APPENDIX G

Noise Modeling

Project-Generated Construction Source Noise Prediction Model

Pinole-Hercules WPCP EIR - WPCP Expansion

AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)	Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Threshold*	1,647	55.0	**Excavator**	85	0.4
Nearest Residence	500	65.4	**Backhoe**	80	0.4
			Grader	85	0.4
			Drill Rig Truck	84	0.2

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Excavator	81.0
Backhoe	76.0
Grader	81.0
Drill Rig Truck	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.4

Sources:

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

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

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

D = Distance from source to receiver.

*Project specific threshold

Project-Generated Construction Source Noise Prediction Model

Pinole-Hercules WPCP EIR - Force Main Installation

AΞCOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)	Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Threshold*	5,537	45.0	**Jackhammer**	85	0.2
Residence on Railroad Ave	50	85.9	**Excavator**	85	0.4
Residences on Woodfield Drive	60	84.3	**Backhoe**	80	0.4
			Paver	85	0.5

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Jackhammer	78.0
Excavator	81.0
Backhoe	76.0
Paver	82.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.9

Sources:

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

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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

Where: E.L. = Emission Level;

U.F.= Usage Factor;

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

D = Distance from source to receiver.

*Project specific threshold

Appendix G
Project-Generated Construction Source Noise Prediction Model
Pinole-Hercules WPCP EIR - HDD

AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)	Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Threshold*	5,424	45.0	**Drill Rig Truck**	84	0.2
Residence on Railroad Ave	50	85.7	**Vibrating Hopper**	85	0.5
Residence on Forest Circle	485	66.0	**Auger Drill Rig**	85	0.2
			Flat Bed Truck	84	0.4

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Drill Rig Truck	77.0
Vibrating Hopper	82.0
Auger Drill Rig	78.0
Flat Bed Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.7

Sources:

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

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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; and

D = Distance from source to receiver.

*Project specific threshold

Appendix G
Project-Generated Construction Source Noise Prediction Model
Pinole-Hercules WPCP EIR - Corporation Yard

AECOM

Location	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)	Assumptions:	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Threshold*	5,797	45.0	**Dozer**	85	0.4
Residence on Dohrman Lane	250	72.3	**Tractor**	84	0.4
			Backhoe	80	0.4
			Paver	85	0.5

Ground Type	Hard
Source Height	8
Receiver Height	5
Ground Factor	0.00

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Dozer	81.0
Tractor	80.0
Backhoe	76.0
Paver	82.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86.3

Sources:

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

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

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; and

D = Distance from source to receiver.

*Project specific threshold