Exhibit D

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ACOUSTICAL ANALYSIS

CHAMISAL FITNESS & TENNIS CLUB
MONTEREY COUNTY, CALIFORNIA

WJVA Project No. 24-13

PREPARED FOR

CHAMISAL FITNESS & TENNIS CLUB
185 ROBLEY ROAD
SALINAS, CALIFORNIA 93908

PREPARED BY

WJV ACOUSTICS, INC.
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OCTOBER 3, 2024

INTRODUCTION

As requested, WJV Acoustics, Inc. (WJVA) has conducted an ambient noise survey associated with recreational activities occurring at the Chamisal Fitness and Tennis Club (referred hereafter as Club), in Monterey County. The analysis provided in this report is intended to specifically document noise levels associated with pickleball activities, and to estimate pickleball noise levels at nearby existing residential land uses. The Club currently operates eight (8) pickleball courts with plans to convert one (1) additional tennis court (adjacent to existing pickleball courts to the east) to four (4) new pickleball courts. This analysis, prepared by WJV Acoustics, Inc. (WJVA), is based upon the findings of on-site and off-site noise level measurements. The methods, data, and findings of the analysis are summarized below.

Appendix A provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects. Appendix B provides typical A-weighted sound levels for common noise sources.

NOISE EXPOSURE CRITERIA

General Plan

The Safety Element of the Monterey County General Plan (adopted October 26, 2010) establishes land use compatibility criteria in terms of the Community Noise Equivalent Level (CNEL) to describe noise exposure for noise compatibility planning purposes. The CNEL is the time-weighted energy average noise level for a 24-hour day, with a 5 dB (technically 4.77 dB) penalty added to noise levels occurring during the evening hours between 7:00 p.m. and 10:00 p.m. and a 10 dB penalty added to noise levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m. The CNEL represents cumulative exposure to noise over an extended period of time and is therefore calculated based upon *annual average* conditions.

The "Noise Hazards" section of the Safety Element provides the following Goals and Policies that are relevant to the project:

Goal S-7: ***Maintain a healthy and quiet environment free from annoying and harmful sounds.***

Policy S-7.1: New Noise Sensitive land uses may only be allowed in areas where existing and projected noise levels are "acceptable" according to "Land Use Compatibility for Community Noise Table" (Table S-2).

Policy S-7.2: Proposed development shall incorporate design elements necessary to minimize noise impacts on surrounding land uses and to reduce noise in indoor spaces to an acceptable level.

Policy S-7.3: Development may occur in areas identified as "normally acceptable" provided effective measures to reduce both the indoor and outdoor noise levels to acceptable levels are taken.

Policy S-7.4: New noise generators may be allowed in areas where projected noise levels are "conditionally acceptable" only after a detailed analysis of the noise reduction requirements is made and needed noise mitigation features are included in project design.

Policy S-7.5: New noise generators shall be discouraged in areas identified as "normally unacceptable." Where such new noise generators are permitted, mitigation to reduce both the indoor and outdoor noise levels will be required.

Policy S-7.6: Acoustical Analysis shall be part of the environmental review process for projects when:

a. Noise sensitive receptors are proposed in areas exposed to existing or projected noise levels that are "normally unacceptable" or higher according

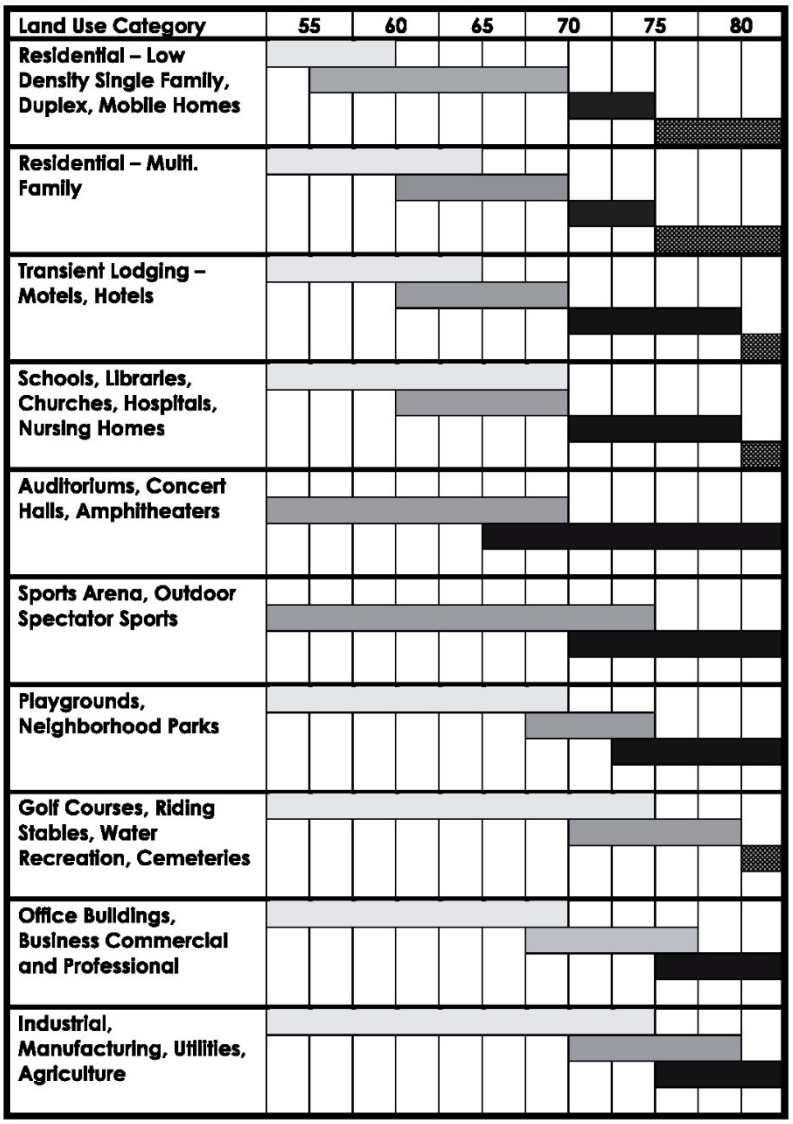
Table S-2 ("Land Use Compatibility for Community Noise").

b. Proposed noise generators are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors.

Policy S-7.7: All proposed discretionary residential projects that are within roadway or railroad noise contours of 60 dB CNEL or greater shall include a finding of consistency with the provisions of the Noise Hazards section of the Safety Element. If found that the roadway noise exceeds 60 dB CNEL within the project site, a project-specific noise impact analysis shall be required. If impacts are identified, the applicant shall conduct mitigation analysis using published Caltrans/Federal Highway Administration guidelines and implement mitigation measures as required. Mitigation measures may include, but are not limited to sound walls, adjacent roadway design, dual pane glass, building location or design, etc. Any proposed mitigation measures shall be concurrently implemented with the implementation of the project.

Although not explicitly stated in the County's General Plan, it is common to ensure interior noise levels attributable to exterior sources not exceed 45 dB CNEL (or L_{dn}) within residential land uses. This is consistent with Title 24 of the California Code of Regulations for multi-family construction and consistent with U.S. Department of Housing and Urban Development (HUD). The intent of the interior noise level guideline is to provide an acceptable noise environment for indoor communication and sleep.

TABLE S-2
Community Noise Exposure
Ldn or CNEL, dB



INTERPRETATION:

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

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

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

Clearly Unacceptable
New construction or development should generally not be undertaken.

Source: OPR General Plan Guidelines

Code of Ordinances
Additionally, The Monterey County Code of Ordinances provides further exterior noise limits.

§10.60.030 – Operation of noise-producing devices restricted.

- At any time of the day, it is prohibited within unincorporated area of the County of Monterey to operate, assist in operating, allow, or cause to be operated any machine, mechanism, device or contrivance which produces a noise level exceeding eighty-five (85) dBA measured fifty (50) feet therefrom. The prohibition in this Section shall not apply to aircraft nor to any such machine, mechanism, device or contrivance that is operated in excess of two thousand five hundred (2,500) feet from any occupied dwelling unit.

§10.60.040 – Regulation of nighttime noise.

The following regulations shall apply to nighttime noise:

a. It is prohibited within the unincorporated area of the County of Monterey to make, assist in making, allow, continue, create, or cause to be made any loud and unreasonable sound any day of the week from 10:00 p.m. to 7:00 a.m. the following morning.

b. Within the period of 10:00 p.m. to 7:00 a.m. the following morning, and for the purposes of this Section, a loud and unreasonable sound shall include any sound that exceed the exterior noise levels standards set forth in Table I below.

(Nighttime Only)

Table I	Standard
Nighttime hourly equivalent sound level (L_{eq} dBA)	45
Maximum level, dBA	65

Monterey County does not provide applicable noise standards for stationary noise sources that occur during daytime hours (7:00 a.m. to 10:00 p.m.). However, most common applications of daytime noise standards apply noise standards that are 5-10 dB less restrictive than the noise standards that are applicable during nighttime hours. For example, it would be typical to include daytime noise standards of 50-55 dB L_{eq} and 70-75 dB L_{max}.

For noise sources that are not transportation related, which usually includes commercial or industrial activities and other stationary noise sources (such as amplified music), it is common to assume that a 3-5 dB increase in noise levels represents a substantial increase in ambient noise levels. This is based on laboratory tests that indicate that a 3 dB increase is the minimum change perceptible to most people, and a 5 dB increase is perceived as a “definitely noticeable change.”

CLUB-RELATED NOISE LEVELS

Chamisal Fitness & Tennis Club (Club) is an existing fitness club facility, established in 1974. The Club includes multiple tennis courts, pickleball courts, a swimming pool, and an indoor fitness center. The Club hours are typically between 5:00 a.m. and 8:00 p.m. Sources of noise associated with the Club are generally limited to noise associated with on-site activities including human voices, tennis and pickleball matches, and various other on-site activities. Sources of noise observed in the vicinity of the Club that were not related to Club activities included noise from traffic on nearby roadways, residential landscaping activities, and noise associated with aircraft overflights on approach to the Monterey Regional Airport. The findings of the ambient noise survey, described below, focuses primarily on noise associated with pickleball activities.

Pickleball Noise Levels

WJVA conducted ambient noise level measurements in the vicinity of the Club as well as in the vicinity of nearby residential land uses on September 17 & 18, 2024. Long-term (24-hour) ambient noise levels were measured at one (1) location (LT-1) and short-term (2-5 minute) ambient noise levels were measured at five (5) locations (ST-1 through ST-5) within the Club grounds as well as in the vicinity of off-site residential land uses. The locations of six (6) total noise measurement sites are provided as Figure 1.

Noise levels were measured at the five short-term sites during both periods of time while pickleball activities were occurring at the Club and periods of time when little to no pickleball activities were occurring at the Club. The findings of the noise level measurements as well as a discussion of pickleball-related noise levels at existing residential land uses are described below.

As described above, the ambient noise level survey was conducted over a two-day period, on September 17 & 18, 2024. Per Club staff, peak hours of pickleball activities typically occur between the open-play hours of approximately 10:30 a.m. to noon, daily, as well as during league-play activities which typically occur Tuesday-Thursday between approximately 5:30 pm at 7:00 p.m. WJVA conducted reference noise level measurements during open-play hours (10:30 a.m. to noon) on both Tuesday September 17 and Wednesday September 18, and during league-play hours (5:30 p.m. to 7:00 p.m.) on Tuesday September 17. Additionally, WJVA conducted ambient noise level measurements at the ambient noise measurement sites during periods with little to no pickleball activities occurring at the Club. It should be noted, noise levels described below that were measured while pickleball activities were occurring at the Club also include noise from multiple other (non-pickleball) sources including tennis activities, human voice, roadway traffic and aircraft overflights.

Temperatures during the Club activity hours over the two-day noise monitoring period were typically in the range of approximately 55-70 degrees (F), with light winds. Conditions were typically cloudy to partially cloudy during the morning hours and becoming clear and sunny during the afternoon hours. No precipitation occurred during the two-day noise monitoring period.

Noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL-820 sound level analyzers equipped with B&K Type 4176 1/2" microphones. The equipment complies with the specifications of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters. The meters were calibrated in the field prior to use with a B&K Type 4230 acoustic calibrator to ensure the accuracy of the measurements. The microphones were located on a tripod at 5 feet above the ground. The meters were set to "fast" response, in order to accurately document the impulse noise levels associated with pickleball activities.

Long-term noise measurement site LT-1 was located within the Club facility, located approximately 150 feet from the eight existing pickleball courts and approximately 50 feet from two nearby tennis courts. Measured hourly energy average noise levels (L_{eq}) at site LT-1 ranged from a low of 34.4 dB between 5:00 a.m. and 6:00 a.m. to a high of 56.8 dB between 8:00 a.m. and 9:00 a.m. Hourly maximum (L_{max}) noise levels at site LT-1 ranged from 52.4 to 79.9 dB. Residual noise levels at the monitoring site, as defined by the L_{90}, ranged from 28.0 to 45.6 dB. The L_{90} is a statistical descriptor that defines the noise level exceeded 90% of the time during each hour of the sample period. The L_{90} is generally considered to represent the residual (or background) noise level in the absence of identifiable single noise events from traffic, aircraft, and other local noise sources. The measured CNEL value at site LT-1 was 53.4 dB CNEL. Figure 2 provides the measured noise levels graphically and Figure 3 provides a photograph of ambient noise measurement site LT-1.

Table II provides the measured hourly energy average (L_{eq}) and maximum (L_{max}) noise levels. These are the noise metrics applied by Monterey County (Table I above) for stationary (non-transportation) noise sources. However, as described above, Monterey County only provides noise standards for stationary noise sources that occur during the nighttime hours (10:00 p.m. to 7:00 a.m.). These nighttime noise standards are 45 dB L_{eq} (hourly energy average noise level) and 65 dB L_{max} (maximum hourly noise level). As described above, most common applications of daytime noise standards apply noise standards that are 5-10 dB less restrictive than the noise standards that are applicable during nighttime hours. For example, it would be typical to include daytime noise standards of 50-55 dB L_{eq} and 70-75 dB L_{max}.

TABLE II

SUMMARY OF 24-HOUR NOISE LEVEL MEASUREMENTS, LT-1
CHAMISAL FITNESS & TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17, 2024

Time	A-Weighted Decibels, dB, L_{eq} (one-hour average)	
	LT-1	
	L_{max}	L_{eq}
12:00 a.m.	43.7	53.7
1:00 a.m.	42.1	52.6
2:00 a.m.	42.2	52.9
3:00 a.m.	43.4	54.0
4:00 a.m.	40.0	53.5
5:00 a.m.	34.4	53.9
6:00 a.m.	47.5	63.9
7:00 a.m.	46.1	70.7
8:00 a.m.	56.8	70.6
9:00 a.m.	48.3	71.0
10:00 a.m.	46.9	65.3
11:00 a.m.	49.7	76.9
12:00 p.m.	49.2	70.3
1:00 p.m.	50.1	75.0
2:00 p.m.	55.1	78.6
3:00 p.m.	53.6	76.5
4:00 p.m.	49.2	69.3
5:00 p.m.	51.6	72.7
6:00 p.m.	51.8	71.4
7:00 p.m.	48.3	71.1
8:00 p.m.	53.1	79.9
9:00 p.m.	50.1	78.3
10:00 p.m.	45.9	52.4
11:00 p.m.	45.6	57.0

Source: WJV Acoustics, Inc.

In addition to the above-described LT-1 24-hour ambient noise level measurement site, WJVA conducted short-term (5-10 minutes) ambient noise level measurements at five (5) additional sites in and around the Club. The length of time of each measurement sample varied in an effort to limit noise from extraneous sources. For example, during numerous measurement periods WJVA staff observed incoming aircraft on approach to Monterey Regional Airport, resulting in that measurement period to conclude as to isolate noise associated with Club activities from the aircraft noise.

Noise levels measured at each of the five short-term sites, LT-1 through LT-5, are summarized below in Table III through Table VII, respectively. The tables provide the noise levels in terms of the energy average noise level (L_{eq}) and the maximum noise level (L_{max}) during each measurement interval. Each table also provides the time the measurement interval occurred and the sample duration for each interval. Noise levels provided in each table are broken into measurements that

were taken with little to no pickleball activities occurring at the Club and measurements that were taken while most or all of the eight pickleball courts were active. Each table provides these measurements for each interval period, the average noise levels, as well as the difference of average (average noise levels with pickleball activities minus the average noise levels without pickleball activities).

Table III summarizes the noise levels measured at site ST-1. Site ST-1 was located within the Club grounds, approximately 135 feet northeast from the center point of the eight pickleball courts. Noise levels described in Table III indicate that energy average noise levels (L_{eq}) showed very little increase during periods of pickleball activity while maximum noise levels (L_{max}) increased by approximately 7 dB during periods of pickleball activities.

TABLE III

SITE ST-1
SUMMARY OF PICKLEBALL NOISE LEVELS
CHAMISAL FITNESS AND TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17 & 18, 2024

Time	Sample Duration	dB, L_{eq}	dB, L_{max}
Little/No Pickleball Activities			
9:15 a.m.	3:25	55.7	63.0
9:18 a.m.	4:10	55.0	65.8
Average		55.4	64.6
Maximum Pickleball Activities			
10:32 a.m.	2:47	55.5	72.3
10:36 a.m.	3:44	56.1	71.4
Average		55.8	71.9
Difference of Average		**+0.4**	**+7.3**

Source: WJV Acoustics, Inc.

Table IV summarizes the noise levels measured at site ST-2. Site ST-2 was located within the Club grounds, approximately 325 feet northeast from the center point of the eight pickleball courts. Noise levels described in Table IV indicate that energy average noise levels (L_{eq}) increased by approximately 2 dB during periods of pickleball activity while maximum noise levels (L_{max}) increased by approximately 1 dB during periods of pickleball activities.

TABLE IV

SITE ST-2
SUMMARY OF PICKLEBALL NOISE LEVELS
CHAMISAL FITNESS AND TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17 & 18, 2024

Time	Sample Duration	dB, L_{eq}	dB, L_{max}
Little/No Pickleball Activities			
9:25 a.m.	2:55	47.8	62.6
4:05 p.m.	4:10	44.7	60.8
Average		46.5	61.8
Maximum Pickleball Activities			
10:41 a.m.	2:46	47.9	63.3
10:46 a.m.	3:13	49.0	62.5
5:37 p.m.	3:56	48.8	62.9
Average		48.6	62.9
Difference of Average		**+2.1**	**+1.1**

Source: WJV Acoustics, Inc.

Table V summarizes the noise levels measured at site ST-3. Site ST-3 was located just outside of the Club grounds, approximately 400 feet north from the center point of the eight pickleball courts. Noise levels described in Table V indicate that energy average noise levels (L_{eq}) decreased by approximately 2 dB during periods of pickleball activity while maximum noise levels (L_{max}) were the same during periods of pickleball activities.

TABLE V

SITE ST-3
SUMMARY OF PICKLEBALL NOISE LEVELS
CHAMISAL FITNESS AND TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17 & 18, 2024

Time	Sample Duration	dB, L_{eq}	dB, L_{max}
Little/No Pickleball Activities			
4:11 p.m.	2:15	45.8	50.0
10:00 a.m.	3:04	41.6	53.8
Average		44.2	52.3
Maximum Pickleball Activities			
11:05 a.m.	4:12	41.8	51.4
5:43 p.m.	3:32	43.2	53.0
Average		42.6	52.3
Difference of Average		**-1.6**	**0**

Source: WJV Acoustics, Inc.

Table VI summarizes the noise levels measured at site ST-4. Site ST-4 was located outside of the Club grounds, approximately 500 feet northeast from the center point of the eight pickleball courts, in the vicinity and direction of existing residential land uses. Noise levels described in Table VI indicate that energy average noise levels (L_{eq}) increased by approximately 1 dB during periods of pickleball activity while maximum noise levels (L_{max}) decreased by approximately 1 dB during periods of pickleball activities.

TABLE VI

SITE ST-4
SUMMARY OF PICKLEBALL NOISE LEVELS
CHAMISAL FITNESS AND TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17 & 18, 2024

Time	Sample Duration	dB, L_{eq}	dB, L_{max}
Little/No Pickleball Activities			
1:30 p.m.	3:05	43.4	52.6
10:10 a.m.	2:09	37.3	51.0
Average		41.3	51.9
Maximum Pickleball Activities			
5:49 p.m.	2:45	40.6	48.8
5:55 p.m.	3:31	42.8	52.8
Average		41.8	51.2
Difference of Average		**+0.5**	**-0.7**

Source: WJV Acoustics, Inc.

Table VII summarizes the noise levels measured at site ST-5. Site ST-5 was located outside of the Club grounds, approximately 180 feet south from the center point of the eight pickleball courts, in the vicinity and direction of existing residential land uses. Noise levels described in Table VII indicate that energy average noise levels (L_{eq}) were the same during periods of pickleball activity while maximum noise levels (L_{max}) increased by approximately 2 dB during periods of pickleball activities.

TABLE VII

SITE ST-5
SUMMARY OF PICKLEBALL NOISE LEVELS
CHAMISAL FITNESS AND TENNIS CLUB, MONTEREY COUNTY
SEPTEMBER 17 & 18, 2024

Time	Sample Duration	dB, L_{eq}	dB, L_{max}
Little/No Pickleball Activities			
10:20 a.m.	2:14	45.8	62.0
10:25 a.m.	2:38	46.6	63.1
Average		46.2	62.6
Maximum Pickleball Activities			
6:08 p.m.	2:03	47.0	64.1
6:14 p.m.	4:10	45.2	65.4
Average		46.2	64.8
Difference of Average		**0**	**+2.2**

Source: WJV Acoustics, Inc.

The noise levels described above in Table III through Table VII indicate that noise levels measured during pickleball activities are slightly higher than those measured during periods of little to no pickleball activities occurring at the Club. However, these measurable increases are only noticeable at locations in closer proximity to the Club (ST-1, ST-2 and ST-5). The data generally indicates that the increase in noise is noticed in terms of the measured maximum noise levels (L_{max}) and not necessarily in terms of the measured energy average noise levels (L_{eq}). It is the opinion of WJVA that the measured increase of approximately 2 dB L_{eq} at site ST-3 was not directly the result of pickleball activities on site. It is also the opinion of WJVA that the measured increases in maximum noise levels (L_{max}) at sites ST-1 and ST-5 is a direct result of pickleball activities, as these two sites are the closest in proximity to the pickleball courts and pickleball noise at these two sites was much more noticeable and isolated from extraneous noise sources compared to the other three sites.

Pickleball Noise Levels at Residential Land Uses

The closest existing residential land uses to the pickleball courts are located at setback distances of 500 feet or greater from the center point of the eight pickleball courts. Applying the highest measured maximum noise levels measured during pickleball activities (ST-1, average maximum of 71.9 dB at a distance of approximately 135 feet from center of pickleball courts), WJVA calculated the maximum pickle-ball related noise levels (based upon standard rate of attenuation of noise with increased distance from a source, - 6db/doubling of distance) to be approximately 61 dB L_{max} at 500 feet from the pickleball courts (approximate setback distance of closest residential land uses to pickleball courts).

It should be noted, the above-described calculated maximum noise level of 61 dB at a distance of 500 feet does not take into account any acoustical shielding provided by intervening

topography, buildings, or vegetation and do not take into account any atmospheric or ground absorption. As such, these noise levels should be considered a worst-case assessment of pickleball-related noise levels at existing residential land uses. The noise levels measured at sites ST-3 and ST-4 are considered to be a more accurate representation of pickleball noise levels at off-site residential land uses. Applying these measured maximum noise levels measured at sites ST-3 and ST-4 to calculate pickleball noise levels at the closest residential land uses indicates a maximum noise level of approximately 52 dB at the closest residential land uses to the pickleball courts.

In regards to the Monterey County land use noise compatibility guidelines (as provided above in Table S-2), the 24-hour noise exposure level measured at the site LT-1 was approximately 53 dB CNEL. Such levels do not exceed the County's 60 dB CNEL land use compatibility guidelines for residential land uses. These levels were measured at a location approximately 150 feet from the eight existing pickleball courts and approximately 50 feet from two nearby tennis courts. The noise levels measured at site LT-1 include noise from all sources, including all on-site Club activities (pickleball, tennis, human voices, landscaping activities, etc.) as well as all off-site noise sources (including roadway traffic noise and aircraft overflights), and should therefore be considered a worst-case assessment of overall Club-related noise levels.

Based upon the above-described noise level measurements conducted during Club pickle-ball activities, the 24-hour noise levels measured on site, and the distances of the closest residential land uses to the Club (and pickleball courts specifically), WJVA has determined that noise levels associated with pickleball activities (and overall Club-related activities) do not exceed any Monterey County noise level standards or noise compatibility criteria and any nearby residential land use.

CONCLUSIONS AND RECOMMENDATIONS

WJVA conducted long-term (24-hour) and short-term (2-5 minutes) ambient noise level measurements at six (6) total locations in the vicinity of the Chamisal Fitness & Tennis Club and surrounding residential areas on September 17 & 18, 2024. Short-term measurements were conducted at each of the five (5) short-term measurement sites during both periods of little to no pickleball activities at the Club and during peak hours of pickleball activities occurring at the Club (discussed in detail above). Based upon these noise measurements, WJVA concludes the following:

- Maximum (L_{max}) pickle-ball related noise levels at the closest residential land uses to the Club would be expected to be in the range of approximately 52-61 dB. Such levels do not exceed any Monterey County noise level standard.

- 24-hour noise exposure levels (as measured at site LT-1) were measured to be approximately 53 dB CNEL, at a distance of approximately 135 feet from the center of the eight existing pickleball courts. Such levels do not exceed Monterey County land use compatibility noise criteria for residential land uses.

- The addition of the four (4) proposed new pickleball courts would not be expected to result in any significant changes to these findings.

The conclusions and recommendations of this acoustical analysis are based upon the best information known to WJV Acoustics Inc. (WJVA) at the time the analysis was prepared concerning on-site activities, pickleball court locations, and the locations of off-site residential land uses. Any significant changes in these factors will require a reevaluation of the findings of this report. Additionally, any significant future changes in noise regulations or other factors beyond WJVA's control may result in long-term noise results different from those described by this analysis.

Respectfully submitted,

Walter J. Van Groningen
President

WJV:wjv

FIGURE 1: AMBIENT NOISE MEASUREMENT SITES

FIGURE 2: NOISE LEVELS MEASURED AT SITE LT-1

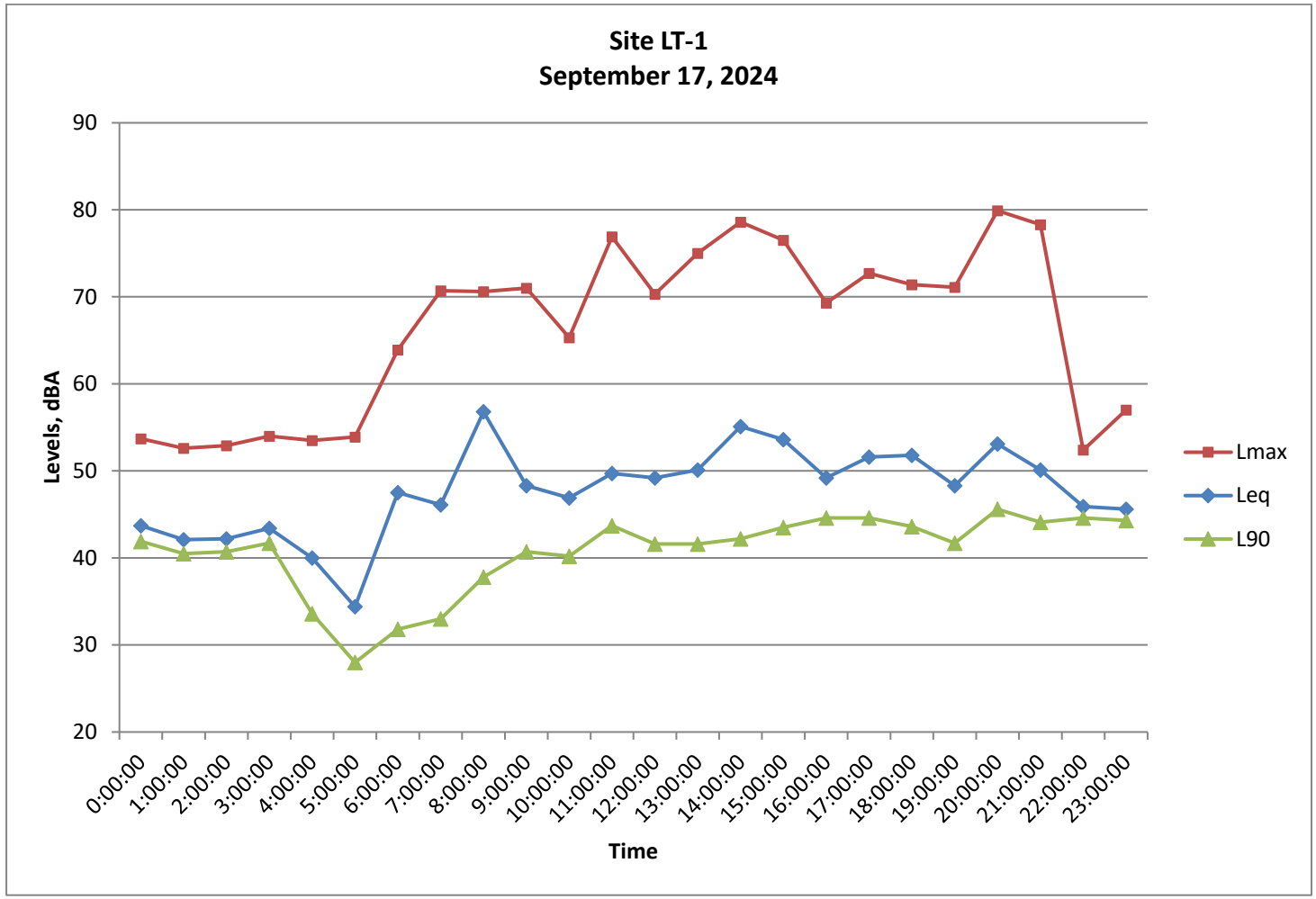


FIGURE 3: AMBIENT NOISE SITE LT-1

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

A-2

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

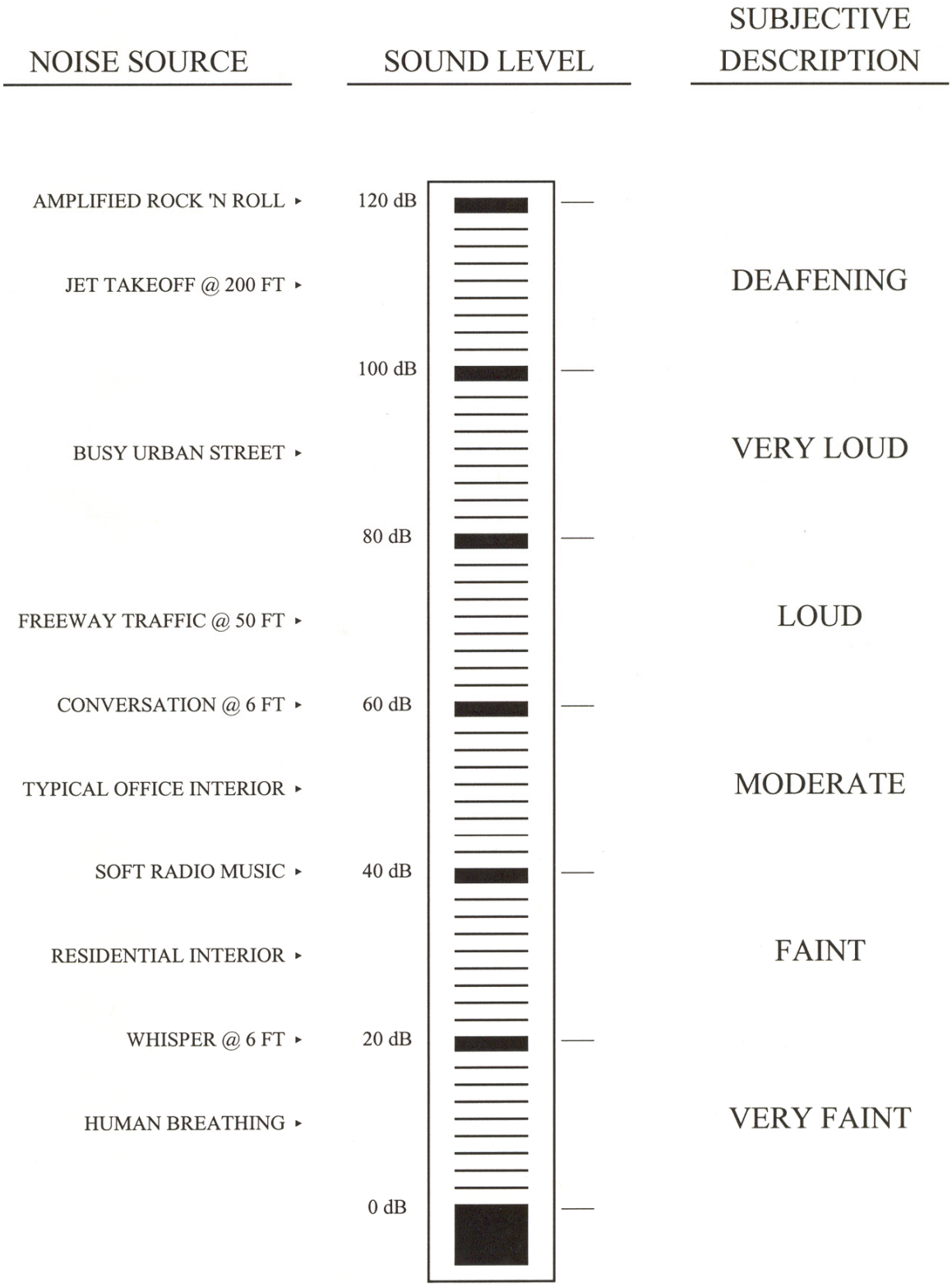
NOISE LEVEL REDUCTION (NLR): The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

SOUND TRANSMISSION CLASS (STC): The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

APPENDIX B
EXAMPLES OF SOUND LEVELS



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