Appendix E:
Environmental Noise Assessment

Environmental Noise Assessment

City of Elk Grove Sphere of Influence Amendment

Elk Grove, California (Sacramento County)

BAC Job # 2010-016

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Introduction

This Noise Study Report was prepared for the proposed City of Elk Grove Sphere of Influence Amendment (SOIA) project. The SOI represents territory adjacent to the service area of a jurisdiction where services might reasonably be expected to be provided in the next 20 years. For a multi-service agency such as the City of Elk Grove, approval of an SOIA by LAFCo indicates that the Commission has designated the revised SOI area for future urbanization. While designation of an area within the City's SOI does not define or identify specific development projects, change or modify land use jurisdiction or zoning, or grant land use entitlements, it may be viewed as an initial harbinger of the potential urbanization of the area. For lands to be annexed, the affected territory is required to be within the Sphere of Influence of the requesting agency.

The project site is located in the unincorporated area of Sacramento County, California. The project area is generally located south-southwest of the existing City of Elk Grove boundaries close to the community of Franklin-Laguna. More specifically, the area to be included in the City's Sphere of Influence (SOI) is described as the areas south of Bilby Road, Kammerer Road, and Grant Line Road, extending south to Eschinger Road and Cosumnes River; east towards Cosumnes River and just past Freeman Road; and west towards Interstate 5 (I-5) and the Union Pacific Railroad tracks (See Figure 1).

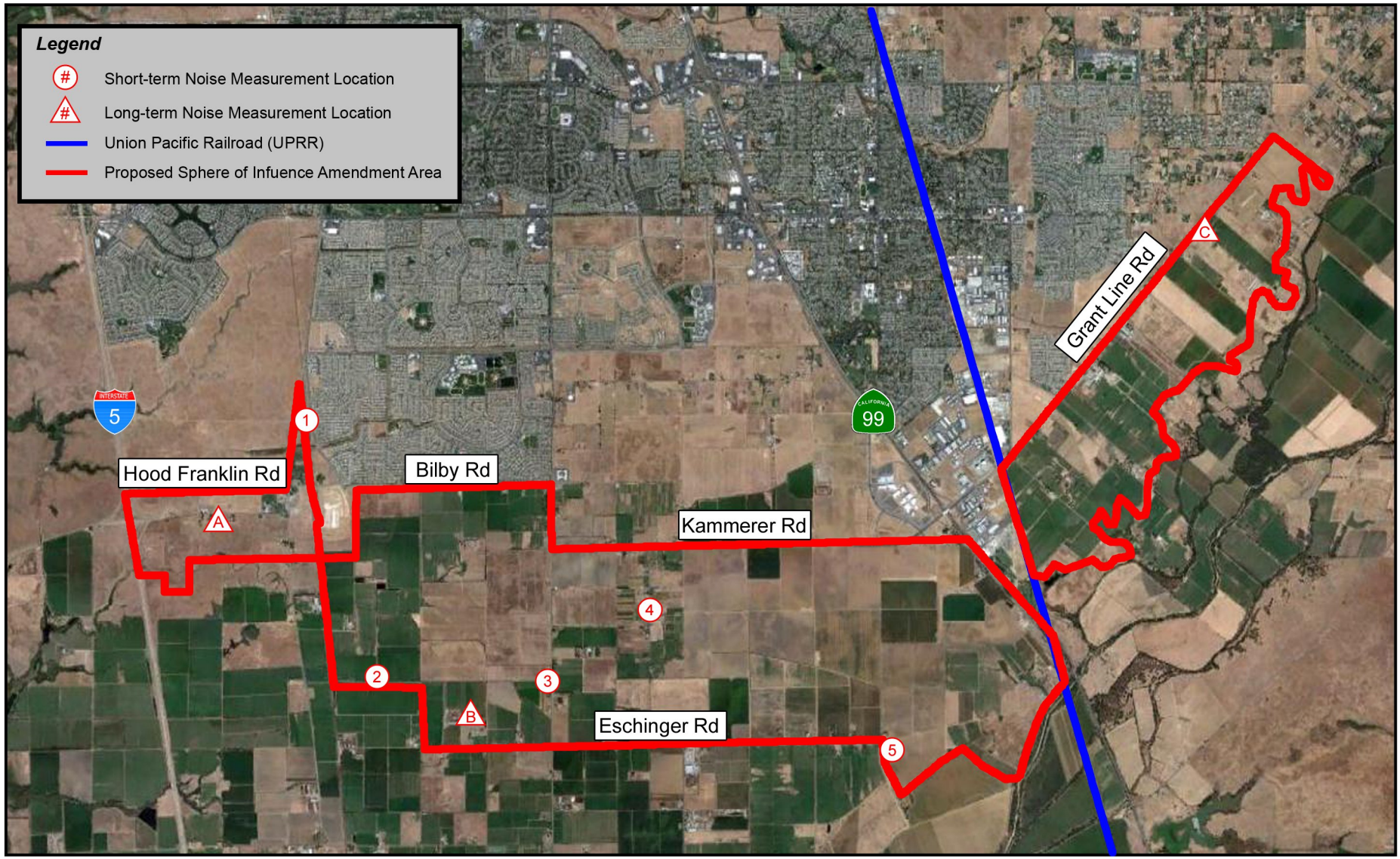
This Environmental Noise Analysis has been prepared to focus on the change in traffic noise levels, potential noise impacts upon future development within the SOI area, and noise levels due to construction activities associated with the project. For the purposes of this analysis, the existing and future noise environments have been evaluated. Predicted noise levels are compared to the applicable City of Elk Grove noise level criteria.

The specific purposes of this report are as follows:

1. To provide sufficient information concerning the project area noise environment so that noise may be effectively considered in the land use planning process.
2. To develop strategies for abating excessive noise exposure through practical mitigation measures in combination with appropriate zoning to avoid incompatible land uses.
3. To protect those existing regions of the planning area whose noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive."
4. To protect existing noise-producing commercial and industrial uses in the project area from encroachment by noise-sensitive land uses.

Figure 1

City of Elk Grove Sphere of Influence Amendment - Elk Grove, California
Project Location and Ambient Noise Measurement Locations



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Scale (feet)
0 3,000 6,000

Environmental Setting

Fundamentals of Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and thus are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz). For analysis purposes, the frequency of traffic noise is commonly considered to be 550 Hz.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. As a result, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers is a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by the A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported herein are in terms of A-weighted levels. Table 1 shows typical noise levels associated with common activities. Table 2 provides acoustical terminology.

Table 1
Typical A-Weighted Sound Levels of Common Noise Sources

Loudness Ratio	dBA	Description
128	130	Threshold of pain
64	120	Jet aircraft take-off at 100 feet
32	110	Riveting machine at operators position
16	100	Shotgun at 200 feet
8	90	Bulldozer at 50 feet
4	80	Diesel locomotive at 300 feet
2	70	Commercial jet aircraft interior during flight
1	60	Normal conversation speech at 5-10 feet
1/2	50	Open office background level
1/4	40	Background level within a residence
1/8	30	Soft whisper at 2 feet
1/16	20	Interior of recording studio

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state, A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually 1-hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The Day-Night Average Level (L_{dn}) is based on the average noise level over a 24-hour day, with a +10 decibel weighting applied to noise occurring during nighttime hours (10 p.m.-7 a.m.). The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they are twice as loud as daytime exposures. Because the L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Noise in the community has often been cited as being a health problem, not in terms of actual physiological damages such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This result is the bases for land use planning policies preventing exposures to excessive community noise levels.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, droning or high-pitched sounds may be more annoying than the A-weighted sound level alone suggests. Many noise standards apply a penalty or correction of 5 dBA to such sounds. The effects of unusual tonal content are generally more of a concern at nighttime when residents may notice the sound in contrast to low levels of ambient/background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not previously audible. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Table 2
Acoustical Terminology

Term	Definition
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel (dB)	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Noise Mitigation Fundamentals

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (L_{dn}, L_{eq}, or L_{max}), the location of the sensitive receiver (inside or outside), and when the problem occurs (daytime or nighttime). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits. Fundamental noise control techniques include the following:

Use of Setbacks

Noise exposure may be reduced by increasing the distance between the noise sources and receiving use. Setback areas can take the form of open space, frontage roads, recreational areas, storage yards, etc. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally about 4 to 6 dB per doubling of distance from the source.

Use of Barriers

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver, and is improved with increasing the distance the sound must travel to pass over the barrier as compared to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference," and is the basis for calculating barrier noise reduction.

Barrier effectiveness depends upon the relative heights of the source, barrier and receiver. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path-length-difference for a given increase in barrier height than does a location closer to either source or receiver.

For maximum effectiveness, barriers must be continuous and relatively airtight along their length and height. To ensure that sound transmission through the barrier is insignificant, barrier mass should be about 4 lbs./square foot, although a lesser mass may be acceptable if the barrier material provides sufficient transmission loss. Satisfaction of the above criteria requires substantial and well-fitted barrier materials, placed to intercept line of sight to all significant noise sources. Earth, in the form of berms or the face of a depressed area, is also an effective barrier material.

The attenuation provided by a barrier depends upon the frequency content of the source. Generally, higher frequencies are attenuated (reduced) more readily than lower frequencies. This results because a given barrier height is relatively large compared to the shorter wavelengths of high frequency sounds, while relatively small compared to the longer wavelengths of the frequency sounds. The effective center frequency for traffic noise is usually considered to be 550 Hz. Railroad engines, cars and horns emit noise with differing frequency content, so the effectiveness of

a barrier will vary for each of these sources. Frequency analyses are necessary to properly calculate barrier effectiveness for noise from sources other than highway traffic.

There are practical limits to the noise reduction provided by barriers. For highway traffic noise, a 5 to 10 dB noise reduction may often be reasonably attained. A 15 dB noise reduction is sometimes possible, but a 20 dB noise reduction is extremely difficult to achieve. Barriers usually are provided in the form of walls, berms, or berm/wall combinations. The use of an earth berm in lieu of a solid wall may provide up to 3 dB additional attenuation over that attained by a solid wall alone, due to the absorption provided by the earth. Berm/wall combinations offer slightly better acoustical performance than solid walls, and are often preferred for aesthetic reasons.

Site Design

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise level caused by reflections. The use of one building to shield another can significantly reduce overall project noise control costs, particularly if the shielding structure is insensitive to noise. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a quiet retreat in an otherwise noisy environment. Patios or balconies should be placed on the side of a building opposite the noise source, and "wing walls" can be added to buildings or patios to help shield sensitive uses.

Another option in site design is the placement of relatively insensitive land uses, such as commercial or storage areas, between the noise source and a more sensitive portion of the project. Examples include development of a commercial strip along a busy arterial to block noise affecting a residential area, or providing recreational vehicle storage or travel trailer parking along the noise-impacted edge of a mobile home park. If existing topography or development adjacent to the project site provides some shielding, as in the case of an existing berm, knoll or building, sensitive structures or activity areas may be placed behind those features to reduce noise control costs.

Site design should also guard against the creation of reflecting surfaces which may increase onsite noise levels. For example, two buildings placed at an angle facing a noise source may cause noise levels within that angle to increase by up to 3 dB. The open end of "U"-shaped buildings should point away from noise sources for the same reason. Landscaping walls or noise barriers located within a development may inadvertently reflect noise back to a noise-sensitive area unless carefully located. Avoidance of these problems while attaining an aesthetic site design requires close coordination between local agencies, the project engineer and architect, and the noise consultant.

Building Design

When structures have been located to provide maximum noise reduction by barriers or site design, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For

example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source.

Bathrooms, closets, stairwells and food preparation areas are relatively insensitive to exterior noise sources, and can be placed on the noisy side of a unit. When such techniques are employed, noise reduction requirements for the building facade can be significantly reduced, although the architect must take care to isolate the noise impacted areas by the use of partitions or doors.

In some cases, external building facades can influence reflected noise levels affecting adjacent buildings. This is primarily a problem where high-rise buildings are proposed, and the effect is most evident in urban areas, where an "urban canyon" may be created. Bell-shaped or irregular building facades and attention to the orientation of the building can reduce this effect.

Noise Reduction by Building Facades

When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 10-15 dB noise reduction for building facades with open windows, and approximately 25 dB noise reduction when windows are closed. Thus a 25 dB exterior-to-interior noise reduction can be obtained by the requirement that building design include adequate ventilation systems, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Where greater noise reduction is required, acoustical treatment of the building facade is necessary. Reduction of relative window area is the most effective control technique, followed by providing acoustical glazing (thicker glass or increased air space between panes) in low air infiltration rate frames, use of fixed (non-movable) acoustical glazing or the elimination of windows. Noise transmitted through walls can be reduced by increasing wall mass (using stucco or brick in lieu of wood siding), isolating wall members by the use of double- or staggered- stud walls, or mounting interior walls on resilient channels. Noise control for exterior doorways is provided by reducing door area, using solid-core doors, and by acoustically sealing door perimeters with suitable gaskets. Roof treatments may include the use of plywood sheathing under roofing materials.

Whichever noise control techniques are employed, it is essential that attention be given to installation of weatherstripping and caulking of joints. Openings for attic or subfloor ventilation may also require acoustical treatment; tight-fitting fireplace dampers and glass doors may be needed in aircraft noise-impacted areas.

Design of acoustical treatment for building facades should be based upon analysis of the level and frequency content of the noise source. The transmission loss of each building component should be defined, and the composite noise reduction for the complete facade calculated, accounting for absorption in the receiving room. A one-third octave band analysis is a definitive method of calculating the A-weighted noise reduction of a facade.

A common measure of transmission loss is the Sound Transmission Class (STC). STC ratings are not directly comparable to A-weighted noise reduction, and must be corrected for the spectral

content of the noise source. Requirements for transmission loss analyses are outlined by Title 24 of the California Code of Regulations.

Use of Vegetation

Trees and other vegetation are often thought to provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) is required to achieve a 5 dB attenuation of traffic noise. Thus the use of vegetation as a noise barrier should not be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Vegetation can be used to acoustically "soften" intervening ground between a noise source and receiver, increasing ground absorption of sound and thus increasing the attenuation of sound with distance. Planting of trees and shrubs is also of aesthetic and psychological value, and may reduce adverse public reaction to a noise source by removing the source from view, even though noise levels will be largely unaffected. It should be noted, however, that trees planted on the top of a noise control berm can actually slightly degrade the acoustical performance of the barrier. This effect can occur when high frequency sounds are diffracted (bent) by foliage and directed downward over a barrier.

In summary, the effects of vegetation upon noise transmission are minor, and are primarily limited to increased absorption of high frequency sounds and to reducing adverse public reaction to the noise by providing aesthetic benefits.

Existing (Ambient) Noise Environment

The major noise sources in the Elk Grove SOIA include traffic on I-5, SR 99, local traffic on major arterials, and railroad operations on the UPRR and BNSF railroad tracks. The project area primarily contains agricultural uses consisting of fallow/row crops/nursery, orchards, vineyard, and dairy and livestock operations. Few structures exist within the project site, and these are limited to barns, rural housing, storage sheds, and related structures. A small area surrounding the intersections of Hood Franklin Road/County Road J8 and Bilby Road/County Road J8 is developed with relatively suburban uses. This area is identified as the Old Town Franklin community. The existing land uses in this community can be described as a mix of rural housing, light industrial, commercial, and public facilities. Franklin Cemetery is located at the intersection of Franklin Boulevard and Hood Franklin Road.

Community Noise Survey

To quantify existing noise levels in the quieter parts of the SOIA, a community noise survey was performed at eight locations. These survey locations were chosen to provide adequate representation of the entire project area. Three of the eight locations were monitored over a continuous 24-hour period, while the other five locations were each monitored for two short term periods during daytime and nighttime hours. The community noise survey noise measurement locations are illustrated in Figure 1. The results of the community noise survey are provided in Table 3. The complete results of the continuous noise surveys are provided in tabular and graphical formats in Appendices A and B, respectively.

Table 3
Community Noise Measurement Survey results
Elk Grove, California – October 18-20, 2010

Site	Location	Time Period	L_{eq}	L_{max}	L_{dn}	Noise Sources
1	Franklin Ranch Pet Hospital & Hotel (Back Parking Lot)	Daytime	45	58	50	Distant/Local Traffic, A/C Overflights, Natural
		Afternoon	43	51		
		Nighttime	43	53		
2	Ranch Gate on Core Road	Daytime	54	79	57	Natural Sources. Traffic on Core Rd., A/C
		Afternoon	49	72		
		Nighttime	50	71		
3	Sacramento Muni Util District Gas Pipeline Valve Site (#8)	Daytime	53	71	54	Traffic on Bruceville Rd., A/C, Natural Noises
		Afternoon	53	75		
		Nighttime	45	63		
4	10760 & 10759 Rau Road	Daytime	52	72	56	Local Traffic, Natural Sounds, Community, A/C
		Afternoon	53	71		
		Nighttime	49	73		
5	Corner Near Greenbelt Carriers Site	Daytime	48	61	51	Local Traffic, AG
		Afternoon	53	71		
		Nighttime	35	46		
A	3460 Hood-Franklin Road	Daytime	53	67	59	
		Nighttime	53	64		
B	6225 Eschinger Road	Daytime	51	71	52	
		Nighttime	44	64		
C	9675 Grantline Road (Backyard)	Daytime	53	68	57	
		Nighttime	51	67		

Notes:

- L_{dn} values for short-term measurement sites (Sites 1-5) were estimated based on average measured values. Two measurement sessions were completed during daytime hours for these sites to better assess daytime noise exposure – one in the morning and one in the afternoon.
- L_{dn} for long-term measurement sites (Sites A-C) were calculated based on measured Hourly L_{eq} data.

Roadway Noise

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with the Calveno vehicle noise emission curves was used to predict traffic noise levels within the Elk Grove SOIA. The FHWA-RD-77-108 Model is considered acceptable for the development of general traffic noise predictions.

A diversity of local roadways and facilities exist within or adjacent to the SOIA area. The major roads serving the area include Bilby Road, Kammerer Road, Hood-Franklin Road, Grant Line Road, Eschinger Road, and Bruceville Road. Hood-Franklin Road, Kammerer Road, and Grant Line Road provide direct access to I-5 and SR-99. No new roads or road improvements are proposed as part of this application. The SOIA area currently requires minimal circulation and roadway services, as the area remains primarily agricultural. Since no specific land use plan has been defined, existing uses are expected to remain unchanged. Existing service providers are expected to continue the current service level. Addition of the SOI Amendment area would cause no additional, immediate demand for circulation service and roadway infrastructure.

The FHWA Model was used with existing traffic data to develop L_{dn} contours for these roadways as well as other smaller roadways in the City. The FHWA Model input data for the studied roadways is provided in Appendix C. The predicted L_{dn} at a reference distance of 100 feet and the distances from the centerlines of the major roadways to the 60, 65, and 70 dB L_{dn} contours are summarized in Table 4.

Table 4
Existing Traffic Noise Levels and Contour Distances
City of Elk Grove, California

#	Roadway	Segment Description	L_{dn} @ 100 feet	Distance to Ldn Contours (ft)		
				70 dB	65 dB	60 dB
1	Lambert Blvd	Bruceville Rd (West) to Bruceville Rd (East)	55	10	22	48
2	Franklin Blvd	Core Rd to Hood Franklin	57	14	30	65
3	Hood Franklin	Interstate 5 to Franklin Blvd	63	34	72	156
4	Bilby Rd	Franklin Blvd to Willard Pkwy	62	31	67	145
5	Dillard Rd	State Route 99 to Riley Rd	62	31	66	143
6	Grant Line Rd	Wilton Rd to Calvine Rd	68	71	152	328
7	Grant Line Rd	Elk Grove Blvd to Wilton Rd	67	66	142	306
8	Grant Line Rd	Bradshaw Rd to Elk Grove Blvd	65	50	107	230
9	Grant Line Rd	State Route 99 to Bradshaw Rd	68	70	151	326
10	Waterman Rd	Grant Line Rd to Elk Grove Blvd	63	35	75	162
11	Elk Grove Blvd	Elk Grove Florin Rd to Bradshaw Rd	66	55	118	253
12	Elk Grove Blvd	State Route 99 to Elk Grove Florin Rd	70	107	230	495
13	Elk Grove Blvd	Laguna Springs Dr to State Route 99	70	94	202	435
14	Elk Grove Florin	East Stockton Blvd to Elk Grove Blvd	61	25	54	117
15	Elk Grove Blvd	Interstate 5 to Franklin Blvd	68	79	170	366
16	Elk Grove Blvd	Franklin Blvd to Bruceville Rd	69	91	196	421
17	Bradshaw Rd	Grant Line Rd to Bond Rd	63	33	72	155
18	Interstate 5	Laguna Blvd to Meadowview Rd	81	527	1136	2448
19	Interstate 5	Elk Grove Blvd to Laguna Blvd	79	415	895	1927
20	Interstate 5	Hood Franklin Rd to Elk Grove Blvd	78	359	773	1665
21	Interstate 5	Twin Cities Rd to Hood Franklin Rd	78	330	711	1531
22	State Route 99	Arno Road to Dillard Rd	77	308	663	1429
23	State Route 99	Dillard Rd to Grant Line Rd	77	292	630	1357
24	State Route 99	Grant Line Rd to Elk Grove Blvd	78	329	710	1529
25	Kammerer Rd	Bruceville Rd to Hood Franklin Rd	56	12	27	57
26	Bruceville Rd	Lambert Rd to Point Pleasant Rd	57	15	31	68
27	Bruceville Rd	Eschinger Rd to Kammerer Rd	59	18	39	84
28	Bruceville Rd	Poppy Ridge Rd to Whitelock Pkwy	61	26	57	122
29	Bruceville Rd	Whitelock Pkwy to Terrazzo Dr	70	94	202	434

Source: Bollard Acoustical Consulting

Airport Noise

Sunset Skyranch Airport, also known as Elk Grove Airport, was located near the intersection of Grant Line Road and Bradshaw Road, just outside the city limits of Elk Grove. The airport was privately owned and operated, but is now closed. As a result, the SOIA is no longer influenced by noise from this airport.

Franklin Field is located on Bruceville Road approximately 2.6 miles south of the SOIA. Franklin Field is a visual flight rated (VFR) airport having two perpendicular runways: a north/south runway (18-36) that is 3,295 feet long and 60 feet wide, and an east/west runway (9-27) which is 31,000 feet long and 60 wide. A 650 feet by 250 feet run-up apron and a tie-down apron (430 feet by 120 feet) exist. A wind cone and segmented circle are maintained to assist pilots. There are a total of 42 tie-down spaces, 23 from transient aircraft. There are also four T-hangars. No fixed-base operator exists. The sole use of Franklin Field is by general aviation aircraft, both single and multi-engine types, for training and touch-and-go activity. Crop dusters also use the facility during the planting and spraying season. The noise contours for Franklin Field are reproduced in Appendix F.

Railroad Noise

There are two sets of railroad tracks operated within the SOIA. The Union Pacific Railroad (UPRR) tracks run from north to south near Franklin Boulevard near the western boundary of the SOIA. The Burlington Northern and Santa Fe Railroad (BNSF) tracks run from north to south through the SOIA near Highway 99.

As part of the City of Elk Grove General Plan Noise Element preparation, continuous noise monitoring of railroad activity was conducted on both the UPRR and BNSF tracks. The results were compared to similar data more recently collected in the area. Although daily train usage of these tracks varies, based upon the noise monitoring results it was determined that approximately twenty trains per day are operated along each set of tracks. The Sound Exposure Level (SEL) of individual trains was recorded along with the duration and maximum noise level during the monitoring program. The aggregate of the data collected indicates that at a distance of 100 feet, the average train operating on these tracks will produce an SEL of approximately 105 dB with usage of the warning horn, and approximately 100 dB without the usage of the horn. Trains are generally required to sound warning horns within 800 feet of at-grade crossings.

To determine the L_{dn} value associated with railroad operations, the following formula was used:

$$L_{dn} = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the mean measured SEL of the train events (105 with horn and 100 without), N_{eq} is the sum of the day plus 10 times the number of nighttime (10pm to 7am) train events, and 49.4 is ten times the logarithm of the number of seconds per day. Based upon this information, the L_{dn} at a distance of 100 feet due to activity on these tracks is approximately 75 dB and 70 dB with and without use of the horn, respectively. Using this information, the distances to railroad noise level contours were calculated and presented in Table 5.

Table 5
Estimated Distances to Railroad Noise Contours (feet)
Elk Grove, CA

UPRR & BNSF Tracks	60 dB L_{dn}	65 dB L_{dn}	70 dB L_{dn}
Without Horn	464	215	100
With Horn	1000	464	215

Source: Elk Grove Noise Element.

Regulatory Setting

The policies of the Noise Element of the Sacramento County (1993) General Plan which would apply to future development within the SOIA are as follows:

GOAL 1 To protect the citizens of Sacramento County from the harmful and annoying effects of exposure to excessive noise

GOAL 2 To protect the economic base of Sacramento County by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

Policies:

The following specific policies are adopted by Sacramento County to accomplish the goals of the Noise Element. Each policy is immediately followed by the identification of what the policy is intended to regulate, the type of noise source and the type of noise receptor.

NO-1 Noise created by new transportation* noise sources should be mitigated so as not to exceed 60 dB L_{dn}/CNEL** at the outdoor activity areas of any affected residential lands or land use situated in the unincorporated areas. When a practical application of the best available noise-reduction technology cannot achieve the 60dB L_{dn}/CNEL standard, then an exterior noise level of 65dB L_{dn}/CNEL may be allowed in outdoor activity areas.

Policy Regulates: Noise Sources
Noise Source Type: Transportation
Noise Receptor Type: Residential

Discussion: This policy will provide guidance when new roadways. Light or heavy rail-lines are proposed adjacent to residential areas. Mitigation measures such as soundwalls, berms, or other attenuation must achieve a 60 dB to 65 dB L_{dn}/CNEL in the outdoor area for the project to be consistent with this policy.

* For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways and railroad line operations. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations such as the Sacramento County Noise Control Ordinance. Areas affected by public use airport noise are subject to the Airport Land Use section and individual Comprehensive Land Use Policy.

** See Appendix A for glossary of these and other technical terms.

Further, there may be portions of the county where higher existing levels of ambient noise in residential areas make the 60 dB standard a hindrance to development otherwise typical in the area. In these instances, an exterior noise level of 65 dB L_{dn}/CNEL may be allowed in outdoor activity areas, provided that all practical exterior noise reduction measures are applied.

NO-2 Noise created by new nontransportation noise sources shall be mitigated so as not to exceed any of the noise level standards of Table II-1, as measured immediately within the property line of any affected residentially designated lands or residential land use situated in the unincorporated areas.

Policy Regulates: Noise Sources
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

NO-3 Where proposed nontransportation noise sources are likely to produce noise levels exceeding the performance standards of Table II-1 at existing or planned residential 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 II-2.)

Policy Regulates: Noise Sources
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

Discussion: New nontransportation noise sources subject to Policy NO-2. that fall within the 60 dB Ldn/CNEL contours lines portrayed on Noise Environment Map of Sacramento County (see back pocket) are also subject to Policy NO-3. Other circumstances exist which may justify an acoustical analysis including: the need for an analysis of future noise levels, multiple noise sources affecting a site (when single-source noise levels meet the standard), and other situations where there is reason to believe that noise levels are not, or will not remain, within the standards. Each of the noise standards in Table II-1 shall be decreased by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). As an example, a noise source which generates a constant noise level more than 30 minutes in an hour would be allowed to produce 50 dBA at a residential property line during daytime hours, and 45 dBA during nighttime hours. A noise source is allowed to produce a sound of no more than 70 dBA at a residential property line during daytime hours, and 65 dBA during nighttime hours. Note that a single survey of a site may be represented by more than one statistical descriptor, a result of the differing components of most noises. If either descriptor exceeds the allowed number of minutes in an hour, then the standard is exceeded.

Table 6
Noise Level Performance Standards[1]
For Residential Areas Affected by Non-Transportation Noise[2]
Sacramento County Noise Element

	Exterior Noise Level Standards (dBA)	
Statistical Noise Level Descriptor	**Daytime (7 a.m. – 10 p.m.)**	**Nighttime (10 p.m. – 7 a.m.)**
L_{50}	50	45
L_{max}	70	65

Notes:

1. These standards are for planning purposes and may vary from the standards of the County Noise Ordinance which are for enforcement purposes. For an explanation of the technical terminology, refer to Appendix A in the General Plan.

2. These standards apply to new or existing residential areas affected by new or existing nontransportation sources.

Table 7

Requirements for Acoustical Analysis

An acoustical analysis prepared pursuant to this Noise Element shall:

A. Be the responsibility of the applicant.

B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

D. Estimate projected future (20 year) noise levels in terms of L_{dn} or CNEL and/or the Standards of Tables 6, and compare those levels to the adopted policies of the Noise Element.

E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element. Where the noise source in question consist of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms evaluating possible sleep disturbance.

F. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

G. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

NO-4 Where residential land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding either 60 dB L_{dn}/CNEL or the performance standards of Table 6, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy Regulates: Noise Receptors
Noise Source Type: Nontransportation and Transportation
Noise Receptor Type: Residential

Discussion: Projects subject to Policy NO-5. or NO-7. which are deemed to fall within the boundaries of the geographical limits set by Figures II-2 and II-3 in the General Plan, are also subject to Policy NO-4. Other circumstances exist which may justify an acoustical analysis including the need for an analysis of future noise levels, where multiple noise sources affecting a site (when single-source noise levels meet the standard), or other situations where there is reason to believe that noise levels are not, or will not remain, within the standards.

NO-5 New residential development shall not be allowed where the noise level due to nontransportation noise sources will exceed the noise level standards of Table 6 as measured immediately within the property line of the new development.

Policy Regulates: Noise Receptors
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

NO-6 The compatibility of proposed nonresidential projects with existing and future noise levels due to transportation noise sources shall be evaluated through a comparison to Table 8, "Land Use Compatibility for Community Noise Environments" and Table 9, "Acceptable Noise Levels in Unoccupied Rooms", and to Figure II-4 in the General Plan for projects affected by aircraft noise.

Policy Regulates: Noise Receptors
Noise Source Type: Transportation
Noise Receptor Type: See Table 7-8, Figure II-4 in the GP

Table 8
Land Use Compatibility
Sacramento County Noise Element

Land Use Category	Acceptable, L_{dn}/CNEL	Conditionally Acceptable, L_{dn}/CNEL	Unacceptable, L_{dn}/CNEL
Residential	60	75	75+
Agricultural Residential	65	75	75+
Transient Lodging – Motels. Hotels	60	75	75+
Schools, Libraries, Churches, Hospitals, Nursing Homes	60	70	70+
Auditoriums, Concert Halls, Amphitheaters, Sports Arenas	60	75	75+
Playgrounds, Neighborhood Parks	70	75	75+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75	80	80+
Office Buildings, Business Commercial and Professional	65	75	75+
Industrial, Manufacturing Utilities, Agriculture	70	80	80+
Notes: This table is to be used to determine the necessity for an acoustical study based on the exterior pre-mitigation noise exposure level. Any mitigation must achieve noise levels that are in compliance with the policies of the Noise Element.			

NO-7 Proposed development of residential land uses should not be permitted: 1) In areas exposed to existing or projected levels of noise from transportation noise sources which exceed 60 dB to 65 dB L_{dn}/CNEL unless the project design includes effective mitigation measures to reduce noise to 60 dB to 65 dB L_{dn}/CNEL or less in outdoor activity areas, and 45 dB L_{dn}/CNEL or less in indoor areas; and 2) For 5 and 10 acre Agricultural-Residential land use the standard for exterior noise is also 60 dB to 65 dB L_{dn}/CNEL. The standard remains at 45 dB L_{dn}/CNEL for interior noise levels.

Policy Regulates: Noise Receptors
Noise Source Type: Transportation
Noise Receptor Type: Residential

Discussion: This policy applies to proposed residential projects adjacent to existing roadways or rail-lines generating high noise levels. If mitigation of the transportation noise cannot reduce outdoor noise to within the 60 dB to 65 dB L_{dn}/CNEL range and 45 dB L_{dn}/CNEL in indoor areas, the project is inconsistent with this policy.

Table 9
Acceptable Noise Levels in Unoccupied Rooms
Affected by Transportation Noise
Sacramento County Noise Element

Location	Average[1] Sound Level (dBA)	Average[1] Sound Level Location	(dBA)
Radio studios, recording studios	25-30	Music Rooms	30-35
Concert halls, large auditoriums	30-35	Theaters (speech)	30-35
Motion picture theaters	40-45	Churches	35-40
Conference rooms, small offices	40-45	Classrooms	35-45
Public offices (large), banks, stores	45-50	Hospitals	40-45
Restaurants, cafeterias	45-55	Court Rooms	40-45
Libraries	40-45		

Notes:

[1]Leq in worst-case hour during period of use.

Source: Handbook of Noise Control, Cyril M. Harris ed., Second Edition

Impacts and Mitigation Measures

Standards of Significance

CEQA guidelines state that implementation of a project would result in significant noise impacts if the project would result in any of the following:

1) Exposure of persons to, or generation of, noise levels in excess of standards established in the local plans or ordinances.

2) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

3) A substantial permanent increase in ambient noise levels in the project vicinity above levels without the project.

4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

5) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, where the project would expose people residing or working in the area to excessive noise levels.

6) For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

Thresholds for Determination of a Significant Noise Increase

Based on studies of test subject's reactions to changes in environmental noise levels, the Federal Interagency Commission on Noise (FICON) developed the following recommendations for thresholds to be used in assessing the significance of project-related noise level increases for transportation noise sources. Where background noise levels without the project would be less than 60 dB Ldn, a 5 dB or greater noise level increase due to the project is considered significant. Where background noise levels without the project would range from 60 to 65 dB Ldn, a 3 dB or greater noise level increase due to the project is considered significant. Finally, where background noise levels without the project would exceed 65 dB Ldn, a 1.5 dB or greater noise level increase due to the project is considered significant. This graduated scale is based on findings that people in quieter noise environments would tolerate larger increases in noise levels without adverse effects, whereas people already exposed to elevated noise levels exhibited adverse reactions to noise for smaller increases.

Methodology

Because this DEIR considers the impacts associated with development within the SOIA the following methodology was employed for the impact analysis. Noise impacts were identified for new noise-sensitive developments located within areas affected by substantial existing or future noise sources (e.g., aircraft, automobile or truck traffic, railroad lines, etc.). Noise impacts were also identified for noise-producing projects proposed near existing or proposed noise-sensitive areas.

Finally, noise impacts were evaluated by comparing traffic noise generation associated with SOIA development relative to existing conditions. The analysis assumes that all new development would comply with either the City of Elk Grove or Sacramento County General Plan noise standards, depending on which are applicable to the SOIA at the time of development.

Analysis of Future Traffic Noise Levels

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), with CALVENO noise emission levels, was used to predict traffic noise levels within the SOIA. Table 9 shows the predicted Ldn values at a reference distance of 100 feet from the roadway centerlines. Table 9 also shows the existing traffic noise levels and the degree by which existing levels will increase upon General Plan Buildout. The complete listing of FHWA Model inputs and results are provided in Appendices C-E.

Table 9
Predicted Traffic Noise Level and Project-Related Traffic Noise Level Increases
City of Elk Grove Sphere of Influence – Elk Grove, California

		Ldn @ 100 Feet					
Road	**Segment**	**Exist**	**Exist + Proj.**	**Change**	**Cumulative**	**Cum. + Proj.**	**Change**
Lambert Blvd	Bruceville Rd (West) to Bruceville Rd (East)	55	62	7	55	63	8
Franklin Blvd	Core Rd to Hood Franklin	57	70	13	57	61	4
Hood Franklin Rd	Interstate 5 to Franklin Blvd	63	66	3	66	70	4
Bilby Rd	Franklin Blvd to Willard Pkwy	62	66	4	65	66	1
Dillard Rd	State Route 99 to Riley Rd	62	64	2	62	62	0
Grant Line Rd	Wilton Rd to Calvine Rd	68	68	0	70	71	1
Grant Line Rd	Elk Grove Blvd to Wilton Rd	67	69	2	70	71	1
Grant Line Rd	Bradshaw Rd to Elk Grove Blvd	65	67	2	69	69	0
Grant Line Rd	State Route 99 to Bradshaw Rd	68	70	2	70	72	2
Waterman Rd	Grant Line Rd to Elk Grove Blvd	63	66	3	65	68	3
Elk Grove Blvd	Elk Grove Florin Rd to Bradshaw Rd	66	67	1	69	69	0
Elk Grove Blvd	State Route 99 to Elk Grove Florin Rd	70	71	1	71	72	1
Elk Grove Blvd	Laguna Springs Dr to State Route 99	70	71	1	71	71	0
Elk Grove Florin Blvd	East Stockton Blvd to Elk Grove Blvd	61	64	3	61	63	2
Elk Grove Blvd	Interstate 5 to Franklin Blvd	68	69	1	68	68	0
Elk Grove Blvd	Franklin Blvd to Bruceville Rd	69	70	1	70	70	0
Bradshaw Rd	Grant Line Rd to Bond Rd	63	66	3	65	68	3
Interstate 5	Laguna Blvd to Meadowview Rd	81	81	0	81	82	1
Interstate 5	Elk Grove Blvd to Laguna Blvd	79	80	1	80	81	1
Interstate 5	Hood Franklin Rd to Elk Grove Blvd	78	79	1	79	80	1
Interstate 5	Twin Cities Rd to Hood Franklin Rd	78	78	0	79	79	0
State Route 99	Arno Road to Dillard Rd	77	77	0	78	78	0
State Route 99	Dillard Rd to Grant Line Rd	77	77	0	78	78	0
State Route 99	Grant Line Rd to Elk Grove Blvd	78	79	1	79	79	0
Kammerer Rd	Bruceville Rd to Hood Franklin Rd	56	66	10	62	68	6
Bruceville Rd	Lambert Rd to Point Pleasant Rd	57	63	6	57	63	6
Bruceville Rd	Eschinger Rd to Kammerer Rd	59	70	11	59	69	10
Bruceville Rd	Poppy Ridge Rd to Whitelock Pkwy	61	69	8	61	68	7
Bruceville Rd	Whitelock Pkwy to Terrazzo Dr	70	70	0	70	71	1

Sources: Bollard Acoustical Consultants, Inc., FHWA RD-77-108

Note: Shaded cells represent significant project-related traffic noise increases.

Project Impacts and Mitigation Measures

Impact 1 Development within the SOIA would increase existing traffic noise levels at noise-sensitive land uses.

Development within the SOIA would result in increased traffic noise along roadways used by project-generated traffic. As indicated in Table 9, the traffic noise increases associated with such development would range from 0 to 13 dB L_{dn} relative to existing conditions. The project-related increases would exceed the project thresholds of significance on thirteen (13) roadway segments. As a result, this impact is considered ***significant***.

Mitigation Measure

As discussed above, a significant traffic noise impact is identified along 14 roadway segments. While repaving of the affected segments using open-graded asphalt, rubberized asphalt or similar material could reduce traffic noise levels 4 dB, thereby reducing this impact to a level of insignificance along some segments, this measure would not provide the required to degree of noise reduction to fully mitigate this impact along all affected roadway segments. In addition, due to driveway access requirements and other physical constraints, the construction of solid noise barriers at the existing residences located along these impacted sections is similarly considered infeasible. As a result, this impact is considered ***significant and unavoidable.***

Impact 2 Future noise-sensitive land uses developed within the SOIA could be exposed to elevated noise levels from both transportation and non-transportation noise sources.

Although there are no specific proposals for noise-sensitive or noise-generating development within the SOIA, future development within the SOIA will likely result in noise-sensitive land uses being exposed to noise levels in excess of the Sacramento County Noise Element standards. For example, development of residential uses within the railroad noise contour distances shown in Table 5 or adjacent to the major roadways identified in Table 9 would result in exceedance of the County's noise standards.

Noise mitigation measures required of future noise-sensitive or noise-generating land uses proposed within the SOIA will vary. General noise mitigation options are described in the Environmental Setting section of this report. Detailed mitigation requirements will depend on several variables including project design, sensitivity or noise-generating potential of the project, site grading, natural and man-made shielding, proximity to noise sources or sensitive receptors, etc. The Sacramento County Noise Element Policies and Implementation Measures were specifically developed to anticipate such impacts and to require the preparation of noise studies in such cases so that appropriate noise mitigation is included with each project. Because the County's General Plan Noise Element Policies require that a project's noise generation or exposure does not exceed the County's noise standards at sensitive receptors, this impact is self-mitigating. As a result, this impact is considered ***less than significant***.

Cumulative Setting, Impacts and Mitigation Measures

The buildout of the SOIA will invariably affect the future (cumulative) ambient noise environment within Sacramento County and the City of Elk Grove through increased noise from traffic and the development of local non-transportation noise sources. While it is difficult to project exactly how the ambient noise conditions will change following buildout of the SOIA, it is known that traffic noise levels will increase on a regional basis due to the additional traffic generated by buildout of various land use designations which have yet to be developed. Specifically, Table 9 shows the projected traffic noise levels at a reference distance of 100 feet from the various roadway centerlines for the cumulative buildout of the SOIA. It should be noted that Table 9 is intended to illustrate relative changes in traffic noise exposure due to development within the SOIA. Absolute traffic noise levels will depend on additional factors such as local shielding, distance to the roadway, etc.

Changes in railroad noise environments in the SOIA are difficult to predict. This is because rail lines affecting the SOIA are operating on fairly busy schedules currently, and there are limits to the number of operations a set of tracks can accommodate. Although no future growth information was available from the railroad operators, given the current operations it is unlikely the railroad tracks within the SOIA could accommodate even a doubling of traffic in the future, which would result in a 3 dB increase in railroad noise exposure along the tracks. As a result, future railroad noise levels are not predicted to significantly exceed existing conditions.

Changes in noise associated with non-transportation noise sources are similarly difficult to predict. Although new non-transportation noise sources such as grocery store loading docks and auto-repair facilities, to name a few, would result in localized increases in ambient noise conditions, the level of noise such new uses would be allowed to generate is regulated by the noise standards of the County's General Plan Noise Element.

Cumulative Noise Impacts

Impact 3 Development within the SOIA would increase cumulative traffic noise levels at noise-sensitive land uses.

Development within the SOIA would result in increased traffic noise along roadways used by project-generated traffic. As indicated in Table 9, the traffic noise increases associated with such development would range from 0 to 10 dB L_{dn} relative to cumulative conditions without the project. The project-related increases would exceed the project thresholds of significance on nine (9) roadway segments. As a result, this impact is considered ***significant***.

Mitigation Measure

As discussed above, a significant traffic noise impact is identified along nine (9) roadway segments. While repaving of the affected segments using open-graded asphalt, rubberized asphalt or similar material could reduce traffic noise levels 4 dB, thereby reducing this impact to a level of insignificance along some segments, this measure would not provide the required to degree of noise reduction to fully mitigate this impact along all affected roadway segments. In addition, due to driveway access requirements and other physical constraints, the construction of solid noise

barriers at the existing residences located along these impacted sections is similarly considered infeasible. As a result, this impact is considered **Significant and Unavoidable**.

Appendix A-1

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site A
October 18-19, 2010

Hour	Leq	Lmax	L50	L90
14:00	55	74	49	44
15:00	50	66	48	44
16:00	52	67	50	46
17:00	52	61	52	48
18:00	54	62	54	50
19:00	54	65	53	50
20:00	54	63	53	50
21:00	52	62	51	47
22:00	52	63	51	48
23:00	50	60	48	44
0:00	49	65	47	43
1:00	50	68	48	43
2:00	51	63	50	46
3:00	50	70	48	45
4:00	55	65	54	51
5:00	55	64	54	50
6:00	55	62	55	50
7:00	58	68	58	55
8:00	56	75	54	47
9:00	52	66	50	43
10:00	53	75	50	46
11:00	48	69	46	40
12:00	48	67	45	41
13:00	48	64	46	41

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	58.0	47.9	53.2	55.3	48.6	52.5
Lmax (Maximum)	75.3	60.6	66.9	70.2	59.8	64.3
L50 (Median)	57.8	45.5	50.5	54.6	47.3	50.5
L90 (Background)	55.1	40.4	46.2	51.0	43.3	46.7

Computed Ldn, dB	59.0
% Daytime Energy	67%
% Nighttime Energy	33%

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Appendix A-2

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site A
October 19-20, 2010

Hour	Leq	Lmax	L50	L90
14:00	51	67	48	43
15:00	53	71	48	44
16:00	51	71	49	43
17:00	54	77	50	46
18:00	54	65	53	49
19:00	53	68	52	49
20:00	54	65	53	50
21:00	54	61	53	50
22:00	53	62	52	50
23:00	52	63	51	48
0:00	51	65	49	43
1:00	48	57	47	43
2:00	47	57	46	41
3:00	47	59	45	41
4:00	51	62	49	45
5:00	55	77	54	50
6:00	58	62	57	54
7:00	60	67	60	59
8:00	59	90	56	52
9:00	55	75	51	47
10:00	55	70	53	44
11:00	49	72	46	43
12:00	54	75	49	44
13:00	50	61	49	44

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	60.4	48.5	54.9	57.6	46.8	52.5
Lmax (Maximum)	89.8	61.3	70.3	76.7	56.6	62.6
L50 (Median)	60.3	46.5	51.4	57.1	45.3	50.0
L90 (Background)	58.5	42.5	47.1	54.2	40.8	46.3

Computed Ldn, dB	59.3
% Daytime Energy	74%
% Nighttime Energy	26%

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Appendix A-3

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site B
October 26-27, 2010

Hour	Leq	Lmax	L50	L90
10:00	53	82	43	40
11:00	51	78	44	40
12:00	47	67	43	39
13:00	48	69	41	37
14:00	51	74	43	38
15:00	49	69	43	39
16:00	56	85	43	39
17:00	53	76	44	39
18:00	48	68	40	37
19:00	44	63	36	34
20:00	39	57	35	33
21:00	42	59	36	33
22:00	43	60	37	34
23:00	37	57	34	32
0:00	48	67	36	33
1:00	44	69	37	34
2:00	37	66	35	34
3:00	46	69	37	34
4:00	41	60	37	35
5:00	40	59	39	36
6:00	47	66	42	39
7:00	51	70	46	43
8:00	52	80	47	45
9:00	48	68	45	43

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	56.2	38.9	50.6	47.8	36.6	44.0
Lmax (Maximum)	84.6	57.5	71.0	68.8	57.5	63.7
L50 (Median)	46.9	34.8	42.0	41.5	34.3	36.9
L90 (Background)	44.8	33.1	38.5	39.4	32.3	34.7

Computed Ldn, dB	52.2
% Daytime Energy	88%
% Nighttime Energy	12%

Appendix A-4

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site B
October 27-28, 2010

Hour	Leq	Lmax	L50	L90
10:00	47	64	43	40
11:00	51	83	39	35
12:00	46	69	41	37
13:00	46	68	40	36
14:00	46	64	43	37
15:00	51	67	42	34
16:00	45	63	40	36
17:00	47	63	42	37
18:00	43	60	39	36
19:00	40	55	38	34
20:00	40	53	39	37
21:00	42	60	39	36
22:00	39	58	34	31
23:00	37	59	33	30
0:00	41	55	34	32
1:00	46	66	37	35
2:00	37	45	37	35
3:00	37	46	37	35
4:00	43	67	39	37
5:00	42	56	41	40
6:00	46	56	44	42
7:00	50	71	47	44
8:00	52	80	46	44
9:00	50	71	46	43

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	52.5	40.4	47.9	46.1	37.1	42.3
Lmax (Maximum)	82.9	53.4	66.1	66.9	44.5	56.4
L50 (Median)	47.4	38.2	41.7	44.2	33.5	37.4
L90 (Background)	44.3	33.9	37.7	42.2	30.3	35.2

Computed Ldn, dB	50.1
% Daytime Energy	86%
% Nighttime Energy	14%

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Appendix A-5

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site C
October 18-19, 2010

Hour	Leq	Lmax	L50	L90
15:00	60	76	46	38
16:00	48	62	46	41
17:00	50	62	49	47
18:00	50	61	50	47
19:00	52	61	52	50
20:00	53	72	52	51
21:00	53	67	52	51
22:00	52	62	52	49
23:00	51	63	50	49
0:00	49	64	48	45
1:00	49	72	48	45
2:00	49	69	47	44
3:00	49	67	46	42
4:00	49	71	46	41
5:00	51	64	48	43
6:00	53	66	52	48
7:00	55	65	55	52
8:00	54	73	52	47
9:00	50	68	46	39
10:00	47	64	43	36
11:00	47	71	42	35
12:00	49	69	42	35
13:00	54	79	43	36
14:00	48	71	43	36

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	60.4	47.1	53.1	53.3	48.7	50.5
Lmax (Maximum)	78.8	60.8	68.0	71.9	62.4	66.5
L50 (Median)	54.6	41.7	47.5	52.3	46.0	48.7
L90 (Background)	51.6	35.2	42.8	49.3	41.3	45.2

Computed Ldn, dB	57.4
% Daytime Energy	75%
% Nighttime Energy	25%

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Appendix A-6

City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site C
October 19-20, 2010

Hour	Leq	Lmax	L50	L90
15:00	48	71	45	38
16:00	47	65	45	40
17:00	49	68	47	42
18:00	49	64	48	43
19:00	52	59	52	50
20:00	53	61	53	51
21:00	52	60	51	49
22:00	51	58	51	48
23:00	51	64	51	49
0:00	51	61	51	49
1:00	51	60	51	48
2:00	50	55	50	48
3:00	52	70	51	49
4:00	51	59	51	49
5:00	51	65	50	47
6:00	53	65	52	48
7:00	55	69	54	51
8:00	52	70	51	46
9:00	49	62	46	41
10:00	50	72	44	39
11:00	48	75	44	38
12:00	52	71	44	38
13:00	49	66	44	37
14:00	50	69	45	38

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	55.1	47.1	50.9	53.2	49.9	51.3
Lmax (Maximum)	74.7	58.9	66.7	69.7	54.6	61.7
L50 (Median)	54.3	43.7	47.5	52.0	49.8	50.8
L90 (Background)	51.4	37.3	42.8	49.4	46.6	48.3

Computed Ldn, dB	57.7
% Daytime Energy	60%
% Nighttime Energy	40%

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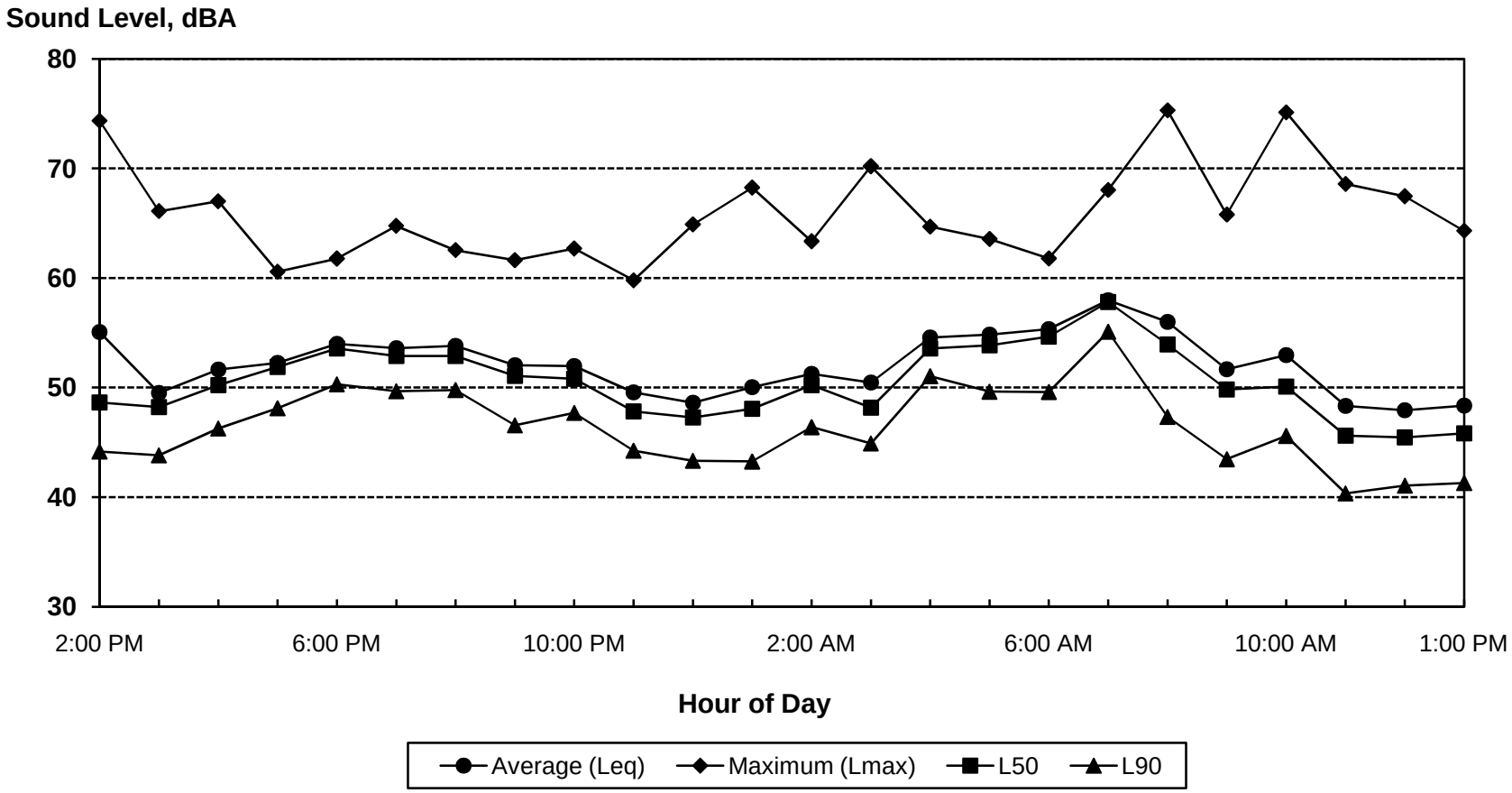
Appendix B-1
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site A
October 18-19, 2010



Ldn: 59 dB

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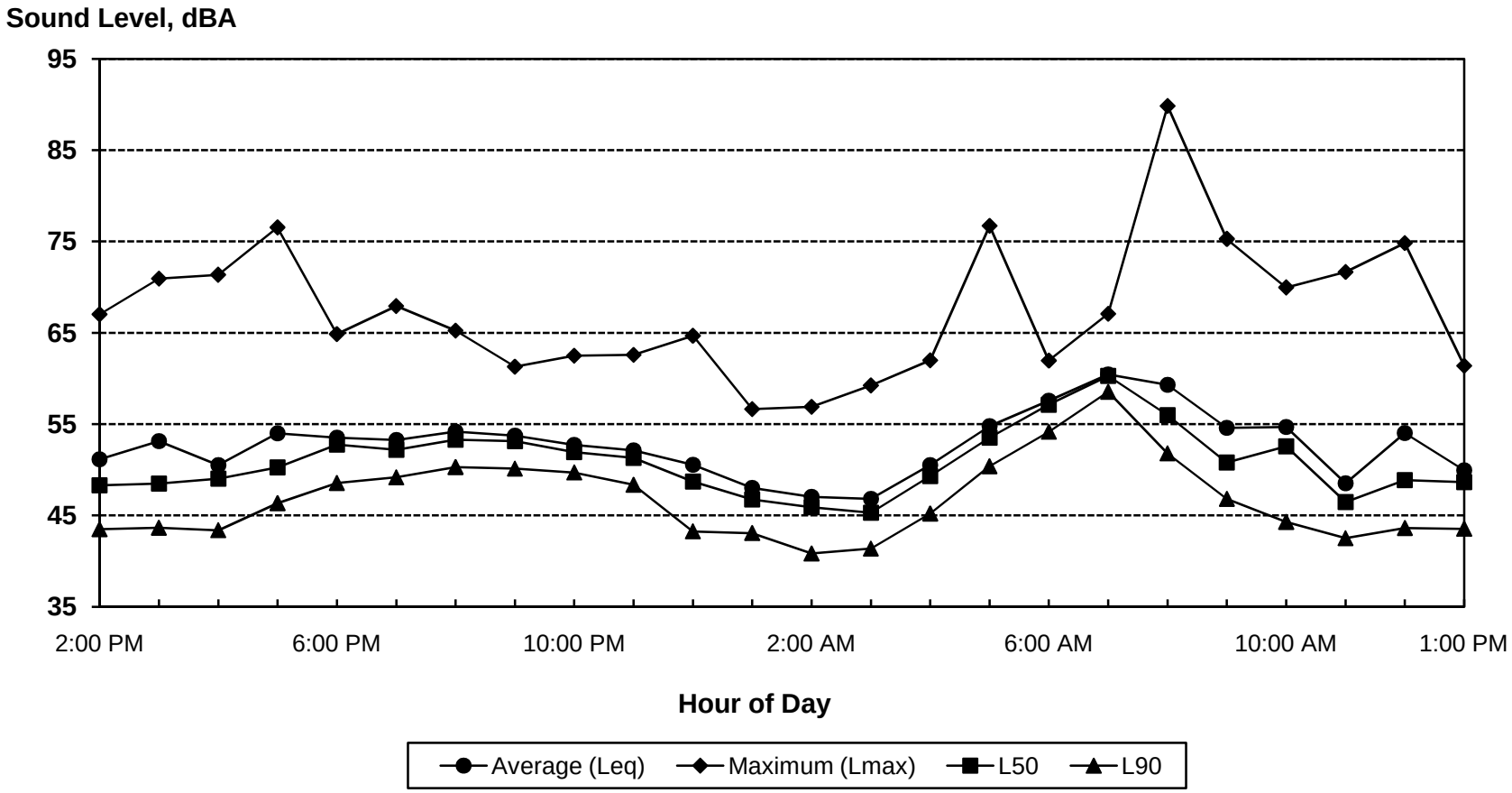
Acoustical Consultants

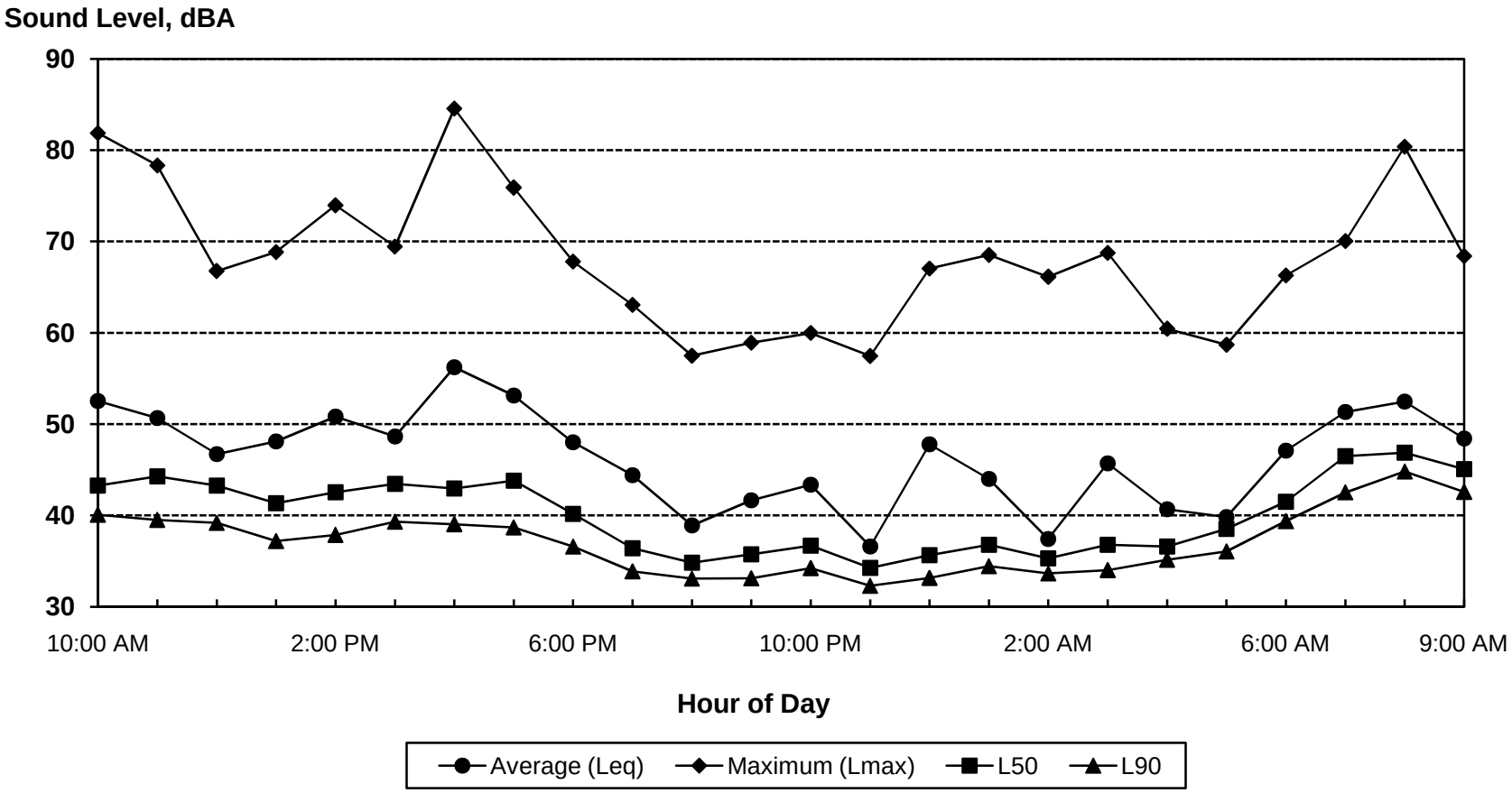
Appendix B-2
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site A
October 19-20, 2010



Ldn: 59 dB

BOLLARD
Acoustical Consultants

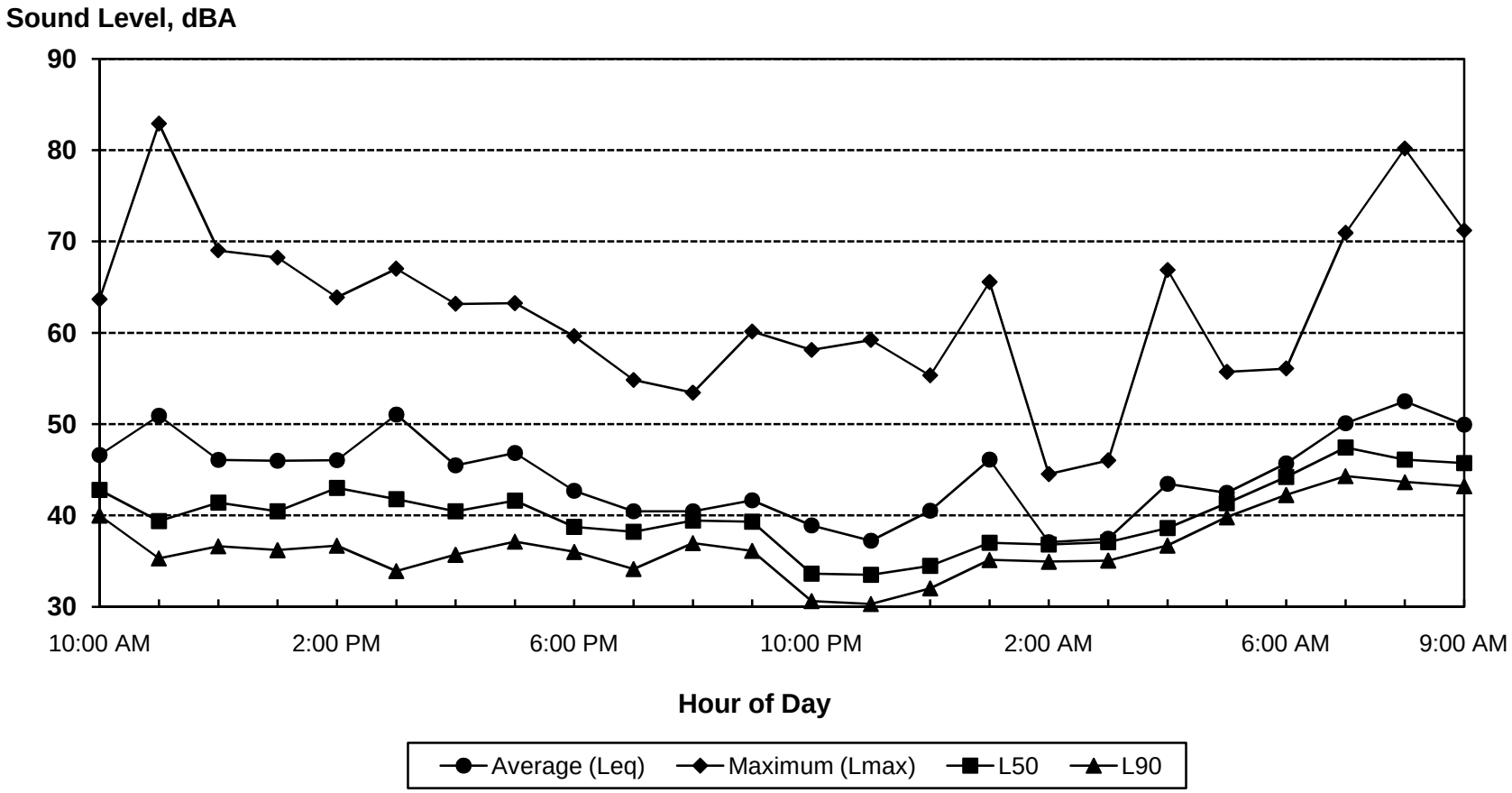
Appendix B-3
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site B
October 26-27, 2010



Ldn: 52 dB

BOLLARD
Acoustical Consultants

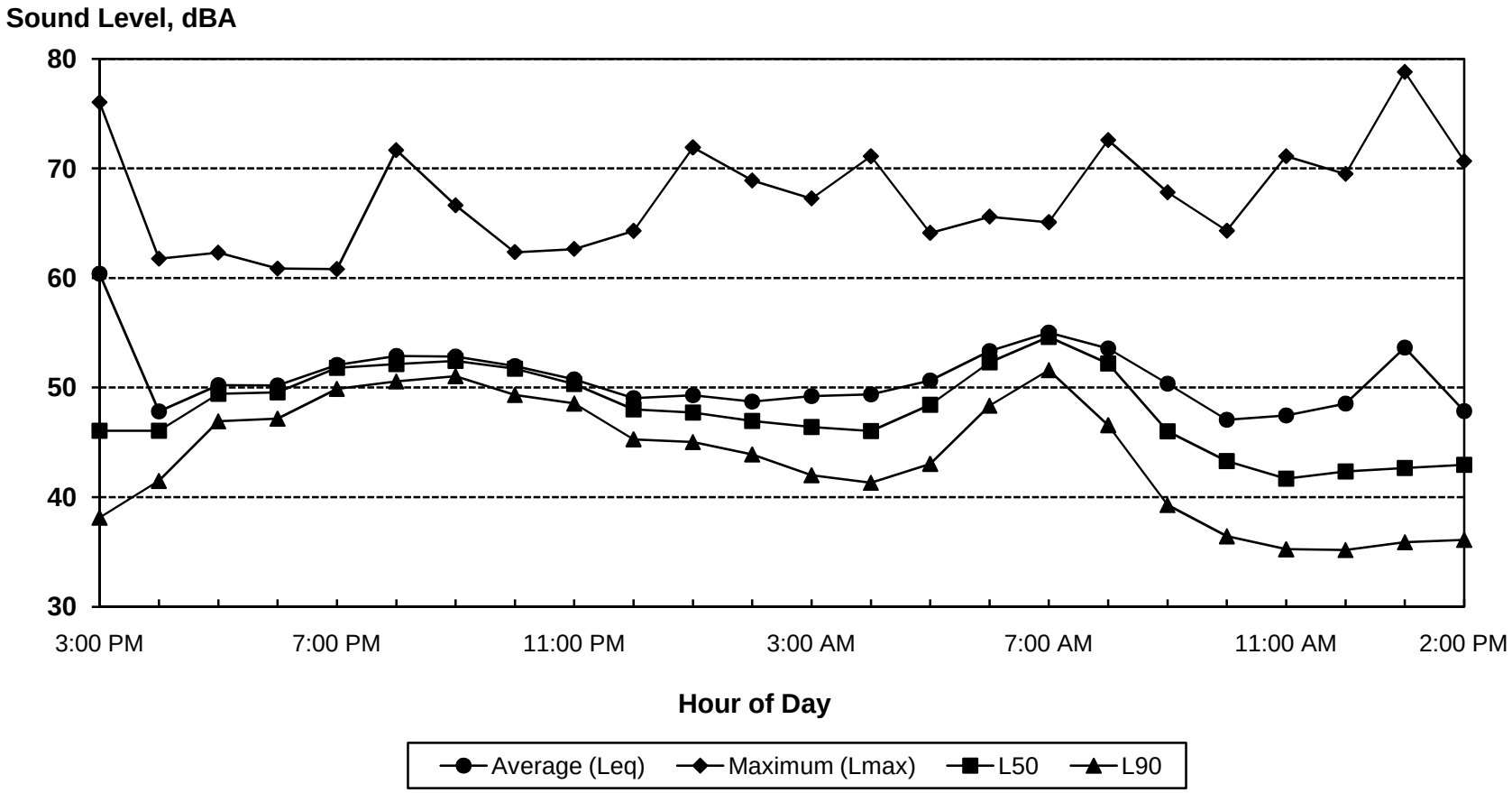
Appendix B-4
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site B
October 27-28, 2010



Ldn: 50 dB

BOLLARD
Acoustical Consultants

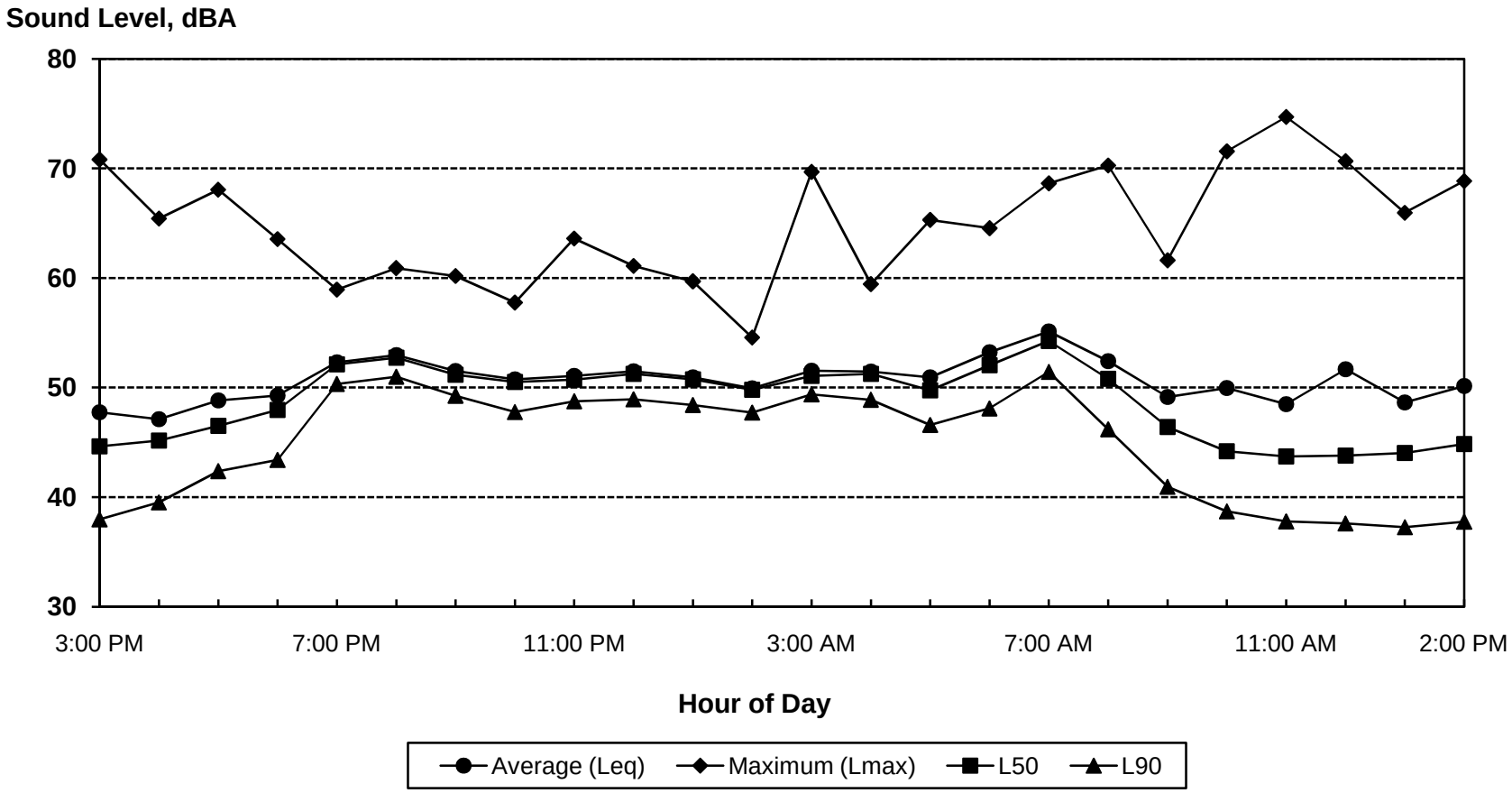
Appendix B-5
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site C
October 18-19, 2010



Ldn: 57 dB

BOLLARD
Acoustical Consultants

Appendix B-6
City of Elk Grove Sphere of Influence
24hr Continuous Noise Monitoring - Site C
October 19-20, 2010



Ldn: 58 dB

BOLLARD
Acoustical Consultants

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description						% Med.	% Hvy.			Offset
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	Trucks	Trucks	Speed	Distance	(dB)
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	898	83		17	2	2	55	100	
2	Franklin Blvd	Core Rd	Hood Franklin Rd	1,435	83		17	2	2	55	100	
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	5,295	83		17	2	2	55	100	
4	Bilby Rd	Franklin Blvd	Willard Pkwy	4,771	83		17	2	2	55	100	
5	Dillard Rd	State Route 99	Riley Rd	4,676	83		17	2	2	55	100	
6	Grant Line Rd	Wilton Rd	Calvine Rd	16,200	83		17	2	2	55	100	
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	14,627	83		17	2	2	55	100	
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	9,525	83		17	2	2	55	100	
9	Grant Line Rd	State Route 99	Bradshaw Rd	16,081	83		17	2	2	55	100	
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	5,630	83		17	2	2	55	100	
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	13,800	83		17	2	2	50	100	
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	37,700	83		17	2	2	50	100	
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	31,028	83		17	2	2	50	100	
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	5,504	83		17	2	2	45	100	
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	24,000	83		17	2	2	50	100	
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	29,600	83		17	2	2	50	100	
17	Bradshaw Rd	Grant Line Rd	Bond Rd	5,247	83		17	2	2	55	100	
18	Interstate 5	Laguna Blvd	Meadowview Rd	98,361	83		17	6	19	65	100	
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	68,724	83		17	6	19	65	100	
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	55,199	83		17	6	19	65	100	
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	48,642	83		17	6	19	65	100	
22	State Route 99	Arno Rd	Dillard Rd	67,570	83		17	4	8	65	100	
23	State Route 99	Dillard Rd	Grant Line Rd	62,520	83		17	4	8	65	100	
24	State Route 99	Grant Line Rd	Elk Grove Blvd	67,395	83		17	5	10	65	100	
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	1,900	83		17	2	2	45	100	

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	1,523	83		17	2	2	55	100	
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	2,100	83		17	2	2	55	100	
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	3,700	83		17	2	2	55	100	
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	24,700	83		17	2	2	55	100	

Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description						% Med.	% Hvy.			Offset
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	Trucks	Trucks	Speed	Distance	(dB)
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	4,820	83		17	2	2	55	100	
2	Franklin Blvd	Core Rd	Hood Franklin Rd	27,550	83		17	2	2	55	100	
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	12,130	83		17	2	2	55	100	
4	Bilby Rd	Franklin Blvd	Willard Pkwy	9,850	83		17	2	2	55	100	
5	Dillard Rd	State Route 99	Riley Rd	6,420	83		17	2	2	55	100	
6	Grant Line Rd	Wilton Rd	Calvine Rd	18,630	83		17	2	2	55	100	
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	23,810	83		17	2	2	55	100	
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	12,890	83		17	2	2	55	100	
9	Grant Line Rd	State Route 99	Bradshaw Rd	26,580	83		17	2	2	55	100	
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	10,520	83		17	2	2	55	100	
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	18,560	83		17	2	2	50	100	
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	43,710	83		17	2	2	50	100	
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	43,260	83		17	2	2	50	100	
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	10,420	83		17	2	2	45	100	
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	26,000	83		17	2	2	50	100	
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	32,370	83		17	2	2	50	100	
17	Bradshaw Rd	Grant Line Rd	Bond Rd	11,670	83		17	2	2	55	100	
18	Interstate 5	Laguna Blvd	Meadowview Rd	103,430	83		17	6	19	65	100	
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	77,750	83		17	6	19	65	100	
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	66,530	83		17	6	19	65	100	
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	48,650	83		17	6	19	65	100	
22	State Route 99	Arno Rd	Dillard Rd	69,510	83		17	4	8	65	100	
23	State Route 99	Dillard Rd	Grant Line Rd	67,560	83		17	4	8	65	100	
24	State Route 99	Grant Line Rd	Elk Grove Blvd	92,830	83		17	5	10	65	100	
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	17,080	83		17	2	2	45	100	

Appendix C-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description										
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	5,450	83		17	2	2	55	100	
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	29,330	83		17	2	2	55	100	
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	22,640	83		17	2	2	55	100	
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	27,450	83		17	2	2	55	100	

Appendix C-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description						% Med.	% Hvy.			Offset
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	Trucks	Trucks	Speed	Distance	(dB)
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	900	83		17	2	2	55	100	
2	Franklin Blvd	Core Rd	Hood Franklin Rd	1,440	83		17	2	2	55	100	
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	12,090	83		17	2	2	55	100	
4	Bilby Rd	Franklin Blvd	Willard Pkwy	8,350	83		17	2	2	55	100	
5	Dillard Rd	State Route 99	Riley Rd	4,680	83		17	2	2	55	100	
6	Grant Line Rd	Wilton Rd	Calvine Rd	28,230	83		17	2	2	55	100	
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	28,690	83		17	2	2	55	100	
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	20,870	83		17	2	2	55	100	
9	Grant Line Rd	State Route 99	Bradshaw Rd	25,380	83		17	2	2	55	100	
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	9,320	83		17	2	2	55	100	
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	25,850	83		17	2	2	50	100	
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	46,090	83		17	2	2	50	100	
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	42,470	83		17	2	2	50	100	
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	5,740	83		17	2	2	45	100	
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	24,010	83		17	2	2	50	100	
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	31,460	83		17	2	2	50	100	
17	Bradshaw Rd	Grant Line Rd	Bond Rd	7,890	83		17	2	2	55	100	
18	Interstate 5	Laguna Blvd	Meadowview Rd	111,690	83		17	6	19	65	100	
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	80,380	83		17	6	19	65	100	
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	66,300	83		17	6	19	65	100	
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	64,100	83		17	6	19	65	100	
22	State Route 99	Arno Rd	Dillard Rd	82,750	83		17	4	8	65	100	
23	State Route 99	Dillard Rd	Grant Line Rd	77,960	83		17	4	8	65	100	
24	State Route 99	Grant Line Rd	Elk Grove Blvd	82,510	83		17	5	10	65	100	
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	7,650	83		17	2	2	45	100	

Appendix C-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	1,530	83		17	2	2	55	100	
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	2,110	83		17	2	2	55	100	
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	3,710	83		17	2	2	55	100	
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	24,710	83		17	2	2	55	100	

Appendix C-7

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description						% Med.	% Hvy.			Offset
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	Trucks	Trucks	Speed	Distance	(dB)
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	5,320	83		17	2	2	55	100	
2	Franklin Blvd	Core Rd	Hood Franklin Rd	3,650	83		17	2	2	55	100	
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	26,300	83		17	2	2	55	100	
4	Bilby Rd	Franklin Blvd	Willard Pkwy	11,620	83		17	2	2	55	100	
5	Dillard Rd	State Route 99	Riley Rd	4,680	83		17	2	2	55	100	
6	Grant Line Rd	Wilton Rd	Calvine Rd	32,490	83		17	2	2	55	100	
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	33,270	83		17	2	2	55	100	
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	23,430	83		17	2	2	55	100	
9	Grant Line Rd	State Route 99	Bradshaw Rd	41,590	83		17	2	2	55	100	
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	15,650	83		17	2	2	55	100	
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	30,300	83		17	2	2	50	100	
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	48,710	83		17	2	2	50	100	
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	45,690	83		17	2	2	50	100	
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	9,000	83		17	2	2	45	100	
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	24,010	83		17	2	2	50	100	
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	32,520	83		17	2	2	50	100	
17	Bradshaw Rd	Grant Line Rd	Bond Rd	17,030	83		17	2	2	55	100	
18	Interstate 5	Laguna Blvd	Meadowview Rd	123,330	83		17	6	19	65	100	
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	93,220	83		17	6	19	65	100	
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	80,040	83		17	6	19	65	100	
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	61,740	83		17	6	19	65	100	
22	State Route 99	Arno Rd	Dillard Rd	85,780	83		17	4	8	65	100	
23	State Route 99	Dillard Rd	Grant Line Rd	83,720	83		17	4	8	65	100	
24	State Route 99	Grant Line Rd	Elk Grove Blvd	99,110	83		17	5	10	65	100	
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	25,820	83		17	2	2	45	100	

Appendix C-8

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description										
Segment	Roadway Name	From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	5,940	83		17	2	2	55	100	
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	19,340	83		17	2	2	55	100	
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	17,680	83		17	2	2	55	100	
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	30,680	83		17	2	2	55	100	

Appendix D-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	53.8	44.1	48.0	55
2	Franklin Blvd	Core Rd	Hood Franklin Rd	55.8	46.1	50.1	57
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	61.5	51.8	55.7	63
4	Bilby Rd	Franklin Blvd	Willard Pkwy	61.1	51.3	55.3	62
5	Dillard Rd	State Route 99	Riley Rd	61.0	51.3	55.2	62
6	Grant Line Rd	Wilton Rd	Calvine Rd	66.4	56.6	60.6	68
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	65.9	56.2	60.1	67
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	64.1	54.3	58.3	65
9	Grant Line Rd	State Route 99	Bradshaw Rd	66.3	56.6	60.6	68
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	61.8	52.1	56.0	63
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	64.5	55.3	59.5	66
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	68.8	59.7	63.9	70
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	68.0	58.8	63.0	70
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	59.2	50.6	55.1	61
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	66.9	57.7	61.9	68
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	67.8	58.6	62.8	69
17	Bradshaw Rd	Grant Line Rd	Bond Rd	61.5	51.8	55.7	63
18	Interstate 5	Laguna Blvd	Meadowview Rd	75.2	70.4	78.9	81
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	73.7	68.8	77.3	79
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	72.7	67.9	76.4	78
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	72.2	67.3	75.8	78
22	State Route 99	Arno Rd	Dillard Rd	74.3	67.0	73.5	77
23	State Route 99	Dillard Rd	Grant Line Rd	73.9	66.7	73.1	77
24	State Route 99	Grant Line Rd	Elk Grove Blvd	74.1	68.0	74.4	78
25	Kammerer Rd	Bruceville Rd		54.5	46.0	50.5	56

Appendix D-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	56.1	46.4	50.3	57
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	57.5	47.8	51.7	59
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	59.9	50.2	54.2	61
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	68.2	58.5	62.4	70

Appendix D-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	61.1	51.4	55.3	62
2	Franklin Blvd	Core Rd	Hood Franklin Rd	68.7	59.0	62.9	70
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	65.1	55.4	59.3	66
4	Bilby Rd	Franklin Blvd	Willard Pkwy	64.2	54.5	58.4	66
5	Dillard Rd	State Route 99	Riley Rd	62.3	52.6	56.6	64
6	Grant Line Rd	Wilton Rd	Calvine Rd	67.0	57.3	61.2	68
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	68.0	58.3	62.3	69
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	65.4	55.7	59.6	67
9	Grant Line Rd	State Route 99	Bradshaw Rd	68.5	58.8	62.7	70
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	64.5	54.8	58.7	66
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	65.8	56.6	60.8	67
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	69.5	60.3	64.5	71
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	69.4	60.3	64.5	71
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	61.9	53.4	57.9	64
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	67.2	58.1	62.3	69
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	68.2	59.0	63.2	70
17	Bradshaw Rd	Grant Line Rd	Bond Rd	64.9	55.2	59.2	66
18	Interstate 5	Laguna Blvd	Meadowview Rd	75.4	70.6	79.1	81
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	74.2	69.4	77.8	80
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	73.5	68.7	77.2	79
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	72.2	67.3	75.8	78
22	State Route 99	Arno Rd	Dillard Rd	74.4	67.1	73.6	77
23	State Route 99	Dillard Rd	Grant Line Rd	74.3	67.0	73.5	77
24	State Route 99	Grant Line Rd	Elk Grove Blvd	75.5	69.3	75.8	79
25	Kammerer Rd	Bruceville Rd		64.1	55.5	60.0	66

Appendix D-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	61.6	51.9	55.9	63
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	68.9	59.2	63.2	70
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	67.8	58.1	62.0	69
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	68.7	58.9	62.9	70

Appendix D-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	53.8	44.1	48.0	55
2	Franklin Blvd	Core Rd	Hood Franklin Rd	55.8	46.1	50.1	57
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	65.1	55.4	59.3	66
4	Bilby Rd	Franklin Blvd	Willard Pkwy	63.5	53.8	57.7	65
5	Dillard Rd	State Route 99	Riley Rd	61.0	51.3	55.2	62
6	Grant Line Rd	Wilton Rd	Calvine Rd	68.8	59.1	63.0	70
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	68.8	59.1	63.1	70
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	67.5	57.7	61.7	69
9	Grant Line Rd	State Route 99	Bradshaw Rd	68.3	58.6	62.5	70
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	64.0	54.2	58.2	65
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	67.2	58.0	62.2	69
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	69.7	60.5	64.7	71
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	69.4	60.2	64.4	71
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	59.3	50.8	55.3	61
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	66.9	57.7	61.9	68
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	68.1	58.9	63.1	70
17	Bradshaw Rd	Grant Line Rd	Bond Rd	63.2	53.5	57.5	65
18	Interstate 5	Laguna Blvd	Meadowview Rd	75.8	70.9	79.4	81
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	74.3	69.5	78.0	80
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	73.5	68.7	77.2	79
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	73.4	68.5	77.0	79
22	State Route 99	Arno Rd	Dillard Rd	75.2	67.9	74.4	78
23	State Route 99	Dillard Rd	Grant Line Rd	74.9	67.6	74.1	78
24	State Route 99	Grant Line Rd	Elk Grove Blvd	75.0	68.8	75.3	79
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	60.6	52.0	56.5	62

Appendix D-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description			Medium	Heavy	
Segment	Roadway Name	From	To	Autos	Trucks	Trucks	Total
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	56.1	46.4	50.3	57
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	57.5	47.8	51.7	59
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	60.0	50.2	54.2	61
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	68.2	58.5	62.4	70

Appendix D-7

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	61.5	51.8	55.8	63
2	Franklin Blvd	Core Rd	Hood Franklin Rd	59.9	50.2	54.1	61
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	68.5	58.8	62.7	70
4	Bilby Rd	Franklin Blvd	Willard Pkwy	64.9	55.2	59.1	66
5	Dillard Rd	State Route 99	Riley Rd	61.0	51.3	55.2	62
6	Grant Line Rd	Wilton Rd	Calvine Rd	69.4	59.7	63.6	71
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	69.5	59.8	63.7	71
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	68.0	58.3	62.2	69
9	Grant Line Rd	State Route 99	Bradshaw Rd	70.5	60.7	64.7	72
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	66.2	56.5	60.4	68
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	67.9	58.7	62.9	69
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	69.9	60.8	65.0	72
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	69.7	60.5	64.7	71
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	61.3	52.7	57.2	63
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	66.9	57.7	61.9	68
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	68.2	59.0	63.2	70
17	Bradshaw Rd	Grant Line Rd	Bond Rd	66.6	56.9	60.8	68
18	Interstate 5	Laguna Blvd	Meadowview Rd	76.2	71.4	79.8	82
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	75.0	70.2	78.6	81
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	74.3	69.5	78.0	80
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	73.2	68.4	76.8	79
22	State Route 99	Arno Rd	Dillard Rd	75.3	68.0	74.5	78
23	State Route 99	Dillard Rd	Grant Line Rd	75.2	67.9	74.4	78
24	State Route 99	Grant Line Rd	Elk Grove Blvd	75.8	69.6	76.1	79
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	65.9	57.3	61.8	68

Appendix D-8

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	62.0	52.3	56.2	63
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	67.1	57.4	61.4	69
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	66.7	57.0	61.0	68
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	69.1	59.4	63.4	71

Appendix E-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	5	10	22	48	103
2	Franklin Blvd	Core Rd	Hood Franklin Rd	7	14	30	65	140
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	16	34	72	156	335
4	Bilby Rd	Franklin Blvd	Willard Pkwy	15	31	67	145	313
5	Dillard Rd	State Route 99	Riley Rd	14	31	66	143	308
6	Grant Line Rd	Wilton Rd	Calvine Rd	33	71	152	328	706
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	31	66	142	306	660
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	23	50	107	230	496
9	Grant Line Rd	State Route 99	Bradshaw Rd	33	70	151	326	703
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	16	35	75	162	349
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	25	55	118	253	546
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	50	107	230	495	1067
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	43	94	202	435	937
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	12	25	54	117	252
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	37	79	170	366	789
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	42	91	196	421	908
17	Bradshaw Rd	Grant Line Rd	Bond Rd	15	33	72	155	333
18	Interstate 5	Laguna Blvd	Meadowview Rd	245	527	1136	2448	5274
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	193	415	895	1927	4153
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	167	359	773	1665	3588
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	153	330	711	1531	3298
22	State Route 99	Arno Rd	Dillard Rd	143	308	663	1429	3079
23	State Route 99	Dillard Rd	Grant Line Rd	136	292	630	1357	2924
24	State Route 99	Grant Line Rd	Elk Grove Blvd	153	329	710	1529	3294
25	Kammerer Rd	Bruceville Rd		6	12	27	57	124

Appendix E-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	7	15	31	68	146
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	8	18	39	84	181
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	12	26	57	122	264
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	43	94	202	434	935

Appendix E-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	15	31	68	146	315
2	Franklin Blvd	Core Rd	Hood Franklin Rd	47	101	217	467	1006
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	27	58	125	270	582
4	Bilby Rd	Franklin Blvd	Willard Pkwy	24	51	109	235	507
5	Dillard Rd	State Route 99	Riley Rd	18	38	82	177	381
6	Grant Line Rd	Wilton Rd	Calvine Rd	36	77	167	360	775
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	42	91	197	424	913
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	28	61	131	281	606
9	Grant Line Rd	State Route 99	Bradshaw Rd	46	98	212	456	982
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	25	53	114	246	529
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	31	67	143	309	665
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	55	118	254	546	1177
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	54	117	252	543	1169
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	18	39	83	179	385
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	39	83	179	386	833
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	45	96	208	447	964
17	Bradshaw Rd	Grant Line Rd	Bond Rd	26	57	122	263	567
18	Interstate 5	Laguna Blvd	Meadowview Rd	253	545	1175	2531	5454
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	209	451	971	2093	4509
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	189	406	876	1886	4064
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	153	330	711	1531	3298
22	State Route 99	Arno Rd	Dillard Rd	146	314	676	1456	3138
23	State Route 99	Dillard Rd	Grant Line Rd	143	308	663	1429	3079
24	State Route 99	Grant Line Rd	Elk Grove Blvd	189	408	879	1893	4078
25	Kammerer Rd	Bruceville Rd		25	54	115	249	535

Appendix E-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	16	34	74	159	342
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	49	105	226	487	1049
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	41	88	190	410	883
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	47	100	216	466	1004

Appendix E-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	5	10	22	48	103
2	Franklin Blvd	Core Rd	Hood Franklin Rd	7	14	30	65	141
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	27	58	125	270	581
4	Bilby Rd	Franklin Blvd	Willard Pkwy	21	45	98	211	454
5	Dillard Rd	State Route 99	Riley Rd	14	31	66	143	309
6	Grant Line Rd	Wilton Rd	Calvine Rd	47	102	220	475	1022
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	48	103	223	480	1033
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	39	84	180	388	836
9	Grant Line Rd	State Route 99	Bradshaw Rd	44	95	205	442	952
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	23	49	105	227	488
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	39	83	179	385	829
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	57	122	263	566	1220
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	54	115	249	536	1155
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	12	26	56	120	259
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	37	79	170	367	790
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	44	95	204	439	946
17	Bradshaw Rd	Grant Line Rd	Bond Rd	20	44	94	203	437
18	Interstate 5	Laguna Blvd	Meadowview Rd	266	574	1237	2664	5740
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	214	461	993	2140	4610
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	188	405	874	1882	4054
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	184	396	854	1840	3964
22	State Route 99	Arno Rd	Dillard Rd	164	352	759	1636	3525
23	State Route 99	Dillard Rd	Grant Line Rd	157	339	730	1572	3387
24	State Route 99	Grant Line Rd	Elk Grove Blvd	175	377	812	1750	3770
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	15	31	68	146	313

Appendix E-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	7	15	32	68	146
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	8	18	39	84	181
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	12	26	57	123	264
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	43	94	202	434	936

Appendix E-7

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
1	Lambert Blvd	Bruceville Rd (West)	Bruceville Rd (East)	16	34	72	156	336
2	Franklin Blvd	Core Rd	Hood Franklin Rd	12	26	56	121	261
3	Hood Franklin Rd	Interstate 5	Franklin Blvd	45	98	210	453	975
4	Bilby Rd	Franklin Blvd	Willard Pkwy	26	57	122	263	566
5	Dillard Rd	State Route 99	Riley Rd	14	31	66	143	309
6	Grant Line Rd	Wilton Rd	Calvine Rd	52	112	242	521	1123
7	Grant Line Rd	Elk Grove Blvd	Wilton Rd	53	114	246	529	1141
8	Grant Line Rd	Bradshaw Rd	Elk Grove Blvd	42	90	195	419	903
9	Grant Line Rd	State Route 99	Bradshaw Rd	61	132	285	614	1324
10	Waterman Rd	Grant Line Rd	Elk Grove Blvd	32	69	149	320	690
11	Elk Grove Blvd	Elk Grove Florin Rd	Bradshaw Rd	43	92	199	428	922
12	Elk Grove Blvd	State Route 99	Elk Grove Florin Rd	59	127	273	587	1265
13	Elk Grove Blvd	Laguna Springs Dr	State Route 99	56	121	261	563	1213
14	Elk Grove Florin Blvd	East Stockton Blvd	Elk Grove Blvd	16	35	75	162	349
15	Elk Grove Blvd	Interstate 5	Franklin Blvd	37	79	170	367	790
16	Elk Grove Blvd	Franklin Blvd	Bruceville Rd	45	97	208	449	967
17	Bradshaw Rd	Grant Line Rd	Bond Rd	34	73	157	339	730
18	Interstate 5	Laguna Blvd	Meadowview Rd	285	613	1321	2846	6132
19	Interstate 5	Elk Grove Blvd	Laguna Blvd	236	509	1096	2362	5089
20	Interstate 5	Hood Franklin Rd	Elk Grove Blvd	213	460	990	2134	4597
21	Interstate 5	Twin Cities Rd	Hood Franklin Rd	179	387	833	1795	3866
22	State Route 99	Arno Rd	Dillard Rd	168	361	778	1676	3610
23	State Route 99	Dillard Rd	Grant Line Rd	165	355	765	1649	3552
24	State Route 99	Grant Line Rd	Elk Grove Blvd	198	426	918	1977	4260
25	Kammerer Rd	Bruceville Rd	Hood Franklin Rd	33	71	152	327	705

Appendix E-8

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2010-016 City of Elk Grove Sphere of Influence Amendment
Description: Future Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

		Segment Description		------ Distances to Traffic Noise Contours ------				
Segment	Roadway Name	From	To	75	70	65	60	55
26	Bruceville Rd	Lambert Rd	Point Pleasant Rd	17	36	78	168	362
27	Bruceville Rd	Eshinger Rd	Kammerer Rd	37	79	171	369	795
28	Bruceville Rd	Poppy Ridge Rd	Whitelock Pkwy	35	75	161	347	748
29	Bruceville Rd	Whitelock Pkwy	Terrazzo Dr	50	108	233	502	1081

Appendix F

City of Elk Grove Sphere of Influence Amendment - Elk Grove, California
Franklin Field Airport Noise Contours

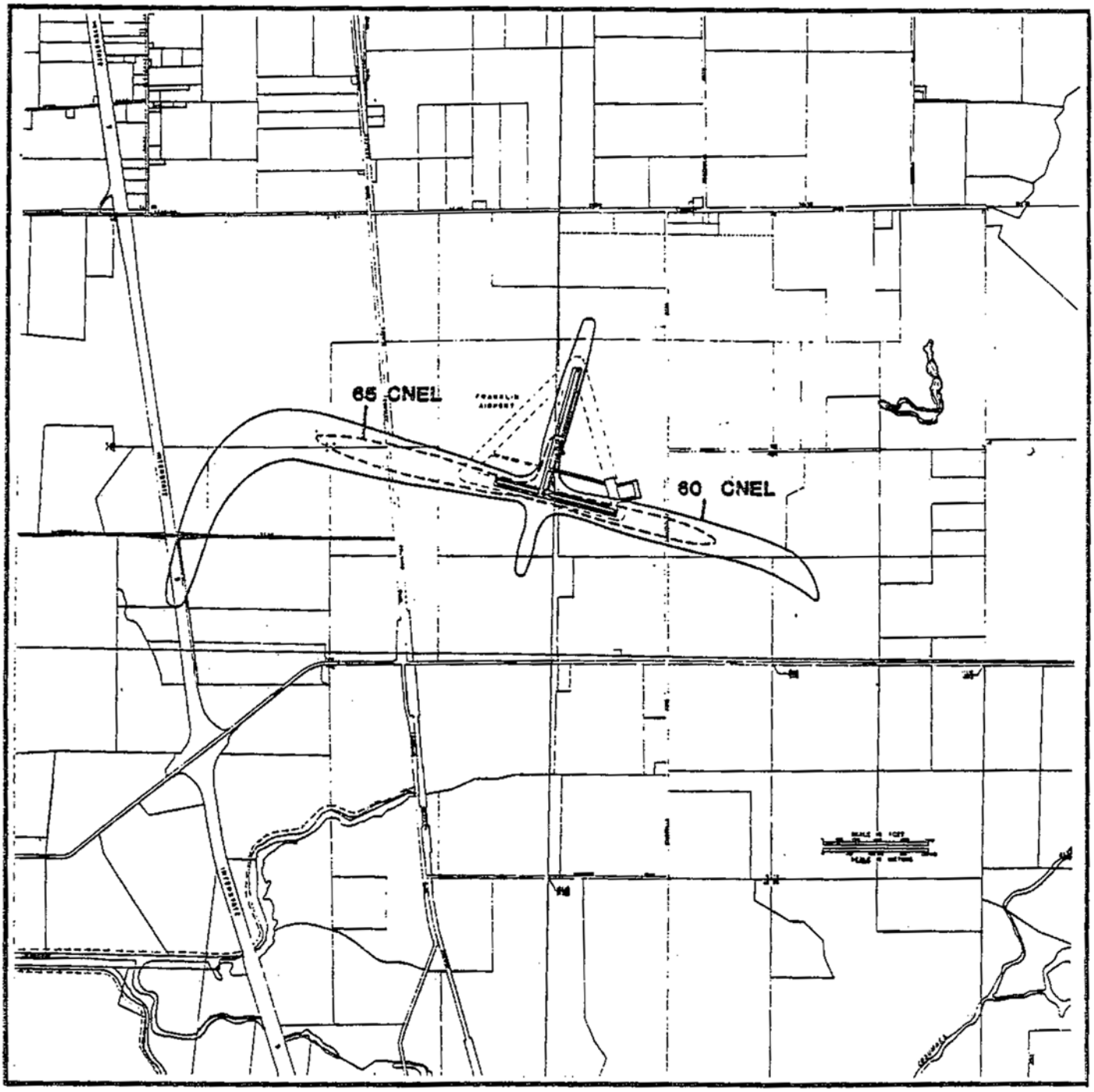


Figure 7 from Franklin Field Comprehensive Land Use Plan (1992)

BOLLARD
Acoustical Consultants

NOT TO SCALE