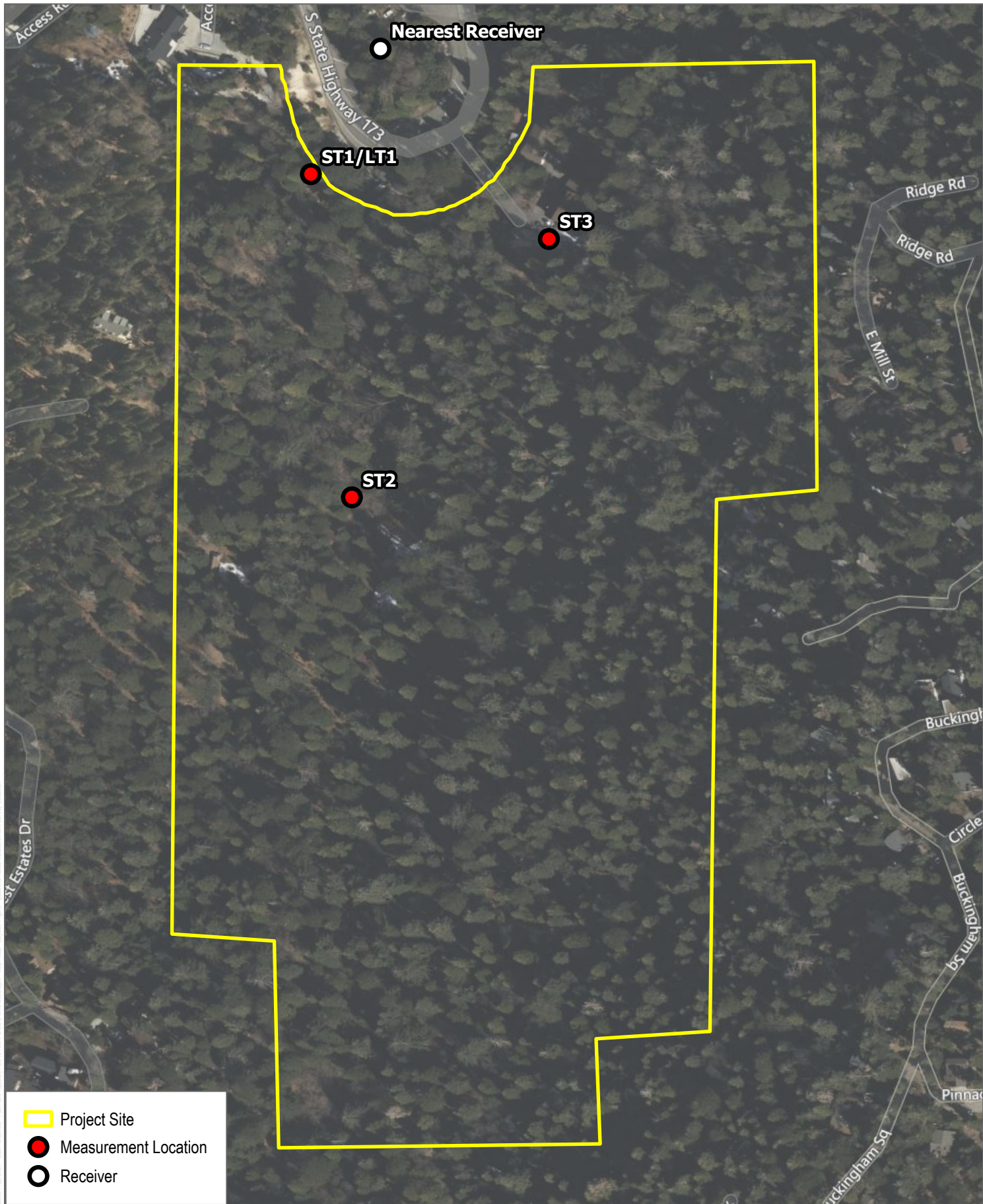

Appendix F

Baseline Field Noise Measurement Data



SOURCE: Bing Maps 2024

Lake arrowhead

Date: 05/22

Device: Rion NL 52 with windscreen

Calibrator: LD CAL 150

Settings: Low, Slow, 1s Leq

Temperature: 60 f

Humidity: 42%

Wind: 5 mph wind southwest

ST1

Time start: 9:21

Time end: 9:36

Leq: 51.1

Lmax: 61.5

Lmin: 38.1

L10: 54.9

L90: 41.5

L50: 48.5

Sources: Birdsong, traffic, rustling leaves

ST2

Time start: 9:42

Time end 9:57

Leq 42.8

Lmax 58.8

Lmin 36.6

L10: 44.8

L90: 39

L50: 41.8

Sources: Birdsong, rustling leaves, stream

ST3

Time start: 10:02

Time end: 10:17

Leq: 55.1

Max: 66.4

Min: 38.2

L10: 58.7

L90: 41.5

L50: 52.6

Sources: Traffic, birdsong, rustling Leaves, stream



162 - Looking east



161 - Looking northeast



163 - Looking northwest



164 - Looking south



165 - Looking northeast



166 - Looking west



167 - Looking northwest



168 - Looking northeast



169 - Looking east

Appendix E

Construction Noise Prediction Model Worksheets

To User: bordered cells are inputs, unbordered cells have formulae

enter "0" to turn off air or grnd absorption terms, "1" to turn on

air abs?

1

grnd abs?

1

magnitude of threshold (dBA) per FTA Guidance =

80

allowable hours over which Leq is to be averaged per FTA Guidance =

8

Source, receptor, and barrier all share same reference grade elevation; unless otherwise noted)

= Barrier of input height inserted between source and receptor

Project Phase No.	Project Phase Description	Comparable FHWA RCNM Construction Equipment Type	Quantity	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Source to NSR Distance (ft.)	Temporary Barrier Insertion Loss (dB)	Additional Noise Reduction	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
1	W1 - Trenching for Water Line	backhoe	1	40	78	50	0		77.9	8	480	74	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
Total Aggregate Noise Exposure from W1 - Trenching for Water Line Phase													73.9															
2	W1 - Site Preparation	backhoe	1	40	78	250	0		63.7	8	480	60	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Site Preparation Phase													59.7															
3	W1 - Removal/Abandonment of Sewer	backhoe	1	40	78	250	0		63.7	8	480	60	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Removal/Abandonment of Sewer Phase													59.7															
4	W1 - Borehole Drilling	auger drill rig	1	20	84	250	0		69.7	8	480	63	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Borehole Drilling Phase													62.7															
5	W1 - Water Quality Sampling	all other equipment > 5 HP	1	50	85	250	0		70.7	8	480	68	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Water Quality Sampling Phase													67.7															
6	W1 - Casting/Screen Installation	auger drill rig	1	20	84	250	0		69.7	8	480	63	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Casting/Screen Installation Phase													62.7															
7	W1 - Annular Seal Installation	auger drill rig	1	20	84	250	0		69.7	8	480	63	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Annular Seal Installation Phase													62.7															
8	W1 - Well Development	auger drill rig	1	20	84	250	0		69.7	8	480	63	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Well Development Phase													62.7															
9	W1 - Aquifer Testing	all other equipment > 5 HP	1	50	85	250	0		70.7	8	480	68	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Aquifer Testing Phase													67.7															
10	W1 - Disinfection	all other equipment > 5 HP	1	50	85	250	0		70.7	8	480	68	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Disinfection Phase													67.7															
11	W1 - Completion of Well Head	auger drill rig	1	20	84	250	0		69.7	8	480	63	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Completion of Well Head Phase													62.7															
12	W1 - Paving for Well	paver	1	50	77	250	0		62.7	8	480	60	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
		roller	1	20	80	250	0		65.7	8	480	59	70	5	0	10	240	250	70.7	240.1	258.3	0.00	0.1	37.5	37.5	0.1	0.1	0.1
Total Aggregate Noise Exposure from W1 - Paving for Well Phase													62.2															

To User: bordered cells are inputs, unbordered cells have formulae

enter "0" to turn off air or grnd absorption terms, "1" to turn on

air abs?

1

grnd abs?

1

magnitude of threshold (dBA) per FTA Guidance =

80

allowable hours over which Leq is to be averaged per FTA Guidance =

8

Source, receptor, and barrier all share same reference grade elevation; unless otherwise noted)

= Barrier of input height inserted between source and receptor

Project Phase No.	Project Phase Description	Comparable FHWA RCNM Construction Equipment Type	Quantity	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Source to NSR Distance (ft.)	Temporary Barrier Insertion Loss (dB)	Additional Noise Reduction	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
1	W1 - Trenching for Water Line	backhoe	1	40	78	50	0		77.9	8	480	74	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
Total Aggregate Noise Exposure from W1 - Trenching for Water Line Phase													73.9															
2	W1 - Site Preparation	backhoe	1	40	78	800	0		51.3	8	480	47	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Site Preparation Phase													47.4															
3	W1 - Borehole Drilling	auger drill rig	1	20	84	800	0		57.3	8	480	50	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Borehole Drilling Phase													50.3															
4	W1 - Water Quality Sampling	all other equipment > 5 HP	1	50	85	800	0		58.3	8	480	55	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Water Quality Sampling Phase													55.3															
5	W1 - Casting/Screen Installation	auger drill rig	1	20	84	800	0		57.3	8	480	50	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Casting/Screen Installation Phase													50.3															
6	W1 - Annular Seal Installation	auger drill rig	1	20	84	800	0		57.3	8	480	50	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Annular Seal Installation Phase													50.3															
7	W1 - Well Development	auger drill rig	1	20	84	800	0		57.3	8	480	50	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Well Development Phase													50.3															
8	W1 - Aquifer Testing	all other equipment > 5 HP	1	50	85	800	0		58.3	8	480	55	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Aquifer Testing Phase													55.3															
9	W1 - Disinfection	all other equipment > 5 HP	1	50	85	800	0		58.3	8	480	55	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Disinfection Phase													55.3															
10	W1 - Completion of Well Head	auger drill rig	1	20	84	800	0		57.3	8	480	50	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Completion of Well Head Phase													50.3															
11	W1 - Paving for Well	paver	1	50	77	800	0		50.3	8	480	47	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
		roller	1	20	80	800	0		53.3	8	480	46	130	5	0	10	790	800	130.4	790.0	809.7	0.00	0.1	67.5	67.5	0.0	0.0	0.1
Total Aggregate Noise Exposure from W1 - Paving for Well Phase													49.9															

To User: bordered cells are inputs, unbordered cells have formulae

enter "0" to turn off air or grnd absorption terms, "1" to turn on

air abs?

1

grnd abs?

1

magnitude of threshold (dBA) per FTA Guidance =

80

allowable hours over which Leq is to be averaged per FTA Guidance =

8

Source, receptor, and barrier all share same reference grade elevation; unless otherwise noted)

= Barrier of input height inserted between source and receptor

Project Phase No.	Project Phase Description	Comparable FHWA RCNM Construction Equipment Type	Quantity	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Source to NSR Distance (ft.)	Temporary Barrier Insertion Loss (dB)	Additional Noise Reduction	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
1	TB - Site Preparation	backhoe	1	40	78	275	0		62.9	8	480	59	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Site Preparation Phase													58.9															
2	TB - Grading	backhoe	1	40	78	275	0		62.9	8	480	59	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Grading Phase													58.9															
3	TB - Trenching	auger drill rig	1	20	84	275	0		68.9	8	480	62	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Trenching Phase													61.9															
4	TB - Building Construction	all other equipment > 5 HP	1	50	85	275	0		69.9	8	480	67	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Building Construction Phase													66.8															
5	TB - Architectural Coating	compressor (air)	1	40	78	275	0		62.9	8	480	59	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Architectural Coating Phase													58.9															
6	TB - Paving	paver	1	50	77	275	0		61.9	8	480	59	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
		roller	1	20	80	275	0		64.9	8	480	58	75	5	0	10	265	275	75.7	265.0	283.8	0.00	0.1	40.0	40.0	0.0	0.0	0.1
Total Aggregate Noise Exposure from TB - Paving Phase													61.4															

To User: bordered cells are inputs, unbordered cells have formulae
enter "0" to turn off air or grnd absorption terms, "1" to turn on

air abs?

1

grnd abs?

1

magnitude of threshold (dBA) per FTA Guidance =

80

allowable hours over which Leq is to be averaged per FTA Guidance =

8

Source, receptor, and barrier all share same reference grade elevation; unless otherwise noted)

= Barrier of input height inserted between source and receptor

Project Phase No.	Project Phase Description	Comparable FHWA RCNM Construction Equipment Type	Quantity	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Source to NSR Distance (ft.)	Temporary Barrier Insertion Loss (dB)	Additional Noise Reduction	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
1	OS - Site Preparation	backhoe	1	40	78	50	0		77.9	8	480	74	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
Total Aggregate Noise Exposure from OS - Site Preparation Phase													73.9															
2	OS - Grading	backhoe	1	40	78	50	0		77.9	8	480	74	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
Total Aggregate Noise Exposure from OS - Grading Phase													73.9															
3	OS - Paving	paver	1	50	77	50	0		76.9	8	480	74	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
		roller	1	20	80	50	0		79.9	8	480	73	10	5	0	10	40	50	14.1	40.3	50.2	0.00	0.1	7.5	7.5	0.6	0.6	0.1
Total Aggregate Noise Exposure from OS - Paving Phase													76.4															

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Lesser of or available Lmax	Spec. 721 Lmax	Measured L _{max} @50ft (dBA, slow)
All Other Equipment > 5 HP	No	50	85	85	-- N/A --
Auger Drill Rig	No	20	84	85	84
Backhoe	No	40	78	80	78
Bar Bender	No	20	80	80	-- N/A --
Blasting	Yes	-- N/A --	94	94	-- N/A --
Boring Jack Power Unit	No	50	80	80	83
Chain Saw	No	20	84	85	84
Clam Shovel (dropping)	Yes	20	87	93	87
Compactor (ground)	No	20	80	80	83
Compressor (air)	No	40	78	80	78
Concrete Batch Plant	No	15	83	83	-- N/A --
Concrete Mixer Truck	No	40	79	85	79
Concrete Pump Truck	No	20	81	82	81
Concrete Saw	No	20	90	90	90
Crane	No	16	81	85	81
Dozer	No	40	82	85	82
Drill Rig Truck	No	20	79	84	79
Drum Mixer	No	50	80	80	80
Dump Truck	No	40	76	84	76
Excavator	No	40	81	85	81
Flat Bed Truck	No	40	74	84	74
Front End Loader	No	40	79	80	79
Generator	No	50	72	72	81
Generator (<25KVA, VMS signs)	No	50	70	70	73
Gradall	No	40	83	85	83
Grader	No	40	85	85	-- N/A --
Grapple (on backhoe)	No	40	85	85	87
Horizontal Boring Hydr. Jack	No	25	80	80	82
Hydra Break Ram	Yes	10	90	90	-- N/A --
Impact Pile Driver	Yes	20	95	95	101
Jackhammer	Yes	20	85	85	89
Man Lift	No	20	75	85	75
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	90
Pavement Scarafier	No	20	85	85	90
Paver	No	50	77	85	77
Pickup Truck	No	40	55	55	75
Pneumatic Tools	No	50	85	85	85
Pumps	No	50	77	77	81
Refrigerator Unit	No	100	73	82	73
Rivit Buster/chipping gun	Yes	20	79	85	79
Rock Drill	No	20	81	85	81
Roller	No	20	80	85	80
Sand Blasting (Single Nozzle)	No	20	85	85	96
Scraper	No	40	84	85	84
Shears (on backhoe)	No	40	85	85	96
Skidsteer*	No	40	80	-- N/A --	-- N/A --
Slurry Plant	No	100	78	78	78
Slurry Trenching Machine	No	50	80	82	80
Soil Mix Drill Rig	No	50	80	80	-- N/A --
Tractor	No	40	84	84	-- N/A --
Vacuum Excavator (Vac-truck)	No	40	85	85	85
Vacuum Street Sweeper	No	10	80	80	82
Ventilation Fan	No	100	79	85	79
Vibrating Hopper	No	50	85	85	87
Vibratory Concrete Mixer	No	20	80	80	80
Vibratory Pile Driver	No	20	95	95	101
Warning Horn	No	5	83	85	83
Welder / Torch	No	40	73	73	74

