

Attachment 2

Amendments to the October
2025 Environmental
Assessment

Amendments to Environmental Assessment, Shingle Springs Band of Miwok Indians 295.7- Acre Fee-to-Trust Project, Dated October 2025

The following presents amendments made to the October 2025 Shingle Springs Rancheria 295.7-Acre Fee-to-Trust Project Environmental Assessment (EA). Items/text that has been removed is represented below in ~~striketrough~~. Items/text that has been added to the EA are presented in double underline. Additionally, two figures that were included in Appendix A of the October 2025 EA have been revised and are provided herein. The Environmental Noise Assessment, included as Appendix I of the October 2025 EA has been revised and the revisions are included herein as an amendment.

Section 2, Proposed Project and Alternatives, Subsection 2.1, Alternative A – Proposed Project (Page 9):

2.1.2 Water Supply and Wastewater Treatment and Disposal

The existing Rancheria obtains its water supply from the El Dorado Irrigation District (EID). Thirteen of the project parcels are located within the EID service area. The remaining 16 parcels are adjacent to, but not located within EID's existing service area. The proposed arena, commercial development, multipurpose emergency shelter and maintenance buildings are all located within the existing EID service area. These proposed land uses would be supplied from the Rancheria's water supply system. The proposed residential development is located on parcels that are partly within and partly outside of the existing ~~EID~~ EID service area. To gain service from EID for parcels that are not currently within their service area, the Tribe will need to request annexation from EID and the El Dorado County Local Agency Formation Commission (LAFCO). Alternatively, groundwater could be used to provide water supply for the homes. Existing wells could be used, and additional wells could be developed to serve individual or multiple homes. Based on well completion reports on file with the California Department of Water Resources well yields in the project area range from 0 to 200 gallons per minute (gpm), with most wells yielding 5 to 20 gpm. Use of groundwater may require filtration and disinfection as well as routine monitoring. If an onsite water supply system serves more than 15 connections (homes) or 25 people, the system would be required to comply with the requirements of the Safe Drinking Water Act.

Wastewater treatment and disposal for the proposed arena, commercial development, multipurpose emergency shelter and maintenance buildings would be provided by connection to the existing wastewater treatment and disposal system on the Rancheria. Wastewater treatment and disposal for the proposed homes would be provided by individual septic systems or connection to the existing wastewater treatment and disposal system on the Rancheria.

Wastewater on the Rancheria is treated at a WWTP that is owned and operated by the Tribe and located in the southeast corner of the Rancheria. All wastewater generated on the Rancheria (including the Red Hawk Casino, health center, and homes) is routed to the WWTP by force mains located within the roads on the Rancheria. The membrane bioreactor plant produces disinfected tertiary recycled water as defined by California Department of Health Regulations (Title 22 California Code of Regulations [CCR]). Under California Title 22 Regulations, allowed uses of disinfected tertiary recycled water include lawn and garden

irrigation (including edible crops), flushing toilets, cleaning roads and sidewalks, and firefighting. The Proposed Project would use recycled water where feasible throughout the proposed development, including landscape irrigation, and toilet and urinal flushing at the proposed arena. The use of recycled water would be subject to availability.

Section 3, Affected Environment and Environmental Consequences, Subsection 3.2 Water Resources – Impacts: Alternative A (Pages 20-21):

Alternative A

Groundwater

Water Supply

Water supply would be provided from EID and/or groundwater wells. It is proposed that the arena, commercial development, multipurpose emergency shelter, and maintenance operations building connect to the EID system. Approximately eight residences on the project site are currently served by individual wells. Residential development may be connected to the EID system, served by groundwater wells, or a combination of both.

Near the project site, well completion reports identify well yields ranging from 0 to 200 gpm, with most wells yielding 5 to 20 gpm. A 5 gpm well is typically adequate for a single-family home. Based on well completion reports on file with DWR, at least 132 domestic wells have been developed in the PLSS Sections where the project site is located. It is anticipated that groundwater yields in the vicinity of the project site would meet the needs of Alternative A for homes not connected to the EID system. However, to ensure that groundwater use is sustainable and does not impact groundwater availability in the vicinity of the project, mitigation has been provided in Section 4.0, which requires the development and testing of wells consistent with El Dorado County and California Well Standards and the evaluation of the sustainable yields. With implementation of these mitigation measures, and therefore Alternative A would result in less-than-significant impacts on the local groundwater supply.

Alternative B

Under Alternative B, impacts to water resources would be similar but reduced in comparison to Alternative A due to the reduced level of development. Overall, impacts to water resources would be less than significant with adherence to BMPs included in **Section 2.1.5** and implementation of mitigation measures identified in Section 4.

Section 3, Affected Environment and Environmental Consequences, Subsection 3.2 Noise – Environmental Setting: Existing Ambient Noise Table 3-6 (Page 47):

Existing Ambient Noise

Table 3-1: Existing Ambient Noise Levels Using Continuous 24-Hour Measurements (dBA)

Site	Date	L _{dn}	Daytime (7:00 am - 10:00 pm)			Nighttime (10:00 pm – 7:00 am)		
			L _{eq}	L ₅₀	L _{max}	L _{eq}	L ₅₀	L _{max}
LT-1	2/23/24	70*	72*	55*	84*	53*	39	57
	2/24/24	50	49	39	64	42	39	55
	2/25/24	48	46	43	64	40	38	53
	Average	49	46	43	64	41	39	55
LT-2	2/23/24	55	51	47	70	49	45	64
	2/24/24	56	52	48	71	49	46	67
	2/25/24	55	52	48	71	48	45	66
	Average	55	52	48	71	49	45	66
LT-3	2/23/24	61	57	51	77	54	49	73
	2/24/24	63	58	53	79	56	50	77
	2/25/24	62	59	53	78	55	50	75
	Average	62	58	52	78	55	50	75
LT-4	2/23/24	71	68	68	78	63	59	73
	2/24/24	69	67	67	78	62	58	75
	2/25/24	68	67	67	77	60	56	71
	Average	69	67	67	78	62	58	73
LT-5	12/12/25	47	45	43	60	39	33	54
	12/13/25	45	45	42	61	36	33	53
	12/14/25	45	44	41	61	35	31	52
	Average	46	45	42	61	37	32	53

* Outlier data from 2/23/24 was excluded from the average summary.

Source: **Appendix I**

Section 3, Affected Environment and Environmental Consequences, Subsection 3.2 Noise – Impacts: Alternative A (Pages 47-49):

Alternative A

Construction Noise

Noise from construction activities would add to the noise environment in the immediate project site vicinity. As indicated in **Appendix I**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA L_{max} at a distance of 50 feet. The nearest residential uses in the southern part of the project site are located approximately 600 feet to the west, as measured from the center of the proposed entertainment center. At this distance, maximum construction noise levels would be in the range of 35-49 dBA L_{eq} and 55-69 dBA L_{max} at the nearest residential uses. For the northern part of the project site (the residential part), the nearest residential units are approximately 250 feet to the west of the proposed development. Assuming typical residential construction equipment noise levels of 85 dBA at 50 feet, construction noise at 250 feet would be approximately 51 dBA L_{eq} and 71 dBA L_{max} . This These levels could exceed the County General Plan's 60 dBA L_{max} construction noise exposure limits for rural regions level limits, as outlined in **Appendix I**, such as 60 dBA L_{max} and 50 dBA L_{eq} between the hours of 7 a.m. and 7 p.m. However, as stated in the County General Plan Policy 6.5.1.11 and Chapter 130.37 of the County Code, the construction activities are exempt if they occur between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. BMPs have been included in **Section 2.1.5** that ensure construction activities would not occur outside of these limits and that construction noise would be reduced to the extent feasible.

Therefore, no significant adverse noise impacts are expected to occur.

Operational Noise

Out of the potential sources of noise generated by the operation of Alternative A, the generated traffic would be the largest contributor to ambient noise increases overall. **Table 3-8** summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the project site area (Appendix C of **Appendix I** provides the complete inputs and results of the FHWA traffic modeling). The County guidelines specify that where existing traffic noise levels are less than 60 dB L_{dn} , a +5 dBA L_{dn} increase in roadway noise levels at the activity area of the sensitive receptor will be considered a significant increase. As shown in **Table 3-8**, Alternative A is predicted to result in an increase in a maximum traffic noise level of 0.6 dBA which is below the +5 dBA L_{dn} threshold. Therefore, no adverse effect associated with increases in the ambient noise environment is anticipated to occur.

Table 3-1: Predicted Traffic Noise Level And Project-Related Traffic Noise Level Increases

Roadway	Segment	Existing no Project	Existing + Project	Change
Green Valley Rd	West of Shingle Springs Dr	55.5	56.1	0.6
Shingle Springs Dr*	South Green Valley Rd	46.0	46.3	0.3
Lotus Rd	North of Green Valley Rd	56.2	56.3	0.1
Green Valley Rd	South of Lotus Rd	57.3	57.5	0.2
Greenstone Rd	South of Green Valley Rd	59.1	59.2	0.1
Green Valley Rd	East of Greenstone Rd	59.4	59.9	0.5
Missouri Flat Rd	East of Green Valley Rd	60.6	60.8	0.2
Missouri Flat Rd	East of El Dorado Rd	53.1	53.2	0.1
El Dorado Rd	South of Missouri Flat Rd	57.2	57.2	0.0
Shingle Rd	South of Green Valley Rd	62.8	62.9	0.1
Ponderosa Rd	South of Green Valley Rd	56.2	56.4	0.2
Deer Valley Rd	North of Green Valley Rd	59.1	59.2	0.1
Cameron Park Dr	South Green Valley Rd	56.6	56.9	0.3

Source: **Appendix I**

Operational noise generated by the proposed residential development would be consistent with typical residential neighborhood noise. The primary noise sources include vehicle-related sounds (e.g. engine ignition), lawn mowers, and children playing. These noise sources already exist in the project site area and development of the proposed residential developments would not significantly add to the existing noise environment. For example, the maximum noise levels generated by the residential HVAC units and on-site vehicle circulation are predicted to be no more than 10 dBA, or greater, than average (L_{eq}) values. The El Dorado County maximum nighttime noise level standard is 55 dBA L_{max} , which is 10 dBA higher than the L_{eq} standard. Therefore, where average noise levels are consistent with the L_{eq} standards, maximum noise levels will also be consistent with the County's standards. Based upon the predicted average noise levels of 32 dBA, the maximum noise levels will be 42 dBA and would therefore be consistent with the County maximum exposure standards. Therefore, residential activities do not have the potential to significantly increase noise levels in the vicinity of the project site or expose off-site sensitive receptors to adverse noise levels. Noise impacts from operation of the residential developments would be less than significant.

The remaining components of Alternative A would generate operational noise different from the residential development. The commercial center of the Proposed Project is predicted to expose nearby residences to noise levels up to 32 dBA, L_{eq} during both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours (refer to Figure 4 in **Appendix I** for an illustration), both being consistent with the County threshold of 40 dBA, L_{eq} . As shown on Figure 3-9 of **Appendix A**, the event center is predicted to expose nearby residences to noise levels up to 44 dBA, L_{eq} during both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The predicted project noise levels would exceed the El Dorado County General Plan noise standard for non-transportation noise sources of 40 dBA, L_{eq} . Therefore, impacts resulting from operational noise would be potentially significant. To reduce the impact, mitigation has been included in **Section 4**. Mitigation would include the construction of an 8-foot sound wall or alternative measures to reduce the maximum noise levels. As shown in Figure 3-10 of **Appendix A**, with the sound wall, noise levels would be reduced to acceptable levels below 40 dBA, L_{eq} . With implementation mitigation, the operational noise impacts would be reduced to less-than significant.

Section 4, Mitigation (Pages 60-63):

NEPA requires that, if a project would have significant adverse effects on the environment, mitigation for those impacts must be identified. Mitigation measures to be implemented during construction and operation of the alternatives are summarized in table below. All mitigation is enforceable because it is (1) inherent to the project design; and/or (2) or required by federal or tribal regulations.

Implementation of mitigation measures listed below would be overseen by the Shingle Springs Band of Miwok Indians in accordance with the Tribe's Environmental Code (Title 1), Housing Ordinance (Title 5), and Land Use Ordinance (Title 7). Additionally, in accordance with the Indian Affairs Manual, Part 59, Chapter 3.3(D), it is the policy of the BIA to:

- Take the appropriate steps to ensure negative environmental effects are prevented, minimized or mitigated whenever possible.
- Monitor for and assess the effectiveness of mitigation measures identified to mitigate adverse environmental impacts in EAs.

Resource Area	Proposed Mitigation	Alternative
Biological Resources	The following measures shall be implemented to minimize or avoid impacts to waters of the U.S.: A. If impacts to waters of the U.S. and wetland habitat are unavoidable, a 404 permit and 401 Certification under the CWA shall be obtained from the USACE and EPA. Mitigation for loss of waters of the U.S. shall occur at a minimum 1:1 ratio through habitat creation, restoration, or purchase of USACE-approved credits. This may occur along the alignment of the re-routed drainage or within bioretention areas. All permit terms and conditions shall be adhered to. The following measures shall be implemented to avoid construction-phase take of northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog: B. To ensure that northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog are not present in construction areas, a qualified biologist shall conduct pre-construction clearance surveys. A qualified biologist is defined as a person who has the educational background, training, and work experience (handling experience and/or permits) required to perform a specific biological task and has been approved by the USFWS. If either of these species are discovered during the survey, project construction activities shall not begin until the USFWS has been consulted and avoidance and minimization measures established and then implemented. C. Once the pre-construction surveys confirm that northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog are not present, the construction crew shall immediately install animal exclusion fencing to separate construction areas from marshes and channels proposed for avoidance. The fencing shall be constructed out of plastic weed cloth or construction fabric, shall be keyed into the ground, and shall be supported by	A, B

Resource Area	Proposed Mitigation	Alternative
	stakes and wire mesh, as needed. Fencing shall also be opaque, a minimum of three feet in height, and installed with a smooth material such that it cannot be climbed. A qualified biologist shall oversee the installation of the exclusionary fencing to ensure its suitability. A qualified biologist shall also make regular inspections during the preconstruction period and during the construction periods when grading and other ground disturbance activities are occurring to ensure the integrity of the fence. D. All construction personnel shall receive worker environmental awareness training before they enter the construction site. The training program shall include, at a minimum, descriptions of the focal species (northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog, and monarch butterflies), and how to identify and avoid these focal species. Personnel shall be trained to halt work in the event that one of these focal species is observed within the work area and allow the individual to leave the work site on their own. Personnel shall be instructed to limit work activities to the designated construction areas and to properly store equipment and materials in the designated laydown area. A qualified biologist shall make regular inspections during the construction periods when grading and other ground disturbance activities are occurring to ensure BMPs are being adequately followed. The following measures shall be implemented to minimize impacts to northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog: E. The development shall be designed such that culverts, free-span bridges, or similar will be installed where roadways cross drainages. Road crossings of drainages shall be designed such that northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog can freely pass underneath proposed roadways. Additionally, a permanent barrier such as a curb shall be installed around the perimeter of paved areas, with the exception of points of access, to discourage northwestern pond turtle, foothill yellow-legged frog, and California red-legged frog from entering the built environment. Designs of the barrier shall be submitted to USFWS for coordination and approval. The following measures shall be implemented to minimize or avoid operational impacts to monarch butterflies: F. Use of insecticides shall be prohibited; use of herbicides shall follow USFWS-approved BMPs. G. The development shall utilize only native species in habitat restoration. H. Monarchs, other pollinators, and their habitats shall be protected from pesticides, including insecticides, fungicides, and herbicides. The Tribe shall avoid applying herbicides to blooming flowers when monarch butterflies are likely around (October 1 – February 28).	

Resource Area	Proposed Mitigation	Alternative
	I. The protection of existing milkweed populations where feasible and the facilitation of expanding milkweed populations through planting. J. Landscaping activities shall maximize use of non-chemical weed and pest prevention. K. Landscaping plans shall select a mosaic plant palate of native species that bloom throughout the year to the greatest extent feasible. The following measures shall be implemented to avoid impacts to nesting birds: L. If construction activities commence during the general nesting season (March to September), a preconstruction nest survey shall be conducted by a qualified biologist on and within 500 feet of proposed construction. If active nests are identified, the qualified biologist shall consult the USFWS to develop measures to avoid “take” of active nests prior to the initiation of any construction activities. M. Avoidance measures include establishment of a buffer zone using construction fencing or similar, or the postponement of construction until after the nesting season, or until after a qualified biologist has determined the nest is no longer active. Avoidance buffers may vary in size depending on habitat characteristics, project-related activities, and disturbance levels.	
Cultural Resources	N. In the event that a cultural resource is inadvertently discovered during project activities, work must be halted within 30 feet of the find and a qualified archaeologist (36 CFR Part 61) notified immediately so that an assessment of its potential significance can be undertaken. The BIA Regional Archaeologist must also be notified immediately. Construction activities may continue in other areas, but may not resume in the area of the find until the BIA provides written permission. If the discovery proves to be significant, additional work, such as data recovery excavation, may be warranted and would be discussed in consultation with the BIA, affiliated tribal organizations, and any other relevant regulatory agencies or invested parties, as appropriate. O. If human remains are discovered during ground-disturbing activities, the BIA Regional Archaeologist and a Shingle Springs Tribal representative shall be notified immediately. The notice shall be followed up within 24 hours with written documentation stating the geographical location by county and State, the contents of the discovery, and the steps taken to secure and protect the human remains or cultural items, as well as the activity that led to the discovery and confirmation that all activity around the discovery has stopped. No further disturbance shall occur until representatives of the Tribe and BIA have resolved which party will assume primary management authority for the discovery, appropriate measures have been taken and the party with primary management authority has provided written certification to the person responsible for the activity that led to the discovery identifying any measures to protect the discovery if	A, B

Resource Area	Proposed Mitigation	Alternative
	appropriate, and the date on which activity may resume around the discovery (43 CFR § 10.5).	
Transportation and Circulation	P. The Tribe shall optimize the signal timing at the Koto Road/Redhawk Parkway at Honpie Road intersection for the PM, Friday PM, Saturday Midday peak-hours to increase LOS levels at this intersection.	A
Noise	Q. The Tribe shall construct an 8-foot-tall sound wall (as shown in Figure 3-10) to reduce noise impacts from the proposed arena unless future project design changes or other factors result in compliance with the County exterior noise standards at adjacent non-Tribal properties. Future design changes could include additional buffer distance, traffic control measures, or other measures verified by a qualified acoustical engineer.	A
Visual Resources	R. The Tribe shall install screens or other physical barriers on the open sides of the parking garage to prevent vehicle lights from shining directly on the adjacent residential area. Screens or other physical barriers shall be required on the north, west and south sides of the parking garage.	A
<u>Water Resources</u>	S. <u>All new water supply wells shall be designed and constructed in a manner consistent with the California Well Standards, Combined (Bulletin 74-81 and 74-90). In addition, the setback requirements provided in the County of El Dorado Well Ordinance Section 8.39.090 shall be maintained.</u> T. <u>The sustainable yield of each water supply well (new or existing) used to provide water to new dwelling units shall be determined by pump testing of the well, and be certified by a Registered Professional Engineer or Registered Geologist.</u> U. <u>All water supply wells (new or existing) used to provide water to new dwelling units shall be operated within the sustainable yield limits identified in Measure T.</u>	<u>A, B</u>

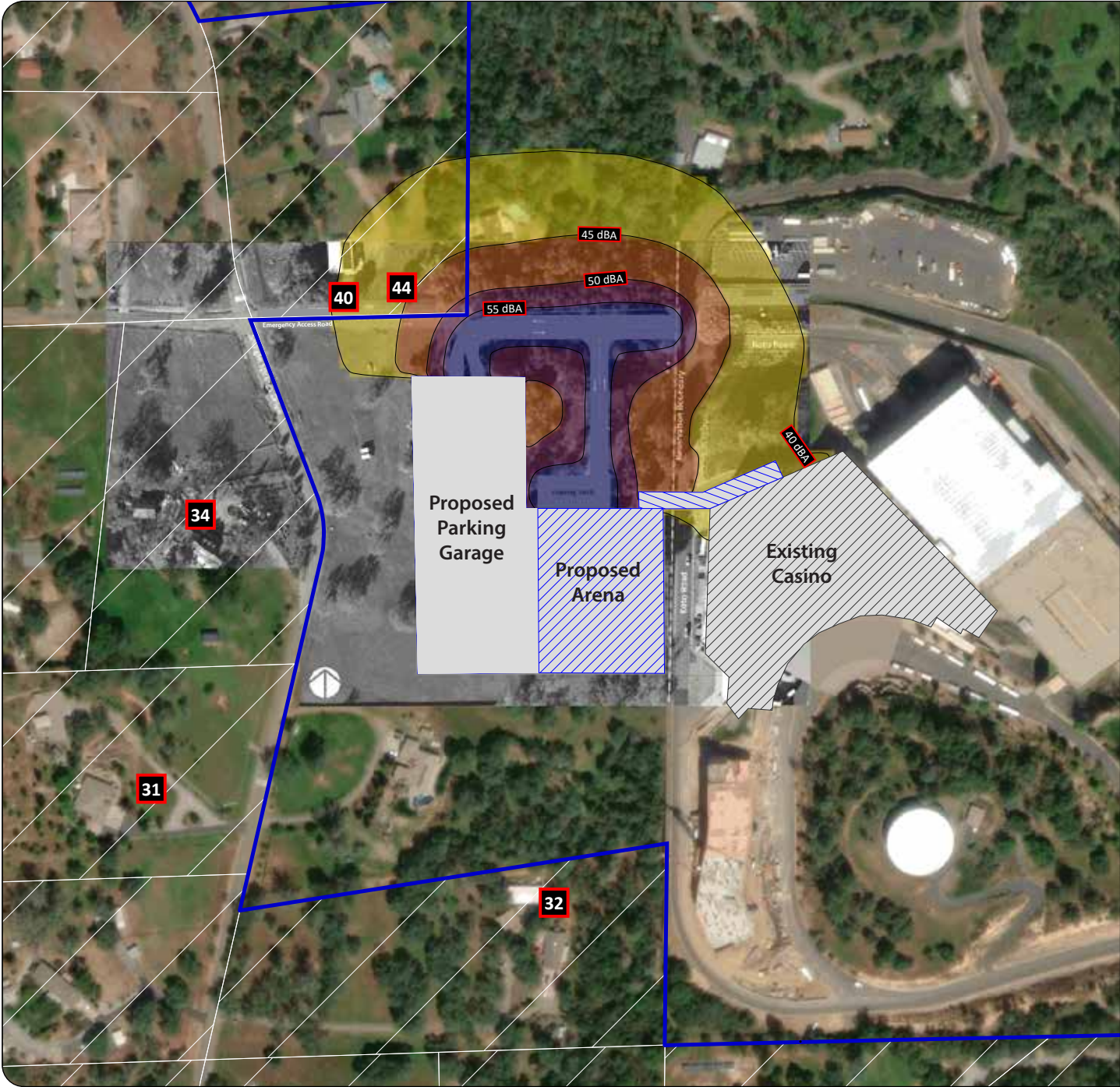
Appendix A, Environmental Assessment Figures (Figures 3-9 and 3-10):

Red Hawk Arena and Housing Project

El Dorado County, California

Figure 4

Stationary Arena Noise Contours Leq, dB(A)



SOURCE: Saxelby Acoustics

Noise Level, dB(A)

40 <	45
45 <	50
50 <	55
55 <	

Legend

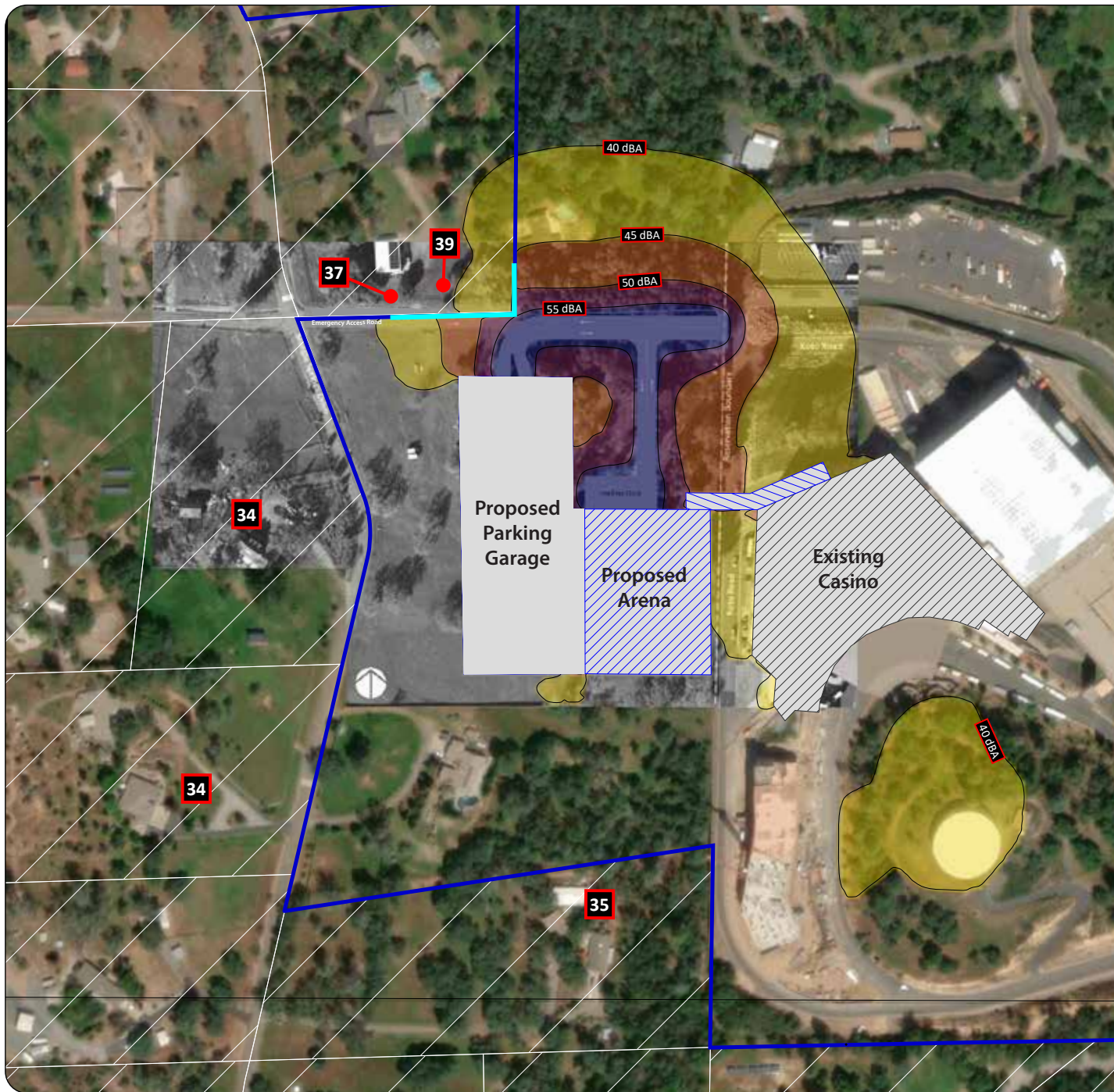
- Project Building
- Neighboring Parcel
- Project Site

Scale 1:270

0 50 100 200 300 400 feet



FIGURE 3-9
ESTIMATED ARENA NOISE CONTOURS



Red Hawk Arena and Housing Project

El Dorado County, California

Figure 5

Stationary Event Center Noise Contours
with Sound Wall
Leq, dB(A)

Noise Level, dB(A)

40 <		<= 45
45 <		<= 50
50 <		<= 55
55 <		

Legend

- Project Building
- Neighboring Parcel
- Project Site
- 8-ft. Sound Wall

Scale 1:270

0 50 100 200 300 400 feet



SOURCE: Saxelby Acoustics

FIGURE 3-10
ESTIMATED ARENA NOISE CONTOURS WITH SOUND WALL

Appendix I, Environmental Noise Assessment:

Environmental Noise Assessment

Red Hawk Arena and Housing Project

El Dorado County, California

January 23, 2026

Project #240105

Prepared for:



Acorn Environmental

5170 Golden Foothill Parkway

El Dorado Hills, CA 95762

Prepared by:

Saxelby Acoustics LLC



A blue ink signature of Luke Saxelby, written in a cursive style.

Luke Saxelby, INCE Bd. Cert.

Principal Consultant

Board Certified, Institute of Noise Control Engineering (INCE)



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INTRODUCTION

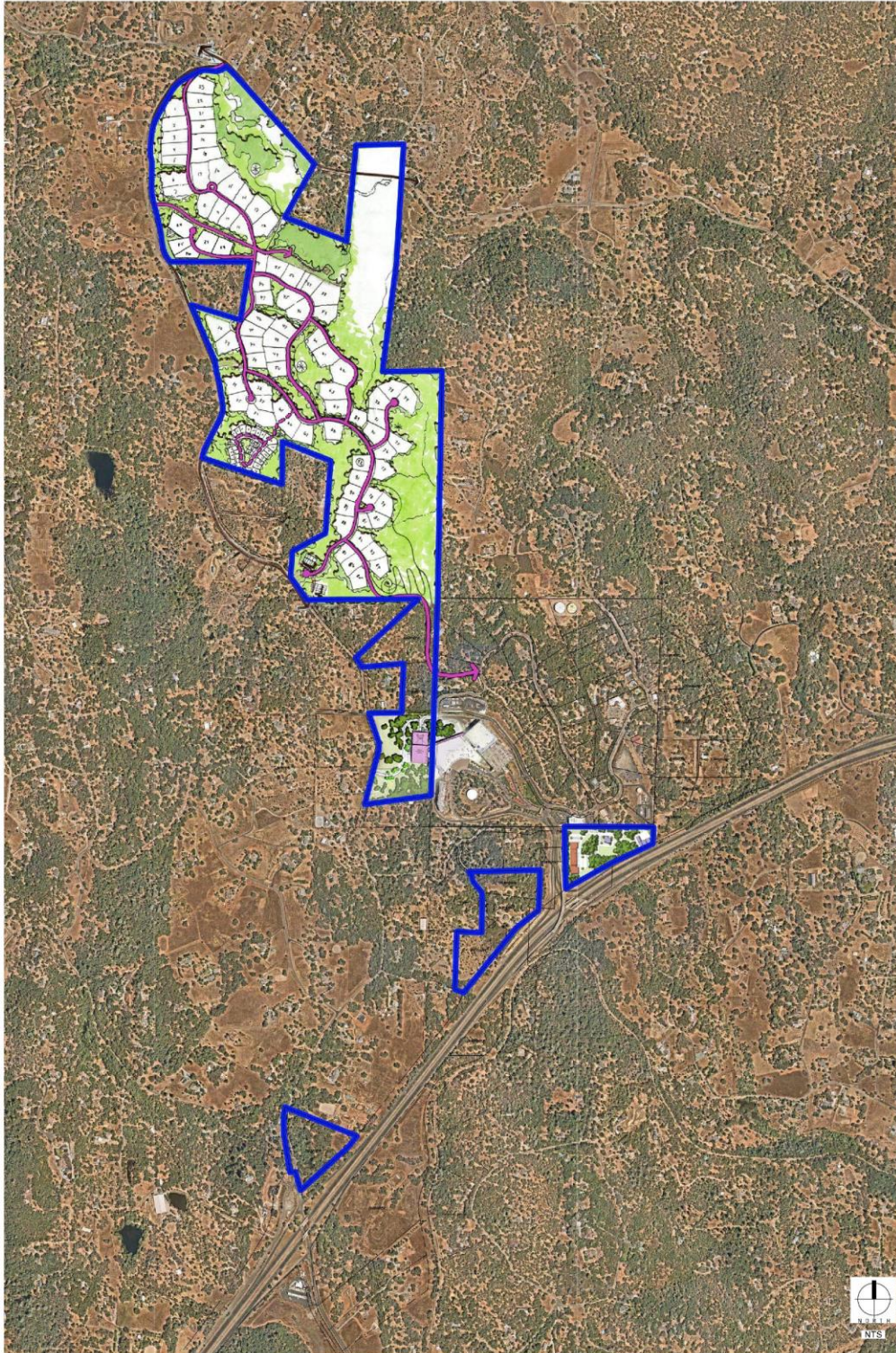
Saxelby Acoustics was retained by Acorn Environmental Planning to perform a noise study for the Redhawk Arena and Housing Project.

The project would include an arena located west of the main casino attached through a skybridge. The arena is proposed to be 80,000 square feet, including a 3-bay loading dock and 1,050-space parking garage. The proposed commercial space encompasses 30,000 square feet of land at the southern end of tribal land, which includes the construction of a parking garage. In addition, the project includes 132 residential units located north of the main casino. The Red Hawk Casino Arena and Housing project is located entirely on Tribal land on Red Hawk Parkway in El Dorado County, California.

The proposed project would primarily include new indoor uses. Any outdoor mechanical equipment would be located on the roof of the new facility and would be shielded from view by rooftop parapets and is unlikely to be audible at the nearest off-site sensitive receptors which are located more than 300 feet to the west. Any proposed residential land use is predicted to be compatible with nearby land uses.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site and existing buildings.

TRUST APPLICATION MAP



SHINGLE SPRINGS BAND OF MIWOK INDIANS
OCTOBER 2023

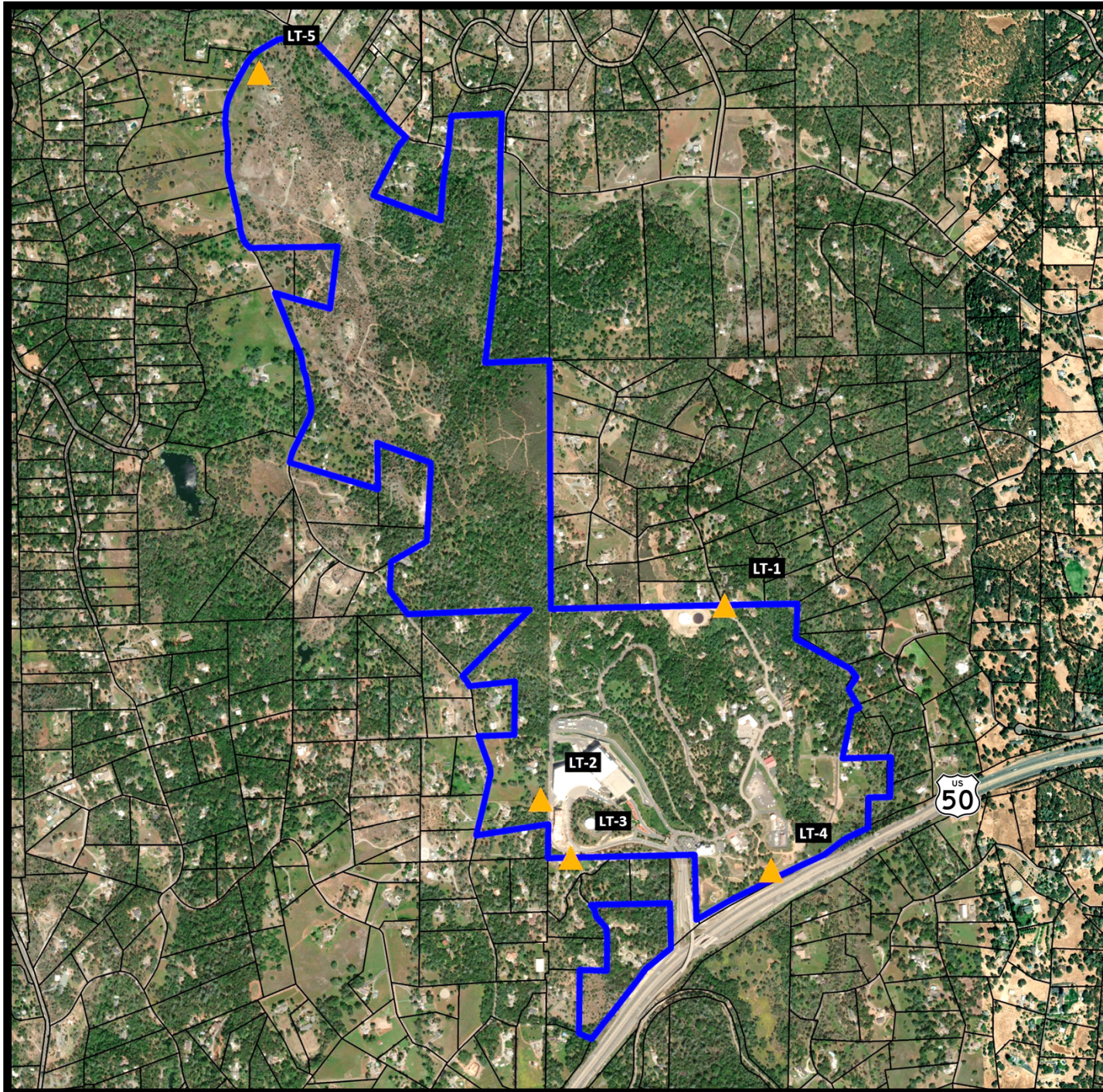
Kimley»Horn

Red Hawk Arena and Housing

El Dorado County, Nevada

Figure 1
Project Site Plan





Red Hawk Arena and Housing

El Dorado County, California

Figure 2

Noise Measurement Sites

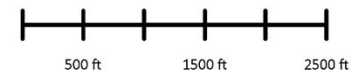
Legend



Project Site



Noise Measurement Site - Long Term



Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 01/09/2026



ENVIRONMENTAL SETTING

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, 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 this reference pressure, and the logarithm is taken to keep the numbers in 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 A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

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 environment. A common statistical tool 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 one 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 (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

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

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

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;

- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AND FUTURE NOISE AND VIBRATION ENVIRONMENTS

EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residential uses located west and south of the project site, outside of the Rancheria boundaries.

EXISTING GENERAL AMBIENT NOISE LEVELS

EXISTING AMBIENT NOISE LEVELS

The existing noise environment in the project area is defined primarily by vehicle traffic, on the local roadway network, existing Red Hawk Casino operations, and construction activity on the existing Rancheria property

To quantify the existing ambient noise environment on the project site, Saxelby Acoustics conducted a continuous noise measurement survey. The noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meter was programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max} , represents the highest noise level measured. The average value, denoted L_{eq} , represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50} , represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) Model 812 and 820 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Site	Date	Average Measured Hourly Noise Levels, dBA						
		L _{dn}	Daytime (7:00 am - 10:00 pm)			Nighttime (10:00 pm – 7:00 am)		
			L _{eq}	L ₅₀	L _{max}	L _{eq}	L ₅₀	L _{max}
Continuous 24-hour Noise Measurement Site								
LT-1	2/23/24	70*	72*	55*	84*	53*	39	57
	2/24/24	50	49	39	64	42	39	55
	2/25/24	48	46	43	64	40	38	53
	Average:	49	48	41	64	41	39	55
LT-2	2/23/24	55	51	47	70	49	45	64
	2/24/24	56	52	48	71	49	46	67
	2/25/24	55	52	48	71	48	45	66
	Average:	55	52	48	71	49	45	66
LT-3	2/23/24	61	57	51	77	54	49	73
	2/24/24	63	58	53	79	56	50	77
	2/25/24	62	59	53	78	55	50	75
	Average:	62	58	52	78	55	50	75
LT-4	2/23/24	71	68	68	78	63	59	73
	2/24/24	69	67	67	78	62	58	75
	2/25/24	68	67	67	77	60	56	71
	Average:	69	67	67	78	62	58	73
LT-5	12/12/25	47	45	43	60	39	33	54
	12/13/25	45	45	42	61	36	33	53
	12/14/25	45	44	41	61	35	31	52
	Average:	46	45	42	61	37	32	53

*Outlier data from 2/23/24 was excluded from the average summary.

Source: Saxelby Acoustics 2025

FUTURE TRAFFIC NOISE ENVIRONMENT AT OFF-SITE RECEPTORS

OFF-SITE TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

The primary source of traffic noise in the project vicinity is US-50. Green Valley Road also contributes to the ambient noise environment. Traffic noise levels were modeled in the SoundPLAN modeling software to account for multiple sources of ambient noise.

Existing and Cumulative noise levels due to traffic are calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based upon the Calven reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn} , it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Project trip generation volumes were provided by the project traffic engineer (Kimley Horn 2024), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for Existing and Cumulative conditions which would result from the project are provided in terms of L_{dn} .

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance.

Tables 3 and 4 summarize the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area. **Appendix C** provides the complete inputs and results of the FHWA traffic modeling.

TABLE 3: PREDICTED TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Segment	Existing no Project	Existing + Project	Change
Green Valley Rd	West of Shingle Springs Dr	55.5	56.1	0.6
Shingle Springs Dr*	South Green Valley Rd	46.0	46.3	0.3
Lotus Rd	North of Green Valley Rd	56.2	56.3	0.1
Green Valley Rd	South of Lotus Rd	57.3	57.5	0.2
Greenstone Rd	South of Green Valley Rd	59.1	59.2	0.1
Green Valley Rd	East of Greenstone Rd	59.4	59.9	0.5
Missouri Flat Rd	East of Green Valley Rd	60.6	60.8	0.2
Missouri Flat Rd	East of El Dorado Rd	53.1	53.5	0.4
El Dorado Rd	South of Missouri Flat Rd	57.2	57.2	0.0
Shingle Rd	South of Green Valley Rd	61.6	61.6	0.0
Ponderosa Rd	South of Green Valley Rd	51.8	52.2	0.4
Deer Valley Rd	North of Green Valley Rd	52.3	52.3	0.0
Cameron Park Dr	South Green Valley Rd	63.8	64.1	0.3

Notes: *Traffic noise levels were modeled in the SoundPLAN modeling software to account for traffic noise contributions from Green Valley Road.

TABLE 4: CUMULATIVE TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Segment	Cumulative no Project	Cumulative + Project	Change
Green Valley Rd	West of Shingle Springs Dr	55.8	56.4	0.6
Shingle Springs Dr*	South Green Valley Rd	46.1	46.4	0.3
Lotus Rd	North of Green Valley Rd	56.5	56.5	0.0
Green Valley Rd	South of Lotus Rd	57.4	57.6	0.2
Greenstone Rd	South of Green Valley Rd	59.9	60.0	0.1
Green Valley Rd	East of Greenstone Rd	59.9	60.3	0.4
Missouri Flat Rd	East of Green Valley Rd	60.9	61.1	0.2
Missouri Flat Rd	East of El Dorado Rd	54.1	54.5	0.4
El Dorado Rd	South of Missouri Flat Rd	57.7	57.7	0.0
Shingle Rd	South of Green Valley Rd	63.8	63.9	0.1
Ponderosa Rd	South of Green Valley Rd	52.9	53.2	0.3
Deer Valley Rd	North of Green Valley Rd	53.2	53.2	0.0
Cameron Park Dr	South Green Valley Rd	64.0	64.6	0.6

NOTES : *Traffic noise levels were modeled in the SoundPLAN modeling software to account for traffic noise contributions from Green Valley Road.

Based upon the **Tables 3 and 4** data, the proposed project is predicted to result in an increase in a maximum traffic noise level increase of 0.6 dBA.

EVALUATION OF ARENA NOISE AT RESIDENTIAL RECEPTORS

This analysis considers the Arena and Commercial Land Use as the primary noise sources for the proposed project. Noise sources associated with each location will be described in further detail in the analysis.

Arena

The following is a list of assumptions used for noise modeling. The data used is based upon a combination of manufacturer's provided data and Saxelby Acoustics data from similar operations.

Rooftop HVAC Units: It is assumed worst-case that all future HVAC units will be mounted atop the proposed entertainment center building. A parapet will be included in the building construction to shield these new units from view. It was assumed that cooling demand would require approximately sixteen 50-ton rooftop HVAC units, each with a sound power level of 91 dBA for a total of 103 dBA.

On-Site Circulation: The arena portion of the project is projected to generate 2,600 daily trips with 1,073 trips in the peak hour (Kimley Horn). Saxelby Acoustics assumed that 2% of these trips could be trucks. Parking lot movements are predicted to generate a sound exposure level (SEL) of 71 dBA SEL at 50 feet for cars and 85 dBA SEL at 50 feet for trucks. Saxelby Acoustics data.

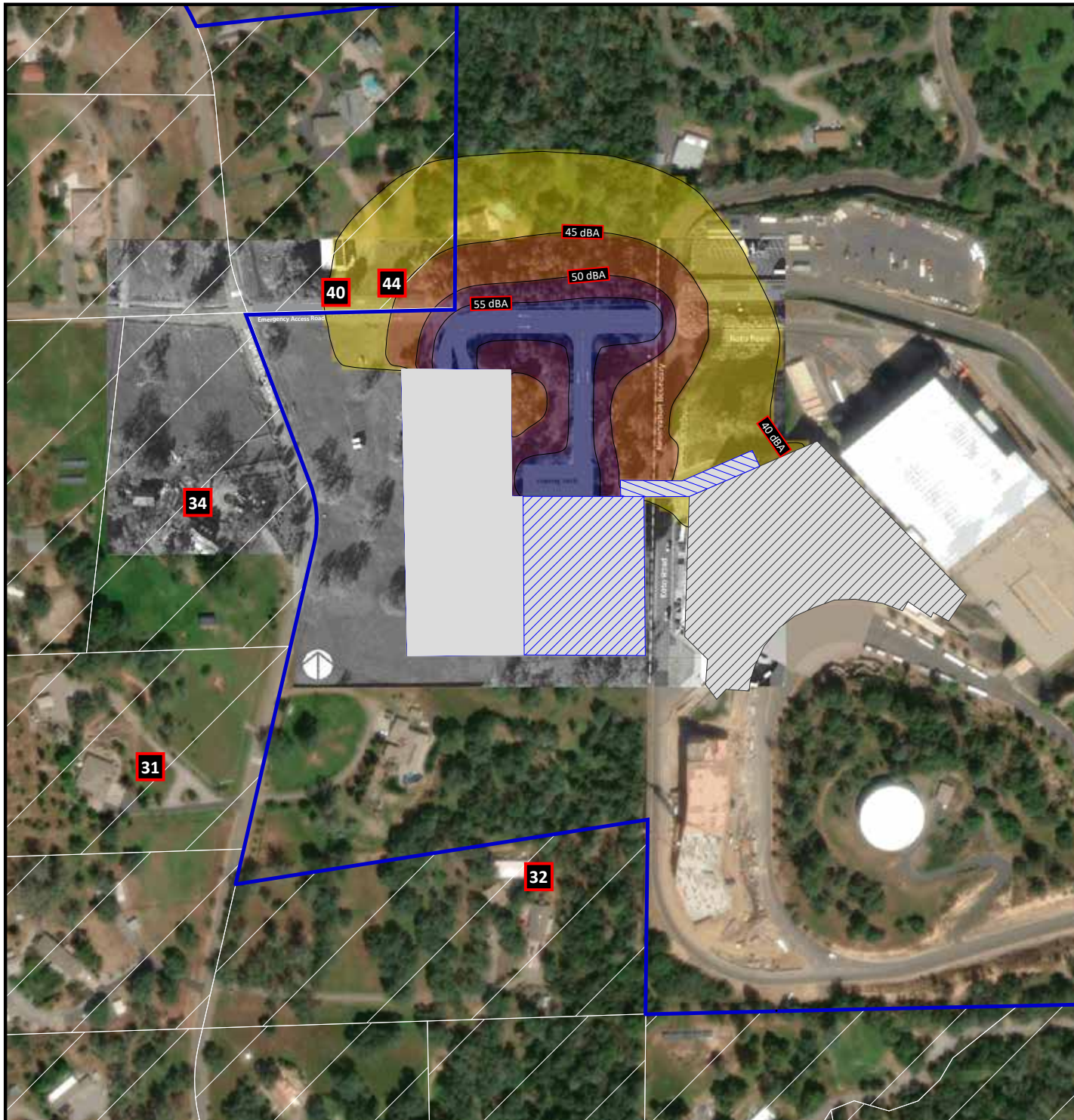
Commercial Land Use

The following is a list of assumptions used for noise modeling. The data used is based upon a combination of manufacturer's provided data and Saxelby Acoustics data from similar operations.

Rooftop HVAC Units: It is assumed worst-case that all future HVAC units will be mounted atop the proposed entertainment center building. A parapet will be included in the building construction to shield these new units from view. Assumes approximately four 6-ton rooftop units for each commercial building, each with a sound power level of 82 dBA.

On-Site Circulation: The commercial component of the project is projected to generate 1,634 daily trips with 198 trips in the morning peak hour (Kimley Horn). Saxelby Acoustics assumed that 2% of these trips could be trucks. Parking lot movements are predicted to generate a sound exposure level (SEL) of 71 dBA SEL at 50 feet for cars and 85 dBA SEL at 50 feet for trucks. Nighttime traffic outside of the AM or PM peak hour is estimated to be approximately 1/4 of daytime trips during nighttime hours (10:00 p.m. to 7:00 a.m.). Saxelby Acoustics data.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed arena, existing and proposed mechanical equipment, existing and proposed buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. **Figure 3** shows the arena noise contours on the project site. **Figure 4** shows predicted commercial noise contours for the proposed project.



Red Hawk Arena and Housing Project

El Dorado County, California

Figure 4

Stationary Arena Noise Contours Leq, dB(A)

Noise Level, dB(A)

40 <	≤ 45
45 <	≤ 50
50 <	≤ 55
55 <	

Legend

-  Project Building
-  Neighboring Parcel
-  Project Site

Scale 1:270

0 50 100 200 300 400 feet





Red Hawk Arena and Housing Project

El Dorado County, California

Figure 4

Stationary Commercial Center
Noise Contours
Leq, dB(A)

Noise Level, dB(A)

45 <	≤ 50
50 <	≤ 55
55 <	≤ 60
60 <	

Legend

-  Project Building
-  Neighboring Parcel
-  Project Site

Scale 1:250

0 50 100 200 300 400 feet



CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project noise from construction activities would temporarily add to the noise environment in the project vicinity. As shown in **Table 5**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

TABLE 5: CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: *Roadway Construction Noise Model User's Guide*. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

CONSTRUCTION VIBRATION ENVIRONMENT

Table 6 shows the typical vibration levels produced by construction equipment.

TABLE 6: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: *Transit Noise and Vibration Impact Assessment Guidelines*. Federal Transit Administration. May 2006.

REGULATORY CONTEXT

Relevant regulations for the off-Reservation environment are discussed below. The Reservation is not subject to the State and local regulations.

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project. Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck pass-by noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

STATE

There are no state regulations related to noise that apply to the Proposed Project. The California Code of Regulations has guidelines for evaluating the compatibility of various off-Reservation land uses as a function of community noise exposure. The State also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dB at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by State and local law enforcement officials.

LOCAL

The El Dorado County General Plan establishes maximum allowable noise exposure for sensitive land uses affected by transportation noise sources. **Table 7** below shows the El Dorado County Land Use Compatibility Chart.

The El Dorado County General Plan also establishes noise level performance standards for noise sensitive land uses affected by non-transportation noise sources. **Table 8** shows the County standards. The Rural Region noise standards apply to the land adjacent to the Project.

The standards outlined in **Table 9** shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. Further, the standards outlined in **Table 9** shall not apply to public projects to alleviate traffic congestion and safety hazards.

TABLE 7: MAXIMUM ALLOWABLE NOISE EXPOSURE FOR TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas ¹ L _{dn} /CNEL, dB	Interior Spaces	
		L _{dn} /CNEL, dB	L _{eq} , dB ²
Residential	60 ³	45	--
Transient Lodging	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60 ³	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

¹ In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100 foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

TABLE 8: NOISE LEVEL PERFORMANCE STANDARDS FOR NOISE SENSITIVE LAND USES AFFECTED BY NON-TRANSPORTATION SOURCES

Noise Level Descriptor	Daytime 7 a.m. – 7 p.m.		Evening 7 p.m. – 10 p.m.		Night 10 p.m. – 7 a.m.	
	Community / Rural Centers	Rural Regions	Community / Rural Centers	Rural Regions	Community / Rural Centers	Rural Regions
Hourly L _{eq} , dBA	55	50	50	45	45	40
Maximum Level (L _{max}), dBA	70	60	60	55	55	50

- Each of the noise levels specified above shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of unamplified 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, such as caretaker dwellings.
- The Director can impose noise level standards which are up to 5 dBA less than those specified above, based upon a determination of existing low ambient noise levels in the vicinity of the project site.
- The exterior noise level standard shall be applied as follows:
 - In Community Regions, at the property line of the receiving property;
 - In Rural Centers and Regions, at a point 100 feet away from a sensitive receptor or, if the sensitive receptor is within the Platted Lands Overlay (-PL) where the underlying land use designation is consistent with Community Region densities, at the property line of the receiving property or 100 feet away from the sensitive receptor, whichever is less; or
 - In all areas, at the boundary of a recorded noise easement between affected properties

TABLE 9: MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NON-TRANSPORTATION NOISE SOURCES IN RURAL REGIONS—CONSTRUCTION NOISE

Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (LDR)	7 am-7 pm	50	60
	7 pm-10 pm	45	55
	10 pm-7 am	40	50
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am-7 pm	65	75
	7 pm -7 am	60	70
Rural Land, Natural Resources, Open Space, and Agricultural Lands (RR, NR, OS, AL)	7 am-7 pm	65	75
	7 pm -7 am	60	70

IMPACTS AND MITIGATION MEASURES

METHODOLOGY

While projects located on Reservation lands are exempt from local noise-related standards and policies, a discussion of local noise standards and policies is appropriate for potential off-Reservation noise impacts. Specifically, the El Dorado County Code establishes noise standards for noise-sensitive land uses affected by transportation noise sources. Adjacent noise-sensitive single-family receptors are located within the unincorporated area. Noise level thresholds and standards applied to studied receptors would be in accordance with the jurisdiction within which they are located and specified for reference within the impact analysis.

THRESHOLDS OF SIGNIFICANCE

The El Dorado County General Plan outlines criteria for determination of significant impacts due to project and construction noise.

Noise Level Increase Criteria for Construction-Related Noise Level Increases

Policy 6.5.1.11 The standards outlined in **Table 9** shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. Further, the standards outlined in **Table 9** shall not apply to public projects to alleviate traffic congestion and safety hazards.

Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration.

- A. Where existing or projected future traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant;
- B. Where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than

3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and

- C. Where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise will be considered significant.

Criteria for Acceptable Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 10**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 10 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 10: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of “architectural” damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of “architectural” damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize “architectural” damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: *Transportation Related Earthborne Vibrations*. Caltrans. TAV-02-01-R9601. February 20, 2002.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

IMPACT 1: **WOULD THE PROJECT GENERATE A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?**

Traffic Noise Increases

The El Dorado County guidelines specify criteria to determine the significance of traffic noise impacts. The maximum increase in traffic noise is predicted to be 0.6 dBA along Green Valley Road west of Shingle Springs Drive and Cameron Park Drive south of Green Valley Road, as shown in **Tables 3 and 4**. The ambient noise level at these locations is less than 65.0 dBA L_{dn} and the increase threshold would be between +3 to +5 dBA. Therefore, this would be a less than significance impact.

Operational Noise at Sensitive Receptors

As shown on **Figure 3**, the arena of the proposed project is predicted to expose nearby residences to noise levels up to 44 dBA, L_{eq} during both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The predicted project noise levels would exceed the El Dorado County General Plan noise standard for nighttime non-transportation noise of 40 dBA, L_{eq} . Therefore, impacts resulting from operational noise would be considered significant and mitigation would be required.

As shown on **Figure 4**, the commercial center of the proposed project is predicted to be 32 dBA L_{eq} during both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The predicted project noise levels would comply with the El Dorado County General Plan noise standard for non-nighttime transportation noise sources of 40 dBA, L_{eq} . Therefore, no mitigation would be required for the commercial center.

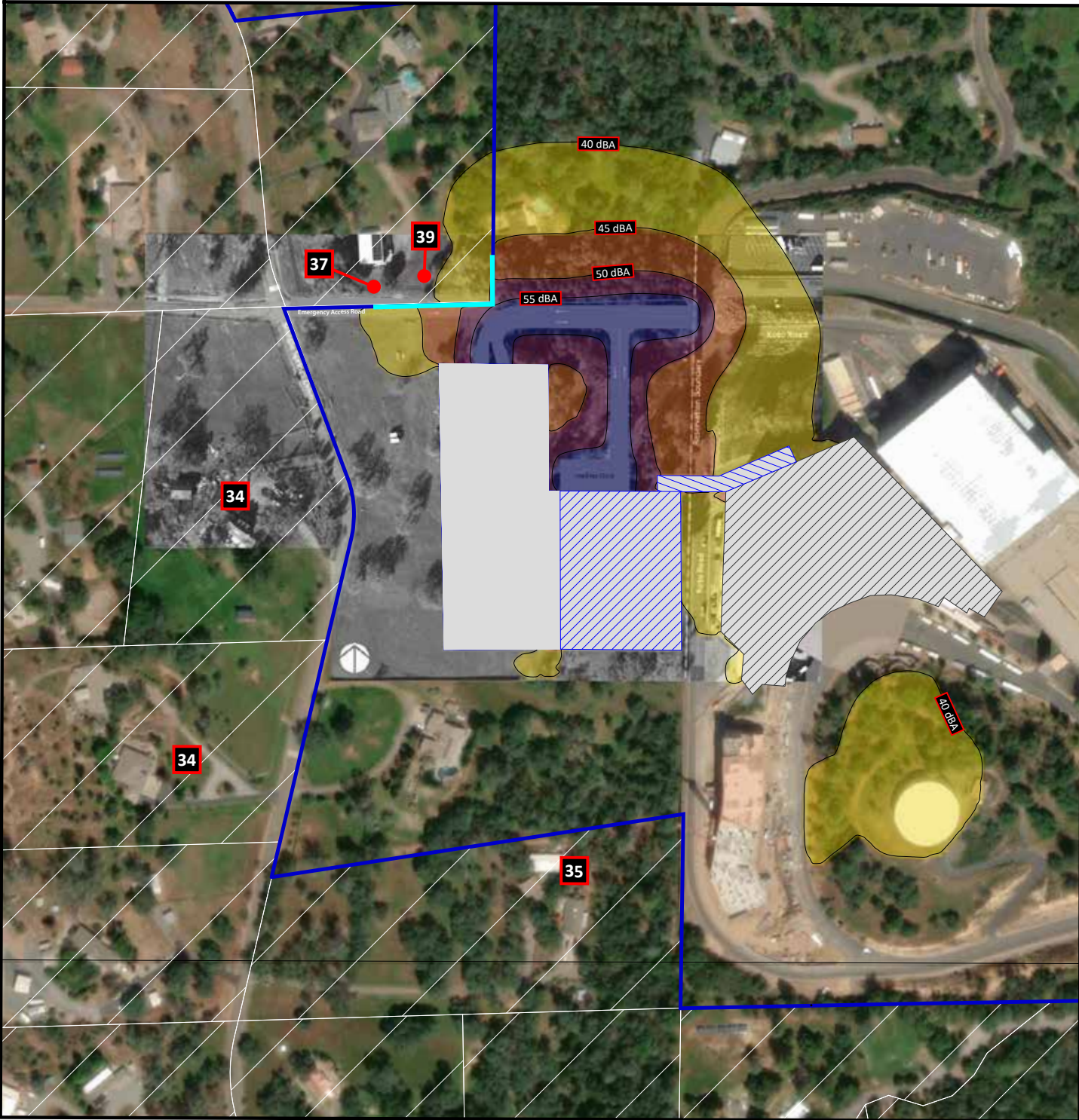
It should be noted that maximum noise levels generated by project HVAC units and on-site vehicle circulation are predicted to be no more than 10 dBA, or greater, than average (L_{eq}) values. The El Dorado County maximum (L_{max}) nighttime noise level standard is 50 dBA L_{max} , which is 10 dBA higher than the L_{eq} standard. Therefore, where average noise levels are in compliance with the L_{eq} standards, maximum noise levels will also meet the County's standards. Based upon the predicted average noise levels of 44 dBA L_{eq} , for the Arena, the maximum noise levels would be 54 dBA L_{max} . This exceeds the County nighttime noise standards of 40 dBA L_{eq} and 50 dBA L_{max} .

Saxelby Acoustics recommends the construction of an 8-foot-tall sound wall to reduce the average maximum noise levels emanating from the project site. The wall location and resulting noise contours are shown on **Figure 5**. Implementation of this mitigation measure would reduce operational noise impacts to *less-than-significant*.

Red Hawk Arena and Housing Project

El Dorado County, California

Figure 5
Stationary Event Center Noise Contours
with Sound Wall
Leq, dB(A)



Noise Level, dB(A)

40 <	≤ 45
45 <	≤ 50
50 <	≤ 55
55 <	

Legend

- Project Building
- Neighboring Parcel
- Project Site
- 8-ft. Sound Wall

Scale 1:270



CONSTRUCTION NOISE

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. As indicated in **Table 5**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA L_{max} at a distance of 50 feet. Construction activities would also be temporary in nature and are anticipated to occur during normal daytime working hours.

The nearest residential uses are located approximately 600 feet to the west, as measured from the center of the construction of the arena. At this distance, assuming -6 dBA per doubling of distance, maximum construction noise levels would be in the range of 35-49 dBA L_{eq} and 55-69 dBA L_{max} at the nearest residential uses. Construction of the proposed residential portion of the project would be similar in intensity as other residential construction projects in the area. Assuming typical residential construction equipment noise levels of 85 dBA at 50 feet, construction noise at 250 feet would be approximately 51 dBA L_{eq} and 71 dBA L_{max} . This could exceed the County's 60 dBA L_{max} construction noise level limits, as outlined in **Table 8** of the County's General Plan, shown in **Table 8**. However, as stated in the County General Plan Policy 6.5.1.11 and Chapter 130.37 of the County Code, the standards outlined in **Table 8** do not apply to noise levels generated by construction activity that occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. While daytime construction noise is exempt under the County policies and would not cause a significant increase in noise levels, mitigation measures have been identified to minimize noise levels due to construction activities.

Mitigation Measure(s)

*MM (1) Use of an 8-foot-tall sound wall, as shown on **Figure 5**, is predicted to result in compliance with the El Dorado County exterior noise standards at the nearest sensitive receptor. This wall should be constructed unless future project design changes can result in compliance with the County exterior noise standards at adjacent non-Tribal properties. Future design changes could include additional buffer distance, traffic control measures, or other measures to be determined and verified by a qualified acoustical engineer.*

MM (2) The project contractor shall ensure that the following construction noise BMPs are met on-site during all phases of construction:

- All equipment driven by internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specifications. Mobile or fixed "package" equipment (e.g., arc welders, air compressors) shall be equipped with shrouds and noise-control features that are readily available for that type of equipment.*
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.*
- The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.*

- *At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.*
- *Unnecessary idling of internal combustion engines shall be prohibited.*
- *Construction staging areas shall be established at locations that would create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.*
- *Construction site and access road speed limits shall be established and enforced during the construction period.*
- *The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.*
- *Project-related public address or music systems shall not be audible at any adjacent receptor.*
- *Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.*
- *The construction contractor shall designate a “noise disturbance coordinator” who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.*

IMPACT 2: WOULD THE PROJECT GENERATE EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 6** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located further than 26 feet from typical construction activities. At distances greater than 26 feet construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact, and no mitigation is required.

IMPACT 3: FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR 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, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?

There are no airports in the project vicinity. Therefore, this impact is not applicable to the proposed project.

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Appendix A: Acoustical Terminology

Acoustics	The science of sound.
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.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
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 or 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 +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
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.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1a: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Friday, February 23, 2024	0:00	37	52	36	33
Friday, February 23, 2024	1:00	38	58	35	33
Friday, February 23, 2024	2:00	36	46	34	31
Friday, February 23, 2024	3:00	37	51	36	32
Friday, February 23, 2024	4:00	39	52	38	34
Friday, February 23, 2024	5:00	46	72	41	38
Friday, February 23, 2024	6:00	61	82	47	43
Friday, February 23, 2024	7:00	62	86	49	46
Friday, February 23, 2024	8:00	61	85	48	45
Friday, February 23, 2024	9:00	60	81	50	48
Friday, February 23, 2024	10:00	65	91	51	47
Friday, February 23, 2024	11:00	80	90	69	50
Friday, February 23, 2024	12:00	80	87	79	49
Friday, February 23, 2024	13:00	63	86	50	47
Friday, February 23, 2024	14:00	70	85	63	48
Friday, February 23, 2024	15:00	67	85	62	56
Friday, February 23, 2024	16:00	65	81	61	51
Friday, February 23, 2024	17:00	59	85	50	48
Friday, February 23, 2024	18:00	58	80	50	48
Friday, February 23, 2024	19:00	62	90	51	49
Friday, February 23, 2024	20:00	63	87	48	43
Friday, February 23, 2024	21:00	44	54	44	42
Friday, February 23, 2024	22:00	42	52	41	38
Friday, February 23, 2024	23:00	40	51	39	36

Statistics	Leq	Lmax	L50	L90
Day Average	72	84	55	48
Night Average	53	57	39	35
Day Low	44	54	44	42
Day High	80	91	79	56
Night Low	36	46	34	31
Night High	61	82	47	43
Ldn	70	Day %		99
CNEL	70	Night %		1

Site: LT-1

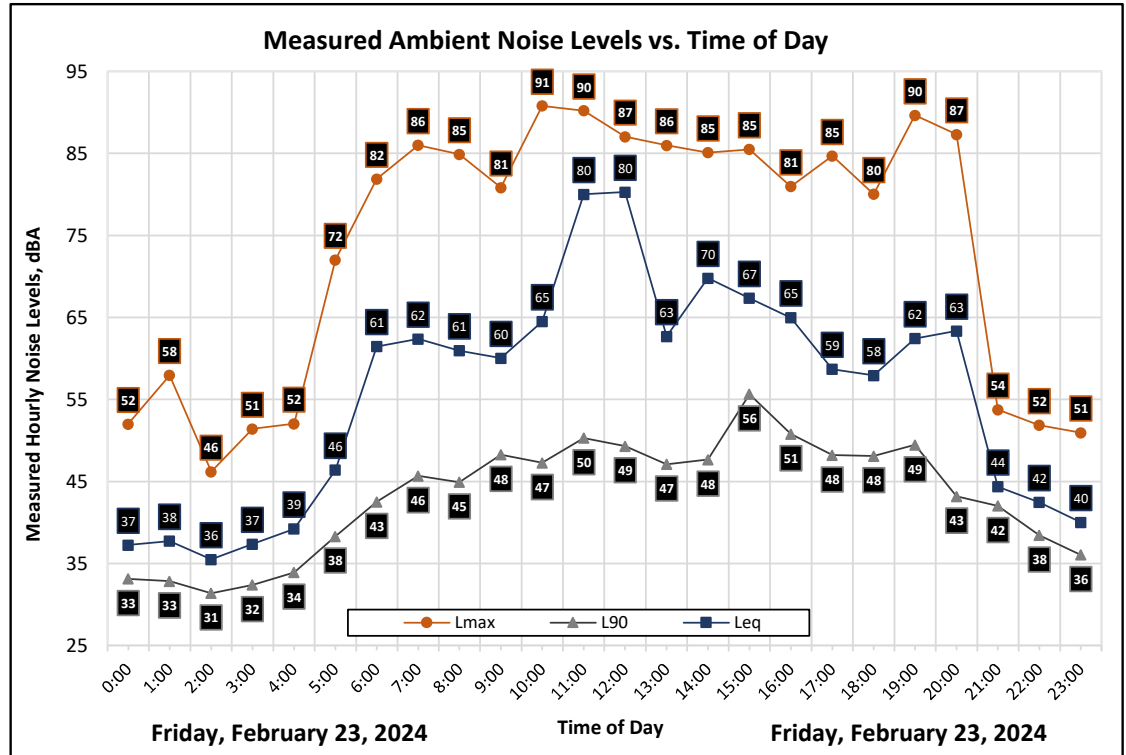
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-7

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.700383°, -120.902830°



Appendix B1b: Continuous Noise Monitoring Results

Site: LT-1

Project: Red Hawk Arena and Housing Project

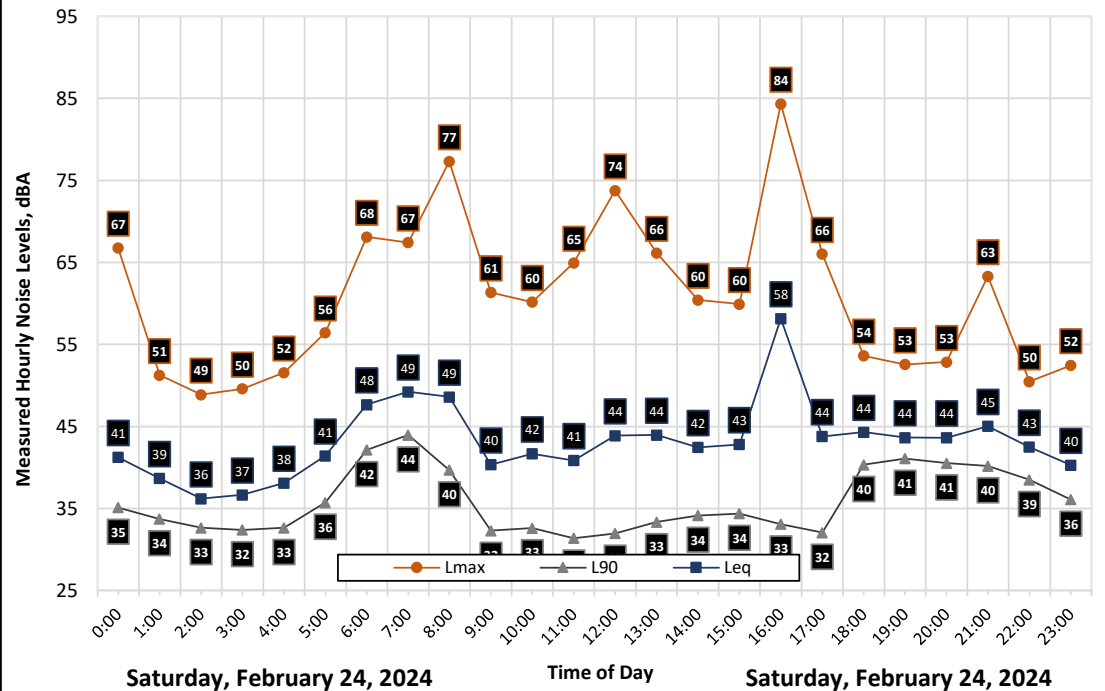
Meter: LDL 820-7

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.700383°, -120.902830°

Measured Ambient Noise Levels vs. Time of Day



Noise Measurement Site



Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Saturday, February 24, 2024	0:00	41	67	39	35
Saturday, February 24, 2024	1:00	39	51	37	34
Saturday, February 24, 2024	2:00	36	49	35	33
Saturday, February 24, 2024	3:00	37	50	35	32
Saturday, February 24, 2024	4:00	38	52	36	33
Saturday, February 24, 2024	5:00	41	56	40	36
Saturday, February 24, 2024	6:00	48	68	46	42
Saturday, February 24, 2024	7:00	49	67	46	44
Saturday, February 24, 2024	8:00	49	77	44	40
Saturday, February 24, 2024	9:00	40	61	36	32
Saturday, February 24, 2024	10:00	42	60	36	33
Saturday, February 24, 2024	11:00	41	65	36	31
Saturday, February 24, 2024	12:00	44	74	35	32
Saturday, February 24, 2024	13:00	44	66	37	33
Saturday, February 24, 2024	14:00	42	60	38	34
Saturday, February 24, 2024	15:00	43	60	38	34
Saturday, February 24, 2024	16:00	58	84	37	33
Saturday, February 24, 2024	17:00	44	66	37	32
Saturday, February 24, 2024	18:00	44	54	43	40
Saturday, February 24, 2024	19:00	44	53	43	41
Saturday, February 24, 2024	20:00	44	53	43	41
Saturday, February 24, 2024	21:00	45	63	42	40
Saturday, February 24, 2024	22:00	43	50	42	39
Saturday, February 24, 2024	23:00	40	52	39	36
Statistics		L _{eq}	L _{max}	L ₅₀	L ₉₀
Day Average		49	64	39	36
Night Average		42	55	39	35
Day Low		40	53	35	31
Day High		58	84	46	44
Night Low		36	49	35	32
Night High		48	68	46	42
L _{dn}		50	Day %	90	
CNEL		50	Night %	10	

Appendix B1c: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Sunday, February 25, 2024	0:00	39	49	37	35
Sunday, February 25, 2024	1:00	37	54	36	34
Sunday, February 25, 2024	2:00	36	48	35	32
Sunday, February 25, 2024	3:00	35	49	34	32
Sunday, February 25, 2024	4:00	38	48	36	33
Sunday, February 25, 2024	5:00	40	50	38	34
Sunday, February 25, 2024	6:00	45	63	43	40
Sunday, February 25, 2024	7:00	48	70	45	42
Sunday, February 25, 2024	8:00	48	68	42	39
Sunday, February 25, 2024	9:00	41	62	38	35
Sunday, February 25, 2024	10:00	46	66	42	39
Sunday, February 25, 2024	11:00	45	61	44	41
Sunday, February 25, 2024	12:00	47	71	43	41
Sunday, February 25, 2024	13:00	46	64	42	39
Sunday, February 25, 2024	14:00	45	64	42	40
Sunday, February 25, 2024	15:00	47	72	41	37
Sunday, February 25, 2024	16:00	44	69	40	36
Sunday, February 25, 2024	17:00	47	63	43	39
Sunday, February 25, 2024	18:00	48	60	47	45
Sunday, February 25, 2024	19:00	48	60	47	45
Sunday, February 25, 2024	20:00	47	58	46	44
Sunday, February 25, 2024	21:00	45	57	44	41
Sunday, February 25, 2024	22:00	41	52	41	39
Sunday, February 25, 2024	23:00	42	61	40	38

Statistics	Leq	Lmax	L50	L90
Day Average	46	64	43	40
Night Average	40	53	38	35
Day Low	41	57	38	35
Day High	48	72	47	45
Night Low	35	48	34	32
Night High	45	63	43	40
Ldn	48	Day %		89
CNEL	49	Night %		11

Site: LT-1

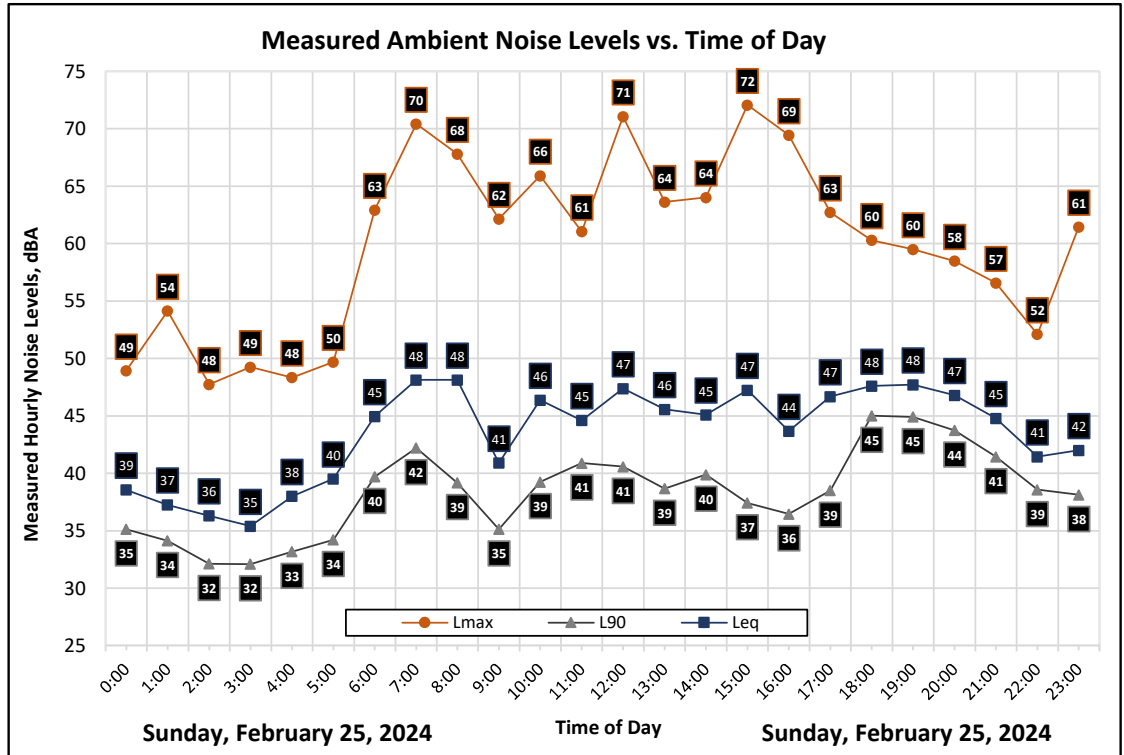
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-7

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.700383°, -120.902830°



Appendix B2a: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Friday, February 23, 2024	0:00	47	63	45	41
Friday, February 23, 2024	1:00	46	62	43	41
Friday, February 23, 2024	2:00	45	60	43	41
Friday, February 23, 2024	3:00	44	60	42	40
Friday, February 23, 2024	4:00	47	59	42	41
Friday, February 23, 2024	5:00	51	62	49	47
Friday, February 23, 2024	6:00	52	64	49	45
Friday, February 23, 2024	7:00	49	65	45	43
Friday, February 23, 2024	8:00	51	66	50	46
Friday, February 23, 2024	9:00	48	62	46	43
Friday, February 23, 2024	10:00	57	89	47	43
Friday, February 23, 2024	11:00	50	71	45	42
Friday, February 23, 2024	12:00	48	62	45	42
Friday, February 23, 2024	13:00	50	71	47	43
Friday, February 23, 2024	14:00	50	70	46	43
Friday, February 23, 2024	15:00	52	77	47	42
Friday, February 23, 2024	16:00	50	67	47	43
Friday, February 23, 2024	17:00	51	75	47	42
Friday, February 23, 2024	18:00	51	64	49	46
Friday, February 23, 2024	19:00	52	70	50	48
Friday, February 23, 2024	20:00	51	70	49	46
Friday, February 23, 2024	21:00	52	71	49	46
Friday, February 23, 2024	22:00	51	73	49	45
Friday, February 23, 2024	23:00	51	68	48	44

Statistics	L _{eq}	L _{max}	L ₅₀	L ₉₀
Day Average	51	70	47	44
Night Average	49	64	45	43
Day Low	48	62	45	42
Day High	57	89	50	48
Night Low	44	59	42	40
Night High	52	73	49	47
Ldn	55	Day %		79
CNEL	56	Night %		21

Site: LT-2

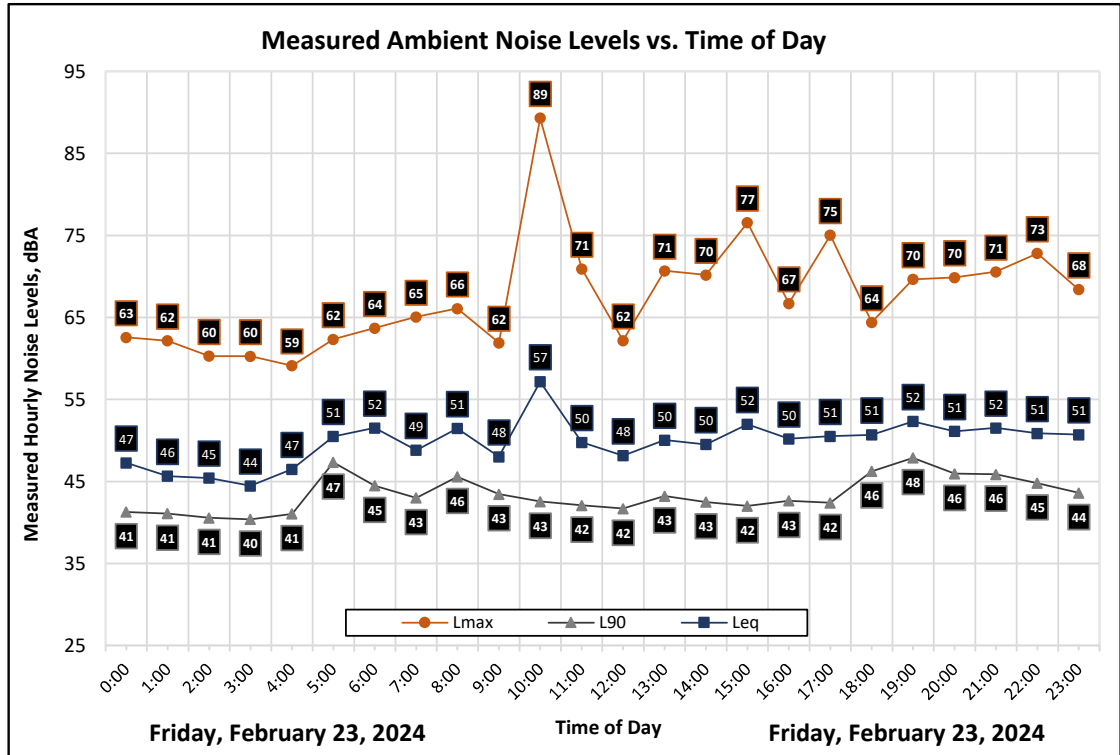
Project: Red Hawk Arena and Housing Project

Location: Northern Project Boundary

Coordinates: 38.694824°, -120.909868°

Meter: LDL 820-6

Calibrator: CAL200



Appendix B2b: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Saturday, February 24, 2024	0:00	51	69	48	43
Saturday, February 24, 2024	1:00	48	61	45	42
Saturday, February 24, 2024	2:00	48	68	45	40
Saturday, February 24, 2024	3:00	47	69	42	40
Saturday, February 24, 2024	4:00	45	62	41	40
Saturday, February 24, 2024	5:00	45	64	42	41
Saturday, February 24, 2024	6:00	51	67	48	43
Saturday, February 24, 2024	7:00	51	61	49	45
Saturday, February 24, 2024	8:00	48	64	45	43
Saturday, February 24, 2024	9:00	50	75	46	42
Saturday, February 24, 2024	10:00	49	70	47	43
Saturday, February 24, 2024	11:00	50	69	46	43
Saturday, February 24, 2024	12:00	50	69	47	42
Saturday, February 24, 2024	13:00	52	74	48	44
Saturday, February 24, 2024	14:00	52	74	48	45
Saturday, February 24, 2024	15:00	55	82	49	45
Saturday, February 24, 2024	16:00	54	80	49	43
Saturday, February 24, 2024	17:00	52	71	48	43
Saturday, February 24, 2024	18:00	52	66	51	48
Saturday, February 24, 2024	19:00	53	70	51	49
Saturday, February 24, 2024	20:00	52	70	50	48
Saturday, February 24, 2024	21:00	52	68	50	47
Saturday, February 24, 2024	22:00	52	68	49	45
Saturday, February 24, 2024	23:00	53	73	50	45

Statistics	Leq	Lmax	L50	L90
Day Average	52	71	48	45
Night Average	49	67	46	42
Day Low	48	61	45	42
Day High	55	82	51	49
Night Low	45	61	41	40
Night High	53	73	50	45
Ldn	56	Day %		77
CNEL	56	Night %		23

Site: LT-2

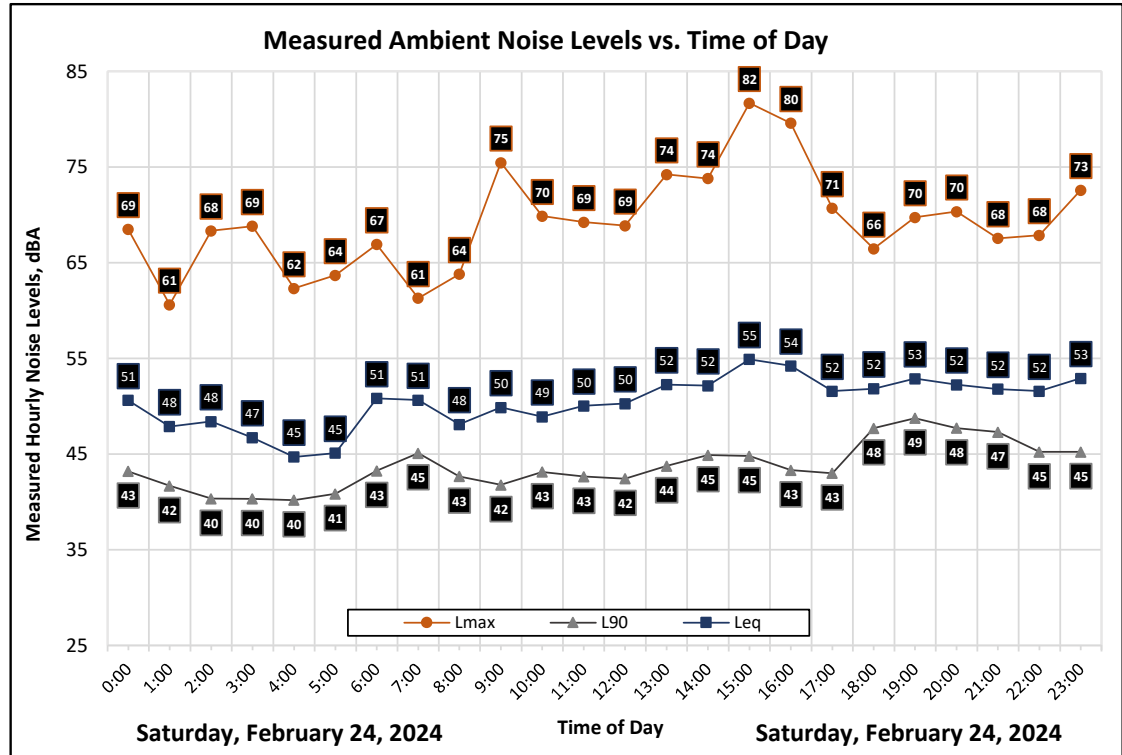
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-6

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.694824°, -120.909868°



Appendix B2c: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Sunday, February 25, 2024	0:00	50	65	49	44
Sunday, February 25, 2024	1:00	50	71	47	42
Sunday, February 25, 2024	2:00	48	64	45	41
Sunday, February 25, 2024	3:00	47	66	43	40
Sunday, February 25, 2024	4:00	45	65	42	40
Sunday, February 25, 2024	5:00	45	60	42	41
Sunday, February 25, 2024	6:00	48	69	45	43
Sunday, February 25, 2024	7:00	48	63	47	44
Sunday, February 25, 2024	8:00	50	69	46	42
Sunday, February 25, 2024	9:00	51	76	45	42
Sunday, February 25, 2024	10:00	53	61	49	43
Sunday, February 25, 2024	11:00	55	81	46	43
Sunday, February 25, 2024	12:00	51	71	47	44
Sunday, February 25, 2024	13:00	51	74	48	44
Sunday, February 25, 2024	14:00	55	78	49	45
Sunday, February 25, 2024	15:00	51	70	48	45
Sunday, February 25, 2024	16:00	52	71	48	43
Sunday, February 25, 2024	17:00	51	73	49	44
Sunday, February 25, 2024	18:00	52	70	51	48
Sunday, February 25, 2024	19:00	53	68	51	49
Sunday, February 25, 2024	20:00	52	70	50	48
Sunday, February 25, 2024	21:00	50	66	49	46
Sunday, February 25, 2024	22:00	50	65	48	44
Sunday, February 25, 2024	23:00	49	67	47	43

Statistics	Leq	Lmax	L50	L90
Day Average	52	71	48	45
Night Average	48	66	45	42
Day Low	48	61	45	42
Day High	55	81	51	49
Night Low	45	60	42	40
Night High	50	71	49	44
Ldn	55	Day %		82
CNEL	56	Night %		18

Site: LT-2

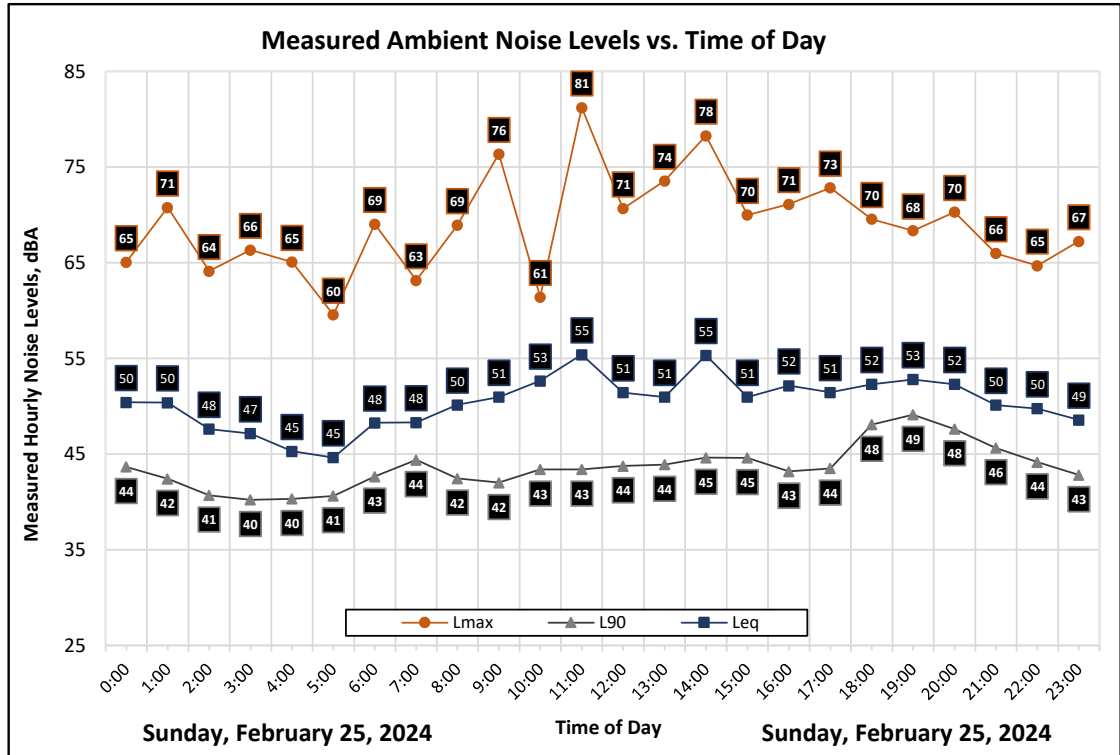
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-6

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.694824°, -120.909868°



Appendix B3a: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Friday, February 23, 2024	0:00	55	76	48	44
Friday, February 23, 2024	1:00	52	74	47	43
Friday, February 23, 2024	2:00	52	73	45	42
Friday, February 23, 2024	3:00	51	67	45	42
Friday, February 23, 2024	4:00	51	68	46	44
Friday, February 23, 2024	5:00	52	68	49	46
Friday, February 23, 2024	6:00	56	73	52	50
Friday, February 23, 2024	7:00	57	77	53	51
Friday, February 23, 2024	8:00	56	76	51	48
Friday, February 23, 2024	9:00	53	72	49	46
Friday, February 23, 2024	10:00	53	72	49	47
Friday, February 23, 2024	11:00	55	78	47	45
Friday, February 23, 2024	12:00	55	73	47	44
Friday, February 23, 2024	13:00	55	74	49	44
Friday, February 23, 2024	14:00	55	72	50	45
Friday, February 23, 2024	15:00	60	86	49	44
Friday, February 23, 2024	16:00	58	81	50	46
Friday, February 23, 2024	17:00	60	90	51	47
Friday, February 23, 2024	18:00	57	72	52	48
Friday, February 23, 2024	19:00	60	83	55	52
Friday, February 23, 2024	20:00	57	71	54	51
Friday, February 23, 2024	21:00	58	81	54	51
Friday, February 23, 2024	22:00	59	78	55	50
Friday, February 23, 2024	23:00	58	78	54	48

Statistics	L _{eq}	L _{max}	L ₅₀	L ₉₀
Day Average	57	77	51	47
Night Average	54	73	49	45
Day Low	53	71	47	44
Day High	60	90	55	52
Night Low	51	67	45	42
Night High	58	78	55	50
Ldn	61	Day %		80
CNEL	61	Night %		20

Site: LT-3

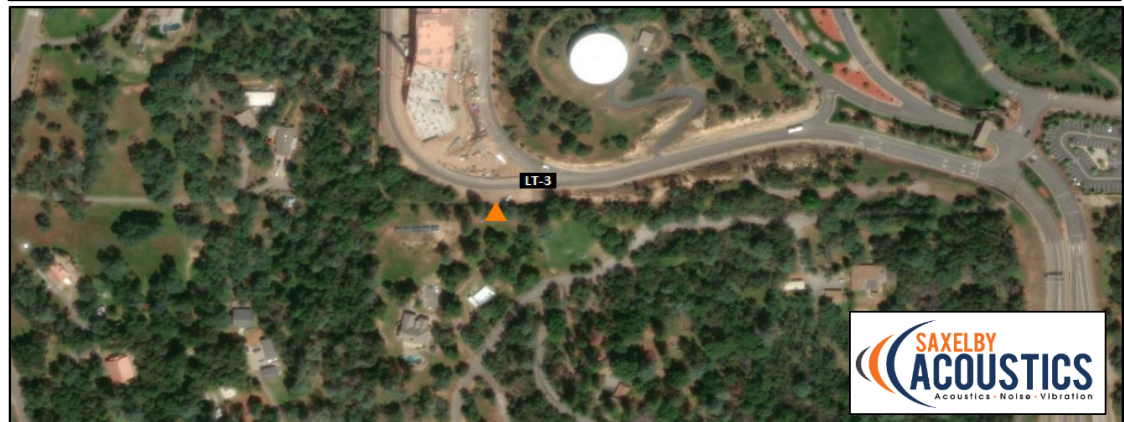
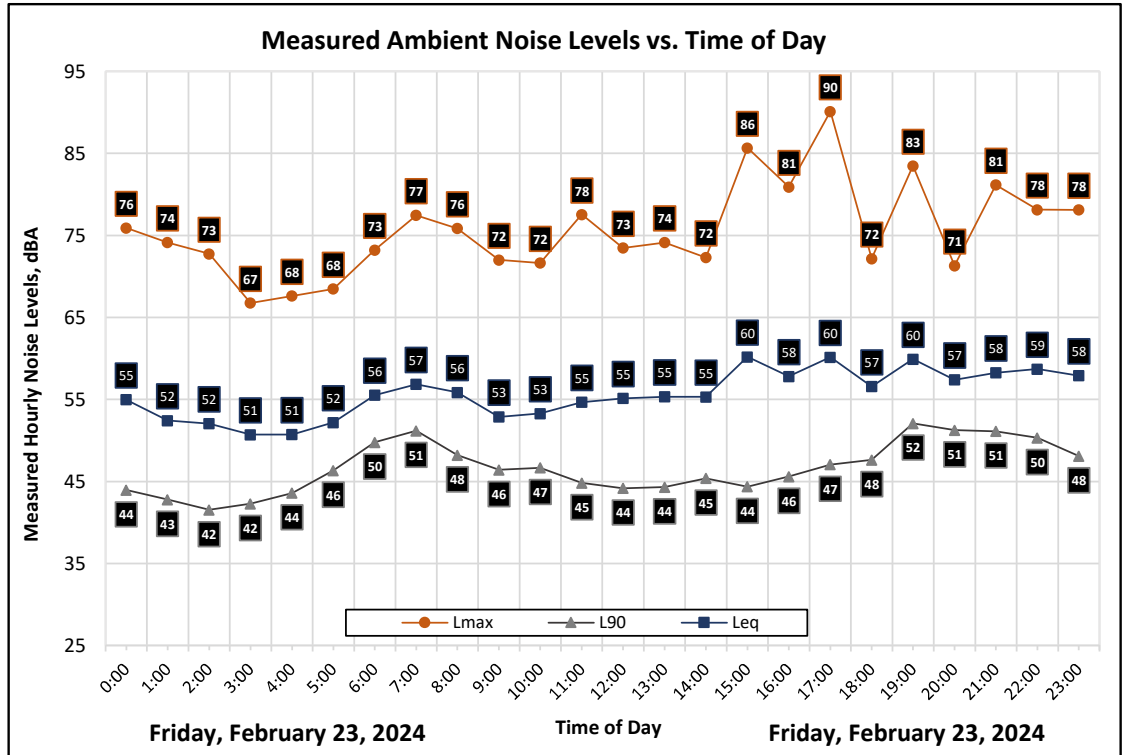
Project: Red Hawk Arena and Housing Project

Meter: LDL 812-2

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.693074°, -120.908792°



Appendix B3b: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Saturday, February 24, 2024	0:00	58	81	53	47
Saturday, February 24, 2024	1:00	55	77	49	45
Saturday, February 24, 2024	2:00	55	73	48	44
Saturday, February 24, 2024	3:00	54	77	46	43
Saturday, February 24, 2024	4:00	51	71	46	43
Saturday, February 24, 2024	5:00	52	70	49	46
Saturday, February 24, 2024	6:00	56	78	52	48
Saturday, February 24, 2024	7:00	56	72	55	52
Saturday, February 24, 2024	8:00	55	72	50	47
Saturday, February 24, 2024	9:00	55	78	47	44
Saturday, February 24, 2024	10:00	56	77	48	45
Saturday, February 24, 2024	11:00	56	77	48	44
Saturday, February 24, 2024	12:00	57	79	49	44
Saturday, February 24, 2024	13:00	58	81	51	46
Saturday, February 24, 2024	14:00	58	79	53	49
Saturday, February 24, 2024	15:00	61	87	55	48
Saturday, February 24, 2024	16:00	61	86	55	46
Saturday, February 24, 2024	17:00	60	84	53	46
Saturday, February 24, 2024	18:00	58	74	55	49
Saturday, February 24, 2024	19:00	59	81	56	52
Saturday, February 24, 2024	20:00	59	84	56	52
Saturday, February 24, 2024	21:00	58	71	56	52
Saturday, February 24, 2024	22:00	59	79	56	50
Saturday, February 24, 2024	23:00	61	88	56	49

Statistics	L _{eq}	L _{max}	L ₅₀	L ₉₀
Day Average	58	79	53	48
Night Average	56	77	50	46
Day Low	55	71	47	44
Day High	61	87	56	52
Night Low	51	70	46	43
Night High	61	88	56	50
Ldn	63	Day %		74
CNEL	63	Night %		26

Site: LT-3

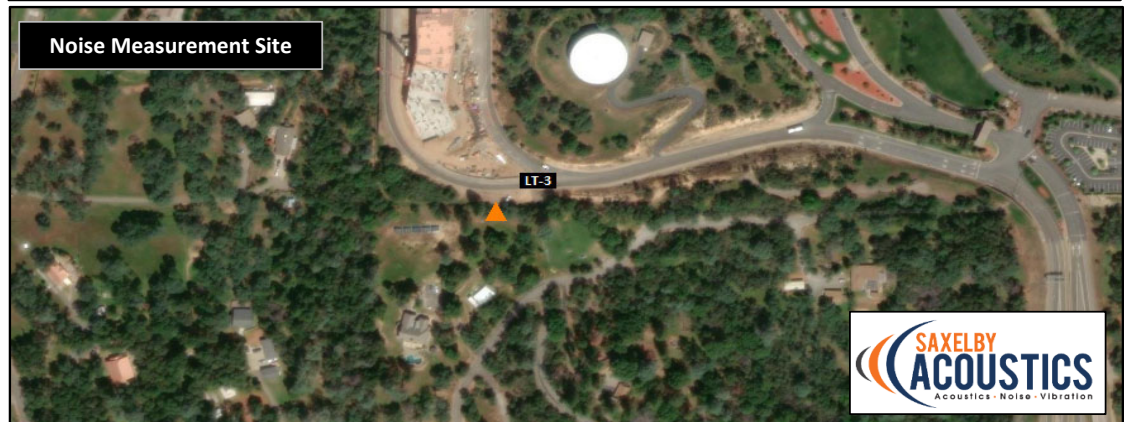
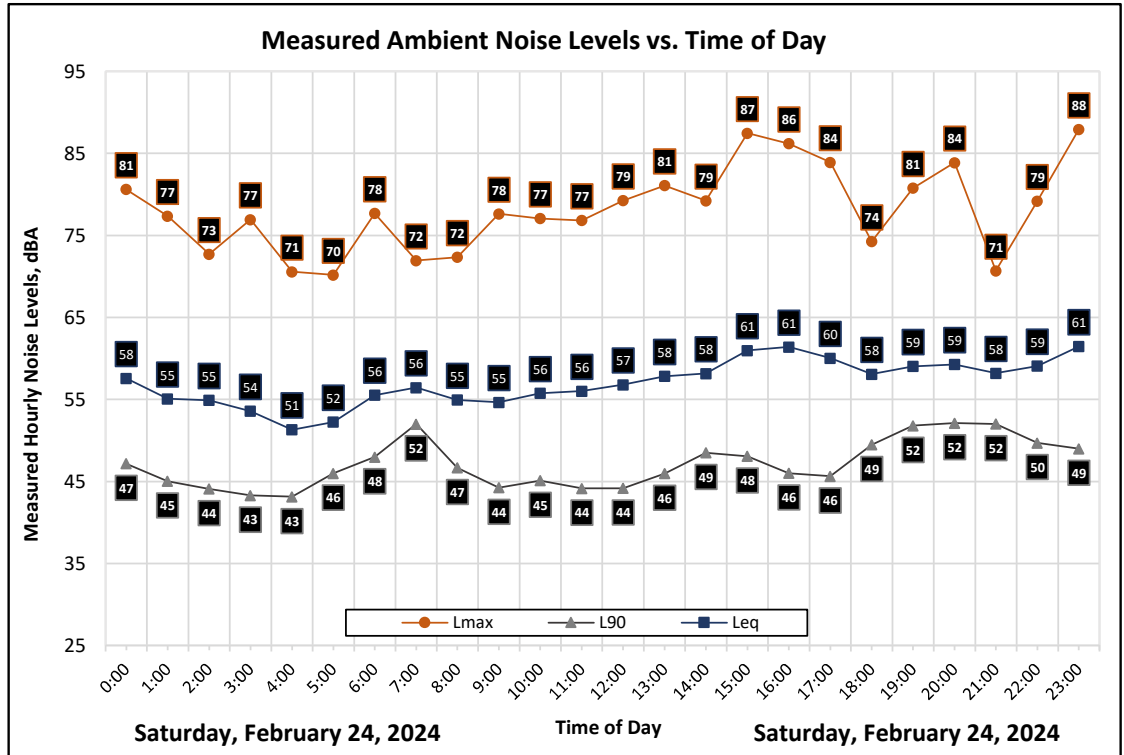
Project: Red Hawk Arena and Housing Project

Location: Northern Project Boundary

Coordinates: 38.693074°, -120.908792°

Meter: LDL 812-2

Calibrator: CAL200



Appendix B3c: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Sunday, February 25, 2024	0:00	59	81	54	47
Sunday, February 25, 2024	1:00	57	79	51	46
Sunday, February 25, 2024	2:00	56	74	49	45
Sunday, February 25, 2024	3:00	53	70	46	43
Sunday, February 25, 2024	4:00	52	68	46	44
Sunday, February 25, 2024	5:00	52	74	48	45
Sunday, February 25, 2024	6:00	55	78	52	49
Sunday, February 25, 2024	7:00	56	72	54	52
Sunday, February 25, 2024	8:00	56	72	51	48
Sunday, February 25, 2024	9:00	55	77	50	47
Sunday, February 25, 2024	10:00	55	71	51	48
Sunday, February 25, 2024	11:00	62	84	53	50
Sunday, February 25, 2024	12:00	58	79	53	50
Sunday, February 25, 2024	13:00	57	77	53	49
Sunday, February 25, 2024	14:00	64	88	54	50
Sunday, February 25, 2024	15:00	58	80	53	49
Sunday, February 25, 2024	16:00	59	80	53	49
Sunday, February 25, 2024	17:00	59	82	54	50
Sunday, February 25, 2024	18:00	59	75	55	52
Sunday, February 25, 2024	19:00	61	88	55	51
Sunday, February 25, 2024	20:00	60	84	55	52
Sunday, February 25, 2024	21:00	57	69	53	49
Sunday, February 25, 2024	22:00	57	77	52	48
Sunday, February 25, 2024	23:00	55	70	51	47

Statistics	L _{eq}	L _{max}	L ₅₀	L ₉₀
Day Average	59	78	53	50
Night Average	55	75	50	46
Day Low	55	69	50	47
Day High	64	88	55	52
Night Low	52	68	46	43
Night High	59	81	54	49
Ldn	62	Day %		81
CNEL	63	Night %		19

Site: LT-3

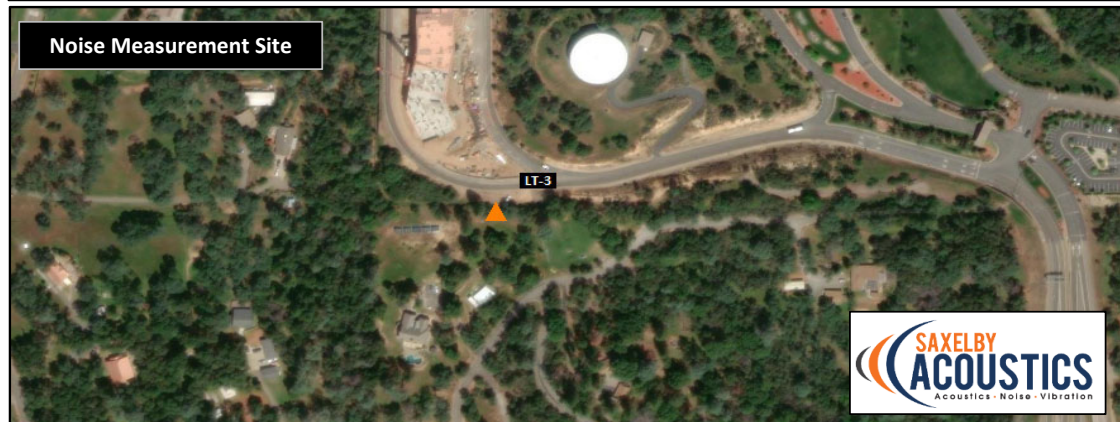
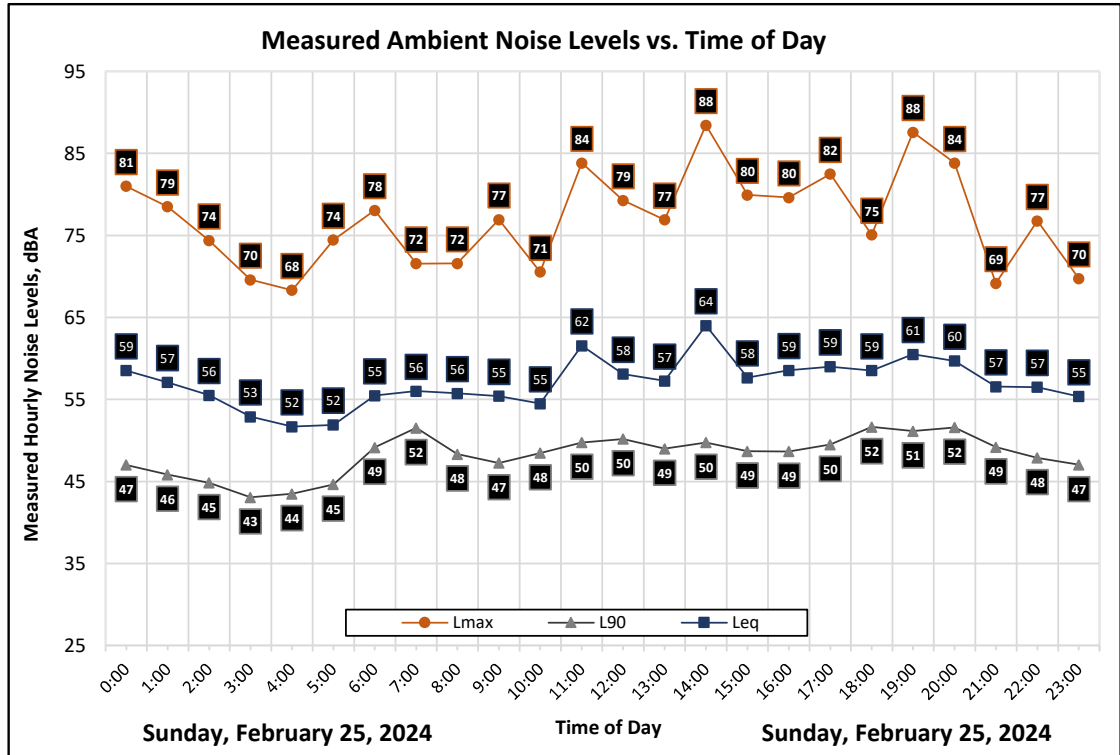
Project: Red Hawk Arena and Housing Project

Location: Northern Project Boundary

Coordinates: 38.693074°, -120.908792°

Meter: LDL 812-2

Calibrator: CAL200



Appendix B4a: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Friday, February 23, 2024	0:00	58	70	55	48
Friday, February 23, 2024	1:00	58	75	53	43
Friday, February 23, 2024	2:00	56	69	49	42
Friday, February 23, 2024	3:00	59	70	55	45
Friday, February 23, 2024	4:00	62	74	61	51
Friday, February 23, 2024	5:00	66	74	66	61
Friday, February 23, 2024	6:00	69	76	68	65
Friday, February 23, 2024	7:00	70	76	70	67
Friday, February 23, 2024	8:00	70	77	70	67
Friday, February 23, 2024	9:00	69	79	69	66
Friday, February 23, 2024	10:00	69	82	68	65
Friday, February 23, 2024	11:00	69	79	68	66
Friday, February 23, 2024	12:00	68	92	68	65
Friday, February 23, 2024	13:00	68	78	68	64
Friday, February 23, 2024	14:00	68	82	68	65
Friday, February 23, 2024	15:00	69	74	68	66
Friday, February 23, 2024	16:00	69	76	69	66
Friday, February 23, 2024	17:00	69	80	69	66
Friday, February 23, 2024	18:00	68	80	68	65
Friday, February 23, 2024	19:00	67	77	66	63
Friday, February 23, 2024	20:00	66	73	66	63
Friday, February 23, 2024	21:00	65	72	65	60
Friday, February 23, 2024	22:00	64	72	63	58
Friday, February 23, 2024	23:00	62	79	61	54

Statistics	Leq	Lmax	L50	L90
Day Average	68	78	68	65
Night Average	63	73	59	52
Day Low	65	72	65	60
Day High	70	92	70	67
Night Low	56	69	49	42
Night High	69	79	68	65
Ldn	71	Day %		86
CNEL	71	Night %		14

Site: LT-4

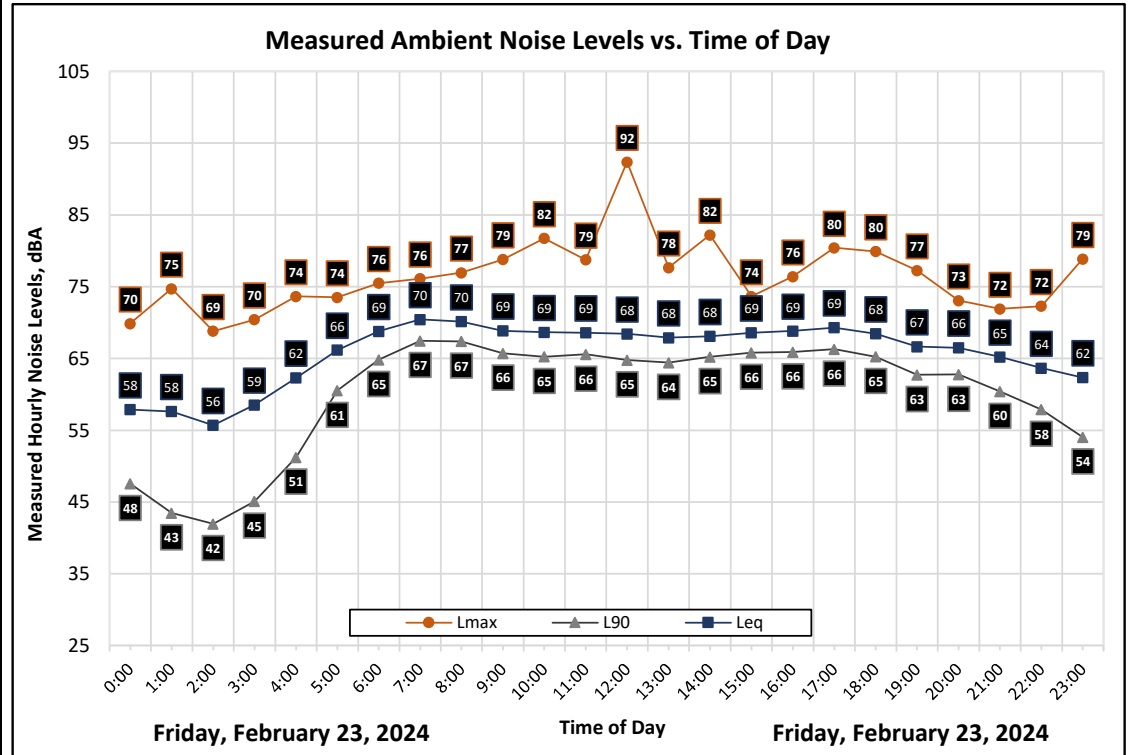
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-5

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.692576°, -120.901322°



Appendix B4b: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Saturday, February 24, 2024	0:00	62	89	58	46
Saturday, February 24, 2024	1:00	58	74	55	45
Saturday, February 24, 2024	2:00	57	72	52	43
Saturday, February 24, 2024	3:00	57	74	51	42
Saturday, February 24, 2024	4:00	59	74	55	44
Saturday, February 24, 2024	5:00	63	74	62	53
Saturday, February 24, 2024	6:00	66	75	66	61
Saturday, February 24, 2024	7:00	68	75	68	64
Saturday, February 24, 2024	8:00	68	79	68	65
Saturday, February 24, 2024	9:00	68	77	67	64
Saturday, February 24, 2024	10:00	68	79	67	64
Saturday, February 24, 2024	11:00	68	82	67	64
Saturday, February 24, 2024	12:00	67	76	67	63
Saturday, February 24, 2024	13:00	67	77	67	63
Saturday, February 24, 2024	14:00	67	76	67	63
Saturday, February 24, 2024	15:00	68	81	67	64
Saturday, February 24, 2024	16:00	69	90	67	64
Saturday, February 24, 2024	17:00	69	77	68	65
Saturday, February 24, 2024	18:00	67	76	67	64
Saturday, February 24, 2024	19:00	67	75	66	63
Saturday, February 24, 2024	20:00	65	72	65	61
Saturday, February 24, 2024	21:00	65	75	64	60
Saturday, February 24, 2024	22:00	63	74	63	58
Saturday, February 24, 2024	23:00	61	75	60	53

Statistics	Leq	Lmax	L50	L90
Day Average	67	78	67	63
Night Average	62	75	58	50
Day Low	65	72	64	60
Day High	69	90	68	65
Night Low	57	72	51	42
Night High	66	89	66	61
Ldn	69	Day %		88
CNEL	70	Night %		12

Site: LT-4

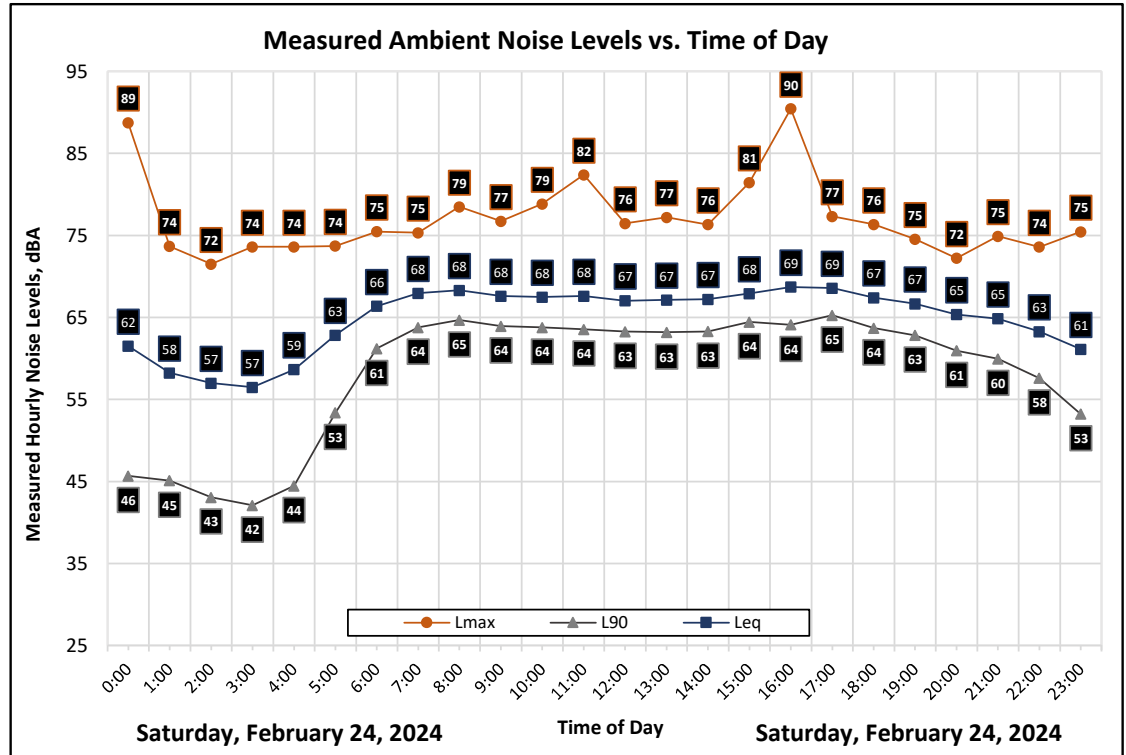
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-5

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.692576°, -120.901322°



Appendix B4c: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Sunday, February 25, 2024	0:00	60	70	58	50
Sunday, February 25, 2024	1:00	58	73	56	46
Sunday, February 25, 2024	2:00	56	69	51	44
Sunday, February 25, 2024	3:00	56	71	51	43
Sunday, February 25, 2024	4:00	57	69	53	44
Sunday, February 25, 2024	5:00	60	73	58	49
Sunday, February 25, 2024	6:00	64	81	63	56
Sunday, February 25, 2024	7:00	67	76	66	62
Sunday, February 25, 2024	8:00	66	73	66	62
Sunday, February 25, 2024	9:00	67	74	67	63
Sunday, February 25, 2024	10:00	68	79	67	64
Sunday, February 25, 2024	11:00	68	76	68	64
Sunday, February 25, 2024	12:00	68	77	68	65
Sunday, February 25, 2024	13:00	68	83	68	65
Sunday, February 25, 2024	14:00	68	76	68	65
Sunday, February 25, 2024	15:00	68	74	68	64
Sunday, February 25, 2024	16:00	68	79	68	64
Sunday, February 25, 2024	17:00	68	82	67	64
Sunday, February 25, 2024	18:00	67	76	67	63
Sunday, February 25, 2024	19:00	66	75	66	61
Sunday, February 25, 2024	20:00	65	75	64	59
Sunday, February 25, 2024	21:00	63	78	61	56
Sunday, February 25, 2024	22:00	60	69	59	52
Sunday, February 25, 2024	23:00	59	69	56	48

Statistics	Leq	Lmax	L50	L90
Day Average	67	77	67	63
Night Average	60	71	56	48
Day Low	63	73	61	56
Day High	68	83	68	65
Night Low	56	69	51	43
Night High	64	81	63	56
Ldn	68	Day %		92
CNEL	68	Night %		8

Site: LT-4

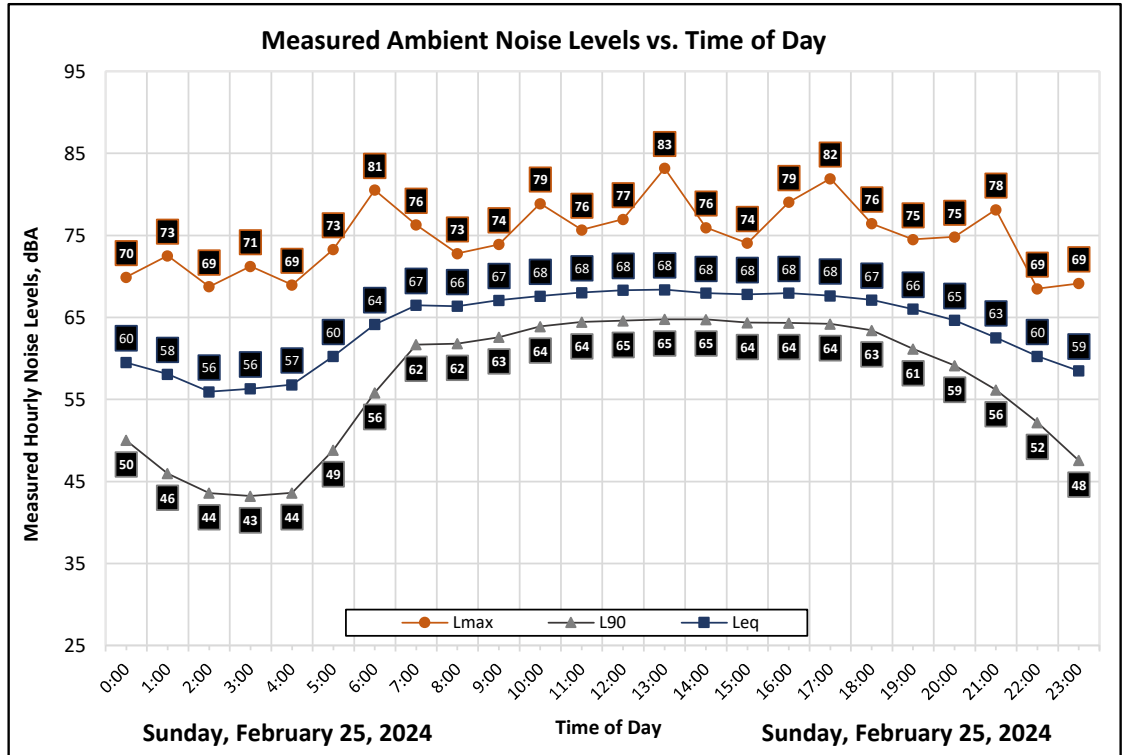
Project: Red Hawk Arena and Housing Project

Meter: LDL 820-5

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: 38.692576°, -120.901322°



Appendix B5a: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Friday, December 12, 2025	0:00	33	47	29	26
Friday, December 12, 2025	1:00	31	45	30	27
Friday, December 12, 2025	2:00	37	56	30	28
Friday, December 12, 2025	3:00	31	45	28	27
Friday, December 12, 2025	4:00	33	48	30	28
Friday, December 12, 2025	5:00	41	59	37	33
Friday, December 12, 2025	6:00	43	60	41	37
Friday, December 12, 2025	7:00	46	56	45	41
Friday, December 12, 2025	8:00	46	58	45	43
Friday, December 12, 2025	9:00	46	71	44	41
Friday, December 12, 2025	10:00	45	57	43	40
Friday, December 12, 2025	11:00	45	62	43	38
Friday, December 12, 2025	12:00	46	63	44	38
Friday, December 12, 2025	13:00	46	70	43	38
Friday, December 12, 2025	14:00	46	58	45	41
Friday, December 12, 2025	15:00	48	63	46	43
Friday, December 12, 2025	16:00	47	58	46	42
Friday, December 12, 2025	17:00	45	59	44	40
Friday, December 12, 2025	18:00	44	61	42	38
Friday, December 12, 2025	19:00	42	53	41	38
Friday, December 12, 2025	20:00	43	67	39	35
Friday, December 12, 2025	21:00	39	51	37	35
Friday, December 12, 2025	22:00	40	58	37	34
Friday, December 12, 2025	23:00	41	63	36	32

Statistics	Leq	Lmax	L50	L90
Day Average	45	60	43	39
Night Average	39	54	33	30
Day Low	39	51	37	35
Day High	48	71	46	43
Night Low	31	45	28	26
Night High	43	63	41	37
Ldn	47	Day %		90
CNEL	47	Night %		10

Site: LT-5

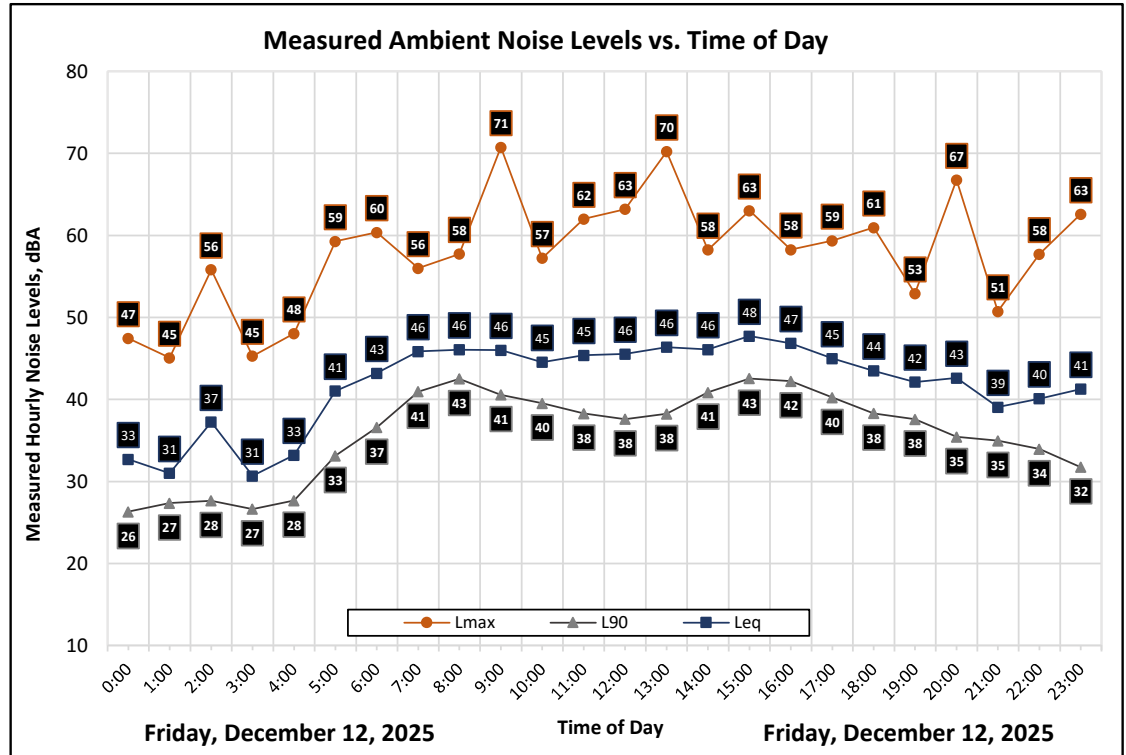
Project: Red Hawk Arena and Housing Project

Location: Northern Project Boundary

Coordinates: (38.716281, -120.919772)

Meter: LDL 820-6

Calibrator: CAL200



Appendix B5b: Continuous Noise Monitoring Results

Site: LT-5

Project: Red Hawk Arena and Housing Project

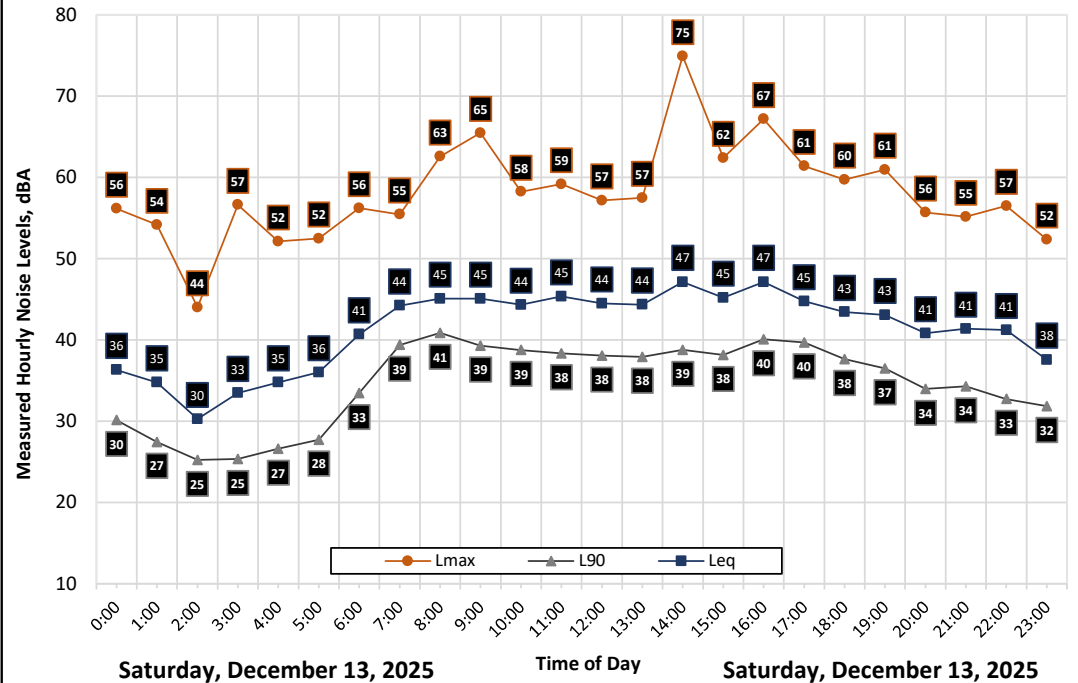
Meter: LDL 820-6

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: (38.716281, -120.919772)

Measured Ambient Noise Levels vs. Time of Day



Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Saturday, December 13, 2025	0:00	36	56	33	30
Saturday, December 13, 2025	1:00	35	54	31	27
Saturday, December 13, 2025	2:00	30	44	27	25
Saturday, December 13, 2025	3:00	33	57	28	25
Saturday, December 13, 2025	4:00	35	52	31	27
Saturday, December 13, 2025	5:00	36	52	32	28
Saturday, December 13, 2025	6:00	41	56	38	33
Saturday, December 13, 2025	7:00	44	55	43	39
Saturday, December 13, 2025	8:00	45	63	43	41
Saturday, December 13, 2025	9:00	45	65	43	39
Saturday, December 13, 2025	10:00	44	58	43	39
Saturday, December 13, 2025	11:00	45	59	43	38
Saturday, December 13, 2025	12:00	44	57	43	38
Saturday, December 13, 2025	13:00	44	57	43	38
Saturday, December 13, 2025	14:00	47	75	44	39
Saturday, December 13, 2025	15:00	45	62	44	38
Saturday, December 13, 2025	16:00	47	67	44	40
Saturday, December 13, 2025	17:00	45	61	43	40
Saturday, December 13, 2025	18:00	43	60	42	38
Saturday, December 13, 2025	19:00	43	61	41	37
Saturday, December 13, 2025	20:00	41	56	39	34
Saturday, December 13, 2025	21:00	41	55	39	34
Saturday, December 13, 2025	22:00	41	57	38	33
Saturday, December 13, 2025	23:00	38	52	35	32

Statistics

	Leq	Lmax	L50	L90
Day Average	45	61	42	38
Night Average	36	53	33	29
Day Low	41	55	39	34
Day High	47	75	44	41
Night Low	30	44	27	25
Night High	41	57	38	33
Ldn	45	Day %		93
CNEL	46	Night %		7

Noise Measurement Site



Appendix B5c: Continuous Noise Monitoring Results

Site: LT-5

Project: Red Hawk Arena and Housing Project

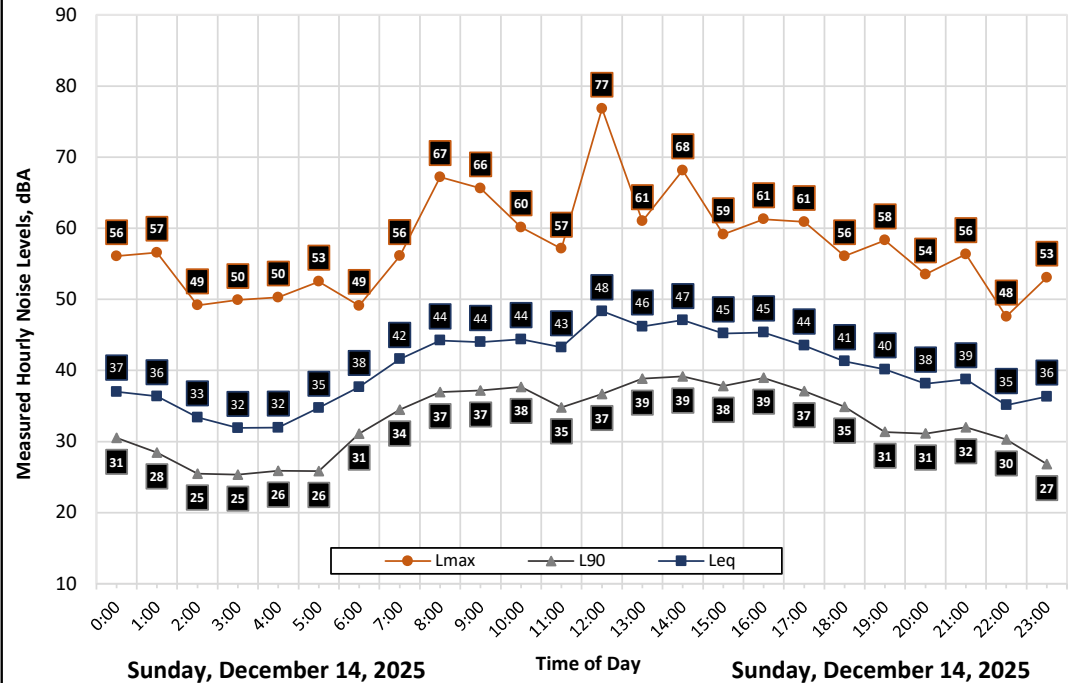
Meter: LDL 820-6

Location: Northern Project Boundary

Calibrator: CAL200

Coordinates: (38.716281, -120.919772)

Measured Ambient Noise Levels vs. Time of Day



Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Sunday, December 14, 2025	0:00	37	56	34	31
Sunday, December 14, 2025	1:00	36	57	32	28
Sunday, December 14, 2025	2:00	33	49	28	25
Sunday, December 14, 2025	3:00	32	50	28	25
Sunday, December 14, 2025	4:00	32	50	28	26
Sunday, December 14, 2025	5:00	35	53	31	26
Sunday, December 14, 2025	6:00	38	49	35	31
Sunday, December 14, 2025	7:00	42	56	40	34
Sunday, December 14, 2025	8:00	44	67	41	37
Sunday, December 14, 2025	9:00	44	66	42	37
Sunday, December 14, 2025	10:00	44	60	42	38
Sunday, December 14, 2025	11:00	43	57	42	35
Sunday, December 14, 2025	12:00	48	77	42	37
Sunday, December 14, 2025	13:00	46	61	44	39
Sunday, December 14, 2025	14:00	47	68	44	39
Sunday, December 14, 2025	15:00	45	59	43	38
Sunday, December 14, 2025	16:00	45	61	43	39
Sunday, December 14, 2025	17:00	44	61	42	37
Sunday, December 14, 2025	18:00	41	56	39	35
Sunday, December 14, 2025	19:00	40	58	37	31
Sunday, December 14, 2025	20:00	38	54	35	31
Sunday, December 14, 2025	21:00	39	56	36	32
Sunday, December 14, 2025	22:00	35	48	33	30
Sunday, December 14, 2025	23:00	36	53	32	27

Statistics	Leq	Lmax	L50	L90
Day Average	44	61	41	36
Night Average	35	52	31	28
Day Low	38	54	35	31
Day High	48	77	44	39
Night Low	32	48	28	25
Night High	38	57	35	31
Ldn	45	Day %		94
CNEL	45	Night %		6



Appendix C: Traffic Noise Calculation Inputs and Results



Appendix C-1

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

Project #: 240105 - Red Hawk Arena and Housing Project

Description: Existing Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Green Valley Rd	West of Shingle Springs Dr	3,480	84	0	16	1.0%	1.0%	45	150	0	75	35	16	55.5
2	Shingle Springs Dr	South Green Valley Rd	30	84	0	16	1.0%	1.0%	15	380	0	44	21	10	46.0
3	Lotus Rd	North of Green Valley Rd	7,870	84	0	16	1.0%	1.0%	45	230	0	129	60	28	56.2
4	Green Valley Rd	South of Lotus Rd	7,480	84	0	16	1.0%	1.0%	45	190	0	125	58	27	57.3
5	Greenstone Rd	South of Green Valley Rd	2,580	84	0	16	1.0%	1.0%	45	70	0	61	28	13	59.1
6	Green Valley Rd	East of Greenstone Rd	3,390	84	0	16	1.0%	1.0%	45	80	0	74	34	16	59.4
7	Missouri Flat Rd	East of Green Valley Rd	4,280	84	0	16	1.0%	1.0%	55	110	0	121	56	26	60.6
8	Missouri Flat Rd	East of El Dorado Rd	1,270	84	0	16	1.0%	1.0%	45	110	0	38	18	8	53.1
9	El Dorado Rd	South of Missouri Flat Rd	2,810	84	0	16	1.0%	1.0%	45	100	0	65	30	14	57.2
10	Shingle Rd	South of Green Valley Rd	5,070	84	0	16	1.0%	1.0%	50	90	0	115	53	25	61.6
11	Ponderosa Rd	South of Green Valley Rd	860	84	0	16	1.0%	1.0%	40	85	0	24	11	5	51.8
12	Deer Valley Rd	North of Green Valley Rd	1,060	84	0	16	1.0%	1.0%	45	110	0	34	16	7	52.3
13	Cameron Park Dr	South Green Valley Rd	4,600	84	0	16	1.0%	1.0%	45	50	0	90	42	19	63.8

Appendix C-2

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

Project #: 240105 - Red Hawk Arena and Housing Project

Description: Existing Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Green Valley Rd	West of Shingle Springs Dr	4,020	84	0	16	1.0%	1.0%	45	150	0	82	38	18	56.1
2	Shingle Springs Dr	South Green Valley Rd	970	84	0	16	1.0%	1.0%	15	380	0	46	22	10	46.3
3	Lotus Rd	North of Green Valley Rd	7,940	84	0	16	1.0%	1.0%	45	230	0	130	60	28	56.3
4	Green Valley Rd	South of Lotus Rd	7,950	84	0	16	1.0%	1.0%	45	190	0	130	60	28	57.5
5	Greenstone Rd	South of Green Valley Rd	2,650	84	0	16	1.0%	1.0%	45	70	0	62	29	13	59.2
6	Green Valley Rd	East of Greenstone Rd	3,730	84	0	16	1.0%	1.0%	45	80	0	78	36	17	59.9
7	Missouri Flat Rd	East of Green Valley Rd	4,490	84	0	16	1.0%	1.0%	55	110	0	125	58	27	60.8
8	Missouri Flat Rd	East of El Dorado Rd	1,400	84	0	16	1.0%	1.0%	45	110	0	41	19	9	53.5
9	El Dorado Rd	South of Missouri Flat Rd	2,810	84	0	16	1.0%	1.0%	45	100	0	65	30	14	57.2
10	Shingle Rd	South of Green Valley Rd	5,140	84	0	16	1.0%	1.0%	50	90	0	116	54	25	61.6
11	Ponderosa Rd	South of Green Valley Rd	930	84	0	16	1.0%	1.0%	40	85	0	26	12	6	52.2
12	Deer Valley Rd	North of Green Valley Rd	1,060	84	0	16	1.0%	1.0%	45	110	0	34	16	7	52.3
13	Cameron Park Dr	South Green Valley Rd	4,940	84	0	16	1.0%	1.0%	45	50	0	94	44	20	64.1

Appendix C-3

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

Project #: 240105 - Red Hawk Arena and Housing Project

Description: Cumulative Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Green Valley Rd	West of Shingle Springs Dr	3,800	84	0	16	1.0%	1.0%	45	150	0	79	37	17	55.8
2	Shingle Springs Dr	South Green Valley Rd	300	84	0	16	1.0%	1.0%	15	380	0	45	21	10	46.1
3	Lotus Rd	North of Green Valley Rd	8,300	84	0	16	1.0%	1.0%	45	230	0	134	62	29	56.5
4	Green Valley Rd	South of Lotus Rd	7,700	84	0	16	1.0%	1.0%	45	190	0	127	59	27	57.4
5	Greenstone Rd	South of Green Valley Rd	3,100	84	0	16	1.0%	1.0%	45	70	0	69	32	15	59.9
6	Green Valley Rd	East of Greenstone Rd	3,800	84	0	16	1.0%	1.0%	45	80	0	79	37	17	59.9
7	Missouri Flat Rd	East of Green Valley Rd	4,600	84	0	16	1.0%	1.0%	55	110	0	127	59	27	60.9
8	Missouri Flat Rd	East of El Dorado Rd	1,600	84	0	16	1.0%	1.0%	45	110	0	45	21	10	54.1
9	El Dorado Rd	South of Missouri Flat Rd	3,200	84	0	16	1.0%	1.0%	45	100	0	71	33	15	57.7
10	Shingle Rd	South of Green Valley Rd	8,500	84	0	16	1.0%	1.0%	50	90	0	162	75	35	63.8
11	Ponderosa Rd	South of Green Valley Rd	1,100	84	0	16	1.0%	1.0%	40	85	0	29	13	6	52.9
12	Deer Valley Rd	North of Green Valley Rd	1,300	84	0	16	1.0%	1.0%	45	110	0	39	18	8	53.2
13	Cameron Park Dr	South Green Valley Rd	4,800	84	0	16	1.0%	1.0%	45	50	0	93	43	20	64.0

Appendix C-4

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

Project #: 240105 - Red Hawk Arena and Housing Project

Description: Cumulative Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60	65	70	
												dBA	dBA	dBA	
1	Green Valley Rd	West of Shingle Springs Dr	4,340	84	0	16	1.0%	1.0%	45	150	0	87	40	19	56.4
2	Shingle Springs Dr	South Green Valley Rd	1,240	84	0	16	1.0%	1.0%	15	380	0	47	22	10	46.4
3	Lotus Rd	North of Green Valley Rd	8,370	84	0	16	1.0%	1.0%	45	230	0	134	62	29	56.5
4	Green Valley Rd	South of Lotus Rd	8,170	84	0	16	1.0%	1.0%	45	190	0	132	61	28	57.6
5	Greenstone Rd	South of Green Valley Rd	3,170	84	0	16	1.0%	1.0%	45	70	0	70	33	15	60.0
6	Green Valley Rd	East of Greenstone Rd	4,140	84	0	16	1.0%	1.0%	45	80	0	84	39	18	60.3
7	Missouri Flat Rd	East of Green Valley Rd	4,810	84	0	16	1.0%	1.0%	55	110	0	131	61	28	61.1
8	Missouri Flat Rd	East of El Dorado Rd	1,730	84	0	16	1.0%	1.0%	45	110	0	47	22	10	54.5
9	El Dorado Rd	South of Missouri Flat Rd	3,200	84	0	16	1.0%	1.0%	45	100	0	71	33	15	57.7
10	Shingle Rd	South of Green Valley Rd	8,570	84	0	16	1.0%	1.0%	50	90	0	163	76	35	63.9
11	Ponderosa Rd	South of Green Valley Rd	1,170	84	0	16	1.0%	1.0%	40	85	0	30	14	6	53.2
12	Deer Valley Rd	North of Green Valley Rd	1,300	84	0	16	1.0%	1.0%	45	110	0	39	18	8	53.2
13	Cameron Park Dr	South Green Valley Rd	5,440	84	0	16	1.0%	1.0%	45	50	0	101	47	22	64.6