

# ***APPENDIX G***

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## ***NOISE MEASUREMENT DATA AND ANALYSIS***

# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site A

### Information Panel

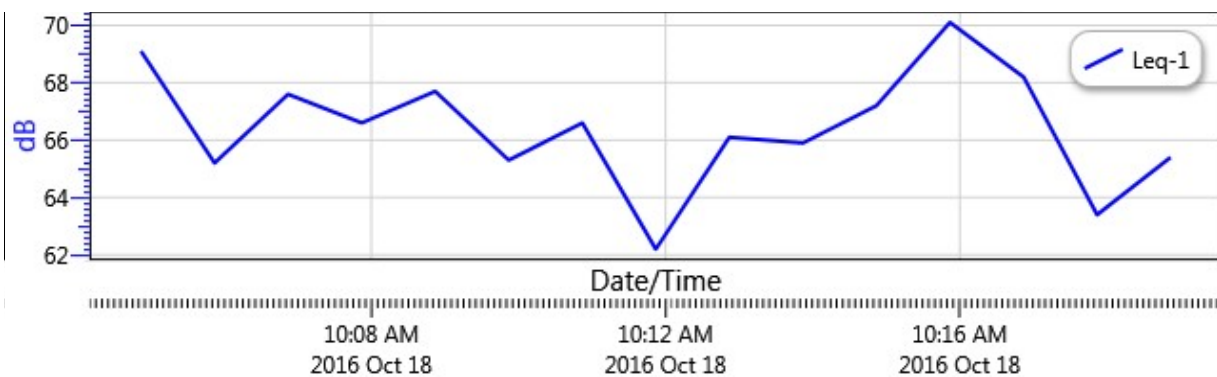
Name	Redding Proposed Project 15-Minute 172
Start Time	10/18/2016 10:03:52 AM
Stop Time	10/18/2016 10:18:57 AM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	66.8 dB	CNEL	1	66.8 dB
LDN	1	66.8 dB	SEL	1	96.4 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Proposed Project 15-Minute 172: Logged Data Chart



# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site B

### Information Panel

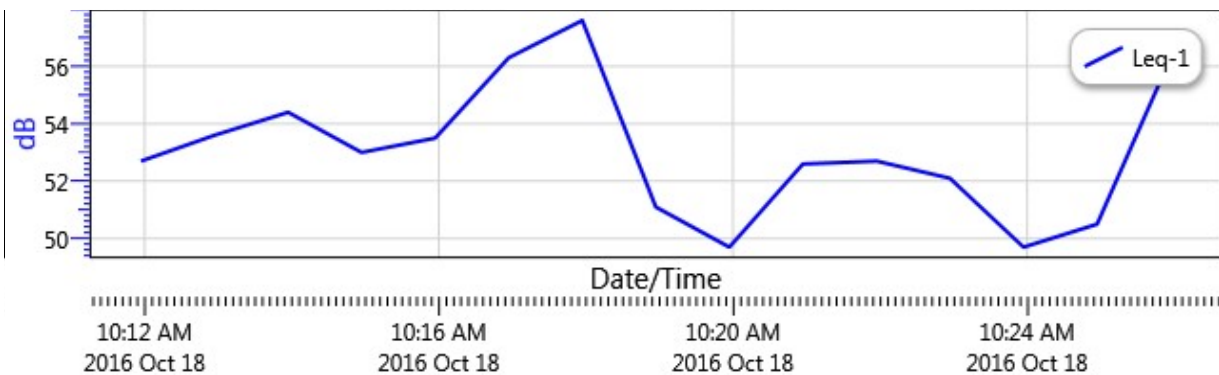
Name	Redding Proposed Project 15-Minute 181
Start Time	10/18/2016 10:10:57 AM
Stop Time	10/18/2016 10:26:39 AM
Device Name	BGH060009
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	53.6 dB	CNEL	1	53.6 dB
LDN	1	53.6 dB	SEL	1	83.4 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Proposed Project 15-Minute 181: Logged Data Chart



# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site C

### Information Panel

Name	Redding Proposed Project 24-Hour 273
Start Time	10/18/2016 10:49:35 AM
Stop Time	10/19/2016 10:48:25 AM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	48.8 dB	CNEL	1	55 dB
LDN	1	54.6 dB	SEL	1	98.1 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Proposed Project 24-Hour 273: Logged Data Chart



# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site D

### Information Panel

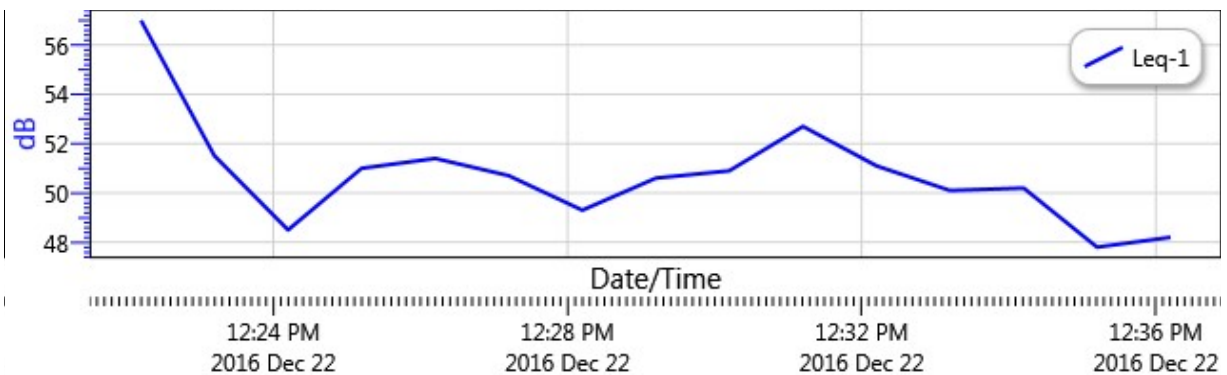
Name	Redding Alts. A, B, and C Site D
Start Time	12/22/2016 12:21:12 PM
Stop Time	12/22/2016 12:36:42 PM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	51.3 dB	CNEL	1	51.3 dB
LDN	1	51.3 dB	SEL	1	81 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Alts. A, B, and C Site D: Logged Data Chart



# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site E

### Information Panel

Name	Redding Alts. A, B, and C Site E
Start Time	12/22/2016 11:36:59 AM
Stop Time	12/22/2016 11:52:20 AM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	70.2 dB	CNEL	1	70.2 dB
LDN	1	70.2 dB	SEL	1	99.8 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Alts. A, B, and C Site E: Logged Data Chart



# Redding Rancheria Alternatives A, B, and C

## Noise Monitoring Site F

### Information Panel

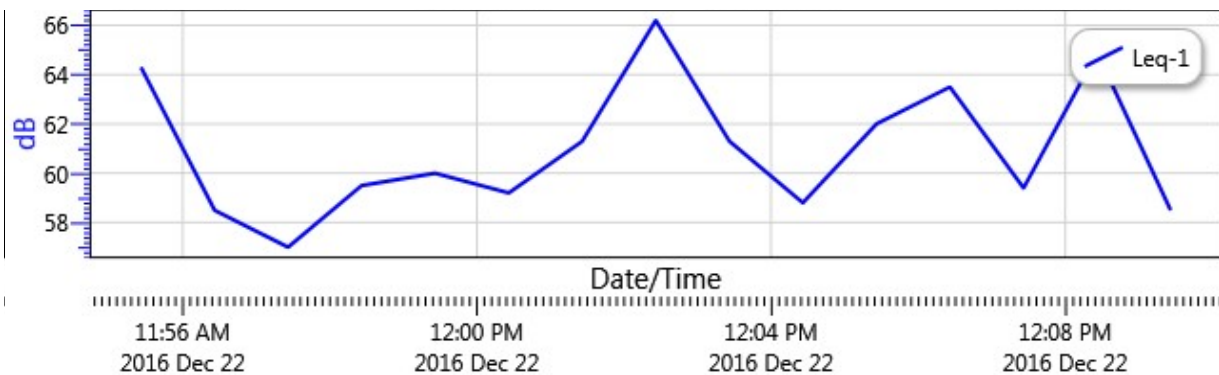
Name	Redding Alts. A, B, and C Site F
Start Time	12/22/2016 11:54:26 AM
Stop Time	12/22/2016 12:09:54 PM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	61.7 dB	LDN	1	61.7 dB
CNEL	1	61.7 dB	SEL	1	91.4 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Alts. A, B, and C Site F: Logged Data Chart



# Redding Rancheria

## Noise Monitoring Location G

### Information Panel

Name	Redding Noise Monitoring Location 1
Start Time	7/18/2017 12:01:12 PM
Stop Time	7/19/2017 12:05:23 PM
Device Name	BGH060009
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	52.4 dB	CNEL	1	58.8 dB
LDN	1	58.4 dB	SEL	1	101.8 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding 1: Logged Data Chart





# Redding Rancheria

## Noise Monitoring Location H

### Information Panel

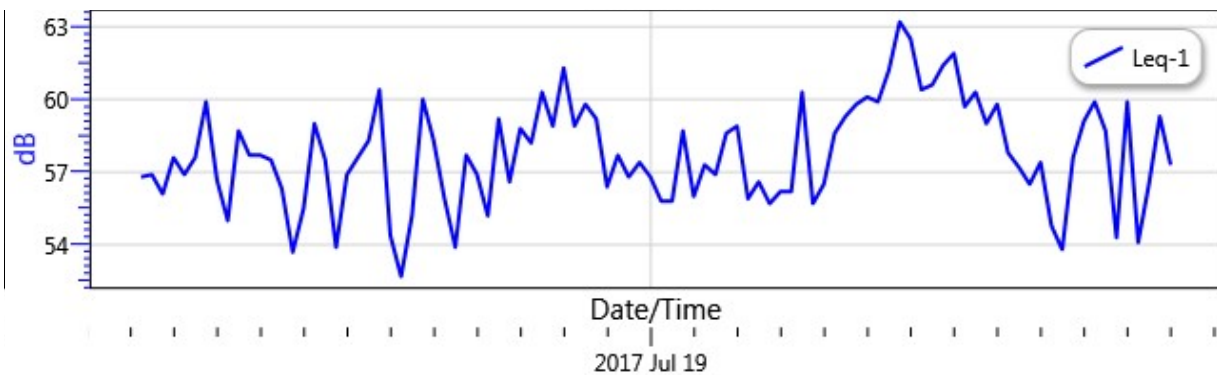
Name	Redding Noise Monitoring Location 2
Start Time	7/18/2017 11:59:23 AM
Stop Time	7/19/2017 12:00:45 PM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	58.2 dB	CNEL	1	65.4 dB
LDN	1	65.2 dB	SEL	1	107.6 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding 2: Logged Data Chart



# Redding Rancheria

## Noise Monitoring Location I

### Information Panel

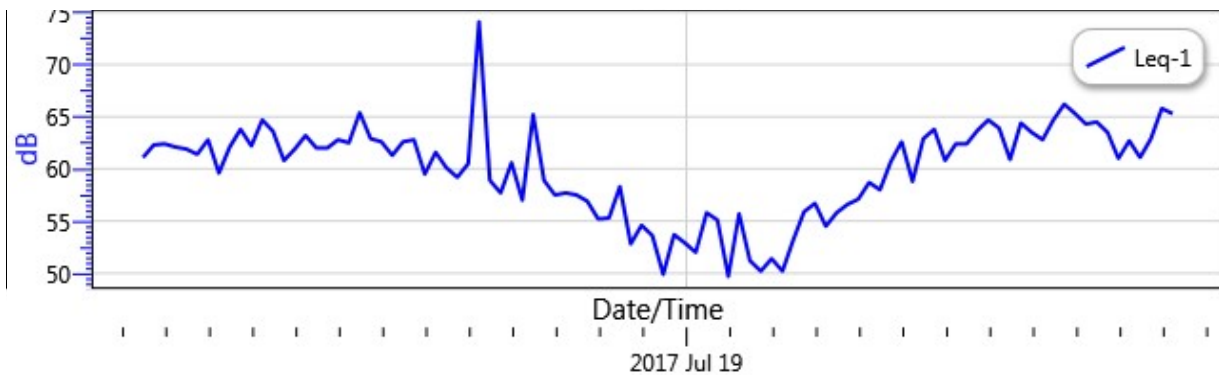
Name	Redding Noise Monitoring Location 3
Start Time	7/18/2017 11:12:48 AM
Stop Time	7/19/2017 11:13:19 AM
Device Name	BGH060007
Model Type	SoundPro DL
Device Firmware Rev	R.13D
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	62.1 dB	CNEL	1	66.9 dB
LDN	1	66.1 dB	SEL	1	111.4 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding 3: Logged Data Chart



# Redding Rancheria Alternative E

## Noise Monitoring Site 1

### Information Panel

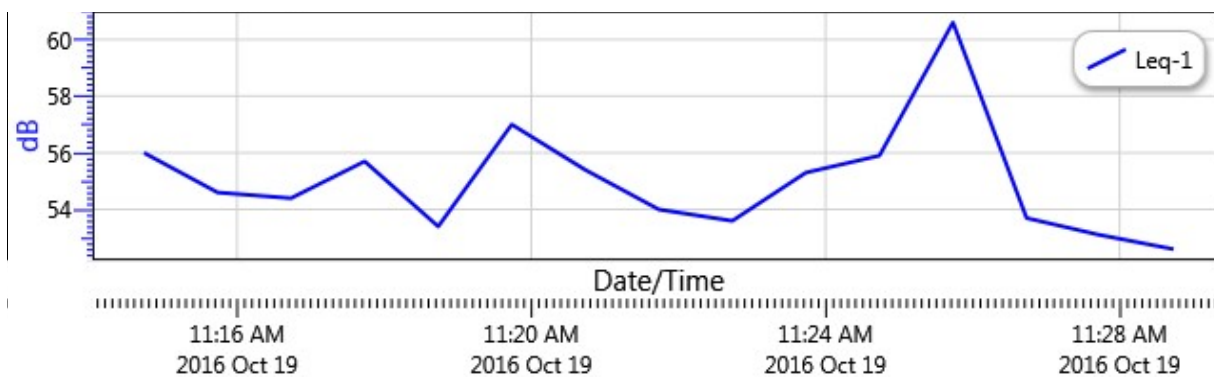
Name	Redding Alt D 15-Minute 274
Start Time	10/19/2016 11:13:44 AM
Stop Time	10/19/2016 11:28:52 AM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.5 dB	CNEL	1	55.5 dB
LDN	1	55.5 dB	SEL	1	85.1 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Alt D 15-Minute 274 : Logged Data Chart



# Redding Rancheria Alternative E

## Noise Monitoring Site 2

### Information Panel

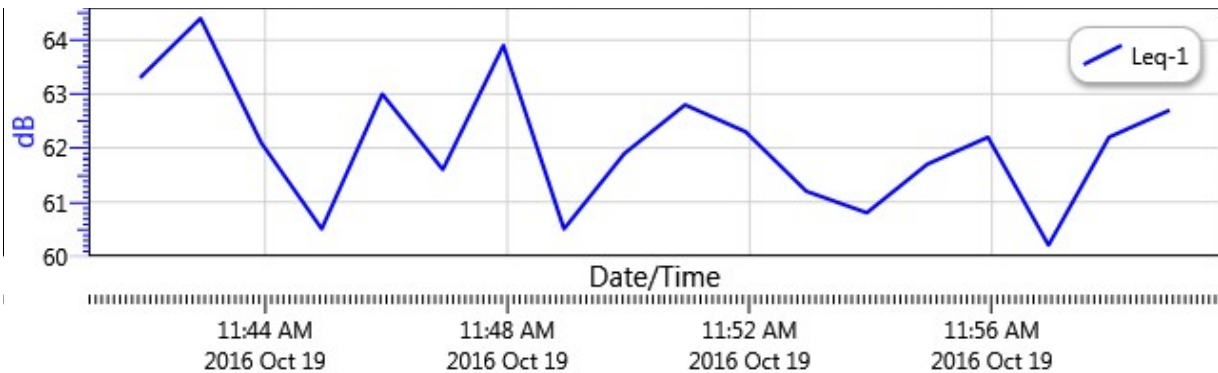
Name	Redding Alt D 15-Minute 275
Start Time	10/19/2016 11:40:56 AM
Stop Time	10/19/2016 11:59:18 AM
Device Name	BGH060008
Model Type	SoundPro DL
Device Firmware Rev	R.12L
Comments	

### Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	62.2 dB	CNEL	1	62.2 dB
LDN	1	62.2 dB	SEL	1	92.6 dB
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Criterion Time	1	8 hrs.

### Logged Data Chart

Redding Alt D 15-Minute 275: Logged Data Chart





June 25, 2018

Ryan Lee Sawyer  
AES  
1801 7th Street, Ste 100  
Sacramento, CA 95811  
rsawyer@analyticalcorp.com

**Subject: Traffic Noise Increases on Adra Way and Bechelli Lane south of South Bonneyview – Redding Rancheria Strawberry Fields Site**

Dear Ms. Sawyer:

Saxelby Acoustics has prepared an analysis of traffic noise increases on the two above-referenced roadway segments. The intent of this analysis is to provide an assessment of the day/night ( $L_{dn}$ ) noise level along these segments for comparison to the standards of the City of Redding and Shasta County.

#### **Significance Criteria**

CEQA does not define a threshold of “significant increase” regarding noise exposure; Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project-noise conditions. Table 1 is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the  $L_{dn}$ .

**TABLE 1: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE**

Ambient Noise Level Without Project, $L_{dn}$	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

Based on the Table 1 data, an increase in the traffic noise level of 3.0 dB or more would be significant where the pre-project noise levels are within 60-65 dB  $L_{dn}$ . Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB  $L_{dn}$ . The rationale for the Table 1 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

It should be noted that this methodology was adopted by Shasta County in General Plan noise policy N-g. The City of Redding has also adopted this policy in General Plan noise policy N2-D, with one exception. Based upon Policy N2-D, the City does not consider an increase up to 60 dB  $L_{dn}$  to be significant where existing noise levels are less than 60 dB  $L_{dn}$ . For example, based upon this policy, an increase in ambient noise levels from 50 dB  $L_{dn}$  to 59 dB  $L_{dn}$  would be less than significant.

### Off-Site Traffic Noise Prediction Methodology

To predict noise levels due to traffic, the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is used in conjunction with the Calvenio reference noise emission curves, and accounts for vehicle volume and speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. The FHWA Model was developed to predict hourly  $L_{eq}$  values for free-flowing traffic conditions. To calculate  $L_{dn}$ , average daily traffic (ADT) volume data is adjusted based on the assumed day/night distribution of traffic on the project roadways.

Traffic volumes for existing conditions were obtained from the project traffic study the form of peak hour intersection movements. The peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes using a factor of 10, according to common industry practice. Truck usage and vehicle speeds on the local area roadways were estimated from field observations and Caltrans data, where available.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. It should be noted that traffic noise levels also include the contribution to overall traffic noise levels from Interstate 5 and S. Bonnyview Road which are dominant noise sources near the surface streets analyzed in the report. This analysis includes assessment of both opening year and cumulative 2040 traffic conditions.

Table 2 summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under existing conditions with and without the project. Table 3 summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area under Cumulative 2040 conditions with and without the project.

Appendix A provides the complete inputs and results of the FHWA traffic modeling.

**TABLE 2: PREDICTED TRAFFIC NOISE LEVELS (EXISTING CONDITIONS WITH AND WITHOUT THE PROJECT)**

Roadway	Segment	Existing Ambient, dBA L <sub>dn</sub>	Opening Year		Opening Year + Project		Change		Significance Threshold	Significant increase?
			Weekday Peak Hour [Daily ADT]	dBA L <sub>dn</sub>	Weekday Peak Hour	dBA L <sub>dn</sub>	Weekday Peak Hour [Daily ADT]	dBA L <sub>dn</sub>		
Adra Way	North of Smith Road	58.4	6 <sup>1</sup> [60]	58.4 <sup>2</sup>	322 [3,220]	60.0 <sup>3</sup>	316 [3,160]	+1.6	≥5 dBA	No
Bechelli Lane	South of South Bonnyview Road, Alt. A, Opt. 1	61.7	151 [1,510]	62.3 <sup>4</sup>	1,290 [12,900]	65.2 <sup>5</sup>	1,139 [11,390]	+2.9	≥3 dBA	No
Bechelli Lane	South Bonnyview Road, Alt. A, Opt. 2	61.7	151 [1,510]	62.3 <sup>4</sup>	973 [9,730]	64.6 <sup>6</sup>	822 [8,220]	+2.3	≥3 dBA	No
Bechelli Lane	South Bonnyview Road, Alt. B, Opt. 1	61.7	151 [1,510]	62.3 <sup>4</sup>	1,051 [10,510]	64.8 <sup>7</sup>	900 [9,000]	+2.5	≥3 dBA	No
Bechelli Lane	South Bonnyview Road, Alt. C, Opt. 1	61.7	151 [1,510]	62.3 <sup>4</sup>	1,138 [11,380]	64.9 <sup>8</sup>	987 [9,870]	+2.6	≥3 dBA	No

**Notes:**

- 1 - Adra Way is an unpaved private road that currently provides access to one residence. Because weekday peak hour traffic volumes were not available for Adra Way, a value of 6 vehicle trips per weekday P.M. peak traffic hour was conservatively assumed.
- 2 - Includes the existing ambient noise level of 58.4 dBA L<sub>dn</sub> added to the Opening Year Adra Way contribution of 31.8 dBA L<sub>dn</sub>.
- 3 - Includes the existing ambient noise level of 58.4 dBA L<sub>dn</sub> added to the Opening Year + Project Adra Way contribution of 55.0 dBA L<sub>dn</sub>.
- 4 - Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Opening Year Bechelli Lane contribution of 53.4 dBA L<sub>dn</sub>.
- 5 - Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Opening Year + Project Alt. A, Opt. 1 Bechelli Lane contribution of 62.7 dBA L<sub>dn</sub>.
- 6 - Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Opening Year + Project Alt. A, Opt. 2 Bechelli Lane contribution of 61.5 dBA L<sub>dn</sub>.
- 7 - Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Opening Year + Project Alt. B, Opt. 1 Bechelli Lane contribution of 61.8 dBA L<sub>dn</sub>.
- 8 - Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Opening Year + Project Alt. C, Opt. 1 Bechelli Lane contribution of 62.1 dBA L<sub>dn</sub>.

**TABLE 3: PREDICTED TRAFFIC NOISE LEVELS (CUMULATIVE 2040 CONDITIONS WITH AND WITHOUT THE PROJECT)**

Roadway	Segment	Existing Ambient, dBA L <sub>dn</sub>	Cumulative Year		Cumulative Year + Project		Change		Significance Threshold	Significant Increase?
			Weekday Peak Hour [Daily ADT]	dBA L <sub>dn</sub>	Weekday Peak Hour	dBA L <sub>dn</sub>	Weekday Peak Hour [Daily ADT]	dBA L <sub>dn</sub>		
Adra Way	North of Smith Road	58.4	9 <sup>1</sup> [90]	58.4 <sup>2</sup>	325 [3,250]	60.0 <sup>3</sup>	316 [3,160]	+1.6	≥5 dBA	No
Bechelli Lane	South of South Bonnyview Road, Alt. A, Opt. 1	61.7	191 [1,910]	62.4 <sup>4</sup>	1,330 [13,330]	65.3 <sup>5</sup>	1,139 [11,390]	+3.0	≥3 dBA	Yes
Bechelli Lane	South Bonnyview Road, Alt. A, Opt. 2	61.7	191 [1,910]	62.4 <sup>4</sup>	1,013 [10,130]	64.7 <sup>6</sup>	822 [8,220]	+2.4	≥3 dBA	No
Bechelli Lane	South Bonnyview Road, Alt. B, Opt. 1	61.7	191 [1,910]	62.4 <sup>4</sup>	1,091 [10,910]	64.8 <sup>7</sup>	900 [9,000]	+2.5	≥3 dBA	No
Bechelli Lane	South Bonnyview Road, Alt. C, Opt. 1	61.7	191 [1,910]	62.4 <sup>4</sup>	1,178 [11,780]	65.0 <sup>8</sup>	987 [9,870]	+2.7	≥3 dBA	No

**Notes:**

- 1 - Adra Way is an unpaved private road that currently provides access to one residence. Because weekday peak hour traffic volumes were not available for Adra Way, a value of 9 vehicle trips per weekday P.M. peak traffic hour was conservatively assumed.
- 2 – Includes the existing ambient noise level of 58.4 dBA L<sub>dn</sub> added to the Cumulative 2040 Adra Way contribution of 33.6 dBA L<sub>dn</sub>.
- 3 – Includes the existing ambient noise level of 58.4 dBA L<sub>dn</sub> added to the Cumulative 2040 + Project Adra Way contribution of 55.0 dBA L<sub>dn</sub>.
- 4 – Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Cumulative 2040 Bechelli Lane contribution of 54.4 dBA L<sub>dn</sub>.
- 5 – Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Cumulative 2040 + Project Alt. A, Opt. 1 Bechelli Lane contribution of 62.8 dBA L<sub>dn</sub>.
- 6 – Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Cumulative 2040 + Project Alt. A, Opt. 2 Bechelli Lane contribution of 61.6 dBA L<sub>dn</sub>.
- 7 – Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Cumulative 2040 + Project Alt. B, Opt. 1 Bechelli Lane contribution of 62.0 dBA L<sub>dn</sub>.
- 8 – Includes the existing ambient noise level of 61.7 dBA L<sub>dn</sub> added to the Cumulative 2040 + Project Alt. C, Opt. 1 Bechelli Lane contribution of 62.3 dBA L<sub>dn</sub>.



## Conclusions

Based upon the predicted traffic noise increases shown in Table 2 and Table 3, the proposed project is predicted to cause increased traffic noise on Bechelli Lane South of S. Bonnyview which would exceed the impact threshold of 3 dBA, or greater. This impact would specifically occur under project Alternative A, Option 1 under Cumulative 2040 plus project conditions. The only sensitive receptor along this roadway segment is the Hilton Garden Inn hotel which includes an outdoor swimming pool area. In order to reduce this traffic noise increase to below 3 dBA, a solid 6-foot tall sound wall would be required to be constructed along the north side of the pool. Based upon the Appendix B data, the barrier would reduce overall noise levels by 6 dBA. This reduction would result in plus projects traffic noise levels which are less than the no project noise levels. Therefore, no additional noise control measures would be required after construction of the noise barrier. This measure would only be required under Alternative A, option 1.

No other exceedances of either the Shasta County or City of Redding significant increase thresholds are predicted for any other segments or project alternatives.

Please call or email me if you have any questions regarding this analysis.

Sincerely,

Saxelby Acoustics



Luke Saxelby, INCE Bd. Cert.  
Principal Consultant  
Board Certified, Institute of Noise Control Engineering

**Appendix A****FHWA-RD-77-108 Highway Traffic Noise Prediction Model****Data Input Sheet****Project #:** 170707**Description:** Redding Rancheria - Strawberry Fields Site Traffic Noise Increases**Ldn/CNEL:** Ldn**Hard/Soft:** Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Level, dBA
<b>Opening Year (2025)</b>											
1	Adra Way	North of Smith Road - Opening Year	60	95	5	0	0	25	75	0	31.8
2	Adra Way	North of Smith Road - Opening Year Plus Project	3,220	95	5	0	0	40	75	0	55.0
3	Bechelli Lane	South of S. Bonnyview Road - Opening Year	1,510	83	17	1	1	40	100	0	53.4
4	Bechelli Lane	South of S. Bonnyview - Opening Year Plus Project, Alt. A, Opt. 1	12,900	83	17	1	1	40	100	0	62.7
5	Bechelli Lane	South of S. Bonnyview - Opening Year Plus Project, Alt. A, Opt. 2	9,730	83	17	1	1	40	100	0	61.5
6	Bechelli Lane	South of S. Bonnyview - Opening Year Plus Project, Alt. B, Opt. 1	10,510	83	17	1	1	40	100	0	61.8
7	Bechelli Lane	South of S. Bonnyview - Opening Year Plus Project, Alt. C, Opt. 1	11,380	83	17	1	1	40	100	0	62.1
<b>Cumulative 2040</b>											
1	Adra Way	North of Smith Road - 2040	90	95	5	0	0	25	75	0	33.6
2	Adra Way	North of Smith Road - 2040 Plus Project	3,250	95	5	0	0	40	75	0	55.0
3	Bechelli Lane	South of S. Bonnyview - 2040 No Project	1,910	83	17	1	1	40	100	0	54.4
4	Bechelli Lane	South of S. Bonnyview - 2040 Plus Project, Alt. A, Opt. 1	13,300	83	17	1	1	40	100	0	62.8
5	Bechelli Lane	South of S. Bonnyview - 2040 Plus Project, Alt. A, Opt. 2	10,130	83	17	1	1	40	100	0	61.6
6	Bechelli Lane	South of S. Bonnyview - 2040 Plus Project, Alt. B, Opt. 1	10,910	83	17	1	1	40	100	0	62.0
7	Bechelli Lane	South of S. Bonnyview - 2040 Plus Project, Alt. C, Opt. 1	11,780	83	17	1	1	40	100	0	62.3

**Appendix B**  
**FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)**  
**Noise Barrier Effectiveness Prediction Worksheet**

**Project Information:** Job Number: 170707  
Description Redding Rancheria - Strawberry Fields Site Traffic Noise Increases  
Roadway Name: Bechelli Lane  
Location(s): 4

**Noise Level Data:** Year: 2040  
Auto  $L_{dn}$ , dB: 62  
Medium Truck  $L_{dn}$ , dB: 51  
Heavy Truck  $L_{dn}$ , dB: 55  
Total: 63

**Site Geometry:** Receiver Description: South of S. Bonnyview - 2040 Plus Project, Alt. A, Opt. 1  
Centerline to Barrier Distance ( $C_1$ ): 100  
Barrier to Receiver Distance ( $C_2$ ): 15  
Automobile Elevation: 0  
Medium Truck Elevation: 2  
Heavy Truck Elevation: 8  
Pad/Ground Elevation at Receiver: 0  
Receiver Elevation<sup>1</sup>: 5  
Base of Barrier Elevation: 0  
Starting Barrier Height 6

**Barrier Effectiveness:**

Top of Barrier Elevation (ft)	Barrier Height <sup>2</sup> (ft)	----- $L_{dn}$ , dB -----				Reduction	Barrier Breaks Line of Sight to...		
		Autos	Medium Trucks	Heavy Trucks	Total		Autos?	Medium Trucks?	Heavy Trucks?
6	6	56	45	50	<b>57</b>	-6	Yes	Yes	Yes
7	7	54	44	50	<b>56</b>	-7	Yes	Yes	Yes
8	8	53	43	48	<b>55</b>	-8	Yes	Yes	Yes
9	9	52	41	47	<b>53</b>	-9	Yes	Yes	Yes
10	10	51	40	46	<b>53</b>	-10	Yes	Yes	Yes
11	11	50	40	45	<b>52</b>	-11	Yes	Yes	Yes
12	12	49	39	44	<b>51</b>	-12	Yes	Yes	Yes
13	13	48	38	43	<b>50</b>	-13	Yes	Yes	Yes
14	14	48	37	42	<b>49</b>	-14	Yes	Yes	Yes

**Notes:** 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)