Appendix D

Noise Measurement Data and Noise Modeling Calculations

Summary	
File Name	LxT_Data.071
Serial Number	0003285
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	
Note	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LAS5.00	LAS10.00	LAS33.00	LAS50.00	LAS66.00	LAS90.00	LCeq	LAeq	LCeq - LAeq	LAleq	LAeq	LAleq - LAeq
1	2017-12-20	08:46:28	00:19:24.8	00:19:19.4	00:00:05.4	68.1	98.7	59.8	08:51:25	79.4	09:01:24	72.4	71.5	69.6	62.7	61.4	60.5	76.9	68.1	8.8	70.7	68.1	2.6

Summary	
File Name	LxT_Data.072
Serial Number	0003285
Model	SoundTrack LxT®
Firmware Version	2.301
User	
Location	
Job Description	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LAS5.00	LAS10.00	LAS33.00	LAS50.00	LAS66.00	LAS90.00	LCeq	LAeq	LCeq - LAeq	LAleq	LAeq	LAleq - LAeq
2	2017-12-20	09:12:41	00:24:14.8	00:24:14.8	00:00:00.0	75.0	106.6	66.1	09:36:35	86.6	09:34:54	79.2	77.0	73.7	73.2	73.0	71.6	82.3	75.0	7.3	76.4	75.0	1.4

Long-Term Noise Measurement Summary

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

Measurement Site: Folsom Leisdorff Corporation Yard
Measurement Date: 12/21/2017
Project Name: Folsom Corporation Yard SOIA

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Computation of CNEL: Period of 24-Hour Day (1=included, 0=not) Day	Evening	Night	Sound Power Breakdown by Period of Day Day	Evening	Night
0:00	47.3	53,990	0	0	1	0	0	53,990
1:00	44.5	28,010	0	0	1	0	0	28,010
2:00	44.6	29,102	0	0	1	0	0	29,102
3:00	51.6	143,489	0	0	1	0	0	143,489
4:00	60.1	1,031,856	0	0	1	0	0	1,031,856
5:00	61.3	1,334,833	0	0	1	0	0	1,334,833
6:00	62.6	1,813,945	0	0	1	0	0	1,813,945
7:00	59.3	859,162	1	0	0	859,162	0	0
8:00	58.5	713,908	1	0	0	713,908	0	0
9:00	57.2	524,399	1	0	0	524,399	0	0
10:00	61.2	1,323,043	1	0	0	1,323,043	0	0
11:00	59.4	877,219	1	0	0	877,219	0	0
12:00	66.7	4,713,744	1	0	0	4,713,744	0	0
13:00	57.5	565,149	1	0	0	565,149	0	0
14:00	51.9	153,882	1	0	0	153,882	0	0
15:00	56.1	411,080	1	0	0	411,080	0	0
16:00	59.4	875,893	1	0	0	875,893	0	0
17:00	53.2	208,454	1	0	0	208,454	0	0
18:00	58.5	707,511	1	0	0	707,511	0	0
19:00	48.8	76,122	0	1	0	0	76,122	0
20:00	51.1	127,907	0	1	0	0	127,907	0
21:00	51.4	137,471	0	1	0	0	137,471	0
22:00	50.3	107,729	0	0	1	0	0	107,729
23:00	48.0	63,262	0	0	1	0	0	63,262
Sum of Sound Power during Period wo/penalty						11,933,443	341,500	4,606,216
Log Factor for CNEL Penalty (i.e., 10*log(x))						1	3	10
Sound Power during Period with penalty						11,933,443	1,024,501	46,062,162

Total Daily Sound Power, with penalties	59,020,107
Hours per Day	24
Average Hourly Sound Power, with penalties	2,459,171
CNEL	63.9

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	53,990
0	1	0	28,010
0	1	0	29,102
0	1	0	143,489
0	1	0	1,031,856
0	1	0	1,334,833
0	1	0	1,813,945
1	0	859,162	0
1	0	713,908	0
1	0	524,399	0
1	0	1,323,043	0
1	0	877,219	0
1	0	4,713,744	0
1	0	565,149	0
1	0	153,882	0
1	0	411,080	0
1	0	875,893	0
1	0	208,454	0
1	0	707,511	0
1	0	76,122	0
1	0	127,907	0
1	0	137,471	0
0	1	0	107,729
0	1	0	63,262

Sum of Sound Power during Period wo/penalty	12,274,944	4,606,216
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	12,274,944	46,062,162

Total Daily Sound Power, with penalties	58,337,106
Hours per Day	24
Average Hourly Sound Power, with penalties	2,430,713
Ldn	63.9

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Deaprtment of Transportation (Caltrans), Divisiong of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement* . Sacramento, CA. Available: <http://www.dot.ca.gov/hq/env/noise/>. Accessed September 24, 2010.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	3,685	50.0
Hillsborough Residences	250	73.4

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dozer	85	0.4
Roller	85	0.2
Grader	85	0.4
Scraper	85	0.4
Flat Bed Truck	84	0.4

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Dozer	81.0
Roller	78.0
Grader	81.0
Scraper	81.0
Flat Bed Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.3

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	6,157	50.0
Hillsborough Residences	250	77.8

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dozer	85	1
Roller	85	1
Grader	85	1
Scraper	85	1
Flat Bed Truck	84	1

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Dozer	85.0
Roller	85.0
Grader	85.0
Scraper	85.0
Flat Bed Truck	84.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
91.8

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	663	50.0
Hillsborough Residences	250	58.5

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Front End Loader	71	1
Flat Bed Truck	67	1

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Front End Loader	71.0
Flat Bed Truck	67.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
72.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	423	70.0
Hillsborough Residences	250	74.6

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Front End Loader	86	1
Flat Bed Truck	85	1

Ground Type	HARD
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Front End Loader	86.0
Flat Bed Truck	85.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
88.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Traffic Noise Spreadsheet Calculator

Project: Folsom Corporation Yard SOIA

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

		Segment Description and Location		Input											Output				
					Speed	Distance to Directional Centerline, (feet)[4]		Traffic Distribution Characteristics							CNEL,	Distance to Contour, (feet)[3]			
Number	Name	From	To	ADT	(mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		(dBA)[5,6,7]	70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																			
1	Prairie City Road	White Rock Road	US 50 EB Ramps	8,309	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		67.1	51	162	513	1623
2	White Rock Road	West of Prairie City Road	Prairie City Road	16,800	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		70.2	104	328	1037	3281
3	White Rock Road	Prairie City Road	Scott Road (west)	12,501	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		68.9	77	244	772	2441
4	White Rock Road	Scott Road (west)	Scott Road (east)	12,757	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		69.0	79	249	788	2491
5	White Rock Road	Scott Road (east)	East of Scott Road (east)	7,989	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		66.9	49	156	493	1560
6	Scott Road (east)	White Rock Road	North of White Rock Road	9,931	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		67.9	61	194	613	1939
7	Scott Road (west)	White Rock Road	South of White Rock Road	2,581	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%		62.0	16	50	159	504
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%						

Notes: All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Heavy vehicle percentage (3%) based on pers comm with Neil Smolen of Fehr and Peers on November 9, 2017.

Traffic Noise Spreadsheet Calculator

Project: Folsom Corporation Yard SOIA

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

	Segment Description and Location			Input										Output				
						Distance to Directional Centerline, (feet)[4]		Traffic Distribution Characteristics						CNEL,	Distance to Contour, (feet)[3]			
Number	Name	From	To	ADT	Speed (mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	(dBA)[5,6,7]	70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																		
1	Prairie City Road	White Rock Road	US 50 EB Ramps	8,533	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	67.8	60	190	600	1899
2	White Rock Road	West of Prairie City Road	Prairie City Road	16,800	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	70.7	118	374	1182	3738
3	White Rock Road	Prairie City Road	Scott Road (west)	12,555	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	69.5	88	279	883	2793
4	White Rock Road	Scott Road (west)	Scott Road (east)	12,864	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	69.6	91	286	905	2862
5	White Rock Road	Scott Road (east)	East of Scott Road (east)	7,989	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	67.5	56	178	562	1778
6	Scott Road (east)	White Rock Road	North of White Rock Road	10,037	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	68.5	71	223	706	2233
7	Scott Road (west)	White Rock Road	South of White Rock Road	2,635	55	100	100	93.0%	2.0%	5.0%	80.0%	15.0%	5.0%	62.7	19	59	185	586
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

Notes: All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Heavy vehicle percentage (5%) based on pers comm with Neil Smolen of Fehr and Peers on November 9, 2017.

Traffic Noise Spreadsheet Calculator

Project: **Folsom Corporation Yard SOIA**

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

				Input										Output				
	Segment Description and Location				Speed	Distance to Directional Centerline, (feet)[4]		Traffic Distribution Characteristics						CNEL,	Distance to Contour, (feet)[3]			
Number	Name	From	To	ADT	(mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	$(dBA)_{5,6,7}$	75 dBA	70 dBA	65 dBA	60 dBA
Existing Conditions																		
1	Prairie City Road	US 50 EB Ramps	Easton Valley Pkwy	25,581	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	72.0	50	158	500	1580
2	Prairie City Road	Easton Valley Pkwy	Street D	22,233	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	71.4	43	137	434	1373
3	Prairie City Road	Street D	Street A	18,047	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	70.5	35	111	352	1114
4	Prairie City Road	Street A	White Rock Road	13,581	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	69.2	27	84	265	839
5	White Rock Road	West of Prairie City Road	Prairie City Road	38,791	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	73.8	76	240	758	2396
6	White Rock Road	Prairie City Road	Oak Avenue Pkwy	25,488	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	72.0	50	157	498	1574
7	White Rock Road	Oak Avenue Pkwy	Scott Road (east)	23,814	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	71.7	47	147	465	1471
8	White Rock Road	Scott Road (east)	East of Scott Road (east)	21,674	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	71.3	42		423	1338
9	Scott Road (west)	White Rock Road	South of White Rock Road	3,163	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	62.9	6	20	62	195
10	Scott Road (east)	White Rock Road	North of White Rock Road	13,116	55	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	69.1	26	81	256	810
11	Oak Avenue Pkwy	Easton Valley Pkwy	White Rock Road	9,302	45	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	65.1	10	33	104	327
12	Oak Avenue Pkwy	US 50 EB Ramps	Easton Valley Pkwy	20,000	45	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	68.5	22	70	223	704
13	Street A	Prairie City Road	Oak Avenue Pkwy	7,442	35	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	61.4	4	14	44	139
14	Easton Valley Pkwy	Prairie City Road	Oak Avenue Pkwy	24,744	45	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	69.4	28	87	275	871
15	Easton Valley Pkwy	Oak Avenue Pkwy	East of Oak Avenue Pkwy	14,698	45	100	100	95.0%	2.0%	3.0%	80.0%	15.0%	5.0%	67.1	16	52	164	517
						100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

Notes: All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Heavy vehicle percentage (3%) based on pers comm with Neil Smolen of Fehr and Peers on November 9, 2017.

Traffic Noise Spreadsheet Calculator

Project: **Folsom Corporation Yard SOIA**

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

				Input										Output				
	Segment Description and Location				Speed	Distance to Directional Centerline, (feet)$_4$		Traffic Distribution Characteristics						CNEL,	Distance to Contour, (feet)$_3$			
Number	Name	From	To	ADT	(mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	(dBA)$_{5,6,7}$	75 dBA	70 dBA	65 dBA	60 dBA
Existing Conditions																		
1	Prairie City Road	US 50 EB Ramps	Easton Valley Pkwy	25,647	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	72.3	54	169	536	1694
2	Prairie City Road	Easton Valley Pkwy	Street D	22,363	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	71.7	47	148	467	1477
3	Prairie City Road	Street D	Street A	18,195	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	70.8	38	120	380	1202
4	Prairie City Road	Street A	White Rock Road	13,786	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	69.6	29	91	288	911
5	White Rock Road	West of Prairie City Road	Prairie City Road	38,791	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	74.1	81	256	810	2562
6	White Rock Road	Prairie City Road	Oak Avenue Pkwy	25,749	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	72.3	54	170	538	1701
7	White Rock Road	Oak Avenue Pkwy	Scott Road (east)	23,870	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	72.0	50	158	499	1577
8	White Rock Road	Scott Road (east)	East of Scott Road (east)	21,740	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	71.6	45		454	1436
9	Scott Road (west)	White Rock Road	South of White Rock Road	3,470	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	63.6	7	23	72	229
10	Scott Road (east)	White Rock Road	North of White Rock Road	13,144	55	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	69.4	27	87	275	868
11	Oak Avenue Pkwy	Easton Valley Pkwy	White Rock Road	9,386	45	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	65.5	11	36	113	358
12	Oak Avenue Pkwy	US 50 EB Ramps	Easton Valley Pkwy	20,028	45	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	68.8	24	76	241	763
13	Street A	Prairie City Road	Oak Avenue Pkwy	7,460	35	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	61.9	5	15	49	154
14	Easton Valley Pkwy	Prairie City Road	Oak Avenue Pkwy	24,763	45	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	69.7	30	94	298	943
15	Easton Valley Pkwy	Oak Avenue Pkwy	East of Oak Avenue Pkwy	14,698	45	100	100	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	67.5	18	56	177	560
						100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

Notes: All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Heavy vehicle percentage (4%) based on pers comm with Neil Smolen of Fehr and Peers on November 9, 2017.

Attenuation Calculations for Stationary Noise Sources

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
Truck SENL 1	84.8	@	40	hard	8	5	0.00	83	@	50
Truck SENL 2	89.5	@	15	hard	8	5	0.00	79	@	50
Truck SENL 3	87.0	@	25	hard	8	5	0.00	81	@	50
Truck SENL 4	82.2	@	40	hard	8	5	0.00	80	@	50
Truck Leq 1	72.5	@	40	hard	8	5	0.00	71	@	50
Truck Leq 2	79.5	@	15	hard	8	5	0.00	69	@	50
Truck Leq 3	76.1	@	25	hard	8	5	0.00	70	@	50
Truck Leq 4	71.4	@	40	hard	8	5	0.00	69	@	50
Truck SENL 1	84.8	@	40	hard	8	5	0.00	88.9	@	25

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presentd in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.