Chapter 20. Noise Element

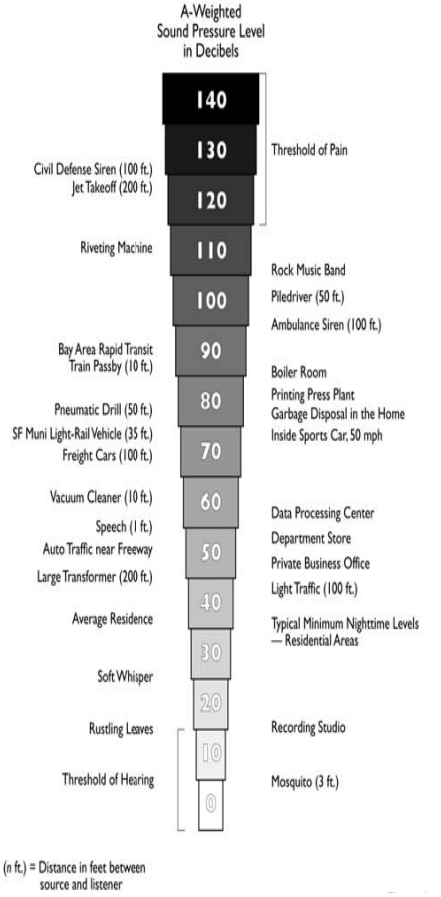
20.1 Introduction

The Noise Element is one of the seven General Plan Elements required by California law (California Government Code, Section 65302). The purpose of the Noise Element is to identify and appraise noise following the guidelines adopted by the Office of Noise Control of the California Department of Health Services. The guidelines indicate that noise levels are to be considered in establishing patterns of land uses that minimize the exposure of community residents to excessive noise.

This chapter identifies the County's noise goals and establishes policies, standards, and implementation measures to manage noise levels within the unincorporated areas of the County.

20.2 Background

Figure 20-1: Sound Level Comparison Chart



Measuring and Characterizing Noise

Assessing the community noise environment involves measuring three aspects of sound: level, frequency and variation. Sound level is the magnitude or loudness of a sound, expressed in decibels (see Figure 20-1 and the glossary at the end of this section). Frequency is a measure of the pitch of the sound, and variation is the change in noise exposure over time. When sound is disagreeable, it is considered noise.

Most community noise is produced by many distant sources, which rise and fall gradually throughout the day creating a relatively steady background sound having no identifiable source. Brief events, such as aircraft flyovers, cause spikes in community noise levels. Both steady background and noise spikes are taken into account in formulating the Community Noise Equivalent Level (CNEL), a measure that describes average noise exposure over a period of time.

Because communities are more sensitive to impacts from nighttime noise, noise descriptors must

specifically take this time period into account. Common measures include the CNEL and the Day-Night Average Level (Ldn). Both reflect noise exposure over an average day, with greater weight given to noise occurring during the evening and night. The two descriptors are roughly equivalent; the CNEL descriptor is more commonly used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for California noise law.

Principal Noise Sources

Table 20-1 lists prominent noise sources within unincorporated areas of the County. Tables 20-2 and 20-3 provide results of community noise surveys by Charles Salter Associates conducted in April 2002 for selected areas. Additional details on County noise issues are contained in the Natural Resources and Hazards background study[1].

Appendix A contains noise level contours for state highways, selected county roads, county airports, and other prominent sources.

Table 20-1. Inventory of Prominent Sources of Noise within Communities of Humboldt County

Community	*Source of Noise*			
	ROADS	AIRPORTS	RAILROAD*	STATIONARY SOURCES
ARCATA	U.S. 101, State Highways 299 & 255	NONE	Northwestern Pacific & Arcata/ Mad River	NONE
BLUE LAKE	State Highway 299	NONE	Arcata/Mad River	NONE
CARLOTTA	State Highway 36	NONE	NONE	Gravel operations
EUREKA	U.S. 101, Myrtle Ave. Harris, Henderson & "H" St	Murray Field	Northwestern Pacific	Redwood Acres
FAIRHAVEN	New Navy Base Rd.	NONE	NONE	Mill
FERNDALE	State Highway 211	NONE	NONE	Fairgrounds
FIELDBROOK	NONE	NONE	NONE	NONE
FIELDS LANDING	U.S. 101	NONE	Northwestern Pacific	Shipping operations
FORTUNA	U.S. 101, Main St.	Rohnerville Airport	Northwestern Pacific	Gravel operations, mills
FRESHWATER	Freshwater Rd.	NONE	NONE	NONE
GARBERVILLE	U.S. 101	NONE	NONE	Gravel operations
HOOPA	State Highway 96	NONE	NONE	NONE

[1] Dyett and Bhatia 2002. *Humboldt 2025 General Plan Update, Natural Resources and Hazards: A Discussion Paper for Community Workshops.*

Table 20-1. Inventory of Prominent Sources of Noise within Communities of Humboldt County

Community	*Source of Noise*			
HYDESVILLE	State Highway 36, Rohnerville Rd.	NONE	NONE	NONE
LOLETA	NONE	NONE	Northwestern Pacific	NONE
MANILA	State Highway 255 (New Navy Base Rd.)	NONE	NONE	NONE
McKINLEYVILLE	U.S. 101, Central Ave.	Eureka/Arcata Airport	NONE	NONE
MOONSTONE/ WESTHAVEN	U.S. 101	NONE	NONE	NONE
ORICK	U.S.101	NONE	NONE	NONE
REDWAY	Redwood Dr.	NONE	NONE	NONE
RIO DELL	U.S. 101, Wildwood Ave.	NONE	Northwestern Pacific	NONE
ROHNERVILLE (See Fortuna)				
SAMOA	New Navy Base Rd.	NONE	NONE	Pulp mill, cogeneration plant, shipping operations
SCOTIA	U.S. 101	NONE	Northwestern Pacific	Mill
TRINIDAD	U.S. 101	NONE	NONE	NONE
WEOTT	U.S. 101	NONE	NONE	NONE
WILLOW CREEK	State Highways 299 & 96	NONE	NONE	Gravel operations

* Note: The former Northwestern Pacific Railroad is now under the direction of the North Coast Railroad Authority**.** While local rail lines have not operated on a regular basis for several years, future rail usage should continue to be considered in land use planning decisions, unless the railroad right-of-ways are abandoned.

Traffic Noise

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high-frequency tire noise, which increases with vehicle speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks generate wind noise. While tire noise from autos is generally located at ground level, truck noise sources can be located as high as 10 to 15 feet above the roadbed due to tall exhaust stacks and high engine placement. Sound walls are not effective for mitigating such noise unless they are very tall. Sound walls are most effective when placed close to the noise source and tall enough so as to block noise transmission to the receiver such as a nearby dwelling.

As illustrated in Table 20-2, Humboldt County is subject to noise impacts primarily from U.S. 101, which creates noise in areas up to 500 feet away. Differences in elevation can amplify or dampen the perceived noise level—(noise from a thoroughfare in a trough or valley between residential areas will be reflected upward and focused, as in a satellite dish, while noise from an elevated thoroughfare may dissipate and be perceived as less of an annoyance). On flat ground, a buffer (such as a sound wall or dense vegetation) will greatly reduce noise escaping to surrounding areas. The California Department of Transportation installs sound walls along state roads when new construction or widening is proposed through urban areas or impacts existing residential uses. In Humboldt County, CalTrans has not pursued sound wall construction along existing highways.

Table 20-2. Traffic Noise Levels in Humboldt County on U.S. Highway 101, April 10-11, 2002

Location	*Post Mile*	*Measurement Distance (ft.)*	*CNEL*	*Distance to 65 CNEL (ft.)*	*Distance to 60 CNEL (ft.)*
Richardson Grove	1.6	11	76	56	121
North of Rio Dell	55.0	23	79	186	400
Singley Rd.	64.4	30	78	323	500
Indianola cutoff	82.6	19	80	179	385
School Rd.	91.4	23	77	147	318
Westhaven Dr.	98.7	20	78	149	322
North of Orick city limits	122.0	20	73	69	149

Source: Charles Salter Associates, 2002.

Noise surveys were conducted at various locations along U.S. 101 over a 24-hour period spanning April 10 and 11, 2002 by Charles Salter Associates. They Monitored sites including incorporated, unincorporated, and rural areas of the County. Their study shows distances from the center of the highway's outer lane the 60-dB CNEL contour ranged from 121 feet at Richardson Grove (near the County's southern border) to 500 feet at Singley Road (south of the Eureka Community Planning Area).

Table 20-3 lists the three sections of roadway in Arcata, McKinleyville, and Eureka with the widest 65-dB and 60-dB CNEL contours. All of these areas represent segments of U.S. 101. It is notable that in Arcata the highway is separated from surface roads in a designated right-of-way, while in Eureka the highway is part of the City's street grid.

Table 20-3. Highest-Noise Roadways in Humboldt County Communities

Community	Roadway	Distance to 65 dB CNEL (ft.)	Distance to 60 dB CNEL (ft.)
Arcata	U.S. 101, Sunset Ave. to SR 299	382	823
	U.S. 101, Samoa Blvd. to Sunset Ave.	379	816
	U.S. 101, Bayside Rd. to Samoa Blvd.	361	778
McKinleyville	U.S. 101, SR 200 to School Rd.	185	400
	U.S. 101, School Rd. to Murray Rd.	185	400
	U.S. 101, Murray Rd. to Airport Rd.	150	350
Eureka	U.S. 101, end of 5th St. to Murray Field	141	305
	U.S. 101, Sunset Ave. to SR 299	137	295
	U.S. 101, Harris St. to Wabash St.	125	270

Sources: City of Arcata General Plan EIR, 1998; City of Eureka General Plan Background Report, 1997; McKinleyville CPA EIR, 1999.

Noise Compatibility

Evaluating new development projects should be based on a comparison of the noise compatibility guidelines in Figure 20-2 with noise contours and other available information. Fences, landscaping, and noise insulation can be used to mitigate the hazards of excessive noise levels.

As shown in Figure 20-2, exterior noise levels for residences are acceptable up to 60 dB without additional noise insulation required. In areas where noise levels exceed 60dB, the need for additional noise insulation will vary depending on the land use designation, adjacent uses, distance to noise source, and intervening topography, vegetation, and other buffers. Appendix B provides standards for meeting noise insulation requirements.

20.3 Goals and Policies

Goals

N-G1. Excessive Noise. Minimize the exposure of community residents to excessive noise. (California Government Code, Section 65302(f))

N-G2. Incompatible Land Uses. Prevent incompatible land uses by reason of noise levels.

Policies

N-P1. Guide to Land Use Patterns. Use current and projected noise levels as a guide for establishing patterns of land use that minimize the exposure of community residents to excessive noise. (California Government Code, Section 65302(f))

N-P2. Land Use/Noise Compatibility Matrix. The Land Use/Noise Compatibility Matrix (Figure 20-2) shall be utilized to ensure compatibility of land uses. Development may occur in areas identified as "normally unacceptable" provided measures to reduce both the indoor and outdoor noise levels to acceptable levels are taken.

N-P3. Periodic Review of Combining Zones. Periodically identify and evaluate potential noise problem areas. Review and revise noise impact combining zone areas as necessary, particularly during Airport Land Use Plan updates.

Figure 20-2

LAND USE / NOISE COMPATIBILITY STANDARDS

CLEARLY ACCEPTABLE	NORMALLY ACCEPTABLE	NORMALLY UNACCEPTABLE	CLEARLY UNACCEPTABLE

LAND USE CATEGORY	Maximum Interior Noise Levels*	LAND USE INTERPRETATION FOR Ldn. VALUE 50 – 60	61 - 70	71 - 80	81 - 90	91+
Residential Single Family, Duplex, Mobile Homes	45					
Residential Multiple Family, Dormitories, etc.	45					
Transient Lodging	45					
School Classrooms, Libraries, Churches	45					
Hospitals, Nursing Homes	45					
Auditoriums, Concert Halls, Music Shells	35					
Sports Arenas, Outdoor Spectator Sports						
Playgounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Rec., Cemeteries						
Office Buildings, Personal, Business & Professional	50					
Commercial: Retail, Movie, Theaters, Restaurants	50					
Commercial: Wholesale, Some Retail, Ind., Mfg., Util.						
Manufacturing, Communications(Noise Sensitive)						
Livestock Farming, Animal Breeding						
Agriculture (except Livestock), Mining, Fishing						
Public Right-of-Way						
Extensive Natural Recreation Areas						

*Due to exterior sources

(Source: Bolt, Beranek, and Newman, Inc., 1974)

CLEARLY ACCEPTABLE: The noise exposure is such that the activities associated with the land use may be carried out with essentially no interference. (Residential areas: both indoor and outdoor noise environments are pleasant.)

NORMALLY ACCEPTABLE: The noise exposure is great enough to be of some concern, but common constructions will make the indoor environment acceptable, even for sleeping quarters. (Residential areas: the outdoor environment will be reasonably pleasant for recreation and play at the quiet end and will be tolerable at the noisy end.)

NORMALLY UNACCEPTABLE: The noise exposure is significantly more severe so that unusual and costly building constructions are necessary to ensure adequate performance of activities. (Residential areas: barriers must be erected between the site and prominent noise sources to make the outdoor environment tolerable.)

CLEARLY UNACCEPTABLE: The noise exposure at the site is so severe that construction costs to make the indoor environment acceptable for performance of activities would be prohibitive. (Residential areas: the outdoor environment would be intolerable for normal residential use.)

N-P4. U.S. 101 Surface Maintenance. The County, through its representation on the Humboldt County Association of Governments and by other means, shall request the Department of Transportation (CalTrans) prioritize roadway surface maintenance on U.S. 101 in the vicinity of Arcata and McKinleyville in order to minimize roadway noise impacts, and, if feasible, consider use of special noise–reducing surface treatments.

N-P5. U.S. 101 Speed Limits/ Noise Barriers. Should roadway surface maintenance fail to prevent significant noise impacts on U.S. 101 in the vicinity of Arcata and McKinleyville, consideration should be given to requesting from CalTrans a speed limit reduction (65 to 60 mph) or installation of noise barriers.

Standards

N-S1. Noise Impact Combining Zones. The 20 year projected noise contours of Appendix A shall be used to identify noise impact combining zone areas to indicate where special sound insulation measures may apply.

N-S2. Environmental Review Process. For noise sensitive locations where noise contours do not exist, the environmental review process required by the California Environmental Quality Act shall be utilized to generate the required analysis and determine the appropriate mitigation per state standards. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application. (Source: Title 24, Appendix Chapter 12, §1208A.8.2)

N-S3. Uniform Building Code. Use the Uniform Building Code as adopted for California (California Code of Regulations, Title 24, Appendix Chapter 12) for determining required noise separation requirements for buildings.

N-S4. Noise Standards for Habitable Rooms. Noise reduction shall be required as necessary to achieve a maximum of 45 CNEL interior noise levels in all habitable rooms per California building standards.

N-S5. Noise Reduction Standards for Habitable Rooms. Noise reduction standards in Appendix B of this Element shall be used to identify building construction assemblies to achieve acceptable interior noise levels in noise impact areas.

N-S6. Noise Reduction Guidelines for Exterior Areas. The Noise Guidebook published by the federal Department of Housing and Urban Development (www.hud.gov) shall be used to guide appropriate exterior noise reduction measures in noise impact areas. For residential areas, a usable outdoor living area at least 200 square feet in size per dwelling unit that meets the 60 CNEL standard shall be maintained somewhere on the property.

Implementation Measures

N-IM1. Noise Impact Combining Zone. Utilize Noise Impact Combining Zone designations to flag where existing standards need to be applied.

N-IM2. Environmental Review. Use review required by the California Environmental Quality Act to implement policies for noise impacts

NOTE: the section below will fall out of the 'final' version found in the GP, but will be critical to the process of review.

20.4 Staff Analysis and Alternatives

State Requirements

California Government Code Section 65302(f) sets out the components of the Noise Element:

The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

(1) Highways and freeways.
(2) Primary arterials and major local streets.
(3) Passenger and freight on-line railroad operations and ground rapid transit systems.
(4) Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
(5) Local industrial plants, including, but not limited to, railroad classification yards.
(6) Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive.

The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.

The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards.

Staff Recommendation

The noise policies in the current Framework General Plan date back to the original 1977 Noise Element. The policies are vaguely stated and have warranted this rewrite. The noise compatibility standards from the 1977 Element, however, are still the current accepted standards for land use planning, so no change is warranted in the basic regulations, found in Figure 20-2.

The noise section of the McKinleyville Community Plan adopted in 2002 reflects a more current approach in policy, and forms the basis of staff's recommended revisions to its plan.

The McKinleyville Community Plan includes mapped noise contours and standards contained in a Noise Combining Zone, whereby mapped noise contours are used to flag locations where the existing standards need to be applied. This treatment of noise hazard mitigation provides a more consistent application of the noise standards, and can effectively streamline the permit process for new development rather than relying on site specific noise studies.

The Critical Choices Report, used as background for this Element, recommends performance standards for noise hazard mitigation. Staff's recommendations address this issue in Standard N-S1 and Implementation Measure N-IM1 with adoption of a Noise Combining Zone.

Alternatives

Plan Alternative A includes Policy N-P6 (New Noise Generators), Industrial Performance Standards (N-IM3 and N-S7) and a Noise Ordinance Implementation Measure (N-IM4) to further protect residents from exposure to excessive noise hazards. It also includes IM-5 to encourage CalTrans to allow sound walls to be constructed within the highway right of way in all Urban Study Areas, and IM-6 (Exterior Noise Reduction Standards) to mitigate noise impacts along highways and exterior settings within noise impact areas.

N-P6 New Noise Generators. New noise generators may be allowed in areas where projected noise levels are "conditionally acceptable" only after an analysis of possible noise reduction measures is made and indoor and outdoor noise mitigation features are included in the project design such that noise impacts from the project are less than significant.

Industrial Performance Standards

The County Coastal Zoning Code includes Industrial Performance Standards that limit noise as well as lights, dust, vibrations and traffic. These standards could be added to the Inland Zoning Code as well. Performance standards for cottage industry and home occupation use already exist in both the inland and coastal zoning code.

N-S7 Industrial Performance Standards. Add the Industrial Performance Standards currently contained in the County Coastal Zoning Code to the Inland Zoning Code as well.

N-IM3 Adoption of Performance Standards. Adopt Industrial Performance Standards Countywide.

Noise Ordinance

While Humboldt is a largely rural county, a Noise Ordinance allowing for the establishment of noise standards based on local standards that are tied to land use designations and zoning districts can protect public health and welfare in more heavily-populated unincorporated areas. Sample noise ordinance language is attached.

Such a Noise Ordinance would codify noise limits for residential, commercial, office, and industrial zones, similar to what is found in Figure 20-2. The main difference would be that it would be applied at the building permit level, ensuring all (new) uses would comply with

the standards, not just discretionary uses where environmental review is required, or where mapped noise contours triggered the application of the Noise Impact combining zone.

Considerable concern was expressed early in the General Plan Update process and during the development of the McKinleyville Community Plan regarding nuisance type noises such as gunfire, loud music, cars and power equipment. The sample noise ordinance discussed above includes provisions to address these issues.

N-IM4. Noise Ordinance. Adopt a noise ordinance based on current zoning districts, tailored to community noise standards.

Sound Walls In CalTrans Right of Way

Presently, CalTrans allows construction of sound walls in highway right of way in rural areas only as a last resort, and McKinleyville is considered a rural area. It is not clear how CalTrans defines rural areas, and what would be necessary to change the designation for property in the Urban Study Areas. The proposed implementation measure would attempt to encourage CalTrans to allow sound walls to be constructed in the highway right of way, not only as a last resort but for other reasons as well.

N-IM5. Sound Walls in CalTrans Right of Way. Encourage CalTrans to allow sound walls to be constructed within the highway right of way in all Urban Study Areas.

Exterior Noise Reduction Standards

The existing general plan identifies acceptable noise levels, but it does not specify how to achieve acceptable noise levels in exterior areas. Adopting the following implementation measure would clarify which portions of a lot are most important for acceptable noise levels, provide design standards for sound walls, and set standards for noise reduction techniques using landscaping:

N-IM6. Exterior Noise Reduction Standards. Adopt standards specifying appropriate measures to reduce exterior noise levels in noise impact areas. Standards shall consider the portion of a lot where noise level reduction measures would apply, acceptable sound wall designs, and standards for achieving noise level reductions through effective site planning techniques.

Plan Alternative C differs from the recommended alternative because it does not include adoption of a Noise Combining Zone nor does it consider adoption of a noise ordinance. It also does not include Policy N-P4 (Hwy 101 Surface Maintenance), nor Policy N-P5 (U.S 101 Speed Limits/ Noise Barriers).

Also, Plan Alternative C includes the following policy:

N-P7. Modification or Waiver of Noise Insulation Requirements. Where full mitigation in accordance with the policies and standards of this Noise Element is not feasible, the Planning Commission may modify or waive such policies or standards to enable reasonable use of the property, provided that noise levels are mitigated to the maximum extent feasible.

Plan Alternatives Comparison Chart

The "Vote" column is provided for the user to indicate a policy preference. Enter a **R**etain, **D**elete or **M**odify.

Table 20-4. Plan Alternatives Comparison Chart

Plan Alternative				*Goals and Policies*	*Staff Remarks*	***Vote: R, D, M***
A	**B**	**C**		**N-G1. Excessive Noise.** Minimize the exposure of community residents to excessive noise. (California Government Code, Section 65302(f))		
A	**B**	**C**		**N-G2. Incompatible Land Uses.** Prevent incompatible land uses by reason of noise levels.		
A	**B**	**C**		**N-P1 Guide to Land Use Patterns.** Use current and projected noise levels as a guide for establishing patterns of land use that minimize the exposure of community residents to excessive noise. (California Government Code Section 65302(f))		
A	**B**	**C**		**N-P2 Land Use/Noise Compatibility Matrix.** The Land Use/Noise Compatibility Matrix (Figure 20-2) shall be utilized to ensure compatibility of land uses.		
A	**B**			**N-P3 Periodic Review Of Combining Zones.** Periodically identify and evaluate potential noise problem areas. Review and revise noise impact combining zone areas as necessary, particularly during Airport Land Use Plan updates.		
A	**B**			**N-P4. Hwy 101 Surface Maintenance.** The County, through its representation on the Humboldt County Association of Governments and by other means, shall request CalTrans prioritize roadway surface maintenance on U.S. 101 in the vicinity of Arcata and McKinleyville in order to minimize roadway noise impacts, and, if feasible, consider use of special noise–reducing surface treatments.		

Plan Alternative				Goals and Policies	Staff Remarks	Vote: R, D, M
A	**B**			**N-P5. U.S 101 Speed Limits/ Noise Barriers.** Should roadway surface maintenance fail to prevent significant noise impacts on U.S. 101 in the vicinity of Arcata and McKinleyville, consideration should be given to requesting from CalTrans a speed limit reduction (65 to 60 mph) or installation of noise barriers.		
A				**N-P6. New Noise Generators.** New noise generators may be allowed in areas where projected noise levels are "conditionally acceptable" only after an analysis of possible noise reduction measures is made and indoor and outdoor noise mitigation features are included in the project design such that noise impacts from the project are less than significant.		
		C		**N-P7. Modification or Waiver of Noise Insulation Requirements.** Where full mitigation in accordance with the policies and standards of this Noise Element is not feasible, the Planning Commission may modify or waive such policies or standards to enable reasonable use of the property, provided that noise levels are mitigated to the maximum extent feasible.		
				Standards		
A	**B**			**N-S1**. **Noise Impact Combining Zones.** The 20 year projected noise contours of Appendix A shall be used to identify noise impact combining zone areas to indicate where special sound insulation measures may apply.		
A	**B**	**C**		**N-S2. Environmental Review Process.** For noise sensitive locations where noise contours do not exist, the environmental review process required by the California Environmental Quality Act shall be utilized to generate the required analysis and determine the appropriate mitigation per state standards. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application. (Source: California Code of Regulations, Title 24, Appendix Chapter 12, Section 1208A.8.2)		

Plan Alternative				Standards	Staff Remarks	Vote: R, D, M
A	**B**	**C**		**N-S3. Uniform Building Code.** Use the Uniform Building Code as adopted for California (California Code of Regulations, Title 24, Appendix Chapter 12) for determining required noise separation requirements for buildings.		
A	**B**	**C**		**N-S4. Noise standards for habitable rooms.** Noise reduction shall be required as necessary to achieve a maximum of 45 CNEL interior noise levels in all habitable rooms per State building standards.		
A	**B**	**C**		**N-S5. Noise Reduction Standards for Interior Areas.** Noise reduction standards in Appendix B of this Element shall be used to identify building construction assemblies to achieve acceptable interior noise levels in habitable areas of structures in noise impact areas.		
A	**B**	**C**		**N-S6. Noise Reduction Guidelines for Exterior Areas.** The Noise Guidebook published by the federal Department of Housing and Urban Development (www.hud.gov) shall be used to guide appropriate exterior noise reduction measures in noise impact areas. For residential areas, a usable outdoor living area at least 200 square feet in size per dwelling unit that meets the 60 CNEL standard shall be maintained somewhere on the property.		
A				**N-S7. Industrial Performance Standards.** Add the Industrial Performance Standards currently contained in the County Coastal Zoning Code to the Inland Zoning Code as well.		
				Implementation Measures		
A	**B**			**N-IM1 Noise Impact Combining Zones.** Utilize Noise Impact Combining Zone designations to flag where existing standards need to be applied.		
A	**B**	**C**		**N-IM2 Environmental Review.** Use review required by the California Environmental Quality Act to implement policies for noise impacts		
A				**N-IM3 Adoption of Performance Standards.** Adopt Industrial Performance Standards Countywide.		
A				**N-IM4 Noise Ordinance.** Adopt a noise ordinance based on current zoning districts, tailored to community noise standards.		

Plan Alternative				*Implementation Measures*	*Staff Remarks*	***Vote: R, D, M***
A				**N-IM5. Sound Walls in CalTrans Right of Way.** Encourage CalTrans to allow sound walls to be constructed within the highway right of way in all Urban Study Areas.		
A				**N-IM6. Exterior Noise Reduction Standards.** Adopt standards specifying appropriate measures to reduce exterior noise levels in noise impact areas. Standards shall consider the portion of a lot where noise level reduction measures would apply, acceptable sound wall designs, and standards for achieving noise level reductions through effective site planning techniques.		

Preliminary Environmental Impact Analysis

Noise level will increase along the County's major transportation corridors as traffic volumes increase and flows remain unimpeded. The McKinleyville and Arcata U.S. 101 corridor areas are particularly susceptible to noise impacts due to higher speed limits, large traffic volumes, the presence of trucks, unimpeded flows, and relatively close residential land uses.

Noise levels at County airports are not expected to increase significantly, with increases in air traffic being offset by quieter aircraft.

Setting

The Framework Plan, community plans, coastal plans, and the Natural Resources and Hazards Report contain a complete description of County noise. The following discussion summarizes the information in these documents.

The common description of noise is the day-night average sound level (Ldn). The day-night average sound level is the average sound level over a 24-hour time period. Ldn is expressed in decibels (dB), which is the standard measure of sound pressure. Since the human ear can detect sound at some frequencies more easily than at other frequencies, filters used with sound-level measuring equipment suppress frequency ranges that the ear cannot readily detect. Measurements of noise normally use the "A" filter, since it was designed to match the frequency sensitivity of the human ear. Hence, noise levels are normally expressed as "A-weighted" levels. All sound or noise levels in this element are A-weighted levels, abbreviated as dB or dBA. Also, all discussion of Ldn assumes that Ldn is measured in A-weighted decibels.

Because decibels are logarithmic units of measure, changes in decibels can be somewhat difficult to interpret. A change of three decibels, for example, is hardly noticeable, while a change of five decibels is quite noticeable. An increase of 10 dB is dramatic and is perceived

as a doubling of the noise level. An increase of 10 dB (from 50 dB to 60 dB) increases the percent of the population highly annoyed at the noise source by about 7%, while an increase of 20 dB (from 50 dB to 70 dB) increases the percentage by approximately 25%.

Roadway traffic is the primary source of noise in Humboldt County. Other major sources of noise include: (1) aircraft in the vicinity of airports; (2) railroad traffic along the Northwestern Pacific right-of-way; and (3) noise from stationary sources, such as the Louisiana Pacific pulp mill or construction sites.

Traffic Noise Sources

Based on historical development patterns, most of the development allowed by the General Plan will probably occur in the Urban Study Areas. Accordingly, recent noise studies of two of the larger Urban Study Areas (McKinleyville and Eureka) can be used to predict the major noise impacts of this project.

In the Eureka area, a noise study was conducted for the 1995 Eureka Community Plan. Although projections of noise levels were not shown, the EIR for that project found that implementation of the Plan, which encourages the construction of 5,500 residential units, would significantly increase traffic in the area. Moreover, the EIR found implementation of the plan would significantly and irreversibly increase noise levels, primarily because of the increase in traffic (*Eureka Community - Plan Draft Environmental Impact Report,* Humboldt County Planning Department, 1992, pp. 35, 76).

The Administrative Draft of the Master Environmental Assessment for the McKinleyville Community Plan Update (Winzler & Kelley, 1993) projected the impacts of future development on the most noisy road segment in McKinleyville, Central Avenue. That study found that obtrusive noise levels would encroach between 3 and 15 feet into property adjacent to the street. However, because of zoning setbacks and an historic right of way along Central Avenue, residential uses are not permitted within 15 feet from the edge of Central Avenue for the most part.

Based on historical development patterns, the 2004 Humboldt County Housing Element states that approximately 25% of the 3,100 units projected to be constructed over the next five years will be built in rural areas. These 800 units could potentially be dispersed across more than a million acres of land served by many different arterials, collectors, and major and minor roads. The impact of this low-density development is deemed to be insignificant since it is not expected to increase noise levels appreciably on any particular road, but will rather add minor amounts of noise across a large number of roads.

The State Vehicle Code contains vehicle noise limits. Proper muffling can bring the exhaust system of most motorcycles, cars, and trucks into compliance with State noise limits. The State Vehicle Code also limits noise levels from sound amplification systems in automobiles. The California Highway Patrol and County Sheriff are responsible for enforcement of the Vehicle Code.

Aircraft Noise

There are seven public airports and numerous private airstrips in Humboldt County. A master plan was prepared for the public sites in 1993 to provide the County with guidelines to make decisions on the development of airport facilities and adjacent land uses. Noise measurements of the airports were made for the plan, and policies were established for future land use in the vicinity of the airport.

Noise from aircraft is often more intrusive and has a higher potential noise impact than noise from traffic along roadways. The visibility of aircraft at low altitudes and typically lower background noise levels at airports seems to create a heightened awareness of general aviation activity. The number of aircraft, the type of aircraft, the distance between the flight path/runway and the receiver, and the presence or absence of physical barriers between the flight path/runway and the receiver influence noise levels.

Railroad Noise

When the Northwestern Pacific Railroad is operational, two trains pass through portions of the County each day. The most significant noise problem associated with trains derives from the engine and horn. Noise generated by the wheels of railroad cars passing over joints between sections of railroad ties and warning signals at grade crossings also contribute to noise levels along railroad lines.

Diesel-powered trains are the loudest. Moving at an average speed of 45 to 50 miles per hour, diesel-powered trains generate noise levels of 88-93 dBA at a distance of 50 feet, while diesel buses and light rail trains typically generate noise levels of 76 to 85 dBA at the same distance. Given the proximity of some residential uses, potentially significant "peak" noise problems may arise as vacant land in these residential areas is developed.

Construction Noise

Noise from construction activities often creates a considerable number of noise-related complaints filed with the County Sheriff's Office. Air compressors can achieve 85 dBA, saws can exceed 90 dBA, and trucks can create noise levels of 95 dBA. Noise problems from construction activity are especially acute in quiet areas and during quiet periods of the day, such as between the hours of 7:00 p.m. and 7:00 a.m. Other factors which influence the degree of noise exposure include the topography of the site and its surroundings, the distance between the construction sites and the receiver, and the access route to the construction site.

The U.S. Occupational Safety and Health Administration (OSHA) has established standards which protect workers from exposure to excessive levels of noise. OSHA requires that firms provide hearing protection to workers exposed to noise levels of more than 85 dBA. OSHA also prohibits exposure of workers to noise levels exceeding 120 dBA.

The Federal Highway Administration and the California Department of Transportation have similar policies for new roadway construction and roadway expansion. These policies contain noise abatement criteria for lands adjacent to highways and selected roads. These criteria are used to determine when noise abatement measures should be required.

Code Requirements

The California Building Code requires certain sound insulation measures to be incorporated into the design and construction of all new residential construction other than detached single-family dwellings. The County Building Inspection Department is responsible for enforcing these requirements.

Humboldt County enforces Section 415 of the California Penal Code, which prohibits anyone from maliciously and willfully disturbing another person by "loud and unreasonable noise". This State law prohibits excessive noise levels from various sources including motor vehicles, amplification systems, and persons yelling or riding their motorcycles and ATVs on their property.

Environmental Impacts

The main issue in evaluating the environmental impacts of the general plan update is whether future development in the County will result in noise levels that exceed acceptable levels. More specifically, the project's noise impacts are considered in two ways:

- Will the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

- Will the project expose people to excessive noise levels who are residing or working in the vicinity of airports?

The sources of noise will remain basically the same under the proposed project as presently exist. Highways and streets will presumably continue as the major noise sources in the County. The Northwest Pacific Railroad transitway may constitute an additional source of noise within the County when it is operational.

The master plan for County airports indicates that the number of aircraft in the County is not expected to increase appreciably between 1991 and 2011 (*Airport Land Use Compatibility Plan - Humboldt County Airports*, Hodges & Shutt, 1993, pp. 4-5, 4-11, 4-17, 4-23, 4-29, 4-37, 4-41). Policies in the plan restrict development in areas subject to noise impacts from airports.

Implementation of the General Plan will indirectly lead to construction activity, which can generate excessive noise. For example, air compressors, heavy equipment and power tools used during construction activities can all generate disturbing levels of noise.

Mitigation

Proposed policies, standards and implementation measures will help reduce the impacts of noise indirectly resulting from this project to less than significant levels. Policies N-P2 (Land Use/Noise Compatibility Matrix), N-P3 (Periodic Review Of Combining Zones), and N-P5 (U.S 101 Speed Limits/ Noise Barriers), Standards N-S1 (Noise Impact Combining Zones), N-S2 (Environmental Review Process), and N-S3 (Uniform Building Code), and Implementation measures N-IM1 (Noise Impact Combining Zones) and N-IM2 (Environmental Review) are deemed necessary parts of the mitigation package to avoid significant noise impacts. Adding N-IM3 (Adoption of Performance Standards) and N-IM4 (Noise Ordinance) will further reduce noise impacts. Policy N-P5 (U.S 101 Speed Limits/ Noise Barriers) was specifically added to address U.S. 101 noise impacts in the vicinity of Arcata and McKinleyville.

Conclusion

The General Plan would provide for population growth that could increase noise levels. The increase in most areas is not expected to significantly affect acceptable noise levels. Localized noise impacts which might be significant are mitigated by the recommended policies, standards, and implementation measures.

Glossary and Definitions

CNEL (Community Noise Equivalent Level): a 24-hour energy equivalent level derived from a variety of single-noise events, with weighting factors of 5 and 10 dBA applied to the evening (7PM to 10 PM) and nighttime (10PM to 7AM) periods, respectively, to allow for the greater sensitivity to noise during those hours.

dB (Decibel): a unit used to express the relative intensity of a sound as it is heard by the human ear.

dBA: The "A-weighted" decibel scale for measuring sounds in decibels; weighs or reduces the effects of low and high frequencies in order to simulate human hearing.

Ldn (Day-Night Average Sound Level): the A-weighted average sound level for a given area (measured in decibels) during a 24-hour period with a 10 dB weighting applied to night-time sound levels. The Ldn is approximately numerically equal to the CNEL for most environmental settings.

Leq (Energy Equivalent Level): defined as the average sound level on the basis of sound energy (or sound pressure squared). The Leq is a "dosage" type measure and is the basis for the descriptors used in current standards, such as the 24-hour CNEL used by the State of California.

SEL (Sound Exposure Level): the total noise energy produced from a single noise event. It is computed from measured dBA sound levels, and is the integration of all the acoustic energy contained within the event.

ATTACHMENT 1

SAMPLE NOISE ORDINANCE

Section 1: Definitions

In addition to the common meaning of words, the following definitions shall be used in interpreting this ordinance.

(a) "A" weighting scale: The sound pressure level in decibels as measured with a sound level meter using the "A" weighted network. The standard unit notation is dB(A)

(b) db(A): Sound level in decibels determined by the "A" weighting scale of a standard sound level meter having characteristics defined by the American National Standards Institute (ANSI) Publication ANSI, S14- 1971.

(c) Decibel: A unit of measure on a logarithmic scale, of the ratio of the magnitude of a particular sound pressure to a standard reference pressure, which for purposes of this ordinance shall be 20 micronewtons / meter.

(d) Impact Noise: Sound that occurs intermittently rather than continuously.

(e) Sound Amplifying Equipment: Any device for the amplification of the human voice, music or any other sound including but not limited to juke boxes, stereos, and radios.

(f) Sound Level: In decibels, a weighted sound pressure level determined by the use of a sound level meter whose characteristics and frequency weightings are specified in the ANSI Standards.

(g) Sound Level Meter: Any instrument certified to meet or exceed ANSI standards which includes omni-directional microphone, an amplifier, an output meter and frequency weighting network(s) for the measurement of sound level.

(h) Sound Pressure Level: In decibels 20 times the logarithm to the base 10 of 2 the ratio of the magnitude of a particular sound pressure to the standard reference pressure. The standard reference pressure is 20 micronewtons / meter.

(i) Weekday: Any day except Sunday.

Section 2: Noise--Generally

(a) *Unreasonably loud and disturbing noises prohibited:* Subject to the provisions of this section, it shall be unlawful for any person or persons to make, permit, continue, or cause to be made or to create any unreasonably loud and disturbing noise in the county. For purposes of this section, the following definitions shall apply:

(1) *Unreasonably loud:* Noise which is substantially incompatible with the time and location where created to the extent that it creates an actual or imminent interference with peace or good order.

(2) *Disturbing:* Noise which is perceived by a person of ordinary sensibilities as interrupting the normal peace and calm of the area. In determining whether a noise is unreasonably loud and disturbing, the following factors incident to such noise are to be considered: Time of day; proximity to residential structures; whether the noise is recurrent, intermittent, or constant; the volume and intensity; whether the noise has been enhanced in volume or range by any type of electronic or mechanical means; the character and zoning (if applicable) of the area; whether the noise is related to the normal operation of a business or other labor activity and whether the noise is subject to being controlled without unreasonable effort or expense to the creator thereof.

(b) *Particular noises prohibited:* The following acts, among others, are declared to be unreasonably loud and disturbing noises in violation of this section but the enumeration shall not be deemed to be exclusive, namely.

(1) The sounding of any horn or signal device on any automobile, motorcycle, bus or other vehicle while not in motion, except as a danger signal if another vehicle is approaching apparently out of control, or if in motion only as a danger signal; the creation by means of any such signal device of any unreasonably loud or harsh sound, and the sounding of such device for an unnecessary and unreasonable period of time.

(2) The playing of any radio, phonograph or any musical instrument in such a manner or with such volume, particularly during the hours between11:00 p.m. and 7:00 a.m., that creates an unreasonably loud or disturbing noise.

(3) The keeping of any animal or bird which, by causing frequent or long continued noise, that creates an unreasonably loud or disturbing noise.

(4) The use of any automobile, motorcycle or other vehicle so out of repair, so loaded or in such manner as to create an unreasonably loud or disturbing noise.

(5) The blowing of any steam whistle attached to any stationary boiler except to give notice of the time to begin or stop work or as a warning of danger.

(6) The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine or motor vehicle, except through a muffler or other device which will effectively prevent loud or explosive noises therefrom.

(7) The use of any mechanical device operated by compressed air unless the noise created thereby is effectively muffled and reduced.

(8) The erection (including excavation), demolition, alteration or repair, or cleaning the outside of, any building in a residential or business district other than between the hours of 7:00 a.m. and 9:00 p.m. on weekdays, except in cases of urgent necessity in the interest of public safety or convenience; provided, however, in cases in which the work is required by an emergency, or by the nature of the particular project or specified portion thereof it is necessary to have a continuous operation without break, or where the specified work cannot be

performed while the permitted use is in operation, the Planning Director may issue a permit for such work to be carried on between hours and on days in addition to the hours and days herein mentioned. (The term "weekdays" in this section means any day except Sunday.)

(9) The creation of any excessive noise on any street adjacent to any school, institution of learning, library, sanitarium or court while the same is in session, or adjacent to any hospital, or any church during services, which unreasonably interferes with the working of such institution.

(10) The creation of unreasonably loud and excessive noise in connection with loading or unloading any vehicle or the opening and destruction of bales, boxes, crates and containers.

(11) The sounding of any bell or gong attached to any building or premises that creates an unreasonably load or disturbing noise.

(12) The shouting and crying of peddlers, hawkers and vendors which disturbs the quiet and peace of the neighborhood.

(13) The use of any drum, loudspeaker or other instrument or device for the purpose of attracting attention by creation of noise to any performance, show, sale, display or advertisement of merchandise.

(14) The firing or discharging of firearms in the streets or elsewhere that creates an unreasonably loud or disturbing noise.

Section 3: Maximum Permissible Standards by Receiving Land

(a) The use of sound amplifying equipment is limited to the conditions specified in this article.

(b) A live musical group or individual using sound amplifying equipment may operate out of doors within the limits of the ordinance as specified in Article III, Sections (c) and (d) provided they have obtained a permit from Humboldt County. A live musical group or individual using sound amplifying equipment who wishes to operate outside of the specified limits may do so only if the property owner, tenant in possession, or in the case of a business, the business manager or an authorized agent of that business manager has been granted a permit. This permit may be secured after it is signed by an authorized agent of the musical group or by a representative of the individual organization or group retaining the services of the musical group and on whose premises the amplifying equipment is to be used.

(c) No person within Humboldt County shall operate or cause to be operated any source of sound in such a manner as to create a sound level which exceeds the limits set forth in Table I below when measured as specified in Section 4.

TABLE I: Sound Levels (dB(a)) By Receiving Land

Time Period	Sound Level	
	Without a Permit	With a Permit
8:00am to 10:00pm	60	60
10:00pm to 10:00am	50	50

(d) Sound Levels in excess of those listed in Table I above will be permitted as follows:

TABLE II: Exceptions To Sound Levels (dB(a)) By Receiving Land In Table I

Time Period	Sound Level	
	Without a Permit	With a Permit
Thursday Evening 5:00pm to 10:00pm	70	up to 85
Friday Evening 5:00pm to Midnight	70	up to 85
Saturday Morning Midnight to 1:00am	60	60
Saturday Evening 5:00pm to Midnight	70	up to 85
Sunday Morning Midnight to 1:00am	60	60

(e) The Planning Director may require an acoustic study for any proposed projects that could have or create sound levels greater than those specified in Table 1 and Table 2 above.

(f) The Planning Director may require the incorporation into a project of any noise attenuation measures deemed necessary to ensure that sound levels are not greater than those specified in Table 1 and Table 2 above.

Section 4: Exceptions

Exceptions. The following sounds shall be exempt from provisions of Section 3:

(a) Construction operations from 7:00am to 9:00pm on weekdays and 8:00am to 7:00pm on Sundays for which building permits have been issued, or construction operations not requiring permits; provided all equipment is operated in accordance with the manufacturer's specifications and with all standard equipment, manufacturer's mufflers and noise reducing equipment in use and in proper operating condition.

(b) Noises of safety signals, warning devices, emergency pressure relief valves and church bells.

(c) Noises resulting from any authorized emergency vehicle when responding to any emergency call or acting in time of emergency.

(d) Unamplified noises at street activity (such as fairs or parades) where the participants have a permit for the conduct of such activity and for use of the streets.

(e) All noises coming from the normal operation of properly equipped aircraft (not including scale model aircraft).

(f) All noises coming from motor vehicles properly equipped with the manufacturer's standard muffler and noise reducing equipment in use and in proper operating condition.

(g) Noise from lawful fireworks and noisemakers on holidays.

(h) Lawn mowers and agricultural equipment used between daylight and 9:00pm when operated with all the manufacturer's standard mufflers and noise reducing equipment in use and in proper operating condition.

(i) Agricultural equipment operated for farming purposes when operated in accordance with the manufacture specifications and with all standard equipment, including manufactures mufflers and noise reducing equipment in use and in proper operation condition.

(j) Any sound resulting from activities of a temporary duration permitted by law and for which a license or permit has been granted by the county or a city, state or federal agency when such sounds do not exceed the conditions and limits stated in the license or permit.

Section 5: Permit to Exceed Maximum Permissible Standards

(a) No person or group of persons shall operate or cause to be operated a source of sound in excess of sound levels not requiring a permit as specified in Section 3, without first obtaining a permit as hereinafter set forth.

(b) Any person or persons desiring a permit shall apply as provided herein and provide all information required.

(1) The applicant must apply for a permit at least forty-eight (48) hours prior to the activity for which the permit is requested. This forty-eight hour requirement shall not prohibit the issuance of a permit in situations where the application is received less than forty-eight hours prior to the activity, provided the application is made sufficiently in advance of the activity for the Planning Director, or his designee, to consider the factors necessary and contained in Section 6 (b) (3) of this ordinance. The legally responsible person must be listed on the permit.

(2) The Humboldt Planning Director, or his designee, will act upon all requests for a permit to exceed maximum permissible standards.

(3) In considering and acting on all requests for permits pursuant to this article, the Planning Director, or his designee shall consider the following in issuing or denying such permit: the timeliness of the application; the nature of the

requested activity; previous experience with the applicant; the nature of the event; the time of the event, other activities in the vicinity of the location proposed; the effect of the activity on surrounding areas and/or persons; previous noise ordinance violations, if any of the applicant, and any other relevant information at his disposal.

(4) Prior to obtaining a permit to exceed maximum permissible sound levels, the applicant will pay to Humboldt County an administrative fee as set on the Schedule of Fees and Charges.

(5) Permit holders shall cooperate with the Humboldt County Sheriff's Office in enforcing this ordinance by having the applicant or applicant's designee as indicated on the permit application physically present at the site of the event during the entire time for which a permit has been issued and shall agree to assist the Sheriff in enforcing this ordinance. The permit holder shall allow the Sheriff's Office to enter the premises at any time during the prescribed activity in order to assess compliance. Failure of the applicant or the designee to be present or to assist the Sheriff as herein prescribed shall be cause for revocation of the permit.

Section 6: Burden of Proof Regarding Exceptions

In any proceeding based upon this ordinance, if an exception stated in this ordinance would limit obligation, limit liability, or eliminate either an obligation or liability, the person who would benefit from the application of the exception shall have the burden of proving that the exception applies and that the terms of the exception have been met.

Section 7: Sound Measurement Standards

Standards, instrumentation and measurement procedures to be used in the measurement of sound as provided for in this ordinance are as follows:

(a) Sound level measurement shall be made with a sound level meter using the "A" weighting scale set on "slow response."

(b) Sound level meters shall be of at least Type Three meeting American National Standards Institute, Incorporated (ANSI) S1.4 – 1971 requirements (or the latest approved version thereof). The entire sound measurement system shall be serviced and operated as recommended by the manufacturer. Persons using the sound level meters shall be trained in sound level measurement and the operation of sound level meters.

(c) Except as provided in (d) below, noise measurements shall be taken at the corner of the primary structure of the complainant nearest the noise source but when this location is not practical, noise measurements shall be made at the boundary of the public or the private right of way which adjoins the complainant's property.

(d) In the case of noises emanating from within a multi-family structure and where the complainant is a resident of the same multi-family structure, noise

measurements shall be made in the unit of the complainant at a height of at least four (4) feet above the floor and at a point approximately equidistant from all walls

Section 8: Presumption in Prosecution for Noise Violations

The complaint of a Humboldt County Deputy Sheriff or any other duly authorized investigating person shall be prima facie evidence that such sound is unreasonably loud, disturbing, and annoying or unnecessary noise. Sound emission decibel measurements shall be used when charging violations under Section 3 of this noise ordinance.

Section 9: Violations and Penalties

(a) Violations The Humboldt County Sheriff or the Humboldt County Code Enforcement Officer shall be responsible for determining noise level violations of this ordinance. For purposes of this ordinance "The Humboldt County Sheriff" shall include the Sheriff and any Deputy Sheriff of Humboldt County.

(b) Civil Penalties

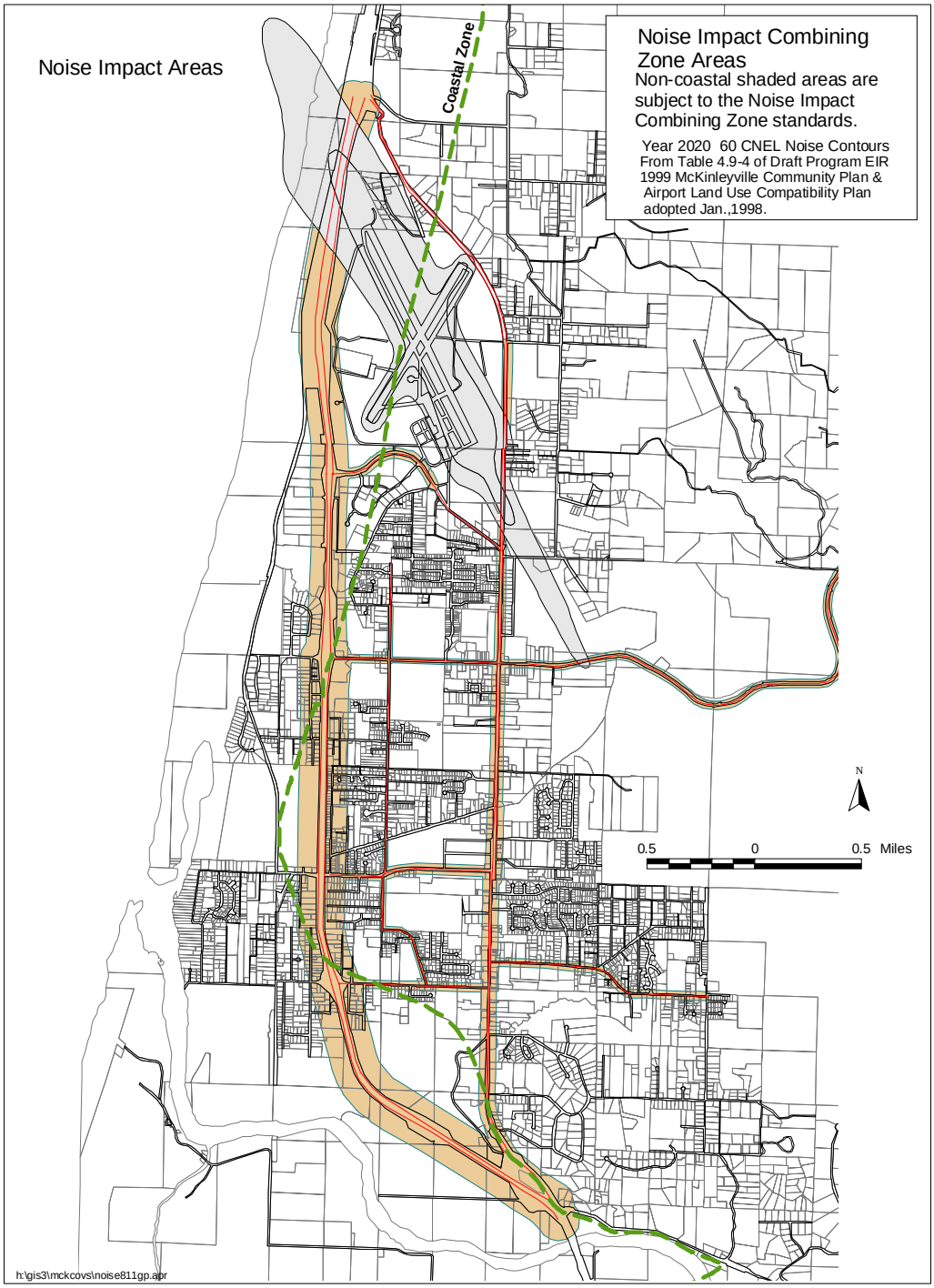
(1) Any person violating any of the provisions of this ordinance shall be subject to a civil penalty of one hundred dollars ($100.00). Each 24 hour period defined as 12:00 midnight to 11:59 pm of a continuing violation shall constitute a separate offense under this subsection.

(2) The Humboldt Count Code Enforcement Unit shall assess civil penalties under this ordinance and shall make written demand for payment upon the person responsible for the violation for which the penalty has been invoked. If payment is not received or equitable settlement reached within sixty (60) days after demand for payment is made, the matter shall be referred to the District Attorney for institution of a civil action in the name of the County in the appropriate division of the Humboldt County Courts for recovery of the penalty. Any sums recovered shall be used to carry out the purposes and requirements of this ordinance.

APPENDIX A

Noise Contour Maps

Sample Noise Contour Map
(McKinleyville Area)



APPENDIX B

RESIDENTIAL NOISE INSULATION REQUIREMENTS

A. SECTION 1 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 25 dB.

1.1 Compliance: Compliance with the following standards shall be deemed to meet requirements for a minimum noise level reduction of 25 decibels.

1.2 General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts or conduits, the space between the wall and pipes, ducts or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Through-the-wall/door mailboxes shall not be used.

1.3 Exterior Walls:

a. Exterior walls, other than as described in this section, shall have a laboratory sound transmission class rating of at least STC-30.

b. Masonry walls having a surface weight of at least 25 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on the studs.

(2) Continuous composition board, plywood or gypsum board sheathing at least 1/2" thick shall cover the exterior side of the wall studs behind wood or metal siding. Asphaltic or wood shake shingles or plaster (stucco) are acceptable in lieu of siding.

Source: California Department of Transportation, Division of Aeronautics, Airport Land Use Planning Handbook, Appendix E, July 1983 (available in the Humboldt County Planning Department).

(3) Sheathing panels shall be covered on the exterior with overlapping building paper.

(4) Insulation material at least R-11 shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

1.4 Windows:

a. Windows other than as described in this section shall have a laboratory sound transmission class rating of at least STC-28.

b. Glass shall be at least 3/16" thick.

c. All operable windows shall be weather-stripped and airtight when closed so as to conform to an air infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or gasket tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230 or TT-S-00153.

1.5 Doors:

a. Doors other than as described in this section shall have a laboratory sound transmission class rating of at least STC-26.

b. All exterior side-hinged doors shall be solid-core wood or insulated hollow metal at least 1 3/4" thick and shall be fully weather-stripped.

c. Exterior sliding doors shall be weather-stripped with an efficient airtight gasket system with performance as specified in Section 1.4c. The glass in the sliding doors shall be at least 3/16" thick.

d. Glass in doors shall be sealed in an airtight nonhardening sealant or in a soft elastomer gasket or glazing tape.

e. The perimeter of door frames shall be sealed airtight to the exterior wall construction as described in Section 1.4e.

1.6 Roofs:

a. Combined roof and ceiling construction other than described in this section and Section 1.7 shall have a laboratory sound transmission class rating of at least STC-39.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of /2" composition board, plywood or gypsum board sheathing topped by roofing as required.

c. Open beam roof construction shall follow the energy insulation standard method for batt insulation.

d. Skylights shall conform to the window standard of Section 1.4.

1.7 Ceilings:

a. Gypsum board or plaster ceilings at least 1/2" thick shall be provided where required by Section 1.6b, above. Ceilings shall be substantially airtight with a minimum number of penetrations.

b. Glass fiber or mineral wool insulation at least R-19 shall be provided above the ceiling between joists.

1.8 Floors: Openings to any crawl spaces below the floor of the lowest occupied rooms shall not exceed 2% of the floor area of the occupied rooms.

1.9 Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors or other openings to the exterior. The attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1" thick coated glass fiber, and shall be at least 5 feet long with one 90-degree bend.

b. Gravity vent openings in attics shall not exceed code minimum in number and size.

c. All vent ducts (except kitchen and sewer gas) connecting the interior space to the outdoors, except domestic range exhaust ducts, shall contain at least a 5-foot length of internal sound- absorbing duct lining. Each duct shall be provided with a bend in the duct such that there is no direct line-of-sight through the duct from the venting cross-section to the room-opening cross-section. Duct lining shall be coasted glass fiber duct liner at least 1" thick.

d. Fireplaces shall be provided with well-fitted dampers.

B. SECTION 2 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM LEVEL REDUCTION OF 30 dB.

2.1 Compliance: Compliance with the following standards shall be deemed to meet requirements for a minimum noise level reduction of 30 decibels.

2.2 General:

a. Brick veneer, masonry blocks or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts or conduits, the space between the wall and pipes, ducts or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational-vented fireplaces shall not be used.

e. All sleeping spaces shall be provided with a carpeted floor.

f. Through-the-wall/door mailboxes shall not be used.

2.3 Exterior Walls:

a. Exterior walls, other than as described below, shall have a laboratory sound transmission class rating of at least STC-35.

b. Masonry walls having a surface weight of at least 40 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on the studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer or stucco. If the exterior is siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, plaster (stucco), or gypsum board sheathing at least 3/4" thick shall cover the exterior side of the wall studs behind wood or metal siding.

(3) Sheathing panels shall be covered on the exterior with overlapping building paper.

(4) Insulation material at least R-11 shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

2.4 Windows:

a. Windows, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-33.

b. Glass of double-glazed windows shall be at least 1/8" thick. Panes of glass shall be separated by a minimum 1/2" airspace.

c. Double-glazed windows shall employ fixed sash or efficiently weather-stripped, operable sash. The sash shall be rigid and weather-stripped with material that is compressed airtight when the window is closed so as to conform to a infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

2.5 Doors:

a. Doors, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-33.

b. Double-door construction is required for all door openings to the exterior. Openings fitted with side-hinged doors shall have one solid-core wood or insulated hollow metal core door at least 1 3/4" thick separated by an airspace of at least 3" from another door, which can be a storm door. Both doors shall be tightly fitted and weather-stripped.

c. The glass of double-glazed sliding doors shall be separated by a minimum 1/2" airspace. Each sliding frame shall be provided with an efficiently airtight weather-stripping material as specified in Section 2.4c.

d. Glass of all doors shall be at least 3/16" thick. Glass of double sliding doors shall not be equal in thickness.

e. The perimeter of door frames shall be sealed airtight to the exterior wall construction as indicated in Section 2.4e.

f. Glass of doors shall be set and sealed in an air-tight nonhardening sealant or a soft elastomer gasket or glazing tape.

2.5 Roofs:

a. Combined roof and ceiling construction, other than described in this section and Section 2.7, shall have a laboratory sound transmission class rating of at least STC-44.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of 3/4" composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. Open beam roof construction shall follow the energy insulation standard method for batt insulation, except use 1" plywood decking with shakes or other suitable roofing material in place of 1/2" plywood.

d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-33.

2.7 Ceilings:

a. Gypsum board or plaster ceilings at least 5/8" thick shall be provided where required by Section 2.6b, above. Ceilings shall be substantially airtight, with a minimum number of penetrations.

b. Glass fiber or mineral wool insulation of at least R-19 shall be provided above the ceiling between joists.

2.8 Floors: The floor of the lowest occupied rooms shall be slab on fill, below grade, or over a fully enclosed basement or crawl space. All door and window openings in the fully enclosed basement shall be tightly fitted.

2.9 Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior. The attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1"-thick coated glass fiber, and shall be at least 5 feet long with one 90-degree bend.

b. Gravity vent openings in attics shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least 3 feet in length containing internal 1" thick coated fiberglass sound-absorbing duct lining. Each duct shall have a lined 90-degree bend in the duct such that there is no direct line-of-sight from the exterior through the duct into the attic.

c. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust and sewer gas ducts, shall contain at least a 10-foot length of internal sound- absorbing duct lining. Each duct shall be provided with a lined 90-degree bend in the duct such that there is no direct line-of- sight through the duct from the venting cross-section to the

room-opening cross-section. Duct lining shall be coated glass fiber duct liner at least 1" thick.

d. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a self-closing baffle plate across the exterior termination which allows proper ventilation. The duct shall be provided with a 90-degree bend.

C. SECTION 3 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 35 dB.

3.1 Compliance: Compliance with the following standards shall be deemed to meet requirements for a minimum noise level reduction of 35 decibels.

3.2 General:

a. Brick veneer, masonry blocks or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts or conduits, the space between the wall and pipes, ducts or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational-vented fireplaces shall not be used.

e All sleeping spaces shall be provided with a carpeted floor.

f. through-the-wall/door mailboxes shall not be used.

g. No glass or plastic skylight shall be used.

3.3 Exterior Walls:

a. Exterior walls, other than as described below, shall have a laboratory sound transmission class rating of at least STC-40.

b. Masonry walls having a surface weight of at least 75 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 5/8" thick, installed on studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer.

if the exterior is stucco or siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, plaster (stucco) or gypsum board sheathing at least 1" thick shall cover the exterior side of the wall studs behind wood or metal siding.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper.

(4) Insulation material at least R-19 shall be installed continuously through the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

3.4 Windows:

a. Windows, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-38.

b. Glass of double-glazed windows shall be at least 3/4" thick. Panes of glass shall be separated by a minimum 1/2" airspace and not be equal in thickness.

c. Double-glazed windows shall employ fixed sash or efficiently weather-stripped, operable sash. The sash shall be rigid and weather-stripped with material that is compressed airtight when the window is closed so as to conform to a infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM-283-65-T.

d. Glass of shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

3.5 Doors:

a. Doors, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-38.

b. Double-door construction is required for all door openings to the exterior. The door shall be side-hinged and shall be solid-core wood or insulated hollow metal, at least 1 3/4" thick, separated by a vestibule or enclosed porch at least 3 feet in length. Both doors shall be tightly fitted and weather-stripped.

c. The perimeter of door frames shall be sealed airtight to the exterior wall construction as specified in Section 3.4d.

d. Glass of all doors shall be at least 3/16" thick. Glass of double sliding doors shall not be equal in thickness.

3.6 Roofs:

a. Combined roof and ceiling construction, other than described in this section and Section 3.7, shall have a laboratory sound transmission class rating of at least STC-49.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of 1" composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. Open beam roof construction shall follow the energy insulation standard method for batt insulation, except use clay or concrete tiles in place of shakes.

3.7 Ceilings:

a. Gypsum board or plaster ceilings at least 5/8" thick shall be provided where required by Section 3.6. Ceilings shall be substantially airtight, with a minimum number of penetrations. The ceiling panels shall be mounted on resilient clips or channels.

b. Glass fiber or mineral wool insulation of at least R-30 shall be provided above the ceiling between joists.

3.8 Floors: The floors of the lowest occupied rooms shall be slab on fill or below grade.

3.9 Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings

to the exterior. The attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1"-thick coated glass fiber, and shall be at least 10 feet long with one 90-degree bend.

b. Gravity vent openings in attics shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least 6 feet in length containing internal sound-absorbing duct lining. Each duct shall have a lined 90- degree bend in the duct such that there is no direct line-of- sight from the exterior through the duct into the attic.

c. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust and sewer gas ducts, shall contain at least a 10-foot length of internal sound- absorbing duct lining. Each duct shall be provided with a lined 90-degree bend in the duct such that there is no direct line-of- sight through the duct from the venting cross-section to the room-opening cross-section. Duct lining shall be coated glass fiber duct liner at least 1" thick.

d. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a self-closing baffle plate across the exterior termination which allows proper
ventilation. The duct shall be provided with a 90-degree bend.