Noise Sources & Standards

The State Office of Planning and Research Noise Element Guidelines require that major noise sources be identified and quantified through the preparation of generalized noise contours for current and projected conditions. Significant noise sources in the Loomis area include traffic and railroad operations. Industrial operations are an additional, but less intrusive, noise source in Loomis. There are no airports in the area that could be a source of noise.

Overview of Noise & Sound Measurement

Noise is usually defined as "unwanted sound." It consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

Sound intensity is measured in units called decibels (dB). When this basic unit is adjusted to correct for the relative frequency response of the human ear, the resulting unit is the "A-weighted" decibel (dBA). See Appendix A for definition of acoustic terms used in this setting document. A-weighting de-emphasizes low frequencies to better correlate with the response of the human ear to sound. The zero on the dBA scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Unlike linear units (inches or pounds), the decibel scale is logarithmic. When measured on this scale, therefore, sound intensity increases or decreases exponentially with each decibel of change. While ten decibels is ten times more intense than one decibel, twenty decibels is one hundred times more intense and thirty decibels is a thousand times more intense. The decibel scale increases as the square of the change in sound pressure energy. A sound as soft as human breathing is about 10 times greater (10 dBA) than the faintest sound audible to the human ear (just above zero dBA). The decibel system of measuring sound provides us with a simplified relationship between the physical intensity of sound and its perceived loudness to the human ear.

Because of the physical characteristics associated with ~~noise~~ sound transmission and reception, a doubling of noise energy normally results in about a 3 dBA increase in noise levels while a 10 dBA increase in noise level is generally required to perceive a doubling of noise. A 1 to 2 dBA change in ambient noise levels generally is not audible even to sensitive receptors.

Sound levels corresponding to typical noise sources are provided in Table 7-~~3~~1. ~~The decibel level of a sound decreases exponentially as the distance from the source of that sound increases.~~ For a single point source, sound level decays approximately six decibels for each doubling of distance from the source. Noise originating from a linear, or "line" source, such as a traffic or rail corridor, will typically decrease by about three decibels for each doubling of distance, provided the surrounding environment is "hard" (free from "soft," sound-absorbing objects such as vegetation). Noise from a line source in an environment that is relatively flat and well-vegetated will decrease by about 4.5 decibels for each doubling of distance.

Table 7-41: Typical Noise Levels Relative Loudness

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol, September 2013

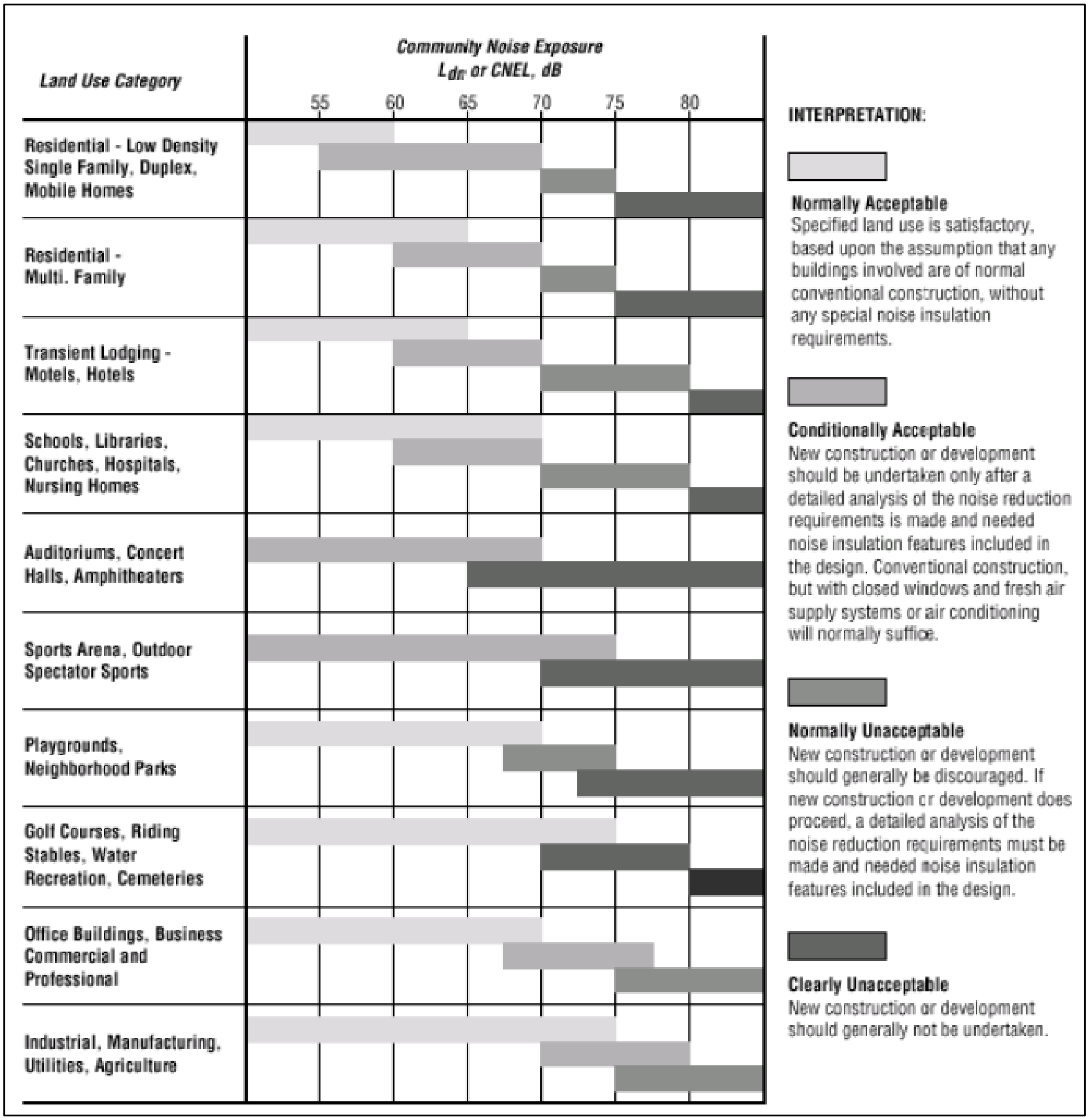
The time of day when a sound is emitted is an important factor in determining whether or not it is considered a nuisance. Sounds that may be barely noticeable at midday may be seriously disruptive at midnight. A number of measurement scales that attempt to account for this time factor have been developed. Two of the more commonly used scales of this type are the Community Noise Equivalent Level (CNEL) and the day-night sound level (Ldn). The Ldn, which was developed by the Environmental Protection Agency, is a 24-hour average sound level in which a 10 dBA penalty is added to any sounds occurring between the hours of 10:00 pm and 7:00 a.m. The CNEL scale, which is used in California Airport Noise Regulations, is similar except that an additional 5 dBA penalty is added for the evening hours from 7:00 p.m. to 10:00 p.m.

Noise Compatibility Standards

State and Federal Standards

CA Government Code §65302(f) provides noise compatibility guidelines for various land uses, as shown by Figure 7-31. presents the California Department of Health, Office of Noise Control, noise compatibility guidelines. The compatibility table illustrates the range of community noise exposure in terms of what is considered "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable." For the most sensitive uses, such as single-family residences, 60 dBA Ldn is recommended as the maximum normally acceptable level, which is the level below which no special sound attenuation measures are required. These guidelines are recommended by the State to assist communities in determining whether or not noise poses a conflict with land development. The following summarizes other pertinent federal and state noise guidelines:

Figure 7-~~3~~1. Noise Land Use Compatibility Standards



Noise Insulation Standards

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings. Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB Ldn or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the Ldn or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment. ~~Article 4 of the California Administrative Code (California Noise Insulation Standards, Title 25, Chapter 1) requires noise insulation in new hotels, motels, apartment houses, and dwellings other than single-family detached housing to provide an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60 dBA CNEL (or greater) noise contour, an acoustical analysis is required to assure that interior levels do not exceed the 45 dBA CNEL annual threshold.~~

The Federal Housing Administration establishes a 65 dBA Ldn standard for outdoor activity areas adjoining residential dwellings, and a 45 dBA Ldn standard for the interior of single-family residences. If exterior levels are between the 65 dBA Ldn standard and 75 dBA Ldn, acoustical analysis is required to ensure ~~insure~~ that the interior standard is met. Residential development is unacceptable where exterior noise levels exceed 75 dBA Ldn.

Local Standards

Loomis' current noise element sets an exterior standard of 65 dBA Ldn and an interior standard of 45 dBA Ldn. This is less stringent than those provided in the State Guidelines. However, the Town's current guidelines are consistent with the FHA standards described above.

~~Placer County's noise standards are more stringent than those adopted by Loomis and could provide a basis for noise guidelines for use within the planning area. These standards are summarized in Table 7-4.~~

Existing Noise Sources & Sound Levels

Noise modeling techniques and measurements were used to develop generalized Ldn ~~or Leq~~ noise contours in the planning area for existing conditions. This method uses source-specific data including traffic mixture, speed limits and traffic volumes, all of which were obtained from either Caltrans, or Fehr & Peers Associates. ~~The modeling methods used in this report follow recommendations made by the State Office of Noise Control~~. Noise contours along roadways were modeled using the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA-RD-77-108, 1978), with California vehicle noise emission levels (CALVENO) developed by Caltrans.

~~Table 7-5: Maximum Allowable Noise Exposure: Transportation Noise Sources (Placer County)~~

~~Land Use~~	~~Outdoor Activity Areas[1]~~	~~Interior Spaces~~	
	~~dBA L_{dn}~~	~~dBA L_{dn}~~	~~dBA L_{eq}~~
~~Residential~~	~~60~~	~~45~~	~~--~~
~~Transient Lodging~~	~~60~~	~~45~~	~~--~~
~~Hospitals, Nursing Homes~~	~~60~~	~~45~~	~~--~~
~~Theaters, Auditoriums, Music Halls~~	~~--~~	~~--~~	~~35~~
~~Churches, Meeting Halls~~	~~60~~	~~--~~	~~40~~
~~Office Buildings~~	~~--~~	~~--~~	~~45~~
~~Schools, Libraries, Museums~~	~~--~~	~~--~~	~~45~~
~~Playgrounds, Neighborhood Parks~~	~~70~~	~~--~~	~~--~~

~~[1] Where the location of outdoor activity areas is unknown, the exterior noise levels standard shall be applied to the property line of the receiving land use.~~
~~[2] Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.~~

The resulting noise contours (Figure 7-~~4~~2) are based on average annual conditions. Local topography and intervening structures at specific locations would alter the contours, which should be considered generalizations. Table 7-~~5~~2 shows the model results for the distance to the 60, 65 and 70 dBA Ldn contours associated with traffic on major roads traversing the Town.

~~Table 7-62 serves as a guide when applying traffic noise exposure contour information to areas with varying topography. The table is used by adding the correction factor to the predicted noise level for a given location. The factors included in this table present conservative (worst-case) results, and complex situations should be evaluated by an acoustical consultant when the potential for a significant noise impact exists.~~

Roadways

Roadway traffic is ~~the~~ a primary source of noise in the Loomis community. Interstate 80 carries by far the most traffic through the area and is consequently the major noise contributor. The 60 dBA Ldn contour from this roadway extends to up to 1,859 ~~ranges from 1,650 to 1,750~~ feet from centerline. However, this distance ~~is likely~~ may be much less than modeled, because of topographic attenuation ~~(see Table 7-63)~~ and intervening buildings. Please refer to Figure 7-~~4~~2 and Table 7-~~5~~2 for more detailed information.

~~Taylor Road and Sierra College Boulevard are the only other roadways in the Town that carry sufficient traffic to produce audible noise at a significant distance. The 60 dBA Ldn contour for these roads typically ranges from 200 to 400 feet, and less where there are intervening structures. Horseshoe Bar Road, King Road and Rocklin Road carry moderate traffic (4,000-5,000 ADT), but~~

not sufficient to produce far-reaching noise contours. The noise model predicts that the 60 dBA Ldn contour would be less than 100 feet from the center of those roadways.

Table 7-~~6~~2: Existing Traffic Noise Levels

Roadway	Segment	Traffic (ADT)	Distance to Ldn Contour from Centerline (feet)			~~Measured Leq (dBA)*~~
			70 dB	65 dB	60 dB	
Bankhead Road	King Rd to Saunders Ave	409	2	4	8	
Bankhead Road	Saunders Ave to Sierra College Blvd	673	2	5	11	
Barton Rd	Brace Rd to Gold Trail Way	1,935	9	19	41	
Barton Rd	Gold Trail Way to Rocklin Rd	2,500	10	23	49	
Barton Rd	Rocklin Rd to Indian Springs Rd	7,952	23	49	105	
Brace Rd	Sierra College Blvd to I-80 Bridge	4,521	13	27	59	
Brace Rd	I-80 Bridge to Laird Rd	3,555	13	29	61	
Del Mar Ave	King Rd to N. Town Limit	212	2	4	8	
Del Mar Ave	S. Town Limit to King Rd	719	4	8	17	
Horseshoe Bar Rd	Taylor Rd to I-80 Bridge	16,536	20	43	93	
Horseshoe Bar Rd	I-80 Bridge to Horseshoe Bar Rd	9,578	14	30	64	
Horseshoe Bar Rd	Brace Rd to N. Town Limit	6,427	20	42	91	
Humphrey Rd	Arcadia Ave to N. Town Limit	1,232	5	10	21	
Humphrey Rd	King Rd to Arcadia Ave	2,721	6	13	28	
King Rd	Del Mar Ave to Bankhead Rd	2,988	12	25	55	
King Rd	Bankhead Rd to Humphrey Rd	3,188	10	22	46	
King Rd	Humphrey Rd to Taylor Rd	5,521	14	31	67	
King Rd	Taylor Rd to Bush Ln	5,629	15	31	68	
King Rd	Bush Ln to I-80 Bridge	5,684	18	39	84	
Laird Rd	Brace Rd to White Ln	4,673	13	28	60	
Laird Rd	White Ln to S. Town Limit	4,412	12	27	58	
Rippey Rd	Taylor Rd to N. Town Limit	802	4	9	18	
Rocklin Rd	James Dr to Barton Rd	13,479	32	69	149	
Saunders Ave	Bankhead Rd to McAllen Ln	378	2	3	7	
Saunders Ave	McAllen Ln to Webb St	919	3	6	13	
Sierra College Blvd	N. Town Limit to King Rd	12,179	43	93	201	
Sierra College Blvd	King Rd to Bankhead Rd	11,372	41	89	192	
Sierra College Blvd	Bankhead Rd to Brace Rd	13,019	38	82	176	
Sierra College Blvd	Brace Rd to N. Granite Dr	22,010	45	96	207	
Swetzer Rd	King Rd to N. Town Limit	6,261	16	34	73	
Taylor Rd	S. Town Limit to Sierra College Blvd	11,463	29	62	134	
Taylor Rd	Sierra College Blvd to Circle Dr	11,045	28	61	131	

Taylor Rd	Circle Dr to Horseshoe Bar Rd	10,775	15	32	70	
Taylor Rd	Horseshoe Bar Rd to King Rd	18,753	22	47	101	
Taylor Rd	King Rd to N. Town Limit	8,881	13	28	61	
Webb St	King Rd to Taylor Rd	4,121	8	17	37	
Wells Ave	Barton Rd to Rickety Rack Rd	3,497	13	28	61	
Wells Ave	Rickety Rack Rd to Morgan Place	3,372	13	28	59	
I-80	Sierra College	85,500	401	863	1859	
~~Interstate 80 Sierra College Blvd to Horseshoe Bar Rd.~~		~~84,000~~	~~379~~	~~816~~	~~1,757~~	~~67.1~~
~~Interstate 80 Horseshoe Bar Rd. to Penryn exit~~		~~78,000~~	~~360~~	~~776~~	~~1,672~~	~~66.8~~
~~Sierra College Boulevard Interstate 80 to Taylor Road~~		~~12,300~~	~~84~~	~~181~~	~~390~~	~~62.1~~
~~Sierra College Boulevard Taylor Road to Bankhead Road~~		~~9,300~~	~~70~~	~~150~~	~~324~~	~~60.7~~
~~Sierra College Boulevard n/o King Road~~		~~6,100~~	~~53~~	~~113~~	~~244~~	~~59.3~~
~~Taylor Road e/o Sierra College Blvd.~~		~~10,500~~	~~58~~	~~126~~	~~271~~	~~61.0~~
~~Taylor Road s/o King Road~~		~~13,800~~	~~51~~	~~110~~	~~238~~	~~61.4~~
~~Horseshoe Bar Road Interstate 80 to Barton Road~~		~~5,300~~	~~N/A~~	~~40~~	~~86~~	~~54.2~~
~~King Road w/o Swetzer Court~~		~~5,300~~	~~N/A~~	~~40~~	~~86~~	~~56.1~~
~~Rocklin Road w/o Barton Road~~		~~4,500~~	~~N/A~~	~~36~~	~~77~~	~~54.1~~
~~Barton Road n/o Barton Road~~		~~1,700~~	~~N/A~~	~~N/A~~	~~40~~	~~50.5~~
~~Laird Road s/o High Cliff Road~~		~~1,900~~	~~N/A~~	~~N/A~~	~~44~~	~~52.7~~

Source: Traffic volumes from Caltrans and Fehr and Peers (~~1998~~2020).

Note:* All ~~measurements taken~~ noise levels reported at 50 feet from roadway centerlines, except for Interstate 80 (100 feet).

~~Table 3 7-7: Traffic Noise Adjustments for Topography~~

~~Topographic Situation~~	~~Distance from Roadway Centerline (feet)~~		
	~~<200~~	~~200-400~~	~~>400~~
~~Hillside overlooks roadway~~	~~no change~~	~~+1 dB~~	~~+3 dB~~
~~Roadway Elevated (>15 feet)~~	~~-5 dB~~	~~-2 dB~~	~~no change~~
~~Roadway in cut/below embankment~~	~~-5 dB~~	~~-5 dB~~	~~-5 dB~~
~~Dense vegetation (100 feet or more thick)~~	~~-5 dB~~	~~-5 dB~~	~~-5 dB~~

~~Source: Brown-Buntin Associates, Inc., 1994.~~

Union Pacific Railroad

The UPRR operates two rail lines through the Town. The westbound rail line parallels Taylor Road, and cuts through the center of the community. The eastbound line travels northward, along the western edge of the planning area, about 1.5 miles west of downtown Loomis.

Noise measurements were conducted on both lines to determine the contribution of freight and passenger rail operations to the noise environment. The goal of the noise measurements was to determine the typical sound exposure levels (SEL), accounting for travel speed, warning horns, locomotive noise, and other factors contributing to noise generation. The average SEL for the westbound line as collected at Site LT-1 was 110 dBA at 50 feet from the track centerline (includes use of warning horns). The average SEL for the eastbound line was 98 dBA at 50 feet (no warning horn usage). Saxelby Acoustics observed approximately 10 daily eastbound trains and 7 westbound trains during the noise measurement survey. ~~for the two observed freight trains was 108.7 dB at a distance of 100 feet from the track centerline; for the passenger trains, the average SEL was 94 dB. Measurements were taken for trains moving in both directions.~~

Union Pacific officials ~~could~~ will not release the precise number of daily trains that travel through Loomis but estimated that about 12 to 15 trains is typical. This number is consistent with a 1996 Surface Transportation Board ruling that limits the number of trains passing through Reno, Nevada, to 15 as a condition of the recent Union Pacific/Southern Pacific merger (Mike Furtney, Union Pacific, 1998). For the purpose of this analysis, an average of 15 trains is assumed, evenly distributed between east and westbound freight.

Amtrak operates two eastbound and two westbound passenger trains daily that pass through Loomis. All four passenger trains pass through the Town during the day or early evening. However, the noise levels generated by passenger trains do not substantially contribute to overall day/night noise levels when compared to freight activity.

To determine the distance to noise contours, it is necessary to calculate the Ldn for typical rail operations. This is accomplished by using the recorded SEL values and the known number of trains. The Ldn may be calculated as follows:

Ldn = SEL + 10logN – 49.4 dB, where:

SEL is the mean SEL of the event, N is the sum of the number of day and evening trains per day plus 10 times the number of nighttime (10 pm to 7 am) trains per day, and 49.4 is a constant which represents ten times the logarithm of the number of seconds per day. Based on this information, the calculated noise contour distances from each rail line are shown in Table 7-~~7~~3.

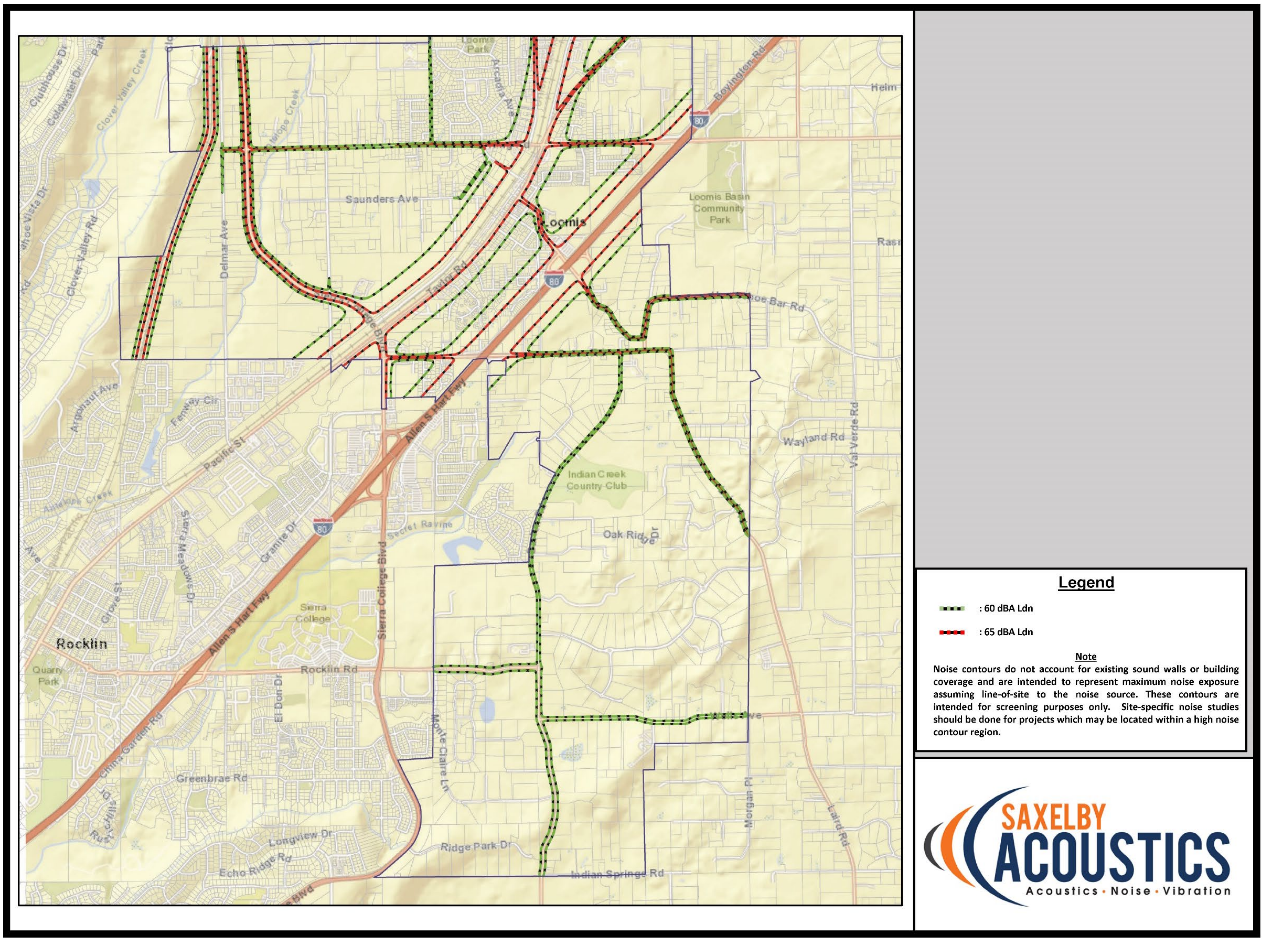
These contours are depicted graphically in Figure 7-42.

Table 7-83: Approximate Distance to Railroad Noise Contours

Train Source	Ldn, at 100 feet	Distance to Ldn contour (feet)		
		70	65	60
Union Pacific (freight) – with warning horns	72.5 71.2 dBA	120	259	558
Union Pacific (freight) – without warning horns	61.9 dBA	29	62	134
Amtrak (Passenger)	47.6	-	-	-
Combined Ldn	72.5	147	316	681

Assumes 7.5 freight and two passenger trains in each direction daily. evenly distributed between daytime and nighttime hours. 1.5 freight an no passenger trains at night.

Figure 7-2~~7-4~~. Existing Noise Contours



Community Noise Survey

A community noise survey was conducted to document ambient noise levels at various locations throughout the Town. Short-term noise measurements were conducted at six locations throughout Loomis on July 13-16, 2020. In addition, four continuous 24-hour noise monitoring sites were also conducted to record day-night statistical noise level trends. The data collected included the hourly average (Leq), median (L50), and the maximum level (Lmax) during the measurement period. Noise monitoring sites and the measured noise levels at each site are summarized in Table 7-4 and Table 7-5. Figure 7-3 shows the locations of the noise monitoring sites. Detailed results of noise monitoring can be found in Appendix B. It should be noted that field work was conducted during COVID-19 restrictions. However, it is not expected that reduced traffic would have resulted in more than a 1-2 dBA reduction in measured noise levels. In some cases traffic noise may potentially have been louder than typical due to increase vehicle travel speeds.

Table 7-4: Existing Short-Term (10-minute) Community Noise Monitoring Results

Site	Location	Date/ Time[1]	Measured Sound Level, dBA			Notes
			L_{eq}	L_{50}	L_{max}	
ST-1	H. Clarke Powers Elementary School	7/13/2020 11:31 am	57	42	73	Primary noise source is Humphrey Ave.
ST-2	Del Oro High School	7/13/2020 11:09 am	67	59	83	Primary noise source is traffic on Taylor Rd.
ST-3	Sierra College Blvd. and King Rd.	7/13/2020 11:52 am	71	67	82	Primary noise source is Sierra College Blvd. Train horn audible in background.
ST-4	Saunders Rd.	7/13/2020 12:10 pm	54	42	72	Background noise due to Sierra College Blvd./ Taylor Rd. Natural sounds such as birds and insects. L_{max} due to passing mail truck on Saunders Rd.
ST-5	Barton Rd. – Indian Creek Country Club	7/13/2020 9:41 am	66	53	82	Primary noise source is traffic on Barton Rd. Secondary Noise sources include activity at the Indian Creek Driving Range, HVAC noise from the Secret Ravine Winery, and natural sounds such as bird and insect noise.
ST-6	Barton Rd. and Wells Ave.	7/13/2020 9:19 am	70	65	83	Primary noise source is Barton Rd. Secondary noise source is Wells Ave.

[1] All community noise measurement sites have test durations of 10:00 minutes
Source: Saxelby Acoustics, 2020.

Table 7-5: Existing Continuous 24-Hour Ambient Noise Monitoring Results (July 13-16, 2020)

Site	Location	L_{dn} (dBA)	Measured Hourly Noise Levels, dBA Low-High (Average)					
			Daytime (7:00 am – 10:00 pm)			Nighttime (10:00 pm – 7:00 am)		
			L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
LT-1	UPRR at Webb St.	73	75	55	93	56	51	72
LT-2	UPRR at Gayaldo Park	66	58	43	70	60	43	73
LT-3	Interstate 80	75	71	69	85	68	61	84
LT-4	Sierra College Boulevard	64	62	58	80	56	48	74

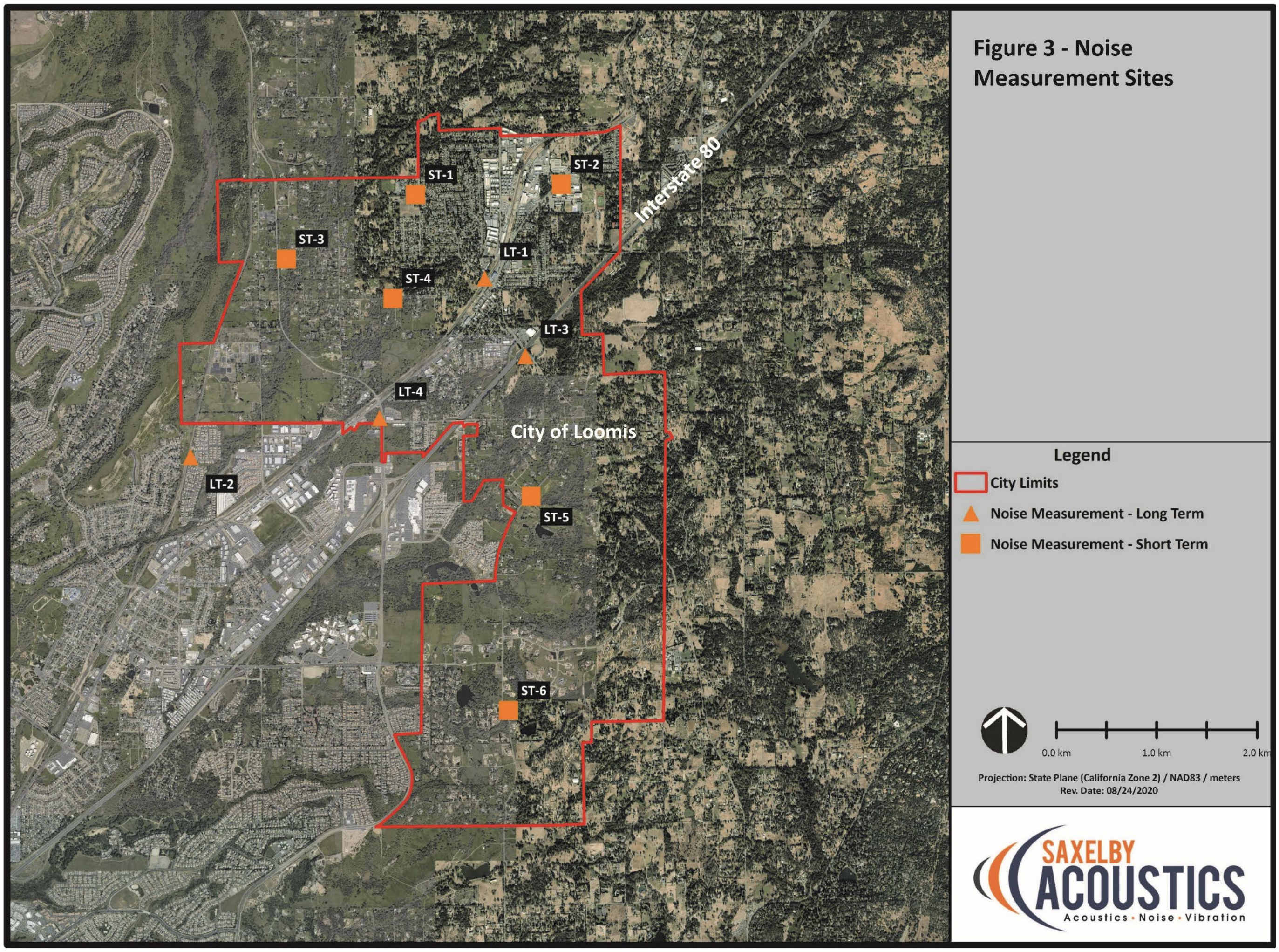
Source: Saxelby Acoustics, 2020.

Community noise monitoring equipment included Larson Davis Laboratories (LDL) Model 812, 820, and 831 precision integrating sound level meters equipped with LDL ½" microphones. The measurement systems were calibrated using an LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

Railroad Vibrations

Saxelby Acoustics performed measurements of train vibrations near site long term site 2 (LT-2). Vibration measurements were conducted using a BRC vibration sensor and Larson Davis model 831 sound meter. Velocity measurements were calibrated in the field using an IMI 699B02 vibration shaker. Based upon the vibration measurements, freight and Amtrak trains were found to generate maximum levels of vibration of 72-73 VdB at a distance of 120 feet from the center of the UP railroad line.

1 **Figure 7-3. Noise Measurement Sites**



2

Stationary Noise Sources

Industrial and commercial operations can be significant sources of noise, depending on the type and hours of operation. Stationary noise sources of concern typically include generators, pumps, air compressors, outdoor speakers, motors, heavy equipment and similar machinery. These are usually often associated with trucking companies, tire shops, auto mechanic shops, metal shops, shopping centers, drive-up windows, car washes, loading docks, gravel operations, athletic fields, and electric generating stations.

Many facilities of this type exist in Loomis. However, none have been identified in the existing environmental documents on file with the Town as substantial noise sources causing significant public disruption.

Existing or planned commercial/industrial operations may result in noise impacts when they are adjacent to noise sensitive land uses. Typical commercial and industrial noise sources include loading dock operations, parking lot activity, onsite equipment (including heating and air conditioning), and heavy truck idling.

~~By far the most important of these noise sources is from heavy-duty trucks idling at a loading dock. Walker, Celano & Associates (1992) reported that individual trucks idling can produce sound levels in the 65-70 dBA range at 65-85 feet. Measurements reported by the PRA Group (*Final EIR for North Broadway Commercial Center*, Perspective Planning, 1995) indicated loading dock noise levels ranging from 54-68 dBA at a shielded location 120 feet from the source, to almost 75 dBA at 50 feet from a refrigerator truck (Bolt, Beranek and Newman, 1980). Individual trucks accelerating from depressed loading docks can produce instantaneous maximum sound levels of 85-90 dBA at 50 feet. A study by Brown-Buntin Associates assumed a 60 dBA Leq at a distance of 50 feet from the loading dock during a busy one-hour period (*Turtle Island EIR*, 1996).~~

Currently, potential noise impacts of this type are most common near the Taylor Road corridor, where residential development often backs against commercial and industrial uses. Industrial parcels along Swetzer Court also back against homes along Kathy Way and Arcadia Avenue, resulting in similar noise impacts to residents in that area. On occasion, there have been complaints regarding excessive industrial-related noise, typically involving the use of heavy equipment or trucks during nighttime hours.

~~Several new or pending developments in the Town have the potential to result in similar noise impacts to adjacent residential development.~~

~~**Turtle Island.** The Turtle Island development south of Interstate 80 would include commercial uses and a hotel, both of which would increase the amount of trucks and buses in the area. Loading dock operations would also contribute noise. The EIR for that project found that increased noise levels from these sources could impacts nearby residential uses on Horseshoe Bar Road and Betty Lane.~~

~~**Specific Plan Development.** Planned commercial development under the Town's Specific Plan for the area between Interstate 80, Horseshoe Bar Road, and King Road could result in similar noise impacts to existing housing along Laird Street (not to be confused with Laird Road) and Sun Knoll Drive.~~

Other Developments. There are several other large-sale developments proposed in the Town (Loomis Hills Estates, Heritage Park, Shadowbrook), none of which would include industrial or commercial components. Short-term construction noise would be an issue in all these areas, which are generally located in rural portions of the community.

From a land use planning perspective, fixed-source noise control issues focus upon two goals:

1. To prevent the introduction of new noise-producing uses in noise-sensitive areas, and
2. To prevent encroachment of noise sensitive uses upon existing noise-producing facilities.

The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in near proximity to noise-producing facilities include mitigation measures that would ensure compliance with noise performance standards.

Typical noise levels associated with various types of stationary noise sources are shown in Table 7-6.

Table 7-6: Typical Stationary Source Noise Levels

Use	Noise Level at 100 feet, Leq 1	Distance to Noise Contours, feet			
		50 dBA Leq (No Shielding)	45 dBA Leq (No Shielding)	50 dBA Leq (With 5 dB Shielding)	45 dBA Leq (With 5 dB Shielding)
Auto Body Shop	56 dB	200	355	112	200
Auto Repair (Light)	53 dB	141	251	79	141
Busy Parking Lot	54 dB	158	281	89	158
Cabinet Shop	62 dB	398	708	224	398
Car Wash	63 dB	446	792	251	446
Cooling Tower	69 dB	889	1,581	500	889
Loading Dock	66 dB	596	1,059	335	596
Lumber Yard	68 dB	794	1,413	447	794
Maintenance Yard	68 dB	794	1,413	447	794
Outdoor Music Venue	90 dB	10,000	17,783	5,623	10,000
Paint Booth Exhaust	61 dB	355	631	200	355
Skate Park	60 dB	316	562	178	316
School Playground / Neighborhood Park	54 dB	158	281	89	158
Truck Circulation	48 dB	84	149	47	84
Vendor Deliveries	58 dB	251	446	141	251

[1] Analysis assumes a source-receiver distance of approximately 100 feet, no shielding, and flat topography. Actual noise levels will vary depending on site conditions and intensity of the use. This information is intended as a general rule only and is not suitable for final site-specific noise studies.

Source: Saxelby Acoustics. 2020.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hospitals, schools, guest lodging, libraries, churches and parks are most sensitive to noise intrusion and therefore have more stringent noise exposure targets than manufacturing or agricultural uses that are not subject to such impacts as sleep disturbance.

The relative sensitivity of various land uses is illustrated in the state's noise compatibility guidelines, shown previously in Figure 7~~-3~~1.

REGULATORY SETTING

FEDERAL

Federal Highway Administration (FHWA)

The FHWA has developed noise abatement criteria that are used for federally funded roadway projects or projects that require federal review. These criteria are discussed in detail in Title 23 Part 772 of the Federal Code of Regulations (23CFR772).

Environmental Protection Agency (EPA)

The EPA has identified the relationship between noise levels and human response. The EPA has determined that over a 24-hour period, an Leq of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an Leq of 55 dBA and interior levels at or below 45 dBA. Although these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The EPA has set 55 dBA Ldn as the basic goal for residential environments. However, other federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA Ldn, have generally agreed on the 65 dBA Ldn level as being appropriate for residential uses. At 65 dBA Ldn activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

The Department of Housing and Urban Development (HUD) was established in response to the Urban Development Act of 1965 (Public Law 90-448). HUD was tasked by the Housing and Urban Development Act of 1965 (Public Law 89-117) "to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes."

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

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

HUD's regulations do not include interior noise standards. Rather a goal of 45 dBA Ldn is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that using standard construction techniques, any building will provide sufficient attenuation so that if the exterior level is 65 dBA Ldn or less, the interior level will be 45 dBA Ldn or less. Thus, structural attenuation is assumed at 20 dBA. However, HUD regulations were promulgated solely for residential development requiring government funding and are not related to the operation of schools or churches.

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA. Noise exposure of this type is dependent on work conditions and is addressed through a facility's or construction contractor's health and safety plan.

State

California Department of Transportation (Caltrans)

Caltrans has adopted policy and guidelines relating to traffic noise as outlined in the Traffic Noise Analysis Protocol (Caltrans 2011). The noise abatement criteria specified in the protocol are the same as those specified by FHWA.

Governor's Office of Planning and Research (OPR)

OPR has developed guidelines for the preparation of general plans (Office of Planning and Research, 2017). The guidelines include land use compatibility guidelines for noise exposure.

Local

The Town of Loomis General Plan goals and policies can be found in the Public Health & Safety Element (Chapter VIII) in General Plan Volume I. The Town's goals are to protect Town residents and workers from harmful and annoying noise effects, mitigate noise effects created by roadway traffic and non-residential land uses while discouraging the construction of sound walls, maintain and enhance the quiet and rural ambiance of the Town, and to minimize noise effects of railroad operations on residential and other sensitive land uses.

Findings

7-1 The primary hazards facing the Town of Loomis include seismic and geologic hazards, wildland and urban fires, flooding, and hazardous materials incidents. Noise is also an important public welfare issue in the community.

7-2 There are relatively few critical facilities in Loomis.

7-3 Although the potential for an earthquake is low, groundshaking from a distant earthquake can still cause damage to the area.

7-4 Seismically-induced liquefaction and subsidence can cause damage in Loomis, particularly in areas overlain by unconsolidated alluvium or fill.

7-5 The potential for landslides is relatively low.

7-6 While wildland fires are a potential threat because of the area's extensive grasslands and woodlands, such fires have rarely occurred in the area.

7-7 Urban fires, while rare, are a particular threat to start and spread in older buildings that have not been brought up to modern building codes.

7-8 Flood hazards are most likely along areas adjacent to Antelope Creek or Secret Ravine, as well as behind culverts that have become temporarily clogged during a storm.

7-9 The most common hazardous materials found in the planning area are household products stored in private residences.

7-10 Other potentially hazardous materials found in the planning area include mine tailings, older buildings containing asbestos, and pesticides associated with agricultural uses.

7-11 Interstate 80 and the Union Pacific Railroad are major transportation routes that often carry hazardous materials in trucks or trains.

7-12 The primary noise sources in the planning area are rail and freeway traffic.

7-13 Much of Loomis north of Interstate 80 experiences noise levels in excess of 60 dBA Ldn, which may be considered excessive for sensitive receptors, including homes, parks, schools, and churches.

7-14 The Town should consider adopting more stringent noise standards to be consistent with Placer County and the State Guidelines.