Appendix 2-13
Noise

Measured Noise Levels

1E: River Road North at Old State Road

Start Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12/16/2010	11:20 AM	58.5	70.2	62.3	49.2	40.6
12/16/2010	12:00 PM	59.6	70.9	63.0	49.7	40.6
12/16/2010	1:00 PM	61.3	70.8	65.5	55.7	41.2
12/16/2010	2:00 PM	60.8	71.1	64.7	54.2	44.6
12/16/2010	3:00 PM	61.9	72.1	66.3	51.8	42.5
12/16/2010	4:00 PM	62.2	73.1	66.6	52.3	42.6
12/16/2010	5:00 PM	62.9	73.9	66.2	50.5	41.9
12/16/2010	6:00 PM	61.5	71.9	64.9	49.2	42.4
12/16/2010	7:00 PM	58.5	70.1	62.9	46.0	40.1
12/16/2010	8:00 PM	57.0	69.7	59.6	44.1	39.8
12/16/2010	9:00 PM	57.4	70.2	58.4	42.8	39.3
12/16/2010	10:00 PM	55.8	69.0	57.4	43.0	38.9
12/16/2010	11:00 PM	54.0	68.3	49.5	42.0	38.3
12/17/2010	12:00 AM	51.8	66.0	48.7	38.8	34.2
12/17/2010	1:00 AM	49.5	62.7	46.7	37.6	31.8
12/17/2010	2:00 AM	42.6	55.8	38.7	32.6	30.1
12/17/2010	3:00 AM	50.6	65.2	45.3	35.6	30.8
12/17/2010	4:00 AM	47.8	61.5	42.4	36.5	32.8
12/17/2010	5:00 AM	55.4	67.5	49.9	39.3	35.9
12/17/2010	6:00 AM	58.9	71.6	60.3	45.2	41.1
12/17/2010	7:00 AM	62.1	73.6	65.9	50.4	44.3
12/17/2010	8:00 AM	60.4	71.7	64.7	49.0	43.7
12/17/2010	9:00 AM	61.6	73.0	62.6	47.3	42.1
12/17/2010	10:00 AM	60.7	72.8	62.9	47.7	41.3

3E: River Road North at Sky Top Drive

Start Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12/16/2010	12:00 PM	61	74.8	61.4	48.4	44.3
12/16/2010	1:00 PM	63.3	76.2	64.7	47.9	43.8
12/16/2010	2:00 PM	65.3	77.6	66.7	48.6	43.6
12/16/2010	3:00 PM	63.3	75.9	66	48.8	43.9
12/16/2010	4:00 PM	64.8	77.3	67.5	49.6	44.6
12/16/2010	5:00 PM	63.8	76.2	65.3	46.3	42.9
12/16/2010	6:00 PM	63	76.3	63.1	51	42
12/16/2010	7:00 PM	61.6	75.4	61.9	48.1	42.2
12/16/2010	8:00 PM	59.8	74.2	59.3	45.8	43.1
12/16/2010	9:00 PM	59.2	73.8	58.2	46.1	42.6
12/16/2010	10:00 PM	59.1	73.2	56.4	47.6	44.8
12/16/2010	11:00 PM	57.5	70	57.8	47.1	44
12/17/2010	12:00 AM	56.8	68.8	55.9	41.9	39
12/17/2010	1:00 AM	56	68.5	56.6	40.3	37.3
12/17/2010	2:00 AM	46.7	60.1	43.2	37.1	36.2
12/17/2010	3:00 AM	55	64.3	49.5	38.7	36.7
12/17/2010	4:00 AM	50.7	63	49.2	38.3	37.2
12/17/2010	5:00 AM	54.9	67	48.4	39.2	37.4
12/17/2010	6:00 AM	62	75.7	61.5	43.9	40.5
12/17/2010	7:00 AM	64.8	77.5	65.4	47.8	43.5
12/17/2010	8:00 AM	63.6	76.8	63.2	47.1	42.3
12/17/2010	9:00 AM	63.4	76.9	63.3	45.3	41.5
12/17/2010	10:00 AM	61.8	75.5	62.4	47.7	43
12/17/2010	11:00 AM	63.8	77.1	63.7	48	43.2

Site 5E: South Property Line at 199 River Road N, 13 ft. elevated

Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1/11/2011	8:00 AM	52.9	63.9	56.7	46.4	42.9
1/11/2011	9:00 AM	49.7	61.6	52.0	42.9	40.5
1/11/2011	10:00 AM	52.0	62.6	51.1	42.2	39.7
1/11/2011	11:00 AM	54.5	68.3	54.9	46.2	40.5
1/11/2011	12:00 PM	53.0	64.1	55.2	42.4	38.9
1/11/2011	1:00 PM	52.8	64.4	54.2	41.9	39.0
1/11/2011	2:00 PM	56.4	69.9	56.9	42.8	38.9
1/11/2011	3:00 PM	52.8	63.5	56.8	43.3	39.0
1/10/2011	4:00 PM	51.5	61.4	56.3	44.5	39.2
1/10/2011	5:00 PM	49.1	59.5	53.7	41.8	39.3
1/10/2011	6:00 PM	48.5	60.3	51.9	40.5	37.5

Site 7E: North Property Line at 217 River Road N

Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1/11/2011	8:00 AM	51.6	63.1	54.4	45.7	42.9
1/11/2011	9:00 AM	46.0	57.8	47.9	41.8	39.6
1/11/2011	10:00 AM	43.2	52.5	45.9	40.6	38.5
1/11/2011	11:00 AM	50.0	58.1	52.4	49.7	40.1
1/11/2011	12:00 PM	46.5	58.0	49.0	40.6	37.9
1/11/2011	1:00 PM	46.1	56.9	49.0	41.1	38.4
1/11/2011	2:00 PM	45.3	56.8	48.1	40.6	38.1
1/10/2011	3:00 PM	48.9	62.2	52.0	41.3	37.5
1/10/2011	4:00 PM	46.5	55.6	49.9	43.5	38.9
1/10/2011	5:00 PM	44.9	53.7	48.5	41.3	38.8
1/10/2011	6:00 PM	45.2	56.6	48.0	41.1	37.1

1W: 165 Latintown Road

Start Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12/15/2010	10:00 AM	65.2	74.9	66.6	52.9	45.4
12/15/2010	11:00 AM	61.6	73.2	65.8	51.9	45.9
12/15/2010	12:00 PM	61.4	72	66.6	52.7	49.6
12/15/2010	1:00 PM	63.5	74.5	67.1	51.9	44.2
12/15/2010	2:00 PM	63	73.7	67.9	52.6	40.3
12/15/2010	3:00 PM	64	74.6	68.7	54.1	41.8
12/15/2010	4:00 PM	63.1	73	68.4	52.7	40.7
12/15/2010	5:00 PM	62.8	72.3	68.2	53.9	40.6
12/15/2010	6:00 PM	62	72.1	67.5	49.8	38.6
12/15/2010	7:00 PM	60.2	71.5	64.9	45	35.4
12/15/2010	8:00 PM	59.2	71.4	63.2	42.7	34
12/15/2010	9:00 PM	58.3	70.2	62.1	41.6	34.1
12/15/2010	10:00 PM	57.8	70.4	60.5	41.5	33.1
12/15/2010	11:00 PM	53.8	67.8	53.8	36.5	33.3
12/16/2010	12:00 AM	51.5	66.5	47.9	34.6	33.6
12/16/2010	1:00 AM	51.5	66.2	49	34.5	33.3
12/16/2010	2:00 AM	48.6	60.6	40.1	32.8	32.3
12/16/2010	3:00 AM	49.8	64.3	42.5	33.9	33
12/16/2010	4:00 AM	53	67.7	47.8	34.1	33.2
12/16/2010	5:00 AM	58.5	71.3	59.9	41.3	36.6
12/16/2010	6:00 AM	62	72.6	67.3	50.1	40
12/16/2010	7:00 AM	64.1	74.8	69.2	53.9	44.2
12/16/2010	8:00 AM	64.1	75.2	68.4	54.5	47.5
12/16/2010	9:00 AM	62.2	74	66.8	49.9	42.1

2W: US Route 9W between Carlino Drive and Pine Road

Start Date	Start Time	dBA				
		L_{eq}	L_1	L_{10}	L_{50}	L_{90}
12/15/2010	11:00 AM	75.8	85.3	79.2	72.6	61.4
12/15/2010	12:00 PM	76	85	79.4	73.2	62.8
12/15/2010	1:00 PM	76.1	85.4	79.5	73.6	63.9
12/15/2010	2:00 PM	76.3	84.7	79.6	74.1	65.4
12/15/2010	3:00 PM	76.4	84.4	79.6	74.7	65.3
12/15/2010	4:00 PM	76.8	84.3	79.7	75.6	68.2
12/15/2010	5:00 PM	75.9	82.4	78.7	74.9	67.3
12/15/2010	6:00 PM	75.1	82.6	78.4	73.5	64.5
12/15/2010	7:00 PM	73.7	81.7	77.6	71	59.6
12/15/2010	8:00 PM	72.5	81	76.7	68.4	57.6
12/15/2010	9:00 PM	72.4	80.8	76.7	68	56.6
12/15/2010	10:00 PM	71.2	80.4	75.6	65.1	54
12/15/2010	11:00 PM	70.2	80.2	74.5	62.5	51
12/16/2010	12:00 AM	67.4	78.7	71.7	56.6	43.7
12/16/2010	1:00 AM	65.8	78.1	68.7	51.6	41.3
12/16/2010	2:00 AM	66.2	79.2	67.8	50.1	40
12/16/2010	3:00 AM	66.6	78.8	68.2	49.9	40.6
12/16/2010	4:00 AM	68.6	80.6	71.8	58	44.1
12/16/2010	5:00 AM	72.4	83.3	76	65.4	54.5
12/16/2010	6:00 AM	75.5	84.8	79.1	72.7	62
12/16/2010	7:00 AM	77	84.9	80.3	75.2	67.2
12/16/2010	8:00 AM	76.4	84.7	79.7	74.5	65.3
12/16/2010	9:00 AM	75.9	84.8	79.3	73.3	61.7
12/16/2010	10:00 AM	74.2	83.6	77.6	71.1	60.8

Spot Measurements

Site	Measurement Location	Time	dBA				
			L_{eq}	L_1	L_{10}	L_{50}	L_{90}
2E	Corner of Liberty Street and Chelsea Road	AM	60.1	73.6	62.6	45.3	38.7
		PM	64.2	78.6	65	49.4	41.4
4E	30 Cobblestone Road	AM	52.5	58.7	54.8	51.5	48.8
		PM	48.2	59.9	48.7	42.9	40.4

Construction Noise Modeling Results

West Site Construction Noise Levels WITH NOISE CONTROL

Peak Duration	4 months	13 months	35 months	1 month	1 month	3 months	1 month
Phase Duration	14 months	13 months	43 months		19 months		8 months

7AM - 3PM

		Site Prep			Shaft Construction			Tunnel Excavation			Tunnel Excavation (Tunnel Cleanup)			Tunnel Lining			Tunnel Lining (CIP against steel liner)			Tunnel Connection		
Receptor	Existing Leq	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	61.4	40.7	61.4	0.0	41.6	61.4	0.0	38.1	61.4	0.0	35.7	61.4	0.0	37.5	61.4	0.0	36.1	61.4	0.0	37.8	61.4	0.0
2W	74.2	64.9	74.7	0.5	60.8	74.4	0.2	65.4	74.7	0.5	57.2	74.3	0.1	63.3	74.5	0.3	59.0	74.3	0.1	61.6	74.4	0.2
3W	61.4	53.1	62.0	0.6	52.8	62.0	0.6	54.1	62.1	0.7	53.0	62.0	0.6	50.0	61.7	0.3	49.1	61.6	0.2	53.9	62.1	0.7
4W	61.4	50.6	61.7	0.3	52.9	62.0	0.6	48.5	61.6	0.2	46.4	61.5	0.1	48.3	61.6	0.2	47.1	61.6	0.2	48.4	61.6	0.2
5W	74.2	57.9	74.3	0.1	51.9	74.2	0.0	53.2	74.2	0.0	48.4	74.2	0.0	52.5	74.2	0.0	50.1	74.2	0.0	51.9	74.2	0.0

3PM - 11PM

		Site Prep			Shaft Construction			Tunnel Excavation			Cleanup)			Tunnel Lining			Tunnel Lining			Tunnel Connection		
Receptor	Existing Leq	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	57.8	40.7	57.9	0.1	41.6	57.9	0.1	38.1	57.8	0.0	35.7	57.8	0.0	37.5	57.8	0.0	36.1	57.8	0.0	37.8	57.8	0.0
2W	71.2	64.9	72.1	0.9	60.8	71.6	0.4	65.4	72.2	1.0	57.2	71.4	0.2	63.3	71.9	0.7	59.0	71.5	0.3	61.6	71.7	0.5
3W	57.8	53.1	59.1	1.3	52.8	59.0	1.2	54.1	59.3	1.5	53.0	59.0	1.2	50.0	58.5	0.7	49.1	58.3	0.5	53.9	59.3	1.5
4W	57.8	50.6	58.6	0.8	52.9	59.0	1.2	48.5	58.3	0.5	46.4	58.1	0.3	48.3	58.3	0.5	47.1	58.2	0.4	48.4	58.3	0.5
5W	71.2	57.9	71.4	0.2	51.9	71.3	0.1	53.2	71.3	0.1	48.4	71.2	0.0	52.5	71.3	0.1	50.1	71.2	0.0	51.9	71.3	0.1

11PM - 7 AM

			Shaft Construction			Tunnel Excavation			Cleanup)			Tunnel Lining			Tunnel Lining			Tunnel Connection		
Receptor	Existing Leq		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	48.6		41.6	49.4	0.8	38.1	49.0	0.4	35.7	48.8	0.2	37.5	48.9	0.3	36.1	48.8	0.2	37.8	48.9	0.3
2W	65.8		60.8	67.0	1.2	65.4	68.6	2.8	57.2	66.4	0.6	63.3	67.7	1.9	59.0	66.6	0.8	61.6	67.2	1.4
3W	48.6		52.8	54.2	5.6	54.1	55.2	6.6	53.0	54.3	5.7	50.0	52.4	3.8	49.1	51.9	3.3	53.9	55.0	6.4
4W	48.6		52.9	54.3	5.7	48.5	51.6	3.0	46.4	50.6	2.0	48.3	51.5	2.9	47.1	50.9	2.3	48.4	51.5	2.9
5W	65.8		51.9	66.0	0.2	53.2	66.0	0.2	48.4	65.9	0.1	52.5	66.0	0.2	50.1	65.9	0.1	51.9	66.0	0.2

East Site Construction Noise Levels WITH NOISE CONTROL

Peak Duration		2 months			4 months			2 months			2 months			1 month			13 months			2 months			1 month			1 month			1 month		
Phase Duration		10 months						23 months									40 months						4 months						8 months		
7AM - 3PM																															
		Site Prep (stage 1)			Site Prep (stages 2-3)			Shaft Construction (Secant Piles)			Shaft Construction (Excavation Rock Lining)			Tunnel Excavation (Connector Tunnel)			Tunnel Excavation (Inundation Plugs)			Tunnel Excavation (TBM Removal)			Tunnel Lining (CIP against TBM tunnel)			Tunnel Lining (CIP against connector tunnel)			Tunnel Connection (junction chamber support)		
Receptor	Existing Leq	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	58.5	54.1	59.8	1.3	50.2	59.1	0.6	50.3	59.1	0.6	53.2	59.6	1.1	50.4	59.1	0.6	44.7	58.7	0.2	49.2	59.0	0.5	50.1	59.1	0.6	50.4	59.1	0.6	56.2	60.5	2.0
2E	60.1	54.9	61.2	1.1	55.0	61.3	1.2	56.7	61.7	1.6	58.7	62.5	2.4	57.9	62.1	2.0	52.8	60.8	0.7	53.4	60.9	0.8	54.3	61.1	1.0	58.0	62.2	2.1	57.2	61.9	1.8
3E	61.0	59.6	63.4	2.4	61.5	64.3	3.3	59.5	63.3	2.3	64.8	66.3	5.3	62.0	64.5	3.5	54.0	61.8	0.8	58.3	62.9	1.9	59.2	63.2	2.2	61.2	64.1	3.1	63.7	65.6	4.6
4E	52.5	50.0	54.4	1.9	52.2	55.4	2.9	46.9	53.6	1.1	54.3	56.5	4.0	52.8	55.7	3.2	39.5	52.7	0.2	48.8	54.0	1.5	53.7	56.2	3.7	53.8	56.2	3.7	53.9	56.3	3.8
5E	49.7	56.7	57.5	7.8	57.4	58.1	8.4	52.7	54.5	4.8	61.5	61.8	12.1	58.9	59.4	9.7	47.7	51.8	2.1	52.8	54.5	4.8	54.7	55.9	6.2	55.4	56.4	6.7	62.5	62.7	13.0
6E	61.0	55.1	62.0	1.0	56.2	62.2	1.2	53.8	61.8	0.8	62.2	64.7	3.7	57.7	62.7	1.7	43.8	61.1	0.1	55.4	62.1	1.1	56.7	62.4	1.4	57.2	62.5	1.5	59.6	63.4	2.4
7E	43.2	63.0	63.0	19.8	65.3	65.3	22.1	60.7	60.8	17.6	68.2	68.2	25.0	64.0	64.0	20.8	45.1	47.3	4.1	61.1	61.2	18.0	63.5	63.5	20.3	63.9	63.9	20.7	65.9	65.9	22.7
8E	43.2	62.9	62.9	19.7	64.4	64.4	21.2	59.5	59.6	16.4	67.5	67.5	24.3	64.0	64.0	20.8	45.4	47.4	4.2	60.8	60.9	17.7	65.0	65.0	21.8	65.3	65.3	22.1	65.7	65.7	22.5

3PM - 11PM

		[redacted]						Shaft Construction			Shaft Construction			Tunnel Excavation			Plugs)			Tunnel Excavation (TBM Removal)			tunnel)			connector tunnel)			Tunnel Connection		
Receptor	Existing Leq							Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	54.0							50.3	55.5	1.5	53.1	56.6	2.6	50.4	55.6	1.6	44.7	54.5	0.5	49.2	55.2	1.2	50.1	55.5	1.5	50.4	55.6	1.6	56.2	58.2	4.2
2E	64.2							56.7	64.9	0.7	58.5	65.2	1.0	57.9	65.1	0.9	52.8	64.5	0.3	53.4	64.5	0.3	54.3	64.6	0.4	58.0	65.1	0.9	57.2	65.0	0.8
3E	59.1							59.5	62.3	3.2	63.2	64.6	5.5	62.0	63.8	4.7	54.0	60.3	1.2	58.3	61.7	2.6	59.2	62.2	3.1	61.2	63.3	4.2	63.7	65.0	5.9
4E	48.2							46.9	50.6	2.4	54.1	55.1	6.9	52.8	54.1	5.9	39.5	48.7	0.5	48.8	51.5	3.3	53.7	54.8	6.6	53.8	54.9	6.7	53.9	54.9	6.7
5E	49.5							52.7	54.4	4.9	57.6	58.2	8.7	58.9	59.4	9.9	47.7	51.7	2.2	52.8	54.5	5.0	54.7	55.8	6.3	55.4	56.4	6.9	62.5	62.7	13.2
6E	59.1							53.8	60.2	1.1	60.3	62.8	3.7	57.7	61.5	2.4	43.8	59.2	0.1	55.4	60.6	1.5	56.7	61.1	2.0	57.2	61.3	2.2	59.6	62.4	3.3
7E	44.9							60.7	60.8	15.9	67.8	67.8	22.9	64.0	64.1	19.2	45.1	48.0	3.1	61.1	61.2	16.3	63.5	63.6	18.7	63.9	64.0	19.1	65.9	65.9	21.0
8E	44.9							59.5	59.6	14.7	67.8	67.8	22.9	64.0	64.1	19.2	45.4	48.2	3.3	60.8	60.9	16.0	65.0	65.0	20.1	65.3	65.3	20.4	65.7	65.7	20.8

11PM - 7AM

		[redacted]									Tunnel Excavation			[redacted]			Tunnel Excavation (TBM Removal)			tunnel)			connector tunnel)			Tunnel Connection		
Receptor	Existing Leq										Construction Noise	Combined Noise Level	Increment				Construction Noise	Noise Level	Increment	Construction Noise	Noise Level	Increment	Construction Noise	Noise Level	Increment	Construction Noise	Noise Level	Increment
1E	42.6										50.4	51.1	8.5				49.2	50.1	7.5	50.1	50.8	8.2	50.4	51.1	8.5	56.2	56.4	13.8
2E	45.8										51.9	52.9	7.1				50.4	51.7	5.9	51.7	52.7	6.9	52.0	52.9	7.1	57.2	57.5	11.7
3E	46.7										60.3	60.5	13.8				57.4	57.8	11.1	58.5	58.8	12.1	59.0	59.2	12.5	63.7	63.8	17.1
4E	42.6										52.6	53.0	10.4				48.8	49.7	7.1	53.7	54.0	11.4	53.8	54.1	11.5	53.9	54.2	11.6
5E	42.6										58.5	58.6	16.0				52.6	53.0	10.4	54.6	54.9	12.3	55.0	55.2	12.6	62.5	62.5	19.9
6E	46.7										57.4	57.8	11.1				55.4	55.9	9.2	56.6	57.0	10.3	57.1	57.5	10.8	59.6	59.8	13.1
7E	42.6										64.0	64.0	21.4				61.1	61.2	18.6	63.5	63.5	20.9	63.9	63.9	21.3	65.9	65.9	23.3
8E	42.6										64.0	64.0	21.4				60.8	60.9	18.3	65.0	65.0	22.4	65.3	65.3	22.7	65.7	65.7	23.1

West Site Construction Noise Levels WITHOUT NOISE CONTROL

7AM - 3PM

Receptor	Existing Leq	Site Prep			Shaft Construction			Tunnel Excavation			Tunnel Lining			Tunnel Lining		
		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	61.4	40.7	61.4	0.0	41.6	61.4	0.0	38.1	61.4	0.0	37.5	61.4	0.0	37.8	61.4	0.0
2W	74.2	64.9	74.7	0.5	60.8	74.4	0.2	65.4	74.7	0.5	63.3	74.5	0.3	61.6	74.4	0.2
3W	61.4	53.1	62.0	0.6	52.8	62.0	0.6	54.1	62.1	0.7	50.0	61.7	0.3	53.9	62.1	0.7
4W	61.4	50.6	61.7	0.3	52.9	62.0	0.6	48.5	61.6	0.2	48.3	61.6	0.2	48.4	61.6	0.2
5W	74.2	57.9	74.3	0.1	51.9	74.2	0.0	53.2	74.2	0.0	52.5	74.2	0.0	51.9	74.2	0.0

3PM - 11PM

Receptor	Existing Leq	Jan, 2013 through Feb, 2014			Feb, 2013 through Feb 2015			Mar, 2015 through Sept, 2018			Oct, 2018 through Mar, 2020			Oct, 2018 through Mar, 2021		
		Site Prep			Shaft Construction			Tunnel Excavation			Tunnel Lining			Tunnel Connection		
		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	57.8	40.7	57.9	0.1	41.6	57.9	0.1	38.1	57.8	0.0	37.5	57.8	0.0	37.8	57.8	0.0
2W	71.2	64.9	72.1	0.9	60.8	71.6	0.4	65.4	72.2	1.0	63.3	71.9	0.7	61.6	71.7	0.5
3W	57.8	53.1	59.1	1.3	52.8	59.0	1.2	54.1	59.3	1.5	50.0	58.5	0.7	53.9	59.3	1.5
4W	57.8	50.6	58.6	0.8	52.9	59.0	1.2	48.5	58.3	0.5	48.3	58.3	0.5	48.4	58.3	0.5
5W	71.2	57.9	71.4	0.2	51.9	71.3	0.1	53.2	71.3	0.1	52.5	71.3	0.1	51.9	71.3	0.1

11PM - 7 AM

Receptor	Existing Leq	Jan, 2013 through Feb, 2014	Feb, 2013 through Feb 2015	Mar, 2015 through Sept, 2018			Oct, 2018 through Mar, 2020			Oct, 2018 through Mar, 2021		
				Tunnel Excavation			Tunnel Lining			Tunnel Connection		
				Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1W	48.6			38.1	49.0	0.4	37.5	48.9	0.3	37.8	48.9	0.3
2W	65.8			65.4	68.6	2.8	63.3	67.7	1.9	61.6	67.2	1.4
3W	48.6			54.1	55.2	6.6	50.0	52.4	3.8	53.9	55.0	6.4
4W	48.6			48.5	51.6	3.0	48.3	51.5	2.9	48.4	51.5	2.9
5W	65.8			53.2	66.0	0.2	52.5	66.0	0.2	51.9	66.0	0.2

East Site Construction Noise Levels WITHOUT NOISE CONTROL

7AM - 3PM

Receptor	Existing Leq	Site Prep (stages 2-3)			Shaft Construction (Excavation Rock Lining)			Tunnel Excavation (Connector Tunnel)			Tunnel Excavation (Inundation Plugs)			Tunnel Lining (CIP against connector tunnel)			Tunnel Connection (junction chamber support)		
		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	58.5	50.9	59.2	0.7	54.6	60.0	1.5	52.6	59.5	1.0	50.6	59.2	0.7	52.6	59.5	1.0	56.8	60.7	2.2
2E	60.1	55.0	61.3	1.2	58.7	62.5	2.4	58.1	62.2	2.1	57.7	62.1	2.0	58.1	62.2	2.1	57.2	61.9	1.8
3E	61.0	62.6	64.9	3.9	65.9	67.1	6.1	64.4	66.0	5.0	61.3	64.2	3.2	63.3	65.3	4.3	64.1	65.8	4.8
4E	52.5	52.3	55.4	2.9	57.1	58.4	5.9	55.9	57.5	5.0	45.9	53.4	0.9	56.2	57.7	5.2	55.5	57.3	4.8
5E	49.7	67.1	67.2	17.5	69.7	69.7	20.0	67.3	67.4	17.7	63.4	63.6	13.9	65.3	65.4	15.7	67.2	67.3	17.6
6E	61.0	60.7	63.9	2.9	67.0	68.0	7.0	64.9	66.4	5.4	52.3	61.5	0.5	64.8	66.3	5.3	64.8	66.3	5.3
7E	43.2	69.6	69.6	26.4	74.9	74.9	31.7	72.2	72.2	29.0	58.9	59.0	15.8	72.0	72.0	28.8	72.2	72.2	29.0
8E	43.2	68.7	68.7	25.5	75.5	75.5	32.3	73.5	73.5	30.3	57.8	57.9	14.7	73.8	73.8	30.6	73.4	73.4	30.2

3PM - 11PM

Receptor	Existing Leq	[redacted]	Shaft Construction			Tunnel Excavation			Plugs)			Tunnel Lining			Tunnel Connection		
			Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	54.0	[redacted]	54.4	57.2	3.2	52.6	56.4	2.4	50.6	55.6	1.6	52.6	56.4	2.4	56.8	58.6	4.6
2E	64.2	[redacted]	58.6	65.3	1.1	58.1	65.2	1.0	57.7	65.1	0.9	58.1	65.2	1.0	57.2	65.0	0.8
3E	59.1	[redacted]	63.8	65.1	6.0	64.4	65.5	6.4	61.3	63.3	4.2	63.3	64.7	5.6	64.1	65.3	6.2
4E	48.2	[redacted]	56.0	56.7	8.5	55.9	56.6	8.4	45.9	50.2	2.0	56.2	56.8	8.6	55.5	56.2	8.0
5E	49.5	[redacted]	65.9	66.0	16.5	67.3	67.4	17.9	63.4	63.6	14.1	65.3	65.4	15.9	67.2	67.3	17.8
6E	59.1	[redacted]	65.6	66.5	7.4	64.9	65.9	6.8	52.3	59.9	0.8	64.8	65.8	6.7	64.8	65.8	6.7
7E	44.9	[redacted]	73.3	73.3	28.4	72.2	72.2	27.3	58.9	59.1	14.2	72.0	72.0	27.1	72.2	72.2	27.3
8E	44.9	[redacted]	74.8	74.8	29.9	73.5	73.5	28.6	57.8	58.0	13.1	73.8	73.8	28.9	73.4	73.4	28.5

11PM - 7AM

Receptor	Existing Leq	[redacted]	Tunnel Excavation			[redacted]	Tunnel Lining			Tunnel Connection		
			Construction Noise	Combined Noise Level	Increment		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	42.6	[redacted]	52.6	53.0	10.4	[redacted]	52.6	53.0	10.4	56.8	57.0	14.4
2E	45.8	[redacted]	58.1	58.3	12.5	[redacted]	58.1	58.3	12.5	57.2	57.5	11.7
3E	46.7	[redacted]	64.4	64.5	17.8	[redacted]	63.3	63.4	16.7	64.1	64.2	17.5
4E	42.6	[redacted]	55.9	56.1	13.5	[redacted]	56.2	56.4	13.8	55.5	55.7	13.1
5E	42.6	[redacted]	67.3	67.3	24.7	[redacted]	65.3	65.3	22.7	67.2	67.2	24.6
6E	46.7	[redacted]	64.9	65.0	18.3	[redacted]	64.8	64.9	18.2	64.8	64.9	18.2
7E	42.6	[redacted]	72.2	72.2	29.6	[redacted]	72.0	72.0	29.4	72.2	72.2	29.6
8E	42.6	[redacted]	73.5	73.5	30.9	[redacted]	73.8	73.8	31.2	73.4	73.4	30.8

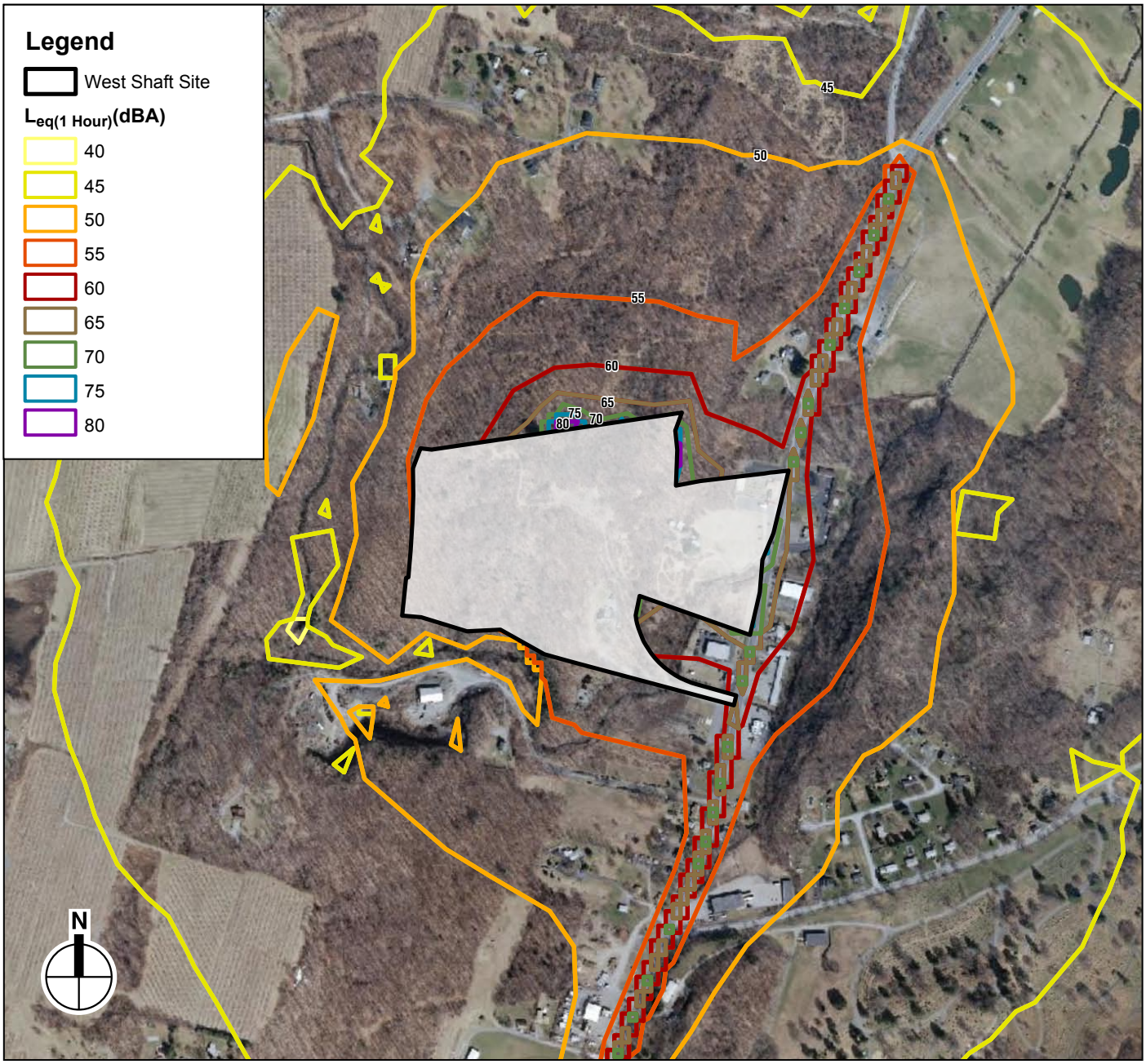
East Site Construction Noise Levels ONLY ONSITE ACTIVITY with Noise-Control

11PM - 7AM

Receptor	Existing Leq	Tunnel Excavation (Connector Tunnel ONSITE)			Tunnel Lining (CIP against connector tunnel ONSITE)		
		Construction Noise	Combined Noise Level	Increment	Construction Noise	Combined Noise Level	Increment
1E	42.6	36.9	43.6	1.0	36.9	43.6	1.0
2E	45.8	45.6	48.7	2.9	45.8	48.8	3.0
3E	46.7	59.9	60.1	13.4	58.2	58.5	11.8
4E	42.6	52.8	53.2	10.6	53.8	54.1	11.5
5E	42.6	58.7	58.8	16.2	54.9	55.1	12.5
6E	46.7	57.3	57.7	11.0	56.9	57.3	10.6
7E	42.6	64.0	64.0	21.4	63.9	63.9	21.3
8E	42.6	64.0	64.0	21.4	65.3	65.3	22.7

Incremental Construction Noise Contours

11.21.11



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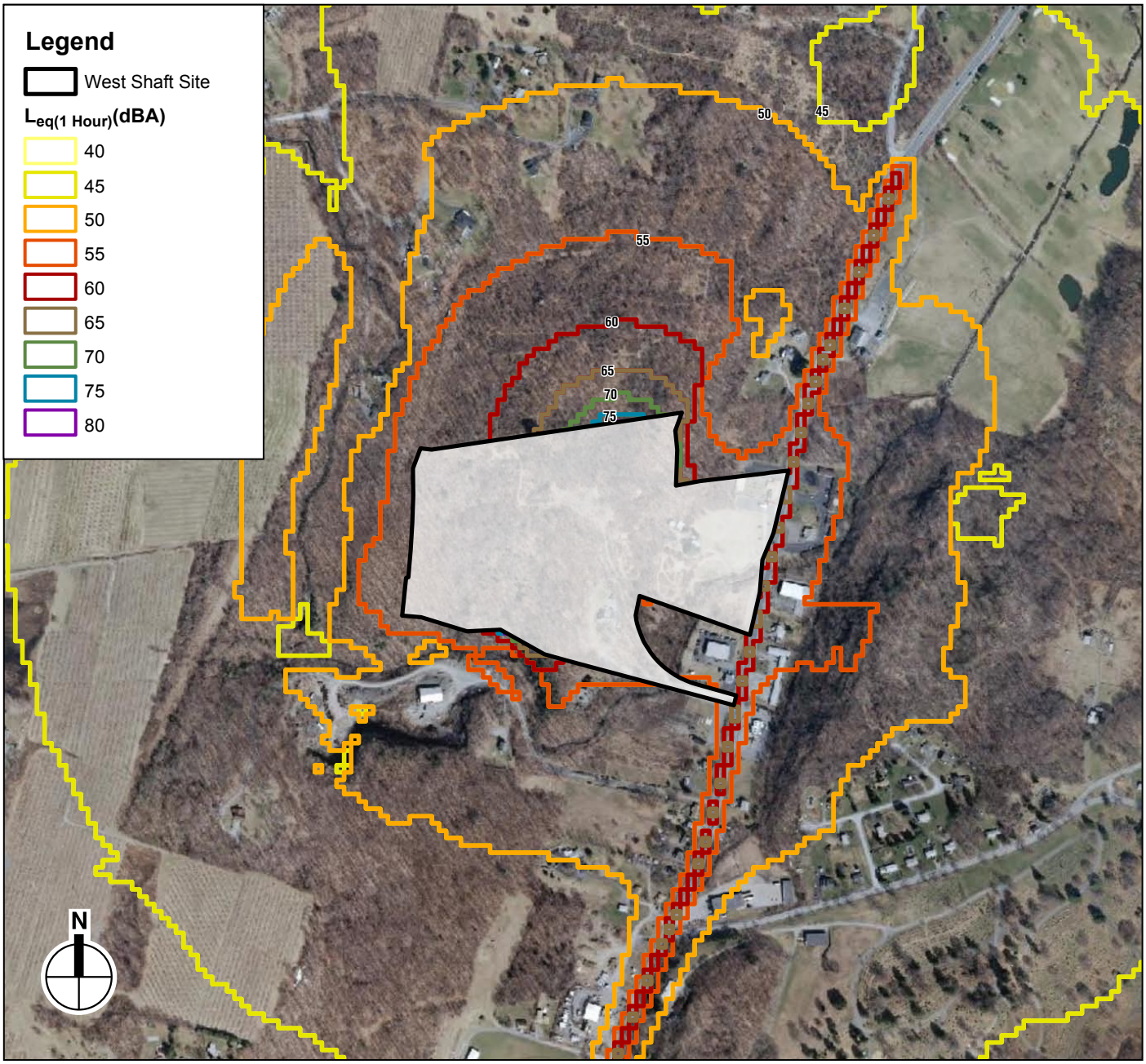
SCALE

West Site Prep

11.21.11



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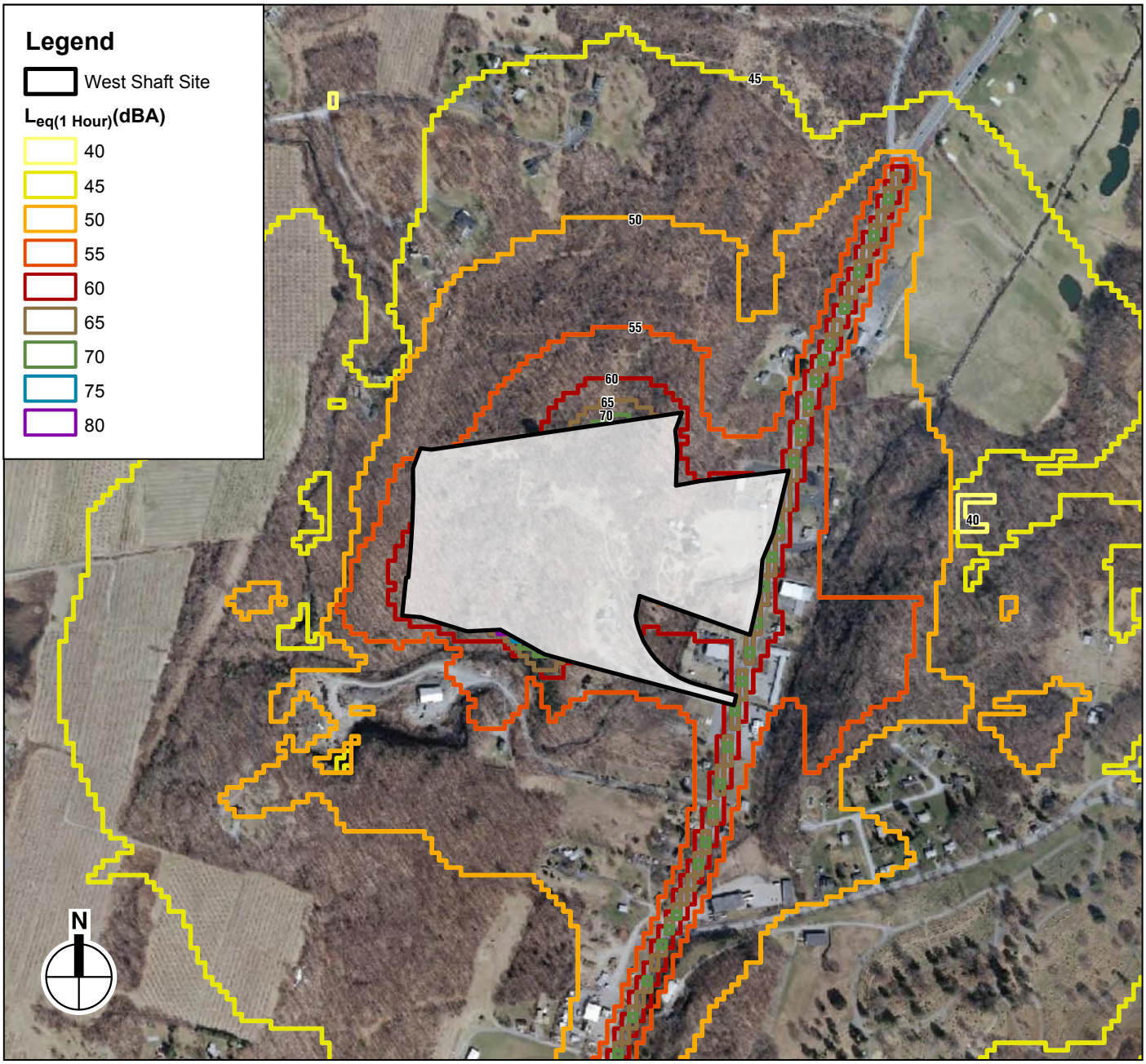
West Shaft Construction Grid

11.21.11



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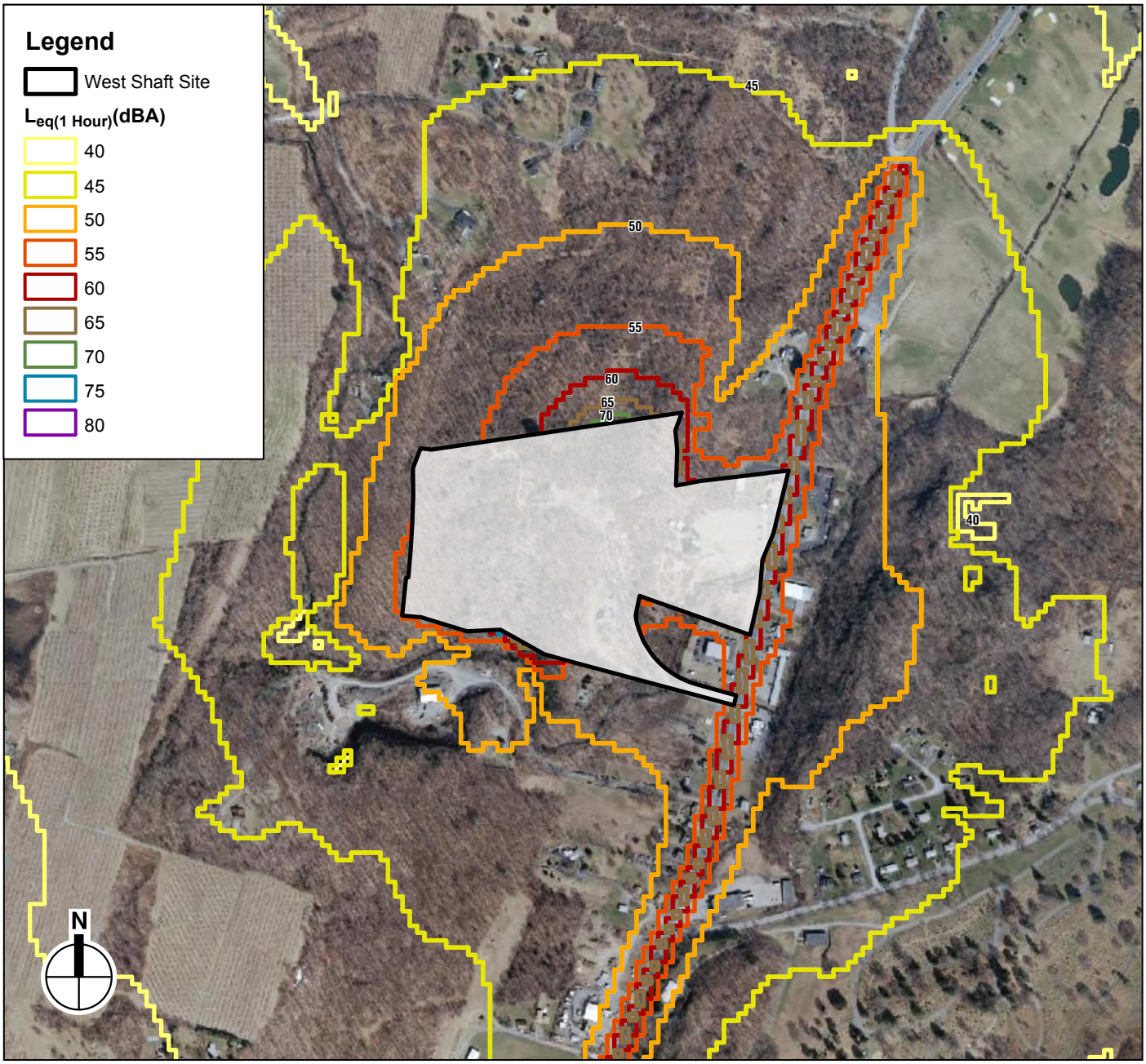
SCALE

West Tunnel Excavation Grid

11.21.11



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SCALE

West Tunnel Lining Grid

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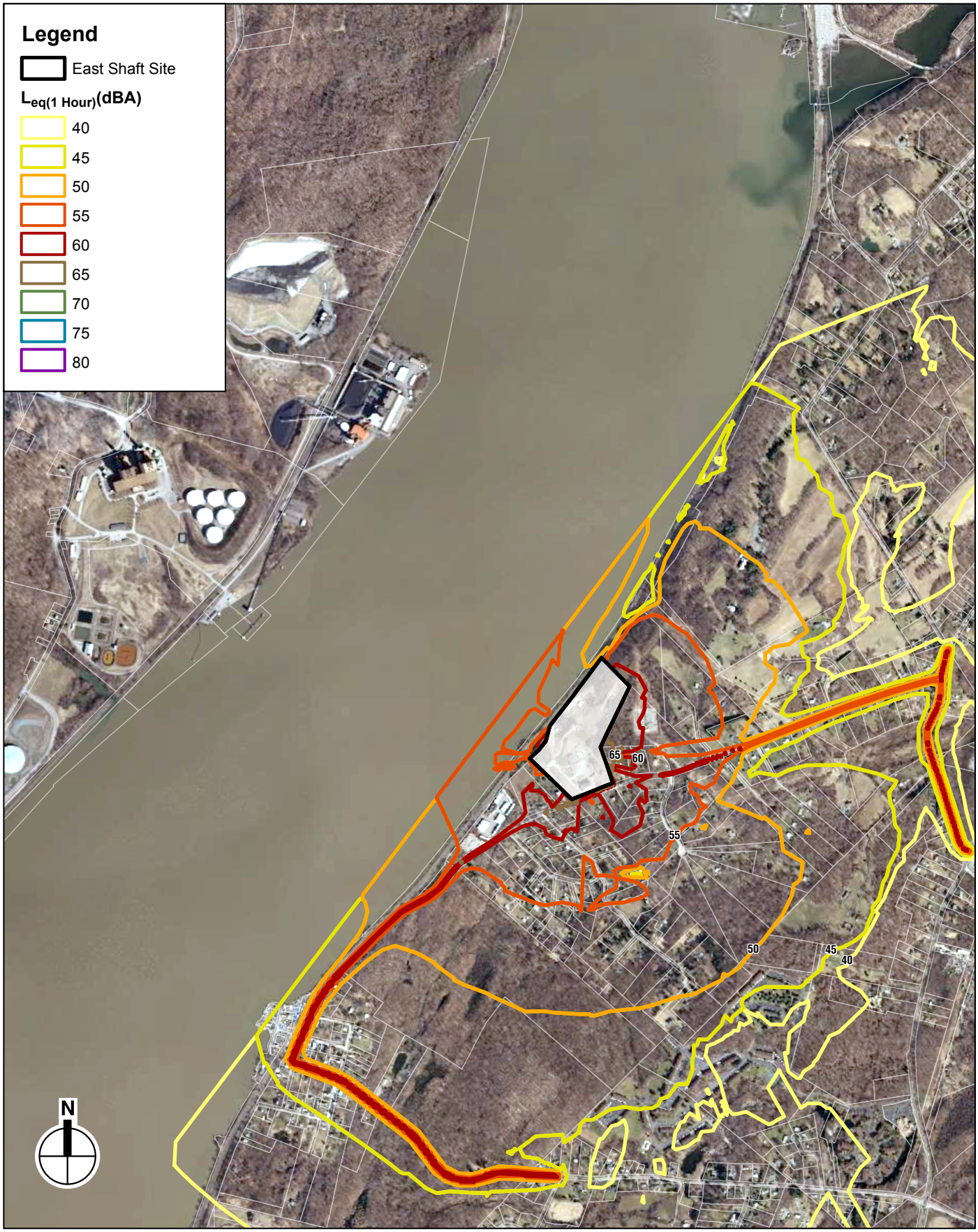

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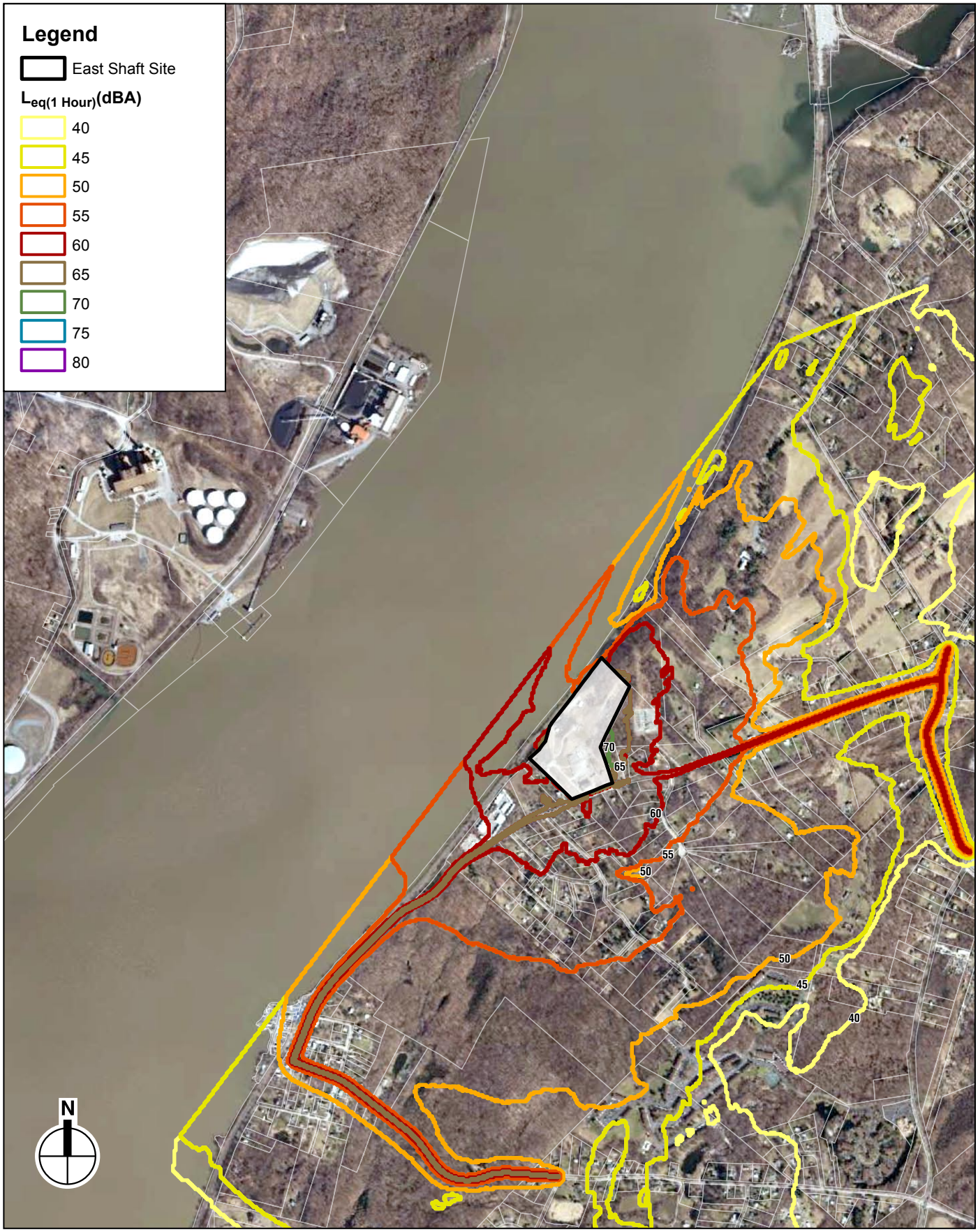
East Site Prep MIT Grid

11.21.11



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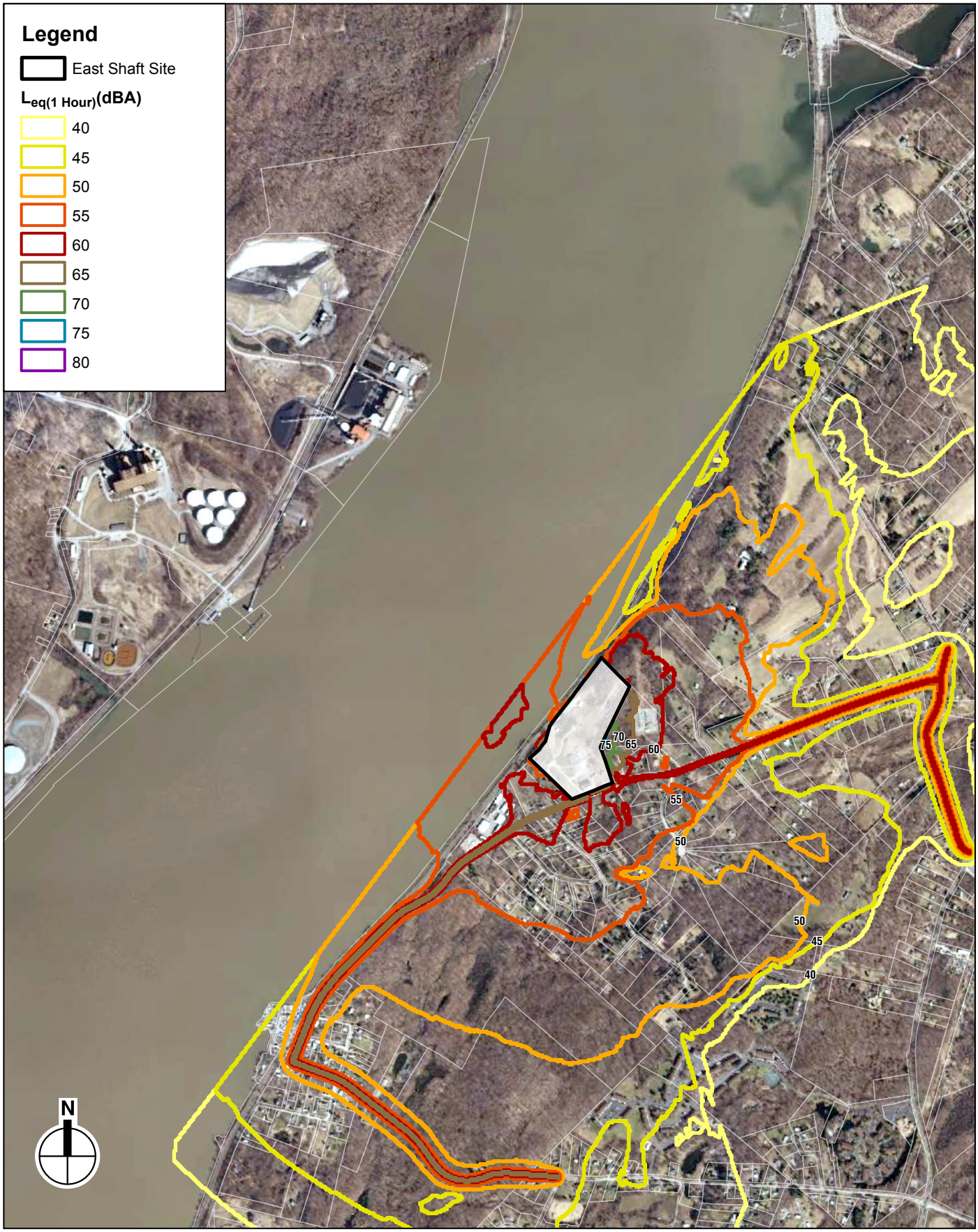
SCALE

East Shaft Construction Shift 1 MIT Grid

11.21.11



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East Shaft Construction Shift 2 MIT Grid

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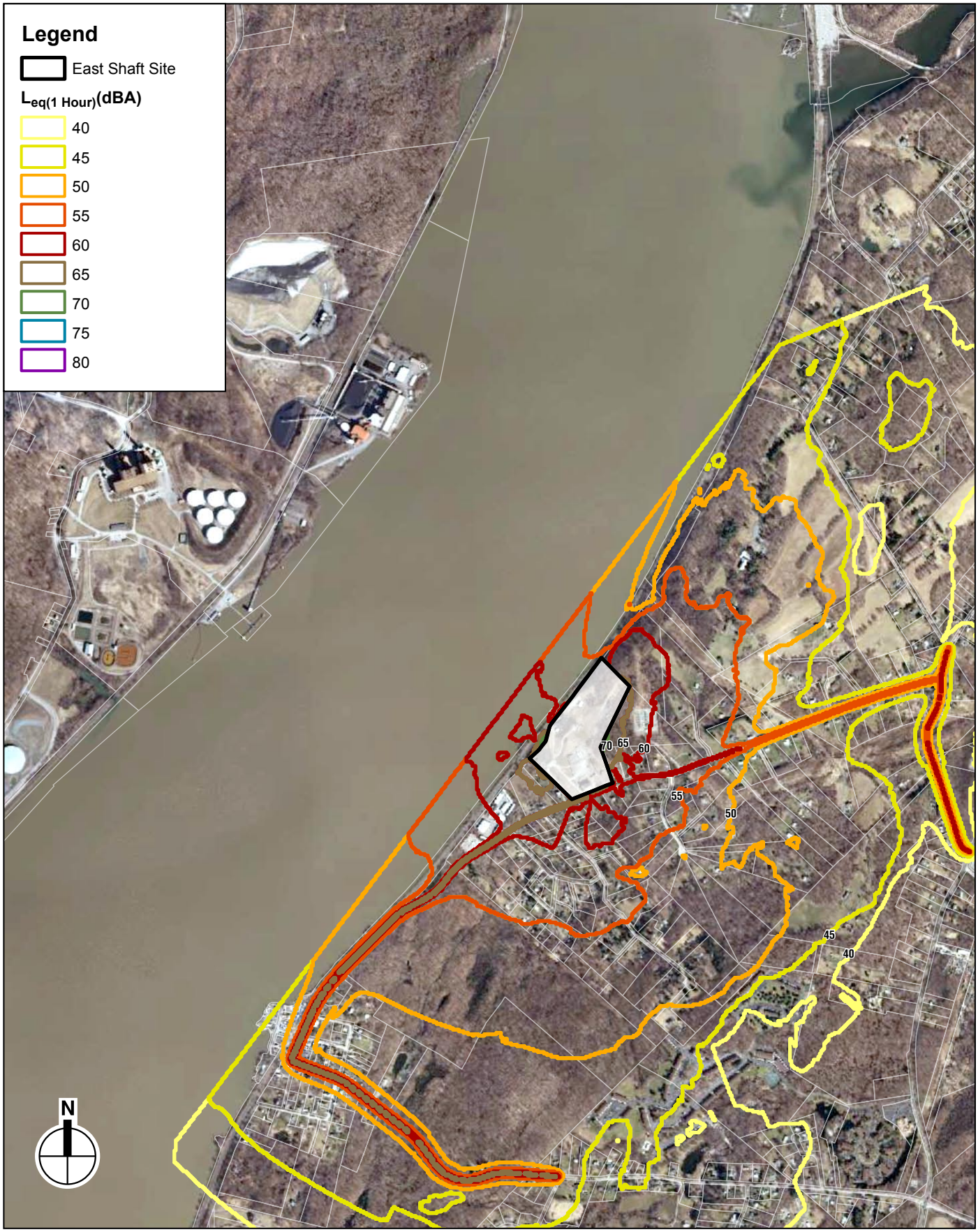

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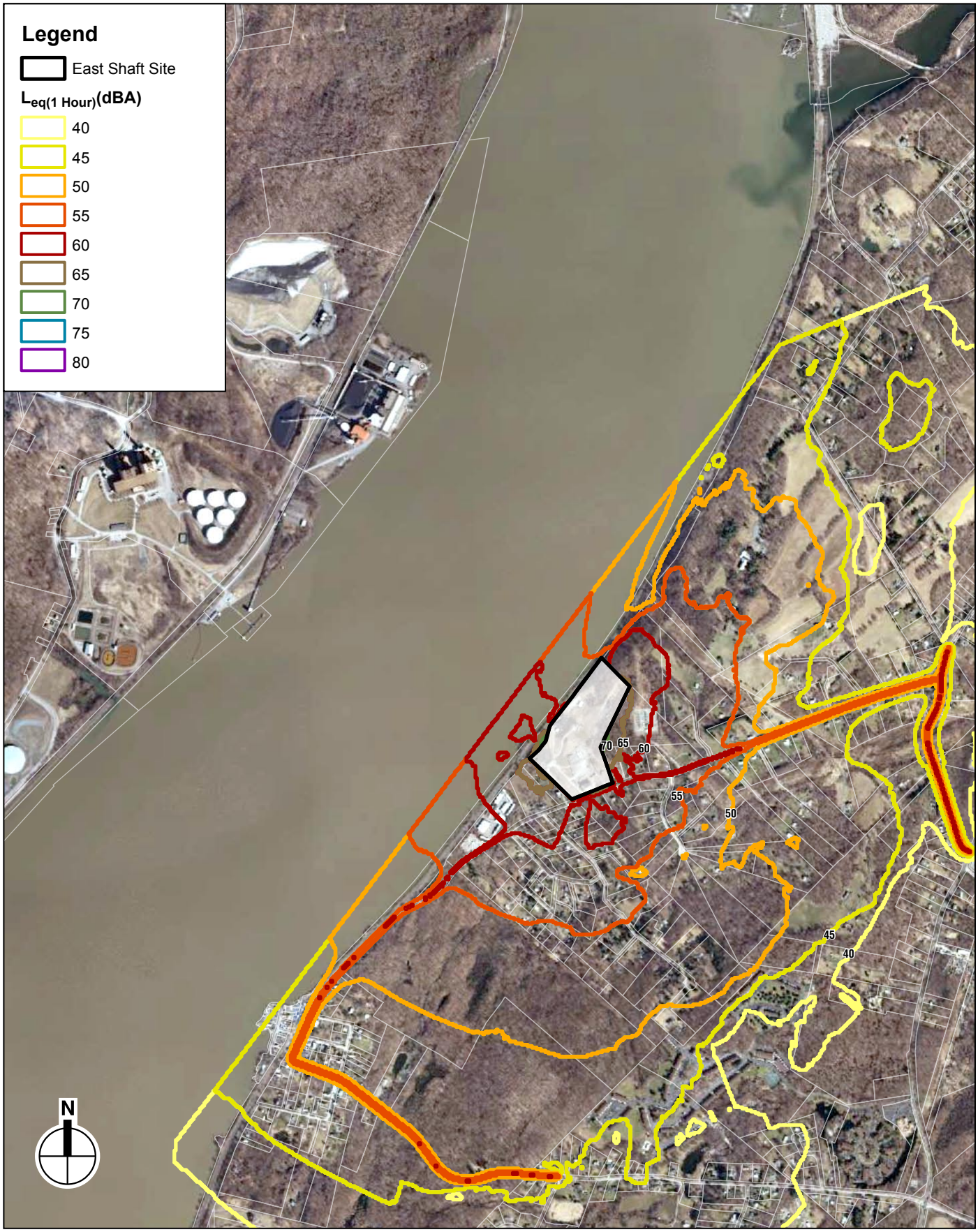
SCALE

East Tunnel Excavation Shift 1 MIT Grid

11.21.11



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SCALE

East Tunnel Excavation Shift 3 MIT Grid

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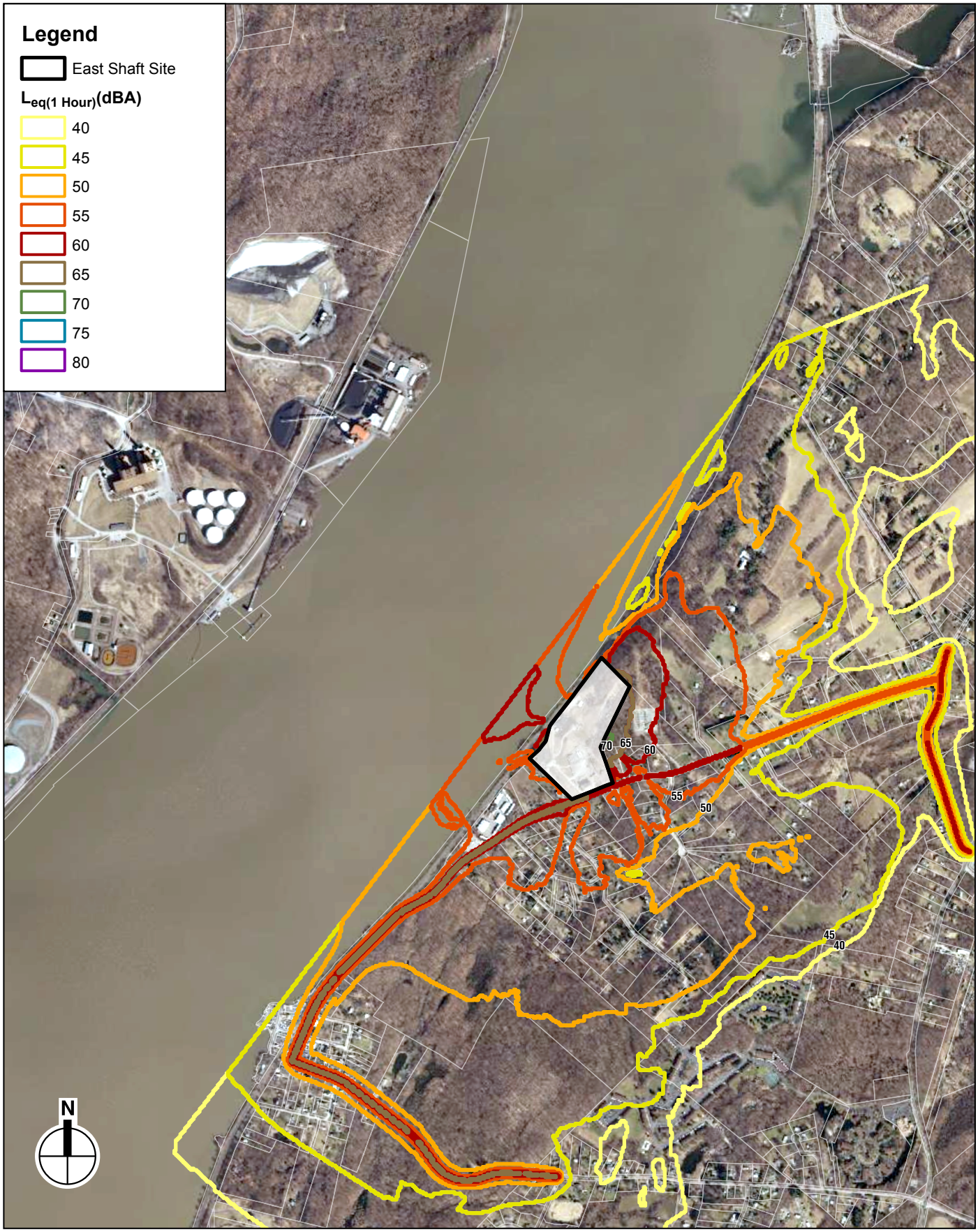

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SCALE

East Tunnel Lining Shift 1 MIT Grid

11.21.11

0 1000 2000 FEET

SCALE

East Tunnel Lining Shift 3 MIT Grid