M E M O R A N D U M

To: Karl Schrader
BuildLACCD

From: Zack Dennis

Date: January 3, 2018

Subject: Monthly Noise Report for Lakeside Villas Noise Monitor, December 2017

This memorandum presents the results of the noise monitoring at the Lakeside Villas residential complex near the West Los Angeles College (WLAC) campus. The monitor is positioned near the property lines of the Lakeside Villas complex to monitor traffic noise and construction noise from projects taking place on the WLAC campus. The monitor is an independent station consisting of a microphone, sound level meter, cell phone modem, and assorted ancillary equipment. The location of the monitor is shown in Appendix A.

Monitor 8: The monthly noise levels at Monitor 8 were similar to those observed during the previous months at this location. Peaks of greater than 65 dBA were observed on December 11, 16, 21, and 26-30. The peaks at the end of December were most likely associated with a local construction activity like tree clearance.

Table 1. Summary of Monthly Results, Monitor 8

Metric	Sound Level, dBA			
	Average	Maximum[2]	Minimum[3]	Standard Deviation
Day-Night Sound Level (Ldn)	54	62	51	2.4
Work Hours Leq[1]	53	61	46	3.2

Notes:
1. The Work Hours Leq is the energy average between 8 a.m. to 6 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays.
2. The maximum Ldn or daytime hourly Leq value during the month.
3. The minimum Ldn or daytime hourly Leq value during the month.

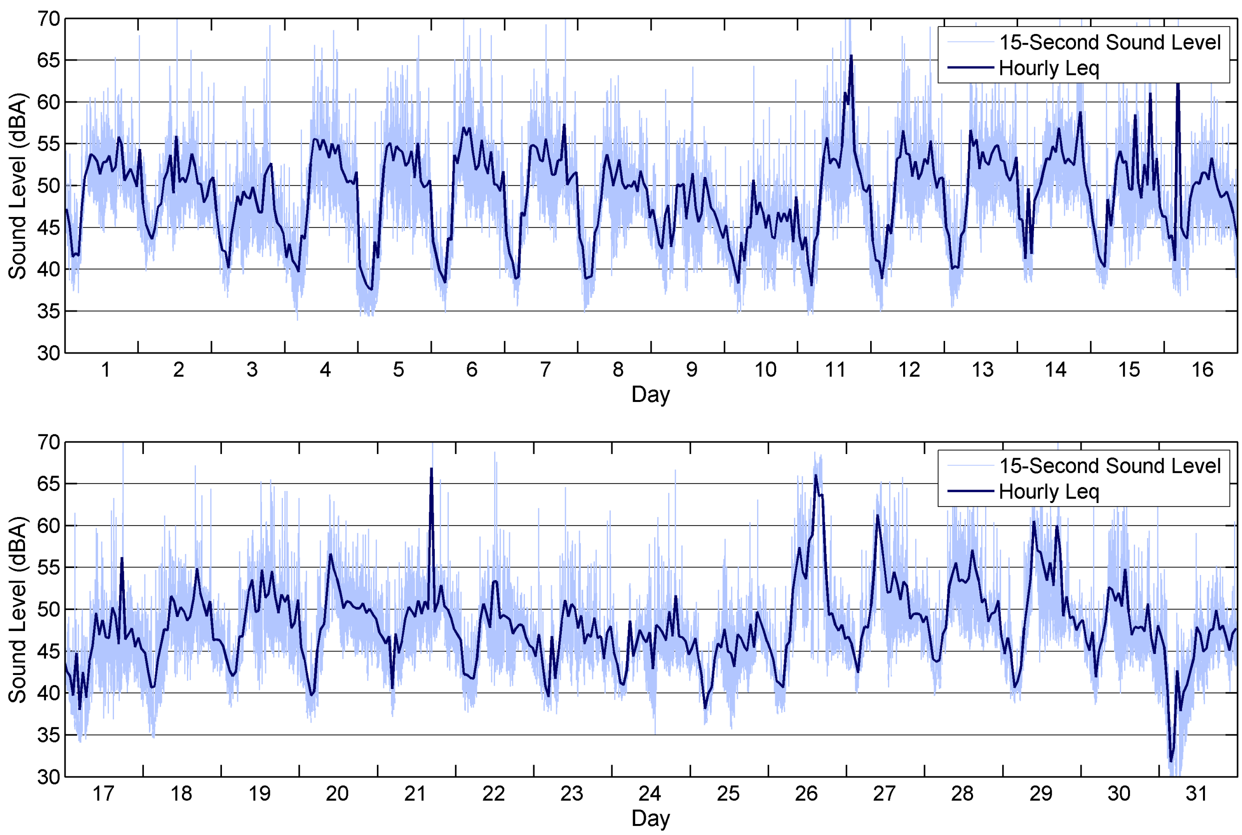


Figure 1: Monitor 8 Hourly Leq Results

APPENDIX A: RESULTS FOR INDIVIDUAL MONITOR SITES

Figure 2: Noise Monitor Location

Monitor 8 is located near Building 15 in the south end of the Lakeside Villas complex, directly next to the property wall that separates the Building 15 pathway from the LADWP spillway. Prior to construction activity, the primary noise sources in this area were residential activity, landscaping equipment and lawnmowers, airplanes, athletic activity on the baseball field, and traffic noise from Freshman Drive and A Street.

Table 2. Daily Results
Monitor 8, December 2017

Date	Sound Level, dBA			
	Work Hours Leq	Maximum[1]	Minimum[2]	Ldn
12/1/17	53	65	37	55
12/2/17	52	70	40	57
12/3/17	--	69	37	53
12/4/17	55	69	34	55
12/5/17	54	68	34	54
12/6/17	55	72	35	55
12/7/17	54	73	36	55
12/8/17	51	63	35	53
12/9/17	49	64	37	52
12/10/17	--	64	35	51
12/11/17	59	81	35	57
12/12/17	53	69	35	55
12/13/17	54	70	35	55
12/14/17	54	73	38	56
12/15/17	53	71	38	55
12/16/17	51	83	37	62
12/17/17	--	74	34	51
12/18/17	51	67	35	53
12/19/17	52	66	38	54
12/20/17	53	64	37	54
12/21/17	58	85	37	56
12/22/17	50	69	38	52
12/23/17	49	65	38	52
12/24/17	--	67	35	52
12/25/17	46	63	36	51
12/26/17	61	69	38	58
12/27/17	56	66	40	56
12/28/17	54	66	40	55
12/29/17	57	71	39	56
12/30/17	51	68	39	54
12/31/17	--	61	29	51

Notes:
1. The maximum sound level over a 15 second interval (15 second Leq) during the 24-hour period.
2. The minimum sound level over a 15 second interval (15 second Leq) during the 24-hour period.

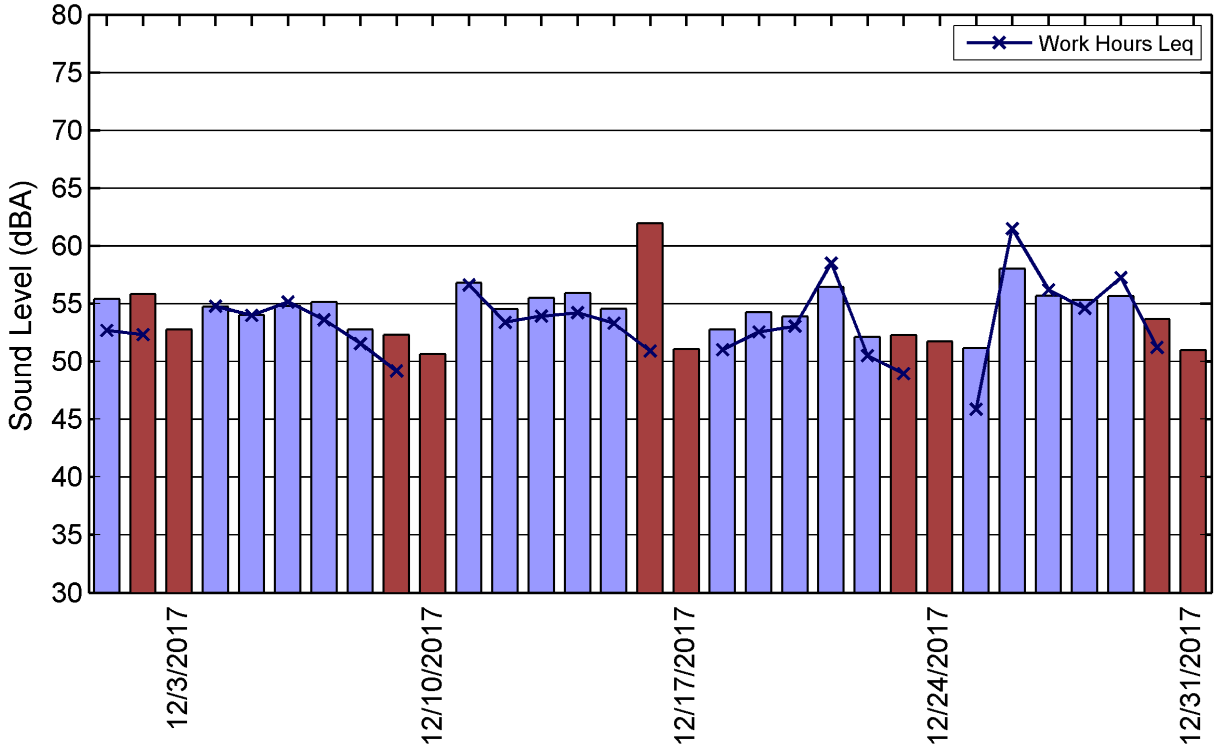


Figure 3: Monitor 8 Ldn and Daytime Leq Results

Table 3. Summary of Monthly Results[1], Monitor 8					
Month	Year	Sound Level, dBA			
		Work Hours Leq[2]	Standard Deviation	Ldn	Standard Deviation
January	2012	54	4.5	54	3.2
February	2012	55	2.0	55	4.4
March	2012	55	2.4	55	2.5
April	2012	54	5.5	55	3.9
May	2012	55	2.2	54	2.6
June	2012	52[2]	1.7[2]	52[2]	2.5[2]
July	2012	52	1.6	53	1.8
August	2012	53	1.4	55	1.3
September	2012	55	2.2	55	2.3
October	2012	54	1.9	56	2.0
November	2012	54	4.2	56	4.0
December	2012	--	--	--	--
January	2013	56	4.9	56	4.2
February	2013	55	3.0	56	2.9
March	2013	55	2.1	56	2.4
April	2013	55	2.5	55	2.5
May	2013	55	2.0	57	6.5
June	2013	53	2.1	53	2.0
July	2013	54	3.5	54	2.9
August	2013	53	6.1	53	3.6
September	2013	55	2.5	55	2.4
October	2013	55	2.7	55	2.0
November	2013	54	2.8	55	2.5
December	2013	53	2.7	56	3.1
January	2014	52	2.4	55	2.5
February	2014	54	2.1	56	2.8
March	2014	55	1.7	55	1.9
April	2014	53	3.0	55	2.0
May	2014	54	3.2	54	2.7
June	2014	54	2.9	53	2.7
July	2014	53	2.6	54	3.6
August	2014	52	1.7	53	1.3
September	2014	55	2.9	55	2.7
October	2014	54	1.5	55	2.6
November	2014	54	3.3	55	2.4
December	2014	54	3.8	55	3.2
January	2015	53	2.7	54	1.6

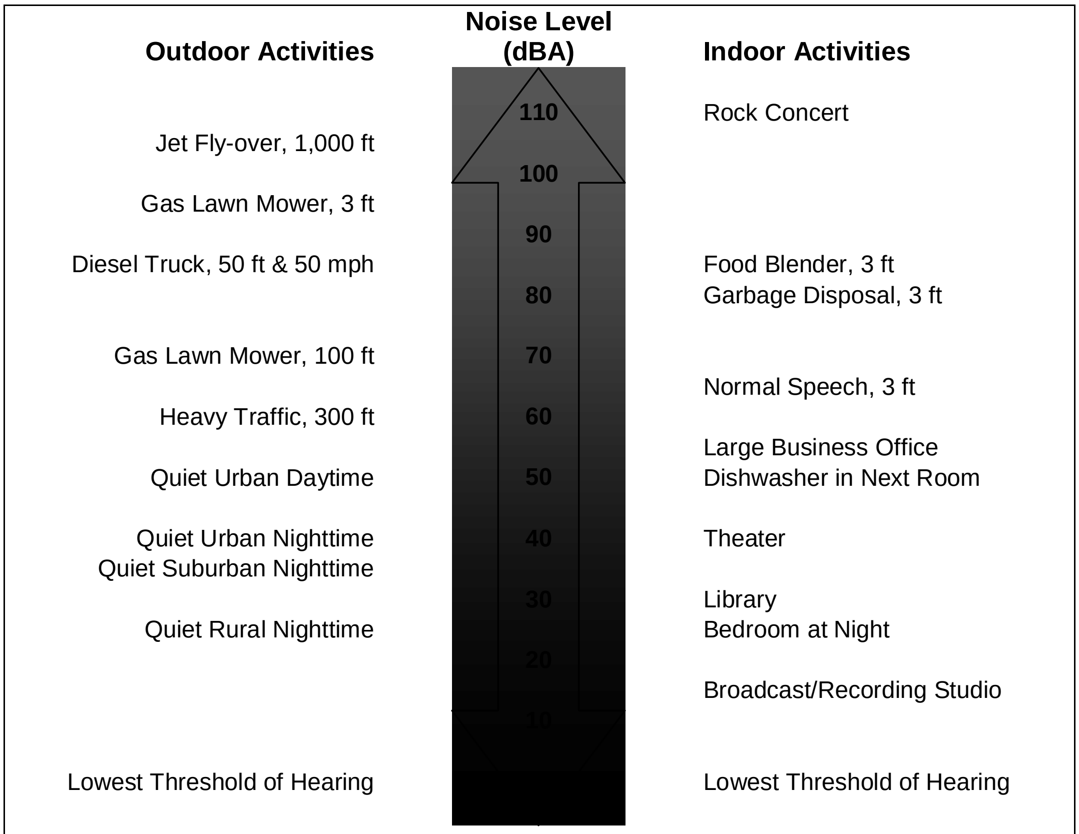
February	2015	54	1.9	54	2.2
March	2015	55	3.2	56	2.6
April	2015	54	3.7	55	2.4
May	2015	55	2.6	55	2.2
June	2015	55	2.7	54	3.2
July	2015	--[3]	--[3]	--[3]	--[3]
August	2015	--[3]	--[3]	--[3]	--[3]
September	2015	53	3.4	55	1.9
October	2015	56	1.9	56	2.3
November	2015	54	3.3	55	2.3
December	2015	54	4.3	55	3.2
January	2016	53	3.2	54	1.6
February	2016	54	2.6	55	2.2
March	2016	--[4]	--[4]	--[4]	--[4]
April	2016	53	6.1	54	3.1
May	2016	53	3.1	54	2.7
June	2016	53	3.4	53	2.7
July	2016	52	3.3	54	3.6
August	2016	52	2.2	53	1.3
September	2016	54	3.7	55	2.7
October	2016	53	2.6	55	2.6
November	2016	54	3.7	55	2.4
December	2016	54	4.3	56	3.3
January	2017	53	2.5	55	2.5
February	2017	53	2.9	56	2.9
March	2017	53	2.6	55	1.9
April	2017	53	3.5	55	2.7
May	2017	53	2.8	54	2.3
June	2017	57	3.1	56	2.1
July	2017	55	2.0	56	3.5
August	2017	54	2.6	54	2.3
September	2017	55	3.5	55	2.8
October	2017	55	2.4	55	2.1
November	2017	55	3.1	55	2.4
December	2017	53	3.2	54	2.4

Notes:
1. Data from prior to March 3012 is available upon request.
2. The work hours Leq is the energy average between 8 a.m. to 6 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays.
3. Data not available.
4. Data not available due to communication issues.

APPENDIX B: BACKGROUND OF NOISE

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted or excessive sound. Sound can vary in intensity by over one million times within the range of human hearing. Therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity and compress the scale to a more manageable range.

Sound is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale has been developed. A-weighted decibels are abbreviated as "dBA." On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA. As a point of reference, Figure 4 includes examples of A-weighted sound levels from common indoor and outdoor sounds.



Source: Caltrans, *Technical Noise Supplement*, 1998

Figure 4. Typical Outdoor and Indoor Noise Sources

Using the decibel scale, sound levels from two or more sources cannot be directly added together to determine the overall sound level. Rather, the combination of two sounds at the same level yields an increase of 3 dBA. The smallest recognizable change in sound level is approximately 1 dBA. A 3-dBA increase is generally considered perceptible, whereas a 5-dBA increase is readily perceptible. A 10-dBA increase is judged by most people as an approximate doubling of the perceived loudness.

Two of the primary factors that reduce levels of environmental sounds are increasing the distance between the sound source and the receiver and having intervening obstacles, such as walls, buildings or terrain features that block the direct path between the sound source and the receiver. Factors that act to increase the loudness of environmental sounds include the proximity of the sound source to the receiver, sound enhancements caused by reflections, and focusing caused by various meteorological conditions.

Brief definitions of the measures of environmental noise used in this report are:

- **Equivalent Sound Level (Leq)**: Environmental sound fluctuates constantly. The equivalent sound level (Leq), sometimes referred to as the energy-average sound level, is the most common means of characterizing community noise. Leq represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. The noise monitors currently measure sound in 15 second intervals and these are used to calculate the 1-hour Leqs.
- **Day-Night Sound Level (Ldn):** Ldn is basically a 24-hour Leq with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10-dB penalty for all sound that occurs between 10 p.m. and 7 a.m. The effect of the penalty is that, when calculating Ldn, any event that occurs during the nighttime is equivalent to 10 of the same event during the daytime. Ldn is the most common measure of total community noise over a 24-hour period.
- **Work Hours Sound Level:** The work hours sound level is effectively a sound level based on the hours the haul road is expected to be used. For weekdays Monday through Friday, it consists of the Leq for the period between 8 a.m. and 6 p.m. For Saturdays, it consists of the Leq for the period between 9 a.m. and 5 p.m. The road is not expected to be used on Sunday.
- **Maximum Sound Level (Lmax):** The maximum sound level over a period of time or for a specific event can also be a useful parameter for characterizing specific noise sources. Standard sound level meters have two settings, FAST and SLOW, which represent different time constants. Lmax using the FAST setting will typically be 1 to 3 dB greater than Lmax using the SLOW setting.
- **Sound Exposure Level (SEL):** SEL is a measure of the total sound energy of an event. In essence, all sound from the event is compressed into a one-second period. This means that SEL increases as the event duration increases and as the event sound level increases. SEL is useful for estimating the Ldn that would be caused by individual events such as train passbys. Although the SEL values for the fifteen-second intervals are recorded (and reported along with the Leq values on the website), we are not using SEL's in any of our calculations.