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March 14, 2014

Mr. Eric Sklar
CS2 Wines, LLC
PO Box 607
Rutherford, CA
VIA E-Mail: eric@preslarventures.com

SUBJECT: Analysis of Mobile Bottling Noise
Yountville Hill Winery, Yountville, CA

Dear Mr. Sklar:
Illingworth & Rodkin, Inc. (I&R) has been retained to measure and analyze noise produced by mobile bottling truck noise at the proposed Yountville Hill Winery in Yountville relative to Napa County Noise Standards at the Scruby residence across Hwy 29 from the Winery Entrance, where noise concerns have been raised. In the following report we present a summary of applicable Napa County noise regulations, a discussion of current ambient noise levels at the identified residential property, and the results of a noise monitoring survey of mobile bottling truck noise conducted for the project. The report concludes with an assessment of the noise levels resulting from mobile bottling at the Scruby residence vs. County Standards and existing ambient noise level. Persons not familiar with environmental noise analysis are referred to Appendix A for additional discussion.

NAPA COUNTY NOISE REGULATIONS

Section 8.16.070 of the Napa County Noise Ordinance regulates exterior noise levels within the unincorporated area of the county due to operational related noise as follows;

No person shall operate, or cause to be operated, any source of sound at any location within the unincorporated area of the county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

a. The noise standard for that land use as specified in Table 8.16.070 for a cumulative period of more than thirty minutes in any hour [equivalent to the L_{50} noise metric]; or

b. The noise standard plus five dB for a cumulative period of more than fifteen minutes in any hour [equivalent to the L_{25} noise metric]; or
c. The noise standard plus ten dB for a cumulative period of more than five minutes in any hour [equivalent to the L_{08} noise metric]; or
d. The noise standard plus fifteen dB for a cumulative period of more than one minute in any hour [equivalent to the L_{02} noise metric];
e. The noise standard plus twenty dB or the maximum measured ambient level, for any period of time [equivalent to the L_{max} noise metric].

Table 8.16.070: EXTERIOR NOISE LIMITS
(Levels not to be exceeded more than 30 minutes in any hour)

Receiving Land Use Category	Time Period	Noise Level (dBA) Noise Zone Classification		
		Rural	Suburban	Urban
Residential: Single and double	10 p.m. to 7 a.m.	45	45	50
	7 a.m. to 10 p.m.	50	55	60
Residential: multiple and country	10 p.m. to 7 a.m.	45	50	55
	7 a.m. to 10 p.m.	50	55	60
Commercial	10 p.m. to 7 a.m.	60		
	7 a.m. to 10 p.m.	65		
Industrial, including wineries	10 p.m. to 7 a.m.	75		
	7 a.m. to 10 p.m.	45		

If the measured ambient noise level differs from that permissible within any of the first four noise limit categories above (L_{50}, L_{25}, L_{08}, L_{02}), the allowable noise exposure standard shall be the ambient noise level.

The implementation of this last provision of the ordinance is unclear. For this analysis, we have interpreted it to mean that if the ambient noise is above the level of any of the first four noise limit categories, then the limits in these categories should be adjusted up to the higher levels. We have not adjusted the sound levels for a lower ambient, since adjusting for both higher and lower levels would, essentially, negate the need for the established limits.

Another provision is included to correct the allowable noise standard for the character of the sound as follows,

"*In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech, the standard limits set forth in Tables 8.16.060 and 8.16.070 shall be reduced by five dB, but not lower than forty-five.*"

EXISTING NOISE ENVIRONMENT AT THE IDENTIFIED RESIDENTIAL PROPERTY

As a part of a study completed for the Cosentino Winery in 2013, which shares a property line with the Scruby residence, I&R conducted a long-term noise measurement on the Cosentino/Scruby property line at approximately 210 feet east of the centerline of Hwy 29. The approximate location of the measurement is shown in Figure 1.

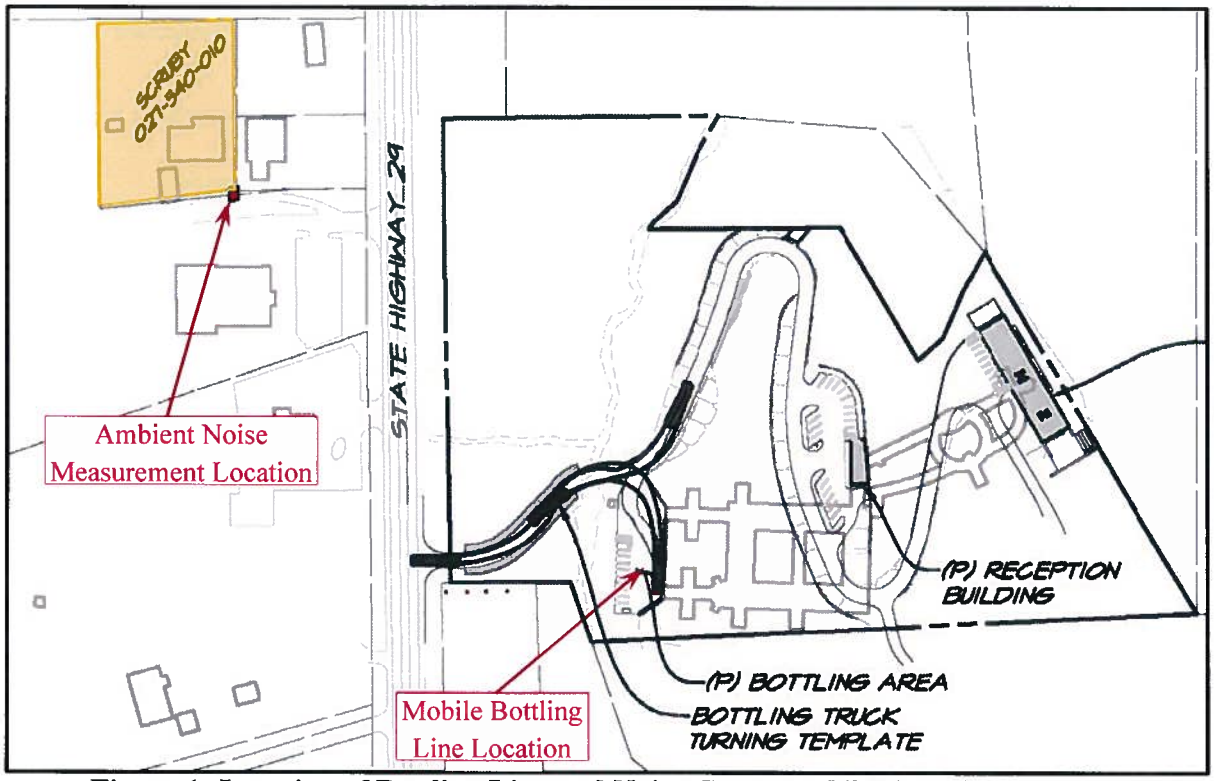


Figure 1: Location of Bottling Line and Noise Concerned Residential Property

Based on the results of these measurements daytime and nighttime average (L_{eq}) noise levels at this location ranged from 52 to 57 dBA and 50 to 58 dBA, respectively, with an average daytime L_{eq} of 56 dBA and an average nighttime L_{eq} of 53 dBA. The day-night average noise level (L_{dn}) measured at this location was 60 dBA. The daytime and nighttime noise descriptors used to interpret the County's Noise Ordinance Standards at LT-1 are shown in Table 1.

Table 1: Measured Noise Levels at Residential Property Line

Hourly Noise Metric	Ave. Daytime Level (Range)
L_{50} (exceeded < 30 min./hour)	**55 dBA** (51 to 56 dBA)
L_{25} (exceeded < 15 min./hour)	**56 dBA** (53 to 58 dBA)
L_{08} (exceeded < 5 min./hour)	**59 dBA** (55 to 61 dBA)
L_{02} (exceeded < 1 min./hour)	**62 dBA** (57 to 63 dBA)
L_{max} (maximum per hour)	**69 dBA** (65 to 73 dBA)

Based on these measurement results, the daytime Noise Ordinance standards for rural residential use have been adjusted to reflect the measured noise levels though the application of the provision of the Noise Ordinance for adjusting the permissible noise levels to match ambient levels. The results of this analysis are shown in Table 2.

Table 2: Adjusted County Noise Ordinance Standards at Residential Property Line

Hourly Noise Metric	Daytime Level
L_{50} (30 Min.)	**55 dBA**
L_{25} (15 Min.)	**56 dBA**
L_{08} (5 Min.)	60 dBA
L_{02} (1 Min.)	65 dBA
L_{max}	70 dBA

Notes: **Bolded** entries have been increased to reflect ambient noise levels that exceed the base Noise Ordinance limits.

NOISE SURVEY OF MOBILE BOTTLING LINE

To determine the noise levels produced during the operation of a mobile bottling line Illingworth & Rodkin conducted noise measurements of a normally operating mobile bottling truck line run by Signature Bottling at the Pine Ridge Winery on Tuesday March 11th between 10 and 11 am. All measurements were made with Larson Davis Model 812 integrating sound level meters, equipped with type I precision microphones, which were calibrated Larson Davis Model CA250 precision acoustic calibrators.

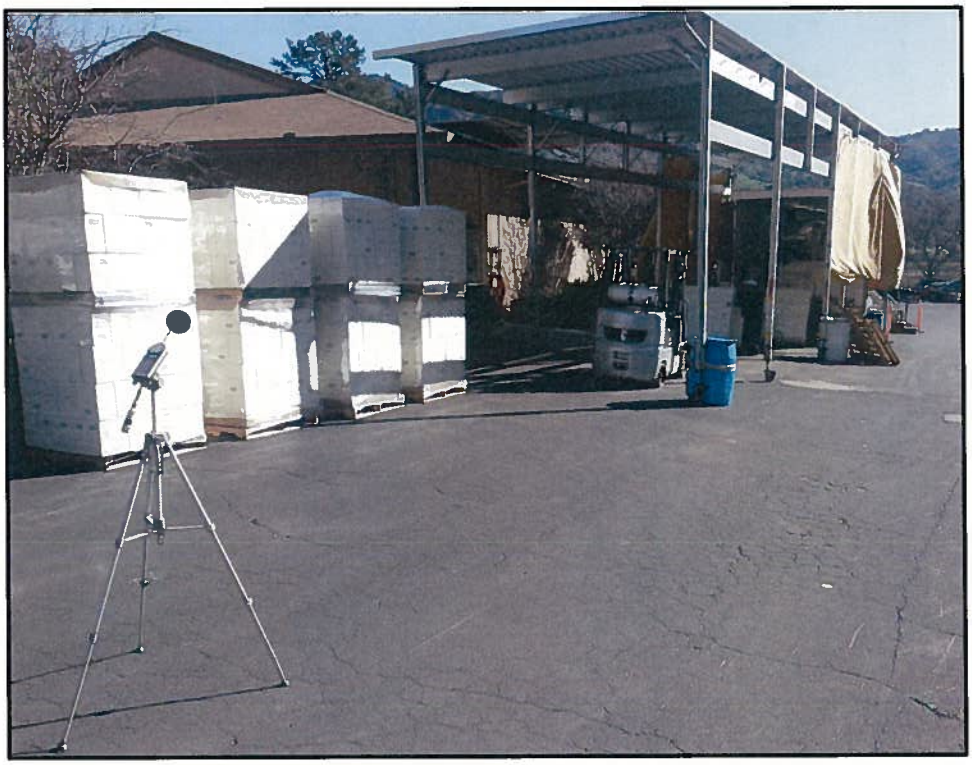


Figure 2: Bottling line Noise Measurement Position

Measurements were made at the exterior of the bottling truck at a distance of 50 feet from the rear (open) face of the truck and approximately 30 feet from the end of the conveyor belt and case assembly area. Figure 2 shows the noise monitoring position in relation to the truck and bottling line. Figure 3, following shows additional detail of the activities at the rear (open) face of the truck. The result of these noise measurements are shown in Table 3, following.

Table 3: Mobile Bottling Line Noise Levels at 50 feet from the Truck Opening

Hourly Noise Metric	Bottling Line Noise Levels
L_{50} (30 Min.)	65 dBA
L_{25} (15 Min.)	67 dBA
L_{08} (5 Min.)	69 dBA
L_{02} (1 Min.)	71 dBA
L_{max}	72 dBA

MOBILE BOTTLING NOISE ASSESSMENT

Based on the distance relationships taken from a review of the project site and area plan shown in in Figure 1, the proposed location of the mobile battling may be as close as 730 feet from the southeastern corner of the Scruby property.

Figure 3: Detail of Rear (open) Face of Bottling Truck

Sound from a localized fixed source spreads out as it travels away from the source, and the sound level drops off with distance according fundamental geometric relationships. This noise reduction is independent of the attenuation that may be received by existing ground vegetation, trees or other obstructions, which could block, absorb or deflect sound traveling between the source and receiver. Most specific sound sources may be treated as a "point source" when the distance from the source to the receiver is large compared to the dimension of the source. For a fixed source, such as a mobile bottling line, located 730 feet from a receiver we would assume that this would be the case. With such point sources sound levels are reduced with distance in accordance with the "inverse square law", which yields a six (6) dB sound level reduction for each doubling of the distance[1] from the source. Based on distance attenuation only, and without consideration of an additional sound losses due to intervening terrain, structure or foliage, mobile bottling line noise levels at the Scruby residence (730 feet distant) would be 23 dBA lower than those at 50 feet from the line. Such noise reduction would result in noise levels which are well below the County Noise Standards at the Scruby Residence as shown in Table 4.

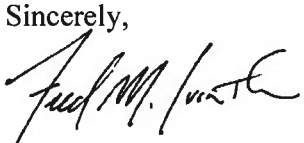
[1] Mathematically expressed as $L_{rec} = L_{source} - 20xLog(D_{rec}/D_{source})$

Table 4: Mobile Bottling Line Noise Levels at Residence vs. County Noise Standards

Hourly Noise Metric	Bottling Line Noise Levels	Adj. County Noise Standards
L_{50} (30 Min.)	41 dBA	55 dBA
L_{25} (15 Min.)	44 dBA	56 dBA
L_{08} (5 Min.)	46 dBA	60 dBA
L_{02} (1 Min.)	47 dBA	65 dBA
L_{max}	48 dBA	70 dBA

In addition to the bottling line noise levels being 12 to 22 dBA below the adjust County Noise Standards, from a review of the typical noise levels show in Table 2 of Appendix A, these levels could also be considered 'quiet' and would be well below normal conversational speech levels. Therefore, we find that noise from the proposed mobile bottling line at the Yountville Hill Winery would not result in a noise impact at the Scruby residence across Hwy 29 from the Winery Entrance.

Sincerely,



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March 21, 2014

Mr. Eric Sklar
CS2 Wines, LLC
PO Box 607
Rutherford, CA
VIA E-Mail: eric@preslarventures.com

SUBJECT: Analysis of Outdoor Event Noise
CS2 Winery, Yountville, CA

Dear Mr. Sklar:
Illingworth & Rodkin, Inc. (I&R) has been retained to analyze noise produced by outdoor events at the proposed CS2 Winery in Yountville relative to Napa County Noise Standards at selected residences and businesses in the project vicinity (see locations in Figure 1). In the following report we present a summary of applicable Napa County noise regulations, a discussion of estimated ambient noise levels relative to County Standards, and an assessment of the noise levels resulting from outdoor events at area residences and businesses vs. County Standards. Persons not familiar with environmental noise analysis are referred to Appendix A for additional discussion.

NAPA COUNTY NOISE REGULATIONS

Section 8.16.070 of the Napa County Noise Ordinance regulates exterior noise levels within the unincorporated area of the county due to operational related noise as follows;

No person shall operate, or cause to be operated, any source of sound at any location within the unincorporated area of the county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:

a. The noise standard for that land use as specified in Table 8.16.070 for a cumulative period of more than thirty minutes in any hour [equivalent to the L_{50} noise metric]; or
b. The noise standard plus five dB for a cumulative period of more than fifteen minutes in any hour [equivalent to the L_{25} noise metric]; or
c. The noise standard plus ten dB for a cumulative period of more than five minutes in any hour [equivalent to the L_{08} noise metric]; or
d. The noise standard plus fifteen dB for a cumulative period of more than one minute in any hour [equivalent to the L_{02} noise metric];
e. The noise standard plus twenty dB or the maximum measured ambient level, for any period of time [equivalent to the L_{max} noise metric].

Table 8.16.070: EXTERIOR NOISE LIMITS
(Levels not to be exceeded more than 30 minutes in any hour)

Receiving Land Use Category	Time Period	Noise Level (dBA) Noise Zone Classification		
		Rural	Suburban	Urban
Residential: Single and double	10 p.m. to 7 a.m.	45	45	50
	7 a.m. to 10 p.m.	50	55	60
Residential: multiple and country	10 p.m. to 7 a.m.	45	50	55
	7 a.m. to 10 p.m.	50	55	60
Commercial	10 p.m. to 7 a.m.	60		
	7 a.m. to 10 p.m.	65		
Industrial, including wineries	10 p.m. to 7 a.m.	75		
	7 a.m. to 10 p.m.	45		

Based on the exterior noise limits shown in Table 8.16.070 and the cumulative hourly noise levels described above for rural residential and commercial uses are as shown in Table 1, below:

Table 1: County Noise Ordinance Standards

	Rural Residential		Commercial	
Hourly Noise Metric	Daytime Level	Nighttime Level	Daytime Level	Nighttime Level
L_{50} (30 Min.)	50 dBA	45 dBA	65 dBA	60 dBA
L_{25} (15 Min.)	55 dBA	50 dBA	70 dBA	65 dBA
L_{08} (5 Min.)	60 dBA	55 dBA	75 dBA	70 dBA
L_{02} (1 Min.)	65 dBA	60 dBA	80 dBA	75 dBA
L_{max}	70 dBA	65 dBA	85 dBA	80 dBA

If the measured ambient noise level differs from that permissible within any of the first four noise limit categories above (L_{50}, L_{25}, L_{08}, L_{02}), the allowable noise exposure standard shall be the ambient noise level.

Another provision is included to correct the allowable noise standard for the character of the sound as follows,

> *"In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech, the standard limits set forth in Tables 8.16.060 and 8.16.070 shall be reduced by five dB, but not lower than forty-five."*

EXISTING NOISE ENVIRONMENT

The existing noise environment was not measured at the selected residences and businesses however, based on the proximity of these receivers to Hwy 29 and the wine train rail line, we would expect that receivers 1, 2, 3, and 8, would be exposed to significant noise from Hwy 29 traffic and occasional wine train noise, that receivers 4 and 5 would be exposed to much lower levels of Hwy 29 noise, but occasional wine train noise, and that receivers 6 and 7, which are quite distant from either Hwy 29 or the rail line, would have relatively low ambient noise environments.

Based on the above considerations of ambient noise conditions, we have added 5 dBA to the noise criteria at residential uses close to Hwy 29 (receivers 1 and 3), and subtracted 5 dBA from

the noise criteria at residential uses that the residential uses distant from Hwy 29 but closer to the rail line (receivers 4 and 5), subtracted 10 dBA the residential uses distant from both Hwy 29 and the rail line (receivers 6 and 7). The commercial noise criterion is considered to remain the same. Additionally, all noise criterion levels were reduced by 5 dBA, to a minimum of 45 dBA to reflect a sound source which contains music and/or speech, per County noise regulations. Based on these factors, we are using the noise standards shown in Table 2 at the selected receivers;

Table 2: Adjusted County Noise Ordinance Standards

	Rural Residential Near Hwy 29 (rec. 1 & 3)		Rural Residential from Hwy & Near rail line (rec. 4 & 5)		Rural Residential away from Hwy & Rail (rec. 6 & 7)		Commercial (rec. 2 & 8)	
Hourly Noise Metric	**Daytime Level**	**Night time Level**	**Daytime Level**	**Night time Level**	**Daytime Level**	**Night time Level**	**Daytime Level**	**Night time Level**
L_{50} (30 Min.)	50 dBA	45 dBA	45 dBA	40 dBA	45 dBA	40 dBA	60 dBA	55 dBA
L_{25} (15 Min.)	55 dBA	50 dBA	50 dBA	45 dBA	45 dBA	40 dBA	65 dBA	60 dBA
L_{08} (5 Min.)	60 dBA	55 dBA	55 dBA	50 dBA	50 dBA	45 dBA	70 dBA	65 dBA
L_{02} (1 Min.)	65 dBA	60 dBA	60 dBA	55 dBA	55 dBA	50 dBA	75 dBA	70 dBA
L_{max}	70 dBA	65 dBA	65 dBA	60 dBA	60 dBA	55 dBA	80 dBA	75 dBA

WINERY EVENT NOISE ASSESSMENT

Estimating the expected noise produced by, and impacts from, events at the CS2 winery at the adjacent uses requires three elements; the first is an assessment of what noise producing operations are likely to occur, the second is typical noise source levels for those operations, and the third is to determine the temporal nature of the operations.

I. Identification of Noise Producing operations/uses

The primary noise producing activities associated with winery events would be associated with sound produced by outdoor music and participants at the activity.

II. Typical Noise Source Levels

To estimate the noise levels associated with outdoor events some attention must be given to the temporal nature of the construction and operational noise produced. As currently proposed outdoor events will generally occur at the ground level terrace of the winery, administration and visitor building, with non-amplified acoustic music and occasional raised patron voices being the primary sound source. Based on experience with such noise sources at winery events, sound from these activities is expected to produce L_{50} levels of 67 dBA at 50 feet for non-amplified (acoustic) music, and 64 dBA at 50 feet for raised patron voices

III. Propagation of sound

The final step in estimating project generated noise levels is assessing the propagation of sound to the sensitive receptors. To do this, it is necessary to assume some rate of sound attenuation between the operations and receiver locations. The most dominant physical effect is due to the spreading out of sound waves with distance. Simple, fixed small area events, may be treated as a

"point source" when the distance from the source to the receiver is large compared to the dimension of the source. For a fixed source, such as an outdoor event at a fixed location, at distances of more than 1,000 feet, we would assume that this would be the case. With such point sources sound levels are reduced with distance in accordance with the "inverse square law", which yields a six (6) dB sound level reduction for each doubling of the distance[1] from the source. Other effects can modify this fall-off rate such as partial shielding from buildings or topography, atmospheric attenuation of sound, ground absorption, and meteorological effects. These effects almost always reduce the noise in addition to that due to sound divergence.

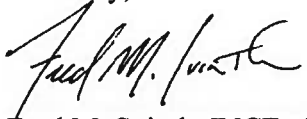
Based on the distance relationships taken from a review of the project site and area plan shown in in Figure 1, the CS2 Winery visitor center will be between 1,135 to 5,680 feet from the selected residences and businesses. With respect to distance attenuation only, and without consideration of an additional sound losses due to intervening terrain, structures or foliage, event noise levels at the selected residences and businesses would be between 29 to 41 dBA lower than those at 50 feet from an event. Such noise reduction would result in noise levels which are below daytime and nighttime County Noise Standards at the selected residences and businesses as shown in Table 3, below.

Table 3: Outdoor Event Noise Levels at Area Residences and Businesses

#	Receiver Location	Distance to Visitor Center	L_{50} level at receiver (dBA)	Adj. County L_{50} Noise Standards (dBA)	
				Daytime	Nighttime
1	7491 Hwy 29 (Residential)	1675	36	50	45
2	7481 Hwy 29 (Napa Cellars)	1420	38	60	55
3	7433 Hwy 29 (Oleander House)	1135	40	50	45
4	7391 Hwy 29 (Residential)	1875	36	45	40
5	7387 Hwy 29 (Autres Rivages)	2120	34	45	40
6	7323 Hwy 29 (Residential)	5680	26	45	40
7	7311 Hwy 29 (Residential)	5395	26	45	40
8	7377 Hwy 29 (Brix)	1740	36	60	55

In addition to the event noise levels being below the adjust County Noise Standards, from a review of the typical noise levels show in Table 2 of Appendix A, these levels could also be considered 'quiet' and would be well below normal conversational speech levels and closer to the level of a soft whisper. Therefore, we find that noise from events at the proposed CS2 Winery would not result in a noise impact at area residences and businesses.

Sincerely,



Fred M. Svinth, INCE, Assoc., AIA
Senior Consultant, Principal
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[1] Mathematically expressed as $L_{rec} = L_{source} - 20xLog(D_{rec}/D_{source})$

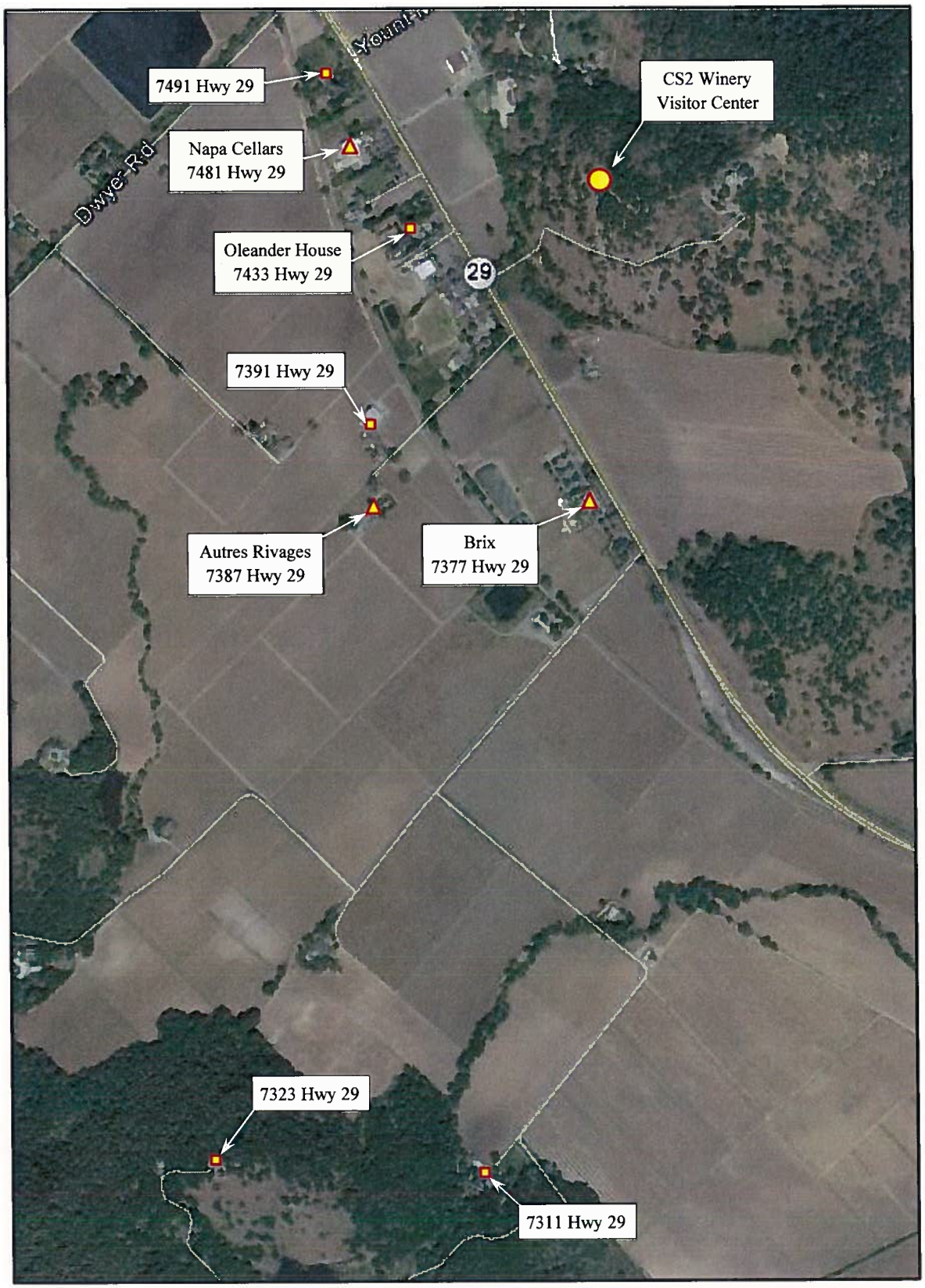

Figure 1: CS2 Winery Visitor Center and Area Residences and Businesses

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May 30, 2014

Mr. Eric Sklar
CS2 Wines, LLC
PO Box 607
Rutherford, CA
VIA E-Mail: eric@preslarventures.com

SUBJECT: Analysis and Simulation of Outdoor Event Noise
CS2 Winery, Yountville, CA

Dear Mr. Sklar:
To follow-up and validate our March 21, 2014 theoretical analysis of the noise produced by outdoor events at the proposed CS2 Winery in Yountville, Illingworth & Rodkin, Inc. (I&R) was retained to measure and record a typical winery event offsite and then conduct a calibrated playback of the event at the proposed Winery to simulate the noise produced by outdoor events at the site and evaluate audibility and compliance with applicable Napa County noise regulations at the nearest noise sensitive receptors. In this report we present the Adjusted County Noise Ordinance Standards from our March 21, 2014 report and analysis[1], the methodology and results of our offsite event measurement and recording survey, and results of the on-site event simulation tests. The report concludes with an assessment of the expected event sound levels at the nearest noise sensitive receptors relative to the adjusted County standards. Persons not familiar with environmental noise analysis are referred to Appendix A for additional discussion.

ADJUSTED NAPA COUNTY NOISE REGULATIONS[1]

The adjusted Napa County Noise Ordinance cumulative hourly noise levels in the areas where sound levels for the event simulations from our March 21, 2014 are as shown in Table 1, following:

Table 1: Adjusted County Noise Ordinance Standards

	Rural Residential Near Hwy 29		Rural Residential away from Hwy & Near rail line		Commercial Near Hwy 29	
Hourly Noise Metric	**Daytime Level**	**Night time Level**	**Daytime Level**	**Night time Level**	**Daytime Level**	**Night time Level**
L_{50} (30 Min.)	50 dBA	45 dBA	45 dBA	40 dBA	60 dBA	55 dBA
L_{25} (15 Min.)	55 dBA	50 dBA	50 dBA	45 dBA	65 dBA	60 dBA
L_{08} (5 Min.)	60 dBA	55 dBA	55 dBA	50 dBA	70 dBA	65 dBA
L_{02} (1 Min.)	65 dBA	60 dBA	60 dBA	55 dBA	75 dBA	70 dBA
L_{max}	70 dBA	65 dBA	65 dBA	60 dBA	80 dBA	75 dBA

[1] Refer to our March 21, 2014 for a full discussion of the applicable and adjusted Napa County noise regulations

EVENT SOUND SURVEY

To record the sound from and document the levels produced by events similar to those proposed at the CS2 Winery, Illingworth & Rodkin recorded and measured sound levels at two wedding dinner events with background music of different sizes (80 and 175 guests). Measurements were made with Larson Davis Labs (LDL) Model 820 integrating sound level meters, equipped with type I precision microphones, which were calibrated with LDL Model CA250 precision acoustic calibrators. Recordings were made with a solid state Roland R-05 wave file recorder, using the line out feed from the Larson Davis sound level meter.

The measured dinner events were in held at the Cornerstone event center in Sonoma within a circular outdoor event area, which had a tent style roof and open air sides. Measurements were made at the perimeter of the dinner event at a distance of 50 feet from the edge and 100 feet from the center of a circular tented dining area.

Documenting the sound levels produced by events in which the only variable was the guest count (80 vs.175 guests), and considering the confined geometric (i.e. circular) nature of the event venue and that sound levels are logarithmic quantities and increase or decrease in a logarithmic fashion, allowed I&R to approximate the expected sound levels produced by events of differing sizes. Based on these relationships we were estimate the expected sound levels for the maximum 200 person events at the proposed winery.

The measured sound levels for the 80 and 175 guest dinner events and those estimated for a the maximum proposed 200 person event at the CS2 winery are presented in Table 2 in terms of the Napa County Noise Ordinance standards.

Table 2: Measured Sound Levels for Dinner Events with Background Music

Size of Event (number of Guests)	Sound Levels in terms of Napa County Noise Standards (dBA)				
	L_{max}	L_{02}	L_{08}	L_{25}	L_{50}
80 (measured)	63	61	59	58	57
175 (measured)	72	71	68	66	66
200 (estimated)	74	72	70	68	67

ON SITE EVENT SIMULATION

To simulate the noise produced by an event at the future site of the CS2 winery outdoor event area the recorded event sound was played back on the Roland R-05 recorder through a Yamaha MG102C mixing board to a bank of three Mackie HD1221 full range speakers. The speakers were positioned at 15 foot intervals at the approximate future elevation of the hill where the future outdoor event area is to be located to fill in sound on a 40 foot wide frontage area represent the frontage of the proposed event area. The sound level output from these speakers was equalized through the mixing board and calibrated to sound levels representing the sound levels produced by a 200 person event with an LDL 820 sound level meter. Due to the slope of the hill, sound levels for the speakers could not be calibrated at 50 feet, but was instead calibrated at a distance of 25 feet. Considering the effect of hemispherical sound attenuation with distance where sound levels are reduced or increased with distance in accordance with the "inverse square law", which yields a six (6) dB sound level reduction or each doubling of the

distance or a six (6) dB sound level increase for each halving of the distance,[2] the sound level calibration at 25 feet was set at 6 dB above that of a 200 person event at 50 feet, or an median (L_{50}) level of 73 dBA.

In addition to the simulation of 200 guest event sound levels, a simulation was also conducted with the sound system output increased by 10 decibels to artificially increase the sound levels and allow for greater possible audibility of the event sound at test sites in the valley below. Based on the relationship between sound levels and event size determined during the event sound survey, this 10 decibel increase over the 200 guest event levels, would represent the sound levels produced by an event with 475 guests.

During the event simulation tests continuous 1 minute interval measurements were made at the 25 foot calibration position. The average measured sound levels, in terms of the Napa County Noise Ordinance standards, at 25 feet during each of these simulation scenarios is shown in Table 3, below.

Table 3: Measured Simulation Sound Levels at Calibration Position

	Sound Levels in terms of Napa County Noise Standards (dBA)				
Simulation Scenario	L_{max}	L_{02}	L_{08}	L_{25}	L_{50}
Max. proposed 200 guest event	78	77	76	74	73
200 guest+10 dB (475 guest) event	87	87	85	84	83

SIMULATED EVENT LEVELS AT SENSITIVE RECEIVERS.
With event levels at the future winery site set, sound level measurements and audibility determinations were made at three locations with a second sound level meter in valley floor areas below the future winery site. These were;

1. At the winery property line near the access drive, at an approximate distance of 770 feet from the event simulation site,
2. In the Mustards parking lot, at an approximate distance of 960 feet from the event simulation site, and
3. At the driveway 7391 Hwy 29, at an approximate distance of 1850 feet from the event simulation site.

The internal clock of the sound level meter used in the valley below was set to within 1 second of the fixed calibration monitor at the simulation site to allow for direct sound level comparison and to determine the actual distance, atmospheric, and terrain attenuation received between the calibration and valley monitoring positions. The approximate locations event simulation and the valley measurements is shown on Figure 1, attached.

Sound from the event simulations set for both the 200 person and the 200 person+10 dB event sound levels were not measurable and inaudible above the background highway traffic and

[2] Mathematically expressed as $L_{rec} = L_{source} - 20xLog(D_{rec}/D_{source})$

mechanical noise from commercial use noise levels at both valley floor locations 1 and 2, and thus could not be reported. At valley floor location 3, which is significantly removed from highway traffic and commercial noise, sound from the event simulation set at the 200 person+10 dB event (estimated 475 guest) levels was audible and measureable, while sounds from the event simulation levels set for the proposed maximum 200 person event were occasionally audible though not measurable over ambient noise conditions. The results of measurements at location 3 for the two simulation levels (maximum proposed 200 person and the 200 person+10 dB event) are shown in Table 4, below.

Table 4: Measured Simulation Levels at Location 3 - 7391 Hwy 29 driveway

Simulation Scenario	Sound Levels in terms of Napa County Noise Standards (dBA)				
	L_{max}	L_{02}	L_{08}	L_{25}	L_{50}
Max. proposed 200 guest event	44	44	42	41	40
200 guest+10 dB (475 guest) event	45	45	43	42	41

This table indicates that the measured levels during the maximum (200 guest) event simulation were only 1 dBA lower than those produced by the 200 guest +10 dB event simulation. Considering that the source level of this simulation were 10 decibels above, or twice as loud as, those for the 200 person event, and that only sound for the 200 person+10 dB event simulation was clearly measurable, much of the sound levels measured for the 200 person event simulation can be attributed to ambient, background noise at the measurement site. Based the logarithmic relationship of sound levels, acoustical calculations were undertaken to determine the ambient sound levels at the measurement site and the actual sound level produced by the maximum (200 guest) event simulation at this measurement location in the absence of ambient noise. The results of these calculations are presented in Table 4. Table 4 also shows the adjusted daytime and nighttime County Noise Ordinance Standards for the most stringent Rural Residential uses in Table 1 (away from Hwy 29 and the rail line), though this the criteria for Rural Residential away from Hwy 29 and near the rail line would more strictly apply to this measurement site.

Table 4: Calculated 200 guest event levels vs County standards

Sound Levels at location 3 (7391 Hwy 29 driveway)	Sound Levels in terms of Napa County Noise Standards (dBA)				
	L_{max}	L_{02}	L_{08}	L_{25}	L_{50}
Calculated ambient noise level during testing	44	43	42	41	40
Calculated 200 guest event level without ambient noise	**36**	**35**	**33**	**32**	**31**
Adjusted daytime County Noise Ordinance Standards	60	55	50	45	45
Adjusted nighttime County Noise Ordinance Standards	55	50	45	40	40

These measured and calculated sound levels can also be directly compared to the calculated L_{50} level of 36 dBA for receiver #4 on Table 3 of I&R's March 21, 2014 theoretical analysis report for event noise at the winery. This comparison indicates that the actual L_{50} level at the 7391 Hwy 29 driveway location are 5 dBA lower than those calculated without consideration for terrain or atmospheric attenuation.

A review of the sound level produced by the maximum 200 guest event at the 7391 Hwy 29 driveway location indicates that event noise levels would be well below the daytime and nighttime County Noise Standards in this area. Furthermore based on the findings of this study versus those in our prior March 21, 2014 theoretical analysis report we would expect sound levels produced by a maximum size (200 guest) event to be well below the daytime and nighttime County Noise Standards at all residences and businesses in the project vicinity. Therefore, we find that noise from events at the proposed CS2 Winery would not result in a noise impact at area residences and businesses.

Sincerely,

Fred M. Svinth, INCE, Assoc., AIA
Senior Consultant, Principal
Illingworth & Rodkin, Inc.

Figure 1: CS2 Winery Event Simulation and Measurement Locations

APPENDIX A:
FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL ACOUSTICS

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound may be caused by either its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. *A decibel (dB)* is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1. There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA.* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2.

Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Day/Night Average Sound Level, Ldn,* is a measure of the cumulative noise exposure in a community, with a 10 dB penalty added to nighttime (10:00 pm - 7:00 am) noise levels.

TERM	DEFINITIONS
Decibel, dB	A unit 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).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	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 frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Definitions Of Acoustical Terms | **Table 1**

At a Given Distance From Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')			
	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen With Garbage	
Vacuum Cleaner (10')	70	Disposal Running	Moderately Loud
Conversational Speech (3')	60	Data Processing Center	
Light Traffic (100')	50	Department Store	
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

Typical Sound Levels Measured In The Environment And Industry | **Table 2**

Effects of Noise

Sleep and Speech Interference: The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity; above 35 dBA, and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA Ldn. Typically, the highest steady traffic noise level during the daytime is about equal to the Ldn and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA Ldn with open windows and 65-70 dBA Ldn if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance: Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The Ldn as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA Ldn. At an Ldn of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the Ldn increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase of about 1 percent per dBA between an Ldn of 60-70 dBA. Between an Ldn of 70-80 dBA, each decibel increase increases by about 2 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the Ldn is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population highly annoyed.