

ILLINGWORTH & RODKIN, INC.
/// Acoustics • Air Quality ///

429 E. Cotati Avenue
Cotati, CA 94931

Tel: 707-794-0400
www.illingworthrodkin.com

Fax: 707-794-0405
illro@illingworthrodkin.com

M E M O

Date: February 6, 2025

To: Desiree Dei Rossi, Project Manager, David J. Powers & Associates, Inc.

From: Michael S. Thill, Principal Consultant, Illingworth & Rodkin, Inc.

SUBJECT: San Lorenzo Valley Tri-Campus (SLV) Campus Field Lighting, Felton, CA – Noise Assessment Memo

This memo summarizes Illingworth & Rodkin, Inc.'s assessment of noise related to the San Lorenzo Valley Tri-Campus (SLV) Campus Field Lighting Project in Felton, unincorporated Santa Cruz County, California.

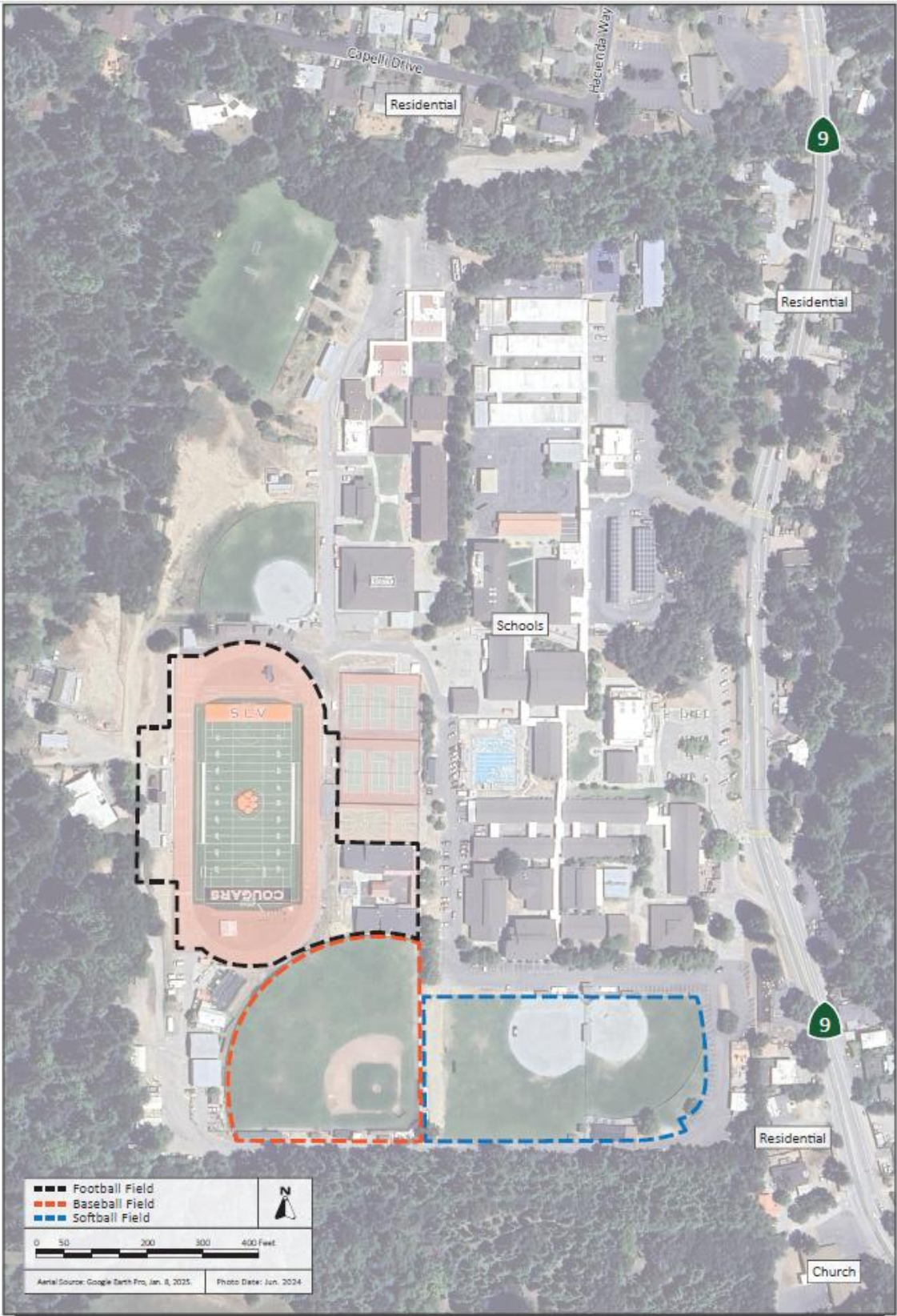
The project is the installation and operation of field lights and an upgraded public address (PA) system at the SLV football, softball, and baseball fields. The field lights would provide for safe and flexible nighttime use of the fields for various sporting and marching band activities, including practices and games. The field lights would also allow for evening special events, such as commencement exercises. A select number of nighttime events would include the use of the PA system. The PA system will also be used for sporting events, marching band, and school activities during daytime hours.

SLV currently hosts all sporting events during daylight hours. Football games are played on Saturdays, in late morning or early afternoon. In the past, SLV has played night football games on Friday or Saturday evenings as away games instead of on-campus; this typically occurs several times per season but varies each year. For the football games held on campus, attendance ranges from 500 attendees for most football games to up to 1,000 attendees for a rivalry or homecoming game. All other sporting events (e.g., baseball and softball games) and special events are currently held on campus during daylight hours on weekdays. The approximate attendance for these other events is up to 200 people.

The use of the field lights and public address system would shift the timing of some sports games, practices, and events to later in the evening. Table describes the proposed schedule for games, practices, and events utilizing the field lights and PA system and Figure 1 shows the project site and vicinity.

Table 1: Proposed Use of the Field Lights and Public Address System		
Proposed Use of Field	Use of Field Lights	Use of Public Address System
Sports Games	A total of up to four nights of varsity/junior varsity interscholastic competition per annual season, comprised of the annual seasons for football, boy's and girls' soccer (four games each), baseball and softball (four games each) concluding by 10:00 PM at the latest ¹	Yes (play-by-play commentary only permitted during football games). All other athletic competitions shall limit the use of the public address systems to announcements, warm-up music or similar uses without running commentary.
Sports Practices	Monday through Friday, concluding by 8:30 PM. Not during weekend nights unless under unusual circumstances approved by the Superintendent or designee	No
Holiday Use	The stadium field lights will not be used on school holidays, or in the period of time between commencement ceremonies and the beginning of sports practice for the fall season ²	No
Non-School Related Groups	The stadium field lights will not be used by Non-School Related Groups	No
¹ Football competitions would typically end by 10:00 PM; all other competitions would typically end by 8:30 PM. Adequate lighting (non-competition level) would be maintained after games to allow for safe exiting of the field. ² First day of practice for fall sports is the beginning of August.		

Figure 1 Project Site and Vicinity



Regulatory Criteria

The goal of the Santa Cruz County General Plan is to, “minimize noise impacts on human activity to ensure the health and safety of the community.” Policies in support of this goal, that apply to this project, are as follows:

9.2.1 Require acoustical studies for all new development projects that may affect the existing noise environment affecting sensitive land uses and receptors and that may not conform to the Normally Acceptable Noise Exposure in Table 9-2.

9.2.2 Require site-design and noise reduction measures for any project, including transportation projects, that would cause significant degradation of the noise environment due to project effects that could: (a) Increase the noise level at existing noise-sensitive receptors or areas by 5 dB or more, where the post-project CNEL or DNL will remain equal to or below 60 dB; (b) Increase the noise level at existing noise-sensitive receptors or areas by 3 dB or more, where the post-project CNEL or DNL would exceed 60 dB; This policy shall not be interpreted in a manner that would limit the ability of the County to require noise-related mitigation measures or conditions of approval for projects that may generate lesser increases than the above. Special consideration may also be applied to special events or activities subject to permit requirements, or to land use development permits for uses and activities exempted from County noise control regulations.

Chapter 13.15, Noise Planning, of the Santa Cruz County Municipal Code regulates, “noise generation and noise exposures by applying standards through land use planning and permitting, incorporating mitigation into project design to prevent unhealthful conditions, and enforcement to address violation of permit conditions.” However, noise produced by entertainment or special events is specifically exempted from the code as follows:

13.15.040 Exemptions.

(C) Entertainment or Special Events. The provisions of this chapter shall not apply to those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events, and occasional noncommercial private outdoor or indoor gatherings and community events, conducted between the hours of 8:00 a.m. and 10:00 p.m. or the applicable permitted timeframe, in compliance with Chapter 8.30 SCCC, Noise, (governing offensive noise) and as long as any applicable requirements for special event permits or temporary use permits are met.

Offensive noise is defined in Chapter 8.30, Noise, of the Santa Cruz County Municipal Code as:

(B) “Offensive noise” means any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise, and includes, but is not limited to, noise made by an individual alone or by a group of people engaged in any business, activity, meeting, gathering, game, dance, or amusement, or by any appliance, contrivance, device, tool, structure, construction, vehicle, ride, machine, implement, or

instrument.

(C) The following factors shall be considered when determining whether a violation of the provisions of this section exists:

(1) Loudness (Intensity) of the Sound.

(a) Day and Evening Hours. For purposes of this factor, a noise shall be automatically considered offensive if it occurs between the hours of 8:00 a.m. and 10:00 p.m. and it is:

(i) Clearly discernible at a distance of 150 feet from the property line of the property from which it is broadcast; or

(ii) In excess of 75 decibels at the edge of the property line of the property from which the sound is broadcast, as registered on a sound measuring instrument meeting the American National Standard Institute's Standard S1.4-1971 (or more recent revision thereof) for Type 1 or Type 2 sound level meters, or an instrument which provides equivalent data.

Noise Data Measured During Similar Sporting Events

Measurements of stadium noise were made by Illingworth & Rodkin, Inc. at Cupertino High School on October 24, 2009 during the junior varsity and varsity football games between Cupertino High School and Monta Vista High School. The attendance at the junior varsity and varsity games were approximately 200 and 300 spectators, respectively. Noise levels were quantified between 4:30 PM and 11:00 PM at one reference location approximately 360 feet northeast of the center of the football field. This reference location was northeast of the center of the field along a line tangent to the rear row of the bleachers on the visitors' side of the field. This orientation provided an unobstructed view of the field, home bleachers, and announcer's booth.

Measurements of shorter durations (5 minutes to 35 minutes) were made at several additional locations on the Cupertino High School campus and in the adjacent single-family neighborhoods at distances ranging from 240 to 750 feet from the center of the football field. Noise measurements were made in areas partially shielded by the bleachers as well as areas with unobstructed views of the field. Table 2 summarizes the results of short-term noise measurements.

In shielded and unshielded areas close to the perimeter of the football field (within 375 feet), average noise levels ranged from 57 to 59 dBA L_{eq} during the junior varsity and varsity football games. Maximum instantaneous noise levels resulting from crowd cheers ranged from 52 to 70 dBA L_{max} . Referee's whistles resulted in maximum instantaneous noise levels ranging from about 50 to 65 dBA L_{max} , and the public address system resulted in maximum instantaneous noise levels of approximately 58 to 70 dBA L_{max} .

Table 2: Noise Levels Measured at Cupertino High School October 24, 2009			
Sources of Noise	Distance from Center of Field	L_{eq} Noise Level	Maximum Noise Level
Junior Varsity Game with Cheering Crowds Public Address System Whistles	335 feet (partially shielded)	57 dBA (5 min)	58 dBA 60-66 dBA 52 dBA
Junior Varsity Game with Cheering Crowds Public Address System Whistles Kick-Off	600 feet	55 dBA (20 min)	51-63 dBA 56-63 dBA 52-56 dBA 55-56 dBA
Junior Varsity Game with Cheering Crowds Public Address System Whistles Kick-Off	375 feet	58 dBA (15 min)	52-70 dBA 56-64 dBA 56-65 dBA 63 dBA
Varsity Game with Cheering Crowds Screaming National Anthem Halftime with Marching Band Playing Public Address System Marching Band Whistles Kick-Off	240 feet (partially shielded)	57 dBA (35 min)	60-68 dBA 54-64 dBA 55-60 dBA 65-70 dBA 58-70 dBA 50-63 dBA 55-65 dBA 65 dBA
Varsity Game with Cheering Crowds Public Address System Whistles Marching Band Scoreboard Siren Amplified Music through PA System	335 feet (partially shielded)	59 dBA (25 min)	51-56 dBA 56-65 dBA 50-55 dBA 57-59 dBA 60 dBA 66-68 dBA
Varsity Game with Cheering Crowds Public Address System Whistles Scoreboard Siren	750 feet	52 dBA (20 min)	63-64 dBA 52-63 dBA 50-58 dBA 55 dBA
Note: L _{eq} is considered the average noise level over the measurement period.			

Unshielded measurements made 600 to 750 feet from the center of the field yielded average noise levels ranging from 52 to 55 dBA L_{eq}. Maximum instantaneous noise levels resulting from crowd cheers ranged from 51 to 64 dBA L_{max}. Referee's whistles resulted in maximum instantaneous noise levels ranging from about 50 to 58 dBA L_{max}, and the public address system resulted in maximum instantaneous noise levels of approximately 52 to 63 dBA L_{max}.

Noise measurements were attempted at shielded residential areas along Judy Avenue, approximately 900 feet east of the center of the football stadium. Although loud cheers, whistles,

and PA announcements were occasionally audible, noise levels resulting from these sources could not be measured above distant highway traffic noise levels (47-48 dBA).

Illingworth & Rodkin, Inc. also measured noise at two San José high schools in 2002, and the data collected during these games are described below. These games were attended by approximately two- to three times as many spectators as observed at Cupertino High School in October 2009.

Noise surveys were conducted at Mt. Pleasant High School during a varsity football game on the evening of September 13, 2002 and at the junior varsity and varsity football games played at Santa Teresa High School on the afternoon of Saturday, September 14, 2002. During each football game, noise levels were measured at a reference location stationed about 465 feet southeast of the center of the field along a line tangent to the front row of the bleachers on the visitors' side of the field. This orientation provided an unobstructed view of the field and was oriented opposite the home field bleachers and announcer's booth.

At Mt. Pleasant High School, the varsity football game began at about 7:20 PM, Approximately 1,050-1,100 spectators were in attendance. Maximum instantaneous noise levels associated with various events at the football game were annotated by the consultant attending the measurement. These data are summarized in Table 3.

Table 3: Noise Levels Measured at a High School Varsity Football Game Townsend Field (September 13, 2002)			
Source of Noise	Distance from Source	L_{eq} Noise Level	Maximum Noise Level
Varsity Game with Cheering Crowds and Screaming	210 feet	65-70 dBA	75-80 dBA
Halftime with Marching Band Playing	210 feet	70 dBA	75-80 dBA
Opening Kickoff	210 feet	--	70 dBA
Cheering	210 feet	--	65-70 dBA
Steady Crowd Noise	210 feet	60-65 dBA	65 dBA
Public Address System	210 feet	--	68 dBA
Whistles	210 feet	--	65-70 dBA
Varsity Game with Cheering Crowds and Screaming	450 feet	55 dBA	60-65 dBA
Halftime with Marching Band Playing	450 feet	60 dBA	65 dBA
Loudest Cheers	450 feet	--	65-70 dBA
Public Address System	450 feet	--	60 dBA
Marching Band	450 feet	--	60-65 dBA
Note: L _{eq} is considered the average noise level.			

At Santa Teresa High School, the junior varsity football game began at about 11:00 AM and the varsity football game began at about 1:50 PM. The school reported that approximately 650 people attended the varsity football game. Data gathered at the reference location during the varsity game are summarized in Table 4.

Table 4: Noise Levels Measured at Santa Teresa High School Varsity Game September 14, 2002	
Location: Reference Site Approximately 465 feet south and east of center of field	
Game Began: 1:49 pm	
Game Ended: 4:05 pm	
Source of Noise	<u>Maximum A-Weighted Noise Level (dBA)</u>
Crowd Cheering	
Opening Kickoff	72
Touchdown - Loudest	77
Typical Cheers	60-67
Referee Whistles	
Loudest	73
Regularly Throughout Game	60-70
PA Announcer	
Regularly Throughout Game	58-64
Loudest Announcements	69
Band	
Occasionally During Game	57-60
Loudest near End of Game	62-65
Individual's Shouts	
Intermittently Audible	55-62
Yell Leaders	
Occasionally During Game	53-60
Halftime Show	60-63
Amplified Music	
During Halftime	58-60

It is interesting to compare and contrast noise levels from the reference locations at the two games. The steady noise levels during each 15-minute interval were typically 2-4 dBA higher at the Mt. Pleasant game than at Santa Teresa. Observations made during each game indicate that this differential was possibly due to differences in atmospheric conditions and was certainly attributable to the difference in attendance. There were nearly twice as many people reported at the Mt. Pleasant game. During the night game, there was a slight north wind that placed the reference location in a downwind position with respect to the field, possibly increasing noise levels

from a neutral condition. During the afternoon game at Santa Teresa, there was a slight wind from the southwest, placing the reference location in a neutral or slightly upwind position. Cheering spectators generated the highest noise levels. At the Mt. Pleasant game, the action in the game was less in the second half than at the Santa Teresa game. This is reflected in the higher maximum noise levels from the individual cheers that show up in the last hour of the data at Santa Teresa. Also, near the end of the Santa Teresa High School game, the public address announcer exhorted the crowd to “make some noise” which probably also contributed to the higher maximum noise levels near the end of the game.

A review of the noise data collected at each of the three football games indicates that the variation in spectator noise (e.g., cheering) at a football game primarily depends upon the attendance and level of excitement generated by the game. Noise levels generated by other primary sources such as the PA (public address) system, the referees’ whistles, and band are about the same regardless of the number of people in attendance.

Illingworth & Rodkin, Inc. has also made measurements of the noise generated by baseball and softball games at several locations throughout the bay area. Little League baseball games typically generate “worst case” noise levels of about 57 dBA L_{eq} at a distance of 100 feet from the center of the infield. Maximum noise levels of about 65 dBA L_{max} typically result from baseballs being hit and shouting from players and spectators.

Operational Noise Levels During SLV Stadium Use

Sports games would occur on up to four nights of varsity/junior varsity interscholastic competition per annual season, comprised of the annual seasons for football, boy’s and girls’ soccer (four games each), baseball and softball (four games each). Junior Varsity football games would typically start at 3:00 PM, and Varsity football games would start at 6:30 PM and end by 10:00 PM. All other games would typically end by 8:30 PM. There would be no other events on the other fields during football games. Play-by-play commentary using the PA system would only be permitted during football games. All other athletic competitions will limit the use of the public address systems to announcements, warm-up music or similar uses without running commentary. Sports practices would occur Monday through Friday, concluding by 8:30 PM. Sports practices would not occur during weekend nights unless under unusual circumstances approved by the Superintendent or designee.

For the purposes of assessing a credible worst-case scenario for stadium use, the noise data collected at Mt. Pleasant High School during a varsity football game were used to estimate noise levels expected from a homecoming football game at SLV. The noise data were adjusted to account for additional distance between the noise source and receptors as the nearest residential receptors in the SLV project vicinity would be approximately 1,000 feet to the east and 1,200 feet to the north (as measured from the center of the field). At 1,000 feet, varsity football noise levels would be expected to range from 47 to 57 dBA L_{eq} and from 52 to 67 dBA L_{max} . The noise levels produced by the homecoming varsity football game at SLV (1,000 spectators) would be below the 75 dB limit that defines “offensive noise” in the Santa Cruz County Municipal Code, and therefore, would be exempt from Chapter 13.15, Noise Planning, of the Santa Cruz County Municipal Code. Noise levels produced by typical varsity football games (500 spectators), boy’s and girls’ soccer

(up to 200 spectators), and sports practices would be less given the reduced crowd sizes, and similarly exempt.

Since the project will allow for evening activities (between 7:00 PM and 10:00 PM), the daily average noise increase analysis conservatively uses CNEL. The CNEL includes a 5 dB penalty to account for peoples increased sensitivity to sounds during evening hours, which is not included in the calculation of DNL. The use of CNEL in lieu of DNL results in a more conservative assessment of noise impact since the DNL would tend to show a lower increase in noise as compared to use of CNEL.

To estimate the CNEL produced by the homecoming junior varsity and varsity football games at SLV under the lights, it was conservatively assumed that football related activities would produce average noise levels of 57 dBA L_{eq} from 3:00 PM to 10:00 PM. The resultant CNEL noise level at the nearest residence due to this activity would be 55 dBA. Under existing conditions (i.e., no evening activities), the resultant CNEL produced by football related activities is 52 dBA.

The Santa Cruz County General Plan estimates that noise levels along Highway 9 are generally in the range of 55 to 60 dB DNL¹ (essentially equal to 55 to 60 dBA CNEL). Therefore, the resultant noise level from traffic and football is estimated at 57 dBA CNEL under existing conditions and up to 58 dBA CNEL under project conditions conservatively assuming that ambient traffic noise levels are 55 dBA CNEL at the nearest residences. The project would not produce noise levels exceeding the normally acceptable threshold or result in a substantial increase noise levels at the nearest sensitive receptors. Noise levels produced by typical junior varsity/varsity football games, boy's and girls' soccer, and sports practices would be less given the reduced crowd sizes, and similarly would not result in noise levels exceeding the normally acceptable threshold or a substantial increase noise levels at the nearest sensitive receptors.

Operational Noise Levels During SLV Baseball/Softball Field Use

For the purposes of assessing a credible worst-case scenario for the baseball and softball fields, the noise data collected by Illingworth & Rodkin, Inc. during a Little League game were used to estimate noise levels expected from baseball and softball games at SLV. The noise data were adjusted to account for additional distance between the noise source and receptors as the nearest residential receptors in the SLV project vicinity would be as close as 300 feet to the east (as measured from the center of the infield). At this distance, softball noise levels produced by games on the near field would be expected to reach 47 dBA L_{eq} and 55 dBA L_{max} . If both softball fields and the baseball field were used simultaneously for games, noise levels would be expected to reach 50 dBA L_{eq} and 55 dBA L_{max} at the nearest residences to the east. The noise levels produced by baseball and softball would be below the 75 dB limit that defines "offensive noise" in the Santa Cruz County Municipal Code, and therefore, would be exempt from Chapter 13.15, Noise Planning, of the Santa Cruz County Municipal Code. Noise levels produced by practices would be less given the reduced crowd sizes, and similarly exempt.

1

https://cdi.santacruzcountycalifornia.gov/Portals/35/CDI/Planning/Policy/GeneralPlanTownPlans/General%20Plan%20Chapters/GP_Chapter%209_Noise.pdf

To estimate the CNEL produced by baseball and softball games at SLV under the lights, it was conservatively assumed that these activities would produce average noise levels of 50 dBA L_{eq} from 3:00 PM to 8:30 PM. The resultant CNEL noise level at the nearest residence due to this activity would be 46 dBA. When compared to existing conditions (i.e., no evening activities), the resultant CNEL produced by baseball and softball games is 44 dBA. The resultant noise level from traffic and baseball and softball games is estimated at 55 dBA CNEL under existing conditions and up to 56 dBA CNEL under project conditions conservatively assuming that ambient traffic noise levels are 55 dBA CNEL at the nearest residences. The project would not produce noise levels exceeding the normally acceptable threshold or result in a substantial increase noise levels at the nearest sensitive receptors. Noise levels produced by baseball and softball practices would be less given the reduced crowd sizes, and similarly would not result in noise levels exceeding the normally acceptable threshold or a substantial increase noise levels at the nearest sensitive receptors.