Environmental Noise Assessment

Villa Florentina Bed & Breakfast and Special Event Facility

Coloma, California (El Dorado County)

BAC Job #2010-066

Prepared For:

Villa Florentina
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Prepared By:

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October 18, 2010

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Exhibit E

INTRODUCTION

Bollard Acoustical Consultants, Inc. has completed an environmental noise assessment for the proposed Villa Florentina Bed & Breakfast and Special Event facility at 6673 Carvers Road in Coloma, California (El Dorado County). The project applicant wishes to host daytime/evening (until 10 p.m.) receptions (e.g., wedding) within the outdoor patio areas on the west side of the project residence. Sound from the patio entertainment, which may include music from a DJ, should satisfy the County's noise exposure criteria at the closest residential receivers to the north, west, and east of the project facility. Please see the site aerial graphic presented as Appendix A.

Please refer to Appendix B for definitions of acoustical terminology used in this report.

CRITERIA FOR ACCEPTABLE NOISE EXPOSURE

The El Dorado County Noise Element of the General Plan establishes hourly noise exposure limits for non-transportation (stationary) noise sources affecting rural residential land uses. These limits are summarized in Table 1. In this case, the noise level criteria have been reduced by 5 dB to account for the speech/music content of the project noise.

Table 1

Exterior Noise Exposure Criteria
Applied at Rural Residential Property Lines Adjacent to the Project
El Dorado County, California Noise Element of the General Plan

	Noise Level (dB)	
Noise Level Descriptor	**Day (7 a.m.-7 p.m.)**	**Evening (7 p.m.-10 p.m.)**
Hourly L_{eq}	45	40
L_{max}	60	50

Note: Levels have been reduced by 5 dB to account for the speech/music nature of the project noise.

SOUND SYSTEM (DJ) NOISE EXPOSURE

Noise Measurement Equipment and Atmospheric Conditions

Noise measurement equipment included a Larson-Davis Laboratories (LDL) Model 820 precision integrating sound level meter equipped with an LDL Model 2560 ½" microphone. The system was calibrated in the field before use using an LDL Model CAL200 acoustical calibrator. The measurement equipment/microphone was placed on a tripod approximately 5 feet above the ground.

Atmospheric conditions during the acoustical measurements included a temperature of approximately 75° F with calm to light winds, and partly cloudy. It is assumed that these conditions would be typical for outdoor receptions at the project facility

Noise Level Measurements

Music in the project covered patio area was generated using a pair of Yamaha MSR 400 portable speakers with built-in amplifiers and an MP3 player. The sound system was installed at the designated location for reception DJs (see Appendix A). The sound system speakers were positioned to face the small dance floor (patio) and fountain/dining areas to the west. Rock music was played through the sound system for the reference measurements. The sound system was set to produce sound levels typical of what would be produced by a DJ during a wedding reception, measured at approximately 82 dB L_{eq} in the dance floor area (Site 1). Noise level measurements were completed at the fountain/dining area and at the residential property lines to the north, west, and east. Please see Table 2 for a summary of the measured noise exposure levels associated with the project.

Table 2

Summary of Noise Level Measurements
Villa Florentina – Coloma, California (El Dorado County)
October 8, 2010 – 2:30-3:30 P.M.

Measurement Site – Description	L_{eq}, dB	L_{max}, dB
1 – Patio dance floor area (15 feet from speakers)	82	87
2 – Fountain/Dining Area (60 Feet from speakers)	64	66
3 – Residence to the east (6683 Carvers Road)	40	45
4 – Residence to the north (6641 Carvers Road)	44	50
5 – Residence to the west (6640 Carvers Road)	39	42

Notes: Please see the measurement locations in Appendix A. Project-related music was nearly inaudible at Site 3 due to shielding from project buildings. Project-related music was audible but not clearly measureable above traffic noise from nearby Highway 49 at Sites 4 and 5. The underlined level at Site 4 exceeded the applicable noise criterion (40 dB L_{eq}), but was dominated by traffic noise on Highway 49.

As shown in Table 2, noise exposure produced by a reception DJ in the project covered patio area did not produce noise exposure in excess of the applicable noise exposure criteria. Music was audible at the residential measurement sites, but was not clearly measureable relative to traffic noise from Highway 49.

GUEST NOISE EXPOSURE

The project proponent proposes to have events with no more than 189 people in the outdoor patio and fountain/dining areas. Persons engaged in normal conversation, such as during dinner, would generally produce noise levels of approximately 60 dB at a distance of 5 feet from one-another. If it is assumed that no more than 38 people (20% of capacity) would be speaking at any given time, and noise level reduction is -6 dB per doubling of distance (standard spherical divergence or spreading loss), noise exposure from the outdoor patio dining area at the closest residences to the north (approximately 180 feet from the center of the fountain/dining area) would be approximately 45 dB L_{eq}. This level represents unmitigated noise exposure (i.e., no reduction due to intervening property line barriers, topography, or structures). In this case,

additional noise level reduction from ground absorption and intervening topography would be expected to reduce guest noise levels to less than 40 dB L_{eq} at the closest residential property line. Therefore, average guest noise levels would be expected to satisfy the applicable daytime and evening noise exposure limits at the closest residential property line.

Worst-case, maximum noise exposure from guest laughter, cheering, etc. would be expected to exceed the County's evening noise exposure limit of 50 dB (L_{max}) at the closest residential property line to the north.

MITIGATION

Sound System

As presented above, noise exposure from a DJ sound system positioned in the covered patio area on the west side of the project residence would not be expected to exceed the applicable daytime or evening noise exposure limits at the closest residential property lines. It is critical that the sound system is placed in the covered patio area to take advantage of the acoustical shielding provided by the project buildings. The DJ sound system should not be positioned anywhere other than the covered patio area shown in Appendix A.

Guest Noise

Guest noise exposure during dinner or other times when the music is not a dominant noise source would not be expected to exceed the applicable 45 dB L_{eq} and 40 dB L_{eq} daytime and nighttime noise exposure limits, respectively, at the closest residential properties. To help mitigate the possibility of nighttime noise exposure impacts at neighboring residents, we recommend that reception activities end no later than 9:30 p.m. This would allow guests time to exit the project area before 10 p.m., limiting nighttime noise exposure in the project neighborhood.

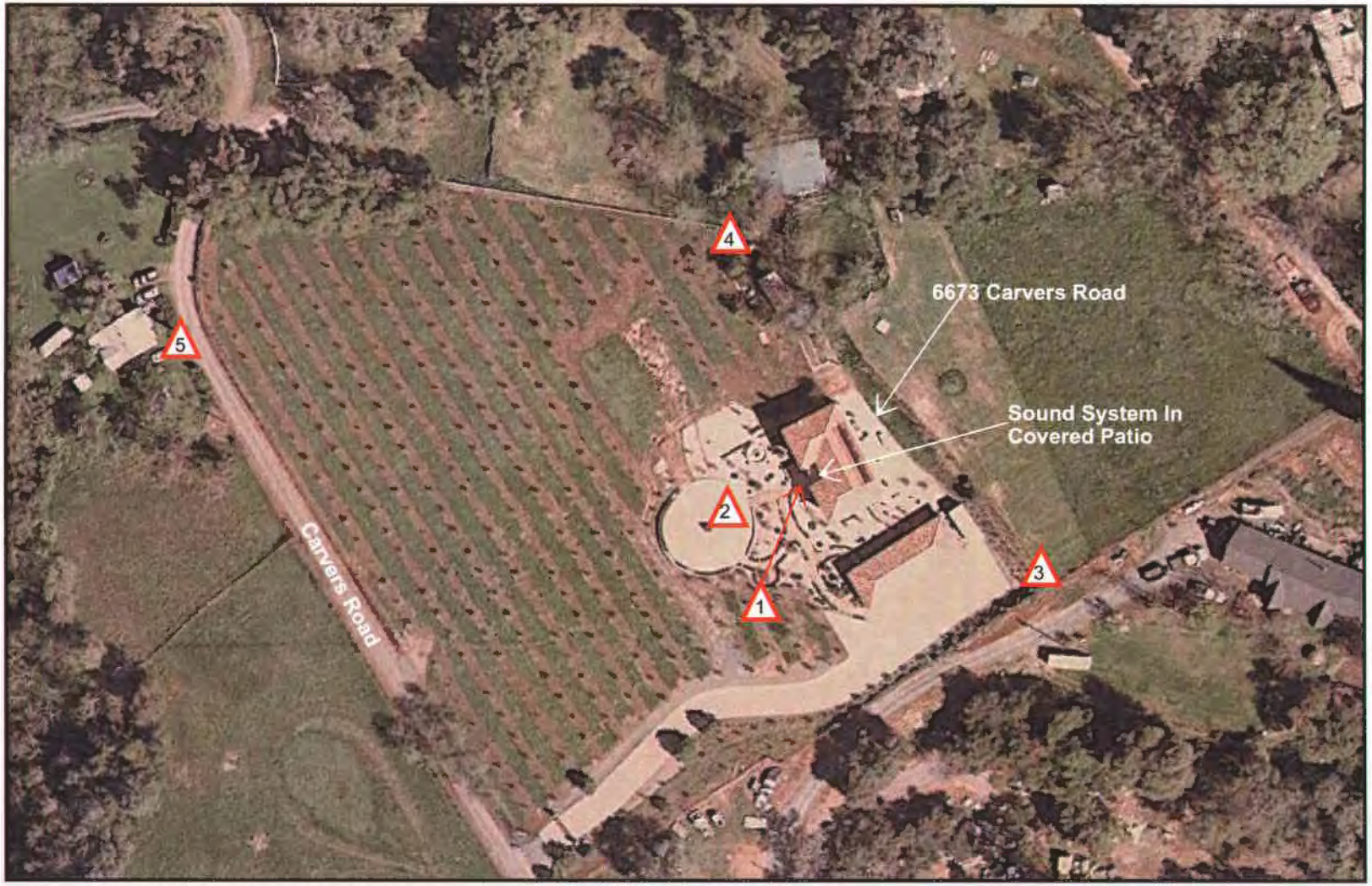
CONCLUSIONS

Noise exposure from DJ Music and guests would not be expected to exceed the applicable daytime and evening average noise exposure criteria (L_{eq}) at the closest residential properties. Maximum noise exposure (L_{max}) from guest cheering, laughing, etc. would be expected to exceed the County's evening noise exposure criterion at the closest residential property to the north. There is no known mitigation for this impact.

Project-related noise exposure at neighboring residential uses may be reduced by limiting music to DJ sound systems or live, acoustic music (no amplification) with string and/or woodwind instruments only (no drums or brass). All music equipment or musicians should be positioning in the covered patio area as shown in Appendix A. Receptions should end no later than 9:30 p.m.

This concludes our environmental noise assessment for the Villa Florentina Bed & Breakfast and Special Event facility in Coloma, California (El Dorado County). Please contact me at (916) 663-0500 or jasonm@bacnoise.com if you have any questions or require additional information.

Appendix A
Villa Florentina Bed & Breakfast and Special Event Facility
Coloma, California (El Dorado County)



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: Short-Term Noise Level Measurement Site

25' 75'
0 50' 100'

Appendix B

General Acoustics Terminology

Absorption Coefficient (α) The fraction of the randomly incident sound power which is absorbed by a material.

Acoustics The physics 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.

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 auditory 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 a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

Impulsive Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.

L_n The sound level exceeded "n" percent of the time during a sample interval (L_{50}, L_{25}, L_8, etc.). L_{50} equals the level exceeded 50 percent of the time.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Noise Unwanted sound.

NLR Noise Level Reduction. The arithmetic difference in noise levels between two conditions. (e.g., NLR = $L_1 - L_2$ or NLR = $L_{source} - L_{receiver}$ or NLR = $L_{exterior} - L_{interior}$).

NRC Noise Reduction Coefficient. A single-number rating of the sound absorption properties of a material. The arithmetic mean of the sound absorption coefficients at 250, 500, 1,000, and 2,000 Hz, rounded to the nearest 0.05.

RT60 The time it takes reverberant sound to decay by 60 dB once the source has been removed.

SEL Sound Exposure Level. The equivalent sound level over a 1 second time interval for a discrete sound event (e.g., aircraft overflight).

Simple Tone Any sound which is distinguishable as a single pitch or set of single pitches.

STC Sound Transmission Class. A single-number representation of a partition's noise insulation performance.