11. Noise

Introduction/ Setting

The State Office of Planning and Research (OPR) Noise Element Guidelines require that major noise sources be identified and quantified by preparing generalized noise contours for current and projected conditions for the following noise 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 are required for these sources, stated in terms of the community noise equivalent level (CNEL) or day-night average level (Ldn), and may be used as a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise.

Based on discussions with the Placer County staff regarding potential major noise sources, it was determined that there are several potentially significant sources of community noise within the Plan area. These sources include traffic on major roadways and highways, railroad and airport operations, and industrial activities.

Analytical noise modeling techniques and noise measurements were conducted by Brown-Buntin Associates to develop generalized Ldn noise contours for the major roadways, airport, railroads and industrial noise sources in the Plan area for existing (1992) and future conditions. The full noise report with complete data is presented in the General Plan Appendix. The following summarizes that report.

Noise models predicted noise levels based on experiences in other locations and on laboratory tests. The noise modeling techniques used in this document employ commonly accepted assumptions and information specific to each noise source including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. The techniques used closely followed recommendations made by the Office of Noise Control, and were supplemented where appropriate by field-measured noise level data to account for local conditions.

A community noise survey was conducted to describe existing noise levels in noise-sensitive areas within the Plan Area so that noise level performance standards could be developed to maintain an acceptable noise environment.

Assumptions

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop L_{dn} contours for all highways and major roadways in the Study Area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The current version of the model is based upon California noise emission factors (CALVENO) for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and to adjust the traffic volume input data to yield an equivalent hourly traffic volume.

BBA conducted short-term (15 minute) traffic noise measurements and concurrent traffic counts adjacent to the major roadways in the Plan Area. In addition, continuous (24-hour) noise measurements were conducted by BBA adjacent to I-80 and Highway 49. BBA also made use of available traffic noise level measurement data which was collected for various recent projects in the Plan Area. The noise measurements were made to evaluate the noise exposure due to traffic on all major roadways in the Plan Area. The locations of the traffic noise measurement sites are shown on Figure 26.

The purpose of the traffic noise level measurements was to determine the accuracy of the FHWA model in describing the existing noise environment within the Plan Area. Noise measurement results were compared to the FHWA model results by entering the observed traffic volumes, speed and distance as inputs to the FHWA model. The results of the traffic noise measurements are summarized in Table 94. Because local topography, vegetation or intervening structure may significantly affect noise exposure at a particular location, the noise contours should not be considered site-specific.

Table 94
COMPARISON OF FHWA MODEL TO MEASURED NOISE LEVELS
Auburn/Bowman Community Plan Area Roadways

Site	Roadway	Location	Dist. (Feet)	Measured L_{eq}, dB	Modeled L_{eq}, dB	Difference dB
1	Interstate 80	Indian Hill Road	150	69	70	1
2	"	High Street	300	62	64	2
3	"	Bowman Road	275	58	64	6
4	"	Mill Pond Road	200	65	67	2
5	"	Werner Road	100	72	74	2
6*	"	Old Airport	25	--	--	--
7	S.R. 49	Joeger - Dry Creek	200	57	61	4

Table 94
COMPARISON OF FHWA MODEL TO MEASURED NOISE LEVELS
Auburn/Bowman Community Plan Area Roadways

Site	Roadway	Location	Dist. (Feet)	Measured L_{eq}, dB	Modeled L_{eq}, dB	Difference dB
8	"	Bell Road	75	66	68	2
9	"	Lone Star Road	700	47	54	7
10	"	Palm Avenue	75	62	69	7
11*	"	Lone Star Road	75	--	--	--
12	Auburn/Folsom Road	Rancheria Road	80	62	62	0
13	Bell Road	S.R. 49	75	64	67	3
14	Bell Road (cont)	New Airport Road	135	60	63	3
15	"	1st Street	50	63	63	0
16	"	East of New Airport	75	72	69	-3
17	Dry Creek Road	Valley Quail Road	60	57	59	2
18	Indian Hill Road	Auburn/Folsom Road	100	60	59	-1
19	Luther Road	Channel Hill Road	45	64	63	-1
20	"	Dairy Road	50	68	67	-1
21	"	East of S.R. 49	50	62	63	1
22	Mt. Vernon Road	Edgewood Road	60	53	55	2
23	Nevada Street	Palm Avenue	35	63	62	-1
24	Palm Avenue	Nevada Street	50	63	63	0

* - Continuous noise measurement site. See Figure I-2 of Noise Study for measurement data.

The differences between measured and predicted noise levels were primarily due to the presence or lack of shielding of traffic noise by intervening topography. Topography in the Plan Area varies considerably, sometimes alternating from flat to hilly along relatively short roadway segments. Due to the size and topographic complexity of the Plan Area, it was not possible to evaluate the effects of topography on the propagation of traffic noise for every possible topographic configuration. Where it is necessary to generally evaluate the effects of topography on the propagation of traffic noise at a location not represented by the noise measurements in Table 94, the following information may be useful.

Table 94 shows that the FHWA Model generally overpredicted noise exposure at all of the measurement locations within the Plan Area, with the exception of locations which were basically at grade with the roadways being measured. This is consistent with BBA experience with the model, and is probably due mostly to the fact that the predicted levels do not account for excess ground attenuation, shielding, or atmospheric absorption over distance. The greatest amount of overprediction occurred in areas which were shielded from view of all or part of the roadway by intervening topography.

Traffic data representing annual average traffic volumes for existing conditions and the future Preferred Alternative scenario were obtained from Placer County Department of Public Works. These data are summarized in Appendix B. Day/night traffic distribution and truck mix were based upon Caltrans data and BBA file data. Using these data and the FHWA methodology, traffic noise levels as defined by L_{dn} were calculated for existing (1988) traffic volumes. Distances from the centerlines of selected roadways to the 60 dB L_{dn} contour are summarized in Table 95 for existing conditions and for the three future development scenarios. The approximate 60 dB L_{dn} traffic noise contours for existing and future conditions are shown on Figures 28 and 29.

These calculations do not include consideration of shielding caused by local buildings or topographical features, so the distances reported in Table 95 are worst-case estimates of noise exposure along roadways in the community.

Figure 27 prepared using the FHWA Model, may be used to estimate the distance to the existing 60 dB L_{dn} contour for projected volumes of arterial traffic on the roadways not included in this analysis. For arterial traffic, the predicted distance to the 60 dB L_{dn} contour is determined by the Average Daily Traffic Volume (ADT) and the posted speed limit. L_{dn} contours derived from Figure 27 are only indicators of potential noise conflicts, requiring more detailed analysis to determine traffic noise levels at any given location.

Table 95
DISTANCE (FEET) FROM CENTER OF ROADWAY
TO 60 dB L_{dn} CONTOURS

		Distance to Contour, feet	
Segment	Description	1988*	Future Preferred Alternative
Interstate 80:			
1	Newcastle to S.R. 49	1532	2659
2	S.R. 49 to Eastern Plan Area Boundary	1204	2225
State Route 49:			
3	Lone Star to Dry Creek	397	756
4	Dry Creek to Bell	363	669
5	Bell to Cottage	417	627
6	Cottage to Atwood	484	662
7	Atwood to Luther	468	696
8	Luther to Palm	451	710
9	Palm to I-80	400	710
10	I-80 to Lincoln	199	404
11	Lincoln to Foresthill	118	324
Atwood Road:			
12	Bean to S.R. 49	98	94
Auburn/Folsom Road:			

Table 95
DISTANCE (FEET) FROM CENTER OF ROADWAY
TO 60 dB L_{dn} CONTOURS

Segment	Description	Distance to Contour, feet	
		1988*	Future Preferred Alternative
13	South City Limits to Indian Hill	65	206
14	Indian Hill to Maidu	121	422
15	Maidu to Sacramento (south)	126	415
16	Sacramento (south) to Sacramento (north)	151	334
17	Sacramento (north) to Lincoln	181	376
Auburn Ravine Road:			
18	Palm to Interstate 80	83	143
Bell Road:			
19	Joeger to S.R. 49	141	202
20	S.R. 49 to New Airport	253	384
21	New Airport to Interstate 80	295	426
Bowman Road:			
22	Foresthill to Luther	156	157
Elm Street:			
23	S.R. 49 to Auburn Ravine	178	202
Foresthill Road:			
24	Interstate 80 to Eastern Plan Area Boundary	99	135
Fulweiler Road:			
25	Carson to S.R. 49	83	83
High Street:			
26	Elm to Lincoln	103	49
27	Lincoln to College	88	102
28	College to Auburn/Folsom	80	124
Lincoln Way:			
29	Bowman to Foresthill	192	241
30	Russell to El Dorado	136	224
31	El Dorado to High	75	262
32	High to East	91	109
33	East to Maple	113	212
Luther Road:			
34	S.R. 49 to Dairy	127	173
35	Dairy to Bowman	102	157
Maple Street:			
36	Lincoln to Interstate 80	95	168

Table 95
DISTANCE (FEET) FROM CENTER OF ROADWAY
TO 60 dB L_{dn} CONTOURS

Segment	Description	Distance to Contour, feet	
		1988*	Future Preferred Alternative
Nevada Street:			
37	S.R. 49 to Mt. Vernon	70	59
38	Palm to Enterprise	90	102
39	Enterprise to Fulweiler	113	102
40	Fulweiler to Interstate 80	83	102
Quartz Drive:			
41	Galena to S.R. 49	69	78
Sacramento Street:			
42	Auburn Folsom to Auburn Folsom	67	150
Dry Creek Road:			
43	West of S.R. 49	62	94
44	East of S.R. 49	84	86
New Airport Road:			
45	North of Bell	37	69
Dairy Road:			
46	South of Luther	37	49
Mt. Vernon Road:			
47	West of Edgewood	28	78
48	Edgewood to Nevada	59	94
Maidu Drive:			
49	East of Auburn Folsom	59	150
Indian Hill Road:			
50	West of Auburn Folsom	85	201

* - 1988 counts are latest traffic data available.

Table 95 has been prepared to serve as a guide when applying the traffic noise exposure contour information presented in this section to areas with varying topography. The table is used by adding the correction factor to the noise level predicted at a given distance. It should be noted that the adjustment factors presented in Table 96 are intended to provide conservative (worst-case) results, and that complex situations should be evaluated by an acoustical consultant where the potential for significant noise impact exists.

FIGURE 27
TRAFFIC NOISE PREDICTION NOMOGRAPH
Source: Brown-Buntin Assoc.

Distance to 60 dB Ldn Contour
Arterial Traffic

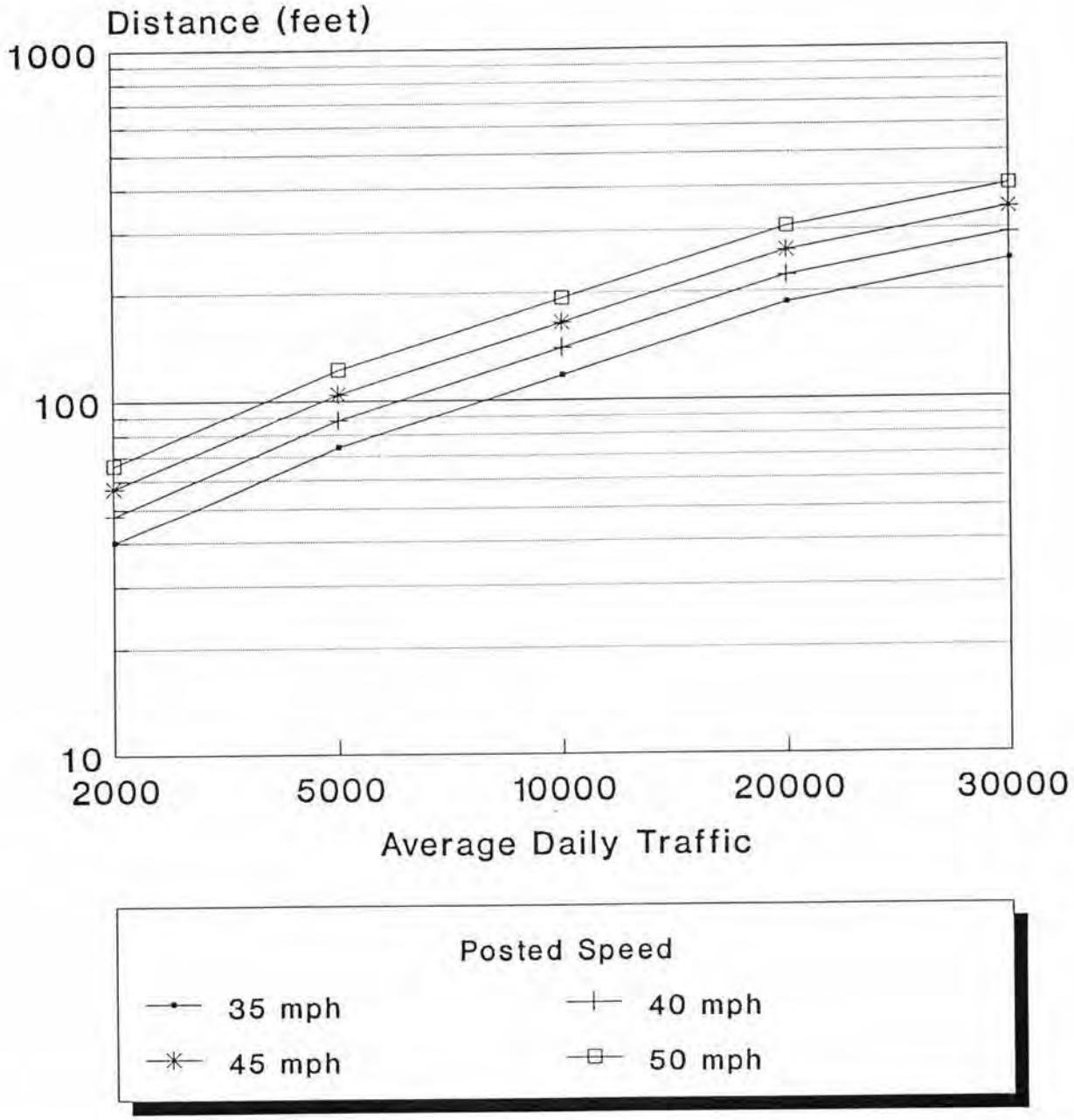


Table 96
TRAFFIC NOISE ADJUSTMENTS FOR VARIOUS TOPOGRAPHIC CONDITIONS

	Distance from Center of Roadway (Feet)		
Topographic Situation	<200	200 - 400	>400
Hillside overlooks roadway	-0-	+1 dB	+3 dB
Roadway Elevated (>15')	-5 dB	-2 dB	-0-
Roadway in cut/below embankment	-5 dB	-5 dB	-5 dB

Railroads. Railroad activity in the Plan Area includes freight and passenger activity on the eastbound and westbound Southern Pacific Transportation Company (SPTCo) trackage.

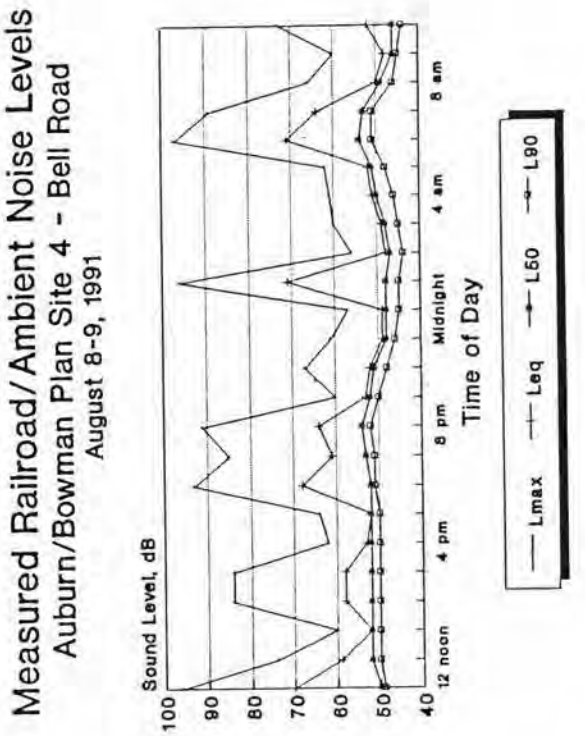
Railroad operational data obtained from SPTCo indicate that approximately 12 freight and 2 Amtrak passenger train operations per day occur on SPTCo tracks in the study area. The freight trains are distributed equally on the eastbound and westbound tracks on a random basis throughout the day. Passenger train operations are scheduled to pass through the study area during daytime hours.

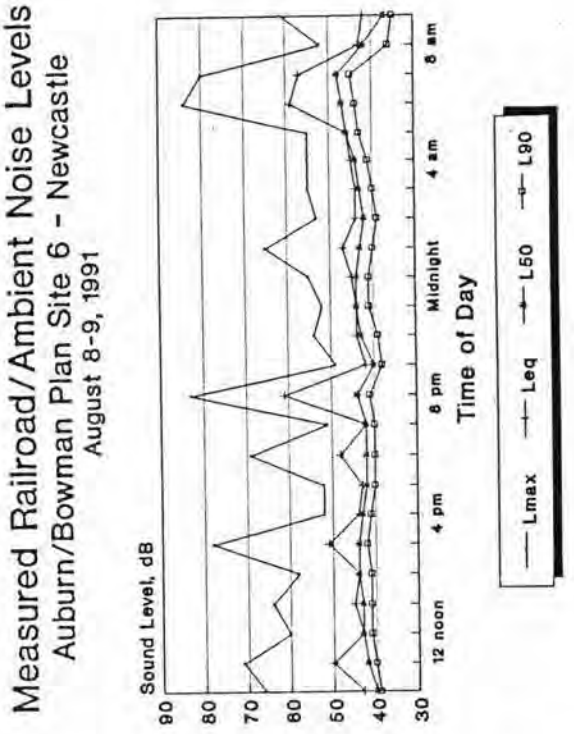
The new Capital Corridor passenger rail service, operated by Amtrak, currently runs between San Jose, Oakland and Sacramento. In the future, Capital Corridor passenger train service will likely be extended to Auburn. The number of daily Capital Corridor trains which will extend to extend to the Auburn Area is not specifically known at this time, but will likely be a function of demand.

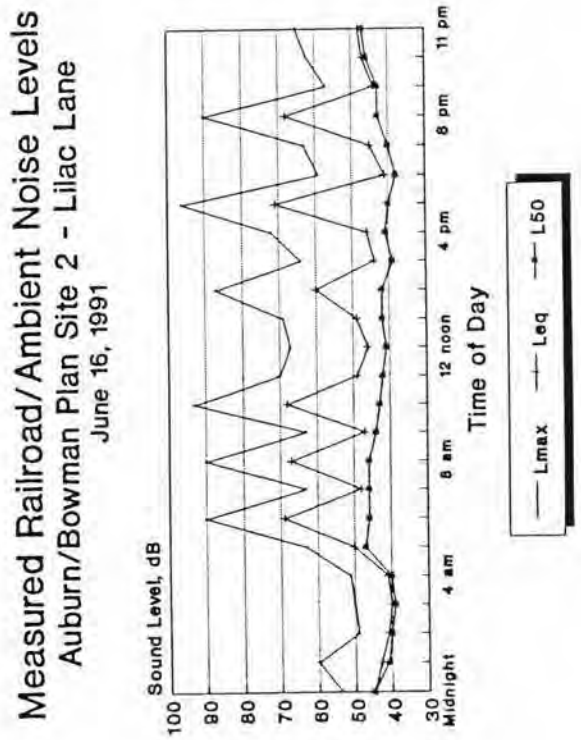
Noise measurements were conducted by BBA at various locations within the Plan Area to determine the contribution of SPTCo railroad operations to the area noise environment. The monitoring locations are shown on Figure 30. The purpose of the noise level measurements was to determine typical sound exposure levels (SEL), number of daily operations, and existing L_{dn} values for railroad line operations in the Plan Area, accounting for the effects of local topography, climate, train speed and other factors which may affect noise generation. The results of the continuous railroad noise measurements are shown on Figure 31.

Measurements of individual train passages in the Plan area indicated that the average sound exposure levels (SEL) at 100 feet from the tracks ranged from 91 dB to 103 dB. Measured noise exposure as defined by the day/night level (L_{dn}) ranged from 55 dB to 70 dB (see Table 97).

FIGURE 31
RAILROAD NOISE MEASUREMENT RESULTS







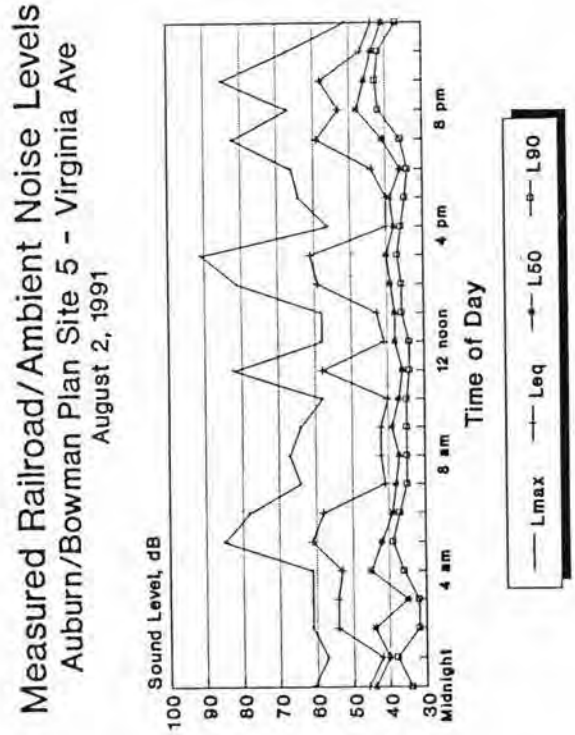


Table 97
RAILROAD NOISE MEASUREMENT RESULTS
AUBURN/BOWMAN COMMUNITY PLAN AREA

Site	Location	Measurement Date(s)	Train Direction	Apparent Number of Daily Trains	Average Sound Exposure Level (SEL) @ 100 ft.	Measured L_{dn}, 100 feet from tracks	Computed L_{dn}, 100 feet from tracks*
1	High Street	Sept. 26-27, 1989	Eastbound	6	101 dB	66 dB	66 dB
2	Lilac Lane	June 14-17, 1990	Eastbound	7	103 dB	68 dB	68 dB
3	New Airport Rd.	July 6-7, 1989	Eastbound	7	99 dB	65 dB	64 dB
4	Headquarter House	Aug. 8-9, 1991	Both	11	102 dB	70 dB	70 dB
5	Virginia Avenue	Aug. 1-4, 1991	Westbound	6	99 dB	64 dB	64 dB
6	Dillon Circle - Newcastle	Aug. 8-9, 1991	Westbound	7	91 dB	55 dB	56 dB

* - L_{dn} computation based on typical railroad distribution of 7 trains per day in each direction, randomly distributed.

At the measurement sites, locomotive and warning horn noise were the major contributors to railroad noise levels as defined by SEL. The SEL for freight train operations varied, depending on the train speed, track grade, and the amount of shielding provided by intervening topography.

The railroad noise levels measured at site 6 were less than the levels measured at the other locations due to slow train speeds and topographic shielding. At site 2, the railroad tracks were elevated approximately 20 feet relative to the noise measurement site. The elevated tracks reduced the effects of ground absorption, and the measured noise levels were therefore higher than at the other railroad noise measurement sites.

Fixed Noise Sources. The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise which affects adjacent sensitive land uses.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in proximity to noise-producing facilities include mitigation measures to ensure compliance with noise performance standards.

Representative Industrial Sources. The following descriptions of existing fixed noise sources in the Plan Area are intended to be representative of the relative noise impacts of such uses, and to identify specific noise sources which should be considered in the review of development proposals. These sources were identified through recommendations by City and County staff and by BBA observations.

— **California Department of Forestry Helipad:**
Contact: Steve Taylor
The California Department of Forestry (CDF) operates a helipad near the intersection of Lincoln way and Rhodes Krueger Drive, northeast of the I-80/Bowman Road interchange. The CDF Helipad location is shown on Figure 32. According to CDF staff, the helipad is used by the CDF, United States Drug Enforcement Agency (DEA), California Highway Patrol (CHP), UC Davis LifeFlight, Reno CareFlight and Stockton MediFlight.

The CDF operates a Bell 204B helicopter, capable of carrying 9 passengers and equipment. CDF staff reported that the CDF operates a Bell 204B helicopter (Huey) at the helipad during the Summer months when there is a fire in the immediate vicinity of the CDF station. Because the CDF refuels the helicopter near the fire operations, the helicopter is seldom operated from the helipad. The majority of the fire-related operations occur at the fire site, where it is fueled and loaded with staff and equipment. CDF staff reported

that the helicopter was used once a day at the helipad during the "49'er" fire of 1988.

CDF staff further reported that helicopters using the helipad typically approach and depart perpendicular to I-80, over the canyon area east of the helipad. However, pilots may deviate from that pattern in response to safety concerns.

The California Highway Patrol (CHP) operates a Bell 206 Jet Ranger in the Auburn area, and uses the helipad infrequently when necessary to provide medical support to accident victims or other governmental agencies. The Drug Enforcement Agency (DEA) stations a Hughes 500 helicopter at the helipad during the period of September through November. The DEA helicopter is reportedly used for aerial search and observation of marijuana growing areas. DEA operations are reported to be two arrivals and departures per day during those months.

For medical emergencies in the Auburn area, UCD Lifeflight and Reno CareFlight operate Alouette helicopters, and Stockton MediFlight operates an A-Star. These organizations typically use the CDF helipad only when it is not possible to land nearer to situations requiring aerial evacuation of persons in need of immediate and/or specialized medical attention.

- **Auburn Truss & Lumber:**
  Contact: Wayne Larson
  Auburn Truss & Lumber, located at 14002 Musso Road, manufactures trusses. Typical hours of operation are from 7 am - 3:30 pm, Monday through Friday. The facility reportedly does not operate on weekends, but may operate until 6 pm during periods of high demand. Noise producing equipment used at this facility includes forklifts, staple guns, air compressors, saws and a crane (boom truck). Heavy truck usage at the facility consists of 4 flatbed trucks per day and 1-2 heavy lumber trucks per week.

- **Chevreaux Concrete:**
  Contact: Joe Chevreaux
  The Chevreaux Concrete company is located east of the intersection of Marguerite Mine Road and State Route 49. Typical hours of operation are reportedly 6 am to 6 pm with occasional operations during early morning and evening hours as demand dictates. Noise is generated at this facility by the concrete batch plant and by front loaders and cement and gravel trucks.

- **Public Address Systems/Drive up Window Speakers:**
  Source: Brown-Buntin Associates, Inc.
  Public address systems and drive up window speakers are used extensively in the Auburn/Bowman Community Plan Area. The most prevalent usage of these systems is at car dealerships and fast food restaurants. Studies have shown that people are more highly annoyed by amplified speech or music than by continuous noise sources of similar intensity such as highway traffic. Noise generated by these systems depends primarily on the amplifier setting, and is therefore highly variable.

- **Airport Industrial Area:**
  Source: Brown-Buntin Associates
  Uses identified in this area include Century Lighting, Coherent Industries, Doug Spense Construction, Pacific Bell, Mussetter Distributing Inc., RJT Construction, Auburn Foothill Quality Door, Harris & Ruth Contractors, Nella Oil Company, the Skunk Works, advanced ceramics, and various aviation maintenance facilities. The most notable noise sources associated with these operations were operation and/or maintenance of medium and heavy commercial truck fleets. Although there does not appear to be any noise sensitive development in the immediate vicinity of the airport industrial area, the potential for noise generation in this area should not be overlooked if neighboring noise sensitive developments are considered.

- **Auburn Container Company:**
  Contact: Arthur Moorehouse
  The Auburn Container company is located on the east side of State Route 49, between the Southern Pacific Railroad tracks and Luther Road. According to the plant manager, normal operating hours are from 7 am to 3:30 pm, Monday through Friday. The plant occasionally operates on Saturday from 7 am to 12 noon. Equipment used at the plant consists of resaws, cutoff saws, a ripsaw, a molder, a cleat machine, cyclones, and a chipper. The cyclones are located about 30 feet above ground level at the plant building. The chipper is located at ground level near the east property line of the plant. The chipper normally operates the entire time the plant is in operation. In addition to the aforementioned noise sources, there are 5 diesel trucks per day entering and leaving the plant.

- **Community Plan Area Parks and Schools:**
  Source: Brown-Buntin Associates
  Parks are often considered noise sensitive uses due to the passive recreation which takes place there. However, such uses may also be significant noise producers during active recreation activities such as basketball and softball games. The amount of noise generated by such uses varies with age of participants, event size and location, as well as the hour during which the activity takes place. To some degree, the noise generated by such uses can be controlled by enforcing curfews, and by locating noise generating activities away from existing or proposed noise sensitive land uses.

  Schools are similar to parks in that active recreation at outdoor playing fields of the schools could result in significant noise levels. School buses also add to the facility noise levels. Future land use planning should consider the potential for noise generation at the playing fields, and noise sensitive land uses should be discouraged adjacent to those areas.

- **Auburn Placer Disposal**
  Contact: Eileen Dominguez
  Auburn Placer Disposal is located on Shale Ridge Road, east of S.R. 49. The facility serves as a refuse disposal transfer station and recycling center. The facility is open to the public between 8 am and 5 pm, but garbage trucks start leaving the facility at 4 am. Approximately 40 heavy truck trips are

generated by the facility daily. Noise is also generated by use of the compactor and maintenance operations at the facility.

Airport Noise. The Auburn Municipal Airport is situated on 210 acres in the northwest section of the City 1/2 mile east of Highway 49, one mile north of Bell Road. The Airport is a Basic Utility, Stage I category facility which can handle 75% of small general aviation aircraft (12,500 pounds gross weight maximum). The existing paved runway, Runway 7-25, is 3,100 feet long and 60 feet wide.

An Airport Master Plan and Environmental Impact Report are currently in progress for the Auburn Municipal Airport. The existing and worst-case future Airport noise contours which were prepared for these documents are reproduced in Figures 33 and 34, respectively. According to these contours the noise sensitive use most affected by airport operations is the Rock Creek Mobile Home Park, located west of Highway 49 between Bell and Dry Creek Roads. The contours indicate that the Mobile Home Park is currently exposed to aircraft noise levels between 60 and 65 dB CNEL.

BBA conducted continuous aircraft noise measurements at the Rock Creek M.H.P. from June 27-30, 1991 to gather single event noise level data and to compute the aircraft CNEL at that location. A Metrosonics dB-604 Environmental Noise Analyzer was used for the aircraft noise level measurements. The equipment was calibrated before use with a Bruel & Kjaer Type 4230 acoustical calibrator, and meets all pertinent specifications of the American National Standards Institute for Type I Sound level measurement systems.

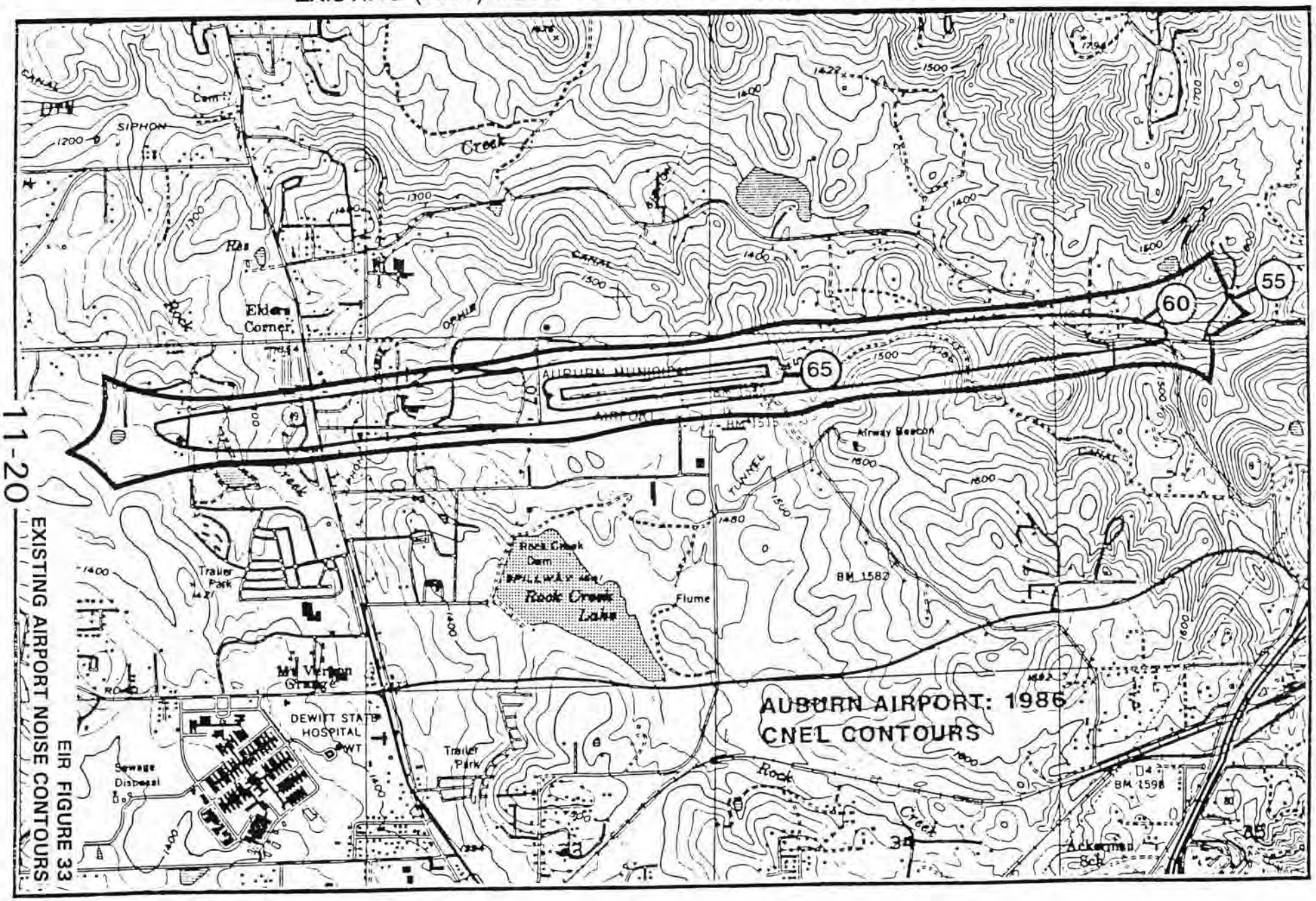
In order for an aircraft to register as a single event, the noise level generated by the aircraft had to remain above 60 dB for a minimum of 10 seconds. These thresholds were set in order to filter out non-aircraft events such as passing cars. The results of the aircraft noise level measurements are shown in Table 98, and are displayed graphically on Figure 35.

Table 98
AIRCRAFT NOISE MEASUREMENT RESULTS
ROCK CREEK M.H.P - JUNE 27-30, 1991

Date	Day of Week	Apparent # of Aircraft Departures	Range of Maximum Noise Levels, dB	Mean Sound Exposure Level, dB	Aircraft CNEL, dB
June 27	Thursday	98	61-81	79	50
June 28	Friday	8	61-77	80	40
June 29	Saturday	53	64-79	81	49
June 30	Sunday	83	62-81	81	53

FIGURE I-8

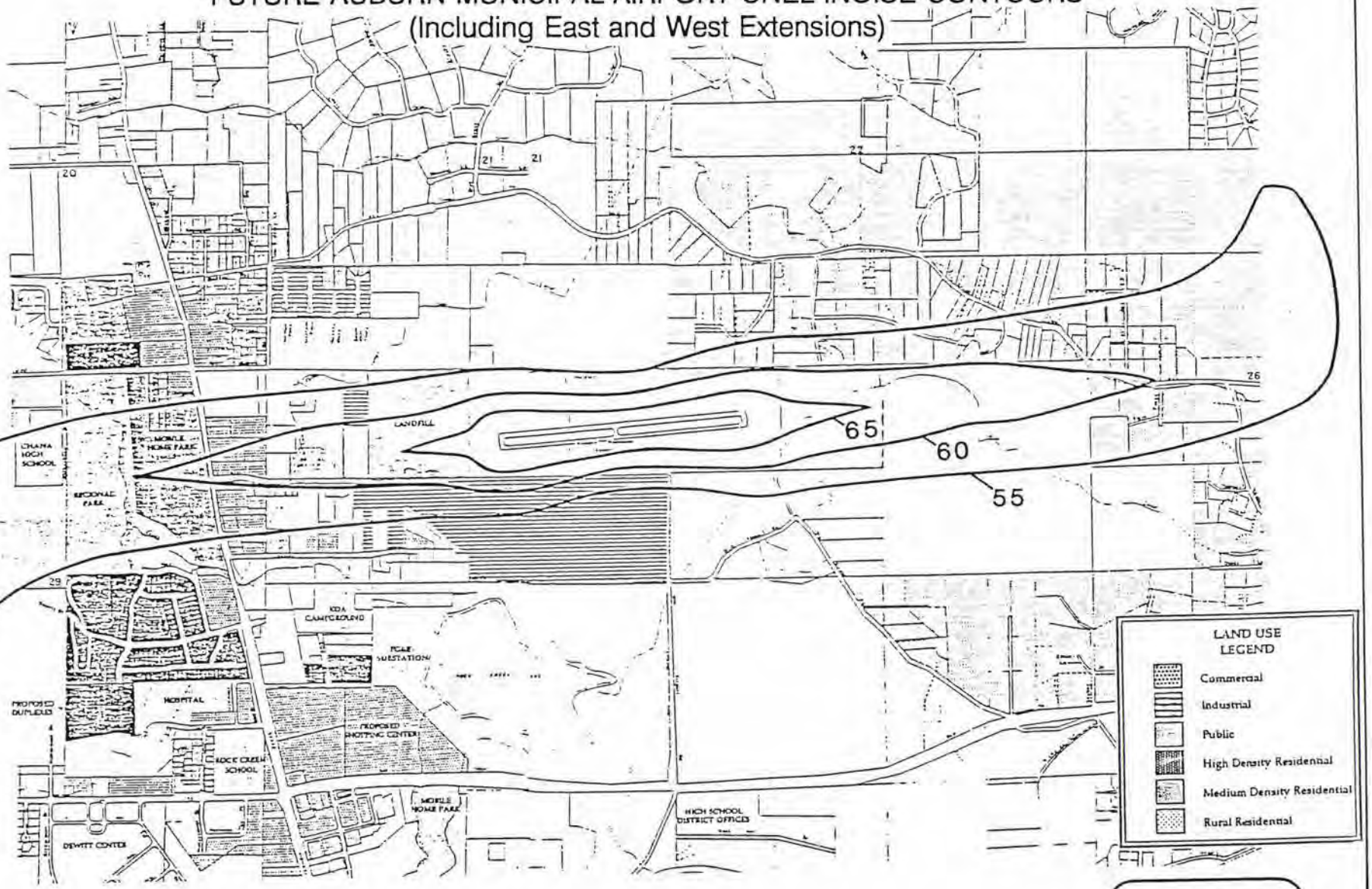
EXISTING (1986) AUBURN MUNICIPAL AIRPORT NOISE CONTOURS



EIR FIGURE 33
EXISTING AIRPORT NOISE CONTOURS

FIGURE I-9

FUTURE AUBURN MUNICIPAL AIRPORT CNEL INOISE CONTOURS
(Including East and West Extensions)

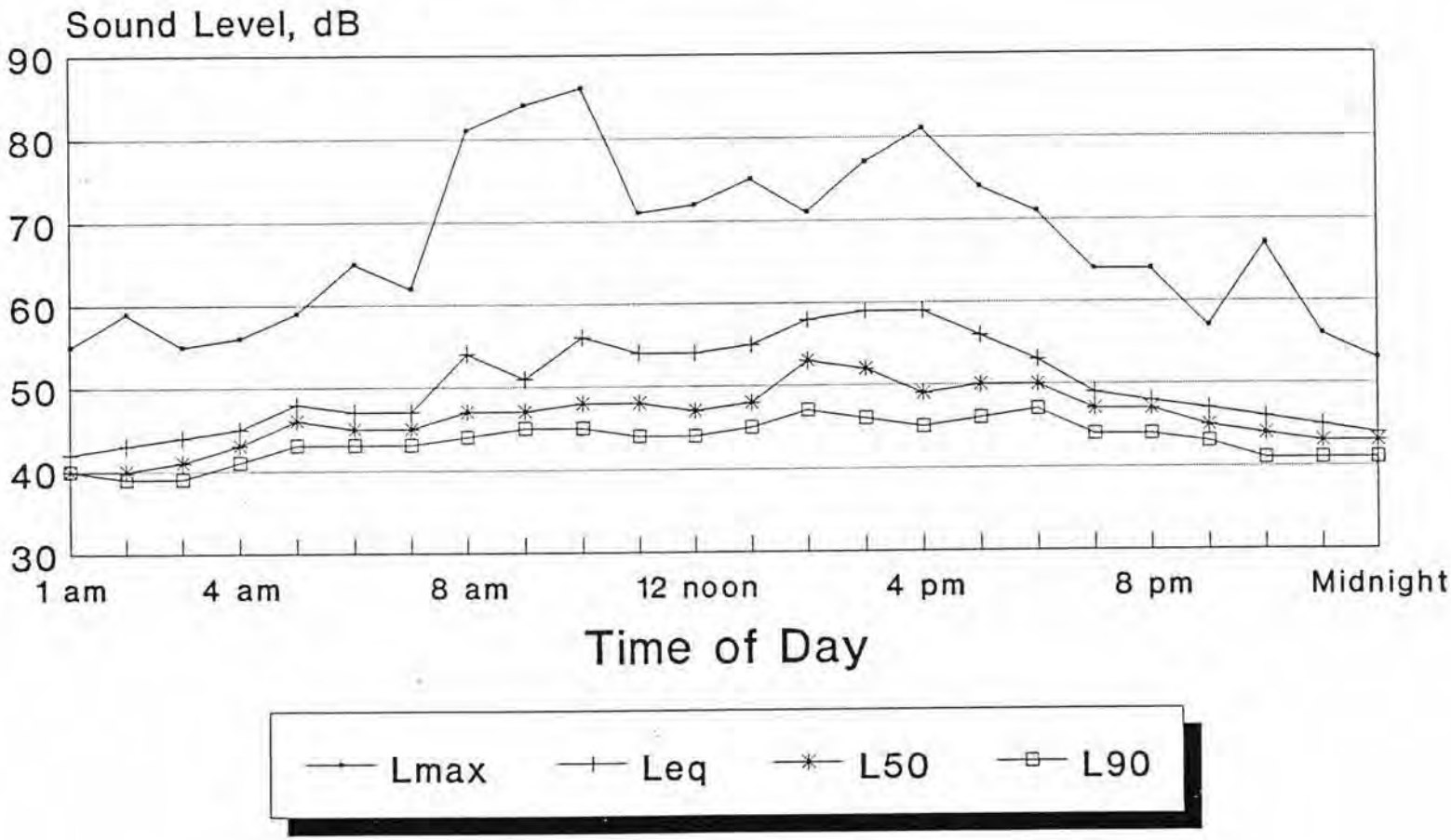


BBA

EIR FIGURE 34
FUTURE AIRPORT NOISE CONTOURS

FIGURE I - 10

Measured Ambient Noise Levels
Rock Creek Mobile Home Park
June 27, 1991



EIR FIGURE 35
AIRPORT NOISE MEASUREMENT RESULTS

The Table 98 data indicate that the apparent number of daily operations on the 27th and 30th closely approximates the number of existing daily operations reported in the Airport EIR. The decrease in number of apparent operations on the 28th and 29th was probably caused by a shift in wind direction, resulting in departures to the east. Because the Rock Creek M.H.P. is located west of the airport, the eastern departures would probably not register as single events based on the aforementioned single event thresholds.

Although a considerable number of aircraft single events were logged on June 27th and 30th, the computed CNEL values for those days were 50 and 53 dB, respectively. The measured CNEL values on those days were approximately 10 lower than the values illustrated on the EIR noise contour maps.

Community Noise Survey. As required by the OPR Noise Element Guidelines, a community noise survey was conducted to document noise exposure in areas of the community containing noise sensitive land uses. For that purpose, noise sensitive land uses in the Plan Area were considered to include residential areas, parks and schools. Noise monitoring sites were selected to be representative of typical noise sensitive locations within the Plan Area.

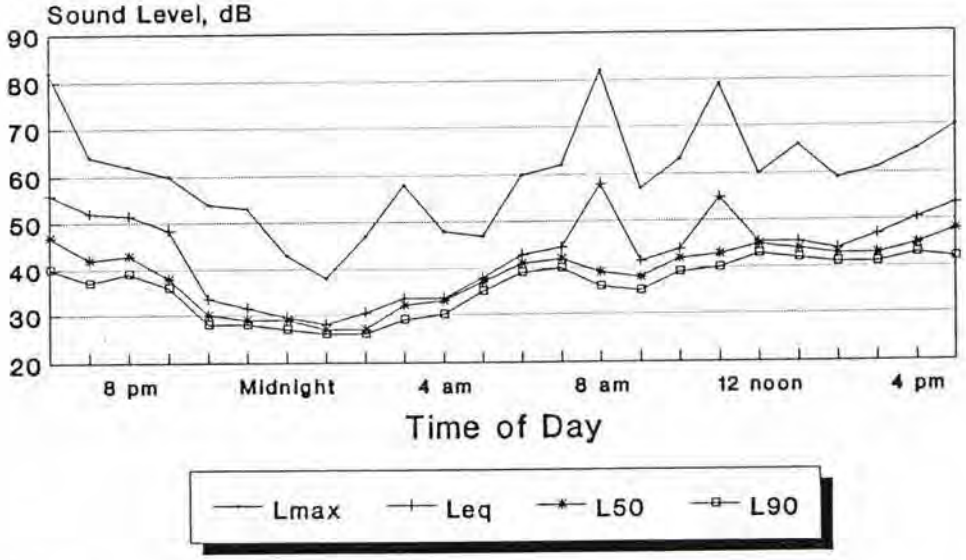
Short-term noise monitoring was conducted on July 17-18, 1991. Each site was monitored three different times during the day and night so that estimates of L_{dn} could be prepared. Two long-term noise monitoring sites were established in the Plan Area to record day-night statistical trends. The data collected included the L_{eq} and other statistical descriptors. Noise monitoring sites, measured noise levels and estimated L_{dn} values at each site are summarized in Table 99. Monitoring sites are shown by Figure 36.

Traffic on local roadways, railroad and aircraft operations, and neighborhood activities are the controlling factors for background noise levels in the majority of the Plan Area. Noise from industrial uses was audible during the evening and nighttime hours at residential uses adjacent to some industrial areas.

The L_{90} values shown in Table 99 represent background noise levels, where there are typically no identifiable local noise sources. The L_{50} values represent median noise levels. The L_{eq} values in Table 99 represent the average noise energy during the sample periods, and show the effects of brief noisy periods. The L_{eq} values were the basis of the estimated L_{dn} values. L_{max} values show the maximum noise levels observed during the samples, and are typically due to passing cars or small aircraft overflights. The results of the continuous ambient noise measurements are shown on Figure 37.

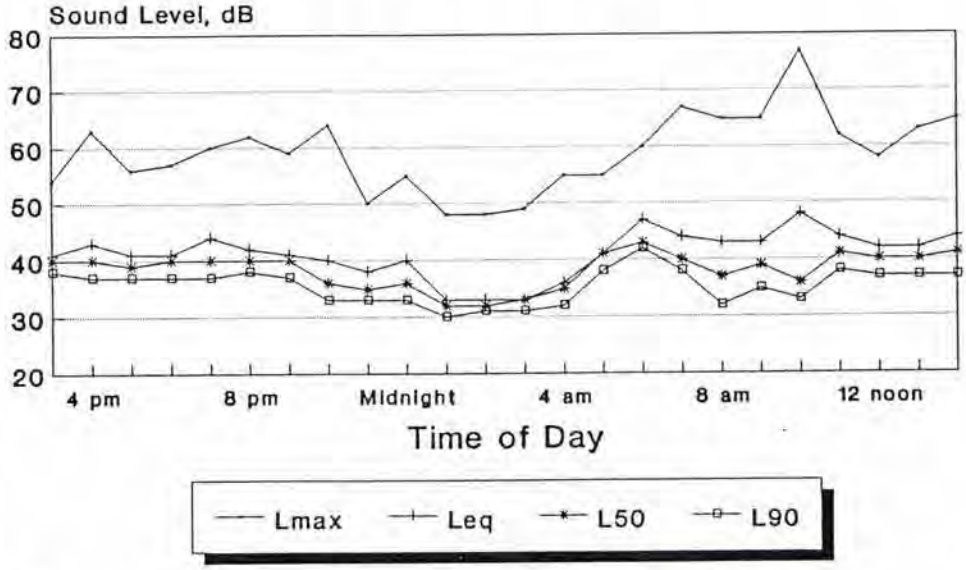
FIGURE I - 12

Measured Ambient Noise Levels
Site 13: 175 Smith Court
July 17-18, 1991



Ldn=50

Measured Ambient Noise Levels
Site 14: 1235 Oak Ridge Road
July 16-17, 1991



Ldn=47

EIR FIGURE 37
COMMUNITY 24 HOUR NOISE MEASUREMENT RESULTS

Table 99
SUMMARY OF MEASURED NOISE LEVELS AND ESTIMATED DAY-NIGHT AVERAGE LEVELS (L_{dn}) IN AREAS CONTAINING NOISE SENSITIVE LAND USES

Site	Location	Date	Time	Sound Level, dB					
				L_{90}	L_{50}	L_{10}	L_{eq}	L_{max}	Est. L_{dn}
1	Shirland Road 0.3 mi. east of Auburn Folsom Road	7-17-91	9:30	36	39	41	47.8	72	47
		7-17-91	13:43	38	44	47	46.8	66	
		7-18-91	1:37	31	34	36	35.0	41	
2	Sky Ridge School	7-17-91	10:05	33	36	46	47.7	72	47
		7-17-91	14:33	41	44	48	48.8	73	
		7-18-91	1:21	33	34	36	34.5	44	
3	Beggs Field/Auburn Recreation Park	7-17-91	10:44	48	52	61	59.8	78	55
		7-17-91	15:03	40	45	50	48.8	63	
		7-18-91	1:10	33	35	38	35.5	41	
4	Paved Recreation Area near College Way and High Street	7-17-91	11:10	44	46	49	46.9	56	51
		7-17-91	15:28	48	50	54	54.9	77	
		7-18-91	00:52	33	34	35	34.0	37	
5	Gold Street	7-17-91	11:40	32	35	53	55.6	75	51
		7-17-91	15:56	33	39	42	43.9	69	
		7-18-91	1:03	34	35	38	36.5	50	
6	Ashford Park	7-17-91	12:15	45	47	51	49.9	69	58
		7-17-91	17:35	50	52	56	53.0	66	
		7-18-91	00:42	47	50	55	52.0	64	
7	Kemper Road between Bean and Country Villa Roads	7-17-91	9:22	39	44	55	55.0	74	52
		7-17-91	13:35	34	37	45	47.1	66	
		7-18-91	00:29	36	39	44	40.5	52	
8	Corner of Copper Penny and Rock View Court	7-17-91	10:00	33	40	50	48.2	66	50
		7-17-91	14:05	38	42	50	52.5	73	
		7-18-91	00:20	34	37	40	37.0	42	
9	Auburn District Regional Park	7-17-91	10:27	40	44	53	50.6	67	50
		7-17-91	14:30	37	41	49	49.2	68	
		7-18-91	00:13	35	38	40	38.5	51	

Table 99
SUMMARY OF MEASURED NOISE LEVELS AND ESTIMATED DAY-NIGHT AVERAGE LEVELS (L_{dn}) IN AREAS CONTAINING NOISE SENSITIVE LAND USES

Site	Location	Date	Time	Sound Level, dB					
				L_{90}	L_{50}	L_{10}	L_{eq}	L_{max}	Est. L_{dn}
10	Old Airport Road near Auburn Airport	7-17-91	10:57	40	44	51	51.7	68	52
		7-17-91	15:00	42	44	51	48.8	65	
		7-17-91	23:58	40	41	43	43.5	56	
11	Squirrel Drive	7-17-91	11:27	44	48	54	51.5	66	49
		7-17-91	15:30	36	42	49	45.4	60	
		7-17-91	23:47	36	37	39	37.5	49	
12	Ray Circle	7-17-91	12:03	29	33	39	36.2	48	43
		7-17-91	16:00	32	34	44	46.2	63	
		7-17-91	23:00	28	30	32	32.1	38	
13	175 Smith Court	Continuous site - results are shown on Figure 37							50
14	1235 Oak Ridge Way	Continuous site - results are shown on Figure 37							47

Impact Evaluation Criteria

The State Office of Planning and Research (OPR) Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The OPR guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of L_{dn} or CNEL. A noise environment of 50 to 60 dB L_{dn} or CNEL is considered to be "normally acceptable" for residential uses according to those guidelines. The OPR recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect lower existing outdoor noise levels.

The U.S. Environmental Protection Agency (EPA) also offers guidelines for community noise exposure in the publication "Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety". These guidelines consider occupational noise exposure as well as noise exposure in the home. The "Levels Document" recognizes an exterior noise level of 55 dB L_{dn} as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other Federal agencies have adopted suggested land use compatibility guidelines which indicate that residential noise exposures of 55 to 65 dB L_{dn} are acceptable.

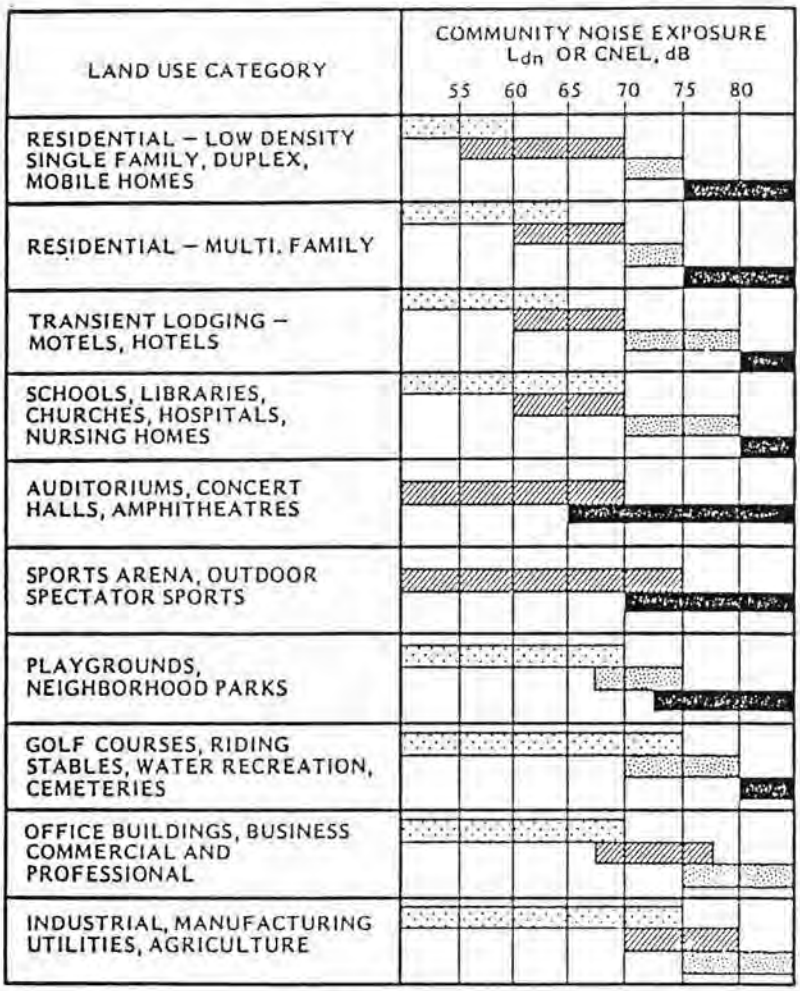
The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance, using L_{eq} as the means of defining allowable residential noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of L_{eq} values as adopted by various local jurisdictions. The mean daytime residential noise standard reported by the EPA is 56.75 dB (L_{eq}); the mean nighttime residential noise standard is 51.75 dB (L_{eq}). This ordinance format has been applied by the City and County of San Diego.

In addition to the recommendations on community noise criteria, the State Department of Housing and Community Development has a standard for noise levels inside residences of 45 L_{dn} dB which applies when the structure is within the 60 L_{dn}, dBA noise contour from a roadway. This is a requirement for multiple-family structures (Title 24).

Impacts

1. **Increased traffic noise due to buildout of the updated Plan.** Table 95 indicates the distances to the future locations of the 60 dB L_{dn} noise contour for the year 2010 based on the County's projected traffic levels. The 60 dB L_{dn} level is used because it is the highest noise level <u>normally</u> acceptable in single-family residential areas.

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE

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

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE–COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL of L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

FIGURE 38

Source: California Office of Noise Control

BBA

Table 100 indicates roadway segments of greatest concern due to the location of existing residential land uses, the potential for future residences, and projected increases in traffic noise levels adjacent to these roadways. Future exterior noise levels are expected to exceed exterior noise level standards at the front property lines of residences adjacent to these roadway segments with buildout of the updated Plan.

Table 100
AREAS OF POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

Seg-ment	Description	Distance (ft) from Center of Rdwy to 60 dB Ldn Contours 1988	Future Pro-posed Plan
I-80	SR49 to Eastern Plan Area Bndry	1204	2225
SR49	Dry Creek to Bell	363	669
	Bell to Cottage	417	627
	Luther to Palm	451	710
Auburn Ravine Road			
	Palm to I-80	83	143
Bell Road	Joeger to SR49	141	202
	SR 49 to New Airport Rd	253	384
	New Airport to I-80	295	425
Luther Road	SR49 to Dairy	127	173
	Dairy to Bowman	103	157
Dry Creek Road West of SR 49		62	94
Dairy Road South of Luther		37	49
Indian Hill Road West of Auburn - Folsom Rd		85	201

Table 101
AUBURN/BOWMAN COMMUNITY PLAN NOISE IMPACT RELATED POLICIES

3. e. New development of noise-sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 16, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 16.

   f. Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 16 or the performance standards of Table 15 an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

   h. Where noise mitigation measures are required to achieve the standards of Tables 15 and 16, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Table 101 lists the Plan's noise policies which are intended to reduce potential noise impacts. However, because existing residences will be virtually impossible to retrofit for noise insulation (particularly outdoor living areas) and because new residences will be allowed in areas where noise walls will likely not be acceptable for aesthetic reasons, impacts are expected to be significant and unmitigable.

Conclusion: Based on the discussion above and the impact evaluation criteria, impacts to existing and future noise sensitive receptors (mainly residences) from increased traffic noise levels in the Plan area are considered significant and unmitigable. Noise Policies e and g should partially reduce the level of impact identified, though not below the level of significance.

2. **Railroad noise.** As discussed in the Setting section, the new Capital Corridor passenger train service operated by Amtrak will likely be extended to the Auburn area. The number of daily passenger trains serving the Auburn area is not known at this time, but will likely be a function of demand. The Placer County Transportation Commission (PCTC) is soliciting bids from transportation consultants to prepare a study to determine the best location of the rail station. The County has proposed a location in the Bowman area. The City has indicated they would prefer the rail station near the Nevada Street and Mt. Vernon Road intersection.

Due to a lack of information regarding the location of the rail station and the number of potential daily passenger trains passing through the Plan area, the noise consultants could not estimate the potential impacts of this expanded passenger service. Brown-Buntin and Associates indicated that the noise emissions of freight train operations are substantially louder than passenger train operations, and therefore five (5) additional passenger train operations per day would be needed to increase existing railroad noise levels by one (1) decibel. Additional environmental review may be required of the increased train operations.

Existing railroad noise levels were measured by BBA at various locations within the Plan area. The location of noise measurement sites are shown on Figure 31. The table below indicates that existing or proposed residences within 250 feet of the eastbound tracks, 185 feet of the westbound tracks and 400 feet of the tracks used for travel in both directions will be impacted from railroad operations. There are numerous existing residences within this noise contour. In addition, there are existing undeveloped legal lots without adequate noise contour setback areas which would not be subject to the requirement for noise analysis because only a building permit would be required for their development.

Table 102 may be used to estimate railroad noise levels at existing or proposed noise sensitive developments. The railroad noise contour information provided in Table 102 is based on the railroad noise measurement results of Table 98, and assumes that the tracks are approximately at grade

with the development and that there is no shielding of railroad noise by intervening topography.

The noise levels provided in Table 102 should be increased by 3 dB where warning horns are used. The railroad noise exposure will differ from these values where the tracks are significantly elevated or shielded relative to the receiver location.

Table 102
APPROXIMATE DISTANCE TO RAILROAD NOISE CONTOURS
AUBURN/BOWMAN COMMUNITY PLAN AREA

Railroad Direction	Ldn, dB, 100 ft from Tracks*	Distance to 60 dB Ldn Contour (ft)	Distance to 65 dB Ldn Contour (ft)
Eastbound	66	250	120
Westbound	64	185	85
Both	69	400	185

* If 5 Capital Corridor trains per day operate on these tracks in the future, this level should be increased by 1 dB. Less than 5 additional passenger trains per day would not result in an increase of even 1 dB.

Future residential development within the 60 dB L_{dn} noise contour from the railroad tracks will need to include mitigation measures to reduce noise levels to an acceptable level. Noise walls should be allowed where possible and development setbacks should be used where sound walls are infeasible due to topography, the elevation of the tracks relative to the new development site, or for aesthetic reasons. Policies contained in the Plan (See EIR Table 101) should ensure that future residential developments requiring environmental review adjacent to the railroad tracks are not adversely impacted from railroad noise. However, as discussed previously, existing residences and future residences not subject to environmental review or on legal lots without adequate noise setback areas will still be exposed to excessive noise levels.

Conclusion: Based on the impact evaluation criteria and discussion above, noise impacts from railroad operations are expected to be significant and unmitigable.

3. **Noise from industrial and non-transportation facilities.** The updated Land Use Map generally locates industrial areas adjacent to SR49, I-80, the railroad tracks, the Auburn Airport and portions of Lincoln Way. However, residentially designated land uses occur adjacent to industrially designated lands in some instances. In these interface areas, new industrial development or expansion of existing facilities will be required to incorporate adequate noise attenuation techniques into project design to ensure that the 50 dB hourly Leq, daytime and 45 dB hourly Leq, nightime contour does not extend onto residentially designated parcels. The following policies contained on page 194-95 of the Auburn/Bowman Community Plan should ensure that new industrial developments will include adequate mitigation.

Table 103
AUBURN/BOWMAN COMMUNITY PLAN
POLICIES RELATED TO STATIONARY NOISE SOURCES
(pages 194-195)

b.	Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 14 as measured immediately within the property line of lands designated for noise-sensitive uses.
c.	Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 14 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design. (Requirements for the content of an acoustical analysis are given by Table 15.)

In addition, future noise levels surrounding existing industrial and non-transportation related facilities are of concern:

a. **California Department of Forestry Helipad.** The noise levels generated by the regular DEA helicopter operations at the CDF helipad were calculated by BBA using noise level data reported by FAA for the Hughes 500 helicopter assuming four operations per day (DEA flights represent the highest use of the helipad). An L_{dn} of 50 dB was computed at a distance of 1000 feet from the helipad directly under the flight path. As a result, existing residences surrounding the helipad are not currently impacted. Updated land use designations surrounding the site are Rural Residential (2.3-4.6 ac) and Rural Estate (4.6-10.0 ac). Since the four flights per day are considered a worst case situation, future use of the facility is not expected to result in significant impacts.

b. **Auburn Truss & Lumber.** BBA noise measurements conducted at the site indicated that saws generated 77 dB at a distance of 25 feet. As a result, existing residences surrounding Auburn Truss & Lumber are not currently impacted. At this time, there are currently no plans for future expansion of the facility. Future expansion of the facility would be required to conform to the policies of the Noise requiring an acoustical noise analysis to determine if measures are needed to mitigate potential noise impacts off-site.

c. **Chevreaux Concrete.** Noise measurements conducted by BBA at the plant indicated an average noise level of 77 dB was measured at a distance of 75 feet from the batch plant during normal operations. There do not appear to be any noise sensitive land uses in the immediate plant vicinity and plant noise is attenuated to the east by steep topography. Any new residential development proposed adja-

cent to the plant or expansion of the plant's operations will require an acoustical analysis to determine if noise mitigation measures will be needed.

d. **Public Address Systems / Drive up Window Speakers.** Noise generated by these systems depends primarily on the amplifier setting, and is therefore highly variable. Noise measurements conducted at Goldrush Chevrolet and the drive-up window speaker at Burger King resulted in noise levels of 78 decibels at 12 feet from the Gold Rush speaker and 65 decibels at a distance of 5 feet from the drive-up window speaker at Burger King.

Studies have shown that people are more highly annoyed by amplified speech or music than by continuous noise sources of similar intensity such as highway traffic. There are existing residences adjacent to car dealerships and fast food restaurants that use these public address systems on a daily basis. While the noise analysis did not identify any existing impacts to adjacent sensitive land uses from public address systems, it would be appropriate to include a policy in the Plan requiring a noise analysis for land uses proposing the use of public address systems. This analysis should determine the maximum amplifier setting for a particular public address system, depending on adjacent land uses and local topography

e. **Airport Industrial Area.** Existing noise sources from this area appears to be associated with operation and/or maintenance of medium and heavy commercial truck fleets. While there does not appear to be any existing noise sensitive land use adjacent to the airport industrial area, the updated Plan would allow development of noise sensitive uses adjacent to this existing industrial area. The updated Plan would allow Rural Residential (2.3-4.6 ac. min.) Rural Estate (4.6-10 ac.min.), Open Space and Park site land uses surrounding the industrial park.

Policies contained within the Plan will ensure an acoustical analysis will be performed for any expansion of existing industrial uses, new industrial uses and any proposed residential developments adjacent to the industrial park. These policies should ensure that noise impacts do not occur to sensitive receptors.

f. **Auburn Container Company.** Noise level measurements of this plant indicate that the exterior noise level due to the plant cyclones is approximately 69 decibels at a distance of 100 feet from the buildings. The 60 dB noise contour for the plant would be located approximately 270 feet from the plant. Adjacent residences to the east of the plant are protected from noise impacts with a 60 foot high noise wall at their back property line. The future of this plant is somewhat nebulous at this time. In any event, any expansion of this plant alternative use will require additional noise studies to determine if impacts will occur and to identify appropriate mitigation measures.

g. **Auburn Placer Disposal.** There are no existing sensitive receptors currently impacted from operation of this facility. Proposed industrial land use designations surrounding this facility would not result in the location of noise sensitive receptors adjacent to the disposal facility. Policies contained within the Plan should ensure existing and potential impacts remain below the significant level.

Conclusion: Noise Policies a,b and c contained within the Plan should ensure that noise impacts from these stationary sources to existing and future noise sensitive receptors should be mitigated to a less than significant level.

4. **Airport Noise.** The existing and worst case future Airport noise contours prepared for the Airport Master Plan and EIR are reproduced in Figures 34 and 35, respectively. According to these contours the noise sensitive use most affected by airport operations is the Rock Creek Mobile Home Park, located west of Highway 49 between Bell and Dry Creek Roads. The contours indicate that the Mobile Home Park is currently exposed to aircraft noise levels between 55 and 65 dB CNEL. Future noise levels are expected to range between 60- and 65 dB CNEL for portions of the Mobile Home Park.

Aircraft departures to the east will result in the 65 dB CNEL noise contour, extending over lands proposed for Rural Estate (4.6-10 acre minimum) land uses. This area is currently composed of mostly vacant land in large parcels. It would appear that this area could be subdivided in 10-acre lots with adequate area to locate future residences outside the 65 dB CNEL noise contour. Policies contained within the Plan will require an acoustical analysis to determine more specifically potential impacts and appropriate mitigation measures if airport operations are expanded. However, if development occurs in this area on existing legal lots that do not require discretionary approval and/or environmental review, new residences could be exposed to noise levels that exceed County standards.

Conclusion: Based on the discussion above and the impact evaluation criteria, impacts to existing noise sensitive receptors (Rock Creek Mobile Home Park) due to future noise levels from the airport will continue to be significant and unmitigable. Future noise levels to the east where noise sensitive land uses are proposed are considered significant and potentially unmitigable. Residential development could occur on existing legal lots without any environmental review and/or noise mitigation included in project design.

5. **Cumulative impacts - Buildout of both the City plus County land use plans.** The impact discussions above addressed cumulative impacts since traffic projections included City generated traffic. Rail traffic is independent of buildout of the two Plans. Stationary noise sources reviewed included sites in the City.

Conclusion: See individual impact discussions above.

Mitigation Measures

1.2 **Traffic and railroad noise. Add new policies.** Future residences and noise sensitive land uses which require environmental review will be protected by Plan policies calling for acoustical analysis where appropriate. Noise walls and interior noise insulation methods (including construction techniques and the installation of air conditioners) are the standard measures required. Future noise contours along I-80, Luther Road, and Highway 49 are examples of areas of critical concern where noise walls could significantly reduce future noise exposure. For example, along I-80, an 8-foot noise wall would reduce the 2600 foot distance to the 60 dB noise contour to 1300 feet and to 600 feet with a 12-foot wall (Brown-Buntin in 8/5/92 memo from Lynn Johnson to Dean Prigmore). There is no other alternative to reducing exterior noise levels other than setbacks beyond the critical noise contour which would require alteration of the Community Plan. However, it is expected that in some cases noise walls will not be acceptable for aesthetic reasons or not feasible for financial or other reasons. In these cases, it will be possible to achieve acceptable interior noise levels but it may not be possible to achieve acceptable outdoor living area noise levels.

In addition, new residences and other noise sensitive uses which do not require building permits or which locate on legal lots with inadequate noise setback area will not require acoustical analyses, precluding the County's ability to require mitigation.

Existing residences will be exposed to increased traffic and railroad noise also. Mitigation possibilities include retrofit noise walls and interior sound insulation. A noise mitigation retrofit fee is recommended. However, retrofitting will not always be feasible and is not expected to reach a majority of the impacted residences.

The following policies/programs should be added to the Plan based on the discussion above:

a. **Require acoustical analysis in critical areas as part of environmental review.**

b. **Consider creation of a mitigation fee based on trip generation to fund noise insulation retrofit fund for construction of noise walls and grants for structural noise insulation and air conditioning (so that windows can remain closed during summer to achieve full noise insulation value).** It is recognized that this fee may not be feasible for political or other reasons and as a result it is not assured that it will reduce impacts below the significant level.

c. **Study noise wall feasibility and create noise wall master plan.**

Effectiveness of Measures/Relevant Plan Provisions: Significant unmitigable impacts. These measures are not expected to fully mitigate impacts, however, they are expected to provide the maximum amount of noise mitigation possible without eliminating residential land use designations throughout the Plan area within the future 60 dBA Ldn noise contour. That option would need to be characterized as

Goals a,b and d, and Policies e,g,h. Partial mitigation is expected from these provisions.

Implementation: a) This measure will be implemented through the County's existing environmental review process and through A/BCP Noise Policy g; b,c). These measures are not included in the Plan. The County determined that retrofitting of noise walls and creation of a noise wall master plan was infeasible and conflicts with other, more important mitigation and Plan goals and policies relating to neighborhood interaction, feeling of community, use of open space.

3. **Noise from industrial and non-transportation sources - Include a new policy requiring a noise analysis be performed for any land uses that propose to use a public address system in which noise sensitive land uses are located or could be located within 100 feet of this facility.**

Effectiveness of Measure/Relevant Plan Provisions: Significant mitigable impact. This measure will ensure that existing and future noise sensitive land uses will not be impacted from future public address systems. Relevant Plan provisions include Noise Goals a-d, and Policies a and c.

Implementation: This measure was not included in the Plan and was not required for mitigation of any identified significant impacts. Partial mitigation will occur via Noise Policy c.

4. **Airport Noise - Require 10-acre lots within the 65 dB L_{dn} contour to the east of the airport and adequate building setbacks. Implement via overlay zoning.**

Effectiveness of Measure/Relevant Plan Provisions: Significant unmitigable impacts. This measure is expected to reduce impacts to future residences in this area below the significant level. However, existing mobile home residents are expected to continue to be significantly impacted. Relevant Plan provisions include Noise Goals a-d and Policies e,g and h.

Implementation: This measure was not included in the Plan because Plan Noise Policy g requires all new discretionary projects to prepare an acoustical noise analysis as part of the environmental review process. Any needed noise mitigation could be included in project design at that time.

5. **Cumulative Impacts - No additional measures recommended** beyond those contained in the A/BCP.

Effectiveness of Measure/Relevant Plan Provisions: See discussion under 1-4 above.

Implementation: N/A