4	30,857	60	72	143	308	664
Napa Vallejo Hwy	Silverado Trail	Streblow Dr	4	37,438	30	69	83	179	386
State Highway 121	Coombsville Rd	Soscol Ave	2	13,146	40	65	45	97	208
State Highway 121	Lincoln Ave	Coombsville Rd	2	14,812	35	64	41	89	193
State Highway 121	Hagen Rd	Lincoln Ave	2	18,030	40	66	55	119	257
State Highway 121	Monticello Rd	Hagen Rd	2	13,757	40	65	46	100	215
State Highway 121	Vichy Ave	Trancas St	2	13,166	45	66	56	120	258
State Highway 121	Wooden Valley Rd	Vichy Ave	2	4,107	30	58	15	33	71
Silverado Trl	Hardman Ave	Trancas St	2	9,723	60	67	66	143	308
Silverado Trl	0ak Knoll Ave	Hardman Ave	2	11,365	60	68	74	158	341
Silverado Trl	Yountville Cross Rd	Oak Knoll Ave	2	12,743	60	68	79	171	368
Silverado Trl	Sage Canyon Rd (SR 128)	Yountville Cross Rd	2	13,524	60	69	83	178	383
Silverado Trl	Zinfandel Ln	Sage Canyon Rd (SR 128)	2	11,049	60	68	72	155	335
Silverado Trl	Pope St	Zinfandel Ln	2	9,282	60	67	64	138	298

Table 6-8. Continued

Roadway	Segment Limit North/East	Segment Limit South/West	Number of Lanes	Daily Traffic Volume	Speed (mph)	L_{dn} at 100 Feet	Distance to 70 L_{dn} contour (feet)	Distance to 65 L_{dn} contour (feet)	Distance to 60 L_{dn} contour (feet)
Silverado Trl	Deer Park Rd	Pope St	2	8,640	60	67	61	132	284
Silverado Trl	Bale Ln	Deer Park Rd	2	5,591	50	63	36	77	166
Silverado Trl	Calistoga City Limits	Bale Ln	2	4,735	50	63	32	69	149
Silverado Trl	Calistoga City Limits	Lincoln Ave (SR 29)	2	5,149	55	64	38	83	179
State Highway 128	Napa/Sonoma Co Line	Tubbs Ln	2	3,402	30	59	20	43	92
State Highway 128	Tubbs Ln	Petrified Forest Rd	2	11,727	40	66	51	109	235
State Highway 128	Petrified Forest Rd	Lincoln Ave (SR 29)	2	12,928	35	65	47	101	219
State Highway 128	Napa River	St Helena Hwy (SR 29)	2	3,262	35	58	16	35	76
State Highway 12	Old Sonoma Rd	Napa/Sonoma Co Line	2	30,793	50	71	124	267	576
State Highway 12	Highway 29 (SR 29/12)	Old Sonoma Rd	4	31,517	55	72	141	305	657
State Highway 12	Kelly Rd	Napa-Vallejo Hwy (SR 29)	4	29,022	40	70	93	200	431
State Highway 12	Lynch Rd	Kelly Rd	4	28,597	55	72	133	286	615
State Highway 12	Napa/Solano Co Line	Lynch Rd	2	31,861	55	72	142	307	661
Flosden Rd	American Canyon Rd	Napa/Solano Co Line	2	15,855	45	67	63	136	292
Interstate 80	American Canyon Rd	Napa/Solano Co Line	4	128,000	65[1]	79	398	857	1847
American Canyon Rd	Napa-Vallejo Hwy (SR 29)	Wetlands Edge Dr	4	7,150	35[1]	61	24	51	111
American Canyon Rd	Flosden Rd	Napa-Vallejo Hwy (SR 29)	2	29,956	35	68	72	155	334
American Canyon Rd	I-80	Flosden Rd	2	22,381	55	70	103	221	476
Eucalyptus Dr	Napa-Vallejo Hwy (SR 29)	Wetlands Edge Dr	2	7,137	25	57	14	31	67
Washington St	Madison St	California Dr	2	5,208	25	56	12	25	54
Green Island Rd	Napa-Vallejo Hwy (SR 29)	American Canyon City Limits	2	6,527	35	59	19	42	90
S Kelly Rd	Jamieson Canyon Rd (SR12)	Highway 29	2	3,430	50	60	22	47	102
N Kelly Rd	Napa-Vallejo Hwy (SR 29)	Jamieson Canyon Rd (SR12)	2	11,870	60	68	68	147	318
Airport Blvd	Napa-Vallejo Hwy (SR 29)	End	4	5,574	35[1]	59	17	37	81
Vista Point Dr	Napa-Vallejo Hwy (SR 221)	Napa-Vallejo Hwy (SR 29)	2	3,541	45	59	19	41	88
Cuttings Wharf Rd	Carneros Hwy (SR 121/12)	End	2	3,002	55	61	24	51	110
Old Sonoma Rd	Buhman Ave	Carneros Hwy (SR 121/12)	2	3,981	55	63	32	70	150
Old Sonoma Rd	Congress Valley Rd	Buhman Ave	2	3,163	50	61	25	53	114
Old Sonoma Rd	Napa City Limits	Congress Valley Rd	2	7,494	55	65	49	107	229
Old Sonoma Rd	Freeway Dr	Napa City Limits	2	8,990	35	63	32	69	150
Buhman Ave	Browns Valley Rd	Napa City Limits	2	7,780	30	59	19	41	89
State Highway 121	Napa-Vallejo Hwy (SR 221)	Highway 29	4	26,007	35[1]	67	65	141	304
Imola Ave	Napa City Limits	Soscol Ave (SR121)	2	4,947	35[1]	60	22	47	100
Soscol Ave	First St	Silverado Trail	4	31,900	35[1]	68	75	162	348
Soscol Ave	Lincoln Ave	First St	4	21,571	35[1]	66	58	124	268
Soscol Ave	Trancas St	Lincoln Ave	4	23,321	35[1]	67	61	131	282
Partrick Rd	Napa City Limit	Highway 29	2	24,635	35[1]	65	47	101	217
1st St	Silverado Trail (SR 121)	Highway 29	2	6,243	25[1]	57	13	28	61
2nd St	Silverado Trail (SR 121)	Highway 29	2	11,457	25[1]	59	20	43	92
Coombsville Rd	First St	Silverado Trail (SR 121)	2	9,244	40[1]	64	38	82	177
Coombsville Rd	Fourth Ave	First St	2	4,327	40	60	23	50	107
Lincoln Ave	Silverado Trail(SR 121)	Highway 29	4	23,363	35[1]	67	61	131	283
Redwood Rd	Browns Valley Rd	Dry Creek Rd	2	8,118	35	62	30	65	140

Table 6-8. Continued

Roadway	Segment Limit North/East	Segment Limit South/West	Number of Lanes	Daily Traffic Volume	Speed (mph)	L_{dn} at 100 Feet	Distance to 70 L_{dn} contour (feet)	Distance to 65 L_{dn} contour (feet)	Distance to 60 L_{dn} contour (feet)
Redwood Rd	Highway 29	Dry Creek Rd	4	9,273	35[1]	63	33	71	153
Trancas St	Soscol Ave	Highway 29	4	25,826	45[1]	69	87	188	404
Trancas St	Monticello Rd (SR 121)	Soscol Ave	4	14,649	45	67	60	129	277
Hagen Rd	Vichy Ave	Napa City Limits	2	4,471	45	60	22	48	103
Dry Creek Rd	Napa City Limit	Redwood Rd	2	9,688	40	62	31	66	143
Salvador Ave	Napa City Limit	Highway 29	2	3,479	35	59	17	37	79
Salvador Ave	Big Ranch Rd	Napa City Limit	2	4,178	40	59	18	38	82
Big Ranch Rd	Salvador Ave	Trancas St	2	9,323	55	66	57	123	265
Big Ranch Rd	Oak Knoll Ave	Salvador Ave	2	4,791	60	64	41	89	192
Vichy Ave	Monticello Rd (SR 121)	Hagen Rd	2	3,136	40	57	15	31	67
Atlas Peak Rd	Old Soda Springs Rd	Monticello Rd (SR 121)	2	6,214	45	62	28	59	128
Oak Knoll Ave	Big Ranch Rd	Highway 29	2	3,869	50	61	24	51	111
Oak Knoll Ave	Silverado Trail	Big Ranch Rd	2	3,082	50	60	20	44	95
Yountville Cross Rd	Silverado Trail	Yountville Town Limits	2	3,875	50	61	24	51	111
Zinfandel Ln	Silverado Trail	St Helena Hwy (SR 29&128)	2	3,071	55	62	27	59	127
Spring St	Main St (SR 29/128)	St Helena City Limit	2	3,010	30	55	10	22	47
Pope St	Silverado Trail	Main St (SR 29/128)	2	5,210	30	60	22	48	104
Howell Mountain Rd	Cold Springs Rd	Deer Park Rd	2	5,515	45	61	25	55	118
College Ave	Howell Mt Rd	White Cottage Rd	2	3,454	25	54	9	19	41
Spring Mountain Rd	Main St (SR 29/128)	St Helena City Limit	2	5,250	25	56	12	25	55
Deer Park Rd	Silverado Trail	St Helena Hwy(SR 29/128)	2	4,956	60	64	38	82	178
Deer Park Rd	Sanitarium Rd (North)	Silverado Trail	2	7,551	45	62	31	68	146
Deer Park Rd	Howell Mountain Rd	Sanitarium Rd (North)	2	11,025	45	64	40	87	187
Sanitarium Rd	Deer Park Rd	Deer Park Rd	2	5,379	35	58	17	37	79
Petrified Forest Rd	Franz Valley Rd	Napa/Sonoma Co Line	2	7,995	45	63	33	70	151
Petrified Forest Rd	Foothill Blvd (SR 128)	Franz Valley School Rd	2	10,890	35	62	27	59	126
Tubbs Ln	Highway 29	Highway 128	2	5,638	55	64	41	88	190
Solano Ave	Napa City Limits	Redwood Rd	2	4,895	50	62	28	60	130

Notes:

Vehicle mix for all roadways are assumed to be 90% automobiles, 5% medium trucks, and 5% heavy trucks.[2]

[1] Roadway speeds unavailable; assumed speed.

[2] Source: California Department of Transportation 2005; Heide and Sheppard pers. comms.

Napa County Airport
Aircraft operations in the vicinity of airports can be a significant source of noise.

Truck percentages assumed in the analysis are based on data provided by the California Department of Transportation (Caltrans) and the County; Caltrans provided traffic data for highways, while the County provided traffic data on County roadways (California Department of Transportation 2005; Heide and Sheppard pers. comms.). Based on this information, it was assumed that the vehicle mix for all roadways are assumed to be 90% automobiles, 5% medium trucks, and 5% heavy trucks. These data and calculated noise levels are summarized in Table 6-8. Calculated L_{dn} values at 100 feet from the roadway centerline along with distances to the 70-, 65-, and 60-dB L_{dn} contours are also presented in Table 6-8. The distances to the 70-, 65-, and 60-dB L_{dn} contours are also presented in Maps 6-4 through 6-6.

AIRCRAFT

Aircraft operations in the vicinity of airports can be a significant source of noise. There are several airports in the County, but the two main airports in operation in the County are the Napa County Airport in Napa and ANGWIN-Virgil O Parrett Field in Angwin. There are also a number of local landing strips located in the proximity of the County. The following airports are located in the County.

- Napa County Airport, Airport Industrial Park, Napa.
- Angwin-Virgil O Parrett Field, Angwin.
- Calistoga Gliderport, 1546 Lincoln Ave, Calistoga.
- Inglenook Ranch Airport, Rutherford.
- Moskowite Airport, Capell Valley.
- Mysterious Valley Airport, Walter Springs.
- Pope Valley Airport, St. Helena.
- River Meadow Farm Heliport, Rutherford.
- Lake Berryessa Seaplane Base, Chiles Valley.

In July 2005, the Napa County Airport Master Plan Update was prepared. The existing 55-, 60-, and 65-dBA CNEL contours for the airport are depicted in Map 6-7, and the projected 55-, 60-, and 65-dBA contours for 2022 are depicted in Map 6-8. The contours indicated in Maps 6-7 and 6-8 are based on the aircraft activity forecast from the airport's Master Plan Update, which is summarized in Table 6-9. The latest year for which noise contours are available for Angwin-Virgil O Parrett Field is 1996; those contours are presented in Map 6-9.

Activity at small private landing strips is highly variable. In cases where the strip is used primarily for crop-dusting (sulfur application), which occurred on approximately 4,500 acres of vineyards throughout the County in 2005, the use will vary with the farming season. Because use of these strips is highly variable, it is not practical to develop CNEL contours. However, data are available on typical sound levels generated by small aircraft as a function of distance. These data are summarized in Table 6-10.

Table 6-9. Napa County Airport Master Plan Activity Forecast

	Current	Projected 2021	
	2001	Low	High
Based aircraft			
Aircraft types			
Single-engine	183	230	260
Twin-engine	19	20	24
Turboprop	13	22	30
Jets	7	12	20
Helicopters	2	6	6
Total aircraft	*224*	*290*	*340*
Storage Demand			
Apron	87		
Hangar space[1]	137	270	320
Total aircraft	*224*	*290*	*340*
Transient aircraft			
Peak parking demand	27	44	44
Annual aircraft operations			
Aircraft mix			
Single-engine piston	86,040	137,500	175,000
Twin-engine piston	15,640	21,000	33,500
Twin-engine turboprop	13,140	27,000	27,000
Small jet (e.g., Citation)	5,630	12,500	12,500
Medium jet (e.g., Falcon 900)	1,250	4,500	4,500
Large jet (e.g., Gulfstream)	1,880	3,500	3,500
Helicopters	2,500	4,000	4,000
Total	*126,080*	*210,000*	*260,000*
Type of operation			
Local (touch-and-go)	65,080	110,000	160,000
Itinerant	61,000	100,000	100,000
Total	*126,080*	*210,000*	*260,000*
Average operations per based aircraft	563	724	765

Source: Mead & Hunt 2005.

Table 6-10. Typical Sound Levels Generated by Small Aircraft

Slant Distance (feet)	Single Engine Takeoff	Single Engine Landing	Twin Engine Takeoff	Twin Engine Landing
500	74	66	80	72
1,000	71	63	77	69
2,000	67	59	73	65
4,000	63	55	69	61
8,000	58	50	64	56

Sources: Bishop and Hays 1975; Miller 1982.

TRAINS

No active freight rail lines are in operation within the County. The only rail line in operation in Napa County is the Napa Valley Wine Train, which operates on the old Southern Pacific Railroad line. The 36-mile rail line runs from the City of Napa to the City of St. Helena daily for lunch and dinner trips, and between the City of Napa and the City of Rutherford for weekend lunch trips. The daily lunch and dinner trips are 3-hour trips, while the weekend brunch trips are 2-hour trips. Table 6-11 summarizes the schedule for the Napa Valley Wine Train.

Table 6-11. Napa Valley Wine Train Schedule

	Brunch	Luncheon		Dinner
All Trips Originate in City of Napa	Weekend	Weekday	Weekend	Daily
Depart for Rutherford	9:30 a.m.	–	–-	–
Depart for St. Helena	—	11:30 a.m.	12:30 p.m.	6:30 p.m.
Return to Napa	11:30 a.m.	2:30 p.m.	3:30 p.m.	9:30 p.m.
Duration	2 hours	3 hours	3 hours	3 hours

Source: Napa Valley Wine Train 2005.

The 1992 EIR prepared for the Napa Valley Wine Train (Environmental Science Associates 1993) indicates that noise from the train would approach 85 to 90 dBA as the diesel locomotive approaches a receiver, and then drop to 80 to 85 dBA as the passenger coaches pass by. The total passby event typically would occur for approximately 1.5 minutes. Modeling conducted for the Napa Valley Wine Train EIR indicates that noise levels would increase to approximately 59 dBA, L_{dn} in the residential areas of the City of Napa. Noise exposure from the Napa Valley Wine Train is primarily limited to the first row of houses along the railroad right-of-way because these houses shield the houses further away from the tracks from train noise.

In addition to passby noise from train operations, the train would also generate noise during idling and when it uses its public warning/safety devices (i.e., train horn) at roadway crossings. Data from the 1992 EIR prepared for the Napa Valley Wine Train indicates that an idling Napa Valley Wine Train locomotive generates a noise level of approximately 78 dBA at 50 feet, while a locomotive horn is approximately 100 dBA at 100 feet. It is anticipated that a train approaching a roadway crossing would sound its horn four to six times within approximately 500 feet of each crossing.

CONSTRUCTION SITES

Table 6-12 illustrates noise levels produced by various types of construction equipment. The types of construction equipment used for a typical construction project usually generate noise levels of 80–90 dBA at a distance of 50 feet while the equipment is operating (U.S. Environmental Protection Agency 1971). Specific noise levels depend on the type of activity, the type and number of pieces of equipment in use; the noise level generated by the various pieces of equipment; the duration of the activity; the distance between the activity and any noise-sensitive receivers; and possible shielding effects that might result from local topography, vegetation, or buildings.

Table 6-12. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 ft from Source	Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81	Paver	89
Backhoe	80	Pile Driver (Impact)	101
Ballast equalizer	82	Pile Driver (Sonic)	96
Ballast tamper	83	Pneumatic Tool	85
Bulldozer	85	Pump	76
Chainsaw	86	Rail saw	90
Compactor	82	Rock Drill	98
Concrete Mixer	85	Roller/Sheep's Foot	74
Concrete Pump	82	Saw	76
Concrete Vibrator	76	Scarifier	83
Crane, Derrick	88	Scraper	89
Crane, Mobile	83	Shovel	82
Excavator/Shovel	82	Spike driver	77
Generator	81	Tie cutter	84
Grader	85	Tie handler	80
Impact wrench	85	Tie inserter	85
Jack Hammer	88	Truck	88
Loader	85	Wood Chipper	89

Sources: Cowan 1994, Federal Transit Administration 1995, Nelson 1987, United States Department of Agriculture Forest Service 1980.

Construction equipment operations can vary from intermittent to fairly continuous, and multiple pieces of equipment often operate concurrently. As an example, assuming that a bulldozer (85 dBA), backhoe (80 dBA), grader (85 dBA), and loader (85 dBA) are operating concurrently in the same area, peak construction-period noise could be as high as approximately 90 dBA at 50 feet from a construction site.

Using a source level of 90 dBA at 50 feet and assuming normal geometric and ground attenuation, the distance to the 75-, 70-, 65-, 60-, 55-, and 50-dBA contours are indicated in Table 6-13.

Napa Valley Wine Train

Residential construction site

Primary sources of noise related to agricultural activity are tractors, harvesters, pesticide/herbicide application equipment, crushers, and frost protection equipment.

Noise from winery operations is generally intermittent and occurs during limited periods.

Table 6-13. Estimated Distance to dBA Contours from Construction Activities

Calculated noise level	Distance from construction source
90 dBA	50 feet
75 dBA	180 feet
70 dBA	300 feet
65 dBA	450 feet
60 dBA	700 feet
55 dBA	1,100 feet
50 dBA	1,700 feet

Table 6-13 indicates that residences and other noise-sensitive land uses within approximately 180 feet of construction activity could be exposed to noise in excess of the County's nighttime noise limit of 75 dBA, while residences and other noise-sensitive land uses within approximately 700 feet of construction activity could be exposed to noise in excess of the County's nighttime noise limit of 60 dBA.

AGRICULTURAL ACTIVITY

The primary sources of noise related to farming activity in Napa County are tractors, harvesters, and crop-dusting aircraft. Typical noise levels from tractors, as measured at a distance of 50 feet, range from approximately 75 dBA to 95 dBA, with an average of approximately 84 dBA (Toth 1979). These noise levels should be reasonably representative of noise levels from other wheeled and tracked farm equipment.

Using a source level of 84 dBA at 50 feet and assuming normal geometric and ground attenuation, the distance to the 75-, 70-, 65-, 60-, 55-, and 50-dBA contours are indicated in Table 6-14.

Table 6-14. Estimated Distance to dBA Contours from Farming Activities

Calculated noise level	Distance from construction source
84 dBA	50 feet
75 dBA	115 feet
70 dBA	175 feet
65 dBA	275 feet
60 dBA	400 feet
55 dBA	650 feet
50 dBA	1,000 feet

Table 6-14 indicates that residences and other noise-sensitive land uses within approximately 115 feet of active farming operations could be exposed to noise in excess of the County's nighttime noise limit of 75 dBA, while residences and other noise-sensitive land uses within approximately 400 feet of active farming operations could be exposed to noise in excess of the County's nighttime noise limit of 60 dBA.

OTHER MISCELLANEOUS FACILITIES AND PLANTS

Several commercial, industrial, and agricultural facilities located throughout the County are sources of noise. Wineries are the predominant commercial/industrial land uses within the County. Wineries within the County are identified in Appendix Noise-F. The locations of winery facilities are shown in Maps 6-1 through 6-3. Maps 6-10 through 6-12 indicate areas within the County zoned for light industrial, warehouse, offices industrial area, industrial, and heavy industrial uses. The following quarries are also located within the County. Only one of the quarries—Napa Quarry—is currently a significant mining operation (California Office of Mine Reclamation 2005).

- Napa Quarry—Syar Industries, Inc., Napa 2301 Napa/Vallejo Highway, Napa.
- Homestake Mining Company—26775 Morgan Valley Road, Lower Lake, 95457 (in reclamation, no longer active).
- American Canyon Quarry—Syar Industries, Inc., 2301 Napa/Vallejo Highway, Napa (idle, not active).
- Pope Creek Quarry—Don Wesner, Inc., 7193 Pope Valley Road, Pope Valley.
- Oat Hill Quarry—Napa Vallejo Waste Management Authority, City of American Canyon.

Noise associated with these facilities is intermittent and variable depending on what activities are occurring and comes from sources such as forklift and equipment activity in equipment yards, delivery trucks, and other facility operations. The facilities are located in areas distant from noise-sensitive land uses and noise from facility operations is typically not audible in areas where noise-sensitive land uses are located.

Noise from winery operations is primarily intermittent and occurs during limited periods. The sound levels can vary greatly depending on the location of the noise source, type of activity, and distance to the nearest receptor. The primary noise-generating activities and equipment associated with wineries include refrigeration equipment, bottling equipment, barrel washing, destemmer and press activities occurring during the harvest crush season, and delivery trucks and other vehicles. Sound level measurements for winery activities were conducted for the proposed Tom Eddy Winery in 2001 as part of a permit review and application process (Sound Solutions 2001). Table 6-15 summarizes sound level measurements taken at the winery to represent representative sound levels for winery activities.

Table 6-15. Representative Sound Levels for Winery Activities

Date	Time	Sound Sources and Measurement Locations	Sound Level Descriptors (dBA)					
			L_{eq}	L_{50}	L_{25}	$L_{8.33}$	$L_{1.67}$	L_0
8/29/01	10:00 a.m.	Ambient	50.7	36.7	49.3	55.9	61.0	64.5
9/27/01	2:39 p.m.	Ambient	40.7	37.4	40.0	44.6	48.7	56.3
–	–	Three flat-bed diesel trucks over 1-hour, 105 feet to path	–	–	–	–	65.0	76.0
9/14/01	10:00 a.m.	Press activities at 60 feet to center of activity area	60.2	57.7	60.3	64.4	68.9	80.6
9/14/01	10:00 a.m.	De-stemmer at 70 feet	66.7	65.8	66.4	67.4	76.0	76.0
9/14/01	10:00 a.m.	Plastic bin washing at 60 feet	54.4	52.1	54.6	57.6	62.2	64.7
9/14/01	10:00 a.m.	Condenser/chiller at 11 feet to one side	70.0	70.0	70.0	71.0	72.0	72.0
–	–	Inside refrigeration equipment room	85.0	85.0	85.0	86.0	87.0	87.0
9/7/01	1:00 p.m.	Mobile bottling line, left side of truck, 30 feet to center	82.3	81.5	73.1	75.1	76.6	77.6
9/7/01	1:00 p.m.	Mobile bottling line, right side of truck, 30 feet to center	73.1	73.1	73.6	74.6	75.6	76.1

Source: Sound Solutions 2001.

EXISTING NOISE EXPOSURES

A community noise survey focusing on various areas within the County was conducted to quantify and document existing noise exposures at selected noise-sensitive locations throughout the County. Monitoring sites were selected to represent typical conditions in the County. Short- and long-term monitoring was conducted. Map 6-4 depicts the locations within the County where noise monitoring was conducted.

SHORT-TERM NOISE MONITORING

Short-term noise monitoring (approximately 20 minutes in duration) was conducted at 20 locations throughout the County between Wednesday, December 1, 2004, and Friday, December 3, 2004, and again on Friday, December 10, 2004. For the short-term monitoring, a Larson-Davis Model 812 Precision Type 1 sound-level meter (serial numbers 0430 and 0239) was placed at each location 5 feet above the ground on a tripod. The calibration of the meter was checked before and after the measurement using a Larson-Davis Model CA250 calibrator (serial number 0125). The locations of the short-term measurement positions are shown in Map 6-4.

Temperature, wind speed, and humidity were recorded manually during the short-term monitoring session using a Kestrel 3000 portable weather station. During the short-term measurement session, skies were essentially sunny. Cloud cover conditions were class 3, which refers to the sun essentially being unobscured 80% of the time, and class 4, which refers to a clear night with less than 50% cloud cover. Wind speeds were typically in the range of 0 to 7 mph. Temperatures were in the range of 44 to 67°F, with relative humidity typically in the range of 21 to 100%.

Monitoring positions are described in Table 6-16 and shown in Map 6-4. Sound level data (L_{eq}, L_{max}, L_{min}, L_{peak}, L_{10}, L_{33}, L_{50}, and L_{90} values) collected during the short-term monitoring sessions are reported in Table 6-16.

LONG-TERM NOISE MONITORING

Long-term noise monitoring (between 1 and 6 days in duration) was conducted at five locations in the County using a Larson-Davis Model 700 Type 2 sound-level meter (serial numbers 0190, 1132, and 1406). The monitoring locations were chosen to characterize noise exposure at various areas within the County. At the long-term sites, the meters were housed in watertight steel cases with a microphone extension from the case. The sound meter microphones were supported approximately 3 feet above ground level. The purpose of these measurements was to quantify variations in sound level throughout the day rather than absolute sound levels at a specific receptor of concern. The long-term sound-level data were collected over a period ranging from 1 to 6 days over the periods beginning on December 1, 2004 and December 10, 2004. Weather conditions were generally cool and calm. Once the data were collected, the sound meters were connected to a computer with an RS-232 interface, and the data were downloaded.

The average hourly L_{eq} values, 24-hour L_{dn}, and 24-hour CNEL values over the long-term monitoring period are summarized in Tables 6-17 through 6-21. Figures 6-1 through 6-5 graphically summarize the results of the long-term monitoring sessions. The differences between the sound levels measured during each hour and the maximum noise hour sound levels are also shown. These values are provided for general reference and can be used to estimate worst noise hour noise levels from measurements not taken during the worst noise hour.

EXISTING NOISE CONFLICTS IN NAPA COUNTY

In general, there are very few existing noise conflicts within the County. A key indicator of noise conflicts is the number of complaints registered with the County. Data provided by the County sheriff's department indicate that there were eight noise complaints received for the years 2003 and 2004 (Crawford pers. comm.). On the city level, St. Helena received 10 complaints for the same time period (Swanson pers. comm.), Yountville received none, American Canyon received one, and the City of Napa received 584 (Claudino pers. comm.). The following discussion summarizes conflicts related to specific noise sources within the County.

ROADWAY TRAFFIC

Several residential areas in the County are currently exposed to traffic noise levels in excess of 60 dBA, L_{dn}. These areas are indicated in Maps 6-4 through 6-6. Calculated L_{dn} values at 100 feet from the roadway centerline along with distances to the 70-, 65-, and 60-dB L_{dn} contours are also presented in Table 6-8, while the distances to the 70-, 65-, and 60-dB L_{dn} contours are also presented in Maps 6-4 through 6-6.

The L_{eq} for a destemmer at 70 feet is 66.7 dBA.

Short-term monitoring was conducted at 20 locations throughout the County using a Larson-Davis Model 812 Precision Type 1 sound level meter placed 5 feet above the ground on a tripod.

Long-term monitoring was conducted at five locations using a Larson-Davis Model 700 Type 2 sound level meter.

Table 6-16. Summary of Short-Term Noise Monitoring

Monitoring position	Location	Date	Start time	Duration (minutes)	L_{eq}	L_{max}	L_{min}	L_{peak}	L_{10}	L_{33}	L_{50}	L_{90}
1	Silverado Trail at Sage Canyon Road, across from Rutherford Ranch	12/2/04	11:30 a.m.	20:00	71.9	84.0	42.5	106.5	76.4	71.4	67.9	55.7
3	Silverado County Club (corner of Hillside Drive & Westgate Drive)	12/2/04	11:55 a.m.	20:00	51.4	65.8	34.0	94.0	56.3	47.9	44.0	37.0
4	Circle Oaks Subdivision (Country Club Lane & Zinnia Lane)	12/2/04	1:07 p.m.	20:00	49.6[1] 44.9[2]	73.4	39.2	90.1	48.2	45.4	44.4	41.4
6	Highway 29, west of Rutherford Fire Department	12/3/04	11:10 a.m.	20:00	66.5	75.7	51.5	101.9	69.3	67.1	65.5	59.1
8	Highway 29 at The Outlets	12/2/04	4:58 p.m.	20:00	71.3	82.1	49.5	100.2	74.8	71.6	69.8	58.1
9	Moskowite Corners (Highway 128 & Steele Canyon Road), across from Corners General Store	12/2/04	1:20 p.m.	20:00	52.9	73.2	37.3	94.1	56.7	51.4	48.4	41.3
10	Berryessa Knoxville Road. (Eastside Rd.) at Welcome to Lake Berryessa sign	12/3/04	4:38 p.m.	20:00	37.8[1] 32.9[2]	60.9	29.2	92.8	35.8	31.1	30.4	29.5
12	North end of Soda Canyon Road, at mailboxes	12/3/04	12:53 p.m.	20:00	49.5[1] 36.5[2]	69.9	29.7	94.8	44.6	36.5	33.9	30.6
14	Steele Park Resort (Boat Launch Ramp)	12/10/04	3:08 p.m.	20:00	45.9	62.1	32.5	87.3	47.7	40.7	38.8	36.0
15	St. Helena Hospital parking lot between Jennie's and Deer Park Elmshaven Church	12/2/04	3:41 p.m.	20:00	46.1	62.9	40.1	91.0	48.5	45.0	44.0	41.6
17	Skyline Park below disc golf course on Manzanita Trail	12/1/04	1:35 p.m.	20:00	40.2	56.5	29.6	91.9	39.1	34.2	32.7	30.1
18	Basalt Road at Syar Napa Quarry entrance sign	12/1/04	12:31 p.m.	20:00	64.4	80.5	44.6	97.5	68.2	56.7	51.7	47.5
19	Corner of Bennett Lane and Evvey Road.	12/2/04	3:46 p.m.	20:00	44.4[1] 40.0[2]	60.0	32.2	81.7	47.1	39.1	37.2	34.1
20	Cardinale Winery at back warehouse	12/10/04	9:31 a.m.	26:54	60.5	83.2	43.7	105.5	60.1	52.8	50.2	46.1
21	Wooden Valley Road at Wooden Valley Elementary School parking lot	12/2/04	11:26 a.m.	20:00	51.5	67.1	32.1	97.8	55.0	46.6	43.6	35.4
22	2049 Monticello Road (Highway 121)	12/1/04	3:28 p.m.	20:00	72.0	85.5	41.8	100.5	77.0	70.8	64.8	50.5
23	Silverado Trail at Hardman Avenue	12/1/04	4:25 p.m.	20:00	65.5	78.8	44.4	94.2	68.8	65.0	62.9	53.4
24	Prichard Hill Area on top of Long Ranch Road	12/10/04	1:57 p.m.	20:00	46.3[1] 35.8[2]	65.3	31.0	91.2	44.6	37.3	34.7	32.1
25	West end of Langtry Road	12/2/04	5:18 p.m.	20:00	45.4[1] 40.2[2]	64.7	32.4	97.0	43.6	39.6	38.3	34.6
26	North end of Big Ranch Road	12/3/04	1:47 p.m.	20:00	45.7	64.5	32.8	88.4	46.0	38.1	36.5	34.0

Notes:

[1] Denotes measured L_{eq} from entire noise monitoring episode

[2] Denotes calculated L_{eq} with single event noise sources (i.e., automobile driveby) removed

Table 6-17. Summary of Long-Term Noise Monitoring at Position 2 (Larson-Davis 1132 Sound Meter)

Time	1-Hour dB-L_{eq}							Maximum Noise Hour dB-L_{eq} minus Hourly dB-L_{eq}
	Saturday (12/11/04)	Sunday (12/12/04)	Monday (12/13/04)	Tuesday (12/14/04)	Wednesday (12/15/04)	Thursday (12/16/04)	Average	
12:00 a.m.	38.5	37.5	37.5	39.0	37.0	37.0	38	12
1:00 a.m.	39.5	36.5	39.0	38.5	37.0	37.0	38	12
2:00 a.m.	39.0	36.0	38.5	37.0	36.5	37.0	37	13
3:00 a.m.	38.5	36.5	41.5	37.5	36.5	37.5	38	12
4:00 a.m.	37.0	37.0	47.5	37.5	37.0	39.5	39	11
5:00 a.m.	39.0	37.0	42.0	47.5	41.5	46.5	42	8
6:00 a.m.	47.0	41.5	49.5	49.5	49.5	50.5	48	2
7:00 a.m.	45.0	42.0	47.0	46.0	46.5	52.5	47	4
8:00 a.m.	46.0	43.5	47.5	48.5	48.5	48.5	47	3
9:00 a.m.	48.5	42.5	47.5	51.5	50.5	48.0	48	2
10:00 a.m.	46.5	45.0	47.0	48.0	47.5	46.5	47	3
11:00 a.m.	46.5	45.0	49.0	51.5	49.5	50.0	49	1
12:00 p.m.	44.0	44.0	48.5	48.5	46.5	50.0	47	3
1:00 p.m.	46.5	46.5	50.5	50.5	46.5	49.5	48	2
2:00 p.m.	47.0	53.0	49.0	53.0	51.0	48.5	50	0
3:00 p.m.	44.0	43.5	50.5	50.5	51.0	49.5	48	2
4:00 p.m.	43.5	43.0	49.5	49.5	50.0	51.0	48	2
5:00 p.m.	49.5	40.5	46.5	49.0	46.5	46.5	46	4
6:00 p.m.	42.0	42.0	44.0	46.5	45.0	44.0	44	6
7:00 p.m.	40.5	42.0	39.5	38.5	46.0	42.0	41	9
8:00 p.m.	39.0	40.5	45.0	39.5	41.0	42.5	41	9
9:00 p.m.	39.0	41.0	37.5	43.0	40.0	39.0	40	10
10:00 p.m.	38.5	38.0	38.0	39.0	37.5	42.0	39	11
11:00 p.m.	39.0	36.5	39.0	38.5	38.0	36.5	38	12
24-hour L_{eq}	44.3	43.6	46.5	47.6	46.6	47.2	46	NA
24-hour L_{dn}	48.3	46.3	50.9	51.1	49.9	51.1	50	NA
24-hour CNEL	48.5	46.7	51.1	51.2	50.1	51.2	50	NA

The most common noise conflict in Napa County is between agricultural activities and their residential neighbors.

AIRCRAFT

In accordance with State Division of Aeronautics Noise Standards, 65 dBA CNEL is considered an acceptable aircraft noise level for residential land uses near a general aviation airport. As shown in Maps 6-7 through 6-9, there are some noise-sensitive land uses currently in the County that are exposed to excessive aircraft noise in excess of 65 dBA CNEL near the Napa County Airport and Angwin-Virgil O Parrett Field.

TRAINS

Several residential areas in the County are exposed to train noise levels in excess of 65 dBA L_{dn}. These areas are located directly adjacent to the rail line. The Valley Estates Mobile home park is exposed to the highest levels of train noise.

CONSTRUCTION SITES

No construction sites are identified where noise is a problem for existing sensitive land uses.

AGRICULTURAL ACTIVITY

Because a majority of Napa County's unincorporated land is rural and the common use of the land is agriculturally based, noise conflicts can occur when two incompatible uses are adjacent. The most common noise conflicts are those between agricultural operations and residential housing developments (neighbor vs. neighbor).

The predominate agricultural activity in Napa County is the growing of wine grapes, the processing (fermenting) of those grapes to make wine, and the marketing of wine through public visitation or events. Noise related to Napa County's wine industry includes the harvesting, transporting, processing (crushing, fermenting, and aging) of wine grapes to make wine, and the sale or marketing of wine. Noise levels from those activities can be inconsistent with localized noise character if vineyard or winery facilitates are located near or adjacent to rural residential home sites or neighborhood enclaves.

Common sources of noise from vineyard operations include frost protection equipment (wind machines, overhead spray irrigation, and related pumps) operated during the evening and early morning hours; tractor use (tillage, mowing, materials transport); pesticide/fertilizer equipment and application; and annual harvest activity of limited duration; routine vineyard management (pruning, trellis and irrigation repair/management, road and avenue maintenance). Common noise sources from wineries and winery processing include de-stemming and crushing equipment, conveyors, hoists and fork lifts, high-pressure cleaning equipment, truck and trailer traffic from delivery operations, automobile and tour bus traffic related to public tours and visitation, and wine marketing events of various size and duration.

OTHER MISCELLANEOUS FACILITIES AND PLANTS

No major industrial or heavy commercial facilities are located adjacent to populated areas, and noise from activities in these areas is generally limited to the facility property. Therefore, no conflicts exist between these facilities and noise-sensitive land uses.

CONCLUSIONS AND REPORT UPDATE RECOMMENDATIONS

As indicated by the relatively low number of noise complaints registered annually with the County, there are very few currently existing noise conflicts within Napa County. The principal noise sources within the County are roadway traffic, aircraft, trains, construction activity, and agricultural activity.

Because the volume and distribution of traffic on the County's roadway network will change as development occurs and transportation infrastructure is created or modified, traffic noise will also change. However, because traffic noise is not highly sensitive to changes in traffic volume (e.g., a doubling of traffic volume results in a barely perceptible change in noise), frequent (i.e., annual) updating of traffic noise contours in the County will not likely be required. Accordingly, traffic noise contours should be updated every 5 years using current traffic data available at that time. Changes in train and airport operations, as well as the frequency and distribution of agricultural activity, should also be evaluated at that time to determine whether those changes effect related noise.

Table 6-18. Summary of Long-Term Noise Monitoring at Position 5 (Larson-Davis 1406 Sound Meter)

	1-Hour dB-L_{eq}				
Time	Saturday (12/11/04)	Sunday (12/12/04)	Monday (12/13/04)	Average	Maximum Noise Hour dB-L_{eq} minus Hourly dB-L_{eq}
12:00 a.m.	48.0	45.5	43.0	46	11
1:00 a.m.	46.0	44.0	49.5	47	10
2:00 a.m.	43.5	41.5	39.0	41	15
3:00 a.m.	44.5	40.0	42.0	42	14
4:00 a.m.	42.5	41.5	42.0	42	14
5:00 a.m.	43.0	49.0	48.5	47	9
6:00 a.m.	44.5	53.0	52.5	50	6
7:00 a.m.	49.5	56.0	55.0	54	3
8:00 a.m.	51.0	56.0	56.0	54	2
9:00 a.m.	55.0	55.0	56.5	56	1
10:00 a.m.	53.0	57.0	53.5	55	2
11:00 a.m.	54.0	57.5	54.5	55	1
12:00 p.m.	54.0	58.0	55.0	56	0
1:00 p.m.	55.0	56.5	56.0	56	0
2:00 p.m.	54.0	55.5	56.0	55	1
3:00 p.m.	54.5	57.5	54.5	56	1
4:00 p.m.	53.5	57.0	55.5	55	1
5:00 p.m.	54.5	55.0	56.0	55	1
6:00 p.m.	51.5	54.0	54.0	53	3
7:00 p.m.	51.0	52.5	52.0	52	4
8:00 p.m.	49.0	49.5	52.0	50	6
9:00 p.m.	49.0	52.5	56.0	53	4
10:00 p.m.	54.5	49.5	54.0	53	3
11:00 p.m.	47.5	48.0	47.5	48	8
24-hour L_{eq}	51.7	54.1	53.6	53	NA
24-hour L_{dn}	55.5	56.6	56.9	56	NA
24-hour CNEL	55.8	57.0	57.5	57	NA

Table 6-19. Summary of Long-Term Noise Monitoring at Position 7 (Larson-Davis 1132 Sound Meter)

	1-Hour dB-L_{eq}					
Time	Thursday (12/2/04)	Friday (12/3/04)	Saturday (12/4/04)	Sunday (12/5/04)	Average	Maximum Noise Hour dB-L_{eq} minus Hourly dB-L_{eq}
12:00 a.m.	48.5	50.5	51.5	48.5	50	8
1:00 a.m.	49.0	45.5	51.0	48.5	49	10
2:00 a.m.	53.0	49.0	46.0	49.0	49	9
3:00 a.m.	50.0	52.0	48.0	49.5	50	8
4:00 a.m.	54.0	51.5	50.5	45.5	50	8
5:00 a.m.	56.0	58.0	54.5	47.5	54	4
6:00 a.m.	60.5	60.5	55.0	52.0	57	1
7:00 a.m.	60.5	61.5	55.5	50.0	57	1
8:00 a.m.	59.5	59.0	57.0	52.5	57	1
9:00 a.m.	59.0	60.0	55.0	52.0	57	2
10:00 a.m.	60.5	63.0	53.5	53.0	58	1
11:00 a.m.	60.0	60.0	56.5	51.0	57	1
12:00 p.m.	63.0	59.5	55.0	54.5	58	0
1:00 p.m.	62.0	60.5	56.5	52.5	58	0
2:00 p.m.	62.0	59.5	54.5	55.0	58	0
3:00 p.m.	62.0	59.5	54.5	56.0	58	0
4:00 p.m.	60.5	62.0	54.0	54.0	58	0
5:00 p.m.	60.0	62.0	54.0	52.5	57	1
6:00 p.m.	59.0	57.5	55.0	52.0	56	2
7:00 p.m.	57.5	56.0	51.5	51.5	54	4
8:00 p.m.	56.5	55.0	52.5	47.5	53	5
9:00 p.m.	55.0	57.0	52.5	47.5	53	5
10:00 p.m.	50.5	55.0	53.0	49.5	52	6
11:00 p.m.	54.0	55.5	50.0	51.0	53	5
24-hour L_{eq}	58.9	58.7	53.9	51.7	56	NA
24-hour L_{dn}	62.4	62.7	58.8	56.4	60	NA
24-hour CNEL	62.7	62.9	59.1	56.6	60	NA

Table 6-20. Summary of Long-Term Noise Monitoring at Position 13(Larson-Davis 0190 Sound Meter)

Time	1-Hour dB-L_{eq}			Maximum Noise Hour dB-L_{eq} minus Hourly dB-L_{eq}
	Wednesday (12/1/04)	Thursday (12/2/04)	Average	
12:00 a.m.	–	38.5	38.5	10
1:00 a.m.	–	35.5	35.5	13
2:00 a.m.	–	35.5	35.5	13
3:00 a.m.	–	33.5	33.5	15
4:00 a.m.	–	34.5	34.5	14
5:00 a.m.	–	41.0	41.0	8
6:00 a.m.	–	43.0	43.0	6
7:00 a.m.	–	47.5	47.5	1
8:00 a.m.	–	45.5	45.5	3
9:00 a.m.	–	47.5	47.5	1
10:00 a.m.	–	46.0	46.0	3
11:00 a.m.	–	47.0	47.0	2
12:00 p.m.	46.5	–	46.5	2
1:00 p.m.	47.0	–	47.0	2
2:00 p.m.	45.5	–	45.5	3
3:00 p.m.	48.0	–	48.0	1
4:00 p.m.	48.5	–	48.5	0
5:00 p.m.	47.0	–	47.0	2
6:00 p.m.	45.5	–	45.5	3
7:00 p.m.	41.5	–	41.5	7
8:00 p.m.	42.0	–	42.0	7
9:00 p.m.	38.5	–	38.5	10
10:00 p.m.	40.5	–	40.5	8
11:00 p.m.	38.0	–	38.0	11
24-hour L_{eq}	44.6	44.6	44.6	NA
24-hour L_{dn}	47.4	47.4	47.4	NA
24-hour CNEL	47.7	47.7	47.7	NA

Table 6-21. Summary of Long-Term Noise Monitoring at Position 16 (Larson-Davis 1406 Sound Meter)

Time	1-Hour dB-L_{eq}							Maximum Noise
	Thursday (12/2/04)	Friday (12/3/04)	Saturday (12/4/04)	Sunday (12/5/04)	Monday (12/6/04)	Tuesday (12/7/04)	Average	
12:00 a.m.	41.5	42.0	42.5	42.0	47.5	59.0	46	7
1:00 a.m.	38.0	41.0	41.5	42.0	39.0	52.5	42	11
2:00 a.m.	37.0	43.5	41.0	42.5	38.0	49.0	42	11
3:00 a.m.	37.5	42.5	39.5	39.5	39.5	47.5	41	12
4:00 a.m.	42.0	44.0	43.5	42.5	42.5	44.5	43	10
5:00 a.m.	46.0	46.0	44.0	42.5	45.5	45.5	45	8
6:00 a.m.	51.0	57.0	45.5	45.5	49.5	54.0	50	3
7:00 a.m.	52.0	59.0	47.0	46.5	53.5	52.0	52	1
8:00 a.m.	52.5	54.5	52.5	49.0	53.5	54.0	53	0
9:00 a.m.	50.0	49.5	47.5	52.5	50.0	52.5	50	3
10:00 a.m.	49.5	50.5	49.0	45.5	51.5	47.5	49	4
11:00 a.m.	53.5	50.0	54.0	45.0	53.0	53.0	51	2
12:00 p.m.	50.5	52.0	49.5	48.5	56.5	50.5	51	2
1:00 p.m.	50.0	52.0	49.5	53.0	53.0	55.0	52	1
2:00 p.m.	49.5	49.5	48.5	47.0	51.5	49.0	49	4
3:00 p.m.	50.5	51.0	50.5	52.0	53.5	52.0	52	1
4:00 p.m.	51.5	52.5	48.0	49.0	52.5	54.0	51	2
5:00 p.m.	50.5	50.5	52.5	56.5	53.5	52.5	53	0
6:00 p.m.	52.0	55.0	51.0	52.5	56.0	49.0	53	0
7:00 p.m.	49.5	48.5	47.0	48.5	57.0	49.5	50	3
8:00 p.m.	47.0	51.0	51.5	46.5	59.5	49.5	51	2
9:00 p.m.	50.0	57.0	45.5	49.0	61.5	50.5	52	1
10:00 p.m.	44.5	49.5	51.5	40.5	63.0	49.5	50	3
11:00 p.m.	45.5	49.5	49.5	49.0	61.0	52.0	51	2
24-hour L_{eq}	49.4	52.2	49.1	49.2	55.7	52.2	51	NA
24-hour L_{dn}	52.8	56.7	53.4	52.3	62.2	59.0	56	NA
24-hour CNEL	53.3	57.3	53.8	52.7	62.9	59.1	57	NA

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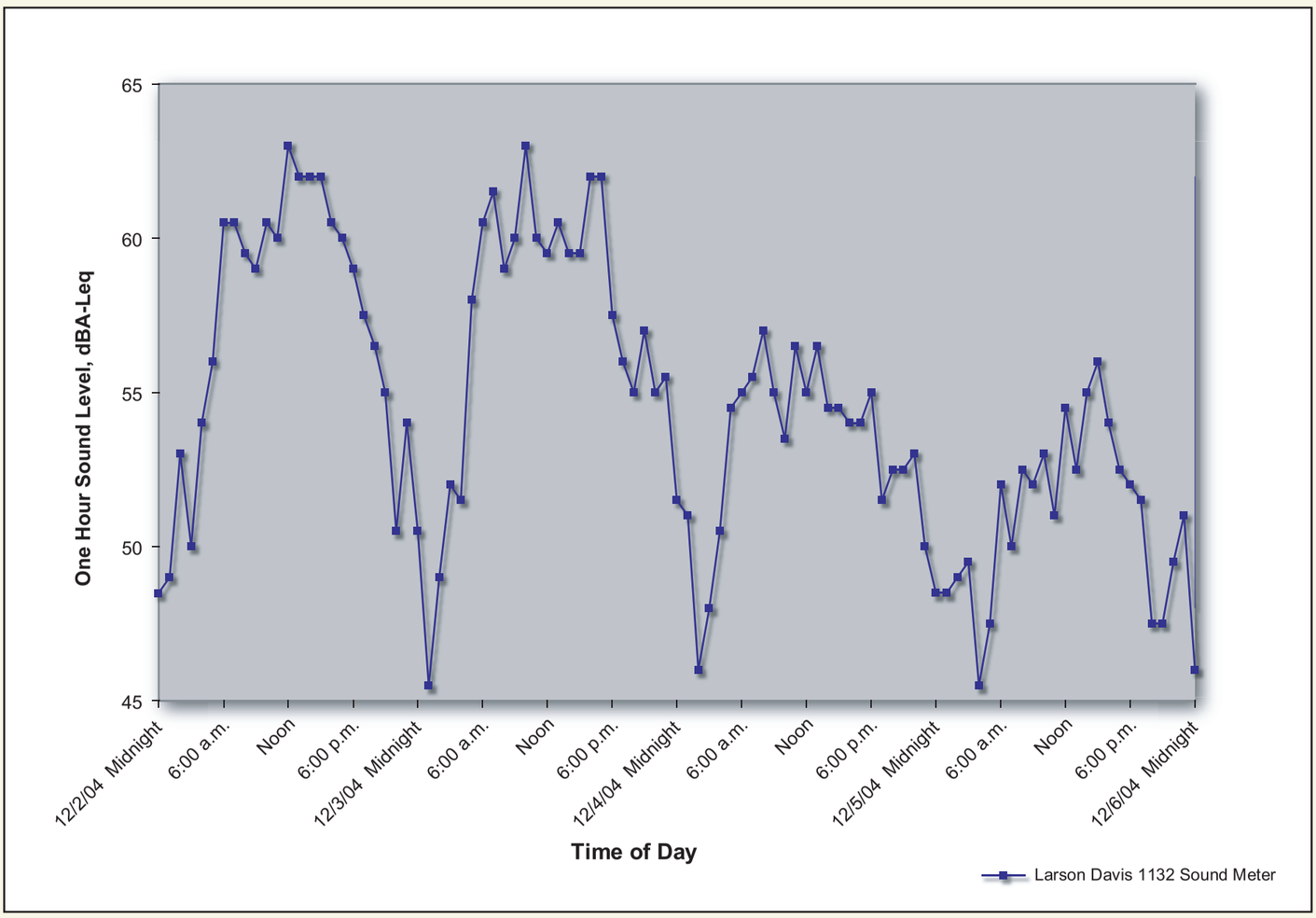

Figure 6-1
Long-Term Noise Monitoring Position 2

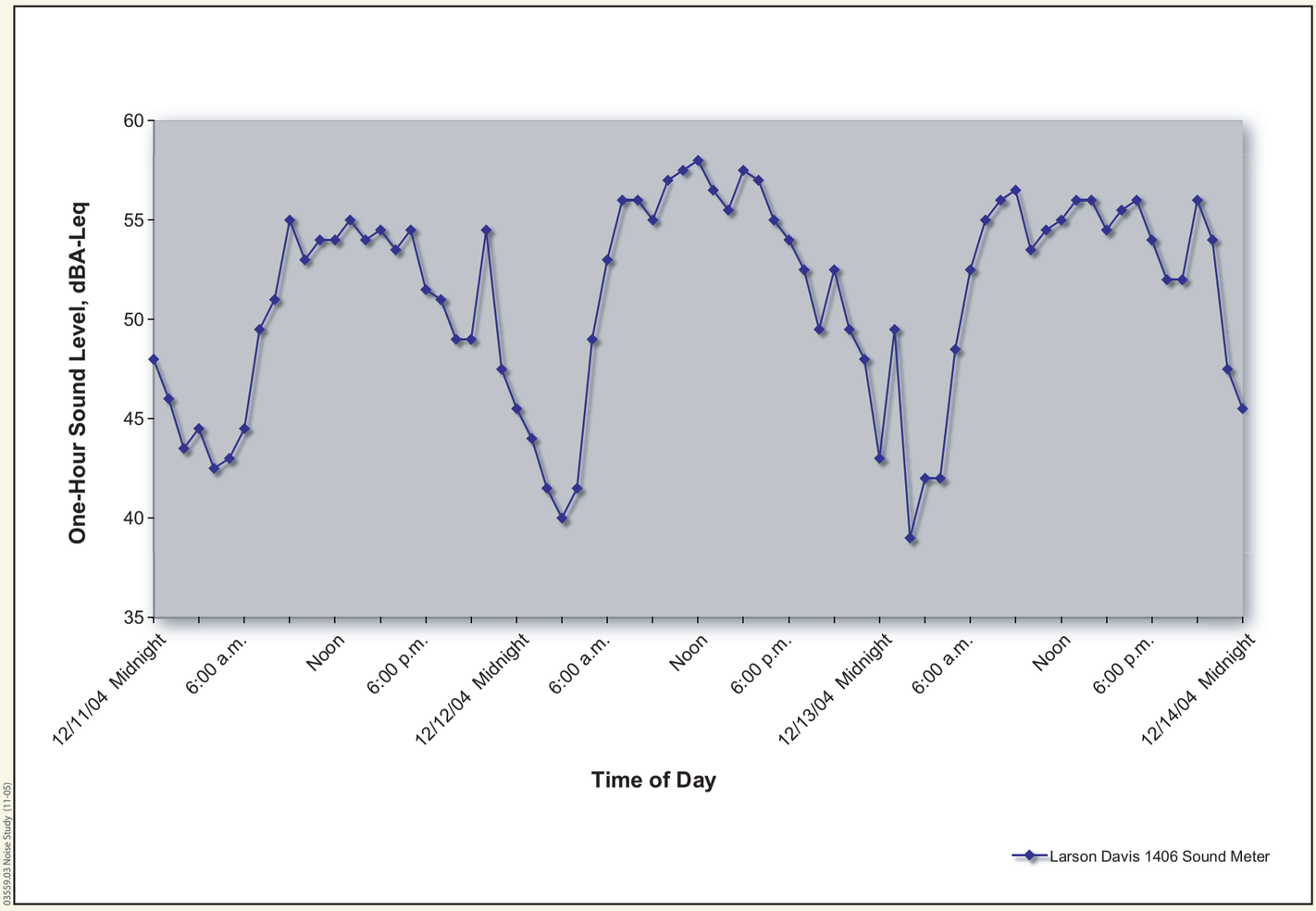

Figure 6-2
Long-Term Noise Monitoring Position 16

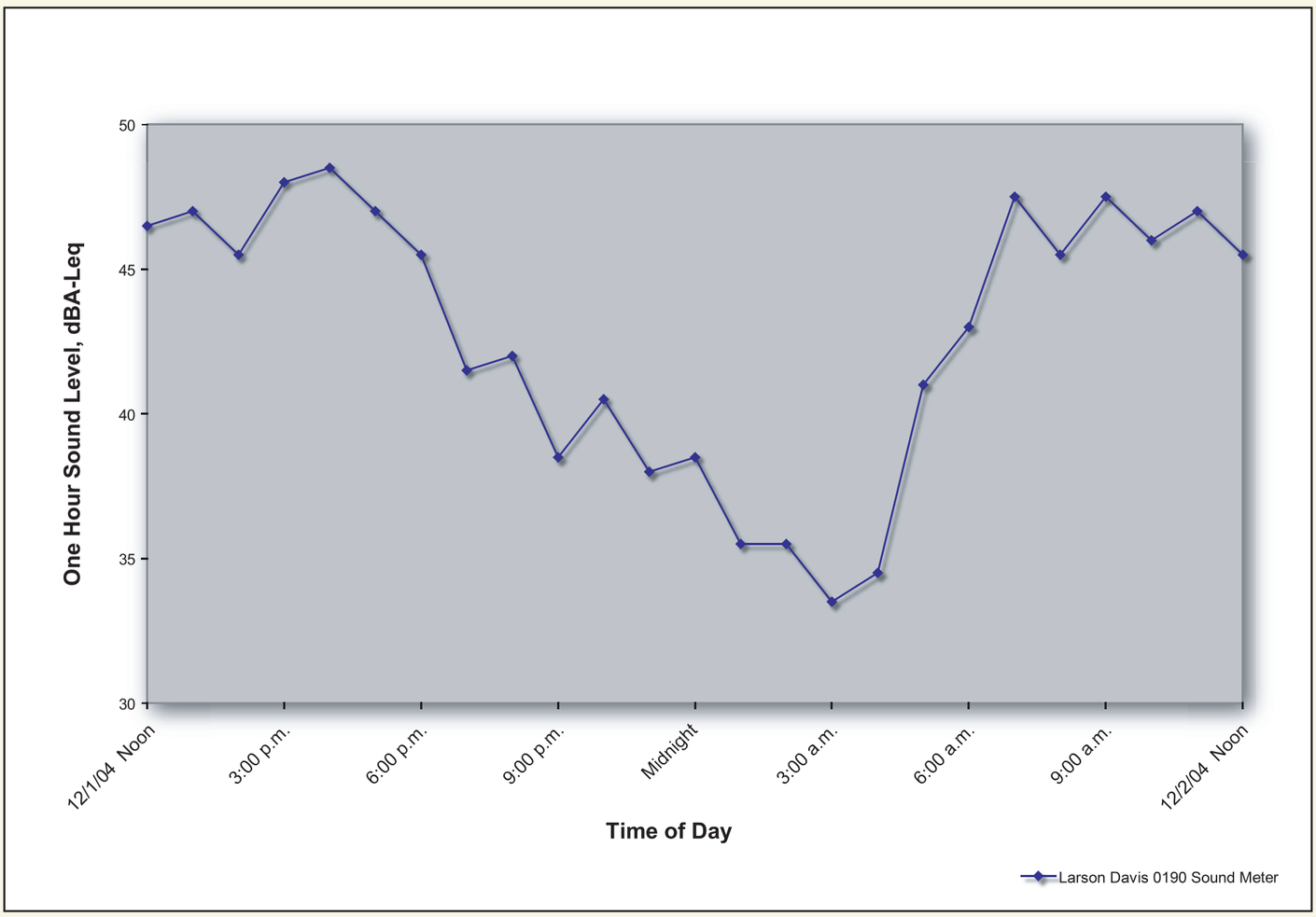

Figure 6-3
Long-Term Noise Monitoring Position 13

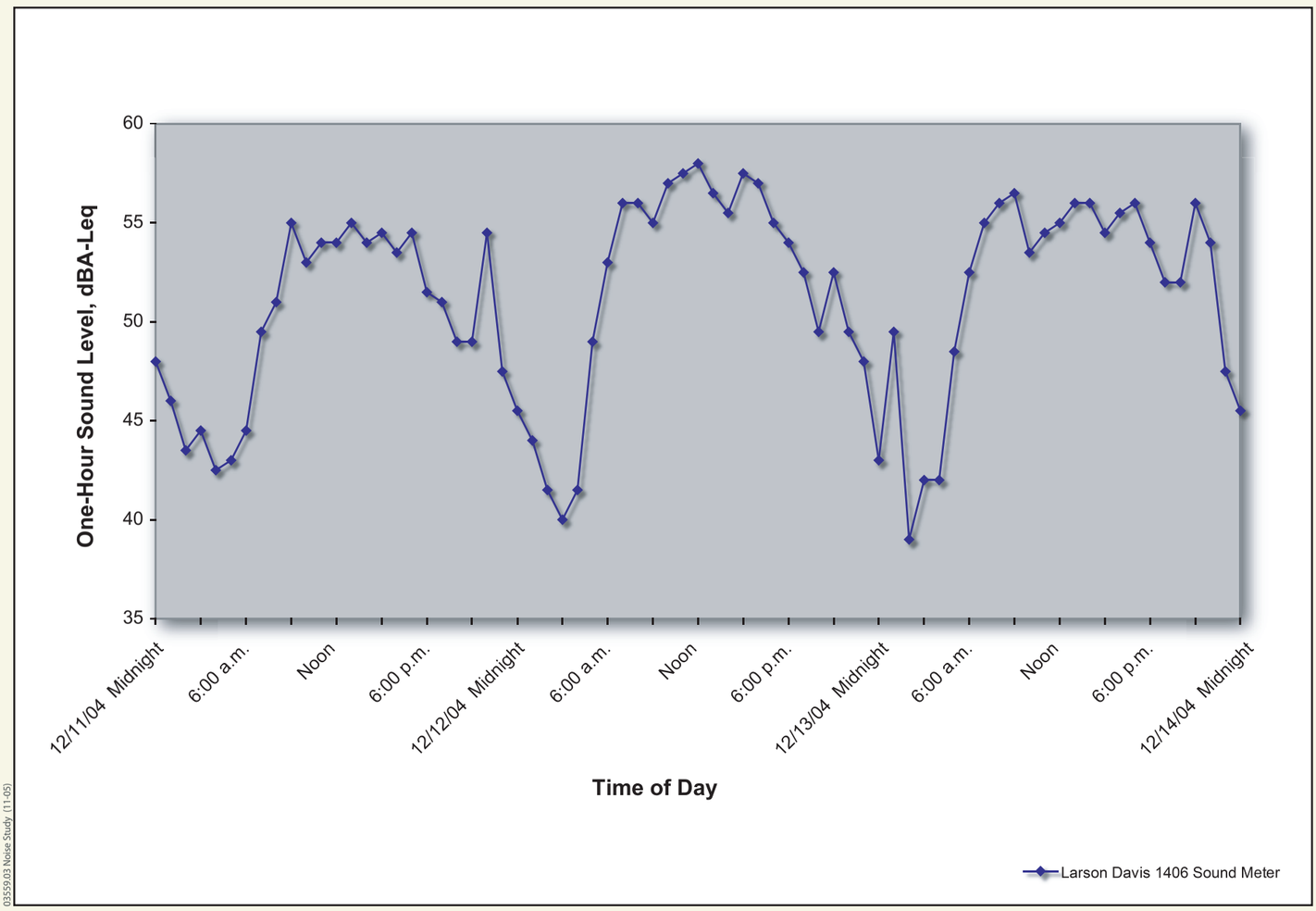

Figure 6-4
Long-Term Noise Monitoring Position 5

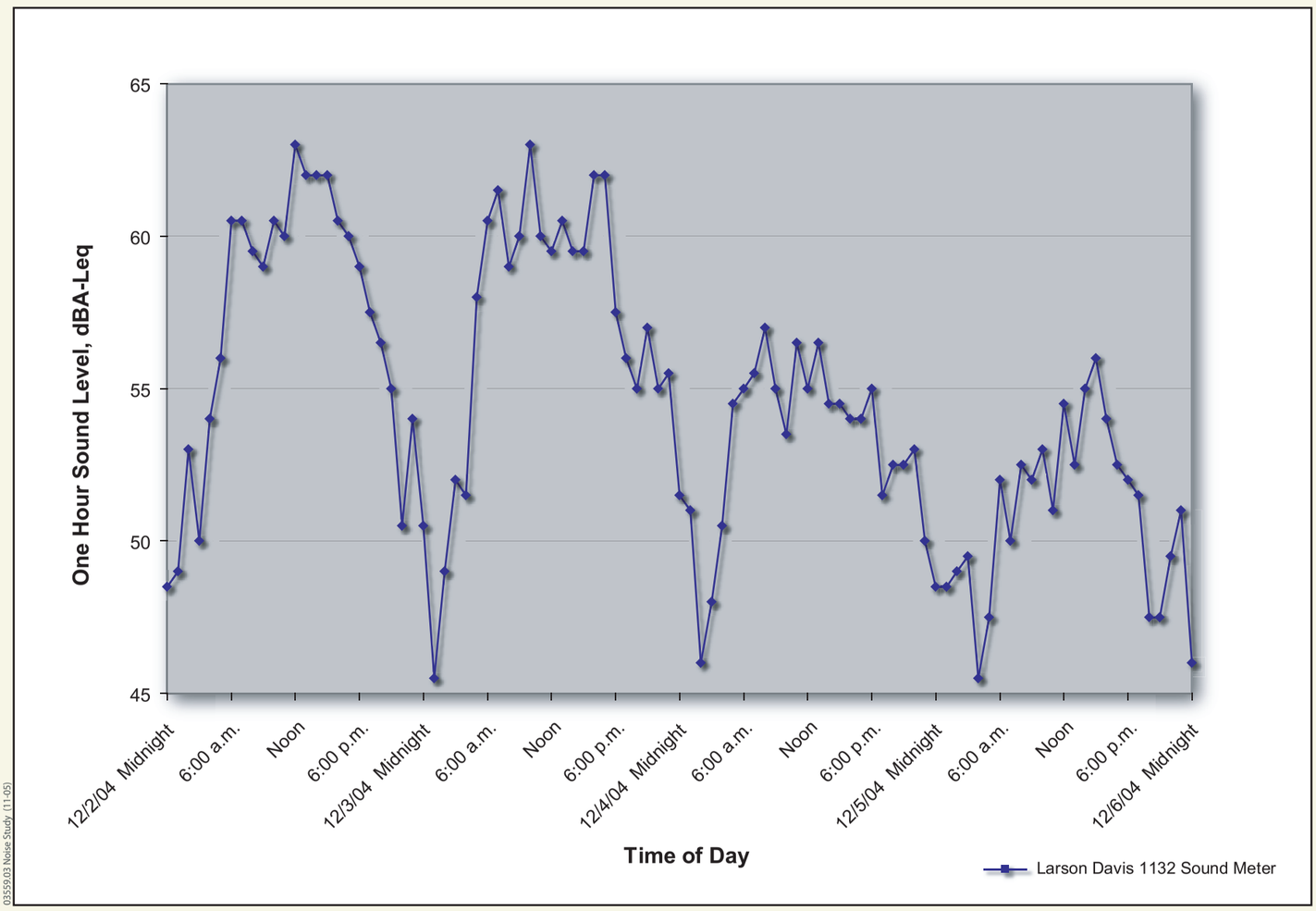

Figure 6-5
Long-Term Noie Monitoring Position 7