Appendix D:

Noise Supporting Information

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Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	160	1	3	71.9	62.9	1934684.073
2	Excavator	85	1	40	210	1	3	69.5	59.3	855681.4558
3	Dozer	85	1	40	210	1	3	69.5	59.3	855681.4558
4	Front End Loader	80	1	40	210	1	3	64.5	54.3	270590.2352
5	Backhoe	80	1	40	210	1	3	64.5	54.3	270590.2352
6										
7										
8										
9										
10										
Notes:							Lmax[4]	72	Leq	66

[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to terrain or structures
[4] Calculated Lmax is the Loudest value.

Distance to Receptor*	8 Hour Average Calculations					
		Time	Hourly Leq	Leq'	0.1*Leq	antiLog
	Night	12:00 AM	0.0	10.0	1	10
		1:00 AM	0.0	10.0	1	10
		2:00 AM	0.0	10.0	1	10
		3:00 AM	0.0	10.0	1	10
		4:00 AM	0.0	10.0	1	10
		5:00 AM	0.0	10.0	1	10
		6:00 AM	0.0	10.0	1	10
Distance to Receptor*	Day	7:00 AM	0.0	0.0	0	1
Leq answer above		8:00 AM	66.0	66.0	6.6	3981071.706
Assuming closest equipment operating 210 feet from nearest receptor		9:00 AM	63.0	63.0	6.3	1995262.315
Assuming closest equipment operating 260 feet from nearest receptor		10:00 AM	61.0	61.0	6.1	1258925.412
Assuming closest equipment operating 310 feet from nearest receptor		11:00 AM	59.0	59.0	5.9	794328.2347
Lunch break		12:00 PM	0.0	0.0	0	1
Assuming closest equipment operating 360 feet from nearest receptor		1:00 PM	57.0	57.0	5.7	501187.2336
Assuming closest equipment operating 410 feet from nearest receptor		2:00 PM	55.0	55.0	5.5	316227.766
Assuming closest equipment operating 460 feet from nearest receptor		3:00 PM	54.0	54.0	5.4	251188.6432
Assuming closest equipment operating 510 feet from nearest receptor		4:00 PM	53.0	53.0	5.3	199526.2315
		5:00 PM	0.0	0.0	0	1
Notes: *Equipment is measured as spaced out		6:00 PM	0.0	0.0	0	1
across the project site	Evening	7:00 PM	0.0	5.0	0.5	3.16227766
		8:00 PM	0.0	5.0	0.5	3.16227766
		9:00 PM	0.0	5.0	0.5	3.16227766
	Night	10:00 PM	0.0	10.0	1	10
		11:00 PM	0.0	10.0	1	10
				Sum		9297821.028
				Sum/8		1162227.629
				Log10(Sum/8)		6.065291195
				10*Log10(Sum/8)		60.65291195
				8 Hour Average		61

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	210	1	3	69.5	59.3	855681.4558
2	Excavator	85	1	40	260	1	3	67.7	56.5	450868.5686
3	Dozer	85	1	40	260	1	3	67.7	56.5	450868.5686
4	Front End Loader	80	1	40	260	1	3	62.7	51.5	142577.1602
5	Backhoe	80	1	40	260	1	3	62.7	51.5	142577.1602
6										
7										
8										
9										
10										
Notes:							Lmax[4]	70	Leq	63

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	260	1	3	67.7	56.5	450868.5686
2	Excavator	85	1	40	310	1	3	66.2	54.2	266002.0128
3	Dozer	85	1	40	310	1	3	66.2	54.2	266002.0128
4	Front End Loader	80	1	40	310	1	3	61.2	49.2	84117.22225
5	Backhoe	80	1	40	310	1	3	61.2	49.2	84117.22225
6										
7										
8										
9										
10										
Notes:							Lmax[4]	68	Leq	61

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	310	1	3	66.2	54.2	266002.0128
2	Excavator	85	1	40	360	1	3	64.9	52.3	169848.8075
3	Dozer	85	1	40	360	1	3	64.9	52.3	169848.8075
4	Front End Loader	80	1	40	360	1	3	59.9	47.3	53710.90895
5	Backhoe	80	1	40	360	1	3	59.9	47.3	53710.90895
6										
7										
8										
9										
10										
Notes:							Lmax[4]	66	Leq	59

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	360	1	3	64.9	52.3	169848.8075
2	Excavator	85	1	40	410	1	3	63.7	50.6	114978.9754
3	Dozer	85	1	40	410	1	3	63.7	50.6	114978.9754
4	Front End Loader	80	1	40	410	1	3	58.7	45.6	36359.54452
5	Backhoe	80	1	40	410	1	3	58.7	45.6	36359.54452
6										
7										
8										
9										
10										
Notes:							Lmax[4]	65	Leq	57

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)	
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	410	1	3	63.7	50.6	114978.9754
2	Excavator	85	1	40	460	1	3	62.7	49.1	81413.51568
3	Dozer	85	1	40	460	1	3	62.7	49.1	81413.51568
4	Front End Loader	80	1	40	460	1	3	57.7	44.1	25745.21419
5	Backhoe	80	1	40	460	1	3	57.7	44.1	25745.21419
6										
7										
8										
9										
10										
Notes:							Lmax[4]	64	Leq	55

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	460	1	3	62.7	49.1	81413.51568
2	Excavator	85	1	40	510	1	3	61.8	47.8	59739.21013
3	Dozer	85	1	40	510	1	3	61.8	47.8	59739.21013
4	Front End Loader	80	1	40	510	1	3	56.8	42.8	18891.19696
5	Backhoe	80	1	40	510	1	3	56.8	42.8	18891.19696
6										
7										
8										
9										
10										
Notes:							Lmax[4]	63	Leq	54

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	510	1	3	61.8	47.8	59739.21013
2	Excavator	85	1	40	560	1	3	61.0	46.5	45123.82677
3	Dozer	85	1	40	560	1	3	61.0	46.5	45123.82677
4	Front End Loader	80	1	40	560	1	3	56.0	41.5	14269.40693
5	Backhoe	80	1	40	560	1	3	56.0	41.5	14269.40693
6										
7										
8										
9										
10										
Notes:							Lmax[4]	62	Leq	53

Residential-Grade Mechanical Equipment

Receptor:	Nearest Residential Receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 3 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Residential grade mechanical ventilation equipment	70	1	80	130	1	0	37.3	19.9	98.3158853
2	Residential grade mechanical ventilation equipment	70	1	80	140	1	0	36.6	19.0	78.71720117
3	Residential grade mechanical ventilation equipment	70	1	80	150	1	0	36.0	18.1	64
4	Residential grade mechanical ventilation equipment	70	1	80	160	1	0	35.5	17.2	52.734375
5										
6										
7										
8										
9										
10										
									Leq	25

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to structural/soundwall shielding

Parking Lot Activity Noise Calculation

Receptor:	Receiving residential property line									
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	parking lot activity	70	5	2	160	1	3	56.9	41.8	15295.02056
2	parking lot activity	70	5	2	170	1	3	56.4	41.1	12751.55795
3	parking lot activity	70	5	2	180	1	3	55.9	40.3	10742.18179
4	parking lot activity	70	5	2	190	1	3	55.4	39.6	9133.751889
5	parking lot activity	70	5	2	200	1	3	55.0	38.9	7831.050525
6										
7										
8										
9										
10										
							Lmax[4]	57	Leq	47

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to terrain or structures

[4] Calculated Lmax is the Loudest value.

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