CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash Ÿ Eureka, CA 95501-2138 Ÿ 707/441-8855 Ÿ FAX: 707/441-8877 Ÿshninfo@shn-engr.com

Reference: 005161.600

July 26, 2005

Robert Vogt
Assistant Director of Environmental Services
PALCO
P.O. Box 37
Scotia, CA 95565

Subject: Environmental Sound Assessment for Residential Rezone and Subdivision of Scotia, California

Dear Mr. Vogt:

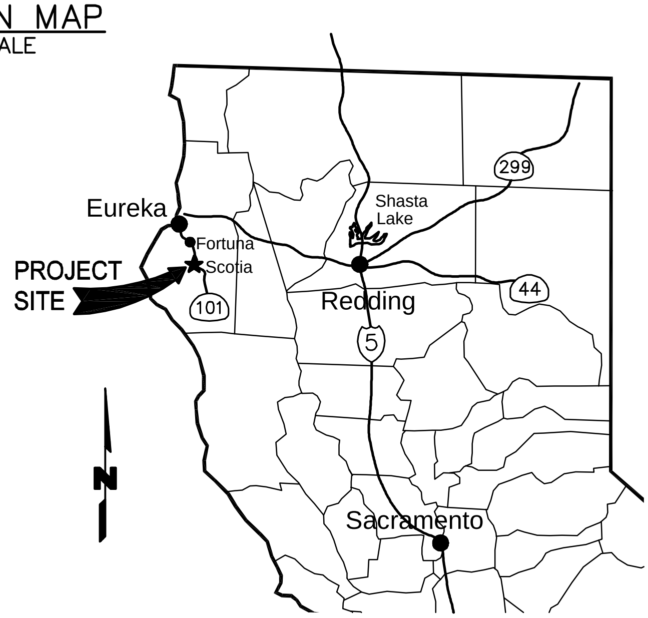
SHN Consulting Engineers & Geologists, Inc. (SHN) conducted, on behalf of Planwest Partners for PALCO, an environmental sound assessment of existing conditions near residences in the vicinity of sound sources close to Scotia, California. This study was designed to support the noise section of the initial study/mitigated negative declaration for the eventual rezone and subdivision of the unincorporated community of Scotia. The purpose was to measure and establish baseline sound levels near residential property lines for selected locations in Scotia with the highest probability of sound impact from sources outside the residential areas. Mark Mullis, a Certified Industrial Hygienist and sound specialist, conducted this sound assessment.

Methods

SHN's Certified Industrial Hygienist toured Scotia (see Figure 1 for location of Scotia) with the PALCO's Assistant Director of Environmental Services to identify the primary sound sources and the residences most affected by those sound sources and where sound level measurements could also be collected. The primary identified sound sources are the PALCO co-generation power plant near the middle of the PALCO facility, the PALCO sawmill and planer toward the south end of the PALCO facility, and U.S. Highway 101.

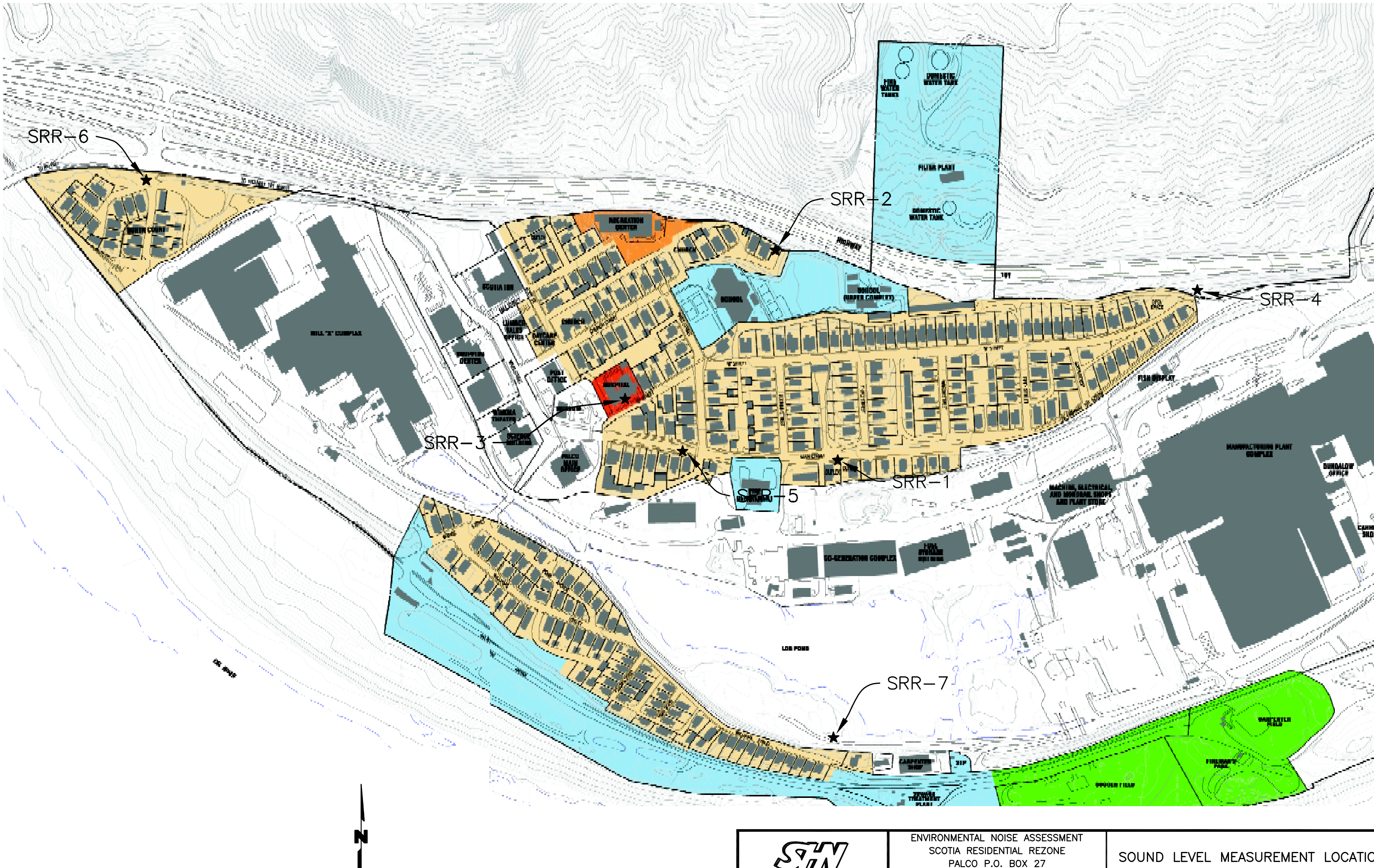
To evaluate the existing sound environment and related sound levels in Scotia, SHN conducted 24-hour long sound level measurements at two locations and short-term sound measurements of 15-minute duration each, at five locations (Figure 2). All of the sound level measurements were made between July 6 and July 8, 2005. The measurement at Scotia Residential Rezone (SRR)-1 was located at the fence line east of the co-generation power plant within the PALCO facility boundary and west of the gravel road behind the house at 149 Main Street (on the west side of Main Street). The microphone for SRR-1 was positioned 49 inches inside the chain link fence and approximately 50 feet south from the corner fence post at the off loading area for yard debris recycling. The 24-hour measurement for SRR-1 was collected between July 6, 2005, at 4:52 p.m. and July 7, 2005 at 4:52 p.m. The measurement at SRR-2 was made near the telephone pole south of the wood barriers at the end

LOCATION MAP
NO SCALE



VICINITY MAP
NO SCALE

SHN Consulting Engineers & Geologists, Inc.	ENVIRONMENTAL NOISE ASSESSMENT SCOTIA RESIDENTIAL REZONE PALCO, P.O. BOX 27 SCOTIA, CALIFORNIA 95565	LOCATION MAP SHN 005161.600
	DATE: JULY 2005	P:\005161.600 Scotia Noise Study\dwg\Figure.dwg — FIGURE 1



SOURCE: PALCO

SCALE:1"= 400'

SHN Consulting Engineers & Geologists, Inc.

ENVIRONMENTAL NOISE ASSESSMENT
SCOTIA RESIDENTIAL REZONE
PALCO P.O. BOX 27
SCOTIA, CALIFORNIA 95565

DATE: JULY 2005

SOUND LEVEL MEASUREMENT LOCATIONS

SHN 005161.600

P:\005161.600 Scotia Noise Study\dwg\Figure.dwg

FIGURE 2

of Church Street just south of the parking area for the house at 430 Church Street and above (in elevation) and east of the elementary school multipurpose building. The 24-hour measurement for SRR-2 was collected between July 7, 2005, at 6:54 p.m. and July 8, 2005, at 6:54 p.m.

At SRR-3, two 15-minute sound level measurements (one daytime and one nighttime) were collected from the sidewalk approximately 10 feet from Main Street and approximately 70 feet south of the intersection with the north end of B Street. The two 15-minute measurements (one daytime and one nighttime) at SRR-4 were taken from the sidewalk approximately one foot from Main Street and approximately six feet north of the intersection with the south end of B Street. The two 15-minute measurements (one daytime and one nighttime) at SRR-5 were made in the gravel alley approximately 25 feet north of the gate on the chain link fence and approximately three feet outside the fence line of the PALCO facility west of Main Street near the intersection of Main and 1st and east of the PALCO truck repair shop. Two 15-minute measurements (one daytime and one nighttime) at SRR-6 were collected from the corner of the sidewalk at 71 North Court west of the northernmost Scotia exit from Highway 101 (and the underpass under the highway) and just north of the northeast end of the PALCO facility. One 15-minute measurement at SRR-7 was made during daytime on a vacant hillside across the street from 844 Williams at one foot outside the chain link fence west of the PALCO facility and due west of the co-generation power plant. The measurement location was approximately 12 feet above Williams Street and the microphone was located approximately four feet below the log pond berm. The locations of these measurements are shown on Figure 1.

The 24-hour sound level measurements were collected with a Quest Model 1900 Type 1 (Precision) Integrating and Logging Sound Level Meter, Serial # CC0090008 using a Bruel & Kjaer 4936 microphone (Prepolarized Free Field Electret), Serial #2128867. The Quest 1900 was factory calibrated by Quest Technologies on March 7, 2005. It was calibrated with a QC-20 calibrator, Serial #QO0080023, which was itself factory calibrated by Quest Technologies on March 7, 2005. Pre-survey calibration readings on July 6, 2005, were 94.0 decibels (dB) on the Quest 1900 at a calibrator setting of 94 dB at 1,000 Hertz (Hz) (Attachment 1 presents an explanation of terms). The post-survey calibration reading was exactly the same when it was checked on July 8, 2005. The settings on the sound level meter were A-weighted, slow response, 3-dB exchange rate, threshold level off (that is, all sound levels were integrated into the measurement) and parameters recorded included L_{eq}, L_1, L_{10}, L_{50}, L_{90}, L_{max}, L_{min}, L_{dn}, CNEL, and Lpk (dB as C-weighted). The 24-hour sampling period was started manually and sound readings were logged every 30 seconds. The Quest 1900 and a 12 volt battery to power long term sound level measurements were mounted in protective foam inside a Pelican™ case that was locked with two heavy duty locks and secured with a heavy duty cable chain and a sturdy lock to a fence post (SRR-1) or telephone pole (SRR-2). A 10-foot electrical cable connected the Quest 1900 inside the case through a hole drilled in the Pelican™ case to the microphone, which was securely attached to a sturdy tripod several feet from the case at approximately 50 inches above the ground. The microphone was oriented vertically toward the sky to equally measure sound from all directions. The Certified Industrial Hygienist remained at least 6 feet away from the microphone with momentary exceptions. A windscreen protected the microphone from wind during the entire time of both 24-hour sound level measurement sessions.

Instantaneous sound levels and 15-minute sound level measurements were taken with a Quest Model 2900 Type 2 (General Purpose) Integrating and Logging Sound Level Meter, Serial # CDD030022 using a Quest Model QE7052 prepolarized (electret) microphone. The Quest 2900 was factory calibrated by Quest Technologies on June 1, 2005. It was calibrated with a QC-20 calibrator, Serial #QO0080023, which was itself factory calibrated by Quest Technologies on March 7, 2005. Pre-survey calibration readings on July 6, 2005 were 94.0 dB on the Quest 2900 at a calibrator setting of 94 dB at 1,000 Hz. The post-survey calibration reading was 94.2 dB when it was checked on July 8, 2005. The settings on the sound level meter were A-weighted, slow response, 3-dB exchange rate, threshold level off (i.e. all sound levels were integrated into the measurement) and parameters recorded included L_{eq}, L_1, L_{10}, L_{50}, L_{90}, L_{max}, L_{min}, and Lpk (dB as C-weighted). The 15-minute sampling period was started manually and sound readings were logged every 3 seconds. The windscreen protected the microphone for every sound level measurement. The Quest 2900 was mounted on a tripod approximately 50 inches above the ground for each sound level measurement and the Certified Industrial Hygienist remained at least 3 feet away from the microphone. The microphone was oriented toward the primary sound source for every measurement.

Meteorological conditions for the sound level measurement at SRR-1 were quite variable over the 24-hour period. Temperatures recorded by SHN during the SRR-1 measurement varied from 60°F to 74°F and the relative humidity ranged from 45% to 86%. The wind varied between approximately zero and 8 miles per hour (mph) and was generally from either the north or the south. There was 100% cloud cover with mist at the beginning of the SRR-1 measurement but conditions cleared during the night of July 7, 2005, so clouds were generally absent during that day.

Meteorological conditions for the sound level measurement at SRR-2 were generally more summer-like during the 24-hour period from the evening of July 7 through July 8, 2005. Temperatures recorded by SHN during the SRR-2 measurement varied from 55°F to 81°F. Relative humidity ranged from 40% to 56% during the day and 80% to 85% at night and during the early evening of July 8, 2005. The wind varied between approximately zero and 10 mph and was observed to be consistently from the north. The cloud cover was zero to 30% during the first 21 hours of the measurement but in the late afternoon of July 8, 2005, clouds rolled in and cloud cover rose to 100%.

Meteorological conditions for the nighttime sound level measurements at SRR-3 through SRR-6 were quite constant during the 2.5-hour period that the 15-minute measurements were collected on the night of July 6-7, 2005. Temperatures recorded by SHN were between 60°F and 62°F and the relative humidity ranged from 74% to 84%. The wind varied between approximately zero and 7 mph from the south. Cloud cover was 100%.

Meteorological conditions for the daytime sound level measurements at SRR-3 through SRR-7 were normal for summertime when the measurements were collected on July 7 and July 8, 2005. Temperatures recorded by SHN ranged between 68°F and 81°F and the relative humidity varied from 40% to 55%. The wind varied between approximately zero and 10 mph from the north. Cloud cover was 0-30%.

Results

The results of the short-term measurements are shown in Table 1. This table presents the integrated average noise level (L_{eq}) measured during the 24-hour measurement period for SRR-1 and SRR-2 and over the 15-minute measurement periods for SRR-3 through SRR-7. The table also portrays the sound level exceeded during 1% of the measurement period (L_1) which is considered the intrusive noise level in a variable sound environment; the sound level exceeded during 50% of the measurement period (L_{50}), which is the median noise level; and the sound level exceeded during 90% of the measurement period (L_{90}), which is considered the background noise level in a variable sound environment. In addition, Table 1 presents the maximum level (L_{max}) during the measurement interval with a slow response setting incorporating A-weighting. These sound measurement terms and other acoustical terms are further defined in Attachment 1 along with an explanation of the principles of sound. Table 1 also portrays the number of vehicles (including automobiles, pickup trucks, semi trucks, and motorcycles) counted passing by the sound level meter during the 15-minute sound level measurements to gauge the impact of vehicular sound levels.

Two critical values from the 24-hour sound level measurements are the Day / Night Noise Level (L_{dn}) and Community Noise Equivalent Level (CNEL). For SRR-1 the L_{dn} is 73.4 dBA and the CNEL is 73.6 dBA. For SRR-2 the L_{dn} is 62.8 dBA and the CNEL is 63.0 dBA. Printouts of the measurement results and measuring parameters for SRR-1 and SRR-2 as well as graphical presentations of the 24-hour measurement periods are shown in Attachment 2. That graph of SRR-1 sound level measurement over the 24-hour measurement period shows that the sound levels are fairly tightly grouped in a band of approximately 3 dBA with infrequent spikes, the highest of which are most likely the LeTourneau Earth Mover operating near the Quest 1900. A sound level reading for a LeTourneau operating approximately 50 feet away was measured at 74 dBA when revved up and the backup alarm was operating but some of these were observed to operate within 15 feet of the Quest 1900 microphone at SRR-1. Conversely, the graph of the sound level measurement over the 24-hour measurement period for SRR-2 in Attachment 2 is quite different from that of SRR-1 since the sound levels are grouped very loosely in a band of approximately 10 dBA. The explanation for this wide band is the acoustical impact and variation of vehicular traffic on Highway 101 nearby and the relatively low background sound level of 54 dBA.

Table 1
Sound Measurement Results, Scotia Residential Rezone, Scotia, California

Location	Date & Time of Measurement Initiation	Average Noise Level (L_{eq})[1]	Maximum Noise Level (L_{max})[1]	Intrusive Noise Level (L_{01})[1]	Median Noise Level (L_{50})[1]	Background Noise Level (L_{90})[1]	Auto & Truck Count
SRR-1	7-6-05 / 4:52 p.m.[2]	67.5	96.7	69.9	65.3	64.5	N / A
SRR-2	7-7-05 / 6:54 p.m.[2]	57.1	82.7	63.4	55.6	54.0	N / A
SRR-3	7-6-05 / 11:33 p.m.[3]	54.1	73.1	66.9	50.2	49.2	7
SRR-3	7-7-05 / 1:03 p.m.[3]	62.8	81.2	74.7	56.0	52.2	35
SRR-4	7-7-05 / 12:11 a.m.[3]	58.3	67.2	64.0	57.8	56.8	18
SRR-4	7-7-05 / 4:52 p.m.[3]	64.1	79.1	74.6	60.6	58.6	71
SRR-5	7-7-05 / 12:45 a.m.[3]	64.2	79.2	74.6	62.5	62.0	2
SRR-5	7-8-05 / 2:06 p.m.[3]	60.3	66.6	64.6	59.4	58.5	32
SRR-6	7-7-05 / 1:23 a.m.[3]	51.2	71.0	64.7	36.1	31.6	12
SRR-6	7-8-05 / 12:41 p.m.[3]	59.3	70.4	67.4	56.7	50.3	142
SRR-7	7-8-05 / 2:55 p.m.[3]	52.4	62.3	60.3	50.9	48.5	6

1. in dBA (see Attachment 1 for explanation of terms)
2. 24-hour measurement duration.
3. 15-minute measurement duration.

During the 15-minute sound level measurement sessions and the portion of the 24-hour sound level measurements where SHN's Certified Industrial Hygienist was present on site, no unusually loud sounds occurred and no unexpected sounds arose to bias the readings. Vehicular traffic sound level varied widely depending on the time of day and the proximity of the location to a well-traveled road. The influence of passing vehicles was significant for the 15-minute sound level measurements at SRR-3, SRR-4, and SRR-6 as demonstrated by the 6 to 8 dBA higher daytime average noise levels compared with the nighttime average noise levels. Conversely, the daytime average noise levels for SRR-5 were 4 dBA higher compared with the nighttime average noise levels at that location since it was a half block away from a well-traveled street.

Noise Standard

The Humboldt County General Plan, Chapter 3, Section 3240 (Attachment 3) delineates the noise requirements for Scotia using the Day-Night Noise Level (L_{dn}). There it states that the maximum acceptable exterior noise level for residences is 60 dB without any additional insulation being required. The L_{dn} for SRR-1 was measured as 73.4 dBA and this location was approximately 30 feet nearer to the co-generation power plant than the nearest house. The L_{dn} for SRR-2 was measured as 62.8 dBA and the microphone was approximately 40 feet farther from Highway 101 (the primary sound source influencing SRR-2) than the house nearest the highway at 430 Church Street. Based on the 15-minute day and night sound level measurements collected in this study, it is anticipated that locations SRR-3, SRR-4, and SRR-5 would exceed 60 dB if the L_{dn} were measured at each of these locations.

Conclusions

Some areas of Scotia do not meet the noise standard specified in the Humboldt County General Plan. However, these sound levels have existed for a long time in such close proximity to the existing residential areas in Scotia.

Thank you for giving us the opportunity to serve you. If you have any questions, please contact me at (530) 221-5424.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Mark Mullis

Mark Mullis
Certified Industrial Hygienist
Certified Safety Professional
Certified Asbestos Consultant

MLM: lms

Attachment 1

Fundamental Concepts of Environmental Acoustics

Fundamental Concepts of Environmental Acoustics

(Modified from Information Supplied by Illingworth & Rodkin, Inc.)

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

In addition to the concepts of pitch and loudness, there are several sound measurement scales that are used to describe sound in a particular location. ***A decibel (dB)*** is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1-1.

Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/sound descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of sound events of arbitrary duration.

The scientific instrument used to measure sound is the sound level meter. Sound level meters can accurately measure environmental sound levels to within approximately plus or minus 1 dBA.

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

There are several methods of characterizing sound. The most common in California is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor sound levels in units of dBA are shown in Table 1-2.

Table 1-2
Typical Sound Levels Measured in the Environment and Industry

At a Given Distance From Sound Source	A-Weighted Sound Level in Decibels	Sound Environments	Subjective Impression
	140		
Civil Defense Siren (100')			
	130		
Jet Takeoff (200')			
	120		
	110		Pain Threshold
Diesel Pile Driver (100')			
	100		
		Rock Music Concert	
Freight Cars (50')	90		Very Loud
Pneumatic Drill (50')			
Freeway (100')	80		
Vacuum Cleaner (10')		Boiler Room	
	70	Printing Press Plant	
	60	In Kitchen With Garbage	Moderately Loud
Light Traffic (100')		Disposal Running	
Large Transformer (200')	50		
		Data Processing Center	
	40		
Soft Whisper (5')		Department Store	
	30		Quiet
		Private Business Office	
	20		
		Quiet Bedroom	
	10		
		Recording Studio	
	0		Threshold of Hearing

ILLINGWORTH & RODKIN, INC. / Acoustical Engineers

The thresholds for speech interference indoors are approximately 45 dBA, if the sound is steady, and above 55 dBA, if the sound is fluctuating. Outdoors these thresholds are approximately 15 dBA higher. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic sound level during the daytime is approximately equal to the L_{dn} and nighttime levels are 10 dBA lower. As discussed above, this standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses.

Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the sound attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Therefore, with typical construction, sleep and speech interference is possible when exterior sound levels are approximately 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if windows are closed.

Attachment 2

Summary Printouts and Graphical Presentations for 24-hour Sound Level Measurements

Scotia Rezone-24 hr.sdat

1900 Integrating/Logging Sound Level Meter

FW Version: 02.4 Serial Number: CC0090008

Name: Scotia Rezone-24 hr

Company: PALCO

Work Area:
Description: 24 hour sound measurements

Comments: Group 1 Test 1 = Location SRR-1

Group 1 Test 1

Test Started: 7/6/2005 4:52:22PM
Test Ended:
7/7/2005 4:52:22PM
Run Time: 24:00:00

Measuring Parameters

Range:	40 - 100 dB	Weighting:	A	Time Constant:	Slow
Threshold:	Off	Exchange Rate:	3 dB	Peak Weighting:	C

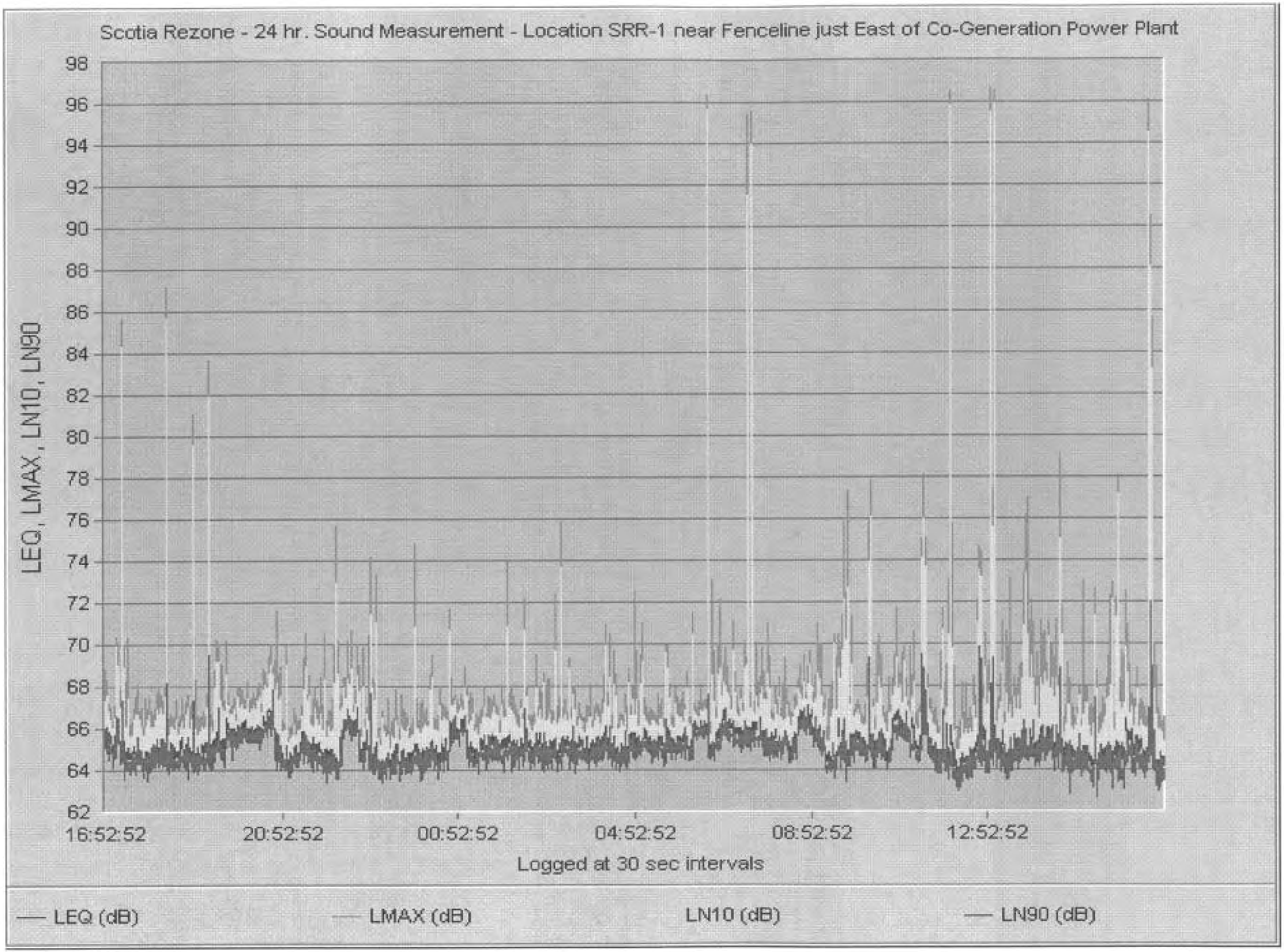
Summary

Peak Level: 113.5 dB, 7/7/2005 4:31:55PM
Max Level: 96.7 dB, 7/7/2005 12:56:52PM

Min Level: 62.3 dB, 7/7/2005 2:44:20PM
Overload: 0.05%

LEQ:	67.5 dB	SEL(3):	116.7 dB	TWA:	72.3 dB	TAKM3:	68.8 dB
LDN:	73.4 dB	CNEL:	73.6 dB	Pa2Sec:	190.5		
L1:	69.9 dB	L10:	66.6 dB	L50:	65.3 dB	L90:	64.5 dB

Comments:


Scotia Rezone - 24 hr. Sound Measurement - Location SRR-1 near Fenceline just East of Co-Generation Power Plant
LEQ, LMAX, LN10, LN90
98
96
94
92
90
88
86
84
82
80
78
76
74
72
70
68
66
64
62
16:52:52
20:52:52
00:52:52
04:52:52
08:52:52
12:52:52
Logged at 30 sec intervals
LEQ (dB)
LMAX (dB)
LN10 (dB)
LN90 (dB)

Scotia Rezone-24 hr.sdat

1900 Integrating/Logging Sound Level Meter

FW Version: 02.4 Serial Number: CC0090008

Name: Scotia Rezone-24 hr

Company: PALCO

Work Area:
Description: 24 hour sound measurements

Comments: Group 1 Test 5 = Location SRR-2

Group 1 Test 5

Test Started: 7/7/2005 6:54:08PM
Test Ended: 7/8/2005 6:54:08PM
Run Time: 24:00:00

Measuring Parameters

Range:	40 - 100 dB	Weighting:	A	Time Constant:	Slow
Threshold:	Off	Exchange Rate:	3 dB	Peak Weighting:	C

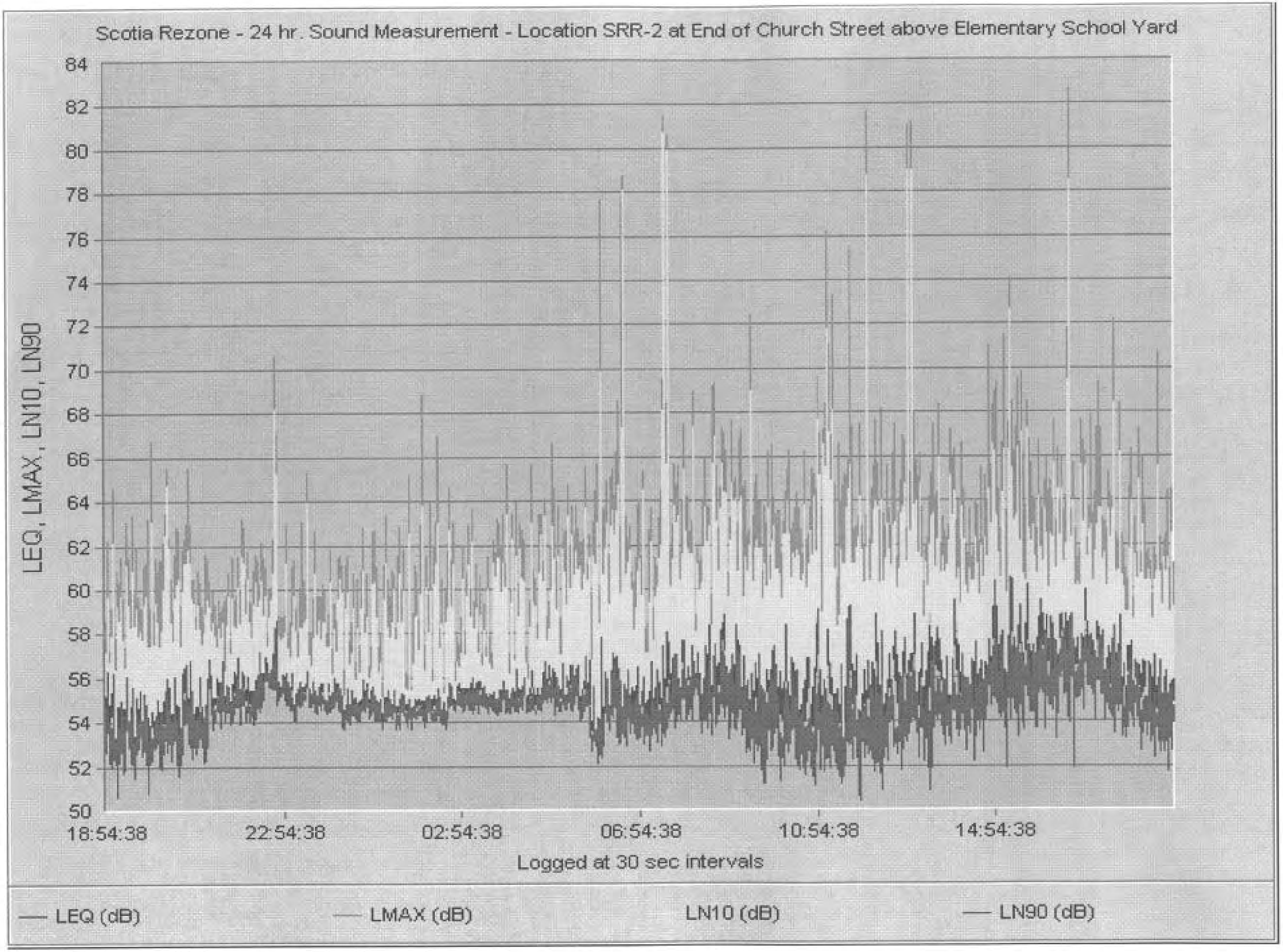
Summary

Peak Level: 104.3 dB, 7/8/2005 4:32:49PM
Max Level: 82.7 dB, 7/8/2005 4:32:49PM

Min Level: 49.7 dB, 7/7/2005 7:10:25PM
Overload: 0.03%

LEQ:	57.1 dB	SEL(3):	106.3 dB	TWA:	61.8 dB	TAKM3:	58.4 dB
LDN:	62.8 dB	CNEL:	63.0 dB	Pa2Sec:	17.1		
L1:	63.4 dB	L10:	58.9 dB	L50:	55.6 dB	L90:	54.0 dB

Comments:


Scotia Rezone - 24 hr. Sound Measurement - Location SRR-2 at End of Church Street above Elementary School Yard
LEQ, LMAX, LN10, LN90
84
82
80
78
76
74
72
70
68
66
64
62
60
58
56
54
52
50
18:54:38
22:54:38
02:54:38
06:54:38
10:54:38
14:54:38
Logged at 30 sec intervals
LEQ (dB)
LMAX (dB)
LN10 (dB)
LN90 (dB)

Attachment 3

Humboldt County General Plan, Chapter 3, Noise

From the Humboldt County General Plan, Chapter 3, Hazards and Resources

3240 Noise

The principal sources of noise in Humboldt County are highways, airports, rail, on-site construction, and industrial activities.

The Environmental Protection Agency identifies 45 Ldn indoors and 55 Ldn outdoors as the maximum level below which no effects on public health and welfare occur. Ldn is the Day-Night Noise Level. Ldn is the average sound level in decibels, excluding frequencies beyond the range of the human ear, during a 24-hour period with a 10-dB weighting applied to nighttime sound levels.

A standard construction wood frame house reduces noise transmission by 15-dB. Since interior noise levels for residences are not to exceed 45-dB, the maximum acceptable exterior noise level for residences is 60-dB without any additional insulation being required. Of course, this would vary depending on the land use designation, adjacent uses, distance to noise source, and intervening topography, vegetation, and other buffers.

The General Plan appendix contains noise level contours for state highways, elected county roads, and county airports. These noises contours and other available noise information are used with the noise compatibility matrix (see Figure 3-2) to establish requirements for project approval to ensure that new development is consistent with the General Plan. Fences, landscaping, and noise insulation can be used to mitigate the hazards of excessive noise levels.

Noise insulation standards have been developed by the State for application to all new multi-family residential construction.

Most of the County's noise hazards are found within incorporated cities. Figure 3-3 lists prominent noise sources for each community.

Figure 3-1
Noise Scale

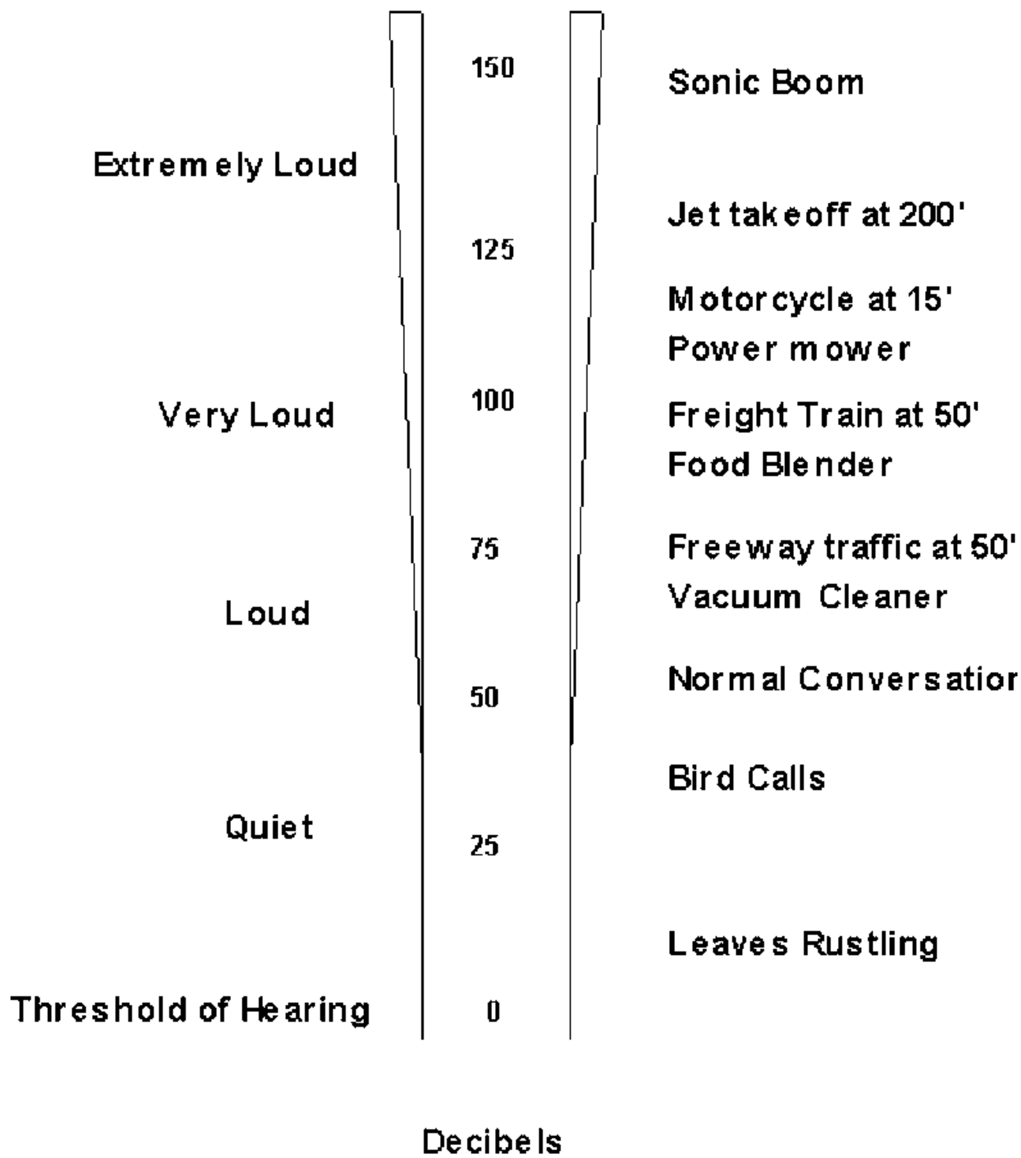


Figure 3-2
Land Use/Noise Compatibility Standards

Clearly Acceptable	Normally Acceptable	Normally Unacceptable	Clearly Unacceptable

Land Use Category	Maximum interior exposure, Ldn*	Land Use Interpretation for Ldn Value									
		55		65	75			85			
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											
Playgrounds, Neighborhood Parks											
Golf Courses, Riding Stables, Water Rec., Cemeteries											
Office Buildings, Personal, Business and 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)

Figure 3-3

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 Railroad & Arcata / Mad River	None
Blue Lake	State Highway 299	None	Arcata / Mad River	None
Carlotta	State Highway 36	None	None	None
Eureka	U.S. 101, Myrtle Avenue, Harris, Henderson & "H" Streets	Murray Field	Northwestern Pacific Railroad	Redwood Acres
Fairhaven	New Navy Base Road	None	None	Mill
Ferndale	State Highway 1	None	None	None
Fieldbrook	None	None	None	None
Fortuna	U.S. 101, Main Street	Rohnerville	Northwestern Pacific	None
Garberville	U.S. 101	None	None	None
Hoopa	State Highway 96	None	None	None
Hydesville	State Highway 36, Rohnerville Road	None	None	None
Loleta	None	None	Northwestern Pacific	None
Manila	State Highway 255 (Navy Base Road)	None	None	None
McKinleyville	U.S. 101, Central Avenue	Eureka / Arcata	None	None
Moonstone / Westhaven	U.S. 101	None	None	None
Orick	U.S. 101	None	None	None
Redway	Redwood Drive	None	None	None
Rio Dell	U.S. 101, Wildwood Avenue	None	Northwestern Pacific Railroad	None
Rohnerville (See Fortuna)				
Samoa	New Navy Base Road	None	None	Mill
Scotia	U.S. 101	None	Northwestern Pacific Railroad	Mill
Trinidad	U.S. 101	None	None	None
Weott	U.S. 101	None	None	None
Willow Creek	State Highways 299 & 96	Willow Creek	None	None