

8.1 Introduction

In technical terms, sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Simply, sound is what we hear. As sounds reach undesirable or unacceptable levels, this is referred to as noise.

To develop goals and policies related to noise abatement in the updated General Plan, it is important to understand how sound, and noise, are measured and compared, and to understand what sound levels occur in the County today. To do this, this section:

- Describes key terms;
- Provides an overview of how noise is characterized (measured);
- Describes existing regulations that affect noise issues; and
- Discusses current noise conditions found in Lake County.

8.2 Noise Conditions

METHODS

The procedure followed in updating the Lake County General Plan Noise Element is based on the *Guidelines for the Preparation and Content of the Noise Element of the General Plan* (Office of Planning and Research, 1998: Appendix A). These Guidelines were originally prepared by the State Department of Health Services, Office of Noise Control, in 1976, and then were updated by the Office of Planning and Research in 1998. Intended to direct the preparation of new Noise Elements, the process outlined in these Guidelines involves 18 distinct steps organized in to four broad phases:

- Noise Environment Definition
- Noise Compatible Land Use Planning
- Noise Mitigation Measures
- Enforcement

KEY TERMS

Ambient Noise. A-weighted decibel (dBA). A unit of measurement for noise having a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device, which mimics the frequency response of the human ear. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in sound energy. A doubling or halving of sound energy corresponds to a 3-dBA increase or decrease.

Attenuation. Reduction in the level of sound resulting from absorption by the topography, the atmosphere, distance, barriers, and other factors.

A-weighted decibel (dBA). A unit of measurement for noise having a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in sound energy. A doubling or halving of sound energy corresponds to a 3-dBA increase or decrease.

Community Noise Equivalent Level (CNEL). Used to characterize average sound levels over a 24-hour period, with weighting factors included for evening and nighttime sound levels. L_{eq} values (equivalent sound levels measured over a 1-hour period - see below) 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 a given set of sound measurements, the CNEL value will usually be about 1 dB higher than the L_{dn} value (average sound exposure over a 24-hour period – see below). In practice, CNEL and L_{dn} are often used interchangeably.

Day-Night Average Sound Level (L_{dn}). Average sound exposure over a 24-hour period. 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.

Equivalent Sound Level (L_{eq}). The level of a steady-state sound that, in a stated time period and at a stated location, has the same sound energy as the time-varying sound (approximately equal to the average sound level). The equivalent sound level measured over a 1-hour period is called the hourly L_{eq} or $L_{eq}(h)$.

L_{max} and L_{min} . 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.

Percentile-Exceeded Sound Level (L_x). The sound level exceeded during a given percentage of a measurement period. 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.

Sensitive Receptors. Sensitive receptors are defined to include residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses.

REGULATIONS THAT AFFECT NOISE -- FEDERAL

The generation of noise and the consideration of noise levels in planning and development are addressed by many statutory and regulatory requirements at the federal, state, and local level. The following list summarizes some of these requirements.

Federal Highway Administration

As shown in Table 8-1, the Federal Highway Administration (FHWA) uses noise abatement criteria that are based on one-hour Leq values for estimated peak hour traffic volumes. Highway projects using federal funding or requiring federal review are subject to these criteria, which are found in Title 23 Part 772 of the Code of Federal Regulations (23CFR772).

Table 8-1 FHWA Design Noise Levels

Activity Category and Description		Design Noise Levels One-hour Leq (dBA)
A	Lands on which serenity and quiet are of extraordinary significance	57 (exterior)
B	Picnic areas, recreation areas, playgrounds, active sports areas	67 (exterior)
C	Developed lands	72 (exterior)
D	Undeveloped lands	
E	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums	52 (interior)

Federal Aviation Administration

The Federal Aviation Administration regulates allowable noise levels from different types of aircraft and the allowable noise change when modifications are made to aircraft. The federal aircraft noise standards are contained in 14 CFR Part 36. These regulations are fairly complex, and specify measuring conditions, correction procedures, and the actual noise limits allowed for various aircraft types. Each subpart of the regulations has a corresponding appendix that sets forth the details of the requirements for a particular category of aircraft.

CFR Section

14 CFR 36.103 and Appendix B
 14 CFR 36.501 and Appendix G
 14 CFR 36.805 and Appendix J

Aircraft Type

Transport Category and jet airplanes
 Small airplanes
 Helicopters

In addition, there are standards for the allowable noise levels from aircraft flyovers. For smaller aircraft, usually encountered in Lake County, the limits are specified in 14CFR36 Appendix F. These limits apply to small aircraft flying at an altitude of 1,000 feet above the ground level, and vary depending on the aircraft's weight. They range from 68 dBA for aircraft up to 1,320 pounds up to a maximum of 82 dBA for aircraft over 3,630 pounds (except that airplanes with an FAA type certificate issued after January 1, 1975 may not exceed 80 dBA).

The FAA also requires that airports complete noise studies and efforts towards ensuring compatible land use planning within their area of influence. These regulations are found in 14CFR150.

U.S. Environmental Protection Agency

Research by the EPA has found that prolonged exposure to a 24-hour Leq of 70 dBA can result in some hearing loss. There will be no interference with speech or other activities if exterior noise levels are maintained at 55 dBA L_{dn}, and interior noise levels do not exceed 45 dBA L_{dn}. The EPA has set 55 dBA L_{dn} as the basic goal for residential environments. However, other federal agencies, in consideration of their own program requirements and goals, cost effectiveness, and the difficulty of actually achieving a goal of 55 dBA L_{dn}, have generally agreed on the 65 dBA L_{dn} level as being appropriate for residential uses. At 65 dBA L_{dn} activity interference is kept to a minimum and annoyance levels are still low. For most modern wood frame construction, an exterior L_{dn} of 65 dBA will mean that interior L_{dn} values will not exceed 45 dBA.

Department of Housing and Urban Development

HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established the following three zones:

- 65 dBA L_{dn} or less - an *acceptable zone* where all projects could be approved.
- Exceeding 65 dBA L_{dn} but not exceeding 75 dBA L_{dn} - a *normally unacceptable zone* where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA L_{dn} area and 10 dBA of attenuation in a 70 to 75 dBA L_{dn} area.
- Exceeding 75 dBA L_{dn} - an unacceptable zone in which projects would not, as a rule, be approved.

HUD's regulations do not include interior noise standards but recognize a goal of 45 dBA L_{dn} for interior living spaces. HUD assumes that using standard construction, any building will provide approximately 20 dBA of noise reduction from exterior to interior areas. HUD regulations were promulgated for residential development requiring government funding and do not apply to other types of land uses.

Occupational Safety and Health Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the USEPA. Noise exposure of this type is depends on work conditions and is addressed through a facility's or construction contractor's health and safety plan. In California, this function is administered by Cal-OSHA, whose regulations are discussed below.

REGULATIONS THAT AFFECT NOISE -- STATE

Noise Element Requirements

State law mandates that each local government include a Noise element within its General Plan (California Government Code Section 65302). The Governor's Office of Planning and Research updated guidelines for the preparation of Noise Elements in 1998. The guidelines include land use compatibility guidelines for noise exposure.

California Department of Transportation

The California Department of Transportation has adopted policy and guidelines relating to traffic noise as outlined in the Traffic Noise Analysis Protocol (Caltrans 1998b). The noise abatement criteria specified in the protocol are the same as those specified by FHWA. Caltrans also uses a Noise Assessment Criteria protocol that allows for evaluating noise levels in more remote quiet areas, and defining noise impacts in terms of increases over existing noise levels.

Airport Land Use Plans

The California Public Utilities Code (Sections 21670 et seq.) requires that each County establish an Airport Land Use Planning Commission and prepare Airport Land Use Plans for each airport. This planning process is intended to identify types of land uses compatible with airports from the perspective of safety and noise.



Please see Section 7.4, "Man Made Hazards" for additional information.

Motor Vehicle Limits

The California Motor Vehicle Code establishes noise limits for motorcycles, snowmobiles, and heavy vehicles. Noise limits are defined as the maximum noise level during a passby at 50 feet. For motorcycles, the limits range from 80 dBA to 88 dBA, depending on the year of manufacture (Motor Vehicle Code Section 27202). Snowmobiles are limited to a maximum noise level of 82 dBA. The noise limits for heavy-duty vehicles vary depending on gross vehicle weight and year of manufacture, and range from 80 to 88 dBA. The Motor Vehicle Code also requires that amplified sound from vehicles be inaudible at 50 feet during normal driving conditions.

California Occupational Safety and Health Administration

Cal-OSHA regulates safety in the workplace, and has established allowable noise levels for workers (8CCR5096). These standards provide a sliding scale of noise level limits, which vary depending on the length of time during which workers are exposed to the noise. For an eight-hour exposure, the maximum allowable sound level is 90 dBA. As the noise levels increase above this limit, the permitted duration of exposure decreases. For example, at 100 dBA the permitted duration is two hours per workday; and at 115 dBA the permitted duration is 15 minutes per workday.

If employees are subjected to sound levels exceeding the limits specified in the code section, then feasible administrative or engineering controls shall be used to limit the exposures. If it is not feasible to control the noise at its source or to limit the duration of exposure, then personal protective equipment must be provided by the employer and be used by the employee.

ENVIRONMENTAL SETTING

Lake County Noise Level Criteria

Lake County has established noise level criteria for various land uses that are consistent with the Department of Housing and Urban Development recommendations noted above. These criteria are shown in Figure 8-1. In addition to these noise criteria, which are used in land planning and project review, the County has adopted specific noise performance standards. These standards are in the Zoning Ordinance (in Section 41.11), and specify the maximum allowable noise levels from activities and equipment operations on the basis of the zoning district or adjacent land uses where the activity is located.

Figure 8-1 Noise Level Criteria

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE					
	55	60	65	70	75	80
RESIDENTIAL—LOW DENSITY SINGLE FAMILY, DUPLEX MOBILE HOME	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
RESIDENTIAL MULTI—FAMILY	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
TRANSIENT LODGING MOTELS, HOTELS	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
SCHOOLS, LIBRARIES CHURCHES, HOSPITALS NURSING HOMES	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
AUDITORIUMS, CONCERTS HALLS, AMPHITHEATERS	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
SPORTS ARENAS, OUTDOOR SPECTATORS SPORTS	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
PLAYGROUNDS, NEIGHBORHOOD PARKS	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
GOLF COARSES, RIDING STABLES, WATER RECREATIONS, CEMETERIES	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable	Clearly Unacceptable
INDUSTRIAL, UTILITIES MANUFACTURING, NON— RESIDENTIAL AGRICULTURAL	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable



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



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 design.



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 systems and air conditioning will normally suffice.



CLEARLY UNACCEPTABLE
New constructions or development should generally not be done.

Noise Sensitive Resources Within The Lake County Planning Area

In Lake County, the primary noise-sensitive use is residential. Other specific uses that are considered sensitive to noise include schools, hospitals, libraries, and nursing homes. Noise can be simply defined as any unwanted sound that annoys or disturbs humans or that causes or tends to cause an adverse psychological effect on humans. Since the perception of noise is subjective, the setting in which the sound is generated is a critical factor. Because much of the County is sparsely populated, sound from other than natural sources may be considered as intrusive noise by some of the population.

Noise associated with agriculture comes from sprayers, frost protection wind machines, leaf blowers, and bird-repelling “zon” guns. Aircraft noise includes the airplane takeoff and landings, helicopters, and the testing of aircraft engines. These types of noise have not been considered a significant area problem due to the sparseness of development in the areas where they occur, but can create a significant localized problem. As activity at the airport increases and as new development occurs closer to and in agriculture areas, it is anticipated that increased concern over this noise will arise. Methods to reduce these types of noise are often not practical, and in the case of aircraft, are preempted by federal regulations. The best method of avoiding future conflicts is to not designate significant amounts of residential land in areas where houses can be exposed to loud noises. Careful development plan reviews prior to construction in areas of higher density occupation can identify and reduce potential future noise conflicts through equipment specifications, design, and location. In a very quiet area this becomes even more important. Specific noise standards can be found in the General Plan and zoning ordinance.

Noise Sources

Roadway traffic is the most widespread source of noise within Lake County, and is discussed in its own section below. In general terms throughout the County, setbacks in residential areas are sufficient to avoid land use incompatibility from traffic noise.

Other major sources include (not in order of importance): geothermal development, power boats, off-road vehicles, barking dogs, agricultural pest control devices, aircraft, gravel crushers, rock quarries, and power tools. There are also stock car races that occur during the summer months at the County Fair Grounds. These grounds are wholly contained within the City of Lakeport, and therefore consideration of stock car noise is included in the Noise Element of the General Plan of the City of Lakeport.

There are no rail lines in Lake County. The County is served only by Greyhound Bus Service. With the possible exception of geothermal development activities, gravel crushers, and rock quarries, there are no industrial facilities that are considered major sources of environmental noise.

Noise complaints have been received regarding geothermal operations near Anderson Springs, Whispering Pines, and Cobb Valley. Powerboat operations on Clear Lake also result in noise complaints. Small residential electrical power generators, heating and air conditioning units, and amplified sound are significant local sources of residential area noise complaints. Occasional complaints are received about other sporadic sources such as barking dogs. Law enforcement personnel regularly respond to complaints regarding disturbance from improperly muffled motor vehicles. Current regulations, including the County noise performance standards in the Zoning Ordinance and the state motor vehicle code, provide the authority to resolve most complaints effectively.

Increasingly, complaints arise from residential areas in proximity to agricultural operations. Many of the agricultural areas of the County are being divided into smaller (10 to 20 acres) parcels that are converted to residential and smaller scale farming uses. This pattern of development increases the number of residences near larger scale agricultural operations. At the same time, the smaller agricultural parcels then become buffer areas to higher density conventional residential uses. In both circumstances, conflicts can arise between the noise (and other effects) associated with agricultural operations and the residential uses.

Pest control devices often use noise to drive away birds from agricultural areas. A popping sound much like that of a shotgun is emitted by these devices, at irregular intervals. In order to be effective, the noise must be fairly loud. Frost is also a local agricultural problem. Frost prevention devices employ engine-driven propellers to move air in a frost-threatened field. Water pumps and other agricultural equipment employ engines that are occasionally noisy. Noise from these sources varies with the type of engine and the degree of muffling.

Although potentially annoying when located near residential areas, the agricultural devices described above are important to the economy of the region. The County Zoning Ordinance specifically exempts agricultural equipment from the noise performance standards when operated on property zoned for agricultural activities and when standard, reasonable practices are being followed (Section 41.11.e.8).

Minimizing the potential for agricultural noise conflicts with residential and other uses requires a combination of careful project review and monitoring and responding to noise complaints to ensure that reasonable practices are being followed. Input from the agricultural community in identifying standard and reasonable practices for noise control will help in the consistent application of the noise performance standards and in the effective resolution of noise complaints.

ROADWAY NOISE

Preliminary calculations have been completed to update the Ldn noise contours adjacent to state highways and County roads. The results of that work are shown in Table 8-2.

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
State Highways							
State Route 20 (SR 20)							
SR 20	e/o Scott Valley Rd	7,600	66.8	49	105	226	486
SR 20	w/o SR 29	7,800	67.8	56	121	261	563
SR 20	e/o SR 29	7,100	68.0	59	127	273	588
SR 20	w/o Lucerne-Nice Cutoff	6,100	67.1	51	110	237	510
SR 20	e/o Lucerne-Nice Cutoff	9,000	68.3	61	131	283	610
SR 20	w/o Lucerne	5,200	66.7	48	104	223	480
SR 20	e/o Lucerne	5,200	66.7	48	104	223	480
SR 20	w/o Clear Lake Oaks	5,200	66.7	48	104	223	480
SR 20	e/o Clear Lake Oaks	5,200	66.7	48	104	223	480
SR 20	w/o SR 53	7,600	67.8	57	123	264	569
SR 20	e/o SR 53	5,900	66.8	49	105	227	488
SR 20	w/o Colusa Co Line	4,200	65.3	39	83	179	385
State Route 29 (SR 29)							
SR 29	n/o Napa Co Line	7,100	63.3	29	61	132	285
SR 29	n/o Rancheria Rd	7,500	63.6	30	64	137	296
SR 29	s/o SR 175, Middletown	8,800	64.3	33	71	153	329
SR 29	n/o SR 175, Middletown	9,100	64.6	34	74	160	345
SR 29	n/o Butts Canyon Rd	9,000	64.8	36	77	167	359
SR 29	s/o Hidden Valley	7,800	64.2	33	70	152	327
SR 29	n/o Hidden Valley	7,600	64.1	32	69	149	321
SR 29	s/o SR 53, Lower Lake	9,100	64.9	36	78	168	362
SR 29	w/o SR 53,	10,000	65.6	40	87	187	403

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
	Lower Lake						
SR 29	e/o Seigler Canyon Rd	8,100	65.0	37	79	170	366
SR 29	w/o Seigler Canyon Rd	7,000	64.3	33	72	154	332
SR 29	w/o Lakeview Dr	6,800	64.2	33	70	151	326
SR 29	e/o SR 175, Kelseyville	7,300	64.8	36	77	165	356
SR 29	w/o SR 175, Kelseyville	7,800	65.0	37	79	170	367
SR 29	e/o Bottle Rock Rd	7,500	64.5	34	73	157	339
SR 29	w/o Bottle Rock Rd	8,900	65.2	38	82	176	380
SR 29	s/o Main St, Kelseyville	9,000	65.2	38	82	178	383
SR 29	n/o Main St Kelseyville	8,800	65.1	38	81	175	377
SR 29	n/o Live Oak Dr, Kelseyville	10,400	65.9	42	91	196	421
SR 29	n/o Bell Hill Rd, Kelseyville	9,500	65.5	40	85	184	397
SR 29	n/o Renfro Dr	12,000	66.5	46	100	215	463
SR 29	n/o Argonaut Rd	11,900	66.5	46	99	214	461
SR 29	n/o Highland Springs Rd	11,500	66.3	45	97	209	450
SR 29	s/o SR 175, So Lakeport	11,900	66.1	44	94	202	435
SR 29	n/o SR 175, So Lakeport	12,300	69.1	69	148	319	688
SR 29	n/o Lakeport Blvd	14,000	70.3	83	179	385	829
SR 29	n/o 11th St	11,700	69.5	74	159	342	736
SR 29	n/o Park Way	8,900	68.3	61	132	285	613
SR 29	n/o Lucerne- Nice Cutoff	5,500	66.2	44	96	207	445
SR 29	s/o SR 20	5,700	67.0	50	107	231	497
State Route 53 (SR 53)							
SR 53	n/o SR 29, Lower Lake	14,000	66.9	49	106	228	490
SR 53	s/o Old Hwy 53	12,500	66.6	47	101	217	467
SR 53	n/o Old Hwy 53	13,400	66.9	49	105	227	490
SR 53	n/o 40th Ave	7,100	64.1	32	69	149	321
SR 53	s/o SR 20	7,000	64.2	33	70	151	326

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Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
State Route 175 (SR 175)							
SR 175	s/o SR 29, Lakeport	1,800	57.5	12	25	54	116
SR 175	s/o SR 29, Kelseyville	670	53.8	7	14	31	66
SR 175	n/o Cobb	3,650	60.6	19	41	87	188
SR 175	s/o Cobb	2,200	58.1	13	28	60	128
SR 175	w/o Dry Creek Rd	2,500	58.7	14	30	65	140
SR 175	e/o Dry Creek Rd	2,900	59.3	15	33	71	154
SR 175	w/o SR 29, Middletown	2,900	59.3	15	33	71	154
State Route 281 (SR 281)							
SR 281	n/o SR 29	4,700					
SR 281	s/o Lakeview Rd	2,400*	58.1	13	28	59	128
SR 281	n/o Lakeview Rd	4,700					
SR 281	s/o Rte. 29*	4,700*	61.3	21	45	97	209
County Roads							
Adobe Creek Rd	s/o Bell Hill Rd	470	47.5	3	5	12	25
Anderson Springs Rd	w/o SR 175, Kelseyville	540	48.1	3	6	13	27
Barnes St	n/o SR 175	1,260	51.8	5	10	22	48
Bell Hill Rd	e/o Highland Springs Rd	620	48.7	3	6	14	30
Bell Hill Rd	s/o SR 29	1,490	52.5	5	12	25	54
Bell Hill Rd	s/o Main St	1,070	51.1	4	9	20	43
Big Bear Rd	e/o Winchester St	430	47.1	2	5	11	24
Big Canyon Rd	n/o Wardlaw St	760	49.6	3	7	16	35
Big Valley Rd	n/o Merritt Rd	1,480	52.5	5	12	25	54
Bonham Rd	n/o Morgan Valley Rd	750	49.5	3	7	16	34
Bottle Rock Rd	n/o SR 175	2,040	53.9	7	14	31	67
Burpee Rd	n/o SR 20	20	33.8	0	1	1	3
Butts Canyon Rd	e/o SR 29	1,380	52.2	5	11	24	51
Butts Canyon Rd	w/o Napa Co Line	800	49.8	4	8	17	36
Clark Dr	s/o Soda Bay Rd	300	45.5	2	4	9	19
Clark Dr	e/o Gaddy Ln	690	49.2	3	7	15	32

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
Clover Dr	e/o Middle Creek Rd	210	44.0	1	3	7	15
Copsey Creek Way	e/o Big Bear Rd	190	43.6	1	3	6	14
Crestview Dr	e/o Lakeshore Dr	150	42.5	1	3	5	12
Cruikshank Rd	e/o Live Oak Dr	160	42.8	1	3	6	12
Crystal Lake Way	e/o Hill Road East	400	46.8	2	5	10	22
Diener Way	w/o SR 29	90	40.3	1	2	4	8
Dry Creek Cutoff	e/o SR 175	230	44.4	2	3	7	16
Dry Creek Cutoff	w/o SR 29	420	47.0	2	5	11	23
Elk Mountain Rd	n/o SR 20	760	49.6	3	7	16	35
Emerford Dr	w/o SR 175	830	50.0	4	8	17	37
Fairway Dr	e/o SR 281	1,550	52.7	6	12	26	55
Fairway Dr	w/o SR 281	1,240	51.7	5	10	22	48
First St, Upper Lake	e/o Main St	720	49.3	3	7	15	33
Foothill Dr	e/o SR 20	370	46.4	2	5	10	21
Gaddy Ln	w/o 3rd St	1,500	52.5	5	12	25	54
Government St	n/o SR 20	1,420	52.3	5	11	24	52
Hammond Ave	s/o SR 20	320	45.8	2	4	9	19
Harbin Springs Rd	w/o Big Canyon Rd	690	49.2	3	7	15	32
Harrington Flat Rd	s/o Bottle Rock Rd	160	42.8	1	3	6	12
Hartman Rd	e/o SR 29	3,200	55.8	9	19	42	90
High Valley Rd	n/o SR 20	250	44.7	2	4	8	16
Highland Springs Rd	s/o SR 29	1,610	52.8	6	12	26	57
Highland Springs Rd	n/o SR 29	630	48.8	3	7	14	30
Highland Springs Rd	n/o Bell Hill Rd	850	50.1	4	8	17	37
Hill Rd	s/o Lakeshore Blvd	1,710	53.1	6	13	27	59
Hill Rd	n/o Hill Rd East	280	45.2	2	4	8	18

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
Hill Road East	n/o Park way	2,390	54.5	7	16	34	74
Island Dr	e/o SR 20	650	48.9	3	7	14	31
Kelsey Creek Dr	s/o SR 29	910	50.4	4	8	18	39
Lake St, Clear Lake Oaks	s/o SR 20	810	49.8	4	8	17	36
Lake St, Lower Lake	n/o Main St Kelseyville	1,460	52.4	5	11	25	53
Lakeshore Blvd	n/o Beach Ln	5,220	57.9	12	27	58	125
Lakeshore Blvd	n/o Park Way	3,180	55.8	9	19	42	90
Lakeshore Dr, Clearlake	w/o Clearlake City Limits	680	49.1	3	7	15	32
Live Oak Dr	s/o Main St	2,630	55.0	8	17	37	79
Live Oak Dr	s/o SR 29	1,260	51.8	5	10	22	48
Loch Lomand Rd	w/o Black Oak St	1,520	52.6	5	12	25	55
Main St, Upper Lake	s/o Washington St	3,500	56.2	10	21	44	95
Martin St	w/o Lakeport City Limits	800	49.8	4	8	17	36
Matthews Rd	e/o SR 175	500	47.8	3	6	12	26
Matthews Rd	w/o Highland Springs Rd	530	48.0	3	6	13	27
Merritt Rd	w/o Loasa Rd	1,590	52.8	6	12	26	56
Merritt Rd	e/o SR 29	2,160	54.1	7	15	32	69
Mill St	n/o 2nd St	1,070	51.1	4	9	20	43
Mission Rancheria Rd	n/o Soda Bay Rd	2,250	54.3	7	15	33	71
Morgan Valley Rd	e/o Mill St	1,530	52.6	6	12	26	55
Nice- Lucerne Cutoff	e/o SR 29	5,420	58.1	13	28	59	128
Nice- Lucerne Cutoff	s/o Lake shore Dr	5,290	58.0	13	27	58	126
Parallel Dr	n/o SR 175	1,510	52.6	5	12	25	55
Park Way	w/o Lakeshore Blvd	2,030	53.8	7	14	31	66
Park Way	e/o Hill Road	1,980	53.7	7	14	30	65

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
	East						
Point Lakeview Rd	e/o Anderson Rd	590	48.5	3	6	14	29
Point Lakeview Rd	s/o Fairway Dr	1,000	50.8	4	9	19	41
Quarterhorse Ln	w/o Pinto Pl	540	48.1	3	6	13	27
Red Hills Rd	s/o SR 29	1,080	51.1	4	9	20	44
Riggs Rd	w/o Scotts Valley Rd	520	47.9	3	6	12	27
Riviera West Dr	s/o Shoreline Dr	450	47.3	2	5	11	24
Scotts Valley Rd	s/o SR 20	500	47.8	3	6	12	26
Scotts Valley Rd	w/o Mountain View Rd	3,720	56.5	10	21	46	99
Second St, Upper Lake	e/o Washington St	2,270	54.3	7	15	33	72
Seigler Canyon Rd	s/o SR 29	1,250	51.7	5	10	22	48
Soda Bay Rd	s/o Hwy 175 extension	10,350	60.9	20	42	91	197
Soda Bay Rd	e/o Riveria West	2,080	53.9	7	15	31	68
Soda Bay Rd	e/o Big Valley Rd	3,730	56.5	10	21	46	100
South Main St	n/o Hwy 175 extension	10,800	61.1	20	44	94	202
Spruce Grove Rd	e/o SR 29	2,310	54.4	7	16	34	72
Spruce Grove Rd, Hidden Valley	e/o SR 29	2,250	54.3	7	15	33	71
State St	S/o Gaddy Ln	1,980	53.7	7	14	30	65
Sulphur Bank Rd	s/o SR 20	170	43.1	1	3	6	13
Third St, Kelseyville	s/o Gaddy Ln	920	50.4	4	8	18	39

Table 8-2 Existing Noise Contours

Highway	Location	ADT	Ldn (dBA) at 100 feet	Distance (feet) From Roadway Centerline			
				70 Ldn Contour	65 Ldn Contour	60 Ldn Contour	55 Ldn Contour
Notes:							
<p>*Inserted from Caltrans data.</p> <p>1. Assumptions for Daytime-Nighttime Splits:</p> <p>Daytime = 7:00 a.m. to 10:00 p.m. 15 hours and 85% of ADT Nighttime = 10:00 p.m to 7:00 a.m. 9 hours and 15%</p> <p>2. REMLS are Reference Energy Mean Levels for each vehicle class.</p> <p>3. California Vehicle Noise Levels (Calveno) were used for REMLS.</p> <p>4. For Heavy Trucks, if the speed is lower than 35 mph, then the REMLS equation must be adjusted:</p> <p style="padding-left: 40px;">Use 80 dBA for 31-35 mph, 51.9+19.2*log(speed, mph) for 25 to 31 mph</p> <p>5. Truck Traffic data (% for Medium Trucks and Heavy Trucks) is from Caltrans 2001.</p> <p>6. Auto, Medium Duty Truck, and Heavy Truck percentages shown in italics were estimated by interpolating between known intersections.</p> <p>7. These calculations use the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108. The estimates of distances to Ldn contours are considered accurate out to about 200 m or 600 fe</p> <p>8. Consistent with the prior Noise Element (page IV-106 in the previous General Plan) a drop off rate of 4.5 dBA per doubling of distance is used in calculating distance to Ldn contours.</p>							