

## **APPENDIX G**

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Noise Modeling Results

Appendix G

**Project-Generated Construction Source Noise Prediction Model**

SAFCA Phase 4a - Clearing and Grubbing/Stripping



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission	Usage Factor <sup>1</sup>
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	
	100	74.6	Scraper	85	0.4
	200	66.7	Front End Loader	80	0.4
	300	62.0	Water Truck	75	0.4
	400	58.7			
	500	56.2			
	600	54.1			
	700	52.3			
	800	50.8	Ground Type	Soft	
	900	49.5	Source Height	5	
	1000	48.3	Receiver Height	8	
	1100	47.2	Ground Factor	0.63	
	1200	46.2			
			<b>Predicted Noise</b>		
			<b>Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			Scraper	81.0	
			Front End Loader	76.0	
			Water Truck	71.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					82.5

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.



**Appendix G**  
**Project-Generated Construction Source Noise Prediction Model**  
 SAFCA Phase 4a - Levee Degrading

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> ) dBA)	Assumptions:	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
	100	76.7	<b>Dozer</b>	85	0.4
	200	68.8	<b>Front End Loader</b>	80	0.4
	300	64.2	<b>Scraper</b>	85	0.4
	400	60.9			
	500	58.3			
	600	56.2			
	700	54.5			
	800	53.0	<b>Ground Type</b>	Soft	
	900	51.6	<b>Source Height</b>	5	
	1000	50.4	<b>Receiver Height</b>	8	
	1100	49.3	<b>Ground Factor</b>	0.63	
	1200	48.3			
			<b>Predicted Noise Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Dozer</b>	81.0	
			<b>Front End Loader</b>	76.0	
			<b>Scraper</b>	81.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
			84.7		

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

**Appendix G**  
**Project-Generated Construction Source Noise Prediction Model**  
**SAFCA Phase 4a - Pipeline Removal**



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission	Usage
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Factor <sup>1</sup>
	100	75.6	<b>Excavator</b>	85	0.4
	200	67.7	<b>Dump Truck</b>	84	0.4
	300	63.1			
	400	59.8			
	500	57.2			
	600	55.1			
	700	53.4			
	800	51.8	<b>Ground Type</b>	Soft	
	900	50.5	<b>Source Height</b>	5	
	1000	49.3	<b>Receiver Height</b>	8	
	1100	48.2	<b>Ground Factor</b>	0.63	
	1200	47.2			
			<b>Predicted Noise</b>		
			<b>Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Excavator</b>	81.0	
			<b>Dump Truck</b>	80.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					83.6

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

Appendix G

**Project-Generated Construction Source Noise Prediction Model**

SAFCA Phase 4a - Cutoff Wall Construction



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission	Usage
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Factor <sup>1</sup>
	100	76.0	<b>Generator</b>	82	0.5
	200	68.0	<b>Excavator</b>	85	0.4
	300	63.4	<b>Front End Loader</b>	80	0.4
	400	60.1			
	500	57.6			
	600	55.5			
	700	53.7			
	800	52.2	<b>Ground Type</b>	Soft	
	900	50.8	<b>Source Height</b>	5	
	1000	49.6	<b>Receiver Height</b>	8	
	1100	48.5	<b>Ground Factor</b>	0.63	
	1200	47.6			
			<b>Predicted Noise</b>		
			<b>Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Generator</b>	79.0	
			<b>Excavator</b>	81.0	
			<b>Front End Loader</b>	76.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
			83.9		

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

Appendix G

Project-Generated Construction Source Noise Prediction Model

SAFCA Phase 4a - Levee Crown Construction



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission	Usage Factor <sup>1</sup>
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	
	100	75.1	Scraper	85	0.4
	200	67.2	Roller	85	0.2
	300	62.6	Water Truck	75	0.4
	400	59.3			
	500	56.7			
	600	54.6			
	700	52.9			
	800	51.3	Ground Type	Soft	
	900	50.0	Source Height	5	
	1000	48.8	Receiver Height	8	
	1100	47.7	Ground Factor	0.63	
	1200	46.7			
			<b>Predicted Noise</b>		
			<b>Level<sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			Scraper	81.0	
			Roller	78.0	
			Water Truck	71.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					83.1

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

Appendix G

**Project-Generated Construction Source Noise Prediction Model**

SAFCA Phase 4a - Borrow Site Excavation



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Assumptions:	Reference Emission	Usage Factor <sup>1</sup>
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	
	100	75.9	<b>Excavator</b>	85	0.4
	200	67.9	<b>Dump Truck</b>	84	0.4
	300	63.3	<b>Water Truck</b>	75	0.4
	400	60.0			
	500	57.5			
	600	55.4			
	700	53.6			
	800	52.1	<b>Ground Type</b>	Soft	
	900	50.7	<b>Source Height</b>	5	
	1000	49.5	<b>Receiver Height</b>	8	
	1100	48.4	<b>Ground Factor</b>	0.63	
	1200	47.4			
			<b>Predicted Noise</b>		
			<b>Level<sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Excavator</b>	81.0	
			<b>Dump Truck</b>	80.0	
			<b>Water Truck</b>	71.0	
			<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>		
					83.8

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

Appendix G

**Project-Generated Construction Source Noise Prediction Model**

SAFCA Phase 4a - Demobilization and Clean Up



Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L <sub>eq</sub> ) dBA)	Assumptions:	Reference Emission	Usage Factor <sup>1</sup>
				Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	
Threshold*	100	75.9	<b>Dump Truck</b>	84	0.4
	200	68.0	<b>Flat Bed Truck</b>	84	0.4
	300	63.3	<b>Hydroseed Truck</b>	80	0.4
	400	60.0			
	500	57.5			
	600	55.4			
	700	53.6			
	800	52.1	<b>Ground Type</b>	Soft	
	900	50.8	<b>Source Height</b>	5	
	1000	49.6	<b>Receiver Height</b>	8	
	1100	48.5	<b>Ground Factor</b>	0.63	
	1200	47.5			
			<b>Predicted Noise</b>		
			<b>Level <sup>2</sup></b>	<b>L<sub>eq</sub> dBA at 50 feet<sup>2</sup></b>	
			<b>Dump Truck</b>	80.0	
			<b>Flat Bed Truck</b>	80.0	
			<b>Hydroseed Truck</b>	76.0	
				<b>Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)</b>	
					83.8

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006.

<sup>2</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.



**Appendix G**

SAFCA Levee Improvement Project  
Canal Work  
Summary of Predicted Action Noise Levels



<b>Action</b>	<b>Leq</b>	<b>Distance to Noise Contours in feet</b>	
		<b>50 dBA Contour</b>	<b>45 dBA Contour</b>
SAFCA Phase 4a - Clearing and Grubbing/Stripping	74.6	1698.8	3021.0
SAFCA Phase 4a - Levee Degrading	76.7	2172.6	3863.4
SAFCA Phase 4a - Pipeline Removal	75.6	1912.2	3400.4
SAFCA Phase 4a - Cutoff Wall Construction	76.0	1989.7	3538.2
SAFCA Phase 4a - Levee Crown Construction	75.1	1805.7	3211.0
SAFCA Phase 4a - Borrow Site Excavation	75.9	1964.8	3493.9
SAFCA Phase 4a - Demobilization and Clean Up	75.9	1970.2	3503.6

**Appendix G**  
**Haul Truck Trips**  
**Fisherman's Lake Borrow Site**



**Assumptions:**

Mean SEL Reference Level	84.0
Assumed Haul Truck Speed (mph)	25.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	4,009,000.0
Number of Haul Days	100.0
Amount of Daily Haul Material	40,090.0
Amount of Hourly Haul Material	4,009.0
Number of Trips per Hour-one way	572.7
Leq for Haul Trips at 50 feet	71.5

**Appendix G**  
**Haul Truck Trips**  
**Krumenacher and Twin Rivers USD Borrow Site**



**Assumptions:**

Mean SEL Reference Level	84.0
Assumed Haul Truck Speed (mph)	25.0
Number of Hours for Hauling per Day	10.0
Haul Truck Size in Cubic Yards	14.0
Amount of Haul Material	350,000.0
Number of Haul Days	140.0
Amount of Daily Haul Material	2,500.0
Amount of Hourly Haul Material	250.0
Number of Trips per Hour-one way	35.7
Leq for Haul Trips at 50 feet	59.4
Trips per Day	178.6