

Appendix B

Air Quality

Table 1. Annual ROG Emissions for Each Alternative by Source

Year	Alternative 1				Alternative 2				Alternative 3				Alternative 4			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Construction Equipment	2.87	4.86	2.16	0.11	2.58	4.90	2.25	0.11	2.15	5.19	4.25	0.11	4.34	4.19	0.41	0.11
Haul Trucks	0.48	2.01	0.36	0.00	0.56	1.97	0.33	0.00	0.65	2.29	1.29	0.19	0.87	2.64	0.82	0.19
Employee Commuting	0.03	0.03	0.03	0.03	0.03	0.09	0.05	0.01	0.03	0.07	0.07	0.01	0.08	0.10	0.04	0.01
Total	3.37	6.89	2.55	0.14	3.18	6.96	2.63	0.12	2.83	7.54	5.61	0.31	5.29	6.93	1.26	0.31

Table 2. Annual NOx Emissions for Each Alternative by Source

Year	Alternative 1				Alternative 2				Alternative 3				Alternative 4			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Construction Equipment	20.33	23.31	9.23	0.98	17.07	23.70	10.07	0.98	12.81	26.22	20.98	0.98	25.80	20.76	3.67	0.98
Haul Trucks	7.58	31.02	5.40	0.00	8.94	30.47	4.91	0.00	10.29	35.32	19.30	2.71	13.78	40.86	12.28	2.71
Employee Commuting	0.10	0.31	0.23	0.03	0.12	0.34	0.23	0.03	0.11	0.27	0.31	0.03	0.31	0.39	0.15	0.03
Total	28.01	54.64	14.86	1.01	26.12	54.51	15.21	1.01	23.21	61.81	40.58	3.72	39.89	62.01	16.10	3.72

Table 3. Annual CO Emissions for Each Alternative by Source

Year	Alternative 1				Alternative 2				Alternative 3				Alternative 4			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Construction Equipment	6.76	9.06	3.14	0.41	5.72	9.22	3.49	0.41	3.88	10.60	8.21	0.41	9.61	8.13	1.51	0.41
Haul Trucks	2.39	9.83	1.73	0.00	2.82	9.66	1.57	0.00	3.24	11.20	6.17	0.87	4.34	12.95	3.92	0.87
Employee Commuting	0.81	2.44	1.79	0.26	0.93	2.67	1.79	0.26	0.84	2.10	2.43	0.26	2.41	3.06	1.19	0.26
Total	9.96	21.33	6.66	0.67	9.47	21.54	6.85	0.67	7.97	23.90	16.80	1.55	16.36	24.14	6.63	1.55

Table 4. Annual PM10 Emissions for Each Alternative by Source

Year	Alternative 1				Alternative 2				Alternative 3				Alternative 4			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Construction Equipment	0.90	1.28	0.53	0.04	0.78	1.29	0.56	0.04	0.61	1.40	1.12	0.04	1.26	1.12	0.14	0.04
Haul Trucks	0.70	3.06	0.57	0.00	0.83	3.00	0.52	0.00	0.95	3.48	2.05	0.31	1.27	4.03	1.31	0.31
Concrete Batch	0.00	5.33	5.33	0.00	0.48	0.00	0.00	0.00	0.97	0.00	0.00	0.00	2.73	3.51	0.00	0.00
Fugitive Dust	9.52	118.37	117.69	22.02	10.14	120.40	107.16	20.18	3.85	68.79	106.26	20.16	15.52	79.49	81.94	20.16
Employee Commuting	0.28	0.96	0.80	0.13	0.32	1.05	0.80	0.13	0.29	0.83	1.08	0.13	0.84	1.21	0.53	0.13
Total	11.40	129.00	124.92	22.19	12.56	125.74	109.04	20.35	6.67	74.50	110.51	20.64	21.62	89.34	83.92	20.64

Table 5. Annual PM2.5 Emissions for Each Alternative by Source

Year	Alternative 1				Alternative 2				Alternative 3				Alternative 4			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Construction Equipment	0.82	1.18	0.49	0.03	0.72	1.19	0.52	0.03	0.56	1.29	1.03	0.03	0.66	1.03	0.13	0.03
Haul Trucks	0.32	1.34	0.24	0.00	0.38	1.32	0.22	0.00	0.44	1.53	0.86	0.12	0.59	1.77	0.54	0.12
Concrete Batch	0.00	3.59	3.59	0.00	0.33	0.00	0.00	0.00	0.65	0.00	0.00	0.00	1.84	2.36	0.00	0.00
Fugitive Dust	1.99	24.72	24.56	4.60	2.12	25.14	22.38	4.21	0.80	14.37	22.19	4.21	3.24	16.60	17.11	4.21
Employee Commuting	0.05	0.18	0.15	0.02	0.06	0.19	0.15	0.02	0.05	0.15	0.20	0.02	0.16	0.22	0.10	0.02
Total	3.19	31.01	29.03	4.66	3.60	27.84	23.26	4.27	2.51	17.34	24.28	4.39	6.48	21.98	17.88	4.39

Table 6. Alternative 1 Total Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.55	0.55																				
Well Installation		12.18	12.18	12.18	12.18	12.18	12.18	12.18	12.18													
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20
Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
Excavation									14.77	14.77	13.90	13.90	13.90	13.90	13.90	13.90	13.90	13.90				
Excavation Backfill																	7.03	7.03	7.03	7.03	7.03	7.03
Dam Stripping																						
Filter Placement															1.51	1.51	1.51					
Shell Placement																1.81	1.81	1.81	1.81	1.81	1.81	1.81
																		1.51	1.51	1.51	1.51	1.51
Total	0.55	12.73	12.18	12.18	12.18	30.38	30.38	43.64	58.40	46.23	44.32	44.32	44.32	44.32	45.82	47.63	54.66	54.66	40.76	40.76	40.76	40.76

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20												
Materials Supply																		
Excavation																		
Excavation Backfill	6.42	6.42	6.42	6.42	6.42	6.42												
Dam Stripping																		
Filter Placement	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.55	1.55	1.55			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	27.71	27.71	27.71	27.71	27.71	27.71	3.08	3.08	3.08	3.08	3.08	3.08	2.88	2.88	2.88	1.34	0.00	0.00

Table 7. Alternative 1 Total Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	4.72	4.72																					
Well Installation		140.16	140.16	140.16	140.16	140.16	140.16	140.16	140.16														
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	
Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	
Excavation									131.41	131.41	122.15	122.15	122.15	122.15	122.15	122.15	122.15	122.15					
Excavation Backfill																	97.59	97.59	97.59	97.59	97.59	97.59	97.59
Dam Stripping															13.94	13.94	13.94						
Filter Placement																15.15	15.15	15.15	15.15	15.15	15.15	15.15	
Shell Placement																		13.94	13.94	13.94	13.94	13.94	
Total	4.72	144.88	140.16	140.16	140.16	192.54	192.54	403.05	534.46	394.30	363.29	363.29	363.29	363.29	377.23	392.38	489.97	489.97	367.81	367.81	367.81	367.81	

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40						
Phase																								
Clear & Grub																								
Well Installation																								
Detention Pond Operations	52.38	52.38	52.38	52.38	52.38	52.38																		
Materials Supply																								
Excavation																								
Excavation Backfill	86.74	86.74	86.74	86.74	86.74	86.74																		
Dam Stripping																								
Filter Placement	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	12.62	12.62	12.62									
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67								
Total	165.69	165.69	165.69	165.69	165.69	165.69	26.56	26.56	26.56	26.56	26.56	26.56	24.28	24.28	24.28	11.67	0.00	0.00						

Table 8. Alternative 1 Total Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	3.83	3.83																					
Well Installation		49.20	49.20	49.20	49.20	49.20	49.20	49.20	49.20														
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	
Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	
Excavation									76.89	76.89	70.33	70.33	70.33	70.33	70.33	70.33	70.33	70.33					
Excavation Backfill																	41.14	41.14	41.14	41.14	41.14	41.14	
Dam Stripping																	5.65	5.65	5.65				
Filter Placement																15.05	15.05	15.05	15.05	15.05	15.05	15.05	
Shell Placement																		5.65	5.65	5.65	5.65	5.65	
Total	3.83	53.03	49.20	49.20	49.20	63.48	63.48	129.82	206.71	157.51	144.44	144.44	144.44	144.44	150.09	165.15	206.29	206.29	135.96	135.96	135.96	135.96	

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40						
Phase																								
Clear & Grub																								
Well Installation																								
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29																		
Materials Supply																								
Excavation																								
Excavation Backfill	36.79	36.79	36.79	36.79	36.79	36.79																		
Dam Stripping																								
Filter Placement	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	12.23	12.23	12.23									
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88								
Total	69.84	69.84	69.84	69.84	69.84	69.84	18.77	18.77	18.77	18.77	18.77	18.77	17.11	17.11	17.11	4.88	0.00	0.00						

Table 9. Alternative 1 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.92	0.92																				
Well Installation		6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71													
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60
Excavation									9.86	9.86	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44				
Excavation Backfill																	86.56	86.56	86.56	86.56	86.56	86.56
Dam Stripping															0.53	0.53	0.53					
Filter Placement																4.24	4.24	4.24	4.24	4.24	4.24	4.24
Shell Placement																		0.53	0.53	0.53	0.53	0.53
Fugitive Emissions									359	359	359	359	359	359	359	931	1293	1293	933	933	933	933
Total	0.92	7.63	6.71	6.71	6.71	10.64	10.64	30.10	399.36	392.65	391.37	391.37	391.37	391.37	391.90	967.97	1416.05	1416.05	1047.21	1047.21	1047.21	1047.21

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	86.14	86.14	86.14	86.14	86.14	86.14												
Dam Stripping																		
Filter Placement	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.13	4.13	4.13			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	933	933	933	933	933	933	572	572	572	572	572	572	572	572	572			
Total	1028.08	1028.08	1028.08	1028.08	1028.08	1028.08	576.49	576.49	576.49	576.49	576.49	576.49	576.40	576.40	576.40	0.43	0.00	0.00

Table 10. Alternative 1 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.92	0.92																					
Well Installation		6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71														
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	
Excavation									9.86	9.86	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44					
Excavation Backfill																	16.21	16.21	16.21	16.21	16.21	16.21	16.21
Dam Stripping															0.53	0.53	0.53						
Filter Placement																4.24	4.24	4.24	4.24	4.24	4.24	4.24	
Shell Placement																		0.53	0.53	0.53	0.53	0.53	
Fugitive Emissions									359	359	359	359	359	359	359	931	1293	1293	933	933	933	933	
Total	0.92	7.63	6.71	6.71	6.71	10.64	10.64	30.10	399.36	392.65	391.37	391.37	391.37	391.37	391.90	967.97	1345.70	1345.70	976.86	976.86	976.86	976.86	

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	15.79	15.79	15.79	15.79	15.79	15.79												
Dam Stripping																		
Filter Placement	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.13	4.13	4.13			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	933	933	933	933	933	933	572	572	572	572	572	572	572	572	572			
Total	957.73	957.73	957.73	957.73	957.73	957.73	576.49	576.49	576.49	576.49	576.49	576.49	576.40	576.40	576.40	0.43	0.00	0.00

Table 11. Alternative 1 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87													
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation									5.81	5.81	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42				
Excavation Backfill																	54.68	54.68	54.68	54.68	54.68	54.68
Dam Stripping															0.49	0.49	0.49					
Filter Placement																1.18	1.18	1.18	1.18	1.18	1.18	1.18
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Fugitive Emissions									75	75	75	75	75	75	75	194	270	270	195	195	195	195
Total	0.30	5.17	4.87	4.87	4.87	8.48	8.48	17.45	98.32	93.45	92.27	92.27	92.27	92.27	92.77	213.37	343.54	343.55	263.06	263.06	263.06	263.06

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	54.30	54.30	54.30	54.30	54.30	54.30												
Dam Stripping																		
Filter Placement	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.08	1.08	1.08			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	195	195	195	195	195	195	119	119	119	119	119	119	119	119	119			
Total	254.40	254.40	254.40	254.40	254.40	254.40	120.99	120.99	120.99	120.99	120.99	120.99	120.90	120.90	120.90	0.40	0.00	0.00

Table 12. Alternative 1 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87													
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation									5.81	5.81	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42				
Excavation Backfill																	7.27	7.27	7.27	7.27	7.27	7.27
Dam Stripping															0.49	0.49	0.49					
Filter Placement																1.18	1.18	1.18	1.18	1.18	1.18	1.18
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Fugitive Emissions									75	75	75	75	75	75	75	194	270	270	195	195	195	195
Total	0.30	5.17	4.87	4.87	4.87	8.48	8.48	17.45	98.32	93.45	92.27	92.27	92.27	92.27	92.77	213.37	296.13	296.14	215.65	215.65	215.65	215.65

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	6.89	6.89	6.89	6.89	6.89	6.89												
Dam Stripping																		
Filter Placement	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.08	1.08	1.08			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	195	195	195	195	195	195	119	119	119	119	119	119	119	119	119			
Total	206.99	206.99	206.99	206.99	206.99	206.99	120.99	120.99	120.99	120.99	120.99	120.99	120.90	120.90	120.90	0.40	0.00	0.00

Table 13. Alternative 2 Total Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.55	0.55																				
Well Installation		12.19	12.19	12.19	12.19	12.19	12.19															
Wall Construction			2.40	2.40	2.40	2.40																
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
Excavation									14.77	14.77	13.90	13.90	13.90	13.90	13.90	13.90	13.90	13.90				
Excavation Backfill																	6.53	6.53	6.53	6.53	6.53	6.53
Dam Stripping															1.51	1.51	1.51					
Filter Placement															1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
Shell Placement																	1.51	1.51	1.51	1.51	1.51	1.51
Total	0.55	12.74	14.59	14.59	14.59	32.79	30.39	31.46	46.23	46.23	44.32	44.32	44.32	46.12	47.63	47.63	54.16	54.16	40.26	40.26	40.26	40.26

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	5.97	5.97	5.97	5.97	5.97	5.97												
Dam Stripping																		
Filter Placement	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.55	1.55	1.55			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	27.26	27.26	27.26	27.26	27.26	27.26	3.08	3.08	3.08	3.08	3.08	3.08	2.88	2.88	2.88	1.34	0.00	0.00

Table 14. Alternative 2 Total Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	4.72	4.72																						
Well Installation		140.27	140.27	140.27	140.27	140.27	140.27																	
Wall Construction			34.11	34.11	34.11	34.11																		
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38		
Overlay Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76		
Excavation									131.41	131.41	122.15	122.15	122.15	122.15	122.15	122.15	122.15	122.15						
Excavation Backfill																	89.88	89.88	89.88	89.88	89.88	89.88		
Dam Stripping															13.94	13.94	13.94							
Filter Placement													15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15		
Shell Placement																		13.94	13.94	13.94	13.94	13.94		
Total	4.72	144.99	174.37	174.37	174.37	226.76	192.65	262.89	394.30	394.30	363.29	363.29	363.29	378.44	392.38	392.38	482.26	482.26	360.11	360.11	360.11	360.11		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase Clear & Grub Well Installation Wall Construction Detention Pond Operations Overlay Materials Supply Excavation Excavation Backfill Dam Stripping Filter Placement Shell Placement																		
	52.38	52.38	52.38	52.38	52.38	52.38												
	79.92	79.92	79.92	79.92	79.92	79.92												
	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	13.82	12.62	12.62	12.62			
	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67	
	Total	158.86	158.86	158.86	158.86	158.86	158.86	26.56	26.56	26.56	26.56	26.56	26.56	24.28	24.28	24.28	11.67	0.00

Table 15. Alternative 2 Total Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	3.83	3.83																				
Well Installation		49.23	49.23	49.23	49.23	49.23	49.23															
Wall Construction			15.71	15.71	15.71	15.71																
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83
Excavation									76.89	76.89	70.33	70.33	70.33	70.33	70.33	70.33	70.33	70.33				
Excavation Backfill																	38.70	38.70	38.70	38.70	38.70	38.70
Dam Stripping																						
Filter Placement														15.05	15.05	15.05	15.05	15.05	15.05	15.05	15.05	15.05
Shell Placement																		5.65	5.65	5.65	5.65	5.65
Total	3.83	53.06	64.94	64.94	64.94	79.23	63.52	80.62	157.51	157.51	144.44	144.44	144.44	159.49	165.15	165.15	203.85	203.85	133.51	133.51	133.51	133.51

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	34.61	34.61	34.61	34.61	34.61	34.61												
Dam Stripping																		
Filter Placement	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	13.53	12.23	12.23	12.23			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	67.66	67.66	67.66	67.66	67.66	67.66	18.77	18.77	18.77	18.77	18.77	18.77	17.11	17.11	17.11	4.88	0.00	0.00

Table 16. Alternative 2 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.92	0.92																				
Well Installation		1.78	1.78	1.78	1.78	1.78	1.78															
Wall Construction			14.68	14.68	14.68	14.68																
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60
Excavation									9.86	9.86	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44				
Excavation Backfill																	79.07	79.07	79.07	79.07	79.07	79.07
Dam Stripping																						
Filter Placement														4.24	4.24	4.24	4.24	4.24	4.24	4.24	4.24	4.24
Shell Placement																		0.53	0.53	0.53	0.53	0.53
Fugitive Emissions			33	33	33	33	0	0	318	318	318	318	318	842	842	842	1165	1165	846	846	846	846
Total	0.92	2.69	49.07	49.07	49.07	53.00	5.71	23.39	351.41	351.41	350.13	350.13	350.13	878.44	878.98	878.98	1280.42	1280.42	952.82	952.82	952.82	952.82

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	78.68	78.68	78.68	78.68	78.68	78.68												
Dam Stripping																		
Filter Placement	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.13	4.13	4.13			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	846	846	846	846	846	846	524	524	524	524	524	524	524	524	524			
Total	933.73	933.73	933.73	933.73	933.73	933.73	528.74	528.74	528.74	528.74	528.74	528.74	528.65	528.65	528.65	0.43	0.00	0.00

Table 17. Alternative 2 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.92	0.92																				
Well Installation		6.71	6.71	6.71	6.71	6.71	6.71															
Wall Construction			5.08	5.08	5.08	5.08																
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60
Excavation									9.86	9.86	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44				
Excavation Backfill																	15.11	15.11	15.11	15.11	15.11	15.11
Dam Stripping																						
Filter Placement														4.24	4.24	4.24	4.24	4.24	4.24	4.24	4.24	4.24
Shell Placement																		0.53	0.53	0.53	0.53	0.53
Fugitive Emissions			33	33	33	33	0	0	318	318	318	318	318	842	842	842	1165	1165	846	846	846	846
Total	0.92	7.63	44.42	44.42	44.42	48.34	10.64	23.39	351.41	351.41	350.13	350.13	350.13	878.44	878.98	878.98	1216.46	1216.46	888.86	888.86	888.86	888.86

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	14.73	14.73	14.73	14.73	14.73	14.73												
Dam Stripping																		
Filter Placement	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.13	4.13	4.13			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	846	846	846	846	846	846	524	524	524	524	524	524	524	524	524			
Total	869.77	869.77	869.77	869.77	869.77	869.77	528.74	528.74	528.74	528.74	528.74	528.74	528.65	528.65	528.65	0.43	0.00	0.00

Table 18. Alternative 2 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87	4.87															
Wall Construction			8.51	8.51	8.51	8.51																
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation									5.81	5.81	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42				
Excavation Backfill																	49.81	49.81	49.81	49.81	49.81	49.81
Dam Stripping															0.49	0.49	0.49					
Filter Placement													1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Shell Placement																	0.49	0.49	0.49	0.49	0.49	0.49
Fugitive Emissions			7	7	7	7	0	0	66	66	66	66	66	176	176	176	243	243	177	177	177	177
Total	0.30	5.17	20.19	20.19	20.19	23.81	8.49	12.58	84.83	84.83	83.65	83.65	83.65	194.28	194.78	194.78	311.91	311.91	240.04	240.04	240.04	240.04

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	49.46	49.46	49.46	49.46	49.46	49.46												
Dam Stripping																		
Filter Placement	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.08	1.08	1.08			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	177	177	177	177	177	177	109	109	109	109	109	109	109	109	109			
Total	231.41	231.41	231.41	231.41	231.41	231.41	111.02	111.02	111.02	111.02	111.02	111.02	110.93	110.93	110.93	0.40	0.00	0.00

Table 19. Alternative 2 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87	4.87															
Wall Construction			2.05	2.05	2.05	2.05																
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation									5.81	5.81	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42				
Excavation Backfill																	6.71	6.71	6.71	6.71	6.71	6.71
Dam Stripping															0.49	0.49	0.49					
Filter Placement													1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	
Shell Placement																	0.49	0.49	0.49	0.49	0.49	
Fugitive Emissions			7	7	7	7	0	0	66	66	66	66	66	176	176	176	243	243	177	177	177	177
Total	0.30	5.17	13.73	13.73	13.73	17.34	8.49	12.58	84.83	84.83	83.65	83.65	83.65	194.28	194.78	194.78	268.80	268.80	196.94	196.94	196.94	196.94

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	6.36	6.36	6.36	6.36	6.36	6.36												
Dam Stripping																		
Filter Placement	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.08	1.08	1.08			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	177	177	177	177	177	177	109	109	109	109	109	109	109	109	109			
Total	188.31	188.31	188.31	188.31	188.31	188.31	111.02	111.02	111.02	111.02	111.02	111.02	110.93	110.93	110.93	0.40	0.00	0.00

Table 20. Alternative 3 Total Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.55	0.55																				
Well Installation		12.19	12.19	12.19	12.19	12.19																
Wall Construction			2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40												
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
Excavation															13.41	13.41	13.41	13.41	13.41	13.41	13.41	13.41
Excavation Backfill																						
Dam Stripping															1.51	1.51	1.51					
Filter Placement														8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04
Shell Placement																		1.51	1.51	1.51	1.51	1.51
Total	0.55	12.74	14.59	14.59	14.59	32.79	20.61	33.86	33.86	33.86	30.42	30.42	30.42	51.87	53.37	53.37	53.37	53.37	53.37	53.37	53.37	39.96

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20								
Overlay Materials Supply																		
Excavation					12.64	12.64	12.64	12.64	12.64									
Excavation Backfill							7.74	7.74	7.74	7.74	7.74							
Dam Stripping																		
Filter Placement	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	6.72	6.72	6.72			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	26.97	26.97	26.97	39.61	39.61	47.35	47.35	47.35	34.71	34.71	16.51	8.77	8.06	8.06	8.06	1.34	0.00	0.00

Table 21. Alternative 3 Total Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	4.72	4.72																										
Well Installation		140.27	140.27	140.27	140.27	140.27																						
Wall Construction			34.11	34.11	34.11	34.11	34.11	34.11	34.11	34.11																		
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38						
Overlay Materials Supply							210.51	210.51	210.51		188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76						
Excavation												117.89																
Excavation Backfill																												
Dam Stripping														13.94	13.94	13.94												
Filter Placement													111.49	111.49	111.49	111.49	111.49	111.49	111.49	111.49	111.49							
Shell Placement																	13.94	13.94	13.94	13.94	13.94							
Total	4.72	144.99	174.37	174.37	174.37	226.76	86.49	297.00	297.00	297.00	241.14	241.14	241.14	470.52	484.47	484.47	484.47	484.47	484.47	484.47	484.47	366.57						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40	
Phase																			
Clear & Grub																			
Well Installation																			
Wall Construction																			
Detention Pond Operations	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38									
Overlay Materials Supply																			
Excavation					109.61	109.61	109.61	109.61	109.61										
Excavation Backfill						107.15	107.15	107.15	107.15	107.15									
Dam Stripping																			
Filter Placement	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	87.78	87.78	87.78				
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67			
Total	164.22	164.22	164.22	273.83	273.83	380.98	380.98	380.98	271.37	271.37	218.99	111.84	99.45	99.45	99.45	11.67	0.00	0.00	

Table 22. Alternative 3 Total Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	3.83	3.83																										
Well Installation		49.23	49.23	49.23	49.23	49.23																						
Wall Construction			15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71																		
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29						
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83						
Excavation												67.24			67.24	67.24	67.24	67.24	67.24	67.24	67.24							
Excavation Backfill																												
Dam Stripping															5.65	5.65	5.65											
Filter Placement														45.59	45.59	45.59	45.59	45.59	45.59	45.59	45.59							
Shell Placement																		5.65	5.65	5.65	5.65	5.65						
Total	3.83	53.06	64.94	64.94	64.94	79.23	30.00	96.34	96.34	96.34	74.11	74.11	74.11	186.94	192.59	192.59	192.59	192.59	192.59	192.59	192.59	125.35						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40	
Phase																			
Clear & Grub																			
Well Installation																			
Wall Construction																			
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29									
Overlay Materials Supply																			
Excavation					61.60	61.60	61.60	61.60	61.60										
Excavation Backfill							43.33	43.33	43.33	43.33	43.33								
Dam Stripping																			
Filter Placement	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	36.47	36.47	36.47				
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88			
Total	60.30	60.30	60.30	121.90	121.90	165.23	165.23	165.23	103.63	103.63	89.35	46.01	41.35	41.35	41.35	4.88	0.00	0.00	

Table 23. Alternative 3 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Phase																							
Clear & Grub	0.92	0.92																					
Well Installation		6.71	6.71	6.71	6.71	6.71																	
Wall Construction			14.68	14.68	14.68	14.68	14.68	14.68	14.68	14.68													
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	
Excavation															8.54	8.54	8.54	8.54	8.54	8.54	8.54	8.54	
Excavation Backfill																							
Dam Stripping															0.53	0.53	0.53						
Filter Placement														13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73	
Shell Placement																		0.53	0.53	0.53	0.53	0.53	
Fugitive Emissions			37	37	37	37	37	37	37	37	0	0	0	568	568	568	568	568	568	568	568	524	
Total	0.92	7.63	58.01	58.01	58.01	61.94	55.23	74.69	74.69	74.69	22.53	22.53	22.53	613.17	613.71	613.71	613.71	613.71	613.71	613.71	613.71	560.47	

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13			
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
Phase																					
	Clear & Grub																				
	Well Installation																				
	Wall Construction																				
	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93										
	Overlay Materials Supply																				
	8.15				8.15	8.15	8.15	8.15													
						149.05	149.05	149.05	149.05	149.05	149.05										
	Dam Stripping																				
	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25							12.82	12.82	12.82
	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48							0.43	0.43	0.43
524	524	524	568	568	819	819	819	774	774	774	524	524	524								
Total	541.34	541.34	541.34	594.19	594.19	993.37	993.37	993.37	940.51	940.51	936.58	537.41	536.93	536.93	536.93	0.43	0.00	0.00			

Table 24. Alternative 3 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22							
Phase																													
Clear & Grub	0.92	0.92																											
Well Installation		6.71	6.71	6.71	6.71	6.71	6.71																						
Wall Construction			5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.08																			
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93							
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60							
Excavation												8.54				8.54	8.54	8.54	8.54	8.54	8.54	8.54							
Excavation Backfill																													
Dam Stripping															0.53	0.53	0.53												
Filter Placement														13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73								
Shell Placement																		0.53	0.53	0.53	0.53	0.53							
Fugitive Emissions			37	37	37	37	37	37	37	37	0	0	0	568	568	568	568	568	568	568	568	524							
Total	0.92	7.63	48.42	48.42	48.42	52.34	45.63	65.09	65.09	65.09	22.53	22.53	22.53	613.17	613.71	613.71	613.71	613.71	613.71	613.71	613.71	560.47							

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
	Clear & Grub																	
	Well Installation																	
	Wall Construction																	
	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93								
	Detention Pond Operations																	
	Overlay Materials Supply																	
	8.15				8.15	8.15	8.15	8.15										
						21.14	21.14	21.14	21.14	21.14	21.14							
	Excavation Backfill																	
Dam Stripping																		
	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	12.82	12.82	12.82			
	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
	524	524	524	568	568	819	819	819	774	774	774	524	524	524	524			
Total	541.34	541.34	541.34	594.19	594.19	865.45	865.45	865.45	812.60	812.60	808.67	537.41	536.93	536.93	536.93	0.43	0.00	0.00

Table 25. Alternative 3 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.30	0.30																						
Well Installation		4.87	4.87	4.87	4.87	4.87																		
Wall Construction			8.51	8.51	8.51	8.51	8.51	8.51	8.51	8.51														
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61		
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18		
Excavation												5.14				5.14	5.14	5.14	5.14	5.14	5.14	5.14		
Excavation Backfill																								
Dam Stripping															0.49	0.49	0.49							
Filter Placement														5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35		
Shell Placement																		0.49	0.49	0.49	0.49	0.49		
Fugitive Emissions			8	8	8	8	8	8	8	8	0	0	0	119	119	119	119	119	119	119	119	109		
Total	0.30	5.17	21.03	21.03	21.03	24.65	19.78	28.75	28.75	28.75	11.79	11.79	11.79	140.99	141.48	141.48	141.48	141.48	141.48	141.48	141.48	127.01		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase Clear & Grub Well Installation Wall Construction Detention Pond Operations Overlay Materials Supply Excavation Excavation Backfill Dam Stripping Filter Placement Shell Placement Fugitive Emissions																		
	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61							
	4.78				4.78	4.78	4.78	4.78										
						96.07	96.07	96.07	96.07	96.07	96.07							
	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.51	4.51	4.51			
	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
	109	109	109	119	119	171	171	171	162	162	162	109	109	109				
	Total	118.34	118.34	118.34	132.46	132.46	280.77	280.77	280.77	266.65	266.65	263.03	114.73	114.28	114.28	114.28	0.40	0.00

Table 26. Alternative 3 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87																
Wall Construction			2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05												
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation														5.14	5.14	5.14	5.14	5.14	5.14	5.14	5.14	
Excavation Backfill																						
Dam Stripping															0.49	0.49	0.49					
Filter Placement														5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Fugitive Emissions			8	8	8	8	8	8	8	8	0	0	0	119	119	119	119	119	119	119	119	109
Total	0.30	5.17	14.57	14.57	14.57	18.18	13.31	22.28	22.28	22.28	11.79	11.79	11.79	140.99	141.48	141.48	141.48	141.48	141.48	141.48	141.48	127.01

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61								
Overlay Materials Supply																		
Excavation				4.78	4.78	4.78	4.78	4.78										
Excavation Backfill						9.86	9.86	9.86	9.86	9.86	9.86							
Dam Stripping																		
Filter Placement	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.51	4.51	4.51			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	109	109	109	119	119	171	171	171	162	162	162	109	109	109	109			
Total	118.34	118.34	118.34	132.46	132.46	194.57	194.57	194.57	180.44	180.44	176.83	114.73	114.28	114.28	114.28	0.40	0.00	0.00

Table 27. Alternative 4 Total Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.55	0.55																				
Well Installation		12.19	12.19	12.19	12.19	12.19																
Wall Construction			2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.21	2.21	2.21	2.21	2.21							
Detention Pond Operations		18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20		
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
Excavation				14.24	14.24	14.24	14.24	14.24	14.24						13.41	13.41	13.41	13.41	13.41	13.41		
Excavation Backfill				4.29	4.29	4.29	4.29	4.29	4.29	4.29	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95
Dam Stripping															1.51	1.51	1.51					
Filter Placement															8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04
Shell Placement																		1.51	1.51	1.51	1.51	1.51
Total	0.55	30.94	32.79	51.33	51.33	51.33	39.14	52.39	52.39	38.16	36.57	36.57	36.57	58.02	59.53	57.32	57.32	57.32	57.32	43.91	25.71	25.71

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	7.35	6.72	6.72	6.72			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.06	8.06	8.06	1.34	0.00	0.00

Table 28. Alternative 4 Total Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	4.72	4.72																						
Well Installation		140.27	140.27	140.27	140.27	140.27																		
Wall Construction			34.11	34.11	34.11	34.11	34.11	34.11	34.11	34.11	30.38	30.38	30.38	30.38	30.38									
Detention Pond Operations		52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38				
Overlay Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76		
Excavation				126.79	126.79	126.79	126.79	126.79	126.79					117.89	117.89	117.89	117.89	117.89	1.21					
Excavation Backfill				55.47	55.47	55.47	55.47	55.47	55.47	55.47	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96	49.96		
Dam Stripping															13.94	13.94	13.94							
Filter Placement														111.49	111.49	111.49	111.49	111.49	111.49	111.49	111.49			
Shell Placement																		13.94	13.94	13.94	13.94	13.94		
Total	4.72	197.37	226.76	409.01	409.01	409.01	268.74	479.26	479.26	352.47	321.49	321.49	321.49	550.87	564.81	534.43	534.43	534.43	417.74	416.54	364.16	364.16		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	99.09	87.78	87.78	87.78			
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67		
Total	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	99.45	99.45	99.45	11.67	0.00	0.00

Table 29. Alternative 4 Total Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	3.83	3.83																						
Well Installation		49.23	49.23	49.23	49.23	49.23																		
Wall Construction			15.71	15.71	15.71	15.71	15.71	15.71	15.71	15.71	14.19	14.19	14.19	14.19	14.19									
Detention Pond Operations		14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29				
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83		
Excavation				73.46	73.46	73.46	73.46	73.46	73.46					67.24	67.24	67.24	67.24	67.24	9.40					
Excavation Backfill				29.02	29.02	29.02	29.02	29.02	29.02	29.02	26.05	26.05	26.05	26.05	26.05	26.05	26.05	26.05	26.05	26.05	26.05	26.05		
Dam Stripping															5.65	5.65	5.65							
Filter Placement														45.59	45.59	45.59	45.59	45.59	45.59	45.59	45.59	45.59	45.59	
Shell Placement																		5.65	5.65	5.65	5.65	5.65	5.65	
Total	3.83	67.35	79.23	181.71	181.71	181.71	132.48	198.82	198.82	125.36	114.36	114.36	114.36	227.19	232.84	218.64	218.64	218.64	160.80	151.40	137.11	137.11		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	40.78	36.47	36.47	36.47			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	41.35	41.35	41.35	4.88	0.00	0.00

Table 30. Alternative 4 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.92	0.92																						
Well Installation		6.71	6.71	6.71	6.71	6.71																		
Wall Construction			13.90	13.90	13.90	13.90	13.90	13.90	13.90	13.90	13.75	13.75	13.75	13.75	13.75									
Detention Pond Operations		3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93				
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation				8.94	8.94	8.94	8.94	8.94	8.94						8.54	8.54	8.54	8.54	3.70					
Excavation Backfill				40.49	40.49	40.49	40.49	40.49	40.49	40.49	40.27	40.27	40.27	40.27	40.27	40.27	40.27	40.27	40.27	40.27	40.27	40.27		
Dam Stripping															0.53	0.53	0.53							
Filter Placement															13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73		
Shell Placement																		0.53	0.53	0.53	0.53	0.53		
Fugitive Emissions			29	165	165	165	165	165	165	165	165	165	165	688	688	659	659	659	659	659	659	659		
Total	0.92	11.56	54.02	238.53	238.53	238.53	231.82	251.28	251.28	242.34	241.11	241.11	241.11	786.96	787.49	744.26	744.26	744.26	739.42	735.72	731.79	731.79		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	12.82	12.82	12.82			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	524	524	524	524	524	524	524	524	524	524	524	524	524	524	524			
Total	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	536.83	536.83	536.83	0.43	0.00	0.00

Table 31. Alternative 4 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.92	0.92																						
Well Installation		6.71	6.71	6.71	6.71	6.71																		
Wall Construction			5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	4.90	4.90	4.90	4.90	4.90									
Detention Pond Operations		3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93				
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation				8.94	8.94	8.94	8.94	8.94	8.94							8.54	8.54	8.54	8.54	3.70				
Excavation Backfill				9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44		
Dam Stripping															0.53	0.53	0.53							
Filter Placement															13.73	13.73	13.73	13.73	13.73	13.73	13.73	13.73		
Shell Placement																		0.53	0.53	0.53	0.53	0.53		
Fugitive Emissions			29	165	165	165	165	165	165	165	165	165	165	688	688	659	659	659	659	659	659	659		
Total	0.92	11.56	45.17	198.84	198.84	198.84	192.13	211.59	211.59	202.64	201.42	201.42	201.42	747.27	747.80	713.42	713.42	713.42	708.59	704.88	700.96	700.96		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	12.82	12.82	12.82			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Fugitive Emissions	524	524	524	524	524	524	524	524	524	524	524	524	524	524	524			
Total	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	536.83	536.83	536.83	0.43	0.00	0.00

Table 32. Alternative 4 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.30	0.30																				
Well Installation		4.87	4.87	4.87	4.87	4.87																
Wall Construction			7.99	7.99	7.99	7.99	7.99	7.99	7.99	7.99	7.85	7.85	7.85	7.85	7.85							
Detention Pond Operations		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61		
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18
Excavation				5.51	5.51	5.51	5.51	5.51	5.51						5.14	5.14	5.14	5.14	0.69			
Excavation Backfill				24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.58	24.58	24.58	24.58	24.58	24.58	24.58	24.58	24.58	24.58	24.58	24.58
Dam Stripping															0.49	0.49	0.49					
Filter Placement															5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Fugitive Emissions			6	34	34	34	34	34	34	34	34	34	34	144	144	138	138	138	138	138	138	138
Total	0.30	8.79	22.63	81.14	81.14	81.14	76.27	85.24	85.24	79.73	78.60	78.60	78.60	198.43	198.92	184.91	184.91	184.91	180.46	179.77	176.16	176.16

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.51	4.51	4.51			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Fugitive Emissions	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109			
Total	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.25	114.25	114.25	0.40	0.00	0.00

Table 33. Alternative 4 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.30	0.30																						
Well Installation		4.87	4.87	4.87	4.87	4.87																		
Wall Construction			2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	1.89	1.89	1.89	1.89	1.89									
Detention Pond Operations		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61				
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18		
Excavation				5.51	5.51	5.51	5.51	5.51	5.51					5.14	5.14	5.14	5.14	5.14	0.69					
Excavation Backfill				4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80		
Dam Stripping															0.49	0.49	0.49							
Filter Placement														5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35		
Shell Placement																		0.49	0.49	0.49	0.49	0.49		
Fugitive Emissions			6	34	34	34	34	34	34	34	34	34	34	144	144	138	138	138	138	138	138	138		
Total	0.30	8.79	16.67	54.39	54.39	54.39	49.52	58.49	58.49	52.98	51.85	51.85	51.85	171.68	172.17	164.13	164.13	164.13	159.68	158.99	155.38	155.38		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.51	4.51	4.51			
Well Installation	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Wall Construction	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109			
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement																		
Shell Placement																		
Fugitive Emissions																		
Total	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.25	114.25	114.25	0.40	0.00	0.00

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Source																						
Construction Equipment	0.48	12.49	12.01	12.01	12.01	30.21	30.21	30.21	44.55	32.54	31.74	31.74	31.74	31.74	33.25	34.76	36.00	36.00	22.46	22.46	22.46	22.46
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	17.70	17.70	17.70	17.70	17.70	17.70
Employee Commuting	0.07	0.24	0.17	0.17	0.17	0.17	0.17	0.17	0.60	0.43	0.36	0.36	0.36	0.36	0.36	0.66	0.96	0.96	0.60	0.60	0.60	0.60
Total	0.55	12.73	12.18	12.18	12.18	30.38	30.38	43.64	58.40	46.23	44.32	44.32	44.32	44.32	45.82	47.63	54.66	54.66	40.76	40.76	40.76	40.76

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	22.21	22.21	22.21	22.21	22.21	22.21	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34
Haul Trucks	5.00	5.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00
Total	27.71	27.71	27.71	27.71	27.71	27.71	3.08	3.08	3.08	3.08	3.08	3.08	2.88	2.88	2.88	1.34

Table 35. Alternative 1 Total Daily Unmitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	4.45	143.95	139.50	139.50	139.50	191.88	191.88	191.88	321.66	182.16	173.09	173.09	173.09	173.09	187.03	200.97	212.57	212.57	91.86	91.86	91.86	91.86
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	273.54	273.54	273.54	273.54	273.54	273.54
Employee Commuting	0.27	0.93	0.65	0.65	0.65	0.65	0.65	0.65	2.29	1.63	1.45	1.45	1.45	1.45	1.45	2.65	3.86	3.86	2.41	2.41	2.41	2.41
Total	4.72	144.88	140.16	140.16	140.16	192.54	192.54	403.05	534.46	394.30	363.29	363.29	363.29	363.29	377.23	392.38	489.97	489.97	367.81	367.81	367.81	367.81

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	88.51	88.51	88.51	88.51	88.51	88.51	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67
Haul Trucks	75.04	75.04	75.04	75.04	75.04	75.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	165.69	165.69	165.69	165.69	165.69	165.69	26.56	26.56	26.56	26.56	26.56	26.56	24.28	24.28	24.28	11.67

Table 36. Alternative 1 Total Daily Mitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Source																						
Construction Equipment	3.56	115.16	111.60	111.60	111.60	153.51	153.51	153.51	257.33	145.73	138.47	138.47	138.47	138.47	149.62	160.78	170.05	170.05	73.49	73.49	73.49	73.49
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	273.54	273.54	273.54	273.54	273.54	273.54
Employee Commuting	0.27	0.93	0.65	0.65	0.65	0.65	0.65	0.65	2.29	1.63	1.45	1.45	1.45	1.45	1.45	2.65	3.86	3.86	2.41	2.41	2.41	2.41
Total	3.83	116.09	112.26	112.26	112.26	154.16	154.16	364.67	470.13	357.87	328.67	328.67	328.67	328.67	339.83	352.19	447.45	447.45	349.44	349.44	349.44	349.44

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	70.81	70.81	70.81	70.81	70.81	70.81	20.40	20.40	20.40	20.40	20.40	20.40	18.67	18.67	18.67	9.33
Haul Trucks	75.04	75.04	75.04	75.04	75.04	75.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	147.98	147.98	147.98	147.98	147.98	147.98	21.46	21.46	21.46	21.46	21.46	21.46	19.62	19.62	19.62	9.33

Table 37. Alternative 1 Total Daily CO Emissions by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Source																						
Construction Equipment	1.70	45.77	44.08	44.08	44.08	58.36	58.36	58.36	122.44	78.37	73.34	73.34	73.34	73.34	78.99	84.64	89.51	89.51	30.46	30.46	30.46	30.46
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	86.70	86.70	86.70	86.70	86.70	86.70
Employee Commuting	2.13	7.26	5.12	5.12	5.12	5.12	5.12	5.12	17.93	12.81	11.28	11.28	11.28	11.28	11.28	20.68	30.08	30.08	18.80	18.80	18.80	18.80
Total	3.83	53.03	49.20	49.20	49.20	63.48	63.48	129.82	206.71	157.51	144.44	144.44	144.44	144.44	150.09	165.15	206.29	206.29	135.96	135.96	135.96	135.96

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	29.27	29.27	29.27	29.27	29.27	29.27	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88
Haul Trucks	23.98	23.98	23.98	23.98	23.98	23.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	16.59	16.59	16.59	16.59	16.59	16.59	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00
Total	69.84	69.84	69.84	69.84	69.84	69.84	18.77	18.77	18.77	18.77	18.77	18.77	17.11	17.11	17.11	4.88

Table 38. Alternative 1 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Construction Equipment	0.18	5.11	4.93	4.93	4.93	8.86	8.86	8.86	14.28	9.35	8.93	8.93	8.93	8.93	9.46	10.00	10.44	10.44	5.45	5.45	5.45	5.45
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	26.95	26.95	26.95	26.95	26.95	26.95
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.06	74.06	74.06	74.06	74.06	74.06
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	359.40	359.40	359.40	359.40	359.40	359.40	359.40	931.23	1292.75	1292.75	933.35	933.35	933.35	933.35
Employee Commuting	0.74	2.52	1.78	1.78	1.78	1.78	1.78	1.78	6.22	4.44	4.44	4.44	4.44	4.44	4.44	8.14	11.84	11.84	7.40	7.40	7.40	7.40
Total	0.92	7.63	6.71	6.71	6.71	10.64	10.64	30.10	399.36	392.65	391.37	391.37	391.37	391.37	391.90	967.97	1416.05	1416.05	1047.21	1047.21	1047.21	1047.21

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Phase																
Construction Equipment	5.30	5.30	5.30	5.30	5.30	5.30	0.96	0.96	0.96	0.96	0.96	0.96	0.87	0.87	0.87	0.43
Haul Trucks	7.98	7.98	7.98	7.98	7.98	7.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Batch	74.06	74.06	74.06	74.06	74.06	74.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	933.35	933.35	933.35	933.35	933.35	933.35	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	0.00
Employee Commuting	7.40	7.40	7.40	7.40	7.40	7.40	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00
Total	1028.08	1028.08	1028.08	1028.08	1028.08	1028.08	576.49	576.49	576.49	576.49	576.49	576.49	576.40	576.40	576.40	0.43

Table 39. Alternative 1 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Construction Equipment	0.10	2.81	2.71	2.71	2.71	4.87	4.87	4.87	7.85	5.14	4.91	4.91	4.91	4.91	5.20	5.50	5.74	5.74	2.99	2.99	2.99	2.99
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	26.95	26.95	26.95	26.95	26.95	26.95
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71	3.71	3.71	3.71	3.71	3.71
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	179.70	179.70	179.70	179.70	179.70	179.70	179.70	465.62	646.38	646.38	466.68	466.68	466.68	466.68
Employee Commuting	0.74	2.52	1.78	1.78	1.78	1.78	1.78	1.78	6.22	4.44	4.44	4.44	4.44	4.44	4.44	8.14	11.84	11.84	7.40	7.40	7.40	7.40
Total	0.84	5.33	4.49	4.49	4.49	6.65	6.65	26.11	213.23	208.74	207.65	207.65	207.65	207.65	207.94	497.85	694.62	694.62	507.73	507.73	507.73	507.73

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Phase																
Construction Equipment	2.91	2.91	2.91	2.91	2.91	2.91	0.53	0.53	0.53	0.53	0.53	0.53	0.48	0.48	0.48	0.24
Haul Trucks	7.98	7.98	7.98	7.98	7.98	7.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Batch	3.71	3.71	3.71	3.71	3.71	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	466.68	466.68	466.68	466.68	466.68	466.68	285.92	285.92	285.92	285.92	285.92	285.92	285.92	285.92	285.92	0.00
Employee Commuting	7.40	7.40	7.40	7.40	7.40	7.40	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00
Total	488.67	488.67	488.67	488.67	488.67	488.67	290.14	290.14	290.14	290.14	290.14	290.14	290.09	290.09	290.09	0.24

Table 40. Alternative 1 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Construction Equipment	0.16	4.70	4.54	4.54	4.54	8.15	8.15	8.15	13.14	8.60	8.21	8.21	8.21	8.21	8.70	9.20	9.61	9.61	5.01	5.01	5.01	5.01
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	11.85	11.85	11.85	11.85	11.85	11.85
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.91	49.91	49.91	49.91	49.91	49.91
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.06	75.06	75.06	75.06	75.06	75.06	75.06	194.48	269.98	269.98	194.92	194.92	194.92	194.92
Employee Commuting	0.14	0.47	0.33	0.33	0.33	0.33	0.33	0.33	1.15	0.82	0.82	0.82	0.82	0.82	0.82	1.51	2.20	2.20	1.37	1.37	1.37	1.37
Total	0.30	5.17	4.87	4.87	4.87	8.48	8.48	17.45	98.32	93.45	92.27	92.27	92.27	92.27	92.77	213.37	343.54	343.55	263.06	263.06	263.06	263.06

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Phase																
Construction Equipment	4.87	4.87	4.87	4.87	4.87	4.87	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.40
Haul Trucks	3.33	3.33	3.33	3.33	3.33	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Batch	49.91	49.91	49.91	49.91	49.91	49.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	194.92	194.92	194.92	194.92	194.92	194.92	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	0.00
Employee Commuting	1.37	1.37	1.37	1.37	1.37	1.37	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00
Total	254.40	254.40	254.40	254.40	254.40	254.40	120.99	120.99	120.99	120.99	120.99	120.99	120.90	120.90	120.90	0.40

Table 41. Alternative 1 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Construction Equipment	0.09	3.76	3.63	3.63	3.63	6.52	6.52	6.52	10.51	6.88	6.57	6.57	6.57	6.57	6.96	7.36	7.69	7.69	4.01	4.01	4.01	4.01
Haul Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	11.85	11.85	11.85	11.85	11.85	11.85
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	2.50	2.50	2.50	2.50	2.50
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.53	37.53	37.53	37.53	37.53	37.53	37.53	97.24	134.99	134.99	97.46	97.46	97.46	97.46
Employee Commuting	0.14	0.47	0.33	0.33	0.33	0.33	0.33	0.33	1.15	0.82	0.82	0.82	0.82	0.82	0.82	1.51	2.20	2.20	1.37	1.37	1.37	1.37
Total	0.23	4.23	3.96	3.96	3.96	6.85	6.85	15.82	58.16	54.20	53.10	53.10	53.10	53.10	53.50	114.29	159.22	159.22	117.19	117.19	117.19	117.19

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Phase																
Construction Equipment	3.90	3.90	3.90	3.90	3.90	3.90	0.71	0.71	0.71	0.71	0.71	0.71	0.64	0.64	0.64	0.32
Haul Trucks	3.33	3.33	3.33	3.33	3.33	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Batch	2.50	2.50	2.50	2.50	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	97.46	97.46	97.46	97.46	97.46	97.46	59.71	59.71	59.71	59.71	59.71	59.71	59.71	59.71	59.71	0.00
Employee Commuting	1.37	1.37	1.37	1.37	1.37	1.37	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00
Total	108.56	108.56	108.56	108.56	108.56	108.56	61.10	61.10	61.10	61.10	61.10	61.10	61.03	61.03	61.03	0.32

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	0.48	12.50	12.47	12.47	12.47	30.67	30.22	18.20	32.54	32.54	31.74	31.74	31.74	33.25	34.76	34.76	36.00	36.00	22.46	22.46	22.46	22.46
Haul Trucks	0.00	0.00	1.78	1.78	1.78	1.78	0.00	13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	17.20	17.20	17.20	17.20	17.20	17.20
Employee Commuting	0.07	0.24	0.34	0.34	0.34	0.34	0.17	0.00	0.43	0.43	0.36	0.36	0.36	0.66	0.66	0.66	0.96	0.96	0.60	0.60	0.60	0.60
Total	0.55	12.74	14.59	14.59	14.59	32.79	30.39	31.46	46.23	46.23	44.32	44.32	44.32	46.12	47.63	47.63	54.16	54.16	40.26	40.26	40.26	40.26

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	22.21	22.21	22.21	22.21	22.21	22.21	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34
Haul Trucks	4.55	4.55	4.55	4.55	4.55	4.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00
Total	27.26	27.26	27.26	27.26	27.26	27.26	3.08	3.08	3.08	3.08	3.08	3.08	2.88	2.88	2.88	1.34

Table 43. Alternative 2 Total Daily Unmitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Source																						
Construction Equipment	4.45	144.06	144.77	144.77	144.77	197.16	192.00	52.38	182.16	182.16	173.09	173.09	173.09	187.03	200.97	200.97	212.57	212.57	91.86	91.86	91.86	91.86
Haul Trucks	0.00	0.00	28.29	28.29	28.29	28.29	0.00	210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	265.83	265.83	265.83	265.83	265.83	265.83
Employee Commuting	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.00	1.63	1.63	1.45	1.45	1.45	2.65	2.65	2.65	3.86	3.86	2.41	2.41	2.41	2.41
Total	4.72	144.99	174.37	174.37	174.37	226.76	192.65	262.89	394.30	394.30	363.29	363.29	363.29	378.44	392.38	392.38	482.26	482.26	360.11	360.11	360.11	360.11

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	88.51	88.51	88.51	88.51	88.51	88.51	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67
Haul Trucks	68.22	68.22	68.22	68.22	68.22	68.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	158.86	158.86	158.86	158.86	158.86	158.86	26.56	26.56	26.56	26.56	26.56	26.56	24.28	24.28	24.28	11.67

Table 44. Alternative 2 Total Daily Mitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	3.56	115.25	115.82	115.82	115.82	157.72	153.60	41.90	145.73	145.73	138.47	138.47	138.47	149.62	160.78	160.78	170.05	170.05	73.49	73.49	73.49	73.49
Haul Trucks	0.00	0.00	28.29	28.29	28.29	28.29	0.00	210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	265.83	265.83	265.83	265.83	265.83	265.83
Employee Commuting	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.00	1.63	1.63	1.45	1.45	1.45	2.65	2.65	2.65	3.86	3.86	2.41	2.41	2.41	2.41
Total	3.83	116.18	145.42	145.42	145.42	187.32	154.25	252.42	357.87	357.87	328.67	328.67	328.67	341.03	352.19	352.19	439.75	439.75	341.73	341.73	341.73	341.73

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	70.81	70.81	70.81	70.81	70.81	70.81	20.40	20.40	20.40	20.40	20.40	20.40	18.67	18.67	18.67	9.33
Haul Trucks	68.22	68.22	68.22	68.22	68.22	68.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	141.16	141.16	141.16	141.16	141.16	141.16	21.46	21.46	21.46	21.46	21.46	21.46	19.62	19.62	19.62	9.33

Table 45. Alternative 2 Total Daily CO Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	1.70	45.80	45.78	45.78	45.78	60.07	58.39	14.29	78.37	78.37	73.34	73.34	73.34	78.99	84.64	84.64	89.51	89.51	30.46	30.46	30.46	30.46
Haul Trucks	0.00	0.00	8.92	8.92	8.92	8.92	0.00	66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	84.26	84.26	84.26	84.26	84.26	84.26
Employee Commuting	2.13	7.26	10.25	10.25	10.25	10.25	5.12	0.00	12.81	12.81	11.28	11.28	11.28	20.68	20.68	20.68	30.08	30.08	18.80	18.80	18.80	18.80
Total	3.83	53.06	64.94	64.94	64.94	79.23	63.52	80.62	157.51	157.51	144.44	144.44	144.44	159.49	165.15	165.15	203.85	203.85	133.51	133.51	133.51	133.51

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	29.27	29.27	29.27	29.27	29.27	29.27	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88
Haul Trucks	21.80	21.80	21.80	21.80	21.80	21.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employee Commuting	16.59	16.59	16.59	16.59	16.59	16.59	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00
Total	67.66	67.66	67.66	67.66	67.66	67.66	18.77	18.77	18.77	18.77	18.77	18.77	17.11	17.11	17.11	4.88

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	0.48	12.50	12.47	12.47	12.47	30.67	18.65	18.65	18.65	18.65	18.20	18.20	18.20	32.82	34.33	34.33	34.33	34.33	34.33	34.33	34.33	21.21
Haul Trucks	0.00	0.00	1.78	1.78	1.78	1.78	1.78	15.04	15.04	15.04	12.21	12.21	12.21	18.45	18.45	18.45	18.45	18.45	18.45	18.45	18.45	18.45
Employee Commuting	0.07	0.24	0.34	0.34	0.34	0.34	0.17	0.17	0.17	0.17	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.30
Total	0.55	12.74	14.59	14.59	14.59	32.79	20.61	33.86	33.86	33.86	30.42	30.42	30.42	51.87	53.37	53.37	53.37	53.37	53.37	53.37	53.37	39.96

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	21.04	21.04	21.04	33.42	33.42	34.42	34.42	34.42	22.03	22.03	3.83	2.83	2.67	2.67	2.67	1.34
Haul Trucks	5.69	5.69	5.69	5.69	5.69	12.19	12.19	12.19	12.19	12.19	12.19	5.69	5.18	5.18	5.18	0.00
Employee Commuting	0.25	0.25	0.25	0.50	0.50	0.75	0.75	0.75	0.50	0.50	0.50	0.25	0.21	0.21	0.21	0.00
Total	26.97	26.97	26.97	39.61	39.61	47.35	47.35	47.35	34.71	34.71	16.51	8.77	8.06	8.06	8.06	1.34

Table 51. Alternative 3 Total Daily Unmitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	4.45	144.06	144.77	144.77	144.77	197.16	57.54	57.54	57.54	57.54	52.38	52.38	52.38	183.01	196.95	196.95	196.95	196.95	196.95	196.95	196.95	80.26
Haul Trucks	0.00	0.00	28.29	28.29	28.29	28.29	28.29	238.81	238.81	238.81	188.76	188.76	188.76	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10
Employee Commuting	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.65	0.65	0.65	0.00	0.00	0.00	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	1.21
Total	4.72	144.99	174.37	174.37	174.37	226.76	86.49	297.00	297.00	297.00	241.14	241.14	241.14	470.52	484.47	484.47	484.47	484.47	484.47	484.47	484.47	366.57

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	77.88	77.88	77.88	186.42	186.42	195.05	195.05	195.05	86.50	86.50	34.12	25.50	23.34	23.34	23.34	11.67
Haul Trucks	85.28	85.28	85.28	85.28	85.28	182.73	182.73	182.73	182.73	182.73	182.73	85.28	75.17	75.17	75.17	0.00
Employee Commuting	1.07	1.07	1.07	2.13	2.13	3.20	3.20	3.20	2.13	2.13	2.13	1.07	0.95	0.95	0.95	0.00
Total	164.22	164.22	164.22	273.83	273.83	380.98	380.98	380.98	271.37	271.37	218.99	111.84	99.45	99.45	99.45	11.67

Table 52. Alternative 3 Total Daily Mitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	3.56	115.25	115.82	115.82	115.82	157.72	46.03	46.03	46.03	46.03	41.90	41.90	41.90	146.41	157.56	157.56	157.56	157.56	157.56	157.56	157.56	64.21
Haul Trucks	0.00	0.00	28.29	28.29	28.29	28.29	28.29	238.81	238.81	238.81	188.76	188.76	188.76	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10
Employee Commuting	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.65	0.65	0.65	0.00	0.00	0.00	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	1.21
Total	3.83	116.18	145.42	145.42	145.42	187.32	74.98	285.49	285.49	285.49	230.66	230.66	230.66	433.92	445.08	445.08	445.08	445.08	445.08	445.08	445.08	350.52

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Source																
Construction Equipment	62.30	62.30	62.30	149.14	149.14	156.04	156.04	156.04	69.20	69.20	27.30	20.40	18.67	18.67	18.67	9.33
Haul Trucks	85.28	85.28	85.28	85.28	85.28	182.73	182.73	182.73	182.73	182.73	182.73	85.28	75.17	75.17	75.17	0.00
Employee Commuting	1.07	1.07	1.07	2.13	2.13	3.20	3.20	3.20	2.13	2.13	2.13	1.07	0.95	0.95	0.95	0.00
Total	148.64	148.64	148.64	236.55	236.55	341.97	341.97	341.97	254.07	254.07	212.17	106.74	94.78	94.78	94.78	9.33

Table 53. Alternative 3 Total Daily Mitigated CO Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	1.70	45.80	45.78	45.78	45.78	60.07	15.96	15.96	15.96	15.96	14.29	14.29	14.29	77.78	83.43	83.43	83.43	83.43	83.43	83.43	83.43	25.59
Haul Trucks	0.00	0.00	8.92	8.92	8.92	8.92	8.92	75.25	75.25	75.25	59.83	59.83	59.83	90.36	90.36	90.36	90.36	90.36	90.36	90.36	90.36	90.36
Employee Commuting	2.13	7.26	10.25	10.25	10.25	10.25	5.12	5.12	5.12	5.12	0.00	0.00	0.00	18.80	18.80	18.80	18.80	18.80	18.80	18.80	18.80	9.40
Total	3.83	53.06	64.94	64.94	64.94	79.23	30.00	96.34	96.34	96.34	74.11	74.11	74.11	186.94	192.59	192.59	192.59	192.59	192.59	192.59	192.59	125.35

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Source																
Construction Equipment	24.76	24.76	24.76	78.07	78.07	81.96	81.96	81.96	28.65	28.65	14.37	14.37	9.76	9.76	9.76	4.88
Haul Trucks	27.25	27.25	27.25	27.25	27.25	58.39	58.39	58.39	58.39	58.39	58.39	27.25	24.24	24.24	24.24	0.00
Employee Commuting	8.29	8.29	8.29	16.59	16.59	24.88	24.88	24.88	16.59	16.59	16.59	8.29	7.35	7.35	7.35	0.00
Total	60.30	60.30	60.30	121.90	121.90	165.23	165.23	165.23	103.63	103.63	89.35	49.91	41.35	41.35	41.35	4.88

Table 54. Alternative 3 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.18	5.11	5.12	5.12	5.12	9.05	4.11	4.11	4.11	4.11	3.93	3.93	3.93	9.30	9.84	9.84	9.84	9.84	9.84	9.84	9.84	5.00
Haul Trucks	0.00	0.00	2.62	2.62	2.62	2.62	2.62	22.08	22.08	22.08	18.60	18.60	18.60	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09
Concrete Batch	0.00	0.00	10.10	10.10	10.10	10.10	10.10	10.10	10.10	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	0.00	0.00	36.62	36.62	36.62	36.62	36.62	36.62	36.62	36.62	0.00	0.00	0.00	568.38	568.38	568.38	568.38	568.38	568.38	568.38	568.38	523.68
Employee Commuting	0.74	2.52	3.55	3.55	3.55	3.55	1.78	1.78	1.78	1.78	0.00	0.00	0.00	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40	3.70
Total	0.92	7.63	58.01	58.01	58.01	61.94	55.23	74.69	74.69	74.69	22.53	22.53	22.53	613.17	613.71	613.71	613.71	613.71	613.71	613.71	613.71	560.47

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	4.89	4.89	4.89	9.35	9.35	9.69	9.69	9.69	5.23	5.23	1.30	1.30	0.87	0.87	0.87	0.43
Haul Trucks	9.07	9.07	9.07	9.07	9.07	19.43	19.43	19.43	19.43	19.43	19.43	9.07	8.68	8.68	8.68	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	134.65	134.65	134.65	134.65	134.65	134.65	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	523.68	523.68	523.68	568.38	568.38	818.50	818.50	818.50	773.80	773.80	773.80	523.68	523.68	523.68	523.68	0.00
Employee Commuting	3.70	3.70	3.70	7.40	7.40	11.10	11.10	11.10	7.40	7.40	7.40	3.70	3.70	3.70	3.70	0.00
Total	541.34	541.34	541.34	594.19	594.19	993.37	993.37	993.37	940.51	940.51	936.58	537.75	536.93	536.93	536.93	0.43

Table 55. Alternative 3 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.10	2.81	2.82	2.82	2.82	4.98	2.26	2.26	2.26	2.26	2.16	2.16	2.16	5.12	5.41	5.41	5.41	5.41	5.41	5.41	5.41	2.75
Haul Trucks	0.00	0.00	2.62	2.62	2.62	2.62	2.62	22.08	22.08	22.08	18.60	18.60	18.60	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09
Concrete Batch	0.00	0.00	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	0.00	0.00	18.31	18.31	18.31	18.31	18.31	18.31	18.31	18.31	0.00	0.00	0.00	284.19	284.19	284.19	284.19	284.19	284.19	284.19	284.19	261.84
Employee Commuting	0.74	2.52	3.55	3.55	3.55	3.55	1.78	1.78	1.78	1.78	0.00	0.00	0.00	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40	3.70
Total	0.84	5.33	27.80	27.80	27.80	29.96	25.47	44.93	44.93	44.93	20.76	20.76	20.76	324.80	325.09	325.09	325.09	325.09	325.09	325.09	325.09	296.38

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	2.69	2.69	2.69	5.14	5.14	5.33	5.33	5.33	2.88	2.88	0.72	0.72	0.48	0.48	0.48	0.24
Haul Trucks	9.07	9.07	9.07	9.07	9.07	19.43	19.43	19.43	19.43	19.43	19.43	9.07	8.68	8.68	8.68	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	6.74	6.74	6.74	6.74	6.74	6.74	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	261.84	261.84	261.84	284.19	284.19	409.25	409.25	409.25	386.90	386.90	386.90	261.84	261.84	261.84	261.84	0.00
Employee Commuting	3.70	3.70	3.70	7.40	7.40	11.10	11.10	11.10	7.40	7.40	7.40	3.70	3.70	3.70	3.70	0.00
Total	277.30	277.30	277.30	305.80	305.80	451.84	451.84	451.84	423.34	423.34	421.18	275.32	274.70	274.70	274.70	0.24

Table 58. Alternative 4 Total Daily ROG Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	0.48	30.70	30.67	45.88	45.88	45.88	33.86	33.86	33.86	19.98	19.87	19.87	19.87	34.49	35.99	35.57	35.57	35.57	35.57	22.46	4.26	4.26
Haul Trucks	0.00	0.00	1.78	4.39	4.39	4.39	4.39	17.65	17.65	17.65	16.26	16.26	16.26	22.49	22.49	20.85	20.85	20.85	20.85	20.85	20.85	20.85
Employee Commuting	0.07	0.24	0.34	1.06	1.06	1.06	0.89	0.89	0.89	0.53	0.44	0.44	0.44	1.04	1.04	0.90	0.90	0.90	0.90	0.60	0.60	0.60
Total	0.55	30.94	32.79	51.33	51.33	51.33	39.14	52.39	52.39	38.16	36.57	36.57	36.57	58.02	59.53	57.32	57.32	57.32	57.32	43.91	25.71	25.71

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34
Haul Trucks	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.18	5.18	5.18	0.00
Employee Commuting	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00
Total	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.77	8.06	8.06	8.06	1.34

Table 59. Alternative 4 Total Daily Unmitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	4.45	196.44	197.16	335.24	335.24	335.24	195.63	195.63	195.63	70.20	68.41	68.41	68.41	199.04	212.99	208.55	208.55	208.55	91.86	91.86	39.48	39.48
Haul Trucks	0.00	0.00	28.29	69.74	69.74	69.74	69.74	280.25	280.25	280.25	251.29	251.29	251.29	347.63	347.63	322.26	322.26	322.26	322.26	322.26	322.26	322.26
Employee Commuting	0.27	0.93	1.31	4.03	4.03	4.03	3.38	3.38	3.38	2.02	1.78	1.78	1.78	4.20	4.20	3.62	3.62	3.62	3.62	2.41	2.41	2.41
Total	4.72	197.37	226.76	409.01	409.01	409.01	268.74	479.26	479.26	352.47	321.49	321.49	321.49	550.87	564.81	534.43	534.43	534.43	417.74	416.54	364.16	364.16

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38
Source																
Construction Equipment	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67
Haul Trucks	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	75.17	75.17	75.17	0.00
Employee Commuting	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	111.84	99.45	99.45	99.45	11.67

Table 60. Alternative 4 Total Daily Mitigated NOx Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	3.56	157.15	157.72	268.19	268.19	268.19	156.50	156.50	156.50	56.16	54.73	54.73	54.73	159.23	170.39	166.84	166.84	166.84	73.49	73.49	31.58	31.58
Haul Trucks	0.00	0.00	28.29	69.74	69.74	69.74	69.74	280.25	280.25	280.25	251.29	251.29	251.29	347.63	347.63	322.26	322.26	322.26	322.26	322.26	322.26	322.26
Employee Commuting	0.27	0.93	1.31	4.03	4.03	4.03	3.38	3.38	3.38	2.02	1.78	1.78	1.78	4.20	4.20	3.62	3.62	3.62	3.62	2.41	2.41	2.41
Total	3.83	158.08	187.32	341.96	341.96	341.96	229.62	440.13	440.13	338.43	307.80	307.80	307.80	511.06	522.22	492.72	492.72	492.72	399.37	398.16	356.26	356.26

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Source																
Construction Equipment	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	18.67	18.67	18.67	9.33
Haul Trucks	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	75.17	75.17	75.17	0.00
Employee Commuting	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00
Total	106.74	106.74	106.74	106.74	106.74	106.74	106.74	106.74	106.74	106.74	106.74	106.74	94.78	94.78	94.78	9.33

Table 61. Alternative 4 Total Daily CO Emissions by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Source																						
Construction Equipment	1.70	60.09	60.07	128.15	128.15	128.15	84.04	84.04	84.04	21.25	20.80	20.80	20.80	84.29	89.94	88.30	88.30	88.30	30.46	30.46	16.17	16.17
Haul Trucks	0.00	0.00	8.92	21.98	21.98	21.98	21.98	88.31	88.31	88.31	79.65	79.65	79.65	110.18	110.18	102.14	102.14	102.14	102.14	102.14	102.14	102.14
Employee Commuting	2.13	7.26	10.25	31.59	31.59	31.59	26.47	26.47	26.47	15.80	13.91	13.91	13.91	32.71	32.71	28.20	28.20	28.20	28.20	18.80	18.80	18.80
Total	3.83	67.35	79.23	181.71	181.71	181.71	132.48	198.82	198.82	125.36	114.36	114.36	114.36	227.19	232.84	218.64	218.64	218.64	160.80	151.40	137.11	137.11

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Source																
Construction Equipment	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88
Haul Trucks	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	24.24	24.24	24.24	0.00
Employee Commuting	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00
Total	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	46.01	41.35	41.35	41.35	4.88

Table 62. Alternative 4 Total Daily PM10 Emissions (Uncontrolled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.18	9.04	9.05	14.79	14.79	14.79	9.85	9.85	9.85	4.61	4.53	4.53	4.53	9.90	10.44	10.28	10.28	10.28	5.45	5.45	1.52	1.52
Haul Trucks	0.00	0.00	2.62	6.45	6.45	6.45	6.45	25.91	25.91	25.91	24.76	24.76	24.76	34.25	34.25	31.75	31.75	31.75	31.75	31.75	31.75	31.75
Concrete Batch	0.00	0.00	9.32	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	32.46	32.46	32.46	32.46	32.46	32.46	32.46
Fugitive Dust	0.00	0.00	29.48	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	688.14	688.14	658.66	658.66	658.66	658.66	658.66	658.66	658.66
Employee Commuting	0.74	2.52	3.55	10.96	10.96	10.96	9.18	9.18	9.18	5.48	5.48	5.48	5.48	12.88	12.88	11.10	11.10	11.10	11.10	7.40	7.40	7.40
Total	0.92	11.56	54.02	238.53	238.53	238.53	231.82	251.28	251.28	242.34	241.11	241.11	241.11	786.96	787.49	744.26	744.26	744.26	739.42	735.72	731.79	731.79

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.87	0.87	0.87	0.43
Haul Trucks	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	8.68	8.68	8.68	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	0.00
Employee Commuting	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00
Total	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	537.31	536.83	536.83	536.83	0.43

Table 63. Alternative 4 Total Daily PM10 Emissions (Controlled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.10	4.97	4.98	8.13	8.13	8.13	5.42	5.42	5.42	2.53	2.49	2.49	2.49	5.45	5.74	5.66	5.66	5.66	2.99	2.99	0.83	0.83
Haul Trucks	0.00	0.00	2.62	6.45	6.45	6.45	6.45	25.91	25.91	25.91	24.76	24.76	24.76	34.25	34.25	31.75	31.75	31.75	31.75	31.75	31.75	31.75
Concrete Batch	0.00	0.00	0.47	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	1.62	1.62	1.62	1.62	1.62	1.62	1.62
Fugitive Dust	0.00	0.00	14.74	82.28	82.28	82.28	82.28	82.28	82.28	82.28	82.28	82.28	82.28	344.07	344.07	329.33	329.33	329.33	329.33	329.33	329.33	329.33
Employee Commuting	0.74	2.52	3.55	10.96	10.96	10.96	9.18	9.18	9.18	5.48	5.48	5.48	5.48	12.88	12.88	11.10	11.10	11.10	11.10	7.40	7.40	7.40
Total	0.84	7.49	26.35	109.91	109.91	109.91	105.42	124.88	124.88	118.29	117.10	117.10	117.10	398.74	399.03	379.47	379.47	379.47	376.81	373.10	370.94	370.94

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.48	0.48	0.48	0.24
Haul Trucks	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	8.68	8.68	8.68	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	261.79	0.00
Employee Commuting	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00
Total	275.09	275.09	275.09	275.09	275.09	275.09	275.09	275.09	275.09	275.09	275.09	275.09	274.65	274.65	274.65	0.24

Table 64. Alternative 4 Total Daily PM2.5 Emissions (Uncontrolled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.16	8.32	8.33	13.61	13.61	13.61	9.06	9.06	9.06	4.24	4.17	4.17	4.17	9.11	9.60	9.46	9.46	9.46	5.01	5.01	1.40	1.40
Haul Trucks	0.00	0.00	1.21	2.97	2.97	2.97	2.97	11.94	11.94	11.94	10.89	10.89	10.89	15.06	15.06	13.96	13.96	13.96	13.96	13.96	13.96	13.96
Concrete Batch	0.00	0.00	6.28	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	21.88	21.88	21.88	21.88	21.88	21.88	21.88
Fugitive Dust	0.00	0.00	6.16	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	143.71	143.71	137.55	137.55	137.55	137.55	137.55	137.55	137.55
Employee Commuting	0.14	0.47	0.66	2.03	2.03	2.03	1.70	1.70	1.70	1.02	1.02	1.02	1.02	2.39	2.39	2.06	2.06	2.06	2.06	1.37	1.37	1.37
Total	0.30	8.79	22.63	81.14	81.14	81.14	76.27	85.24	85.24	79.73	78.60	78.60	78.60	198.43	198.92	184.91	184.91	184.91	180.46	179.77	176.16	176.16

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.40
Haul Trucks	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.43	3.43	3.43	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	0.00
Employee Commuting	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00
Total	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.70	114.25	114.25	114.25	0.40

Table 65. Alternative 4 Total Daily PM2.5 Emissions (Controlled Concrete Emissions) by Source and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Construction Equipment	0.09	6.65	6.66	10.88	10.88	10.88	7.25	7.25	7.25	3.39	3.34	3.34	3.34	7.29	7.68	7.57	7.57	7.57	4.01	4.01	1.12	1.12
Haul Trucks	0.00	0.00	1.21	2.97	2.97	2.97	2.97	11.94	11.94	11.94	10.89	10.89	10.89	15.06	15.06	13.96	13.96	13.96	13.96	13.96	13.96	13.96
Concrete Batch	0.00	0.00	0.31	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Fugitive Dust	0.00	0.00	3.08	17.19	17.19	17.19	17.19	17.19	17.19	17.19	17.19	17.19	17.19	71.86	71.86	68.78	68.78	68.78	68.78	68.78	68.78	68.78
Employee Commuting	0.14	0.47	0.66	2.03	2.03	2.03	1.70	1.70	1.70	1.02	1.02	1.02	1.02	2.39	2.39	2.06	2.06	2.06	2.06	1.37	1.37	1.37
Total	0.23	7.12	11.92	34.48	34.48	34.48	30.52	39.49	39.49	34.95	33.83	33.83	33.83	98.01	98.40	93.46	93.46	93.46	89.90	89.21	86.32	86.32

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Phase																
Construction Equipment	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.64	0.64	0.64	0.32
Haul Trucks	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.43	3.43	3.43	0.00
Concrete Batch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	54.67	0.00
Employee Commuting	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00
Total	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.85	59.42	59.42	59.42	0.32

Table B-66. Volume of Materials Moved During Alternative 1 Phases¹

Phase	Description	Phase Duration		Materials Moved (cy/d)	
		Start Month	End Month	Onsite	Offsite
1	Clearing and Grubbing	Mar-10	Apr-10	-	-
2	Dewatering Well Installation	Apr-10	Nov-10	-	-
3	Excavation ²	Nov-10	Aug-11	3039	-
4	Excavation Backfill ³	Jul-11	Jun-12	1942	299
5	Filter Placement and Overlay ⁴	Jun-11	Mar-13	2367	663

Notes:

¹ Volume of onsite and offsite cut/fill materials are inputs for fugitive dust calculations in URBEMIS v.9.2.4.

Total soil disturbance area is estimated to be 16.1 acres, or 0.08 acres per day.

² Excavation materials include embankment material and materials from deep excavation and detention pond excavation.

³ Excavation backfill materials include re-used excavated material, imported sand, and cement.

⁴ Filter placement and overlay materials include sand and re-used excavated materials.

Key:

cy/d = cubic yards per day

Table B-67. Volume of Materials Moved During Alternative 2 Phases¹

Phase	Description	Phase Duration		Materials Moved (cy/d)	
		Start Month	End Month	Onsite	Offsite
1	Clearing and Grubbing	Mar-10	Apr-10	-	-
2	Dewatering Well Installation	Apr-10	Sep-10	-	-
3	Wall Construction ²	May-10	Aug-10	-	73
4	Excavation ³	Nov-10	Aug-11	2692	-
5	Excavation Backfill ⁴	Jul-11	Jun-12	1706	274
6	Filter Placement and Overlay ⁵	Apr-11	Mar-13	2170	608

Notes:

¹ Volume of onsite and offsite cut/fill materials are inputs for fugitive dust calculations in URBEMIS v.9.2.4.

Total soil disturbance area is estimated to be 9.2 acres, or 0.05 acres per day.

² Wall construction material includes cement.

³ Excavation materials include embankment material and materials from deep excavation and detention pond excavation.

⁴ Excavation backfill materials include re-used excavated material, imported sand, and cement.

⁵ Filter placement and overlay materials include sand and re-used excavated materials.

Key:

cy/d = cubic yards per day

Table B-68. Volume of Materials Moved During Alternative 3 Phases¹

Phase	Description	Phase Duration		Materials Moved (cy/d)	
		Start Month	End Month	Onsite	Offsite
1	Clearing and Grubbing	Mar-10	Apr-10	-	-
2	Dewatering Well Installation	Apr-10	Aug-10	-	-
3	Wall Construction ²	May-10	Dec-10	-	83
4	Excavation ³	Jan-11	Aug-12	378	-
5	Excavation Backfill ⁴	Jun-12	Nov-12	590	410
6	Filter Placement and Overlay ⁵	Apr-11	Mar-13	2170	608

Notes:

¹ Volume of onsite and offsite cut/fill materials are inputs for fugitive dust calculations in URBEMIS v.9.2.4.

Total soil disturbance area is estimated to be 3.4 acres, or 0.009 acres per day.

² Wall construction material includes cement.

³ Excavation materials include embankment material and materials from deep excavation and detention pond excavation.

⁴ Excavation backfill materials include re-used excavated material, imported sand, and cement.

⁵ Filter placement and overlay materials include sand and re-used excavated materials.

Key:

cy/d = cubic yards per day

Table B-69. Volume of Materials Moved During Alternative 4 Phases¹

Phase	Description	Phase Duration		Materials Moved (cy/d)	
		Start Month	End Month	Onsite	Offsite
1	Clearing and Grubbing	Mar-10	Apr-10	-	-
2	Dewatering Well Installation	Apr-10	Aug-10	-	-
3	Wall Construction ²	May-10	May-11	-	67
4	Excavation ³	Jun-10	Sep-11	436	-
5	Excavation Backfill ⁴	Jun-10	Sep-11	184	141
6	Filter Placement and Overlay ⁵	Apr-11	Mar-13	2170	608

Notes:

¹ Volume of onsite and offsite cut/fill materials are inputs for fugitive dust calculations in URBEMIS v.9.2.4.

Total soil disturbance area is estimated to be 0.7 acres, or 0.002 acres per day.

² Wall construction material includes cement.

³ Excavation materials include embankment material and materials from deep excavation and detention pond excavation.

⁴ Excavation backfill materials include re-used excavated material, imported sand, and cement.

⁵ Filter placement and overlay materials include sand and re-used excavated materials.

Key:

cy/d = cubic yards per day

Table B-70. Annual Fugitive Emissions from Material Handling

Alternative	PM10 Emissions (tpy)				PM2.5 Emissions (tpy)			
	2010	2011	2012	2013	2010	2011	2012	2013
1	9.52	118.37	117.69	22.02	1.99	24.72	24.56	4.60
2	10.14	120.40	107.16	20.18	2.12	25.14	22.38	4.21
3	3.85	68.79	106.26	20.16	0.80	14.37	22.19	4.21
4	15.52	79.49	81.94	20.16	3.24	16.60	17.11	4.21

Source: URBEMISv.9.2.4

Key:

tpy = tons per year

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-71. Alternative 1 Uncontrolled Fugitive PM10 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									359.40	359.40	359.40	359.40	359.40	359.40	359.40	359.40	359.40	359.40				
Excavation Backfill																	361.52	361.52	361.52	361.52	361.52	361.52
Dam Stripping															0.00	0.00	0.00					
Filter Placement																571.83	571.83	571.83	571.83	571.83	571.83	571.83
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	359.40	359.40	359.40	359.40	359.40	359.40	359.40	931.23	1292.75	1292.75	933.35	933.35	933.35	933.35

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	361.52	361.52	361.52	361.52	361.52	361.52												
Dam Stripping																		
Filter Placement	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	933.35	933.35	933.35	933.35	933.35	933.35	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	571.83	0.00	0.00	0.00

Table B-72. Alternative 1 Uncontrolled Fugitive PM2.5 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									75.06	75.06	75.06	75.06	75.06	75.06	75.06	75.06	75.06	75.06				
Excavation Backfill																	75.50	75.50	75.50	75.50	75.50	75.50
Dam Stripping															0.00	0.00	0.00					
Filter Placement																119.42	119.42	119.42	119.42	119.42	119.42	119.42
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.06	75.06	75.06	75.06	75.06	75.06	75.06	194.48	269.98	269.98	194.92	194.92	194.92	194.92

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	75.50	75.50	75.50	75.50	75.50	75.50												
Dam Stripping																		
Filter Placement	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	194.92	194.92	194.92	194.92	194.92	194.92	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	119.42	0.00	0.00	0.00

Table B-73. Alternative 2 Uncontrolled Fugitive PM10 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00															
Wall Construction			32.62	32.62	32.62	32.62																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									318.16	318.16	318.16	318.16	318.16	318.16	318.16	318.16	318.16	318.16				
Excavation Backfill																	322.37	322.37	322.37	322.37	322.37	322.37
Dam Stripping															0.00	0.00	0.00					
Filter Placement														524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	32.62	32.62	32.62	32.62	0.00	0.00	318.16	318.16	318.16	318.16	318.16	842.24	842.24	842.24	1164.61	1164.61	846.45	846.45	846.45	846.45

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	322.37	322.37	322.37	322.37	322.37	322.37												
Dam Stripping																		
Filter Placement	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	846.45	846.45	846.45	846.45	846.45	846.45	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	524.08	0.00	0.00	0.00

Table B-74. Alternative 2 Uncontrolled Fugitive PM2.5 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00														
Wall Construction			6.81	6.81	6.81	6.81																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply							0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									66.44	66.44	66.44	66.44	66.44	66.44	66.44	66.44	66.44	66.44				
Excavation Backfill																	67.32	67.32	67.32	67.32	67.32	67.32
Dam Stripping															0.00	0.00	0.00					
Filter Placement														109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.81	6.81	6.81	6.81	0.00	0.00	66.44	66.44	66.44	66.44	66.44	175.89	175.89	175.89	243.21	243.21	176.77	176.77	176.77	176.77

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	67.32	67.32	67.32	67.32	67.32	67.32												
Dam Stripping																		
Filter Placement	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	176.77	176.77	176.77	176.77	176.77	176.77	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	109.45	0.00	0.00	0.00

Table B-75. Alternative 3 Uncontrolled Fugitive PM10 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00																
Wall Construction			36.62	36.62	36.62	36.62	36.62	36.62	36.62	36.62												
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation														44.70	44.70	44.70	44.70	44.70	44.70	44.70	44.70	
Excavation Backfill																						
Dam Stripping															0.00	0.00	0.00					
Filter Placement														523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	36.62	36.62	36.62	36.62	36.62	36.62	36.62	36.62	0.00	0.00	0.00	568.38	568.38	568.38	568.38	568.38	568.38	568.38	568.38	523.68

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation				44.70	44.70	44.70	44.70	44.70										
Excavation Backfill						250.12	250.12	250.12	250.12	250.12	250.12							
Dam Stripping																		
Filter Placement	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68	523.68			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	523.68	523.68	523.68	568.38	568.38	818.50	818.50	818.50	773.80	773.80	773.80	523.68	523.68	523.68	523.68	0.00	0.00	0.00

Table B-76. Alternative 3 Uncontrolled Fugitive PM2.5 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00																
Wall Construction			7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65												
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation														9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	
Excavation Backfill																						
Dam Stripping															0.00	0.00	0.00					
Filter Placement														109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	0.00	0.00	0.00	118.71	118.71	118.71	118.71	118.71	118.71	118.71	118.71	109.37

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation				9.34	9.34	9.34	9.34	9.34										
Excavation Backfill						52.24	52.24	52.24	52.24	52.24	52.24							
Dam Stripping																		
Filter Placement	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37	109.37			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	109.37	109.37	109.37	118.71	118.71	170.95	170.95	170.95	161.61	161.61	161.61	109.37	109.37	109.37	109.37	0.00	0.00	0.00

Table B-77. Alternative 4 Uncontrolled Fugitive PM10 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00																
Wall Construction			29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48	29.48							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation																						
Excavation Backfill				135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08	135.08
Dam Stripping															0.00	0.00	0.00					
Filter Placement														523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	29.48	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	164.56	688.14	688.14	658.66	658.66	658.66	658.66	658.66	658.66	658.66

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	523.58	0.00	0.00	0.00

Table B-78. Alternative 4 Uncontrolled Fugitive PM2.5 Emissions by Phase and Month (lbs/day)

Month Phase	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00																
Wall Construction			6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16	6.16							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation																						
Excavation Backfill				28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21	28.21
Dam Stripping															0.00	0.00	0.00					
Filter Placement														109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.16	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	34.37	143.71	143.71	137.55	137.55	137.55	137.55	137.55	137.55	137.55

Month Phase	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	109.34	0.00	0.00	0.00

Table B-79. 2010 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO ₂	PM
Pavers	25	7.07E-01	2.15E+00	4.08E+00	6.03E-03	2.35E-01
Pavers	50	3.56E-02	8.46E-02	6.81E-02	7.93E-05	7.81E-03
Pavers	120	1.27E-02	4.04E-02	7.50E-02	6.28E-05	6.62E-03
Pavers	175	1.75E-02	6.80E-02	1.37E-01	1.23E-04	7.73E-03
Pavers	250	1.20E-01	3.47E-01	1.16E+00	1.09E-03	4.72E-02
Pavers	500	6.33E-02	2.81E-01	6.12E-01	5.54E-04	2.47E-02
Plate Compactors	15	9.98E-03	5.21E-02	6.27E-02	1.33E-04	2.98E-03
Rollers	15	7.74E-03	4.06E-02	4.85E-02	1.04E-04	1.99E-03
Rollers	25	2.47E-02	8.31E-02	1.58E-01	2.56E-04	8.15E-03
Rollers	50	3.08E-02	7.69E-02	6.68E-02	8.15E-05	7.10E-03
Rollers	120	2.27E-03	7.87E-03	1.39E-02	1.30E-05	1.21E-03
Rollers	175	4.75E-03	2.01E-02	3.86E-02	3.91E-05	2.12E-03
Rollers	250	2.44E-02	7.19E-02	2.57E-01	2.73E-04	9.54E-03
Rollers	500	2.24E-02	8.78E-02	2.36E-01	2.43E-04	8.84E-03
Scrapers	120	4.57E-01	1.46E+00	2.66E+00	2.25E-03	2.41E-01
Scrapers	175	3.66E-02	1.42E-01	2.80E-01	2.55E-04	1.61E-02
Scrapers	250	2.87E-02	8.07E-02	2.73E-01	2.59E-04	1.10E-02
Scrapers	500	7.27E-03	3.02E-02	6.82E-02	6.29E-05	2.76E-03
Scrapers	750	2.10E-01	8.69E-01	2.01E+00	1.86E-03	8.02E-02
Paving Equipment	25	2.28E-01	7.66E-01	1.46E+00	2.35E-03	7.51E-02
Paving Equipment	50	1.20E+00	2.84E+00	2.30E+00	2.69E-03	2.64E-01
Paving Equipment	120	3.22E-02	1.03E-01	1.91E-01	1.61E-04	1.68E-02
Paving Equipment	175	5.86E-02	2.27E-01	4.61E-01	4.16E-04	2.58E-02
Paving Equipment	250	1.37E-01	3.96E-01	1.33E+00	1.25E-03	5.38E-02
Surfacing Equipment	50	5.63E-01	1.45E+00	1.39E+00	1.74E-03	1.36E-01
Surfacing Equipment	120	2.38E+00	8.62E+00	1.53E+01	1.49E-02	1.24E+00
Surfacing Equipment	175	1.95E+00	8.71E+00	1.67E+01	1.76E-02	8.61E-01
Surfacing Equipment	250	7.98E-01	2.47E+00	8.78E+00	9.66E-03	3.14E-01
Surfacing Equipment	500	7.07E-02	2.97E-01	7.83E-01	8.29E-04	2.83E-02
Surfacing Equipment	750	5.15E-01	2.12E+00	5.73E+00	6.07E-03	2.04E-01
Signal Boards	15	1.62E-03	8.52E-03	1.02E-02	2.17E-05	3.81E-04
Signal Boards	50	2.04E+00	5.22E+00	5.03E+00	6.38E-03	4.97E-01
Signal Boards	120	5.20E-02	1.87E-01	3.28E-01	3.27E-04	2.75E-02
Signal Boards	175	7.34E-02	3.24E-01	6.23E-01	6.68E-04	3.26E-02
Signal Boards	250	2.61E-01	7.81E-01	3.20E+00	3.66E-03	1.00E-01
Trenchers	15	8.36E-02	4.39E-01	5.24E-01	1.12E-03	1.96E-02
Trenchers	25	1.94E-01	6.55E-01	1.24E+00	2.02E-03	6.06E-02
Trenchers	50	1.17E-02	2.77E-02	2.30E-02	2.70E-05	2.57E-03
Trenchers	120	2.95E-03	9.45E-03	1.77E-02	1.49E-05	1.52E-03
Trenchers	175	2.76E-02	1.08E-01	2.20E-01	1.98E-04	1.21E-02
Trenchers	250	2.64E-01	7.77E-01	2.56E+00	2.40E-03	1.05E-01
Trenchers	500	1.30E-01	6.10E-01	1.27E+00	1.14E-03	5.13E-02
Trenchers	750	5.73E+00	2.67E+01	5.67E+01	5.13E-02	2.26E+00
Bore/Drill Rigs	15	7.67E-01	4.02E+00	4.80E+00	1.02E-02	1.97E-01
Bore/Drill Rigs	25	2.50E-01	8.40E-01	1.60E+00	2.58E-03	8.24E-02
Bore/Drill Rigs	50	7.97E-02	3.65E-01	4.11E-01	5.85E-04	2.83E-02
Bore/Drill Rigs	120	1.43E-02	9.53E-02	1.22E-01	1.79E-04	9.03E-03
Bore/Drill Rigs	175	5.47E-02	4.43E-01	5.37E-01	9.31E-04	2.83E-02
Bore/Drill Rigs	250	4.57E-02	1.65E-01	5.66E-01	1.01E-03	1.84E-02
Bore/Drill Rigs	500	1.60E-02	5.97E-02	1.83E-01	3.28E-04	6.59E-03
Bore/Drill Rigs	750	1.68E-01	6.17E-01	1.95E+00	3.47E-03	6.90E-02
Bore/Drill Rigs	1000	1.34E-01	4.28E-01	2.08E+00	2.34E-03	5.21E-02
Excavators	25	2.05E-01	6.99E-01	1.30E+00	2.15E-03	5.89E-02
Excavators	50	1.56E-02	4.32E-02	3.62E-02	4.43E-05	3.79E-03

Table B-79. 2010 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Excavators	120	2.95E-03	1.12E-02	1.77E-02	1.82E-05	1.65E-03
Excavators	175	1.10E-03	5.01E-03	8.35E-03	9.44E-06	4.97E-04
Excavators	250	1.87E-03	5.06E-03	1.93E-02	2.30E-05	6.68E-04
Excavators	500	1.77E-03	5.49E-03	1.72E-02	2.05E-05	6.34E-04
Excavators	750	3.68E-01	1.13E+00	3.66E+00	4.33E-03	1.33E-01
Concrete/Industrial Saws	25	1.91E+00	6.48E+00	1.22E+01	2.00E-02	5.99E-01
Concrete/Industrial Saws	50	6.72E-01	1.75E+00	1.68E+00	2.13E-03	1.64E-01
Concrete/Industrial Saws	120	1.75E-01	6.49E-01	1.12E+00	1.13E-03	9.40E-02
Concrete/Industrial Saws	175	5.27E+00	2.40E+01	4.50E+01	4.92E-02	2.36E+00
Cement and Mortar Mixers	15	9.83E-03	4.84E-02	6.30E-02	1.23E-04	3.60E-03
Cement and Mortar Mixers	25	2.87E-01	7.82E-01	1.36E+00	1.85E-03	8.89E-02
Cranes	50	7.22E-01	1.78E+00	1.43E+00	1.68E-03	1.62E-01
Cranes	120	2.39E-02	7.95E-02	1.40E-01	1.26E-04	1.29E-02
Cranes	175	1.77E-02	7.14E-02	1.36E-01	1.32E-04	7.89E-03
Cranes	250	6.56E-03	1.83E-02	6.54E-02	6.67E-05	2.48E-03
Cranes	500	1.31E-02	4.76E-02	1.28E-01	1.27E-04	4.93E-03
Cranes	750	8.25E-02	2.98E-01	8.18E-01	8.15E-04	3.12E-02
Cranes	9999	1.74E-02	6.61E-02	1.95E-01	1.56E-04	6.06E-03
Graders	50	1.91E+00	4.89E+00	4.04E+00	4.86E-03	4.42E-01
Graders	120	1.33E-02	4.65E-02	7.90E-02	7.49E-05	7.25E-03
Graders	175	2.99E-03	1.27E-02	2.32E-02	2.38E-05	1.34E-03
Graders	250	3.40E-03	9.51E-03	3.46E-02	3.74E-05	1.28E-03
Graders	500	7.33E-02	2.56E-01	7.23E-01	7.68E-04	2.75E-02
Graders	750	7.97E+00	2.76E+01	8.01E+01	8.50E-02	3.01E+00
Off-Highway Trucks	175	1.46E-01	6.40E-01	1.08E+00	1.18E-03	6.49E-02
Off-Highway Trucks	250	1.30E-02	3.42E-02	1.29E-01	1.49E-04	4.57E-03
Off-Highway Trucks	500	7.04E-03	2.13E-02	6.55E-02	7.55E-05	2.46E-03
Off-Highway Trucks	750	3.38E-02	1.01E-01	3.22E-01	3.68E-04	1.19E-02
Off-Highway Trucks	1000	8.55E-02	2.74E-01	9.72E-01	8.33E-04	2.94E-02
Crushing/Proc. Equipment	50	2.71E-01	6.68E-01	5.61E-01	6.79E-04	6.21E-02
Crushing/Proc. Equipment	120	3.11E-02	1.05E-01	1.83E-01	1.72E-04	1.70E-02
Crushing/Proc. Equipment	175	6.78E-02	2.78E-01	5.32E-01	5.38E-04	3.06E-02
Crushing/Proc. Equipment	250	4.51E-01	1.25E+00	5.12E+00	5.53E-03	1.69E-01
Crushing/Proc. Equipment	500	5.52E-02	1.88E-01	6.16E-01	6.55E-04	2.12E-02
Crushing/Proc. Equipment	750	5.17E+00	1.69E+01	5.90E+01	6.18E-02	1.98E+00
Crushing/Proc. Equipment	9999	1.08E+00	3.76E+00	1.26E+01	1.03E-02	3.77E-01
Rough Terrain Forklifts	50	2.74E-01	7.21E-01	6.12E-01	7.53E-04	6.51E-02
Rough Terrain Forklifts	120	1.82E-03	6.66E-03	1.10E-02	1.10E-05	1.01E-03
Rough Terrain Forklifts	175	1.32E-02	5.85E-02	1.03E-01	1.13E-04	6.01E-03
Rough Terrain Forklifts	250	1.53E-01	4.29E-01	1.67E+00	1.93E-03	5.70E-02
Rough Terrain Forklifts	500	1.60E-01	5.24E-01	1.68E+00	1.92E-03	6.02E-02
Rubber Tired Loaders	25	5.62E-01	1.90E+00	3.59E+00	5.86E-03	1.76E-01
Rubber Tired Loaders	50	1.10E-01	2.81E-01	2.34E-01	2.83E-04	2.54E-02
Rubber Tired Loaders	120	1.30E-03	4.60E-03	7.78E-03	7.44E-06	7.13E-04
Rubber Tired Loaders	175	1.94E-03	8.28E-03	1.51E-02	1.57E-05	8.72E-04
Rubber Tired Loaders	250	1.38E-03	3.87E-03	1.42E-02	1.54E-05	5.19E-04
Rubber Tired Loaders	500	2.40E-03	8.45E-03	2.40E-02	2.58E-05	9.06E-04
Rubber Tired Loaders	750	1.93E-01	6.74E-01	1.97E+00	2.11E-03	7.33E-02
Rubber Tired Loaders	1000	1.85E+00	6.72E+00	2.15E+01	1.80E-02	6.49E-01
Rubber Tired Dozers	175	1.31E+00	4.74E+00	9.76E+00	7.95E-03	5.66E-01
Rubber Tired Dozers	250	4.32E-02	1.21E-01	3.82E-01	3.22E-04	1.67E-02
Rubber Tired Dozers	500	1.83E-02	8.79E-02	1.62E-01	1.32E-04	6.92E-03
Rubber Tired Dozers	750	2.14E-01	1.02E+00	1.92E+00	1.57E-03	8.13E-02
Rubber Tired Dozers	1000	3.68E+00	1.82E+01	3.69E+01	2.59E-02	1.31E+00

Table B-79. 2010 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Tractors/Loaders/Backhoes	25	2.89E-02	9.23E-02	1.78E-01	2.73E-04	9.78E-03
Tractors/Loaders/Backhoes	50	1.43E-02	4.03E-02	3.53E-02	4.45E-05	3.54E-03
Tractors/Loaders/Backhoes	120	3.22E-04	1.28E-03	2.00E-03	2.14E-06	1.82E-04
Tractors/Loaders/Backhoes	175	3.96E-03	1.91E-02	3.14E-02	3.70E-05	1.83E-03
Tractors/Loaders/Backhoes	250	9.97E-03	2.83E-02	1.09E-01	1.36E-04	3.68E-03
Tractors/Loaders/Backhoes	500	5.72E-03	1.85E-02	5.93E-02	8.44E-05	2.13E-03
Tractors/Loaders/Backhoes	750	3.44E-02	1.10E-01	3.64E-01	5.02E-04	1.29E-02
Crawler Tractors	50	1.98E+00	4.80E+00	3.79E+00	4.39E-03	4.38E-01
Crawler Tractors	120	1.56E-03	5.03E-03	9.06E-03	7.74E-06	8.22E-04
Crawler Tractors	175	3.95E-03	1.54E-02	3.01E-02	2.77E-05	1.74E-03
Crawler Tractors	250	3.39E-03	9.48E-03	3.22E-02	3.09E-05	1.29E-03
Crawler Tractors	500	3.51E-03	1.43E-02	3.29E-02	3.07E-05	1.33E-03
Crawler Tractors	750	3.42E-01	1.39E+00	3.25E+00	3.05E-03	1.30E-01
Crawler Tractors	1000	3.91E-01	1.65E+00	4.21E+00	3.24E-03	1.38E-01
Skid Steer Loaders	25	4.94E-03	1.39E-02	2.49E-02	3.48E-05	1.57E-03
Skid Steer Loaders	50	8.64E-04	2.75E-03	2.70E-03	3.62E-06	2.38E-04
Skid Steer Loaders	120	5.31E-04	2.46E-03	3.61E-03	4.38E-06	3.11E-04
Off-Highway Tractors	120	1.96E+01	5.92E+01	1.13E+02	8.75E-02	1.00E+01
Off-Highway Tractors	175	1.04E-02	3.82E-02	7.88E-02	6.55E-05	4.53E-03
Off-Highway Tractors	250	6.21E-03	1.76E-02	5.63E-02	4.85E-05	2.43E-03
Off-Highway Tractors	750	7.70E-02	3.70E-01	7.11E-01	5.94E-04	2.97E-02
Off-Highway Tractors	1000	8.27E-01	4.08E+00	8.47E+00	6.05E-03	2.96E-01
Dumpers/Tenders	25	1.72E-01	5.35E-01	1.03E+00	1.54E-03	5.79E-02
Other Construction Equipment	15	2.26E-02	1.19E-01	1.42E-01	3.03E-04	5.80E-03
Other Construction Equipment	25	1.11E-01	3.72E-01	7.09E-01	1.14E-03	3.65E-02
Other Construction Equipment	50	2.30E-01	6.51E-01	6.19E-01	8.04E-04	5.86E-02
Other Construction Equipment	120	7.42E-02	3.04E-01	4.85E-01	5.32E-04	4.16E-02
Other Construction Equipment	175	3.26E-02	1.64E-01	2.77E-01	3.34E-04	1.51E-02
Other Construction Equipment	500	7.16E-03	2.54E-02	8.32E-02	1.05E-04	2.85E-03

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

ROG = reactive organic gases

CO = carbon monoxide

NOx = oxides of nitrogen

SO2 = sulfur dioxide

PM = particulate matter

Table B-80. 2011 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Pavers	25	6.65E-01	2.07E+00	3.92E+00	5.93E-03	2.16E-01
Pavers	50	3.32E-02	8.13E-02	6.62E-02	7.80E-05	7.37E-03
Pavers	120	1.18E-02	3.93E-02	7.04E-02	6.18E-05	6.25E-03
Pavers	175	1.65E-02	6.63E-02	1.28E-01	1.21E-04	7.31E-03
Pavers	250	1.12E-01	3.25E-01	1.07E+00	1.07E-03	4.31E-02
Pavers	500	5.94E-02	2.55E-01	5.67E-01	5.45E-04	2.26E-02
Plate Compactors	15	9.78E-03	5.12E-02	6.13E-02	1.31E-04	2.54E-03
Rollers	15	7.62E-03	4.00E-02	4.77E-02	1.02E-04	1.87E-03
Rollers	25	2.41E-02	8.16E-02	1.54E-01	2.52E-04	7.30E-03
Rollers	50	2.84E-02	7.36E-02	6.48E-02	8.02E-05	6.64E-03
Rollers	120	2.09E-03	7.67E-03	1.30E-02	1.28E-05	1.14E-03
Rollers	175	4.43E-03	1.97E-02	3.60E-02	3.85E-05	2.00E-03
Rollers	250	2.25E-02	6.70E-02	2.36E-01	2.69E-04	8.56E-03
Rollers	500	2.07E-02	8.04E-02	2.16E-01	2.39E-04	7.95E-03
Scrapers	120	4.25E-01	1.42E+00	2.49E+00	2.21E-03	2.26E-01
Scrapers	175	3.44E-02	1.39E-01	2.61E-01	2.51E-04	1.52E-02
Scrapers	250	2.69E-02	7.57E-02	2.52E-01	2.55E-04	1.00E-02
Scrapers	500	6.84E-03	2.74E-02	6.30E-02	6.19E-05	2.52E-03
Scrapers	750	1.98E-01	7.90E-01	1.85E+00	1.83E-03	7.33E-02
Paving Equipment	25	2.22E-01	7.52E-01	1.42E+00	2.32E-03	6.73E-02
Paving Equipment	50	1.12E+00	2.73E+00	2.24E+00	2.64E-03	2.49E-01
Paving Equipment	120	3.00E-02	9.98E-02	1.79E-01	1.58E-04	1.59E-02
Paving Equipment	175	5.51E-02	2.22E-01	4.32E-01	4.10E-04	2.45E-02
Paving Equipment	250	1.27E-01	3.70E-01	1.23E+00	1.23E-03	4.90E-02
Surfacing Equipment	50	5.18E-01	1.39E+00	1.34E+00	1.71E-03	1.27E-01
Surfacing Equipment	120	2.19E+00	8.40E+00	1.43E+01	1.46E-02	1.17E+00
Surfacing Equipment	175	1.81E+00	8.53E+00	1.55E+01	1.73E-02	8.13E-01
Surfacing Equipment	250	7.34E-01	2.31E+00	8.06E+00	9.51E-03	2.83E-01
Surfacing Equipment	500	6.53E-02	2.72E-01	7.19E-01	8.16E-04	2.55E-02
Surfacing Equipment	750	4.75E-01	1.95E+00	5.26E+00	5.97E-03	1.84E-01
Signal Boards	15	1.60E-03	8.38E-03	1.00E-02	2.14E-05	3.79E-04
Signal Boards	50	1.86E+00	4.99E+00	4.87E+00	6.28E-03	4.63E-01
Signal Boards	120	4.77E-02	1.82E-01	3.06E-01	3.22E-04	2.59E-02
Signal Boards	175	6.78E-02	3.18E-01	5.78E-01	6.58E-04	3.07E-02
Signal Boards	250	2.36E-01	7.21E-01	2.92E+00	3.60E-03	8.85E-02
Trenchers	15	8.23E-02	4.32E-01	5.15E-01	1.10E-03	1.95E-02
Trenchers	25	1.90E-01	6.45E-01	1.20E+00	1.99E-03	5.33E-02
Trenchers	50	1.09E-02	2.67E-02	2.24E-02	2.66E-05	2.43E-03
Trenchers	120	2.75E-03	9.19E-03	1.67E-02	1.46E-05	1.44E-03
Trenchers	175	2.59E-02	1.05E-01	2.06E-01	1.95E-04	1.15E-02
Trenchers	250	2.46E-01	7.29E-01	2.38E+00	2.36E-03	9.61E-02
Trenchers	500	1.21E-01	5.56E-01	1.18E+00	1.13E-03	4.71E-02
Trenchers	750	5.36E+00	2.43E+01	5.27E+01	5.05E-02	2.08E+00
Bore/Drill Rigs	15	7.54E-01	3.96E+00	4.72E+00	1.01E-02	1.85E-01
Bore/Drill Rigs	25	2.44E-01	8.25E-01	1.56E+00	2.54E-03	7.38E-02
Bore/Drill Rigs	50	6.25E-02	3.45E-01	4.00E-01	5.76E-04	2.43E-02
Bore/Drill Rigs	120	1.18E-02	9.27E-02	1.09E-01	1.76E-04	7.79E-03
Bore/Drill Rigs	175	4.78E-02	4.35E-01	4.76E-01	9.17E-04	2.58E-02
Bore/Drill Rigs	250	4.19E-02	1.62E-01	4.75E-01	9.94E-04	1.51E-02
Bore/Drill Rigs	500	1.49E-02	5.85E-02	1.57E-01	3.23E-04	5.49E-03
Bore/Drill Rigs	750	1.56E-01	6.04E-01	1.66E+00	3.41E-03	5.71E-02
Bore/Drill Rigs	1000	1.21E-01	4.17E-01	1.83E+00	2.30E-03	4.63E-02
Excavators	25	2.02E-01	6.88E-01	1.27E+00	2.12E-03	5.05E-02
Excavators	50	1.38E-02	4.10E-02	3.51E-02	4.36E-05	3.46E-03

Table B-80. 2011 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Excavators	120	2.67E-03	1.09E-02	1.63E-02	1.79E-05	1.50E-03
Excavators	175	1.01E-03	4.92E-03	7.64E-03	9.29E-06	4.62E-04
Excavators	250	1.74E-03	4.76E-03	1.73E-02	2.26E-05	5.89E-04
Excavators	500	1.66E-03	5.08E-03	1.55E-02	2.01E-05	5.61E-04
Excavators	750	3.44E-01	1.05E+00	3.30E+00	4.26E-03	1.18E-01
Concrete/Industrial Saws	25	1.88E+00	6.38E+00	1.19E+01	1.96E-02	5.27E-01
Concrete/Industrial Saws	50	6.12E-01	1.67E+00	1.62E+00	2.10E-03	1.53E-01
Concrete/Industrial Saws	120	1.60E-01	6.33E-01	1.04E+00	1.12E-03	8.80E-02
Concrete/Industrial Saws	175	4.86E+00	2.35E+01	4.16E+01	4.84E-02	2.22E+00
Cement and Mortar Mixers	15	9.35E-03	4.74E-02	5.93E-02	1.21E-04	3.15E-03
Cement and Mortar Mixers	25	2.60E-01	7.31E-01	1.30E+00	1.82E-03	8.05E-02
Cranes	50	6.60E-01	1.70E+00	1.39E+00	1.66E-03	1.51E-01
Cranes	120	2.20E-02	7.74E-02	1.30E-01	1.24E-04	1.20E-02
Cranes	175	1.66E-02	6.99E-02	1.26E-01	1.30E-04	7.42E-03
Cranes	250	6.09E-03	1.70E-02	6.00E-02	6.56E-05	2.22E-03
Cranes	500	1.22E-02	4.34E-02	1.17E-01	1.25E-04	4.44E-03
Cranes	750	7.69E-02	2.71E-01	7.49E-01	8.02E-04	2.81E-02
Cranes	9999	1.63E-02	6.04E-02	1.82E-01	1.53E-04	5.64E-03
Graders	50	1.74E+00	4.67E+00	3.92E+00	4.78E-03	4.09E-01
Graders	120	1.22E-02	4.53E-02	7.34E-02	7.37E-05	6.73E-03
Graders	175	2.78E-03	1.24E-02	2.14E-02	2.35E-05	1.26E-03
Graders	250	3.16E-03	8.93E-03	3.15E-02	3.68E-05	1.14E-03
Graders	500	6.86E-02	2.36E-01	6.60E-01	7.56E-04	2.47E-02
Graders	750	7.46E+00	2.55E+01	7.31E+01	8.36E-02	2.71E+00
Off-Highway Trucks	175	1.35E-01	6.29E-01	9.86E-01	1.16E-03	6.05E-02
Off-Highway Trucks	250	1.21E-02	3.21E-02	1.16E-01	1.47E-04	4.03E-03
Off-Highway Trucks	500	6.59E-03	1.96E-02	5.91E-02	7.43E-05	2.18E-03
Off-Highway Trucks	750	3.16E-02	9.34E-02	2.90E-01	3.63E-04	1.06E-02
Off-Highway Trucks	1000	7.97E-02	2.50E-01	8.94E-01	8.20E-04	2.71E-02
Crushing/Proc. Equipment	50	2.48E-01	6.37E-01	5.43E-01	6.68E-04	5.79E-02
Crushing/Proc. Equipment	120	2.87E-02	1.02E-01	1.70E-01	1.69E-04	1.59E-02
Crushing/Proc. Equipment	175	6.29E-02	2.73E-01	4.93E-01	5.29E-04	2.88E-02
Crushing/Proc. Equipment	250	4.12E-01	1.15E+00	4.69E+00	5.44E-03	1.49E-01
Crushing/Proc. Equipment	500	5.07E-02	1.69E-01	5.61E-01	6.44E-04	1.88E-02
Crushing/Proc. Equipment	750	4.75E+00	1.53E+01	5.38E+01	6.08E-02	1.76E+00
Crushing/Proc. Equipment	9999	1.00E+00	3.41E+00	1.17E+01	1.01E-02	3.49E-01
Rough Terrain Forklifts	50	2.46E-01	6.86E-01	5.94E-01	7.41E-04	6.00E-02
Rough Terrain Forklifts	120	1.66E-03	6.49E-03	1.01E-02	1.08E-05	9.39E-04
Rough Terrain Forklifts	175	1.22E-02	5.74E-02	9.50E-02	1.11E-04	5.62E-03
Rough Terrain Forklifts	250	1.41E-01	3.99E-01	1.52E+00	1.90E-03	5.01E-02
Rough Terrain Forklifts	500	1.49E-01	4.77E-01	1.52E+00	1.89E-03	5.32E-02
Rubber Tired Loaders	25	5.51E-01	1.87E+00	3.50E+00	5.77E-03	1.55E-01
Rubber Tired Loaders	50	9.94E-02	2.68E-01	2.27E-01	2.78E-04	2.35E-02
Rubber Tired Loaders	120	1.19E-03	4.48E-03	7.23E-03	7.32E-06	6.61E-04
Rubber Tired Loaders	175	1.80E-03	8.12E-03	1.40E-02	1.54E-05	8.17E-04
Rubber Tired Loaders	250	1.28E-03	3.63E-03	1.29E-02	1.52E-05	4.63E-04
Rubber Tired Loaders	500	2.25E-03	7.80E-03	2.19E-02	2.53E-05	8.12E-04
Rubber Tired Loaders	750	1.81E-01	6.22E-01	1.79E+00	2.07E-03	6.58E-02
Rubber Tired Loaders	1000	1.72E+00	6.18E+00	1.99E+01	1.77E-02	6.01E-01
Rubber Tired Dozers	175	1.24E+00	4.62E+00	9.18E+00	7.82E-03	5.36E-01
Rubber Tired Dozers	250	4.07E-02	1.14E-01	3.56E-01	3.17E-04	1.54E-02
Rubber Tired Dozers	500	1.73E-02	8.09E-02	1.51E-01	1.30E-04	6.41E-03
Rubber Tired Dozers	750	2.03E-01	9.43E-01	1.80E+00	1.55E-03	7.54E-02
Rubber Tired Dozers	1000	3.48E+00	1.68E+01	3.48E+01	2.55E-02	1.23E+00

Table B-80. 2011 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Tractors/Loaders/Backhoes	25	2.73E-02	8.93E-02	1.71E-01	2.68E-04	8.84E-03
Tractors/Loaders/Backhoes	50	1.26E-02	3.82E-02	3.43E-02	4.38E-05	3.23E-03
Tractors/Loaders/Backhoes	120	2.90E-04	1.25E-03	1.84E-03	2.11E-06	1.67E-04
Tractors/Loaders/Backhoes	175	3.64E-03	1.88E-02	2.87E-02	3.64E-05	1.70E-03
Tractors/Loaders/Backhoes	250	9.24E-03	2.68E-02	9.76E-02	1.34E-04	3.23E-03
Tractors/Loaders/Backhoes	500	5.36E-03	1.73E-02	5.32E-02	8.31E-05	1.88E-03
Tractors/Loaders/Backhoes	750	3.21E-02	1.03E-01	3.27E-01	4.94E-04	1.14E-02
Crawler Tractors	50	1.82E+00	4.60E+00	3.69E+00	4.32E-03	4.10E-01
Crawler Tractors	120	1.44E-03	4.89E-03	8.46E-03	7.61E-06	7.69E-04
Crawler Tractors	175	3.70E-03	1.51E-02	2.80E-02	2.72E-05	1.64E-03
Crawler Tractors	250	3.17E-03	8.89E-03	2.97E-02	3.04E-05	1.18E-03
Crawler Tractors	500	3.30E-03	1.31E-02	3.03E-02	3.02E-05	1.21E-03
Crawler Tractors	750	3.21E-01	1.26E+00	3.00E+00	3.00E-03	1.18E-01
Crawler Tractors	1000	3.65E-01	1.50E+00	3.93E+00	3.19E-03	1.28E-01
Skid Steer Loaders	25	4.48E-03	1.30E-02	2.39E-02	3.43E-05	1.42E-03
Skid Steer Loaders	50	7.41E-04	2.61E-03	2.62E-03	3.56E-06	2.14E-04
Skid Steer Loaders	120	4.67E-04	2.40E-03	3.30E-03	4.30E-06	2.80E-04
Off-Highway Tractors	120	1.83E+01	5.76E+01	1.06E+02	8.61E-02	9.45E+00
Off-Highway Tractors	175	9.80E-03	3.72E-02	7.41E-02	6.44E-05	4.29E-03
Off-Highway Tractors	250	5.84E-03	1.66E-02	5.25E-02	4.77E-05	2.24E-03
Off-Highway Tractors	750	7.27E-02	3.39E-01	6.63E-01	5.84E-04	2.74E-02
Off-Highway Tractors	1000	7.78E-01	3.75E+00	7.98E+00	5.95E-03	2.77E-01
Dumpers/Tenders	25	1.62E-01	5.16E-01	9.85E-01	1.52E-03	5.28E-02
Other Construction Equipment	15	2.23E-02	1.17E-01	1.39E-01	2.98E-04	5.45E-03
Other Construction Equipment	25	1.08E-01	3.65E-01	6.89E-01	1.13E-03	3.27E-02
Other Construction Equipment	50	2.05E-01	6.20E-01	6.00E-01	7.91E-04	5.37E-02
Other Construction Equipment	120	6.69E-02	2.96E-01	4.47E-01	5.23E-04	3.84E-02
Other Construction Equipment	175	2.99E-02	1.61E-01	2.54E-01	3.28E-04	1.41E-02
Other Construction Equipment	500	6.60E-03	2.35E-02	7.48E-02	1.03E-04	2.50E-03

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

ROG = reactive organic gases

CO = carbon monoxide

NOx = oxides of nitrogen

SO2 = sulfur dioxide

PM = particulate matter

Table B-81. 2012 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Pavers	25	6.29E-01	2.00E+00	3.78E+00	5.84E-03	1.98E-01
Pavers	50	3.08E-02	7.81E-02	6.44E-02	7.68E-05	6.94E-03
Pavers	120	1.10E-02	3.83E-02	6.59E-02	6.09E-05	5.83E-03
Pavers	175	1.54E-02	6.48E-02	1.20E-01	1.19E-04	6.79E-03
Pavers	250	1.05E-01	3.05E-01	9.95E-01	1.05E-03	3.93E-02
Pavers	500	5.58E-02	2.33E-01	5.25E-01	5.36E-04	2.06E-02
Plate Compactors	15	9.62E-03	5.04E-02	6.02E-02	1.29E-04	2.40E-03
Rollers	15	7.50E-03	3.93E-02	4.70E-02	1.00E-04	1.81E-03
Rollers	25	2.37E-02	8.03E-02	1.50E-01	2.48E-04	6.55E-03
Rollers	50	2.60E-02	7.04E-02	6.29E-02	7.90E-05	6.19E-03
Rollers	120	1.93E-03	7.48E-03	1.21E-02	1.26E-05	1.05E-03
Rollers	175	4.12E-03	1.93E-02	3.34E-02	3.79E-05	1.84E-03
Rollers	250	2.07E-02	6.26E-02	2.17E-01	2.64E-04	7.65E-03
Rollers	500	1.92E-02	7.38E-02	1.98E-01	2.35E-04	7.13E-03
Scrapers	120	3.94E-01	1.39E+00	2.32E+00	2.18E-03	2.09E-01
Scrapers	175	3.22E-02	1.36E-01	2.44E-01	2.47E-04	1.40E-02
Scrapers	250	2.52E-02	7.11E-02	2.33E-01	2.51E-04	9.12E-03
Scrapers	500	6.43E-03	2.50E-02	5.82E-02	6.09E-05	2.30E-03
Scrapers	750	1.86E-01	7.21E-01	1.71E+00	1.80E-03	6.68E-02
Paving Equipment	25	2.18E-01	7.40E-01	1.39E+00	2.28E-03	6.03E-02
Paving Equipment	50	1.04E+00	2.63E+00	2.18E+00	2.60E-03	2.35E-01
Paving Equipment	120	2.80E-02	9.72E-02	1.68E-01	1.55E-04	1.49E-02
Paving Equipment	175	5.17E-02	2.17E-01	4.04E-01	4.03E-04	2.27E-02
Paving Equipment	250	1.19E-01	3.47E-01	1.14E+00	1.21E-03	4.46E-02
Surfacing Equipment	50	4.75E-01	1.33E+00	1.31E+00	1.69E-03	1.18E-01
Surfacing Equipment	120	2.01E+00	8.19E+00	1.33E+01	1.44E-02	1.08E+00
Surfacing Equipment	175	1.68E+00	8.36E+00	1.45E+01	1.70E-02	7.45E-01
Surfacing Equipment	250	6.75E-01	2.17E+00	7.40E+00	9.36E-03	2.55E-01
Surfacing Equipment	500	6.03E-02	2.52E-01	6.59E-01	8.03E-04	2.30E-02
Surfacing Equipment	750	4.38E-01	1.80E+00	4.82E+00	5.88E-03	1.66E-01
Signal Boards	15	1.57E-03	8.25E-03	9.85E-03	2.10E-05	3.82E-04
Signal Boards	50	1.68E+00	4.74E+00	4.71E+00	6.18E-03	4.28E-01
Signal Boards	120	4.33E-02	1.77E-01	2.82E-01	3.17E-04	2.37E-02
Signal Boards	175	6.20E-02	3.12E-01	5.32E-01	6.47E-04	2.80E-02
Signal Boards	250	2.15E-01	6.80E-01	2.67E+00	3.54E-03	7.88E-02
Trenchers	15	8.10E-02	4.25E-01	5.07E-01	1.08E-03	1.97E-02
Trenchers	25	1.86E-01	6.35E-01	1.18E+00	1.96E-03	4.71E-02
Trenchers	50	1.02E-02	2.57E-02	2.18E-02	2.62E-05	2.30E-03
Trenchers	120	2.56E-03	8.95E-03	1.56E-02	1.44E-05	1.34E-03
Trenchers	175	2.43E-02	1.03E-01	1.93E-01	1.92E-04	1.07E-02
Trenchers	250	2.29E-01	6.85E-01	2.21E+00	2.32E-03	8.78E-02
Trenchers	500	1.14E-01	5.07E-01	1.10E+00	1.11E-03	4.31E-02
Trenchers	750	5.01E+00	2.22E+01	4.89E+01	4.97E-02	1.90E+00
Bore/Drill Rigs	15	7.43E-01	3.90E+00	4.65E+00	9.93E-03	1.79E-01
Bore/Drill Rigs	25	2.39E-01	8.12E-01	1.52E+00	2.50E-03	6.62E-02
Bore/Drill Rigs	50	4.95E-02	3.30E-01	3.91E-01	5.67E-04	2.11E-02
Bore/Drill Rigs	120	9.84E-03	9.06E-02	9.63E-02	1.73E-04	6.29E-03
Bore/Drill Rigs	175	4.26E-02	4.28E-01	4.25E-01	9.02E-04	2.08E-02
Bore/Drill Rigs	250	3.87E-02	1.59E-01	4.03E-01	9.79E-04	1.24E-02
Bore/Drill Rigs	500	1.40E-02	5.74E-02	1.37E-01	3.18E-04	4.53E-03
Bore/Drill Rigs	750	1.46E-01	5.93E-01	1.43E+00	3.36E-03	4.70E-02
Bore/Drill Rigs	1000	1.09E-01	4.08E-01	1.61E+00	2.27E-03	4.13E-02
Excavators	25	1.98E-01	6.77E-01	1.25E+00	2.09E-03	4.78E-02
Excavators	50	1.22E-02	3.90E-02	3.41E-02	4.29E-05	3.15E-03

Table B-81. 2012 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Excavators	120	2.42E-03	1.06E-02	1.49E-02	1.76E-05	1.34E-03
Excavators	175	9.36E-04	4.84E-03	6.98E-03	9.14E-06	4.13E-04
Excavators	250	1.62E-03	4.52E-03	1.55E-02	2.23E-05	5.18E-04
Excavators	500	1.56E-03	4.74E-03	1.39E-02	1.98E-05	4.96E-04
Excavators	750	3.24E-01	9.78E-01	2.97E+00	4.19E-03	1.04E-01
Concrete/Industrial Saws	25	1.84E+00	6.28E+00	1.17E+01	1.93E-02	4.66E-01
Concrete/Industrial Saws	50	5.54E-01	1.59E+00	1.57E+00	2.06E-03	1.42E-01
Concrete/Industrial Saws	120	1.46E-01	6.17E-01	9.64E-01	1.10E-03	8.10E-02
Concrete/Industrial Saws	175	4.46E+00	2.31E+01	3.84E+01	4.76E-02	2.03E+00
Cement and Mortar Mixers	15	9.06E-03	4.66E-02	5.73E-02	1.19E-04	2.81E-03
Cement and Mortar Mixers	25	2.36E-01	6.85E-01	1.25E+00	1.79E-03	7.28E-02
Cranes	50	6.00E-01	1.62E+00	1.35E+00	1.63E-03	1.41E-01
Cranes	120	2.03E-02	7.55E-02	1.21E-01	1.22E-04	1.10E-02
Cranes	175	1.55E-02	6.86E-02	1.17E-01	1.28E-04	6.81E-03
Cranes	250	5.64E-03	1.59E-02	5.49E-02	6.46E-05	1.99E-03
Cranes	500	1.14E-02	3.97E-02	1.07E-01	1.23E-04	3.98E-03
Cranes	750	7.17E-02	2.48E-01	6.86E-01	7.90E-04	2.52E-02
Cranes	9999	1.53E-02	5.53E-02	1.69E-01	1.51E-04	5.24E-03
Graders	50	1.57E+00	4.45E+00	3.81E+00	4.70E-03	3.78E-01
Graders	120	1.12E-02	4.42E-02	6.79E-02	7.26E-05	6.13E-03
Graders	175	2.58E-03	1.22E-02	1.98E-02	2.31E-05	1.14E-03
Graders	250	2.94E-03	8.41E-03	2.87E-02	3.62E-05	1.02E-03
Graders	500	6.43E-02	2.19E-01	6.01E-01	7.44E-04	2.21E-02
Graders	750	6.99E+00	2.36E+01	6.67E+01	8.23E-02	2.42E+00
Off-Highway Trucks	175	1.25E-01	6.17E-01	9.02E-01	1.14E-03	5.43E-02
Off-Highway Trucks	250	1.13E-02	3.04E-02	1.04E-01	1.44E-04	3.55E-03
Off-Highway Trucks	500	6.19E-03	1.82E-02	5.33E-02	7.31E-05	1.93E-03
Off-Highway Trucks	750	2.97E-02	8.67E-02	2.62E-01	3.57E-04	9.35E-03
Off-Highway Trucks	1000	7.44E-02	2.30E-01	8.22E-01	8.07E-04	2.48E-02
Crushing/Proc. Equipment	50	2.23E-01	6.03E-01	5.26E-01	6.58E-04	5.35E-02
Crushing/Proc. Equipment	120	2.61E-02	9.97E-02	1.57E-01	1.67E-04	1.46E-02
Crushing/Proc. Equipment	175	5.79E-02	2.67E-01	4.53E-01	5.21E-04	2.62E-02
Crushing/Proc. Equipment	250	3.81E-01	1.09E+00	4.27E+00	5.36E-03	1.33E-01
Crushing/Proc. Equipment	500	4.73E-02	1.55E-01	5.10E-01	6.34E-04	1.68E-02
Crushing/Proc. Equipment	750	4.41E+00	1.40E+01	4.89E+01	5.98E-02	1.58E+00
Crushing/Proc. Equipment	9999	9.18E-01	3.06E+00	1.08E+01	9.97E-03	3.19E-01
Rough Terrain Forklifts	50	2.20E-01	6.52E-01	5.76E-01	7.29E-04	5.52E-02
Rough Terrain Forklifts	120	1.51E-03	6.33E-03	9.33E-03	1.06E-05	8.51E-04
Rough Terrain Forklifts	175	1.12E-02	5.64E-02	8.71E-02	1.09E-04	5.07E-03
Rough Terrain Forklifts	250	1.32E-01	3.79E-01	1.37E+00	1.87E-03	4.46E-02
Rough Terrain Forklifts	500	1.40E-01	4.43E-01	1.38E+00	1.86E-03	4.75E-02
Rubber Tired Loaders	25	5.41E-01	1.84E+00	3.42E+00	5.68E-03	1.37E-01
Rubber Tired Loaders	50	8.97E-02	2.56E-01	2.21E-01	2.74E-04	2.17E-02
Rubber Tired Loaders	120	1.09E-03	4.37E-03	6.68E-03	7.20E-06	6.02E-04
Rubber Tired Loaders	175	1.67E-03	7.97E-03	1.29E-02	1.52E-05	7.42E-04
Rubber Tired Loaders	250	1.19E-03	3.42E-03	1.17E-02	1.50E-05	4.13E-04
Rubber Tired Loaders	500	2.10E-03	7.23E-03	1.99E-02	2.49E-05	7.26E-04
Rubber Tired Loaders	750	1.69E-01	5.77E-01	1.63E+00	2.04E-03	5.88E-02
Rubber Tired Loaders	1000	1.60E+00	5.70E+00	1.85E+01	1.74E-02	5.57E-01
Rubber Tired Dozers	175	1.17E+00	4.51E+00	8.62E+00	7.70E-03	5.00E-01
Rubber Tired Dozers	250	3.84E-02	1.07E-01	3.32E-01	3.12E-04	1.42E-02
Rubber Tired Dozers	500	1.64E-02	7.44E-02	1.41E-01	1.28E-04	5.93E-03
Rubber Tired Dozers	750	1.92E-01	8.68E-01	1.68E+00	1.52E-03	6.97E-02
Rubber Tired Dozers	1000	3.29E+00	1.55E+01	3.28E+01	2.51E-02	1.15E+00

Table B-81. 2012 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Tractors/Loaders/Backhoes	25	2.61E-02	8.68E-02	1.64E-01	2.64E-04	8.01E-03
Tractors/Loaders/Backhoes	50	1.11E-02	3.63E-02	3.33E-02	4.31E-05	2.94E-03
Tractors/Loaders/Backhoes	120	2.61E-04	1.22E-03	1.68E-03	2.08E-06	1.48E-04
Tractors/Loaders/Backhoes	175	3.34E-03	1.84E-02	2.61E-02	3.58E-05	1.51E-03
Tractors/Loaders/Backhoes	250	8.61E-03	2.55E-02	8.73E-02	1.31E-04	2.83E-03
Tractors/Loaders/Backhoes	500	5.03E-03	1.62E-02	4.77E-02	8.17E-05	1.65E-03
Tractors/Loaders/Backhoes	750	3.02E-02	9.66E-02	2.93E-01	4.86E-04	1.00E-02
Crawler Tractors	50	1.67E+00	4.41E+00	3.58E+00	4.25E-03	3.83E-01
Crawler Tractors	120	1.34E-03	4.76E-03	7.88E-03	7.49E-06	7.09E-04
Crawler Tractors	175	3.47E-03	1.47E-02	2.61E-02	2.68E-05	1.51E-03
Crawler Tractors	250	2.97E-03	8.35E-03	2.73E-02	2.99E-05	1.07E-03
Crawler Tractors	500	3.11E-03	1.19E-02	2.79E-02	2.97E-05	1.10E-03
Crawler Tractors	750	3.02E-01	1.15E+00	2.77E+00	2.95E-03	1.08E-01
Crawler Tractors	1000	3.43E-01	1.37E+00	3.68E+00	3.14E-03	1.19E-01
Skid Steer Loaders	25	4.07E-03	1.22E-02	2.29E-02	3.37E-05	1.29E-03
Skid Steer Loaders	50	6.36E-04	2.48E-03	2.55E-03	3.50E-06	1.92E-04
Skid Steer Loaders	120	4.09E-04	2.34E-03	2.99E-03	4.24E-06	2.42E-04
Off-Highway Tractors	120	1.72E+01	5.60E+01	9.99E+01	8.48E-02	8.83E+00
Off-Highway Tractors	175	9.24E-03	3.63E-02	6.96E-02	6.34E-05	3.99E-03
Off-Highway Tractors	250	5.49E-03	1.56E-02	4.89E-02	4.70E-05	2.06E-03
Off-Highway Tractors	750	6.86E-02	3.11E-01	6.18E-01	5.75E-04	2.53E-02
Off-Highway Tractors	1000	7.33E-01	3.45E+00	7.52E+00	5.86E-03	2.59E-01
Dumpers/Tenders	25	1.54E-01	5.00E-01	9.46E-01	1.49E-03	4.82E-02
Other Construction Equipment	15	2.19E-02	1.15E-01	1.37E-01	2.93E-04	5.29E-03
Other Construction Equipment	25	1.06E-01	3.60E-01	6.73E-01	1.11E-03	2.93E-02
Other Construction Equipment	50	1.82E-01	5.90E-01	5.83E-01	7.78E-04	4.91E-02
Other Construction Equipment	120	6.01E-02	2.89E-01	4.10E-01	5.15E-04	3.45E-02
Other Construction Equipment	175	2.73E-02	1.59E-01	2.32E-01	3.23E-04	1.26E-02
Other Construction Equipment	500	6.17E-03	2.20E-02	6.75E-02	1.01E-04	2.22E-03

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

ROG = reactive organic gases

CO = carbon monoxide

NOx = oxides of nitrogen

SO2 = sulfur dioxide

PM = particulate matter

Table B-82. 2013 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Pavers	25	5.98E-01	1.94E+00	3.64E+00	5.75E-03	1.82E-01
Pavers	50	2.86E-02	7.51E-02	6.16E-02	7.56E-05	6.45E-03
Pavers	120	1.03E-02	3.73E-02	6.17E-02	5.99E-05	5.40E-03
Pavers	175	1.45E-02	6.34E-02	1.12E-01	1.18E-04	6.28E-03
Pavers	250	9.80E-02	2.87E-01	9.22E-01	1.03E-03	3.57E-02
Pavers	500	5.24E-02	2.13E-01	4.86E-01	5.28E-04	1.88E-02
Plate Compactors	15	9.47E-03	4.97E-02	5.93E-02	1.27E-04	2.32E-03
Rollers	15	7.38E-03	3.87E-02	4.62E-02	9.87E-05	1.79E-03
Rollers	25	2.32E-02	7.91E-02	1.47E-01	2.44E-04	5.90E-03
Rollers	50	2.38E-02	6.74E-02	5.98E-02	7.77E-05	5.67E-03
Rollers	120	1.78E-03	7.30E-03	1.12E-02	1.24E-05	9.61E-04
Rollers	175	3.83E-03	1.90E-02	3.10E-02	3.73E-05	1.69E-03
Rollers	250	1.91E-02	5.87E-02	1.99E-01	2.60E-04	6.82E-03
Rollers	500	1.78E-02	6.79E-02	1.81E-01	2.32E-04	6.38E-03
Scrapers	120	3.66E-01	1.35E+00	2.17E+00	2.14E-03	1.92E-01
Scrapers	175	3.02E-02	1.33E-01	2.27E-01	2.43E-04	1.29E-02
Scrapers	250	2.36E-02	6.70E-02	2.15E-01	2.47E-04	8.27E-03
Scrapers	500	6.05E-03	2.30E-02	5.38E-02	6.00E-05	2.09E-03
Scrapers	750	1.75E-01	6.62E-01	1.58E+00	1.77E-03	6.08E-02
Paving Equipment	25	2.14E-01	7.28E-01	1.36E+00	2.24E-03	5.43E-02
Paving Equipment	50	9.67E-01	2.53E+00	2.08E+00	2.56E-03	2.18E-01
Paving Equipment	120	2.61E-02	9.48E-02	1.57E-01	1.53E-04	1.38E-02
Paving Equipment	175	4.85E-02	2.12E-01	3.78E-01	3.97E-04	2.11E-02
Paving Equipment	250	1.11E-01	3.26E-01	1.06E+00	1.19E-03	4.05E-02
Surfacing Equipment	50	4.35E-01	1.28E+00	1.24E+00	1.66E-03	1.08E-01
Surfacing Equipment	120	1.84E+00	8.00E+00	1.24E+01	1.42E-02	9.83E-01
Surfacing Equipment	175	1.55E+00	8.20E+00	1.34E+01	1.67E-02	6.81E-01
Surfacing Equipment	250	6.22E-01	2.05E+00	6.79E+00	9.21E-03	2.28E-01
Surfacing Equipment	500	5.58E-02	2.33E-01	6.05E-01	7.91E-04	2.06E-02
Surfacing Equipment	750	4.05E-01	1.67E+00	4.42E+00	5.79E-03	1.49E-01
Signal Boards	15	1.55E-03	8.12E-03	9.70E-03	2.07E-05	3.78E-04
Signal Boards	50	1.50E+00	4.50E+00	4.44E+00	6.09E-03	3.86E-01
Signal Boards	120	3.91E-02	1.73E-01	2.59E-01	3.12E-04	2.14E-02
Signal Boards	175	5.64E-02	3.06E-01	4.89E-01	6.37E-04	2.52E-02
Signal Boards	250	1.98E-01	6.49E-01	2.43E+00	3.49E-03	7.05E-02
Trenchers	15	7.97E-02	4.18E-01	4.99E-01	1.07E-03	1.95E-02
Trenchers	25	1.83E-01	6.25E-01	1.16E+00	1.93E-03	4.49E-02
Trenchers	50	9.50E-03	2.47E-02	2.08E-02	2.58E-05	2.14E-03
Trenchers	120	2.39E-03	8.72E-03	1.46E-02	1.42E-05	1.25E-03
Trenchers	175	2.29E-02	1.01E-01	1.81E-01	1.89E-04	9.92E-03
Trenchers	250	2.14E-01	6.44E-01	2.05E+00	2.28E-03	8.01E-02
Trenchers	500	1.06E-01	4.63E-01	1.02E+00	1.09E-03	3.94E-02
Trenchers	750	4.70E+00	2.03E+01	4.54E+01	4.89E-02	1.74E+00
Bore/Drill Rigs	15	7.31E-01	3.83E+00	4.58E+00	9.77E-03	1.78E-01
Bore/Drill Rigs	25	2.35E-01	7.99E-01	1.49E+00	2.46E-03	5.96E-02
Bore/Drill Rigs	50	4.02E-02	3.17E-01	3.57E-01	5.58E-04	1.66E-02
Bore/Drill Rigs	120	8.43E-03	8.87E-02	8.65E-02	1.71E-04	4.85E-03
Bore/Drill Rigs	175	3.94E-02	4.22E-01	3.88E-01	8.88E-04	1.69E-02
Bore/Drill Rigs	250	3.61E-02	1.56E-01	3.47E-01	9.64E-04	1.00E-02
Bore/Drill Rigs	500	1.32E-02	5.64E-02	1.20E-01	3.13E-04	3.69E-03
Bore/Drill Rigs	750	1.37E-01	5.83E-01	1.25E+00	3.31E-03	3.83E-02
Bore/Drill Rigs	1000	9.96E-02	3.99E-01	1.42E+00	2.23E-03	3.69E-02
Excavators	25	1.95E-01	6.66E-01	1.23E+00	2.05E-03	4.62E-02
Excavators	50	1.07E-02	3.72E-02	3.21E-02	4.23E-05	2.78E-03

Table B-82. 2013 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Excavators	120	2.19E-03	1.04E-02	1.36E-02	1.73E-05	1.18E-03
Excavators	175	8.64E-04	4.75E-03	6.38E-03	9.00E-06	3.66E-04
Excavators	250	1.53E-03	4.34E-03	1.40E-02	2.19E-05	4.57E-04
Excavators	500	1.48E-03	4.48E-03	1.26E-02	1.95E-05	4.39E-04
Excavators	750	3.06E-01	9.24E-01	2.67E+00	4.12E-03	9.22E-02
Concrete/Industrial Saws	25	1.81E+00	6.18E+00	1.14E+01	1.90E-02	4.44E-01
Concrete/Industrial Saws	50	4.98E-01	1.52E+00	1.49E+00	2.03E-03	1.29E-01
Concrete/Industrial Saws	120	1.33E-01	6.02E-01	8.91E-01	1.08E-03	7.35E-02
Concrete/Industrial Saws	175	4.09E+00	2.26E+01	3.55E+01	4.69E-02	1.84E+00
Cement and Mortar Mixers	15	8.84E-03	4.58E-02	5.58E-02	1.17E-04	2.53E-03
Cement and Mortar Mixers	25	2.14E-01	6.43E-01	1.20E+00	1.76E-03	6.58E-02
Cranes	50	5.45E-01	1.55E+00	1.28E+00	1.61E-03	1.28E-01
Cranes	120	1.87E-02	7.36E-02	1.12E-01	1.20E-04	1.01E-02
Cranes	175	1.44E-02	6.73E-02	1.09E-01	1.26E-04	6.23E-03
Cranes	250	5.24E-03	1.48E-02	5.02E-02	6.36E-05	1.77E-03
Cranes	500	1.07E-02	3.63E-02	9.78E-02	1.21E-04	3.56E-03
Cranes	750	6.70E-02	2.27E-01	6.28E-01	7.77E-04	2.26E-02
Cranes	9999	1.45E-02	5.07E-02	1.58E-01	1.49E-04	4.86E-03
Graders	50	1.41E+00	4.25E+00	3.61E+00	4.63E-03	3.42E-01
Graders	120	1.02E-02	4.32E-02	6.29E-02	7.14E-05	5.51E-03
Graders	175	2.40E-03	1.20E-02	1.83E-02	2.27E-05	1.03E-03
Graders	250	2.75E-03	7.96E-03	2.61E-02	3.56E-05	9.09E-04
Graders	500	6.03E-02	2.04E-01	5.48E-01	7.32E-04	1.98E-02
Graders	750	6.55E+00	2.20E+01	6.08E+01	8.10E-02	2.17E+00
Off-Highway Trucks	175	1.16E-01	6.07E-01	8.27E-01	1.13E-03	4.83E-02
Off-Highway Trucks	250	1.06E-02	2.91E-02	9.41E-02	1.42E-04	3.13E-03
Off-Highway Trucks	500	5.85E-03	1.71E-02	4.82E-02	7.20E-05	1.71E-03
Off-Highway Trucks	750	2.80E-02	8.16E-02	2.37E-01	3.51E-04	8.27E-03
Off-Highway Trucks	1000	6.94E-02	2.11E-01	7.56E-01	7.95E-04	2.27E-02
Crushing/Proc. Equipment	50	1.99E-01	5.71E-01	4.96E-01	6.48E-04	4.82E-02
Crushing/Proc. Equipment	120	2.37E-02	9.70E-02	1.44E-01	1.64E-04	1.32E-02
Crushing/Proc. Equipment	175	5.30E-02	2.62E-01	4.16E-01	5.13E-04	2.36E-02
Crushing/Proc. Equipment	250	3.55E-01	1.04E+00	3.88E+00	5.27E-03	1.19E-01
Crushing/Proc. Equipment	500	4.44E-02	1.44E-01	4.62E-01	6.24E-04	1.50E-02
Crushing/Proc. Equipment	750	4.12E+00	1.31E+01	4.42E+01	5.89E-02	1.41E+00
Crushing/Proc. Equipment	9999	8.41E-01	2.74E+00	9.94E+00	9.81E-03	2.90E-01
Rough Terrain Forklifts	50	1.94E-01	6.21E-01	5.44E-01	7.18E-04	4.94E-02
Rough Terrain Forklifts	120	1.37E-03	6.18E-03	8.57E-03	1.05E-05	7.58E-04
Rough Terrain Forklifts	175	1.04E-02	5.54E-02	8.00E-02	1.07E-04	4.54E-03
Rough Terrain Forklifts	250	1.24E-01	3.64E-01	1.24E+00	1.84E-03	3.99E-02
Rough Terrain Forklifts	500	1.33E-01	4.16E-01	1.25E+00	1.83E-03	4.26E-02
Rubber Tired Loaders	25	5.32E-01	1.81E+00	3.36E+00	5.59E-03	1.30E-01
Rubber Tired Loaders	50	8.06E-02	2.44E-01	2.09E-01	2.70E-04	1.96E-02
Rubber Tired Loaders	120	9.99E-04	4.26E-03	6.18E-03	7.09E-06	5.41E-04
Rubber Tired Loaders	175	1.55E-03	7.83E-03	1.19E-02	1.49E-05	6.70E-04
Rubber Tired Loaders	250	1.11E-03	3.24E-03	1.07E-02	1.47E-05	3.66E-04
Rubber Tired Loaders	500	1.97E-03	6.75E-03	1.81E-02	2.46E-05	6.47E-04
Rubber Tired Loaders	750	1.58E-01	5.38E-01	1.49E+00	2.01E-03	5.24E-02
Rubber Tired Loaders	1000	1.49E+00	5.28E+00	1.71E+01	1.71E-02	5.15E-01
Rubber Tired Dozers	175	1.10E+00	4.40E+00	8.10E+00	7.58E-03	4.65E-01
Rubber Tired Dozers	250	3.62E-02	1.01E-01	3.10E-01	3.07E-04	1.31E-02
Rubber Tired Dozers	500	1.55E-02	6.85E-02	1.32E-01	1.26E-04	5.46E-03
Rubber Tired Dozers	750	1.81E-01	7.99E-01	1.56E+00	1.50E-03	6.42E-02
Rubber Tired Dozers	1000	3.11E+00	1.42E+01	3.09E+01	2.47E-02	1.07E+00

Table B-82. 2013 Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)				
		ROG	CO	NOx	SO2	PM
Tractors/Loaders/Backhoes	25	2.52E-02	8.48E-02	1.60E-01	2.60E-04	7.29E-03
Tractors/Loaders/Backhoes	50	9.70E-03	3.46E-02	3.13E-02	4.24E-05	2.58E-03
Tractors/Loaders/Backhoes	120	2.35E-04	1.19E-03	1.54E-03	2.04E-06	1.29E-04
Tractors/Loaders/Backhoes	175	3.07E-03	1.81E-02	2.39E-02	3.53E-05	1.33E-03
Tractors/Loaders/Backhoes	250	8.07E-03	2.45E-02	7.82E-02	1.29E-04	2.48E-03
Tractors/Loaders/Backhoes	500	4.75E-03	1.54E-02	4.29E-02	8.05E-05	1.45E-03
Tractors/Loaders/Backhoes	750	2.85E-02	9.18E-02	2.63E-01	4.79E-04	8.81E-03
Crawler Tractors	50	1.53E+00	4.23E+00	3.42E+00	4.18E-03	3.52E-01
Crawler Tractors	120	1.24E-03	4.64E-03	7.35E-03	7.37E-06	6.49E-04
Crawler Tractors	175	3.25E-03	1.44E-02	2.43E-02	2.64E-05	1.38E-03
Crawler Tractors	250	2.78E-03	7.87E-03	2.52E-02	2.95E-05	9.66E-04
Crawler Tractors	500	2.92E-03	1.09E-02	2.58E-02	2.93E-05	9.98E-04
Crawler Tractors	750	2.85E-01	1.06E+00	2.55E+00	2.91E-03	9.78E-02
Crawler Tractors	1000	3.22E-01	1.26E+00	3.44E+00	3.09E-03	1.10E-01
Skid Steer Loaders	25	3.82E-03	1.18E-02	2.21E-02	3.32E-05	1.19E-03
Skid Steer Loaders	50	5.43E-04	2.37E-03	2.38E-03	3.45E-06	1.64E-04
Skid Steer Loaders	120	3.58E-04	2.29E-03	2.72E-03	4.17E-06	2.04E-04
Off-Highway Tractors	120	1.61E+01	5.46E+01	9.39E+01	8.34E-02	8.20E+00
Off-Highway Tractors	175	8.72E-03	3.55E-02	6.53E-02	6.24E-05	3.71E-03
Off-Highway Tractors	250	5.17E-03	1.47E-02	4.56E-02	4.62E-05	1.89E-03
Off-Highway Tractors	750	6.48E-02	2.86E-01	5.76E-01	5.66E-04	2.33E-02
Off-Highway Tractors	1000	6.92E-01	3.17E+00	7.08E+00	5.76E-03	2.42E-01
Dumpers/Tenders	25	1.46E-01	4.86E-01	9.12E-01	1.47E-03	4.40E-02
Other Construction Equipment	15	2.16E-02	1.13E-01	1.35E-01	2.88E-04	5.24E-03
Other Construction Equipment	25	1.04E-01	3.54E-01	6.59E-01	1.09E-03	2.64E-02
Other Construction Equipment	50	1.60E-01	5.62E-01	5.48E-01	7.66E-04	4.35E-02
Other Construction Equipment	120	5.39E-02	2.82E-01	3.76E-01	5.07E-04	3.04E-02
Other Construction Equipment	175	2.49E-02	1.56E-01	2.13E-01	3.18E-04	1.12E-02
Other Construction Equipment	500	5.82E-03	2.09E-02	6.09E-02	9.99E-05	1.97E-03

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

ROG = reactive organic gases

CO = carbon monoxide

NOx = oxides of nitrogen

SO2 = sulfur dioxide

PM = particulate matter

Table B-83. Alternative 1 Annual Emissions of ROG from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak Yr
1 Clear & Grub	0.01	-	-	-	0.01
2a Well Installation	1.15	-	-	-	1.15
2b Detention Pond Operations	1.39	3.33	1.67	-	3.33
5a Overlay Materials Supply	-	-	-	-	0.00
3 Excavation	0.32	1.16	-	-	1.16
4 Excavation Backfill	-	0.09	0.08	-	0.09
Dam Stripping	-	0.05	-	-	0.05
5b Filter Placement	-	0.13	0.20	0.05	0.20
Shell Placement	-	0.09	0.20	0.06	0.20
TOTAL	2.87	4.86	2.16	0.11	4.86

Table B-84. Alternative 1 Annual Emissions of NOx from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.09	-	-	-	0.09
2a Well Installation	13.39	-	-	-	13.39
2b Detention Pond Operations	3.99	9.59	4.79	-	9.59
5a Overlay Materials Supply	-	-	-	-	0.00
3 Excavation	2.86	10.38	-	-	10.38
4 Excavation Backfill	-	0.83	0.77	-	0.83
Dam Stripping	-	0.50	-	-	0.50
5b Filter Placement	-	1.17	1.84	0.42	1.84
Shell Placement	-	0.84	1.84	0.56	1.84
TOTAL	20.33	23.31	9.23	0.98	23.31

Table B-85. Alternative 1 Annual Emissions of CO from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.03	-	-	-	0.03
2a Well Installation	4.23	-	-	-	4.23
2b Detention Pond Operations	1.09	2.61	1.31	-	2.61
5a Overlay Materials Supply	-	-	-	-	0.00
3 Excavation	1.41	5.08	-	-	5.08
4 Excavation Backfill	-	0.35	0.32	-	0.35
Dam Stripping	-	0.20	-	-	0.20
5b Filter Placement	-	0.47	0.75	0.18	0.75
Shell Placement	-	0.34	0.75	0.23	0.75
TOTAL	6.76	9.06	3.14	0.41	9.06

Table B-86. Alternative 1 Annual Emissions of PM10 from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.47	-	-	-	0.47
2b Detention Pond Operations	0.30	0.72	0.36	-	0.72
5a Overlay Materials Supply	-	-	-	-	0.00
3 Excavation	0.12	0.43	-	-	0.43
4 Excavation Backfill	-	0.03	0.03	-	0.03
Dam Stripping	-	0.02	-	-	0.02
5b Filter Placement	-	0.04	0.07	0.02	0.07
Shell Placement	-	0.03	0.07	0.02	0.07
TOTAL	0.90	1.28	0.53	0.04	1.28

Table B-87. Alternative 1 Annual Emissions of PM2.5 from Construction Equipment (tons per year)

Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.00	-	-	-	0.00
2a	Well Installation	0.44	-	-	-	0.44
2b	Detention Pond Operations	0.28	0.66	0.33	-	0.66
5a	Overlay Materials Supply	-	-	-	-	0.00
3	Excavation	0.11	0.40	-	-	0.40
4	Excavation Backfill	-	0.03	0.03	-	0.03
	Dam Stripping	-	0.02	-	-	0.02
5b	Filter Placement	-	0.04	0.06	0.01	0.06
	Shell Placement	-	0.03	0.06	0.02	0.06
TOTAL		0.82	1.18	0.49	0.03	1.18

Table B-88. Alternative 1 Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.48	0.48																				
Well Installation		12.01	12.01	12.01	12.01	12.01	12.01	12.01	12.01													
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20
Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									14.34	14.34	13.54	13.54	13.54	13.54	13.54	13.54	13.54	13.54				
Excavation Backfill																						
Dam Stripping															1.51	1.51	1.51					
Filter Placement																1.51	1.51	1.51	1.51	1.51	1.51	1.51
Shell Placement																		1.51	1.51	1.51	1.51	1.51
Total	0.48	12.49	12.01	12.01	12.01	30.21	30.21	30.21	44.55	32.54	31.74	31.74	31.74	31.74	33.25	34.76	36.00	36.00	22.46	22.46	22.46	22.46

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20												
Materials Supply																		
Excavation																		
Excavation Backfill	1.17	1.17	1.17	1.17	1.17	1.17												
Dam Stripping																		
Filter Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	22.21	22.21	22.21	22.21	22.21	22.21	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34	0.00	0.00

Table B-89. Alternative 1 Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	4.45	4.45																						
Well Installation		139.50	139.50	139.50	139.50	139.50	139.50	139.50	139.50															
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									129.78	129.78	120.71	120.71	120.71	120.71	120.71	120.71	120.71	120.71						
Excavation Backfill																	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
Dam Stripping														13.94	13.94	13.94								
Filter Placement																13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	
Shell Placement																								
Total	4.45	143.95	139.50	139.50	139.50	191.88	191.88	191.88	321.66	182.16	173.09	173.09	173.09	173.09	187.03	200.97	212.57	212.57	91.86	91.86	91.86	91.86		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	52.38	52.38	52.38	52.38	52.38	52.38												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	10.63	10.63	10.63	10.63	10.63	10.63												
Dam Stripping																		
Filter Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67			
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67		
Total	88.51	88.51	88.51	88.51	88.51	88.51	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67	0.00	0.00

Table B-90. Alternative 1 Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Phase																							
Clear & Grub	1.70	1.70																					
Well Installation		44.08	44.08	44.08	44.08	44.08	44.08	44.08	44.08														
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation									64.08	64.08	59.05	59.05	59.05	59.05	59.05	59.05	59.05	59.05					
Excavation Backfill																	4.87	4.87	4.87	4.87	4.87	4.87	
Dam Stripping															5.65	5.65	5.65						
Filter Placement																5.65	5.65	5.65	5.65	5.65	5.65	5.65	
Shell Placement																		5.65	5.65	5.65	5.65	5.65	
Total	1.70	45.77	44.08	44.08	44.08	58.36	58.36	58.36	122.44	78.37	73.34	73.34	73.34	73.34	78.99	84.64	89.51	89.51	30.46	30.46	30.46	30.46	

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	4.51	4.51	4.51	4.51	4.51	4.51												
Dam Stripping																		
Filter Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	29.27	29.27	29.27	29.27	29.27	29.27	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88	0.00	0.00

Table B-91. Alternative 1 Daily PM10 Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.18	0.18																				
Well Installation		4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93													
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									5.42	5.42	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00				
Excavation Backfill																	0.45	0.45	0.45	0.45	0.45	0.45
Dam Stripping															0.53	0.53	0.53					
Filter Placement																0.53	0.53	0.53	0.53	0.53	0.53	0.53
Shell Placement																		0.53	0.53	0.53	0.53	0.53
Total	0.18	5.11	4.93	4.93	4.93	8.86	8.86	8.86	14.28	9.35	8.93	8.93	8.93	8.93	9.46	10.00	10.44	10.44	5.45	5.45	5.45	5.45

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.41	0.41	0.41	0.41	0.41	0.41												
Dam Stripping																		
Filter Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Total	5.30	5.30	5.30	5.30	5.30	5.30	0.96	0.96	0.96	0.96	0.96	0.96	0.87	0.87	0.87	0.43	0.00	0.00

Table B-92. Alternative 1 Daily PM2.5 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.16	0.16																				
Well Installation		4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54													
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									4.99	4.99	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60				
Excavation Backfill																						
Dam Stripping															0.49	0.49	0.49					
Filter Placement																0.49	0.49	0.49	0.49	0.49	0.49	0.49
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Total	0.16	4.70	4.54	4.54	4.54	8.15	8.15	8.15	13.14	8.60	8.21	8.21	8.21	8.21	8.70	9.20	9.61	9.61	5.01	5.01	5.01	5.01

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.37	0.37	0.37	0.37	0.37	0.37												
Dam Stripping																		
Filter Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Total	4.87	4.87	4.87	4.87	4.87	4.87	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.40	0.00	0.00

Table B-98. Alternative 2 Annual Emissions of ROG from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.01	-	-	-	0.01
2a Well Installation	0.87	-	-	-	0.87
3 Wall Construction	0.01	-	-	-	0.01
2b Detention Pond Operations	1.39	3.33	1.67	-	3.33
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.31	1.17	-	-	1.17
5 Excavation Backfill	-	0.09	0.17	-	0.17
Dam Stripping	-	0.05	-	-	0.05
6b Filter Placement	-	0.16	0.20	0.05	0.20
Shell Placement	-	0.09	0.20	0.06	0.20
TOTAL	2.58	4.90	2.25	0.11	4.90

Table B-99. Alternative 2 Annual Emissions of NOx from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.09	-	-	-	0.09
2a Well Installation	10.05	-	-	-	10.05
3 Wall Construction	0.13	-	-	-	0.13
2b Detention Pond Operations	4.00	9.59	4.80	-	9.59
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	2.80	10.43	-	-	10.43
5 Excavation Backfill	-	0.83	1.60	-	1.60
Dam Stripping	-	0.50	-	-	0.50
6b Filter Placement	-	1.51	1.84	0.42	1.84
Shell Placement	-	0.84	1.84	0.56	1.84
TOTAL	17.07	23.70	10.07	0.98	23.70

Table B-100. Alternative 2 Annual Emissions of CO from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.03	-	-	-	0.03
2a Well Installation	3.18	-	-	-	3.18
3 Wall Construction	0.04	-	-	-	0.04
2b Detention Pond Operations	1.09	2.62	1.31	-	2.62
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	1.38	5.10	-	-	5.10
5 Excavation Backfill	-	0.35	0.68	-	0.68
Dam Stripping	-	0.20	-	-	0.20
6b Filter Placement	-	0.61	0.75	0.18	0.75
Shell Placement	-	0.34	0.75	0.23	0.75
TOTAL	5.72	9.22	3.49	0.41	9.22

Table B-101. Alternative 2 Annual Emissions of PM10 from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.36	-	-	-	0.36
3 Wall Construction	0.00	-	-	-	0.00
2b Detention Pond Operations	0.30	0.72	0.36	-	0.72
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.12	0.43	-	-	0.43
5 Excavation Backfill	-	0.03	0.06	-	0.06
Dam Stripping	-	0.02	-	-	0.02
6b Filter Placement	-	0.06	0.07	0.02	0.07
Shell Placement	-	0.03	0.07	0.02	0.07
TOTAL	0.78	1.29	0.56	0.04	1.29

Table B-102. Alternative 2 Annual Emissions of PM2.5 from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.33	-	-	-	0.33
3 Wall Construction	0.00	-	-	-	0.00
2b Detention Pond Operations	0.28	0.66	0.33	-	0.66
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.11	0.40	-	-	0.40
5 Excavation Backfill	-	0.03	0.06	-	0.06
Dam Stripping	-	0.02	-	-	0.02
6b Filter Placement	-	0.05	0.06	0.01	0.06
Shell Placement	-	0.03	0.06	0.02	0.06
TOTAL	0.72	1.19	0.52	0.03	1.19

Table B-103. Alternative 2 Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22							
Phase																													
Clear & Grub	0.48	0.48																											
Well Installation		12.02	12.02	12.02	12.02	12.02	12.02																						
Wall Construction			0.45	0.45	0.45	0.45																							
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20							
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0							
Excavation									14.34	14.34	13.54	13.54	13.54	13.54	13.54	13.54	13.54	13.54											
Excavation Backfill																							1.24	1.24	1.24	1.24	1.24	1.24	
Dam Stripping																							1.51	1.51	1.51				
Filter Placement													1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51							
Shell Placement																	1.51	1.51	1.51	1.51	1.51	1.51							
Total	0.48	12.50	12.47	12.47	12.47	30.67	30.22	18.20	32.54	32.54	31.74	31.74	31.74	33.25	34.76	34.76	36.00	36.00	22.46	22.46	22.46	22.46							

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	1.17	1.17	1.17	1.17	1.17	1.17												
Dam Stripping																		
Filter Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	22.21	22.21	22.21	22.21	22.21	22.21	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34	0.00	0.00

Table B-104. Alternative 2 Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	4.45	4.45																						
Well Installation		139.62	139.62	139.62	139.62	139.62	139.62																	
Wall Construction			5.16	5.16	5.16	5.16																		
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation									129.78	129.78	120.71	120.71	120.71	120.71	120.71	120.71	120.71	120.71						
Excavation Backfill																	11.60	11.60	11.60	11.60	11.60	11.60		
Dam Stripping															13.94	13.94	13.94							
Filter Placement													13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94			
Shell Placement																	13.94	13.94	13.94	13.94	13.94			
Total	4.45	144.06	144.77	144.77	144.77	197.16	192.00	52.38	182.16	182.16	173.09	173.09	173.09	187.03	200.97	200.97	212.57	212.57	91.86	91.86	91.86	91.86		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	52.38	52.38	52.38	52.38	52.38	52.38												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	10.63	10.63	10.63	10.63	10.63	10.63												
Dam Stripping																		
Filter Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67			
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67		
Total	88.51	88.51	88.51	88.51	88.51	88.51	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67	0.00	0.00

Table B-105. Alternative 2 Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	1.70	1.70																				
Well Installation		44.11	44.11	44.11	44.11	44.11	44.11															
Wall Construction			1.68	1.68	1.68	1.68																
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Excavation									64.08	64.08	59.05	59.05	59.05	59.05	59.05	59.05	59.05	59.05				
Excavation Backfill																	4.87	4.87	4.87	4.87	4.87	4.87
Dam Stripping																	5.65	5.65	5.65			
Filter Placement														5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65
Shell Placement																		5.65	5.65	5.65	5.65	5.65
Total	1.70	45.80	45.78	45.78	45.78	60.07	58.39	14.29	78.37	78.37	73.34	73.34	73.34	78.99	84.64	84.64	89.51	89.51	30.46	30.46	30.46	30.46

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	4.51	4.51	4.51	4.51	4.51	4.51												
Dam Stripping																		
Filter Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	29.27	29.27	29.27	29.27	29.27	29.27	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88	0.00	0.00

Table B-106. Alternative 2 Daily PM10 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.18	0.18																				
Well Installation		4.94	4.94	4.94	4.94	4.94	4.94															
Wall Construction			0.19	0.19	0.19	0.19																
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Excavation									5.42	5.42	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00				
Excavation Backfill																						
Dam Stripping															0.53	0.53	0.53					
Filter Placement														0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Shell Placement																		0.53	0.53	0.53	0.53	0.53
Total	0.18	5.11	5.12	5.12	5.12	9.05	8.86	3.93	9.35	9.35	8.93	8.93	8.93	9.46	10.00	10.00	10.44	10.44	5.45	5.45	5.45	5.45

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.41	0.41	0.41	0.41	0.41	0.41												
Dam Stripping																		
Filter Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Total	5.30	5.30	5.30	5.30	5.30	5.30	0.96	0.96	0.96	0.96	0.96	0.96	0.87	0.87	0.87	0.43	0.00	0.00

Table B-107. Alternative 2 Daily PM2.5 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.16	0.16																				
Well Installation		4.54	4.54	4.54	4.54	4.54	4.54															
Wall Construction			0.17	0.17	0.17	0.17																
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Excavation									4.99	4.99	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60				
Excavation Backfill																						
Dam Stripping															0.49	0.49	0.49					
Filter Placement														0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Shell Placement																		0.49	0.49	0.49	0.49	0.49
Total	0.16	4.70	4.71	4.71	4.71	8.33	8.16	3.61	8.60	8.60	8.21	8.21	8.21	8.70	9.20	9.20	9.61	9.61	5.01	5.01	5.01	5.01

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.37	0.37	0.37	0.37	0.37	0.37												
Dam Stripping																		
Filter Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Total	4.87	4.87	4.87	4.87	4.87	4.87	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.40	0.00	0.00

Table B-113. Alternative 3 Annual Emissions of ROG from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.01	-	-	-	0.01
2a Well Installation	0.72	-	-	-	0.72
3 Wall Construction	0.03	-	-	-	0.03
2b Detention Pond Operations	1.39	3.33	2.78	-	3.33
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	-	1.55	0.91	-	1.55
5 Excavation Backfill	-	-	0.15	-	0.15
Dam Stripping	-	0.05	-	-	0.05
6b Filter Placement	-	0.16	0.20	0.05	0.20
Shell Placement	-	0.09	0.20	0.06	0.20
TOTAL	2.15	5.19	4.25	0.11	5.19

Table B-114. Alternative 3 Annual Emissions of NOx from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.09	-	-	-	0.09
2a Well Installation	8.38	-	-	-	8.38
3 Wall Construction	0.35	-	-	-	0.35
2b Detention Pond Operations	4.00	9.59	7.99	-	9.59
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	-	13.79	8.02	-	13.79
5 Excavation Backfill	-	-	1.30	-	1.30
Dam Stripping	-	0.50	-	-	0.50
6b Filter Placement	-	1.51	1.84	0.42	1.84
Shell Placement	-	0.84	1.84	0.56	1.84
TOTAL	12.81	26.22	20.98	0.98	26.22

Table B-115. Alternative 3 Annual Emissions of CO from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.03	-	-	-	0.03
2a Well Installation	2.65	-	-	-	2.65
3 Wall Construction	0.11	-	-	-	0.11
2b Detention Pond Operations	1.09	2.62	2.18	-	2.62
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	-	6.83	3.94	-	6.83
5 Excavation Backfill	-	-	0.58	-	0.58
Dam Stripping	-	0.20	-	-	0.20
6b Filter Placement	-	0.61	0.75	0.18	0.75
Shell Placement	-	0.34	0.75	0.23	0.75
TOTAL	3.88	10.60	8.21	0.41	10.60

Table B-116. Alternative 3 Annual Emissions of PM10 from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.30	-	-	-	0.30
3 Wall Construction	0.01	-	-	-	0.01
2b Detention Pond Operations	0.30	0.72	0.60	-	0.72
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	-	0.57	0.33	-	0.57
5 Excavation Backfill	-	-	0.05	-	0.05
Dam Stripping	-	0.02	-	-	0.02
6b Filter Placement	-	0.06	0.07	0.02	0.07
Shell Placement	-	0.03	0.07	0.02	0.07
TOTAL	0.61	1.40	1.12	0.04	1.40

Table B-117. Alternative 3 Annual Emissions of PM2.5 from Construction Equipment (tons per year)

Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.00	-	-	-	0.00
2a	Well Installation	0.27	-	-	-	0.27
3	Wall Construction	0.01	-	-	-	0.01
2b	Detention Pond Operations	0.28	0.66	0.55	-	0.66
6a	Overlay Materials Supply	-	-	-	-	0.00
4	Excavation	-	0.53	0.30	-	0.53
5	Excavation Backfill	-	-	0.05	-	0.05
	Dam Stripping	-	0.02	-	-	0.02
6b	Filter Placement	-	0.05	0.06	0.01	0.06
	Shell Placement	-	0.03	0.06	0.02	0.06
TOTAL		0.56	1.29	1.03	0.03	1.29

Table B-118. Alternative 3 Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22												
Phase																																		
Clear & Grub	0.48	0.48																																
Well Installation		12.02	12.02	12.02	12.02	12.02																												
Wall Construction			0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45																								
Detention Pond Operations						18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20												
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0												
Excavation																																		
Excavation Backfill																																		
Dam Stripping															1.51	1.51	1.51																	
Filter Placement														1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51												
Shell Placement																		1.51	1.51	1.51	1.51	1.51												
Total	0.48	12.50	12.47	12.47	12.47	30.67	18.65	18.65	18.65	18.65	18.20	18.20	18.20	32.82	34.33	34.33	34.33	34.33	34.33	34.33	34.33	21.21												

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20								
Overlay Materials Supply																		
Excavation					12.39	12.39	12.39	12.39	12.39									
Excavation Backfill						0.99	0.99	0.99	0.99	0.99	0.99							
Dam Stripping																		
Filter Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	21.04	21.04	21.04	33.42	33.42	34.42	34.42	34.42	22.03	22.03	3.83	2.83	2.67	2.67	2.67	1.34	0.00	0.00

Table B-119. Alternative 3 Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	4.45	4.45																						
Well Installation		139.62	139.62	139.62	139.62	139.62																		
Wall Construction			5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16														
Detention Pond Operations						52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation												116.69												
Excavation Backfill																								
Dam Stripping															13.94	13.94	13.94							
Filter Placement														13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94		
Shell Placement																	13.94	13.94	13.94	13.94	13.94	13.94		
Total	4.45	144.06	144.77	144.77	144.77	197.16	57.54	57.54	57.54	57.54	52.38	52.38	52.38	183.01	196.95	196.95	196.95	196.95	196.95	196.95	196.95	80.26		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38								
Overlay Materials Supply																		
Excavation					108.55	108.55	108.55	108.55	108.55									
Excavation Backfill							8.63	8.63	8.63	8.63	8.63							
Dam Stripping																		
Filter Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67			
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67		
Total	77.88	77.88	77.88	186.42	186.42	195.05	195.05	195.05	86.50	86.50	34.12	25.50	23.34	23.34	23.34	11.67	0.00	0.00

Table B-120. Alternative 3 Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	1.70	1.70																										
Well Installation		44.11	44.11	44.11	44.11	44.11																						
Wall Construction			1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68																		
Detention Pond Operations						14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29						
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0						
Excavation																												
Excavation Backfill																												
Dam Stripping															5.65	5.65	5.65											
Filter Placement														5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65						
Shell Placement																		5.65	5.65	5.65	5.65	5.65						
Total	1.70	45.80	45.78	45.78	45.78	60.07	15.96	15.96	15.96	15.96	14.29	14.29	14.29	77.78	83.43	83.43	83.43	83.43	83.43	83.43	83.43	25.59						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29								
Overlay Materials Supply																		
Excavation					53.31	53.31	53.31	53.31	53.31									
Excavation Backfill						3.90	3.90	3.90	3.90	3.90	3.90	3.90						
Dam Stripping																		
Filter Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	24.76	24.76	24.76	78.07	78.07	81.96	81.96	81.96	28.65	28.65	14.37	14.37	9.76	9.76	9.76	4.88	0.00	0.00

Table B-121. Alternative 3 Daily PM10 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.18	0.18																					
Well Installation		4.94	4.94	4.94	4.94	4.94																	
Wall Construction			0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19													
Detention Pond Operations						3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	
Excavation																							
Excavation Backfill																							
Dam Stripping														0.53	0.53	0.53							
Filter Placement														0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	
Shell Placement																	0.53	0.53	0.53	0.53	0.53	0.53	
Total	0.18	5.11	5.12	5.12	5.12	9.05	4.11	4.11	4.11	4.11	3.93	3.93	3.93	9.30	9.84	9.84	9.84	9.84	9.84	9.84	9.84	5.00	

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93								
Overlay Materials Supply																		
Excavation					4.45	4.45	4.45	4.45	4.45									
Excavation Backfill							0.34	0.34	0.34	0.34	0.34	0.34						
Dam Stripping																		
Filter Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Total	4.89	4.89	4.89	9.35	9.35	9.69	9.69	9.69	5.23	5.23	1.30	1.30	0.87	0.87	0.87	0.43	0.00	0.00

Table B-122. Alternative 3 Daily PM2.5 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	0.16	0.16																										
Well Installation		4.54	4.54	4.54	4.54	4.54																						
Wall Construction			0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17																		
Detention Pond Operations						3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61						
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0						
Excavation																												
Excavation Backfill																												
Dam Stripping														0.49	0.49	0.49												
Filter Placement													0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49							
Shell Placement																	0.49	0.49	0.49	0.49	0.49							
Total	0.16	4.70	4.71	4.71	4.71	8.33	3.79	3.79	3.79	3.79	3.61	3.61	3.61	8.56	9.05	9.05	9.05	9.05	9.05	9.05	9.05	4.60						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61								
Overlay Materials Supply																		
Excavation					4.10	4.10	4.10	4.10	4.10									
Excavation Backfill							0.31	0.31	0.31	0.31	0.31	0.31						
Dam Stripping																		
Filter Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Total	4.50	4.50	4.50	8.60	8.60	8.91	8.91	8.91	4.81	4.81	1.20	1.20	0.80	0.80	0.80	0.40	0.00	0.00

Table B-124. Alternative 3 Exhaust CO Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	2.13E-02				4.22E-01				8.44E-03			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	8.07E-02				3.22E-01				6.44E-03			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	8.79E-02				7.94E-01				1.59E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	3.87E-03				1.54E-02				3.08E-04			
1	Water Truck	Off-Highway Trucks	189	3.42E-02				1.43E-01				2.85E-03			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	6.17E-01				4.41E+01				2.64E+00			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	3.87E-03				3.08E-02				1.85E-03			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A ¹	75 ²	1.20E+00				1.43E+01				1.09E+00	2.62E+00	2.18E+00	
Step 3 - Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	5.97E-02				9.59E-01				6.33E-02			
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	5.97E-02				6.87E-01				4.54E-02			
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	3.87E-03				3.08E-02				4.06E-03			
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02	1.82E-02		2.33E+00	2.17E+00			2.76E-01	1.60E-01		
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181		7.57E-02	7.11E-02		2.42E+00	2.27E+00			2.85E-01	1.68E-01		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02	7.44E-02		4.39E+00	4.04E+00			5.18E-01	2.98E-01		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580		9.43E-01	8.68E-01		4.82E+01	4.44E+01			5.70E+00	3.28E+00		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180		3.63E-03	3.42E-03		2.88E-02	2.72E-02			3.41E-03	2.01E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03	7.23E-03		1.79E-01	1.66E-01			2.11E-02	1.22E-02		
1	Water Truck	Off-Highway Trucks	189		3.21E-02	3.04E-02		2.67E-01	2.53E-01			3.16E-02	1.87E-02		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450			1.82E-02			7.23E-01				5.20E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410			7.44E-02			2.69E+00				1.94E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350			2.20E-02			6.81E-01				4.90E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260			7.23E-03			1.66E-01				1.19E-02		
1	Water Truck	Off-Highway Trucks	189			3.04E-02			2.53E-01				1.82E-02		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02				1.56E+00				5.60E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02				2.92E+00				1.05E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02				7.24E-01				2.61E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03				1.79E-01				6.44E-03		
1	Water Truck	Off-Highway Trucks	189		3.21E-02				2.67E-01				9.63E-03		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02	1.82E-02	1.71E-02		1.56E+00	1.45E+00	1.36E+00		1.68E-01	2.08E-01	4.89E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02	7.44E-02	6.85E-02		2.92E+00	2.69E+00	2.48E+00		3.16E-01	3.88E-01	8.92E-02
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02	2.20E-02	2.09E-02		7.24E-01	6.81E-01	6.46E-01		7.82E-02	9.80E-02	2.33E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03	7.23E-03	6.75E-03		1.79E-01	1.66E-01	1.55E-01		1.93E-02	2.39E-02	5.57E-03
1	Water Truck	Off-Highway Trucks	189		3.21E-02	3.04E-02	2.91E-02		2.67E-01	2.53E-01	2.43E-01		2.89E-02	3.65E-02	8.73E-03
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02	1.82E-02	1.71E-02		1.56E+00	1.45E+00	1.36E+00		9.33E-02	2.08E-01	6.52E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02	7.44E-02	6.85E-02		2.92E+00	2.69E+00	2.48E+00		1.75E-01	3.88E-01	1.19E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02	2.20E-02	2.09E-02		7.24E-01	6.81E-01	6.46E-01		4.34E-02	9.80E-02	3.10E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03	7.23E-03	6.75E-03		1.79E-01	1.66E-01	1.55E-01		1.07E-02	2.39E-02	7.42E-03
1	Water Truck	Off-Highway Trucks	189		3.21E-02	3.04E-02	2.91E-02		2.67E-01	2.53E-01	2.43E-01		1.60E-02	3.65E-02	1.16E-02

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-125. Alternative 3 Exhaust NOx Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	6.55E-02				1.30E+00				2.60E-02			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.73E-01				1.09E+00				2.18E-02			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.62E-01				1.47E+00				2.93E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.42E-02				5.62E-02				1.12E-03			
1	Water Truck	Off-Highway Trucks	189	1.29E-01				5.36E-01				1.07E-02			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	1.95E+00				1.40E+02				8.37E+00			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.42E-02				1.12E-01				6.75E-03			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A ¹	75 ²	4.40E+00				5.24E+01				4.00E+00	9.59E+00	7.99E+00	
Step 3 - Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	1.83E-01				2.94E+00				1.94E-01			
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	1.83E-01				2.11E+00				1.39E-01			
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.42E-02				1.12E-01				1.48E-02			
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02	5.33E-02		7.03E+00	6.35E+00			8.31E-01	4.69E-01		
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181		2.52E-01	2.33E-01		8.04E+00	7.42E+00			9.50E-01	5.48E-01		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01	1.41E-01		8.21E+00	7.66E+00			9.71E-01	5.66E-01		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580		1.80E+00	1.68E+00		9.18E+01	8.57E+01			1.09E+01	6.33E+00		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180		1.29E-02	1.17E-02		1.02E-01	9.32E-02			1.21E-02	6.88E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02	1.99E-02		5.01E-01	4.56E-01			5.92E-02	3.37E-02		
1	Water Truck	Off-Highway Trucks	189		1.16E-01	1.04E-01		9.66E-01	8.70E-01			1.14E-01	6.42E-02		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450			5.33E-02			2.12E+00				1.52E-01		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410			1.41E-01			5.11E+00				3.68E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350			6.75E-02			2.08E+00				1.50E-01		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260			1.99E-02			4.56E-01				3.29E-02		
1	Water Truck	Off-Highway Trucks	189			1.04E-01			8.70E-01				6.26E-02		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02				4.69E+00				1.69E-01		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01				5.48E+00				1.97E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02				2.31E+00				8.31E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02				5.01E-01				1.80E-02		
1	Water Truck	Off-Highway Trucks	189		1.16E-01				9.66E-01				3.48E-02		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02	5.33E-02	4.82E-02		4.69E+00	4.23E+00	3.82E+00		5.06E-01	6.09E-01	1.38E-01
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01	1.41E-01	1.32E-01		5.48E+00	5.11E+00	4.77E+00		5.91E-01	7.36E-01	1.72E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02	6.75E-02	6.09E-02		2.31E+00	2.08E+00	1.88E+00		2.49E-01	3.00E-01	6.76E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02	1.99E-02	1.81E-02		5.01E-01	4.56E-01	4.16E-01		5.41E-02	6.57E-02	1.50E-02
1	Water Truck	Off-Highway Trucks	189		1.16E-01	1.04E-01	9.41E-02		9.66E-01	8.70E-01	7.84E-01		1.04E-01	1.25E-01	2.82E-02
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02	5.33E-02	4.82E-02		4.69E+00	4.23E+00	3.82E+00		2.81E-01	6.09E-01	1.84E-01
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01	1.41E-01	1.32E-01		5.48E+00	5.11E+00	4.77E+00		3.29E-01	7.36E-01	2.29E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02	6.75E-02	6.09E-02		2.31E+00	2.08E+00	1.88E+00		1.39E-01	3.00E-01	9.02E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02	1.99E-02	1.81E-02		5.01E-01	4.56E-01	4.16E-01		3.01E-02	6.57E-02	2.00E-02
1	Water Truck	Off-Highway Trucks	189		1.16E-01	1.04E-01	9.41E-02		9.66E-01	8.70E-01	7.84E-01		5.79E-02	1.25E-01	3.76E-02

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-126. Alternative 3 Exhaust SO2 Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.55E-05				1.50E-03				3.00E-05			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.59E-04				1.03E-03				2.06E-05			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E-04				1.19E-03				2.38E-05			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.54E-05				6.13E-05				1.23E-06			
1	Water Truck	Off-Highway Trucks	189	1.49E-04				6.21E-04				1.24E-05			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.47E-03				2.48E-01				1.49E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.54E-05				1.23E-04				7.36E-06			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A ¹	75 ²	1.25E+00				1.48E+01				1.13E+00	2.72E+00	2.26E+00	
Step 3 - Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	3.28E-04				5.26E-03				3.47E-04			
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	3.28E-04				3.77E-03				2.49E-04			
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.54E-05				1.23E-04				1.62E-05			
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05	7.31E-05		8.85E-03	8.71E-03			1.05E-03	6.43E-04		
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181		2.55E-04	2.51E-04		8.13E-03	8.00E-03			9.60E-04	5.91E-04		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04	1.28E-04		7.03E-03	6.92E-03			8.31E-04	5.11E-04		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580		1.55E-03	1.52E-03		7.92E-02	7.79E-02			9.36E-03	5.75E-03		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180		1.52E-05	1.50E-05		1.21E-04	1.19E-04			1.43E-05	8.77E-06		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05	2.49E-05		5.81E-04	5.72E-04			6.87E-05	4.22E-05		
1	Water Truck	Off-Highway Trucks	189		1.47E-04	1.44E-04		1.22E-03	1.20E-03			1.44E-04	8.89E-05		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450			7.31E-05			2.90E-03				2.09E-04		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410			1.28E-04			4.61E-03				3.32E-04		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350			1.01E-04			3.13E-03				2.25E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260			2.49E-05			5.72E-04				4.12E-05		
1	Water Truck	Off-Highway Trucks	189			1.44E-04			1.20E-03				8.67E-05		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05				5.90E-03				2.12E-04		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04				4.69E-03				1.69E-04		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04				3.18E-03				1.15E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05				5.81E-04				2.09E-05		
1	Water Truck	Off-Highway Trucks	189		1.47E-04				1.22E-03				4.40E-05		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05	7.31E-05	7.20E-05		5.90E-03	5.81E-03	5.71E-03		6.37E-04	8.36E-04	2.06E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04	1.28E-04	1.26E-04		4.69E-03	4.61E-03	4.54E-03		5.06E-04	6.64E-04	1.63E-04
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04	1.01E-04	9.99E-05		3.18E-03	3.13E-03	3.08E-03		3.44E-04	4.51E-04	1.11E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05	2.49E-05	2.46E-05		5.81E-04	5.72E-04	5.63E-04		6.28E-05	8.24E-05	2.03E-05
1	Water Truck	Off-Highway Trucks	189		1.47E-04	1.44E-04	1.42E-04		1.22E-03	1.20E-03	1.18E-03		1.32E-04	1.73E-04	4.27E-05
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05	7.31E-05	7.20E-05		5.90E-03	5.81E-03	5.71E-03		3.54E-04	8.36E-04	2.74E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04	1.28E-04	1.26E-04		4.69E-03	4.61E-03	4.54E-03		2.81E-04	6.64E-04	2.18E-04
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04	1.01E-04	9.99E-05		3.18E-03	3.13E-03	3.08E-03		1.91E-04	4.51E-04	1.48E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05	2.49E-05	2.46E-05		5.81E-04	5.72E-04	5.63E-04		3.49E-05	8.24E-05	2.70E-05
1	Water Truck	Off-Highway Trucks	189		1.47E-04	1.44E-04	1.42E-04		1.22E-03	1.20E-03	1.18E-03		7.34E-05	1.73E-04	5.69E-05

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-127. Alternative 3 Exhaust PM Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	2.46E-03				4.88E-02				9.77E-04			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	1.10E-02				4.40E-02				8.80E-04			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	6.92E-03				6.26E-02				1.25E-03			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	5.19E-04				2.06E-03				4.12E-05			
1	Water Truck	Off-Highway Trucks	189	4.57E-03				1.90E-02				3.81E-04			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	6.90E-02				4.93E+00				2.96E-01			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	5.19E-04				4.12E-03				2.47E-04			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A ¹	75 ²	3.30E-01				3.93E+00				3.00E-01	7.19E-01	5.99E-01	
Step 3 - Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	6.59E-03				1.06E-01				6.98E-03			
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	6.59E-03				7.58E-02				5.00E-03			
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	5.19E-04				4.12E-03				5.43E-04			
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03	1.93E-03		2.60E-01	2.30E-01			3.07E-02	1.70E-02		
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181		1.00E-02	9.12E-03		3.21E-01	2.91E-01			3.79E-02	2.15E-02		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03	5.93E-03		3.48E-01	3.21E-01			4.11E-02	2.37E-02		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580		7.54E-02	6.97E-02		3.85E+00	3.56E+00			4.55E-01	2.63E-01		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180		4.63E-04	4.13E-04		3.68E-03	3.28E-03			4.35E-04	2.42E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04	7.26E-04		1.86E-02	1.66E-02			2.20E-03	1.23E-03		
1	Water Truck	Off-Highway Trucks	189		4.03E-03	3.55E-03		3.36E-02	2.96E-02			3.97E-03	2.19E-03		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450			1.93E-03			7.66E-02				5.51E-03		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410			5.93E-03			2.14E-01				1.54E-02		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350			2.22E-03			6.84E-02				4.93E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260			7.26E-04			1.66E-02				1.20E-03		
1	Water Truck	Off-Highway Trucks	189			3.55E-03			2.96E-02				2.13E-03		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03				1.73E-01				6.24E-03		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03				2.32E-01				8.35E-03		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03				7.72E-02				2.78E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04				1.86E-02				6.71E-04		
1	Water Truck	Off-Highway Trucks	189		4.03E-03				3.36E-02				1.21E-03		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03	1.93E-03	1.71E-03		1.73E-01	1.53E-01	1.35E-01		1.87E-02	2.21E-02	4.88E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03	5.93E-03	5.46E-03		2.32E-01	2.14E-01	1.98E-01		2.50E-02	3.09E-02	7.11E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03	2.22E-03	1.97E-03		7.72E-02	6.84E-02	6.07E-02		8.33E-03	9.85E-03	2.19E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04	7.26E-04	6.47E-04		1.86E-02	1.66E-02	1.48E-02		2.01E-03	2.40E-03	5.34E-04
1	Water Truck	Off-Highway Trucks	189		4.03E-03	3.55E-03	3.13E-03		3.36E-02	2.96E-02	2.61E-02		3.63E-03	4.26E-03	9.40E-04
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03	1.93E-03	1.71E-03		1.73E-01	1.53E-01	1.35E-01		1.04E-02	2.21E-02	6.50E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03	5.93E-03	5.46E-03		2.32E-01	2.14E-01	1.98E-01		1.39E-02	3.09E-02	9.48E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03	2.22E-03	1.97E-03		7.72E-02	6.84E-02	6.07E-02		4.63E-03	9.85E-03	2.91E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04	7.26E-04	6.47E-04		1.86E-02	1.66E-02	1.48E-02		1.12E-03	2.40E-03	7.12E-04
1	Water Truck	Off-Highway Trucks	189		4.03E-03	3.55E-03	3.13E-03		3.36E-02	2.96E-02	2.61E-02		2.02E-03	4.26E-03	1.25E-03

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-128. Alternative 4 Annual Emissions of ROG from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.01	-	-	-	0.01
2a Well Installation	0.72	-	-	-	0.72
3 Wall Construction	0.02	0.01	-	-	0.02
2b Detention Pond Operations	2.50	2.78	-	-	2.78
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	1.00	0.94	-	-	1.00
5 Excavation Backfill	0.09	0.15	-	-	0.15
Dam Stripping	-	0.05	-	-	0.05
6b Filter Placement	-	0.16	0.20	0.05	0.20
Shell Placement	-	0.09	0.20	0.06	0.20
TOTAL	4.34	4.19	0.41	0.11	4.34

Table B-129. Alternative 4 Annual Emissions of NOx from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.09	-	-	-	0.09
2a Well Installation	8.38	-	-	-	8.38
3 Wall Construction	0.21	0.12	-	-	0.21
2b Detention Pond Operations	7.20	7.99	-	-	7.99
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	9.03	8.40	-	-	9.03
5 Excavation Backfill	0.90	1.41	-	-	1.41
Dam Stripping	-	0.50	-	-	0.50
6b Filter Placement	-	1.51	1.84	0.42	1.84
Shell Placement	-	0.84	1.84	0.56	1.84
TOTAL	25.80	20.76	3.67	0.98	25.80

Table B-130. Alternative 4 Annual Emissions of CO from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.03	-	-	-	0.03
2a Well Installation	2.65	-	-	-	2.65
3 Wall Construction	0.07	0.04	-	-	0.07
2b Detention Pond Operations	1.96	2.18	-	-	2.18
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	4.52	4.16	-	-	4.52
5 Excavation Backfill	0.37	0.59	-	-	0.59
Dam Stripping	-	0.20	-	-	0.20
6b Filter Placement	-	0.61	0.75	0.18	0.75
Shell Placement	-	0.34	0.75	0.23	0.75
TOTAL	9.61	8.13	1.51	0.41	9.61

Table B-131. Alternative 4 Annual Emissions of PM10 from Construction Equipment (tons per year)

Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.03	-	-	-	0.03
2a Well Installation	2.65	-	-	-	2.65
3 Wall Construction	0.07	0.04	-	-	0.07
2b Detention Pond Operations	1.96	2.18	-	-	2.18
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	4.52	4.16	-	-	4.52
5 Excavation Backfill	0.37	0.59	-	-	0.59
Dam Stripping	-	0.20	-	-	0.20
6b Filter Placement	-	0.61	0.75	0.18	0.75
Shell Placement	-	0.34	0.75	0.23	0.75
TOTAL	9.61	8.13	1.51	0.41	9.61

Table B-132. Alternative 4 Annual Emissions of PM2.5 from Construction Equipment (tons per year)

Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.03	-	-	-	0.03
2a	Well Installation	2.43	-	-	-	2.43
3	Wall Construction	0.06	0.04	-	-	0.06
2b	Detention Pond Operations	1.81	2.01	-	-	2.01
6a	Overlay Materials Supply	-	-	-	-	0.00
4	Excavation	4.16	3.83	-	-	4.16
5	Excavation Backfill	0.34	0.54	-	-	0.54
	Dam Stripping	-	0.19	-	-	0.19
6b	Filter Placement	-	0.56	0.69	0.16	0.69
	Shell Placement	-	0.31	0.69	0.22	0.69
TOTAL		8.84	7.48	1.39	0.38	8.84

Table B-133. Alternative 4 Daily ROG Emissions by Phase and Month (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.48	0.48																						
Well Installation		12.02	12.02	12.02	12.02	12.02																		
Wall Construction			0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.42	0.42	0.42	0.42	0.42									
Detention Pond Operations		18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20	18.20				
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation				13.88	13.88	13.88	13.88	13.88	13.88						13.11	13.11	13.11	13.11	13.11	13.11				
Excavation Backfill				1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24		
Dam Stripping															1.51	1.51	1.51							
Filter Placement														1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
Shell Placement																		1.51	1.51	1.51	1.51	1.51	1.51	1.51
Total	0.48	30.70	30.67	45.88	45.88	45.88	33.86	33.86	33.86	19.98	19.87	19.87	19.87	34.49	35.99	35.57	35.57	35.57	35.57	22.46	4.26	4.26		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34			
Shell Placement	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.34	1.34	1.34	1.34		
Total	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.67	2.67	2.67	1.34	0.00	0.00

Table B-134. Alternative 4 Daily NOx Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	4.45	4.45																										
Well Installation		139.62	139.62	139.62	139.62	139.62																						
Wall Construction			5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	4.44	4.44	4.44	4.44	4.44													
Detention Pond Operations		52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38	52.38								
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0						
Excavation				125.43	125.43	125.43	125.43	125.43	125.43																			
Excavation Backfill				12.66	12.66	12.66	12.66	12.66	12.66	12.66	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60						
Dam Stripping															13.94	13.94	13.94											
Filter Placement														13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94				
Shell Placement																							13.94	13.94	13.94	13.94	13.94	13.94
Total	4.45	196.44	197.16	335.24	335.24	335.24	195.63	195.63	195.63	70.20	68.41	68.41	68.41	199.04	212.99	208.55	208.55	208.55	91.86	91.86	39.48	39.48						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67			
Shell Placement	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	11.67	11.67	11.67	11.67		
Total	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50	23.34	23.34	23.34	11.67	0.00	0.00

Table B-135. Alternative 4 Daily CO Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	1.70	1.70																						
Well Installation		44.11	44.11	44.11	44.11	44.11																		
Wall Construction			1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.64	1.64	1.64	1.64	1.64									
Detention Pond Operations		14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29				
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation				62.79	62.79	62.79	62.79	62.79	62.79					57.84	57.84	57.84	57.84	57.84						
Excavation Backfill				5.29	5.29	5.29	5.29	5.29	5.29	5.29	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87		
Dam Stripping															5.65	5.65	5.65							
Filter Placement															5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65
Shell Placement																			5.65	5.65	5.65	5.65	5.65	5.65
Total	1.70	60.09	60.07	128.15	128.15	128.15	84.04	84.04	84.04	21.25	20.80	20.80	20.80	84.29	89.94	88.30	88.30	88.30	30.46	30.46	16.17	16.17		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88			
Shell Placement	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	4.88	4.88	4.88	4.88		
Total	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	10.47	9.76	9.76	9.76	4.88	0.00	0.00

Table B-136. Alternative 4 Daily PM10 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.18	0.18																						
Well Installation		4.94	4.94	4.94	4.94	4.94																		
Wall Construction			0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.15	0.15	0.15	0.15	0.15									
Detention Pond Operations		3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93				
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation				5.24	5.24	5.24	5.24	5.24	5.24					4.84	4.84	4.84	4.84	4.84						
Excavation Backfill				0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45		
Dam Stripping															0.53	0.53	0.53							
Filter Placement															0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Shell Placement																			0.53	0.53	0.53	0.53	0.53	0.53
Total	0.18	9.04	9.05	14.79	14.79	14.79	9.85	9.85	9.85	4.61	4.53	4.53	4.53	9.90	10.44	10.28	10.28	10.28	5.45	5.45	1.52	1.52		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43			
Shell Placement	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.43		
Total	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.87	0.87	0.87	0.43	0.00	0.00

Table B-137. Alternative 4 Daily PM2.5 Emissions by Phase and Month (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.16	0.16																						
Well Installation		4.54	4.54	4.54	4.54	4.54																		
Wall Construction			0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.14	0.14	0.14	0.14	0.14									
Detention Pond Operations		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61				
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0		
Excavation				4.82	4.82	4.82	4.82	4.82	4.82					4.45	4.45	4.45	4.45	4.45						
Excavation Backfill				0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41		
Dam Stripping															0.49	0.49	0.49							
Filter Placement														0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Shell Placement																		0.49	0.49	0.49	0.49	0.49	0.49	
Total	0.16	8.32	8.33	13.61	13.61	13.61	9.06	9.06	9.06	4.24	4.17	4.17	4.17	9.11	9.60	9.46	9.46	9.46	5.01	5.01	1.40	1.40		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40			
Shell Placement	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40		
Total	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.40	0.00	0.00

Table B-138. Alternative 4 Exhaust ROG Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.04E-03				1.40E-01				2.79E-03			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.87E-02				1.15E-01				2.29E-03			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.83E-02				1.66E-01				3.31E-03			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.38E-03				5.46E-03				1.09E-04			
1	Water Truck	Off-Highway Trucks	189	1.30E-02				5.44E-02				1.09E-03			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	1.68E-01				1.20E+01				7.20E-01			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.38E-03				1.09E-02				6.55E-04			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A1	752	1.53E+00				1.82E+01				2.50E+00	2.78E+00		
Step 3 - Cellular Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	1.60E-02	1.49E-02			2.56E-01	2.40E-01			1.04E-02	6.09E-03		
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	1.60E-02	1.49E-02			1.84E-01	1.72E-01			7.47E-03	4.37E-03		
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.38E-03	1.28E-03			1.09E-02	1.01E-02			8.87E-04	5.15E-04		
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.04E-03	6.59E-03			8.38E-01	7.85E-01			6.03E-02	5.65E-02		
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.87E-02	2.69E-02			9.17E-01	8.58E-01			6.60E-02	6.18E-02		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.83E-02	1.73E-02			9.93E-01	9.40E-01			7.15E-02	6.76E-02		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	2.14E-01	2.03E-01			1.10E+01	1.04E+01			7.89E-01	7.46E-01		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.38E-03	1.28E-03			1.09E-02	1.01E-02			7.86E-04	7.30E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.40E-03	2.25E-03			5.51E-02	5.15E-02			3.97E-03	3.71E-03		
1	Water Truck	Off-Highway Trucks	189	1.30E-02	1.21E-02			1.09E-01	1.01E-01			7.83E-03	7.28E-03		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.04E-03	6.59E-03			2.79E-01	2.62E-01			1.98E-02	3.17E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.83E-02	1.73E-02			6.62E-01	6.26E-01			4.68E-02	7.60E-02		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	7.16E-03	6.60E-03			2.21E-01	2.04E-01			1.56E-02	2.47E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.40E-03	2.25E-03			5.51E-02	5.15E-02			3.90E-03	6.25E-03		
1	Water Truck	Off-Highway Trucks	189	1.30E-02	1.21E-02			1.09E-01	1.01E-01			7.69E-03	1.23E-02		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		6.59E-03				5.23E-01				1.88E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.73E-02				6.26E-01				2.25E-02		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		6.60E-03				2.04E-01				7.33E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.25E-03				5.15E-02				1.85E-03		
1	Water Truck	Off-Highway Trucks	189		1.21E-02				1.01E-01				3.64E-03		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		6.59E-03	6.19E-03	5.85E-03		5.23E-01	4.91E-01	4.64E-01		5.65E-02	7.08E-02	1.67E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.73E-02	1.64E-02	1.55E-02		6.26E-01	5.92E-01	5.60E-01		6.76E-02	8.53E-02	2.02E-02
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		6.60E-03	6.17E-03	5.82E-03		2.04E-01	1.91E-01	1.80E-01		2.20E-02	2.74E-02	6.46E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.25E-03	2.10E-03	1.97E-03		5.15E-02	4.82E-02	4.52E-02		5.56E-03	6.94E-03	1.63E-03
1	Water Truck	Off-Highway Trucks	189		1.21E-02	1.13E-02	1.06E-02		1.01E-01	9.44E-02	8.86E-02		1.09E-02	1.36E-02	3.19E-03
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		6.59E-03	6.19E-03	5.85E-03		5.23E-01	4.91E-01	4.64E-01		3.14E-02	7.08E-02	2.23E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.73E-02	1.64E-02	1.55E-02		6.26E-01	5.92E-01	5.60E-01		3.76E-02	8.53E-02	2.69E-02
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		6.60E-03	6.17E-03	5.82E-03		2.04E-01	1.91E-01	1.80E-01		1.22E-02	2.74E-02	8.62E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.25E-03	2.10E-03	1.97E-03		5.15E-02	4.82E-02	4.52E-02		3.09E-03	6.94E-03	2.17E-03
1	Water Truck	Off-Highway Trucks	189		1.21E-02	1.13E-02	1.06E-02		1.01E-01	9.44E-02	8.86E-02		6.07E-03	1.36E-02	4.25E-03

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-139. Alternative 4 Exhaust CO Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	2.13E-02				4.22E-01				8.44E-03			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	8.07E-02				3.22E-01				6.44E-03			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	8.79E-02				7.94E-01				1.59E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	3.87E-03				1.54E-02				3.08E-04			
1	Water Truck	Off-Highway Trucks	189	3.42E-02				1.43E-01				2.85E-03			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	6.17E-01				4.41E+01				2.64E+00			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	3.87E-03				3.08E-02				1.85E-03			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A1	752	1.20E+00				1.43E+01				1.96E+00	2.18E+00		
Step 3 - Cellular Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	5.97E-02	5.85E-02			9.59E-01	9.39E-01			3.89E-02	2.38E-02		
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	5.97E-02	5.85E-02			6.87E-01	6.73E-01			2.79E-02	1.71E-02		
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	3.87E-03	3.63E-03			3.08E-02	2.88E-02			2.50E-03	1.46E-03		
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	2.13E-02	1.96E-02			2.53E+00	2.33E+00			1.82E-01	1.68E-01		
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	8.07E-02	7.57E-02			2.58E+00	2.42E+00			1.86E-01	1.74E-01		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	8.79E-02	8.09E-02			4.77E+00	4.39E+00			3.43E-01	3.16E-01		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.02E+00	9.43E-01			5.24E+01	4.82E+01			3.77E+00	3.47E+00		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	3.87E-03	3.63E-03			3.08E-02	2.88E-02			2.21E-03	2.08E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	8.45E-03	7.80E-03			1.94E-01	1.79E-01			1.40E-02	1.29E-02		
1	Water Truck	Off-Highway Trucks	189	3.42E-02	3.21E-02			2.85E-01	2.67E-01			2.05E-02	1.93E-02		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	2.13E-02	1.96E-02			8.44E-01	7.78E-01			5.97E-02	9.43E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	8.79E-02	8.09E-02			3.18E+00	2.92E+00			2.25E-01	3.55E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	2.54E-02	2.35E-02			7.85E-01	7.24E-01			5.56E-02	8.78E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	8.45E-03	7.80E-03			1.94E-01	1.79E-01			1.37E-02	2.17E-02		
1	Water Truck	Off-Highway Trucks	189	3.42E-02	3.21E-02			2.85E-01	2.67E-01			2.02E-02	3.24E-02		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02				1.56E+00				5.60E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02				2.92E+00				1.05E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02				7.24E-01				2.61E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03				1.79E-01				6.44E-03		
1	Water Truck	Off-Highway Trucks	189		3.21E-02				2.67E-01				9.63E-03		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02	1.82E-02	1.71E-02		1.56E+00	1.45E+00	1.36E+00		1.68E-01	2.08E-01	4.89E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02	7.44E-02	6.85E-02		2.92E+00	2.69E+00	2.48E+00		3.16E-01	3.88E-01	8.92E-02
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02	2.20E-02	2.09E-02		7.24E-01	6.81E-01	6.46E-01		7.82E-02	9.80E-02	2.33E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03	7.23E-03	6.75E-03		1.79E-01	1.66E-01	1.55E-01		1.93E-02	2.39E-02	5.57E-03
1	Water Truck	Off-Highway Trucks	189		3.21E-02	3.04E-02	2.91E-02		2.67E-01	2.53E-01	2.43E-01		2.89E-02	3.65E-02	8.73E-03
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		1.96E-02	1.82E-02	1.71E-02		1.56E+00	1.45E+00	1.36E+00		9.33E-02	2.08E-01	6.52E-02
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		8.09E-02	7.44E-02	6.85E-02		2.92E+00	2.69E+00	2.48E+00		1.75E-01	3.88E-01	1.19E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.35E-02	2.20E-02	2.09E-02		7.24E-01	6.81E-01	6.46E-01		4.34E-02	9.80E-02	3.10E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		7.80E-03	7.23E-03	6.75E-03		1.79E-01	1.66E-01	1.55E-01		1.07E-02	2.39E-02	7.42E-03
1	Water Truck	Off-Highway Trucks	189		3.21E-02	3.04E-02	2.91E-02		2.67E-01	2.53E-01	2.43E-01		1.60E-02	3.65E-02	1.16E-02

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-140. Alternative 4 Exhaust NOx Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	6.55E-02				1.30E+00				2.60E-02			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.73E-01				1.09E+00				2.18E-02			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.62E-01				1.47E+00				2.93E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.42E-02				5.62E-02				1.12E-03			
1	Water Truck	Off-Highway Trucks	189	1.29E-01				5.36E-01				1.07E-02			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	1.95E+00				1.40E+02				8.37E+00			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.42E-02				1.12E-01				6.75E-03			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A1	752	4.40E+00				5.24E+01				7.20E+00	7.99E+00		
Step 3 - Cellular Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	1.83E-01	1.57E-01			2.94E+00	2.52E+00			1.19E-01	6.41E-02		
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	1.83E-01	1.57E-01			2.11E+00	1.81E+00			8.56E-02	4.59E-02		
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.42E-02	1.29E-02			1.12E-01	1.02E-01			9.13E-03	5.20E-03		
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	6.55E-02	5.91E-02			7.80E+00	7.03E+00			5.62E-01	5.06E-01		
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.73E-01	2.52E-01			8.70E+00	8.04E+00			6.26E-01	5.79E-01		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.62E-01	1.51E-01			8.80E+00	8.21E+00			6.34E-01	5.91E-01		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.92E+00	1.80E+00			9.84E+01	9.18E+01			7.08E+00	6.61E+00		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.42E-02	1.29E-02			1.12E-01	1.02E-01			8.10E-03	7.37E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.40E-02	2.19E-02			5.51E-01	5.01E-01			3.96E-02	3.61E-02		
1	Water Truck	Off-Highway Trucks	189	1.29E-01	1.16E-01			1.07E+00	9.66E-01			7.72E-02	6.95E-02		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	6.55E-02	5.91E-02			2.60E+00	2.34E+00			1.84E-01	2.84E-01		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.62E-01	1.51E-01			5.87E+00	5.48E+00			4.15E-01	6.64E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	8.32E-02	7.48E-02			2.57E+00	2.31E+00			1.82E-01	2.80E-01		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.40E-02	2.19E-02			5.51E-01	5.01E-01			3.89E-02	6.08E-02		
1	Water Truck	Off-Highway Trucks	189	1.29E-01	1.16E-01			1.07E+00	9.66E-01			7.59E-02	1.17E-01		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02				4.69E+00				1.69E-01		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01				5.48E+00				1.97E-01		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02				2.31E+00				8.31E-02		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02				5.01E-01				1.80E-02		
1	Water Truck	Off-Highway Trucks	189		1.16E-01				9.66E-01				3.48E-02		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02	5.33E-02	4.82E-02		4.69E+00	4.23E+00	3.82E+00		5.06E-01	6.09E-01	1.38E-01
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01	1.41E-01	1.32E-01		5.48E+00	5.11E+00	4.77E+00		5.91E-01	7.36E-01	1.72E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02	6.75E-02	6.09E-02		2.31E+00	2.08E+00	1.88E+00		2.49E-01	3.00E-01	6.76E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02	1.99E-02	1.81E-02		5.01E-01	4.56E-01	4.16E-01		5.41E-02	6.57E-02	1.50E-02
1	Water Truck	Off-Highway Trucks	189		1.16E-01	1.04E-01	9.41E-02		9.66E-01	8.70E-01	7.84E-01		1.04E-01	1.25E-01	2.82E-02
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		5.91E-02	5.33E-02	4.82E-02		4.69E+00	4.23E+00	3.82E+00		2.81E-01	6.09E-01	1.84E-01
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.51E-01	1.41E-01	1.32E-01		5.48E+00	5.11E+00	4.77E+00		3.29E-01	7.36E-01	2.29E-01
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		7.48E-02	6.75E-02	6.09E-02		2.31E+00	2.08E+00	1.88E+00		1.39E-01	3.00E-01	9.02E-02
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.19E-02	1.99E-02	1.81E-02		5.01E-01	4.56E-01	4.16E-01		3.01E-02	6.57E-02	2.00E-02
1	Water Truck	Off-Highway Trucks	189		1.16E-01	1.04E-01	9.41E-02		9.66E-01	8.70E-01	7.84E-01		5.79E-02	1.25E-01	3.76E-02

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-141. Alternative 4 Exhaust SO2 Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.55E-05				1.50E-03				3.00E-05			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.59E-04				1.03E-03				2.06E-05			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E-04				1.19E-03				2.38E-05			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.54E-05				6.13E-05				1.23E-06			
1	Water Truck	Off-Highway Trucks	189	1.49E-04				6.21E-04				1.24E-05			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.47E-03				2.48E-01				1.49E-02			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.54E-05				1.23E-04				7.36E-06			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A1	752	1.25E+00				1.48E+01				2.04E+00	2.27E+00		
Step 3 - Cellular Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	3.28E-04	3.23E-04			5.26E-03	5.18E-03			2.14E-04	1.31E-04		
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	3.28E-04	3.23E-04			3.77E-03	3.71E-03			1.53E-04	9.42E-05		
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.54E-05	1.52E-05			1.23E-04	1.21E-04			9.96E-06	6.13E-06		
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.55E-05	7.43E-05			8.99E-03	8.85E-03			6.47E-04	6.37E-04		
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.59E-04	2.55E-04			8.26E-03	8.13E-03			5.95E-04	5.85E-04		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E-04	1.30E-04			7.14E-03	7.03E-03			5.14E-04	5.06E-04		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.57E-03	1.55E-03			8.05E-02	7.92E-02			5.79E-03	5.70E-03		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.54E-05	1.52E-05			1.23E-04	1.21E-04			8.83E-06	8.69E-06		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E-05	2.53E-05			5.91E-04	5.81E-04			4.25E-05	4.18E-05		
1	Water Truck	Off-Highway Trucks	189	1.49E-04	1.47E-04			1.24E-03	1.22E-03			8.95E-05	8.80E-05		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.55E-05	7.43E-05			3.00E-03	2.95E-03			2.12E-04	3.58E-04		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E-04	1.30E-04			4.76E-03	4.69E-03			3.37E-04	5.68E-04		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E-04	1.03E-04			3.23E-03	3.18E-03			2.29E-04	3.86E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E-05	2.53E-05			5.91E-04	5.81E-04			4.18E-05	7.05E-05		
1	Water Truck	Off-Highway Trucks	189	1.49E-04	1.47E-04			1.24E-03	1.22E-03			8.79E-05	1.48E-04		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05				5.90E-03				2.12E-04		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04				4.69E-03				1.69E-04		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04				3.18E-03				1.15E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05				5.81E-04				2.09E-05		
1	Water Truck	Off-Highway Trucks	189		1.47E-04				1.22E-03				4.40E-05		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05	7.31E-05	7.20E-05		5.90E-03	5.81E-03	5.71E-03		6.37E-04	8.36E-04	2.06E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04	1.28E-04	1.26E-04		4.69E-03	4.61E-03	4.54E-03		5.06E-04	6.64E-04	1.63E-04
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04	1.01E-04	9.99E-05		3.18E-03	3.13E-03	3.08E-03		3.44E-04	4.51E-04	1.11E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05	2.49E-05	2.46E-05		5.81E-04	5.72E-04	5.63E-04		6.28E-05	8.24E-05	2.03E-05
1	Water Truck	Off-Highway Trucks	189		1.47E-04	1.44E-04	1.42E-04		1.22E-03	1.20E-03	1.18E-03		1.32E-04	1.73E-04	4.27E-05
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		7.43E-05	7.31E-05	7.20E-05		5.90E-03	5.81E-03	5.71E-03		3.54E-04	8.36E-04	2.74E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		1.30E-04	1.28E-04	1.26E-04		4.69E-03	4.61E-03	4.54E-03		2.81E-04	6.64E-04	2.18E-04
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		1.03E-04	1.01E-04	9.99E-05		3.18E-03	3.13E-03	3.08E-03		1.91E-04	4.51E-04	1.48E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		2.53E-05	2.49E-05	2.46E-05		5.81E-04	5.72E-04	5.63E-04		3.49E-05	8.24E-05	2.70E-05
1	Water Truck	Off-Highway Trucks	189		1.47E-04	1.44E-04	1.42E-04		1.22E-03	1.20E-03	1.18E-03		7.34E-05	1.73E-04	5.69E-05

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-142. Alternative 4 Exhaust PM Emissions from Construction Equipment

Quantity	Equipment	OFFROAD Category	Rating (hp)	Emission Factors (g/hp/hr)				Emissions (pounds per day)				Emissions (tons per year)			
				2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Step 1 - Clearing and Grubbing															
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	2.46E-03				4.88E-02				9.77E-04			
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	1.10E-02				4.40E-02				8.80E-04			
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	6.92E-03				6.26E-02				1.25E-03			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	5.19E-04				2.06E-03				4.12E-05			
1	Water Truck	Off-Highway Trucks	189	4.57E-03				1.90E-02				3.81E-04			
Step 2a - Dewatering Well Installation															
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	6.90E-02				4.93E+00				2.96E-01			
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	5.19E-04				4.12E-03				2.47E-04			
Step 2b - Detention Pond Operations															
3	1000 gpm Diesel Pump (2008 model)	N/A1	752	3.30E-01				3.93E+00				5.40E-01	6.00E-01		
Step 3 - Cellular Wall (secant and sheet pile) Construction															
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	6.59E-03	5.49E-03			1.06E-01	8.81E-02			4.30E-03	2.24E-03		
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	6.59E-03	5.49E-03			7.58E-02	6.32E-02			3.08E-03	1.60E-03		
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	5.19E-04	4.63E-04			4.12E-03	3.68E-03			3.34E-04	1.87E-04		
Step 4 - Excavation															
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	2.46E-03	2.18E-03			2.93E-01	2.60E-01			2.11E-02	1.87E-02		
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	1.10E-02	1.00E-02			3.52E-01	3.21E-01			2.53E-02	2.31E-02		
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	6.92E-03	6.41E-03			3.75E-01	3.48E-01			2.70E-02	2.50E-02		
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	8.13E-02	7.54E-02			4.16E+00	3.85E+00			3.00E-01	2.77E-01		
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	5.19E-04	4.63E-04			4.12E-03	3.68E-03			2.96E-04	2.65E-04		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	9.06E-04	8.12E-04			2.08E-02	1.86E-02			1.50E-03	1.34E-03		
1	Water Truck	Off-Highway Trucks	189	4.57E-03	4.03E-03			3.81E-02	3.36E-02			2.74E-03	2.42E-03		
Step 5 - Excavation Backfill															
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	2.46E-03	2.18E-03			9.77E-02	8.66E-02			6.91E-03	1.05E-02		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	6.92E-03	6.41E-03			2.50E-01	2.32E-01			1.77E-02	2.81E-02		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	2.85E-03	2.50E-03			8.78E-02	7.72E-02			6.21E-03	9.36E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	9.06E-04	8.12E-04			2.08E-02	1.86E-02			1.47E-03	2.26E-03		
1	Water Truck	Off-Highway Trucks	189	4.57E-03	4.03E-03			3.81E-02	3.36E-02			2.69E-03	4.08E-03		
Step 6 - Dam Stripping															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03				1.73E-01				6.24E-03		
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03				2.32E-01				8.35E-03		
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03				7.72E-02				2.78E-03		
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04				1.86E-02				6.71E-04		
1	Water Truck	Off-Highway Trucks	189		4.03E-03				3.36E-02				1.21E-03		
Step 6b - Filter Placement and Overlay															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03	1.93E-03	1.71E-03		1.73E-01	1.53E-01	1.35E-01		1.87E-02	2.21E-02	4.88E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03	5.93E-03	5.46E-03		2.32E-01	2.14E-01	1.98E-01		2.50E-02	3.09E-02	7.11E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03	2.22E-03	1.97E-03		7.72E-02	6.84E-02	6.07E-02		8.33E-03	9.85E-03	2.19E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04	7.26E-04	6.47E-04		1.86E-02	1.66E-02	1.48E-02		2.01E-03	2.40E-03	5.34E-04
1	Water Truck	Off-Highway Trucks	189		4.03E-03	3.55E-03	3.13E-03		3.36E-02	2.96E-02	2.61E-02		3.63E-03	4.26E-03	9.40E-04
7 - Shell Placement															
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450		2.18E-03	1.93E-03	1.71E-03		1.73E-01	1.53E-01	1.35E-01		1.04E-02	2.21E-02	6.50E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410		6.41E-03	5.93E-03	5.46E-03		2.32E-01	2.14E-01	1.98E-01		1.39E-02	3.09E-02	9.48E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350		2.50E-03	2.22E-03	1.97E-03		7.72E-02	6.84E-02	6.07E-02		4.63E-03	9.85E-03	2.91E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260		8.12E-04	7.26E-04	6.47E-04		1.86E-02	1.66E-02	1.48E-02		1.12E-03	2.40E-03	7.12E-04
1	Water Truck	Off-Highway Trucks	189		4.03E-03	3.55E-03	3.13E-03		3.36E-02	2.96E-02	2.61E-02		2.02E-03	4.26E-03	1.25E-03

Source: Offroad2007, AP-42 Section 3.3-1

Notes:

¹ Pump engine CO2 emissions from AP-42 Table 3.3-1 in lb/hp/hr was converted to g/kw/hr.

² Engine rating is in kilowatt.

Key:

hp = horsepower

g/hp/hr = grams per horsepower per hour

Table B-143. Alternative 1 Unmitigated Annual Emissions from Haul Trucks

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
4	Excavation Backfill	-	0.39	0.36	-	-	6.10	5.40	-	-	1.93	1.73	-	-	0.60	0.57	-	-	0.26	0.24	-
5a	Filter Material Supply	0.48	1.61	-	-	7.58	24.92	-	-	2.39	7.90	-	-	0.70	2.45	-	-	0.32	1.08	-	-
TOTAL		0.48	2.01	0.36	0.00	7.58	31.02	5.40	0.00	2.39	9.83	1.73	0.00	0.70	3.06	0.57	0.00	0.32	1.34	0.24	0.00

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-144. Alternative 2 Unmitigated Annual Emissions from Haul Trucks

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
3	Wall Construction	0.09	-	-	-	1.36	-	-	-	0.43	-	-	-	0.13	-	-	-	0.06	-	-	-
5	Excavation Backfill	-	0.36	0.33	-	-	5.55	4.91	-	-	1.76	1.57	-	-	0.55	0.52	-	-	0.24	0.22	-
6a	Filter Material Supply	0.48	1.61	-	-	7.58	24.92	-	-	2.39	7.90	-	-	0.70	2.45	-	-	0.32	1.08	-	-
TOTAL		0.56	1.97	0.33	0.00	8.94	30.47	4.91	0.00	2.82	9.66	1.57	0.00	0.83	3.00	0.52	0.00	0.38	1.32	0.22	0.00

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-145. Alternative 3 Unmitigated Annual Emissions from Haul Trucks

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
3	Wall Construction	0.17	-	-	-	2.72	-	-	-	0.86	-	-	-	0.25	-	-	-	0.12	-	-	-
5	Excavation Backfill	-	-	0.47	-	-	-	7.02	-	-	-	2.24	-	-	-	0.75	-	-	-	0.31	-
6a	Filter Material Supply	0.48	1.61	-	-	7.58	24.92	-	-	2.39	7.90	-	-	0.70	2.45	-	-	0.32	1.08	-	-
6b	Filter Placement and Overlay	-	0.67	0.82	0.19	-	10.41	12.28	2.71	-	3.30	3.92	0.87	-	1.03	1.31	0.31	-	0.45	0.54	0.12
TOTAL		0.65	2.29	1.29	0.19	10.29	35.32	19.30	2.71	3.24	11.20	6.17	0.87	0.95	3.48	2.05	0.31	0.44	1.53	0.86	0.12

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-146. Alternative 4 Unmitigated Annual Emissions from Haul Trucks

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
3	Wall Construction	0.17	0.10	-	-	2.72	1.52	-	-	0.86	0.48	-	-	0.25	0.15	-	-	0.12	0.07	-	-
5	Excavation Backfill	0.22	0.26	-	-	3.48	4.01	-	-	1.10	1.27	-	-	0.32	0.40	-	-	0.15	0.17	-	-
6a	Filter Material Supply	0.48	1.61	-	-	7.58	24.92	-	-	2.39	7.90	-	-	0.70	2.45	-	-	0.32	1.08	-	-
6b	Filter Placement and Overlay	-	0.67	0.82	0.19	-	10.41	12.28	2.71	-	3.30	3.92	0.87	-	1.03	1.31	0.31	-	0.45	0.54	0.12
TOTAL		0.87	2.64	0.82	0.19	13.78	40.86	12.28	2.71	4.34	12.95	3.92	0.87	1.27	4.03	1.31	0.31	0.59	1.77	0.54	0.12

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-147. Alternative 1 Unmitigated Emissions from Haul Trucks

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	Total	Exhaust	PM10			Total	Exhaust	PM2.5		
								Tire Wear	Brake Wear	Paved Road Dust			Tire Wear	Brake Wear	Paved Road Dust ²
4	Excavation Backfill	2011	5.49	26.87	84.78	8.35	2.893	0.225	0.175	5.06	3.67	2.662	0.056	0.075	0.88
4		2012	5.00	23.98	75.04	7.98	2.518	0.225	0.175	5.06	3.33	2.318	0.056	0.075	0.88
5a	Filter Material Supply	2010	13.26	66.34	210.51	19.46	7.303	0.501	0.389	11.27	8.97	6.718	0.125	0.167	1.96
5a		2011	12.21	59.83	188.76	18.60	6.440	0.501	0.389	11.27	8.18	5.926	0.125	0.167	1.96

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-148. Alternative 2 Unmitigated Emissions from Haul Trucks

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	Total	Exhaust	PM10			Total	Exhaust	PM2.5		
								Tire Wear	Brake Wear	Paved Road Dust			Tire Wear	Brake Wear	Paved Road Dust ²
3	Wall Construction	2010	1.78	8.92	28.29	2.62	0.981	0.067	0.052	1.51	1.21	0.903	0.017	0.022	0.26
5	Excavation Backfill	2011	4.99	24.43	77.08	7.59	2.630	0.204	0.159	4.60	3.34	2.420	0.051	0.068	0.80
5		2012	4.55	21.80	68.22	7.25	2.289	0.204	0.159	4.60	3.03	2.107	0.051	0.068	0.80
6a	Filter Material Supply	2010	13.26	66.34	210.51	19.46	7.303	0.501	0.389	11.27	8.97	6.718	0.125	0.167	1.96
6a		2011	12.21	59.83	188.76	18.60	6.440	0.501	0.389	11.27	8.18	5.926	0.125	0.167	1.96

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-149. Alternative 3 Unmitigated Emissions from Haul Trucks

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	Total	Exhaust	PM10			Total	Exhaust	PM2.5		
								Tire Wear	Brake Wear	Paved Road Dust			Tire Wear	Brake Wear	Paved Road Dust ²
3	Wall Construction	2010	1.78	8.92	28.29	2.62	0.981	0.067	0.052	1.51	1.21	0.903	0.017	0.022	0.26
5	Excavation Backfill	2012	6.50	31.14	97.46	10.36	3.270	0.292	0.227	6.57	4.32	3.010	0.073	0.097	1.14
6a	Filter Material Supply	2010	13.26	66.34	210.51	19.46	7.303	0.501	0.389	11.27	8.97	6.718	0.125	0.167	1.96
6a		2011	12.21	59.83	188.76	18.60	6.440	0.501	0.389	11.27	8.18	5.926	0.125	0.167	1.96
6b	Filter Placement and Overlay	2011	6.23	30.54	96.34	9.49	3.287	0.256	0.199	5.75	4.17	3.025	0.064	0.085	1.00
6b		2012	5.69	27.25	85.28	9.07	2.861	0.256	0.199	5.75	3.783	2.634	0.064	0.085	1.00
6b		2013	5.18	24.24	75.17	8.68	2.478	0.256	0.199	5.75	3.428	2.279	0.064	0.085	1.00

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-150. Alternative 4 Unmitigated Emissions from Haul Trucks

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	Total	Exhaust	PM10			Total	Exhaust	PM2.5		
								Tire Wear	Brake Wear	Paved Road Dust			Tire Wear	Brake Wear	Paved Road Dust ²
3	Wall Construction	2010	1.78	8.92	28.29	2.62	0.981	0.067	0.052	1.51	1.21	0.903	0.017	0.022	0.26
3		2011	1.64	8.04	25.37	2.50	0.866	0.067	0.052	1.51	1.10	0.796	0.017	0.022	0.26
5	Excavation Backfill	2010	2.61	13.06	41.44	3.83	1.438	0.099	0.077	2.22	1.77	1.323	0.025	0.033	0.39
5		2011	2.40	11.78	37.16	3.66	1.268	0.099	0.077	2.22	1.61	1.167	0.025	0.033	0.39
6a	Filter Material Supply	2010	13.26	66.34	210.51	19.46	7.303	0.501	0.389	11.27	8.97	6.718	0.125	0.167	1.96
6a		2011	12.21	59.83	188.76	18.60	6.440	0.501	0.389	11.27	8.177	5.926	0.125	0.167	1.96
6b	Filter Placement and Overlay	2011	6.23	30.54	96.34	9.49	3.287	0.256	0.199	5.75	4.174	3.025	0.064	0.085	1.00
6b		2012	5.69	27.25	85.28	9.07	2.861	0.256	0.199	5.75	3.783	2.634	0.064	0.085	1.00
6b		2013	5.18	24.24	75.17	8.68	2.478	0.256	0.199	5.75	3.428	2.279	0.064	0.085	1.00

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-151. Alternative 1 Daily ROG Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00														
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Excavation Backfill																	5.49	5.49	5.49	5.49	5.49	5.49	
Dam Stripping														0.00	0.00	0.00							
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	17.70	17.70	17.70	17.70	17.70	17.70	

[illegible]

Table B-152. Alternative 1 Daily NOx Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76		
Excavation										0.00	0.00													
Excavation Backfill											0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Dam Stripping														0.00	0.00	0.00								
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	273.54	273.54	273.54	273.54	273.54	273.54		

[illegible]

Table B-153. Alternative 1 Daily CO Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply							66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83		
Excavation										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Excavation Backfill																		26.87	26.87	26.87	26.87	26.87	26.87	26.87
Dam Stripping														0.00	0.00									
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Shell Placement																		0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	86.70	86.70	86.70	86.70	86.70	86.70		

[illegible]

Table B-154. Alternative 1 Daily PM10 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply							19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation										0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Excavation Backfill											0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Dam Stripping														0.00	0.00	0.00	8.35	8.35	8.35	8.35	8.35	8.35		
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	26.95	26.95	26.95	26.95	26.95	26.95		

[illegible]

Table B-155. Alternative 1 Daily PM2.5 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply							8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18		
Excavation									0.00	0.00														
Excavation Backfill														3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	
Dam Stripping														0.00	0.00	0.00								
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	11.85	11.85	11.85	11.85	11.85	11.85		

[illegible]

Table B-156. Alternative 2 Daily ROG Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			1.78	1.78	1.78	1.78																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21		
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Excavation Backfill											0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Dam Stripping														0.00	0.00	0.00	0.00	4.99	4.99	4.99	4.99	4.99		
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	1.78	1.78	1.78	1.78	0.00	13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	17.20	17.20	17.20	17.20	17.20	17.20		

[illegible]

Table B-157. Alternative 2 Daily NOx Emissions by Phase and Month from Haul Trucks (lbs/day)

[illegible]

Table B-158 Alternative 2 Daily CO Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																
Wall Construction			8.92	8.92	8.92	8.92																	
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Excavation Backfill																	24.43	24.43	24.43	24.43	24.43	24.43	
Dam Stripping														0.00	0.00	0.00							
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	8.92	8.92	8.92	8.92	0.00	66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	84.26	84.26	84.26	84.26	84.26	84.26	

[illegible]

Table B-159. Alternative 2 Daily PM10 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			2.62	2.62	2.62	2.62																		
Detention Pond Operations							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Excavation Backfill																	7.59	7.59	7.59	7.59	7.59	7.59		
Dam Stripping														0.00	0.00	0.00								
Filter Placement													0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	2.62	2.62	2.62	2.62	0.00	19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	26.19	26.19	26.19	26.19	26.19	26.19		

[illegible]

Table B-160. Alternative 2 Daily PM2.5 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			1.21	1.21	1.21	1.21																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18		
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Excavation Backfill																	3.34	3.34	3.34	3.34	3.34	3.34		
Dam Stripping														0.00	0.00	0.00								
Filter Placement													0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	1.21	1.21	1.21	1.21	0.00	8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	11.52	11.52	11.52	11.52	11.52	11.52		

[illegible]

Table B-161. Alternative 3 Daily ROG Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00															
Wall Construction			1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78												
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
Excavation																						
Excavation Backfill																						
Dam Stripping															0.00	0.00	0.00					
Filter Placement														6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	1.78	1.78	1.78	1.78	1.78	15.04	15.04	15.04	12.21	12.21	12.21	18.45	18.45	18.45	18.45	18.45	18.45	18.45	18.45	18.45

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation					0.00	0.00	0.00	0.00	0.00									
Excavation Backfill							6.50	6.50	6.50	6.50	6.50							
Dam Stripping																		
Filter Placement	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.18	5.18	5.18			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	5.69	5.69	5.69	5.69	5.69	12.19	12.19	12.19	12.19	12.19	12.19	5.69	5.18	5.18	5.18	0.00	0.00	0.00

Table B-162. Alternative 3 Daily NOx Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22							
Phase																													
Clear & Grub	0.00	0.00																											
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																						
Wall Construction			28.29	28.29	28.29	28.29	28.29	28.29	28.29	28.29																			
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Overlay Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76							
Excavation												0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Excavation Backfill																													
Dam Stripping															0.00	0.00	0.00												
Filter Placement														96.34	96.34	96.34	96.34	96.34	96.34	96.34	96.34	96.34							
Shell Placement																		0.00	0.00	0.00	0.00	0.00							
Total	0.00	0.00	28.29	28.29	28.29	28.29	28.29	238.81	238.81	238.81	188.76	188.76	188.76	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10	285.10							

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation	0.00				0.00	0.00	0.00	0.00										
Excavation Backfill	97.46						97.46	97.46	97.46	97.46								
Dam Stripping																		
Filter Placement	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	75.17	75.17	75.17			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	85.28	85.28	85.28	85.28	85.28	182.73	182.73	182.73	182.73	182.73	182.73	85.28	75.17	75.17	75.17	0.00	0.00	0.00

Table B-163. Alternative 3 Daily CO Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22							
Phase																													
Clear & Grub	0.00	0.00																											
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																						
Wall Construction			8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92																			
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83							
Excavation												0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Excavation Backfill																													
Dam Stripping														0.00	0.00	0.00													
Filter Placement														30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54								
Shell Placement																		0.00	0.00	0.00	0.00								
Total	0.00	0.00	8.92	8.92	8.92	8.92	8.92	75.25	75.25	75.25	59.83	59.83	59.83	90.36	90.36	90.36	90.36	90.36	90.36	90.36	90.36								

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation	0.00				0.00	0.00	0.00	0.00										
Excavation Backfill						31.14	31.14	31.14	31.14	31.14	31.14							
Dam Stripping																		
Filter Placement	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	24.24	24.24	24.24			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	27.25	27.25	27.25	27.25	27.25	58.39	58.39	58.39	58.39	58.39	58.39	27.25	24.24	24.24	24.24	0.00	0.00	0.00

Table B-164. Alternative 3 Daily PM10 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62														
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation												0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation Backfill																								
Dam Stripping															0.00	0.00	0.00							
Filter Placement														9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49			
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	2.62	2.62	2.62	2.62	2.62	22.08	22.08	22.08	18.60	18.60	18.60	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09	28.09		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Overlay Materials Supply																		
Excavation					0.00	0.00	0.00	0.00	0.00									
Excavation Backfill						10.36	10.36	10.36	10.36	10.36	10.36							
Dam Stripping																		
Filter Placement	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	8.68	8.68	8.68			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	9.07	9.07	9.07	9.07	9.07	19.43	19.43	19.43	19.43	19.43	19.43	9.07	8.68	8.68	8.68	0.00	0.00	0.00

Table B-165. Alternative 3 Daily PM2.5 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																
Wall Construction			1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	
Excavation																							
Excavation Backfill																							
Dam Stripping														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Filter Placement														4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17		
Shell Placement																		0.00	0.00	0.00	0.00		
Total	0.00	0.00	1.21	1.21	1.21	1.21	1.21	10.18	10.18	10.18	8.18	8.18	8.18	12.35	12.35	12.35	12.35	12.35	12.35	12.35	12.35	12.35	

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation	0.00				0.00	0.00	0.00	0.00										
Excavation Backfill	4.32						4.32	4.32	4.32	4.32	4.32							
Dam Stripping																		
Filter Placement	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.43	3.43	3.43			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	3.78	3.78	3.78	3.78	3.78	8.11	8.11	8.11	8.11	8.11	8.11	3.78	3.43	3.43	3.43	0.00	0.00	0.00

Table B-166. Alternative 4 Daily ROG Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																
Wall Construction			1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.64	1.64	1.64	1.64	1.64								
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Overlay Materials Supply								13.26	13.26	13.26	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	
Excavation				0.00	0.00	0.00	0.00	0.00	0.00							0.00	0.00	0.00	0.00	0.00			
Excavation Backfill				2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	
Dam Stripping															0.00	0.00	0.00						
Filter Placement													6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	6.23	
Shell Placement																		0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	1.78	4.39	4.39	4.39	4.39	17.65	17.65	17.65	16.26	16.26	16.26	22.49	22.49	20.85	20.85	20.85	20.85	20.85	20.85	20.85	

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.18	5.18	5.18			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.18	5.18	5.18	0.00	0.00	0.00

Table B-167. Alternative 4 Daily Nox Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00																		
Wall Construction			28.29	28.29	28.29	28.29	28.29	28.29	28.29	28.29	25.37	25.37	25.37	25.37	25.37									
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Overlay Materials Supply								210.51	210.51	210.51	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76	188.76		
Excavation				0.00	0.00	0.00	0.00	0.00	0.00															
Excavation Backfill				41.44	41.44	41.44	41.44	41.44	41.44	41.44	37.16	37.16	37.16	37.16	37.16	37.16	37.16	37.16	37.16	37.16	37.16	37.16		
Dam Stripping															0.00	0.00	0.00							
Filter Placement													96.34		96.34	96.34	96.34	96.34	96.34	96.34	96.34	96.34		
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	28.29	69.74	69.74	69.74	69.74	280.25	280.25	280.25	251.29	251.29	251.29	347.63	347.63	322.26	322.26	322.26	322.26	322.26	322.26	322.26		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	75.17	75.17	75.17			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	85.28	75.17	75.17	75.17	0.00	0.00	0.00

Table B-168. Alternative 4 Daily CO Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.04	8.04	8.04	8.04	8.04									
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Overlay Materials Supply								66.34	66.34	66.34	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83	59.83		
Excavation				0.00	0.00	0.00	0.00	0.00	0.00															
Excavation Backfill				13.06	13.06	13.06	13.06	13.06	13.06	13.06	11.78	11.78	11.78	11.78	11.78	11.78	11.78	11.78	11.78	11.78	11.78	11.78		
Dam Stripping														0.00	0.00	0.00								
Filter Placement													30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54		
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	8.92	21.98	21.98	21.98	21.98	88.31	88.31	88.31	79.65	79.65	79.65	110.18	110.18	102.14	102.14	102.14	102.14	102.14	102.14	102.14		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	24.24	24.24	24.24			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	27.25	24.24	24.24	24.24	0.00	0.00	0.00

Table B-169. Alternative 4 Daily PM10 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00																		
Wall Construction			2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.50	2.50	2.50	2.50	2.50									
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Overlay Materials Supply								19.46	19.46	19.46	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60	18.60		
Excavation				0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00					
Excavation Backfill				3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66		
Dam Stripping															0.00	0.00	0.00							
Filter Placement														9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49			
Shell Placement																		0.00	0.00	0.00	0.00			
Total	0.00	0.00	2.62	6.45	6.45	6.45	6.45	25.91	25.91	25.91	24.76	24.76	24.76	34.25	34.25	31.75	31.75	31.75	31.75	31.75	31.75	31.75		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	8.68	8.68	8.68			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	8.68	8.68	8.68	0.00	0.00	0.00

Table B-170. Alternative 4 Daily PM2.5 Emissions by Phase and Month from Haul Trucks (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00																		
Wall Construction			1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.10	1.10	1.10	1.10	1.10									
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Overlay Materials Supply								8.97	8.97	8.97	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18	8.18		
Excavation				0.00	0.00	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00					
Excavation Backfill				1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61		
Dam Stripping															0.00	0.00	0.00							
Filter Placement													4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17		
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	1.21	2.97	2.97	2.97	2.97	11.94	11.94	11.94	10.89	10.89	10.89	15.06	15.06	13.96	13.96	13.96	13.96	13.96	13.96	13.96		

Month	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.43	3.43	3.43			
Shell Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.78	3.43	3.43	3.43	0.00	0.00	0.00

Table B-171. Alternative 1 Uncontrolled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tons per year) 2011 2012	(lb/day)	(tons per year) 2011 2012
Aggregate transfer	Course Aggregate	0.82	0.06 0.06	0.55	0.04 0.04
Sand Transfer	Sand	0.19	0.01 0.01	0.13	0.01 0.01
Cement unloading to elevated storage silo (pneumatic)	Cement	30.19	2.17 2.17	20.35	1.47 1.47
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	10.73	0.77 0.77	7.23	0.52 0.52
Weigh hopper loading	Aggregate + Sand	1.06	0.08 0.08	0.71	0.05 0.05
Mixer loading (central mix)	Cement + Supplement	10.10	0.73 0.73	6.81	0.49 0.49
Truck loading	Cement + Supplement	20.96	1.51 1.51	14.13	1.02 1.02
Total Emissions		74.06	5.33 5.33	49.91	3.59 3.59

Table B-172. Alternative 2 Uncontrolled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tpy) 2010	(lb/day)	(tpy) 2010
Aggregate transfer	Course Aggregate	0.11	0.01	0.08	0.00
Sand Transfer	Sand	0.03	0.00	0.02	0.00
Cement unloading to elevated storage silo (pneumatic)	Cement	4.12	0.20	2.77	0.13
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	1.46	0.07	0.99	0.05
Weigh hopper loading	Aggregate + Sand	0.14	0.01	0.10	0.00
Mixer loading (central mix)	Cement + Supplement	1.38	0.07	0.93	0.04
Truck loading	Cement + Supplement	2.86	0.14	1.93	0.09
Total Emissions		10.10	0.48	6.81	0.33

Table B-173. Alternative 3 Uncontrolled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tpy) 2010	(lb/day)	(tpy) 2010
Aggregate transfer	Course Aggregate	0.11	0.01	0.08	0.01
Sand Transfer	Sand	0.03	0.00	0.02	0.00
Cement unloading to elevated storage silo (pneumatic)	Cement	4.12	0.40	2.77	0.27
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	1.46	0.14	0.99	0.09
Weigh hopper loading	Aggregate + Sand	0.14	0.01	0.10	0.01
Mixer loading (central mix)	Cement + Supplement	1.38	0.13	0.93	0.09
Truck loading	Cement + Supplement	2.86	0.27	1.93	0.18
Total Emissions		10.10	0.97	6.81	0.65

Table B-174. Alternative 4 Uncontrolled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tons per year) 2011 2012	(lb/day)	(tons per year) 2011 2012
Aggregate transfer	Course Aggregate	0.36	0.03 0.04	0.24	0.02 0.03
Sand Transfer	Sand	0.08	0.01 0.01	0.06	0.00 0.01
Cement unloading to elevated storage silo (pneumatic)	Cement	13.23	1.11 1.43	8.92	0.75 0.96
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	4.71	0.40 0.51	3.17	0.27 0.34
Weigh hopper loading	Aggregate + Sand	0.46	0.04 0.05	0.31	0.03 0.03
Mixer loading (central mix)	Cement + Supplement	4.43	0.37 0.48	2.98	0.25 0.32
Truck loading	Cement + Supplement	9.19	0.77 0.99	6.19	0.52 0.67
Total Emissions		32.46	2.73 3.51	21.88	1.84 2.36

Table B-175. Alternative 1 Controlled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tons per year) 2011 2012	(lb/day)	(tons per year) 2011 2012
Aggregate transfer	Course Aggregate	0.82	0.06 0.06	0.55	0.04 0.04
Sand Transfer	Sand	0.19	0.01 0.01	0.13	0.01 0.01
Cement unloading to elevated storage silo (pneumatic)	Cement	0.02	0.00 0.00	0.02	0.00 0.00
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	0.05	0.00 0.00	0.03	0.00 0.00
Weigh hopper loading	Aggregate + Sand	1.06	0.08 0.08	0.71	0.05 0.05
Mixer loading (central mix)	Cement + Supplement	0.36	0.03 0.03	0.24	0.02 0.02
Truck loading	Cement + Supplement	1.21	0.09 0.09	0.81	0.06 0.06
Total Emissions		3.71	0.27 0.27	2.50	0.18 0.18

Table B-176. Alternative 2 Controlled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tpy) 2010	(lb/day)	(tpy) 2010
Aggregate transfer	Course Aggregate	0.11	0.01	0.08	0.00
Sand Transfer	Sand	0.03	0.00	0.02	0.00
Cement unloading to elevated storage silo (pneumatic)	Cement	0.00	0.00	0.00	0.00
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	0.01	0.00	0.00	0.00
Weigh hopper loading	Aggregate + Sand	0.14	0.01	0.10	0.00
Mixer loading (central mix)	Cement + Supplement	0.05	0.00	0.03	0.00
Truck loading	Cement + Supplement	0.16	0.01	0.11	0.01
Total Emissions		0.51	0.02	0.34	0.02

Table B-177. Alternative 3 Controlled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions		PM2.5 Emissions	
		(lb/day)	(tpy) 2010	(lb/day)	(tpy) 2010
Aggregate transfer	Course Aggregate	0.11	0.01	0.08	0.01
Sand Transfer	Sand	0.03	0.00	0.02	0.00
Cement unloading to elevated storage silo (pneumatic)	Cement	0.00	0.00	0.00	0.00
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	0.01	0.00	0.00	0.00
Weigh hopper loading	Aggregate + Sand	0.14	0.01	0.10	0.01
Mixer loading (central mix)	Cement + Supplement	0.05	0.00	0.03	0.00
Truck loading	Cement + Supplement	0.16	0.02	0.11	0.01
Total Emissions		0.51	0.05	0.34	0.03

Table B-178. Alternative 4 Controlled Particulate Emissions from Concrete Batch Plant

Source	Material	PM10 Emissions			PM2.5 Emissions		
		(lb/day)	(tons per year)		(lb/day)	(tons per year)	
			2011	2012		2011	2012
Aggregate transfer	Course Aggregate	0.36	0.03	0.04	0.24	0.02	0.03
Sand Transfer	Sand	0.08	0.01	0.01	0.06	0.00	0.01
Cement unloading to elevated storage silo (pneumatic)	Cement	0.01	0.00	0.00	0.01	0.00	0.00
Cement supplement unloading to elevated storage silo (pneumatic)	Cement Supplement	0.02	0.00	0.00	0.01	0.00	0.00
Weigh hopper loading	Aggregate + Sand	0.46	0.04	0.05	0.31	0.03	0.03
Mixer loading (central mix)	Cement + Supplement	0.16	0.01	0.02	0.11	0.01	0.01
Truck loading	Cement + Supplement	0.53	0.04	0.06	0.36	0.03	0.04
Total Emissions		1.62	0.14	0.18	1.09	0.09	0.12

Table B-179. Alternative 1 Daily Uncontrolled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Excavation Backfill																						
Dam Stripping														0.00	0.00		74.06	74.06	74.06	74.06	74.06	74.06
Filter Placement															0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.06	74.06	74.06	74.06	74.06	74.06

[illegible]

Table B-180. Alternative 1 Daily Controlled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.00	0.00												
Excavation Backfill																	3.71	3.71	3.71	3.71	3.71	3.71
Dam Stripping														0.00	0.00	0.00						
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.71	3.71	3.71	3.71	3.71	3.71

[illegible]

Table B-181. Alternative 1 Daily Controlled PM2.5 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Excavation Backfill																						
Dam Stripping														0.00	0.00		2.50	2.50	2.50	2.50	2.50	2.50
Filter Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	2.50	2.50	2.50	2.50	2.50

[illegible]

Table B-182. Alternative 2 Daily Uncontrolled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.00	0.00																						
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																	
Wall Construction			10.10	10.10	10.10	10.10																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply							0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									0.00	0.00														
Excavation Backfill																								
Dam Stripping															0.00	0.00	0.00	67.33	67.33	67.33	67.33	67.33		
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Shell Placement																		0.00	0.00	0.00	0.00	0.00		
Total	0.00	0.00	10.10	10.10	10.10	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.33	67.33	67.33	67.33	67.33	67.33		

[illegible]

Table B-183. Alternative 2 Daily Controlled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00																
Wall Construction			0.51	0.51	0.51	0.51																	
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Overlay Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation								0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00						
Excavation Backfill																	3.37	3.37	3.37	3.37	3.37	3.37	
Dam Stripping														0.00	0.00	0.00							
Filter Placement													0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	0.51	0.51	0.51	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.37	3.37	3.37	3.37	3.37	3.37	

[illegible]

Table B-184. Alternative 2 Daily Uncontrolled PM2.5 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00															
Wall Construction			6.81	6.81	6.81	6.81																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation Backfill											0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dam Stripping															0.00	0.00	0.00	45.37	45.37	45.37	45.37	45.37
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.81	6.81	6.81	6.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.37	45.37	45.37	45.37	45.37	45.37

[illegible]

Table B-185. Alternative 2 Daily Controlled PM2.5 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00	0.00															
Wall Construction			0.34	0.34	0.34	0.34																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Excavation Backfill																	2.27	2.27	2.27	2.27	2.27	2.27
Dam Stripping															0.00	0.00	0.00					
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																		0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.34	0.34	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.27	2.27	2.27	2.27	2.27	2.27

[illegible]

Table B-190. Alternative 4 Daily Uncontrolled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00																	
Wall Construction			9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32								
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation				0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Excavation Backfill				32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	32.46	
Dam Stripping																							
Filter Placement														0.00	0.00	0.00							
Shell Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
																	0.00	0.00	0.00	0.00	0.00	0.00	
Total	0.00	0.00	9.32	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	41.78	32.46	32.46	32.46	32.46	32.46	32.46	32.46	

[illegible]

Table B-191. Alternative 4 Daily Controlled PM10 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.00	0.00																				
Well Installation		0.00	0.00	0.00	0.00	0.00																
Wall Construction			0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation				0.00	0.00	0.00	0.00	0.00	0.00													
Excavation Backfill				1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
Dam Stripping																						
Filter Placement														0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shell Placement																	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.47	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	1.62	1.62	1.62	1.62	1.62	1.62	1.62

[illegible]

Table B-192. Alternative 4 Daily Uncontrolled PM2.5 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Phase																									
Clear & Grub	0.00	0.00																							
Well Installation		0.00	0.00	0.00	0.00	0.00																			
Wall Construction			6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28										
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Excavation				0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Excavation Backfill				21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88	21.88			
Dam Stripping																									
Filter Placement															0.00	0.00	0.00								
Shell Placement																0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.28	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	28.16	21.88	21.88	21.88	21.88	21.88	21.88	21.88			

[illegible]

Table B-193. Alternative 4 Daily Controlled PM2.5 Emissions by Phase and Month from Concrete Batch Plant (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22	
Phase																							
Clear & Grub	0.00	0.00																					
Well Installation		0.00	0.00	0.00	0.00	0.00																	
Wall Construction			0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31								
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Overlay Materials Supply							0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation			0.00	0.00	0.00	0.00	0.00	0.00	0.00														
Excavation Backfill			1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	
Dam Stripping																							
Filter Placement																							
Shell Placement																							
Total	0.00	0.00	0.31	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.09	1.09	1.09	1.09	1.09	1.09	1.09	

[illegible]

Table B-194. Alternative 1 Unmitigated Emissions from Employee Commuting

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	PM10					PM2.5				
						Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust	Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust ²
1	Clearing and Grubbing	2010	0.07	2.13	0.27	0.74	0.007	0.007	0.011	0.71	0.14	0.007	0.002	0.004	0.12
2	Dewatering Well Installation	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.30
3	Excavation	2010	0.43	12.81	1.63	4.44	0.045	0.042	0.069	4.29	0.82	0.042	0.011	0.026	0.75
3		2011	0.36	11.28	1.45	4.44	0.045	0.042	0.069	4.29	0.82	0.042	0.011	0.026	0.75
4	Excavation Backfill	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
4		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
5	Filter Placement and Overlay	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
5		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
5		2013	0.21	7.35	0.95	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-195. Alternative 2 Unmitigated Emissions from Employee Commuting

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	PM10					PM2.5				
						Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust	Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust ²
1	Clearing and Grubbing	2010	0.07	2.13	0.27	0.74	0.007	0.007	0.011	0.71	0.14	0.007	0.002	0.004	0.12
2	Dewatering Well Installation	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.30
3	Wall Construction	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.30
4	Excavation	2010	0.43	12.81	1.63	4.44	0.045	0.042	0.069	4.29	0.82	0.042	0.011	0.026	0.75
4		2011	0.36	11.28	1.45	4.44	0.045	0.042	0.069	4.29	0.82	0.042	0.011	0.026	0.75
5	Excavation Backfill	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
5		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
6	Filter Placement and Overlay	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
6		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
6		2013	0.21	7.35	0.95	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-196. Alternative 3 Unmitigated Emissions from Employee Commuting

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	PM10					PM2.5				
						Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust	Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust ²
1	Clearing and Grubbing	2010	0.07	2.13	0.27	0.74	0.007	0.007	0.011	0.71	0.14	0.007	0.002	0.004	0.12
2	Dewatering Well Installation	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.30
3	Wall Construction	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.30
4	Excavation	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
4		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
5	Excavation Backfill	2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
6	Filter Placement and Overlay	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.62
6		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62
6		2013	0.21	7.35	0.95	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.62

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-197. Alternative 4 Unmitigated Emissions from Employee Commuting

Phase	Description	Year	Emissions (pounds per day) ¹												
			ROG	CO	NOx	PM10					PM2.5				
						Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust	Total	Exhaust	Tire Wear	Brake Wear	Paved Road Dust ²
1	Clearing and Grubbing	2010	0.07	2.13	0.27	0.74	0.007	0.007	0.011	0.71	0.14	0.007	0.002	0.004	0.124
2	Dewatering Well Installation	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.298
3	Wall Construction	2010	0.17	5.12	0.65	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.298
3		2011	0.14	4.51	0.58	1.78	0.018	0.017	0.028	1.71	0.33	0.017	0.004	0.011	0.298
4	Excavation	2010	0.36	10.67	1.36	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.621
4		2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.621
5	Excavation Backfill	2010	0.36	10.67	1.36	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.621
5		2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.621
6	Filter Placement and Overlay	2011	0.30	9.40	1.21	3.70	0.037	0.035	0.057	3.57	0.69	0.035	0.009	0.022	0.621
6		2012	0.25	8.29	1.07	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.621
6		2013	0.21	7.35	0.95	3.70	0.035	0.035	0.057	3.57	0.69	0.033	0.009	0.022	0.621

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

² Paved road dust PM2.5 emissions calculated using PM10 emission factor from MRI 1996 and CARB speciation profile.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-198. Alternative 1 Unmitigated Annual Emissions from Employee Commuting

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
1	Clear & Grub	0.001	-	-	-	0.005	-	-	-	0.043	-	-	-	0.015	-	-	-	0.003	-	-	-
2	Well Installation	0.016	-	-	-	0.063	-	-	-	0.492	-	-	-	0.171	-	-	-	0.032	-	-	-
3	Excavation	0.009	0.031	-	-	0.035	0.125	-	-	0.277	0.975	-	-	0.096	0.384	-	-	0.018	0.071	-	-
4	Excavation Backfill	-	0.022	0.018	-	-	0.087	0.077	-	-	0.677	0.597	-	-	0.267	0.266	-	-	0.049	0.049	-
	Dam Stripping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Filter Placement	-	0.025	0.036	0.008	-	0.101	0.154	0.034	-	0.790	1.194	0.265	-	0.311	0.533	0.133	-	0.058	0.099	0.025
	Shell Placement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL		0.027	0.078	0.054	0.008	0.104	0.313	0.230	0.034	0.811	2.441	1.791	0.265	0.281	0.961	0.799	0.133	0.052	0.178	0.148	0.025

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-199. Alternative 2 Unmitigated Annual Emissions from Employee Commuting

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
1	Clear & Grub	0.001	-	-	-	0.005	-	-	-	0.043	-	-	-	0.015	-	-	-	0.003	-	-	-
2	Well Installation	0.012	-	-	-	0.047	-	-	-	0.369	-	-	-	0.128	-	-	-	0.024	-	-	-
3	Excavation	0.008	-	-	-	0.031	-	-	-	0.246	-	-	-	0.085	-	-	-	0.016	-	-	-
4	Excavation Backfill	0.009	0.031	-	-	0.035	0.125	-	-	0.277	0.975	-	-	0.096	0.384	-	-	0.018	0.071	-	-
	Dam Stripping	-	0.022	0.018	-	-	0.087	0.077	-	-	0.677	0.597	-	-	0.267	0.266	-	-	0.049	0.049	-
5	Filter Placement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shell Placement	-	0.032	0.036	0.008	-	0.130	0.154	0.034	-	1.015	1.194	0.265	-	0.400	0.533	0.133	-	0.074	0.099	0.025
TOTAL		0.0313	0.0851	0.0538	0.0075	0.1192	0.3421	0.2305	0.0341	0.934	2.6667	1.7914	0.2647	0.324	1.05	0.799	0.1332	0.0601	0.195	0.148	0.0247

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-200. Alternative 3 Unmitigated Annual Emissions from Employee Commuting

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
1	Clear & Grub	0.001	-	-	-	0.005	-	-	-	0.043	-	-	-	0.015	-	-	-	0.003	-	-	-
2	Well Installation	0.010	-	-	-	0.039	-	-	-	0.307	-	-	-	0.107	-	-	-	0.020	-	-	-
3	Excavation	0.016	-	-	-	0.063	-	-	-	0.492	-	-	-	0.171	-	-	-	0.032	-	-	-
4	Excavation Backfill	-	0.035	0.019	-	-	0.139	0.082	-	-	1.083	0.637	-	-	0.426	0.284	-	-	0.079	0.053	-
	Dam Stripping	-	-	0.018	-	-	-	0.077	-	-	-	0.597	-	-	-	0.266	-	-	-	0.049	-
5	Filter Placement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shell Placement	-	0.032	0.036	0.008	-	0.130	0.154	0.034	-	1.015	1.194	0.265	-	0.400	0.533	0.133	-	0.074	0.099	0.025
TOTAL		0.0282	0.0669	0.0729	0.0075	0.1075	0.2692	0.3124	0.0341	0.8418	2.0982	2.4284	0.2647	0.292	0.8262	1.0832	0.1332	0.0542	0.1534	0.2006	0.0247

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-201. Alternative 4 Unmitigated Annual Emissions from Employee Commuting

Phase		Emissions (tons per year) ¹																			
		ROG				NOx				CO				PM10				PM2.5			
		2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
1	Clear & Grub	0.001	-	-	-	0.005	-	-	-	0.043	-	-	-	0.015	-	-	-	0.003	-	-	-
2	Well Installation	0.010	-	-	-	0.039	-	-	-	0.307	-	-	-	0.107	-	-	-	0.020	-	-	-
3	Excavation	0.016	0.009	-	-	0.063	0.035	-	-	0.492	0.271	-	-	0.171	0.107	-	-	0.032	0.020	-	-
4	Excavation Backfill	0.023	0.024	-	-	0.086	0.098	-	-	0.672	0.761	-	-	0.233	0.300	-	-	0.043	0.056	-	-
	Dam Stripping	0.030	0.032	-	-	0.114	0.130	-	-	0.896	1.015	-	-	0.311	0.400	-	-	0.058	0.074	-	-
5	Filter Placement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shell Placement	-	0.032	0.036	0.008	-	0.130	0.154	0.034	-	1.015	1.194	0.265	-	0.400	0.533	0.133	-	0.074	0.099	0.025
TOTAL		0.0807	0.0977	0.0359	0.0075	0.3077	0.3929	0.1537	0.0341	2.4107	3.0626	1.1943	0.2647	0.8361	1.2059	0.5327	0.1332	0.1552	0.2239	0.0986	0.0247

Source: EMFAC2007, MRI 1996, CARB 2008a

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

ROG = reactive organic compound

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

CO = carbon monoxide

NOx = oxides of nitrogen

PM10 = inhalable particulate matter

PM2.5 = fine particulate matter

Table B-202. Alternative 1 Daily ROG Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.07	0.07																				
Well Installation		0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.43	0.43	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36				
Excavation Backfill																						
Dam Stripping																						
Filter Placement															0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Shell Placement																						
Total	0.07	0.24	0.17	0.17	0.17	0.17	0.17	0.17	0.60	0.43	0.36	0.36	0.36	0.36	0.36	0.66	0.96	0.96	0.60	0.60	0.60	0.60

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Materials Supply																		
Excavation																		
Excavation Backfill	0.25	0.25	0.25	0.25	0.25	0.25												
Dam Stripping																		
Filter Placement	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21			
Shell Placement																		
Total	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00	0.00	0.00

Table B-203. Alternative 1 Daily NOx Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.27	0.27																				
Well Installation		0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									1.63	1.63	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45				
Excavation Backfill																	1.21	1.21	1.21	1.21	1.21	1.21
Dam Stripping																						
Filter Placement																1.21	1.21	1.21	1.21	1.21	1.21	1.21
Shell Placement																						
Total	0.27	0.93	0.65	0.65	0.65	0.65	0.65	0.65	2.29	1.63	1.45	1.45	1.45	1.45	1.45	2.65	3.86	3.86	2.41	2.41	2.41	2.41

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Materials Supply																		
Excavation																		
Excavation Backfill	1.07	1.07	1.07	1.07	1.07	1.07												
Dam Stripping																		
Filter Placement	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95			
Shell Placement																		
Total	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00	0.00	0.00

Table B-204. Alternative 1 Daily CO Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	2.13	2.13																						
Well Installation		5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.12															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									12.81	12.81	11.28	11.28	11.28	11.28	11.28	11.28	11.28	11.28						
Excavation Backfill																								
Dam Stripping														9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	
Filter Placement																9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40
Shell Placement																								
Total	2.13	7.26	5.12	5.12	5.12	5.12	5.12	5.12	17.93	12.81	11.28	11.28	11.28	11.28	11.28	20.68	30.08	30.08	18.80	18.80	18.80	18.80		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Materials Supply																		
Excavation																		
Excavation Backfill	8.29	8.29	8.29	8.29	8.29	8.29												
Dam Stripping																		
Filter Placement	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35			
Shell Placement																		
Total	16.59	16.59	16.59	16.59	16.59	16.59	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00	0.00	0.00

Table B-205. Alternative 1 Daily PM10 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.74	0.74																				
Well Installation		1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78													
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44				
Excavation Backfill																	3.70	3.70	3.70	3.70	3.70	3.70
Dam Stripping																						
Filter Placement																3.70	3.70	3.70	3.70	3.70	3.70	3.70
Shell Placement																						
Total	0.74	2.52	1.78	1.78	1.78	1.78	1.78	1.78	6.22	4.44	4.44	4.44	4.44	4.44	4.44	8.14	11.84	11.84	7.40	7.40	7.40	7.40

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Materials Supply																		
Excavation																		
Excavation Backfill	3.70	3.70	3.70	3.70	3.70	3.70												
Dam Stripping																		
Filter Placement	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70			
Shell Placement																		
Total	7.40	7.40	7.40	7.40	7.40	7.40	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00	0.00	0.00

Table B-206. Alternative 1 Daily PM2.5 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.14	0.14																						
Well Installation		0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33															
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									0.82	0.82														
Excavation Backfill															0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Dam Stripping																								
Filter Placement																0.69	0.69	0.69	0.69	0.69	0.69	0.69		
Shell Placement																								
Total	0.14	0.47	0.33	0.33	0.33	0.33	0.33	0.33	1.15	0.82	0.82	0.82	0.82	0.82	0.82	1.51	2.20	2.20	1.37	1.37	1.37	1.37		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Materials Supply																		
Excavation																		
Excavation Backfill	0.69	0.69	0.69	0.69	0.69	0.69												
Dam Stripping																		
Filter Placement	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69			
Shell Placement																		
Total	1.37	1.37	1.37	1.37	1.37	1.37	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00	0.00	0.00

Table B-207. Alternative 2 Daily ROG Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.07	0.07																						
Well Installation		0.17	0.17	0.17	0.17	0.17	0.17																	
Wall Construction			0.17	0.17	0.17	0.17																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply							0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									0.43	0.43	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36						
Excavation Backfill																	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Dam Stripping																								
Filter Placement														0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	
Shell Placement																								
Total	0.07	0.24	0.34	0.34	0.34	0.34	0.17	0.00	0.43	0.43	0.36	0.36	0.36	0.66	0.66	0.66	0.96	0.96	0.60	0.60	0.60	0.60		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.25	0.25	0.25	0.25	0.25	0.25												
Dam Stripping																		
Filter Placement	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21			
Shell Placement																		
Total	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00	0.00	0.00

Table B-208. Alternative 2 Daily NOx Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Phase																								
Clear & Grub	0.27	0.27																						
Well Installation		0.65	0.65	0.65	0.65	0.65	0.65																	
Wall Construction			0.65	0.65	0.65	0.65																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation									1.63	1.63	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45						
Excavation Backfill																								
Dam Stripping														1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	
Filter Placement														1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	
Shell Placement																								
Total	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.00	1.63	1.63	1.45	1.45	1.45	2.65	2.65	2.65	3.86	3.86	2.41	2.41	2.41	2.41		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
	0.00	0.00	0.00	0.00	0.00	0.00												
	1.07	1.07	1.07	1.07	1.07	1.07												
	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95			
Total	2.13	2.13	2.13	2.13	2.13	2.13	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00	0.00	0.00

Table B-209. Alternative 2 Daily CO Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	2.13	2.13																				
Well Installation		5.12	5.12	5.12	5.12	5.12	5.12															
Wall Construction			5.12	5.12	5.12	5.12																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									12.81	12.81	11.28	11.28	11.28	11.28	11.28	11.28	11.28	11.28				
Excavation Backfill																	9.40	9.40	9.40	9.40	9.40	9.40
Dam Stripping																						
Filter Placement														9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40
Shell Placement																						
Total	2.13	7.26	10.25	10.25	10.25	10.25	5.12	0.00	12.81	12.81	11.28	11.28	11.28	20.68	20.68	20.68	30.08	30.08	18.80	18.80	18.80	18.80

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	8.29	8.29	8.29	8.29	8.29	8.29												
Dam Stripping																		
Filter Placement	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35			
Shell Placement																		
Total	16.59	16.59	16.59	16.59	16.59	16.59	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00	0.00	0.00

Table B-210. Alternative 2 Daily PM10 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.74	0.74																				
Well Installation		1.78	1.78	1.78	1.78	1.78	1.78															
Wall Construction			1.78	1.78	1.78	1.78																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44				
Excavation Backfill																	3.70	3.70	3.70	3.70	3.70	3.70
Dam Stripping																						
Filter Placement														3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Shell Placement																						
Total	0.74	2.52	3.55	3.55	3.55	3.55	1.78	0.00	4.44	4.44	4.44	4.44	4.44	8.14	8.14	8.14	11.84	11.84	7.40	7.40	7.40	7.40

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	3.70	3.70	3.70	3.70	3.70	3.70												
Dam Stripping																		
Filter Placement	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70			
Shell Placement																		
Total	7.40	7.40	7.40	7.40	7.40	7.40	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00	0.00	0.00

Table B-211. Alternative 2 Daily PM2.5 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.14	0.14																				
Well Installation		0.33	0.33	0.33	0.33	0.33	0.33															
Wall Construction			0.33	0.33	0.33	0.33																
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation									0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82				
Excavation Backfill																						
Dam Stripping																						
Filter Placement														0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Shell Placement																						
Total	0.14	0.47	0.66	0.66	0.66	0.66	0.33	0.00	0.82	0.82	0.82	0.82	0.82	1.51	1.51	1.51	2.20	2.20	1.37	1.37	1.37	1.37

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00												
Overlay Materials Supply																		
Excavation																		
Excavation Backfill	0.69	0.69	0.69	0.69	0.69	0.69												
Dam Stripping																		
Filter Placement	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69			
Shell Placement																		
Total	1.37	1.37	1.37	1.37	1.37	1.37	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00	0.00	0.00

Table B-212. Alternative 3 Daily ROG Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22		
Phase																								
Clear & Grub	0.07	0.07																						
Well Installation		0.17	0.17	0.17	0.17	0.17																		
Wall Construction			0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17														
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Excavation																								
Excavation Backfill																								
Dam Stripping																								
Filter Placement														0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Shell Placement																								
Total	0.07	0.24	0.34	0.34	0.34	0.34	0.17	0.17	0.17	0.17	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.30		

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
Overlay Materials Supply																		
Excavation					0.25	0.25	0.25	0.25	0.25									
Excavation Backfill							0.25	0.25	0.25	0.25	0.25	0.25						
Dam Stripping																		
Filter Placement	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21			
Shell Placement																		
Total	0.25	0.25	0.25	0.50	0.50	0.75	0.75	0.75	0.50	0.50	0.50	0.25	0.21	0.21	0.21	0.00	0.00	0.00

Table B-213. Alternative 3 Daily NOx Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.27	0.27																				
Well Installation		0.65	0.65	0.65	0.65	0.65																
Wall Construction			0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65												
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation																						
Excavation Backfill																						
Dam Stripping																						
Filter Placement													1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Shell Placement																						
Total	0.27	0.93	1.31	1.31	1.31	1.31	0.65	0.65	0.65	0.65	0.00	0.00	0.00	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	1.21

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation					1.07	1.07	1.07	1.07	1.07									
Excavation Backfill							1.07	1.07	1.07	1.07	1.07							
Dam Stripping																		
Filter Placement	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95			
Shell Placement																		
Total	1.07	1.07	1.07	2.13	2.13	3.20	3.20	3.20	2.13	2.13	2.13	1.07	0.95	0.95	0.95	0.00	0.00	0.00

Table B-214. Alternative 3 Daily CO Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	2.13	2.13																										
Well Installation		5.12	5.12	5.12	5.12	5.12																						
Wall Construction			5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.12																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Excavation																												
Excavation Backfill																												
Dam Stripping																												
Filter Placement													9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40						
Shell Placement																												
Total	2.13	7.26	10.25	10.25	10.25	10.25	5.12	5.12	5.12	5.12	0.00	0.00	0.00	18.80	18.80	18.80	18.80	18.80	18.80	18.80	18.80	9.40						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation	8.29				8.29	8.29	8.29	8.29										
Excavation Backfill							8.29	8.29	8.29	8.29	8.29							
Dam Stripping																		
Filter Placement	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35			
Shell Placement																		
Total	8.29	8.29	8.29	16.59	16.59	24.88	24.88	24.88	16.59	16.59	16.59	8.29	7.35	7.35	7.35	0.00	0.00	0.00

Table B-215. Alternative 3 Daily PM10 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	0.74	0.74																										
Well Installation		1.78	1.78	1.78	1.78	1.78																						
Wall Construction			1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Excavation																												
Excavation Backfill																												
Dam Stripping																												
Filter Placement													3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70						
Shell Placement																												
Total	0.74	2.52	3.55	3.55	3.55	3.55	1.78	1.78	1.78	1.78	0.00	0.00	0.00	7.40	7.40	7.40	7.40	7.40	7.40	7.40	7.40	3.70						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation					3.70	3.70	3.70	3.70	3.70									
Excavation Backfill							3.70	3.70	3.70	3.70	3.70							
Dam Stripping																		
Filter Placement	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70			
Shell Placement																		
Total	3.70	3.70	3.70	7.40	7.40	11.10	11.10	11.10	7.40	7.40	7.40	3.70	3.70	3.70	3.70	0.00	0.00	0.00

Table B-216. Alternative 3 Daily PM2.5 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22						
Phase																												
Clear & Grub	0.14	0.14																										
Well Installation		0.33	0.33	0.33	0.33	0.33																						
Wall Construction			0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33																		
Detention Pond Operations						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Excavation																												
Excavation Backfill																												
Dam Stripping																												
Filter Placement													0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69						
Shell Placement																												
Total	0.14	0.47	0.66	0.66	0.66	0.66	0.33	0.33	0.33	0.33	0.00	0.00	0.00	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	0.69						

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Overlay Materials Supply																		
Excavation					0.69	0.69	0.69	0.69	0.69									
Excavation Backfill							0.69	0.69	0.69	0.69	0.69							
Dam Stripping																		
Filter Placement	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69			
Shell Placement																		
Total	0.69	0.69	0.69	1.37	1.37	2.06	2.06	2.06	1.37	1.37	1.37	0.69	0.69	0.69	0.69	0.00	0.00	0.00

Table B-217. Alternative 4 Daily ROG Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.07	0.07																				
Well Installation		0.17	0.17	0.17	0.17	0.17																
Wall Construction			0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.14	0.14	0.14	0.14	0.14							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation				0.36	0.36	0.36	0.36	0.36	0.36					0.30	0.30	0.30	0.30	0.30	0.30			
Excavation Backfill				0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Dam Stripping																						
Filter Placement														0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Shell Placement																						
Total	0.07	0.24	0.34	1.06	1.06	1.06	0.89	0.89	0.89	0.53	0.44	0.44	0.44	1.04	1.04	0.90	0.90	0.90	0.90	0.60	0.60	0.60

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21			
Shell Placement																		
Total	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.21	0.21	0.00	0.00	0.00

Table B-218. Alternative 4 Daily NOx Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.27	0.27																				
Well Installation		0.65	0.65	0.65	0.65	0.65																
Wall Construction			0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.58	0.58	0.58	0.58	0.58							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation				1.36	1.36	1.36	1.36	1.36	1.36					1.21	1.21	1.21	1.21	1.21	1.21	1.21		
Excavation Backfill				1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Dam Stripping																						
Filter Placement													1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Shell Placement																						
Total	0.27	0.93	1.31	4.03	4.03	4.03	3.38	3.38	3.38	2.02	1.78	1.78	1.78	4.20	4.20	3.62	3.62	3.62	3.62	2.41	2.41	2.41

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95			
Shell Placement																		
Total	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	0.95	0.95	0.95	0.00	0.00	0.00

Table B-219. Alternative 4 Daily CO Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	2.13	2.13																				
Well Installation		5.12	5.12	5.12	5.12	5.12																
Wall Construction			5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.12	4.51	4.51	4.51	4.51	4.51							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavation				10.67	10.67	10.67	10.67	10.67	10.67					9.40	9.40	9.40	9.40	9.40	9.40			
Excavation Backfill				10.67	10.67	10.67	10.67	10.67	10.67	10.67	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40
Dam Stripping																						
Filter Placement													9.40		9.40	9.40	9.40	9.40	9.40	9.40	9.40	9.40
Shell Placement																						
Total	2.13	7.26	10.25	31.59	31.59	31.59	26.47	26.47	26.47	15.80	13.91	13.91	13.91	32.71	32.71	28.20	28.20	28.20	28.20	18.80	18.80	18.80

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35			
Shell Placement																		
Total	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	8.29	7.35	7.35	7.35	0.00	0.00	0.00

Table B-220. Alternative 4 Daily PM10 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.74	0.74																				
Well Installation		1.78	1.78	1.78	1.78	1.78																
Wall Construction			1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation				3.70	3.70	3.70	3.70	3.70	3.70					3.70	3.70	3.70	3.70	3.70	3.70			
Excavation Backfill				3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Dam Stripping																						
Filter Placement														3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Shell Placement																						
Total	0.74	2.52	3.55	10.96	10.96	10.96	9.18	9.18	9.18	5.48	5.48	5.48	5.48	12.88	12.88	11.10	11.10	11.10	11.10	7.40	7.40	7.40

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70			
Shell Placement																		
Total	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	0.00	0.00	0.00

Table B-221. Alternative 4 Daily PM2.5 Emissions by Phase and Month from Employee Commuting (lbs/day)

Month	Mar-10 1	Apr-10 2	May-10 3	Jun-10 4	Jul-10 5	Aug-10 6	Sep-10 7	Oct-10 8	Nov-10 9	Dec-10 10	Jan-11 11	Feb-11 12	Mar-11 13	Apr-11 14	May-11 15	Jun-11 16	Jul-11 17	Aug-11 18	Sep-11 19	Oct-11 20	Nov-11 21	Dec-11 22
Phase																						
Clear & Grub	0.14	0.14																				
Well Installation		0.33	0.33	0.33	0.33	0.33																
Wall Construction			0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33							
Detention Pond Operations		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Overlay Materials Supply								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation				0.69	0.69	0.69	0.69	0.69	0.69					0.69	0.69	0.69	0.69	0.69	0.69			
Excavation Backfill				0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Dam Stripping																						
Filter Placement														0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Shell Placement																						
Total	0.14	0.47	0.66	2.03	2.03	2.03	1.70	1.70	1.70	1.02	1.02	1.02	1.02	2.39	2.39	2.06	2.06	2.06	2.06	1.37	1.37	1.37

Month	Jan-12 23	Feb-12 24	Mar-12 25	Apr-12 26	May-12 27	Jun-12 28	Jul-12 29	Aug-12 30	Sep-12 31	Oct-12 32	Nov-12 33	Dec-12 34	Jan-13 35	Feb-13 36	Mar-13 37	Apr-13 38	May-13 39	Jun-13 40
Phase																		
Clear & Grub																		
Well Installation																		
Wall Construction																		
Detention Pond Operations																		
Overlay Materials Supply																		
Excavation																		
Excavation Backfill																		
Dam Stripping																		
Filter Placement	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69			
Shell Placement																		
Total	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.00	0.00	0.00

Appendix C

Transportation and Circulation

Appendix C

Transportation and Circulation

This appendix includes information and methods used or applied to the technical analysis presented in Chapter 10, Traffic and Circulation.

C.1 Technical Evaluation Criteria – Roadways and Intersections

The transportation analysis included both roadway segments and signalized intersections. Different methods were used to evaluate these roadway facilities. Roadway operations were evaluated on a daily basis. Intersection operations were evaluated during the peak commute periods with hourly volumes.

C.2 Roadway Segments

The roadway segments were evaluated by comparing daily traffic volumes to the daily LOS thresholds, based on the number of lanes and the facility type, as presented in Table C-1. These thresholds were calculated based on the Highway Capacity Manual (HCM) (Transportation Research Board 2000).

Table C-1. Functional Class and Level of Service Thresholds

Facility Type	Daily Traffic LOS Capacity Threshold (Total vehicles in both directions except where noted)				
	A	B	C	D	E
2-Lane Collector ¹	-	-	5,700	9,000	9,800
Minor 2-Lane Highway	900	2,000	6,800	14,100	17,400
Major 2-Lane Highway	1,200	2,900	7,900	16,000	20,500
4-Lane, Multilane Highway	10,700	17,600	25,300	32,800	36,500
2-Lane Arterial ¹	-	-	9,700	17,600	18,700
4-Lane Arterial, Undivided ¹	-	-	17,500	27,400	28,900
4-Lane Arterial, Divided ¹	-	-	19,200	35,400	37,400
6-Lane Arterial, Divided ¹	-	-	27,100	53,200	56,000
8-Lane Arterial, Divided ¹	-	-	37,200	17,100	74,700
2-Lane Freeway ²	11,100	20,100	28,800	35,700	40,100
2-Lane Freeway + Auxiliary Lane ²	14,100	25,500	36,400	44,900	50,350
3-Lane Freeway ²	17,000	30,800	44,000	54,100	60,600
3-Lane Freeway + Auxiliary Lane ²	20,100	36,400	51,800	63,500	71,000
4-Lane Freeway ²	23,200	42,000	59,500	72,800	81,400

Source: Transportation Research Board 2000; Fehr & Peers 2004.

Notes:

¹LOS A and B are not achievable for collectors and arterials because they typically have closely spaced signalized intersections with relatively high cycle lengths (e.g. greater than 90 seconds).

²LOS Capacity Threshold is for one direction.

Key: LOS = level of service

C.3 Trip Assumptions by Alternative

The following tables present the worker and truck trip assumptions by alternative that were used to complete the traffic analysis.

Alternative #1 - Large Open Cut	Workers					Trucks					Months
	Daily Total	AM Peak		PM Peak		Daily Total	AM Peak		PM Peak		
		Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Step 1 - Clearing and Grubbing	20	10	0	0	10	0	0	0	0	0	1 - 2
Step 2 - Dewatering Well Installation	48	12	0	12	12	0	0	0	0	0	2 - 9
Step 3 - Excavation	120	30	0	30	30	0	0	0	0	0	9 - 18
Step 4 - Excavation Backfill	100	25	0	25	25	0	0	0	0	0	17 - 28
Step 5a - Filter Material Supply	0	0	0	0	0	180	9	9	9	9	8 - 21
Step 5b - Filter Placement and Overlay	100	25	0	25	25	0	0	0	0	0	16 - 37

Alternative #2 - Single Wall Excavation	Workers					Trucks					Months
		AM Peak		PM Peak		Daily Total	AM Peak		PM Peak		
		Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Step 1 - Clearing and Grubbing	20	10	0	0	10	0	0	0	0	0	1 - 2
Step 2 - Dewatering Well Installation	48	12	0	12	12	0	0	0	0	0	2 - 7
Step 3 - Wall Construction	48	12	0	12	12	12	1	1	1	1	3 - 6
Step 4 - Excavation	120	30	0	30	30	0	0	0	0	0	9 - 18
Step 5 - Excavation Backfill	100	25	0	25	25	0	0	0	0	0	17 - 28
Step 6a - Filter Material Supply	0	0	0	0	0	180	9	9	9	9	8 - 21
Step 6b - Filter Placement and Overlay	100	25	0	25	25	0	0	0	0	0	14 - 37

Alternative #3 - Dual Wall Excavation	Workers					Trucks					Months
		AM Peak		PM Peak		Daily Total	AM Peak		PM Peak		
		Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Step 1 - Clearing and Grubbing	20	10	0	0	10	0	0	0	0	0	1 - 2
Step 2 - Dewatering Well Installation	48	12	0	12	12	0	0	0	0	0	2 - 6
Step 3 - Dual Wall Construction	48	12	0	12	12	12	1	1	1	1	3 - 10
Step 4 - Excavation	100	25	0	25	25	0	0	0	0	0	11 - 30
Step 5 - Excavation Backfill	100	25	0	25	25	0	0	0	0	0	28 - 33
Step 6a - Filter Material Supply	0	0	0	0	0	180	9	9	9	9	8 - 21
Step 6b - Filter Placement and Overlay	100	25	0	25	25	90	5	5	5	5	14 - 37

Alternative #4 - Cellular Wall Excavation	Workers					Trucks					Months
		AM Peak		PM Peak		Daily Total	AM Peak		PM Peak		
		Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Step 1 - Clearing and Grubbing	20	10	0	0	10	0	0	0	0	0	1 - 2
Step 2 - Dewatering Well Installation	48	12	0	12	12	0	0	0	0	0	2 - 6
Step 3 - Cellular Wall Construction	48	12	0	12	12	12	1	1	1	1	3 - 15
Step 4 - Excavation	100	25	0	25	25	0	0	0	0	0	4 - 19
Step 5 - Excavation Backfill	100	25	0	25	25	0	0	0	0	0	4 - 19
Step 6a - Filter Material Supply	0	0	0	0	0	180	10	10	10	10	8 - 21
Step 6b - Filter Placement and Overlay	100	25	0	25	25	90	5	5	5	5	14 - 37

Assumptions:

Workers: Shifts from 6am - 4pm & 4pm - 2am, so 1st shift will enter site during AM peak & leave during PM peak, 2nd shift will enter during PM peak and exit at off-peak hours

Truck volumes were multiplied by factor of 1.7 to represent slower acceleration rates and round trips were assumed

Construction will begin in March of 2010

Appendix D

Noise

Table D-1. Summary of Estimated Ambient Noise Conditions					
Receptor Locations		Ambient Noise Levels			Distance from Center of Construction/Processing Activity
Receptor Id.	Description	Daytime L _{eq}	Nighttime L _{eq}	L _{dn}	
1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	50	60	2,700 feet from MIAD
2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	35	45	1,300 feet from MIAD

Note: Ambient noise levels are estimates based on land use conditions.

Source: U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health 35

Table D-2. Local Government Non-Transportation Noise Standards (dBA)

Noise Element Jurisdiction/Land Use Category	Maximum Allowable Exterior Noise Levels						
	Daytime 7a.m. - 7p.m.		Evening 7 p.m. - 10 p.m.		Nighttime 10p.m. - 7 a.m.		
Sacramento County Residential Areas	Hourly		Hourly		Hourly		
	L ₅₀	L _{max}	L ₅₀	L _{max}	L ₅₀	L _{max}	
	50	70	50	70	45	65	
City of Folsom	Construction noise is exempt from the City of Folsom Noise Element provided that construction does not take place before 7 a.m. or after 6 p.m. during weekdays and before 8 a.m. or after 5 p.m on weekends.						
El Dorado County ¹	Hourly		Hourly		Hourly		
	L _{eq}	L _{max}	L _{eq}	L _{max}	L _{eq}	L _{max}	
	Residential areas (Community Areas)	55	75	50	65	45	60
	Residential Areas (Rural Regions)	50	60	45	55	40	50
	Commercial areas (Community Areas)	70	90	65	75	65	75
	Commercial areas (Rural Regions)	65	75	60	70	60	70
	Open Space, Natural Resource (Rural Regions)	65	75	60	70	60	70
Placer County ² including Granite Bay Community			L _{dn}				

Notes:

¹ Non-transportation construction noise standards.

² Single event impulsive noise levels produced by blasting shall not exceed a peak linear overpressure of 122 dB, or a C-weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from blasting shall not exceed 60 dB LC_{dn} or CNELC on any given day.

Sources:

County of Sacramento General Plan Noise Element (December 1993, amended 1998)

City of Folsom Municipal Code, Chapter 8.42 Noise Control

El Dorado County General Plan, Public Health, Safety and Noise Element (July 2004)

Placer County General Plan Update, Section 9 Noise (August 1994)

Granite Bay Community Plan Noise Element (Amended 1996)

Table D-3a. Internal Haul Route Dump Trucktrips											
Project Feature	Year	Alt 1 - No Raise		Alt 2 - 4 ft Raise/Tunnel		Alt 3 - 4 ft to 7 ft Raise		Alt 4 - 9.5-ft Raise		Alt 5 - 17-ft Raise	
		Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour
Main Concrete Dam Raise	2011	0	0	0	0	0	0	0	0	0	0
Main Concrete Dam Tendons and Shears	2013-2014	42	2	70	4	42	2	42	2	42	2
Auxiliary Spillway Borrow Development (3,190,000 cu yd)	2007-2009	146	8	146	8	146	8	146	8	0	0
Auxiliary Spillway Construction	2009-2011	0	0	0	0	0	0	0	0	0	0
Tunnel Construction	2009-2011	0	0	55	3	0	0	0	0	0	0
Beals Point/Mooney Ridge Borrow Development (1,250,000 cu yd max)	2007 -2010	63	4	56	3	43	2	115	6	121	7
Right Wing Dam Stripping/Excavation	2009-2010	67	4	67	4	67	4	63	4	65	4
Right Wing Dam Construction	2009-2010	61	3	83	5	26	1	84	5	82	5
Bridge Spoils Excavation (750,000 cu yds)	2007-2009	60	3	60	3	60	3	60	3	60	3
Dike 5 Stripping/Excavation	2008	44	2	33	2	51	3	48	3	60	3
Dike 5 Construction	2008	67	4	55	3	52	3	61	3	69	4
Dike 6 Stripping/Excavation	2008	64	4	34	2	60	3	32	2	40	2
Dike 6 Construction	2008	36	2	51	3	48	3	46	3	66	4
Mooney Ridge Stripping/Excavation	2013-2014	0	0	39	2	0	0	36	2	36	2
Mooney Ridge Construction	2013-2014	0	0	48	3	0	0	65	4	64	4
Right Wing Dam Construction	2009-2011	16	1	48	3	0	0	65	4	64	4
Folsom Point Area Borrow Development and processing (1,673,000 cu yd max)	2007-2012	0	0	0	0	0	0	0	0	42	2
MIAD - Stripping/Excavation	2008-2009	81	5	64	4	81	5	81	5	71	4
MIAD - Shell and Raise Construction & Replace Foundation (alts 2 & 5)	2010-2011 (2012)	88	5	84	5	88	5	88	5	86	5
MIAD Jet Grouting	2008-2009	0	0	0	0	0	0	0	0	0	0
Left Wing Dam Stripping/Excavation	2012-2013	59	3	72	4	66	4	72	4	72	4
Left Wing Dam Construction	2012-2013	58	3	76	4	62	3	71	4	70	4
Dike 7 Strip/Excavate	2012	46	3	36	2	12	1	53	3	48	3
Dike 7 Construction	2012	28	2	27	2	42	2	46	3	48	3
Dike 8 Strip/Excavate	2012	0	0	41	2	47	3	33	2	22	1
Dike 8 Construction	2012	0	0	36	2	31	2	52	3	49	3
Granite Bay Borrow Development (913,000 cu yd max)	2013-2014	0	0	36	2	47	3	41	2	45	3
Dike 4 Strip/Excavate	2013-2014	53	3	43	2	36	2	32	2	31	2
Dike 4 Construction	2013-2014	28	2	40	2	43	2	54	3	56	3
Dikes 1, 2, 3, 4 Stripping/Excavation	2013-2014	0	0	66	4	61	3	69	4	73	4
Dikes 1, 2, 3, 4 Construction	2013-2014	0	0	56	3	53	3	60	3	76	4
Total 8 Yr Project		1107		1522		1264		1615		1558	

Hours/Day

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Table D-3b. Internal Haul Route Concrete Trucktrips											
Project Feature	Year	Alt 1 - No Raise		Alt 2 - 4 ft Raise/Tunnel		Alt 3 - 4 ft to 7 ft Raise		Alt 4 - 9.5-ft Raise		Alt 5 - 17-ft Raise	
		Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour	Trucktrips Day	Trucktrips Hour
Main Concrete Dam Raise	2011	0	0	28	2	28	2	30	2	34	2
Main Concrete Dam Tendons and Shears	2013-2014	8	1	8	0	8	0	8	0	8	0
Auxiliary Spillway Construction	2009-2011	24	1	24	1	26	1	26	1	0	0
Tunnel Construction	2009-2011	0	0	37	2	0	0	0	0	0	0
Right Wing Dam Construction	2009-2010	0	0	4	1	0	0	0	0	0	0
Left Wing Dam Construction	2012-2013	0	0	4	1	0	0	0	0	0	0
Total 8 Yr Project		32		77		34		34		8	

Note: Truck trips per hour are based on 18 hours of operation.

Table D-4. Evaluation of Internal Haul Truck Trips on Project Feature Estimated Noise Levels								
Project Feature	Trucktrips trips/hour	Min. trips L_{eq} level (dBA)	Max, trips L_{eq} level (dBA)	Alt. 1 L_{eq} level Change (dBA)	Alt. 2 L_{eq} level Change (dBA)	Alt. 3 L_{eq} level Change (dBA)	Alt. 4 L_{eq} level Change (dBA)	Alt. 5 L_{eq} level Change (dBA)
Auxiliary Spillway Borrow Development Period	0-8	92	94	0	0	0	0	-2
RWD Stripping, Excavation & Construction	5-9	92	93	0	1	-1	1	1
LWD Stripping, Excavation & Construction	6-8	92	93	0	1	1	1	1
Beals Point/Mooney Ridge Borrow Development*	2-7	91	93	0	1	-1	2	2
Dike 5 & 6 Stripping, Excavation & Construction	10-13	93	93	0	0	0	0	0
Mooney Ridge Stripping, Excavation & Construction*	0-6	90	92	0	2	0	2	2
MIAD - Excavate & Replace Foundation*	4-5	92	92	0	0	0	0	0
Dike 7 & 8 Stripping, Excavation & Construction	5-11	91	93	0	1	1	2	2
Granite Bay Borrow Development*	0-3	92	93	0	0	1	0	1
Dike 1, 2, 3 & 4 Stripping, Excavation & Construction	0-8	89	92	0	3	2	3	3

Note: Min. and max. truck trips are range estimated for Alts. 1 through 5.

* = Project features used to predict noise impacts at sensitive receptors

Dump truck trip information in equipment list is based on Alternative 1; therefore, there is no change in noise levels for Alternative 1.

Table D-5. Summary of Construction Noise Levels for Each Construction Activity

Construction Activities	Equipment types	Estimated Equipment Numbers Per Site	Usage Factor	Equipment L _{max} @ 50'	BACT L _{max} @ 50'	Add to Single Source Level (dBA)	Total L _{max} @ 50'	BACT Total L _{max} @ 50'	Equipment L _{eq} @ 50'	Total L _{eq} @ 50'	BACT L _{eq} @ 50'	BACT Total L _{eq} @ 50'
Alt 1 (Case 1) Clearing & Grubbing/Well Install	Articulated Trucks	2	40%	84	80	3	87	83	80	83	76	79
	Scrapers	1	40%	85	85	0	85	85	81	81	81	81
	Dozers	1	40%	85	85	0	85	85	81	81	81	81
	Wheel Loaders	1	40%	80	80	0	80	80	76	76	76	76
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Total						94	91		89		87
Alt 1 (Case 2) Well Install/Detention Pond/Excavation	Articulated Trucks	6	40%	84	80	8	92	88	80	88	76	84
	Scrapers	6	40%	85	85	8	93	93	81	89	81	89
	Dozers	5	40%	85	85	7	92	92	81	88	81	88
	Wheel Loaders	3	40%	80	80	5	85	85	76	81	76	81
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Total						98	97		94		93
Alt 1 (Case 3) Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	Articulated Trucks	12	40%	84	80	11	95	91	80	91	76	87
	Scrapers	6	40%	85	85	8	93	93	81	89	81	89
	Dozers	9	40%	85	85	10	95	95	81	91	81	91
	Wheel Loaders	7	40%	80	80	8	88	88	76	84	76	84
	Water Truck	3	40%	84	84	5	89	89	80	85	80	85
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Cement Plant	1	15%	83	73	0	83	73	75	75	65	65
	Total						100	99		96		95
Alt 2 (Case 1) Clearing & Grubbing/Well Install	Articulated Trucks	2	40%	84	80	3	87	83	80	83	76	79
	Scrapers	1	40%	85	85	0	85	85	81	81	81	81
	Dozers	1	40%	85	85	0	85	85	81	81	81	81
	Wheel Loaders	2	40%	80	80	3	83	83	76	79	76	79
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Total						94	91		89		87
Alt 2 (Case 2) Well Install/Detention Pond/Sheet Pile Wall	Wheel Loaders	1	40%	80	80	0	80	80	76	76	76	76
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Sheet Pile Driver	1	20%	95	95	0	95	95	88	88	88	88
	Secant Pile Drill	1	20%	85	85	0	85	85	78	78	78	78
	Total						97	96		90		89
Alt 2 (Case 3) Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	Articulated Trucks	12	40%	84	80	11	95	91	80	91	76	87
	Scrapers	4	40%	85	85	6	91	91	81	87	81	87
	Dozers	9	40%	85	85	10	95	95	81	91	81	91
	Wheel Loaders	7	40%	80	80	8	88	88	76	84	76	84
	Water Truck	3	40%	84	84	5	89	89	80	85	80	85
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Total						99	98		95		94
Alt 3 (Case 1) Clearing & Grubbing/Well Install	Articulated Trucks	2	40%	84	80	3	87	83	80	83	76	79
	Scrapers	1	40%	85	85	0	85	85	81	81	81	81
	Dozers	1	40%	85	85	0	85	85	81	81	81	81
	Wheel Loaders	2	40%	80	80	3	83	83	76	79	76	79
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Total						94	91		89		87
Alt 3 (Case 2) Well Install/Detention Pond/Sheet Pile Wall	Wheel Loaders	2	40%	80	80	3	83	83	76	79	76	79
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Sheet Pile Driver	1	20%	95	95	0	95	95	88	88	88	88
	Secant Pile Drill	1	20%	85	85	0	85	85	78	78	78	78
	Total						97	96		90		89

Table D-5. Summary of Construction Noise Levels for Each Construction Activity

Construction Activities	Equipment types	Estimated Equipment Numbers Per Site	Usage Factor	Equipment L _{max} @ 50'	BACT L _{max} @ 50'	Add to Single Source Level (dBA)	Total L _{max} @ 50'	BACT Total L _{max} @ 50'	Equipment L _{eq} @ 50'	Total L _{eq} @ 50'	BACT L _{eq} @ 50'	BACT Total L _{eq} @ 50'
Alt 3 (Case 3) Sheet Pile Wall/Detention Pond/Excavation	Articulated Trucks	6	40%	84	80	8	92	88	80	88	76	84
	Scrapers	4	40%	85	85	6	91	91	81	87	81	87
	Dozers	5	40%	85	85	7	92	92	81	88	81	88
	Wheel Loaders	4	40%	80	80	6	86	86	76	82	76	82
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Cement Plant	1	15%	83	73	0	83	73	75	75	65	65
	Secant Pile Drill	1	20%	85	85	0	85	85	78	78	78	78
	Sheet Pile Driver	1	20%	95	95	0	95	95	88	88	88	88
	Total						99	99		94		94
Alt 3 (Case 4) Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	Articulated Trucks	12	40%	84	80	11	95	91	80	91	76	87
	Scrapers	4	40%	85	85	6	91	91	81	87	81	87
	Dozers	9	40%	85	85	10	95	95	81	91	81	91
	Wheel Loaders	7	40%	80	80	8	88	88	76	84	76	84
	Water Truck	3	40%	84	84	5	89	89	80	85	80	85
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Total						99	98		95		94
Alt 4 (Case 1) Clearing & Grubbing/Well Install	Articulated Trucks	2	40%	84	80	3	87	83	80	83	76	79
	Scrapers	1	40%	85	85	0	85	85	81	81	81	81
	Dozers	1	40%	85	85	0	85	85	81	81	81	81
	Wheel Loaders	2	40%	80	80	3	83	83	76	79	76	79
	Water Truck	1	40%	84	84	0	84	84	80	80	80	80
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Total						94	91		89		87
Alt 4 (Case 2) Well Install/Detention Pond/Sheet Pile Wall	Wheel Loaders	2	40%	80	80	3	83	83	76	79	76	79
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Drill Rigs	3	20%	85	75	5	90	80	78	83	68	73
	Sheet Pile Driver	1	20%	95	95	0	95	95	88	88	88	88
	Secant Pile Drill	1	20%	85	85	0	85	85	78	78	78	78
	Total						97	96		90		89
Alt 4 (Case 3) Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	Articulated Trucks	6	40%	84	80	8	92	88	80	88	76	84
	Scrapers	4	40%	85	85	6	91	91	81	87	81	87
	Dozers	9	40%	85	85	10	95	95	81	91	81	91
	Wheel Loaders	8	40%	80	80	9	89	89	76	85	76	85
	Water Truck	3	40%	84	84	5	89	89	80	85	80	85
	Water Pump	3	50%	77	67	5	82	72	74	79	64	69
	Cement Plant	1	15%	83	73	0	83	73	75	75	65	65
	Secant Pile Drill	1	20%	85	85	0	85	85	78	78	78	78
	Sheet Pile Driver	1	20%	95	95	0	95	95	88	88	88	88
	Total						100	100		96		95

Notes:

Number of round trucktrips per hour estimated by CDM were based on on-site haul and concrete truck projections over an 18-hour construction day for Alternative 1.

Yellow highlighted noise levels are based on the installation of either portable or stationary barriers capable of reducing noise levels by 10 dBA (See Readme file

Sources:

U.S. Army Corps, Folsom Dam Raise and Auxiliary Spillway Alternative PASSII Draft Report, Feburary 2006.

FHWA, Roadway Construction Noise Model, January 2006.

P. Yastrow, Laku Landing Sound Level Analysis, April 1990.

CDM, 2006

Folsom Dam Construction Schedule

Table D-6a. Alternative 1 - Large Open Cut

[illegible]

Table D-6b. Alternative 2 - Single Downstream Wall

[illegible]

Table D-6c. Alternative 3 - Dual Wall System

[illegible]**Table D-6d. Alternative 4 - Cellular**[illegible]

Source: U.S. EPA, Noise From Construction Equipment and Operations Building and Home Appliances, December 1971.

Table D-7. Topography Attenuation

Receptor ID.	Receptor Height (ft)	Receptor Elevation (ft)	Source Height (ft)	Source Elevation (ft)
1	5	450	10	450
2	5	450	10	440
3	5	600	10	500
4	5	600	10	400
5	5	450	10	400
6	5	600	10	480

Source: USGS topographic maps

Source:	Front End Loader		Rec.:	Receptor 1		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	140.2	0	500	138.7	-50	0	137.2		0	137.2
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source:	Front End Loader		Rec.:	Receptor 2		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	137	0	671	138.5	-50	0	138	50	0	138
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		5.4	6.4	7.8	9.9	12.4	15.3	18.3	21.3	24.0	24.0

Source:	Front End Loader		Rec.:	Receptor 3		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	153.4	0	1250	184.5	-50	0	183	50	0	183
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		11.8	14.8	17.8	20.8	23.8	24.0	24.0	24.0	24.0	24.0

Source:	Front End Loader		Rec.:	Receptor 4		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	153.4	0	610	184.5	-50	0	183	50	0	183
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		11.8	14.8	17.8	20.8	23.8	24.0	24.0	24.0	24.0	24.0

Source:	Front End Loader		Rec.:	Receptor 5		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	125	0	580	139	-50	0	137	50	0	137
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		9.8	12.6	15.5	18.6	21.6	24.0	24.0	24.0	24.0	24.0

Source:	Front End Loader		Rec.:	Receptor 6		Barrier:	Earthen Berm				
x	y	z	x	y	z	x1	y1	z1	x2	y2	z2
0	0	149	0	275	184.5	-50	0	183	50	0	183
		Octave Center Band Frequency (Hz)									
		31.5	63	125	250	500	1000	2000	4000	8000	16000
Attenuation (dB)		12.1	15.1	18.1	21.1	24.0	24.0	24.0	24.0	24.0	24.0

Notes:

Based on a barrier model developed by Cavanuagh Tocci Associates, Inc., 1993.

Coordinates and elevations are in meters.

The 250 Hz octave band frequency was selected to represent topographic attenuation because according to EPA construction equipment noise frequency is 250 Hz..

CONSTRUCTION NOISE MODELING ANALYSIS

Daytime Projected Noise Levels

Table D-8a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{max} Levels @ 50'	BACT L _{max} Levels @ 50'	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'
Alternative 1 (Case 1)	94	91	89	87
Alternative 1 (Case 2)	98	97	94	93
Alternative 1 (Case 3)	100	99	96	95
Alternative 2 (Case 1)	94	91	89	87
Alternative 2 (Case 2)	97	96	90	89
Alternative 2 (Case 3)	99	98	95	94
Alternative 3 (Case 1)	94	91	89	87
Alternative 3 (Case 2)	97	96	90	89
Alternative 3 (Case 3)	99	99	94	94
Alternative 3 (Case 4)	99	98	95	94
Alternative 4 (Case 1)	94	91	89	87
Alternative 4 (Case 2)	97	96	90	89
Alternative 4 (Case 3)	100	100	96	95

Table D-8b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Major Project Feature Impacting Receptor
							L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	2,700	35	0	1	66	63	65	63	65	63	66	63	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	1,300	28	0	1	71	67	71	67	71	67	72	67	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

CONSTRUCTION NOISE MODELING ANALYSIS

Daytime Projected Noise Levels

Table D-8c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L_{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Major Project Feature Impacting Receptor
							L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	2,700	35	0	1	65	63	64	62	65	62	66	63	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	1,300	28	0	1	70	66	70	66	70	66	71	66	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

Table D-8d. Comparison of Unmitigated Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Daytime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
			Unmitigated Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	Unmitigated Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	Unmitigated Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	Unmitigated Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	63	3	63	3	63	3	63	3
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	67	22	67	22	67	22	67	22

Table D-8e. Comparison of Mitigated Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Daytime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
			BACT Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	BACT Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	BACT Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}	BACT Daytime L_{eq}	Increase Above Existing Daytime L_{50}/L_{eq}
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	63	3	62	2	62	2	63	3
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	66	21	66	21	66	21	66	21

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68 °F and 50% humidity for 250 Hz.

CONSTRUCTION NOISE MODELING ANALYSIS

Nighttime Projected Noise Levels

Table D-9a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{max} Levels @ 50'	BACT L _{max} Levels @ 50'	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'
Alternative 1 (Case 1)	94	91	89	87
Alternative 1 (Case 2)	98	97	94	93
Alternative 1 (Case 3)	100	99	96	95
Alternative 2 (Case 1)	94	91	89	87
Alternative 2 (Case 2)	97	96	90	89
Alternative 2 (Case 3)	99	98	95	94
Alternative 3 (Case 1)	94	91	89	87
Alternative 3 (Case 2)	97	96	90	89
Alternative 3 (Case 3)	99	99	94	94
Alternative 3 (Case 4)	99	98	95	94
Alternative 4 (Case 1)	94	91	89	87
Alternative 4 (Case 2)	97	96	90	89
Alternative 4 (Case 3)	100	100	96	95

Table D-9b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Major Project Feature Impacting Receptor
							L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	L _{max} (dBA)	L _{eq} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	50	2,700	35	0	1	64	60	64	60	64	60	65	60	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	35	1,300	28	0	1	71	67	71	67	71	67	72	67	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

CONSTRUCTION NOISE MODELING ANALYSIS

Nighttime Projected Noise Levels

Table D-9c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L_{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Major Project Feature Impacting Receptor
							L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{eq} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	50	2,700	35	0	1	63	60	63	59	63	59	64	60	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	35	1,300	28	0	1	70	66	69	66	70	66	71	66	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

Table D-9d. Comparison of Mitigated Noise Levels with Existing Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Nighttime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
			BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}
R-1	of Lakeridge Oaks Drive, El Dorado County	50	60	10	60	10	60	10	60	10
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	35	67	32	67	32	67	32	67	32

Table D-9e. Comparison of Mitigated Noise Levels with Existing Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Nighttime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
			BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}	BACT Nighttime L_{eq}	Increase Above Existing Nighttime L_{50}/L_{eq}
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	50	60	10	59	9	59	9	60	10
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	35	66	31	66	31	66	31	66	31

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68 °F and 50% humidity for 250 Hz.

Construction Noise Modeling Analysis
Day-Night Projected Noise Levels

Table D-10a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'	Unmitigated L _{dn} Levels @ 50'	BACT L _{dn} Levels @ 50'
Alternative 1 (Case 1)	89	87	92	90
Alternative 1 (Case 2)	94	93	97	95
Alternative 1 (Case 3)	96	95	99	97
Alternative 2 (Case 1)	89	87	92	90
Alternative 2 (Case 2)	90	89	93	92
Alternative 2 (Case 3)	95	94	98	97
Alternative 3 (Case 1)	89	87	92	90
Alternative 3 (Case 2)	90	89	93	92
Alternative 3 (Case 3)	94	94	97	96
Alternative 3 (Case 4)	95	94	98	97
Alternative 4 (Case 1)	89	87	92	90
Alternative 4 (Case 2)	90	89	93	92
Alternative 4 (Case 3)	96	95	98	98

Table D-10b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing L _{dn} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Major Project Feature Impacting Receptor
							L _{dn} (dBA)	L _{dn} (dBA)	L _{dn} (dBA)	L _{dn} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	2,700	35	0	1	65	64	64	65	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	1,300	28	0	1	70	69	69	70	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

Table D-10c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing L _{dn} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Major Project Feature Impacting Receptor
							L _{dn} (dBA)	L _{dn} (dBA)	L _{dn} (dBA)	L _{dn} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	2,700	35	0	1	64	64	64	64	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	1,300	28	0	1	69	68	68	69	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68°F and 50% humidity for 250 Hz.

Summary of BACT Analysis

Table D-11a. Projected Daytime Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Noise Impact Descriptor
			BACT Daytime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Daytime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Daytime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Daytime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	63	3	62	2	62	2	63	3	No Impact
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	66	21	66	21	66	21	66	21	Severe

Table D-11b. Projected Nighttime Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L_{eq}	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Noise Impact Descriptor
			BACT Nighttime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Nighttime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Nighttime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	BACT Nighttime L_{eq} (dBA)	Increase Above Existing L_{eq} (dBA)	
1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	50	60	10	59	9	59	9	60	10	Moderate
2	Western corner of Elvie Perazzo and Briggs Park, Folsom	35	66	31	66	31	66	31	66	31	Severe

Comparison of Projected Construction Noise Levels to Community Noise Standards

Table D-12a. Projected Mitigated Noise Levels (Daytime)

Receptor Locations		L _{max} Level (dBA)		Exceedance	L ₅₀ /L _{eq} Level (dBA)		Exceedance
Station Id.	Description	Daytime	Standard	Yes/No	Daytime	Standard	Yes/No
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	66	75	No	63	55	Yes
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	71	--	--	66	--	--

Table D-12b. Projected Mitigated Noise Levels (Nighttime)

Receptor Locations		L _{max} Level (dBA)		Exceedance	L ₅₀ /L _{eq} Level (dBA)		Exceedance
Station Id.	Description	Nighttime	Standard	Yes/No	Nighttime	Standard	Yes/No
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	64	60	Yes	60	45	Yes
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	71	--	--	66	--	--

Notes: Exceedances are due to existing background noise levels at or above the standards before adding in project noise levels.

Conservatively assumed that L₅₀ noise level is equivalent to L_{eq} noise level.

Noise levels represent maximum BACT noise level for all five alternatives.

Table D-13. Comparison of Project Alternatives Construction Noise Impacts

Receptor Locations		Major Construction Phase	Project	Construction Schedule Duration (total days)				
Station Id.	Description		Years	Potential	Alternative 1	Alternative 2	Alternative 3	Alternative 4
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	2010-2013					
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	Excavation/Detention Pond/Excavation Backfill/Filter Placement and Overlay	2010-2013					

Receptor Locations		Construction Period Average L _{dn} Noise Level					Impact Evaluation*	
Station Id.	Description	No-Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Lower	Higher
R-1	North of Maul Oak Court and west of Lakeridge Oaks Drive, El Dorado County	60	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
R-2	Western corner of Elvie Perazzo and Briggs Park, Folsom	45	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		

Note: * Impact evaluation compares alternatives with No-Action alternative.

Table D-14. Summary of Estimated Ambient Noise Conditions					
Receptor Locations		Ambient Noise Levels			Distance from Center of Construction/Processing Activity
Receptor Id.	Description	Daytime L _{eq}	Nighttime L _{eq}	L _{dn}	
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	50	60	500 feet from Mississippi Bar

Note: Ambient noise levels are estimates based on land use conditions.

Source: U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health 35

Table D-2. Local Government Non-Transportation Noise Standards (dBA)

Noise Element Jurisdiction/Land Use Category	Maximum Allowable Exterior Noise Levels						
	Daytime 7a.m. - 7p.m.		Evening 7 p.m. - 10 p.m.		Nighttime 10p.m. - 7 a.m.		
Sacramento County Residential Areas	Hourly		Hourly		Hourly		
	L ₅₀	L _{max}	L ₅₀	L _{max}	L ₅₀	L _{max}	
	50	70	50	70	45	65	
City of Folsom	Construction noise is exempt from the City of Folsom Noise Element provided that construction does not take place before 7 a.m. or after 6 p.m. during weekdays and before 8 a.m. or after 5 p.m on weekends.						
El Dorado County ¹	Hourly		Hourly		Hourly		
	L _{eq}	L _{max}	L _{eq}	L _{max}	L _{eq}	L _{max}	
	Residential areas (Community Areas)	55	75	50	65	45	60
	Residential Areas (Rural Regions)	50	60	45	55	40	50
	Commercial areas (Community Areas)	70	90	65	75	65	75
	Commercial areas (Rural Regions)	65	75	60	70	60	70
	Open Space, Natural Resource (Rural Regions)	65	75	60	70	60	70
Placer County ² including Granite Bay Community			L _{dn}				
Residential			50				
Residential Areas Adjacent to Industrial			60				
General Commerical			70				
Heavy Commercial/Industrial Park			75				
Recreation & Forestry			70				
All land uses interior allowable noise level			45				

Notes:

¹ Non-transportation construction noise standards.

² Single event impulsive noise levels produced by blasting shall not exceed a peak linear overpressure of 122 dB, or a C-weighted Sound Exposure Level (SEL) of 98 dBC. The cumulative noise level from blasting shall not exceed 60 dB LC_{dn} or CNELC on any given day.

Sources:

County of Sacramento General Plan Noise Element (December 1993, amended 1998)

City of Folsom Municipal Code, Chapter 8.42 Noise Control

El Dorado County General Plan, Public Health, Safety and Noise Element (July 2004)

Placer County General Plan Update, Section 9 Noise (August 1994)

Granite Bay Community Plan Noise Element (Amended 1996)

Table D-15. Summary of Construction Noise Levels for Mississippi Bar

Construction Activities	Equipment types	Estimated Equipment Numbers Per Site	Usage Factor	Equipment L _{max} @ 50'	BACT L _{max} @ 50'	Add to Single Source Level (dBA)	Total L _{max} @ 50'	BACT Total L _{max} @ 50'	Equipment L _{eq} @ 50'	Total L _{eq} @ 50'	BACT L _{eq} @ 50'	BACT Total L _{eq} @ 50'
Mississippi Bar	Wheel Loaders	1	40%	80	80	0	80	80	76	76	76	76
	Dump Truck	1	40%	84	80	0	84	80	80	80	76	76
	Dozers	1	40%	85	85	0	85	85	81	81	81	81
	Road Grader	1	40%	85	85	0	85	85	81	81	81	81
	Total						90	89		86		85

Notes:

Number of round trucktrips per hour estimated by CDM were based on on-site haul and concrete truck projections over an 18-hour construction day for Alternative 1.

Yellow highlighted noise levels are based on the installation of either portable or stationary barriers capable of reducing noise levels by 10 dBA (See Readme file

Sources:

U.S. Army Corps, Folsom Dam Raise and Auxiliary Spillway Alternative PASSII Draft Report, Feburary 2006.

FHWA, Roadway Construction Noise Model, January 2006.

P. Yastrow, Laku Landing Sound Level Analysis, April 1990.

CDM, 2006

CONSTRUCTION NOISE MODELING ANALYSIS

Daytime Projected Noise Levels

Table D-16a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{max} Levels @ 50'	BACT L _{max} Levels @ 50'	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'
Mississippi Bar	90	89	86	85

Table D-16b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Mississippi Bar	
							L _{max} (dBA)	L _{eq} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	500	20	0	0	70	67

Table D-16c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Mississippi Bar	
							L _{max} (dBA)	L _{eq} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	500	20	0	0	70	66

Table D-16d. Comparison of Unmitigated Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Daytime L _{eq}	Mississippi Bar	
			Unmitigated Daytime L _{eq}	Increase Above Existing Daytime L ₅₀ /L _{eq}
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	67	7

Table D-16e. Comparison of Mitigated Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Daytime L _{eq}	Mississippi Bar	
			BACT Daytime L _{eq}	Increase Above Existing Daytime L ₅₀ /L _{eq}
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	66	6

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68 °F and 50% humidity for 250 Hz.

CONSTRUCTION NOISE MODELING ANALYSIS

Nighttime Projected Noise Levels

Table D-17a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{max} Levels @ 50'	BACT L _{max} Levels @ 50'	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'
Mississippi Bar	90	89	86	85

Table D-17b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Mississippi Bar	
							L _{max} (dBA)	L _{eq} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	50	500	20	0	0	70	66

Table D-17c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L _{eq} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Mississippi Bar	
							L _{max} (dBA)	L _{eq} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	50	500	20	0	0	69	65

Table D-17d. Comparison of Mitigated Noise Levels with Existing Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Nighttime L _{eq}	Mississippi Bar	
			BACT Nighttime L _{eq}	Increase Above Existing Nighttime L ₅₀ /L _{eq}
3	South of Caltrop Court and North of Main Avenue, Sacramento County	50	66	16

Table D-17e. Comparison of Mitigated Noise Levels with Existing Noise Levels (dBA)

Receptor ID.	Receptor Location	Existing Nighttime L _{eq}	Mississippi Bar	
			BACT Nighttime L _{eq}	Increase Above Existing Nighttime L ₅₀ /L _{eq}
3	South of Caltrop Court and North of Main Avenue, Sacramento County	50	65	15

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68 °F and 50% humidity for 250 Hz.

Construction Noise Modeling Analysis
Day-Night Projected Noise Levels

Table D-18a. Construction Activity Noise Levels (dBA)

Project Feature	Unmitigated L _{eq} Levels @ 50'	BACT L _{eq} Levels @ 50'	Unmitigated L _{dn} Levels @ 50'	BACT L _{dn} Levels @ 50'
Mississippi Bar	86	85	89	88

Table D-18b. Projected Unmitigated Noise Levels

Receptor ID.	Receptor Location	Existing L _{dn} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Miss. Bar L _{dn} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	500	20	0	0	69

Table D-18c. Projected Mitigated Noise Levels

Receptor ID.	Receptor Location	Existing L _{dn} (dBA)	Distance from Nearest Construction Site (ft)	Distance Divergence (dBA)	Topography Shielding (dBA)	Atmospheric Attenuation (dBA)	Miss. Bar L _{dn} (dBA)
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	500	20	0	0	68

C.M. Harris, 1991, Atmospheric attenuation based on 1.3 dB/km reduction at 68°F and 50% humidity for 250 Hz.

Summary of BACT Analysis

Table D-19a. Projected Daytime Noise Levels

Receptor ID.	Receptor Location	Existing Daytime L _{eq}	Mississippi Bar		Noise Impact Descriptor
			BACT Daytime L _{eq} (dBA)	Increase Above Existing L _{eq} (dBA)	
3	South of Caltrop Court and North of Main Avenue, Sacramento County	60	66	6	None to Slight

Table D-19b. Projected Nighttime Noise Levels

Receptor ID.	Receptor Location	Existing Nighttime L _{eq}	Mississippi Bar		Noise Impact Descriptor
			BACT Nighttime L _{eq} (dBA)	Increase Above Existing L _{eq} (dBA)	
3	South of Caltrop Court and North of Main Avenue, Sacramento County	50	65	15	Slight

Comparison of Projected Construction Noise Levels to Community Noise Standards

Table D-20a. Projected Mitigated Noise Levels (Daytime)

Receptor Locations		L _{max} Level (dBA)		Exceedance	L ₅₀ /L _{eq} Level (dBA)		Exceedance
Station Id.	Description	Daytime	Standard	Yes/No	Daytime	Standard	Yes/No
3	South of Caltrop Court and North of Main Avenue, Sacramento County	70	75	No	66	55	Yes

Table D-20b. Projected Mitigated Noise Levels (Nighttime)

Receptor Locations		L _{max} Level (dBA)		Exceedance	L ₅₀ /L _{eq} Level (dBA)		Exceedance
Station Id.	Description	Nighttime	Standard	Yes/No	Nighttime	Standard	Yes/No
3	South of Caltrop Court and North of Main Avenue, Sacramento County	69	60	Yes	65	45	Yes

Notes: Exceedances are due to existing background noise levels at or above the standards before adding in project noise levels.

Conservatively assumed that L₅₀ noise level is equivalent to L_{eq} noise level.

Noise levels represent maximum BACT noise level for all five alternatives.

Appendix E

Climate Change

Table E-1. Alternative 1 - Emissions Summary

Equipment	Emissions of CO2 (metric tons/year)				Peak Yr
	2010	2011	2012	2013	
Construction Equipment	1008.48	990.04	451.95	50.90	1008.48
Haul Trucks	874.15	3990.50	785.28	-	3990.50
Concrete Batching	-	-	-	-	0.00
Employee Commuting	105.33	359.63	298.96	49.80	359.63
Total	1987.96	5340.18	1536.19	100.70	5340.18
Equipment	Emissions of CH4 (metric tons/year)				Peak Yr
	2010	2011	2012	2013	
Construction Equipment	0.04	0.05	0.02	0.00	0.05
Haul Trucks	0.02	0.09	0.02	0.00	0.09
Concrete Batching	-	-	-	-	0.00
Employee Commuting	0.01	0.02	0.02	0.00	0.02
Total	0.07	0.16	0.05	0.01	0.16
Equipment	Emissions of N2O (metric tons/year)				Peak Yr
	2010	2011	2012	2013	
Construction Equipment	0.000	0.000	0.000	0.000	0.000
Haul Trucks	0.002	0.010	0.002	-	0.010
Concrete Batching	-	-	-	-	0.000
Employee Commuting	0.026	0.087	0.073	0.012	0.087
Total	0.028	0.097	0.075	0.012	0.097

Global Warming Potential	CO2	CH4	N2O
	1	21	310

Notes:

Construction Equipment emissions from "Alt1 Emissions_GHG.xlsx" spreadsheet.

Haul Trucks emissions from "Haul Trucks_GHG.xlsx" spreadsheet.

Employee Commuting emissions from "Employee Commuting_GHG.xlsx" spreadsheet.

Equipment	CO2e Emissions of CO2 (metric tons/year)				Peak Yr
	2010	2011	2012	2013	
Construction Equipment	1,008	990	452	51	1,008
Haul Trucks	874	3,991	785	-	3,991
Concrete Batching	-	-	-	-	0
Employee Commuting	105	360	299	50	360
Total	1,988	5,340	1,536	101	5,340
Equipment	CO2e Emissions of CH4 (metric tons/year)				Peak Yr
	2,010	2,011	2,012	2,013	
Construction Equipment	0.9	1.1	0.4	0.1	1.1
Haul Trucks	0.4	1.8	0.3	-	1.8
Concrete Batching	-	-	-	-	0.0
Employee Commuting	0.1	0.4	0.3	0.0	0.4
Total	1.5	3.3	1.0	0.1	3.3
Equipment	CO2e Emissions of N2O (metric tons/year)				Peak Yr
	2,010	2,011	2,012	2,013	
Construction Equipment	0.0	0.0	0.0	0.0	0.0
Haul Trucks	0.7	3.1	0.6	-	3.1
Concrete Batching	-	-	-	-	0.0
Employee Commuting	7.9	27.1	22.5	3.8	27.1
Total	8.6	30.2	23.1	3.8	30.2

	Emissions of CO2e (metric tons/year)				Peak Yr
	2,010	2,011	2,012	2,013	
Total	1,998	5,374	1,560	105	5,374

Table E-2. Alternative 2 - Emissions Summary

Equipment	Emissions of CO2 (metric tons/year)				
	2010	2011	2012	2013	Peak Yr
Construction Equipment	849.20	998.62	497.14	50.90	998.62
Haul Trucks	1030.80	3919.11	713.89	-	3919.11
Concrete Batching	-	-	-	-	0.00
Employee Commuting	121.30	392.87	298.96	49.80	392.87
Total	2001.30	5310.60	1509.99	100.70	5310.60
Equipment	Emissions of CH4 (metric tons/year)				
	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.04	0.06	0.02	0.00	0.06
Haul Trucks	0.02	0.09	0.01	-	0.09
Concrete Batching	-	-	-	-	0.00
Employee Commuting	0.01	0.02	0.02	0.00	0.02
Total	0.06	0.17	0.05	0.01	0.17
Equipment	Emissions of N2O (metric tons/year)				
	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.000	0.000	0.000	0.000	0.000
Haul Trucks	0.003	0.010	0.002	-	0.010
Concrete Batching	-	-	-	-	0.000
Employee Commuting	0.029	0.095	0.073	0.012	0.095
Total	0.032	0.105	0.074	0.012	0.105

Global Warming Potential	CO2	CH4	N2O
	1	21	310

Notes:

Construction Equipment emissions from "Alt2 Emissions_GHG.xlsx" spreadsheet.

Haul Trucks emissions from "Haul Trucks_GHG.xlsx" spreadsheet.

Employee Commuting emissions from "Employee Commuting_GHG.xlsx" spreadsheet.

Equipment	CO2e Emissions of CO2 (metric tons/year)				
	2010	2011	2012	2013	Peak Yr
Construction Equipment	849	999	497	51	999
Haul Trucks	1,031	3,919	714	-	3,919
Concrete Batching	-	-	-	-	0
Employee Commuting	121	393	299	50	393
Total	2,001	5,311	1,510	101	5,311
Equipment	CO2e Emissions of CH4 (metric tons/year)				
	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	0.8	1.2	0.5	0.1	1.2
Haul Trucks	0.4	1.9	0.3	-	1.9
Concrete Batching	-	-	-	-	0.0
Employee Commuting	0.2	0.5	0.3	0.0	0.5
Total	1.4	3.5	1.1	0.1	3.5
Equipment	CO2e Emissions of N2O (metric tons/year)				
	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	0.0	0.0	0.0	0.0	0.0
Haul Trucks	0.8	3.0	0.6	-	3.0
Concrete Batching	-	-	-	-	0.0
Employee Commuting	9.1	29.6	22.5	3.8	29.6
Total	9.9	32.6	23.1	3.8	32.6

	Emissions of CO2e (metric tons/year)				
	2,010	2,011	2,012	2,013	Peak Yr
Total	2,013	5,347	1,534	105	5,347

Table E-3. Alternative 3 - Emissions Summary

Emissions of CO2 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	702.78	1087.67	1005.04	50.90	1087.67
Haul Trucks	1187.45	4543.77	2804.57	-	4543.77
Concrete Batching	-	-	-	-	0.00
Employee Commuting	109.32	309.11	405.26	49.80	405.26
Total	1999.56	5940.55	4214.87	100.70	5940.55
Emissions of CH4 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.02	0.07	0.06	0.00	0.07
Haul Trucks	0.03	0.10	0.05	-	0.10
Concrete Batching	-	-	-	-	0.00
Employee Commuting	0.01	0.02	0.02	0.00	0.02
Total	0.06	0.18	0.14	0.01	0.18
Emissions of N2O (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.000	0.000	0.000	0.000	0.000
Haul Trucks	0.003	0.011	0.007	-	0.011
Concrete Batching	-	-	-	-	0.000
Employee Commuting	0.027	0.075	0.098	0.012	0.098
Total	0.029	0.086	0.105	0.012	0.105

Global Warming Potential	CO2	CH4	N2O
	1	21	310

Notes:

Construction Equipment emissions from "Alt3 Emissions_GHG.xlsx" spreadsheet.

Haul Trucks emissions from "Haul Trucks_GHG.xlsx" spreadsheet.

Employee Commuting emissions from "Employee Commuting_GHG.xlsx" spreadsheet.

CO2e Emissions of CO2 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	703	1,088	1,005	51	1,088
Haul Trucks	1,187	4,544	2,805	-	4,544
Concrete Batching	-	-	-	-	0
Employee Commuting	109	309	405	50	405
Total	2,000	5,941	4,215	101	5,941
CO2e Emissions of CH4 (metric tons/year)					
Equipment	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	0.5	1.5	1.3	0.1	1.5
Haul Trucks	0.6	2.0	1.1	-	2.0
Concrete Batching	-	-	-	-	0.0
Employee Commuting	0.1	0.4	0.4	0.0	0.4
Total	1.2	3.8	2.9	0.1	3.8
CO2e Emissions of N2O (metric tons/year)					
Equipment	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	0.0	0.0	0.0	0.0	0.0
Haul Trucks	0.9	3.5	2.2	-	3.5
Concrete Batching	-	-	-	-	0.0
Employee Commuting	8.2	23.3	30.5	3.8	30.5
Total	9.1	26.8	32.7	3.8	32.7

Emissions of CO2e (metric tons/year)					
	2,010	2,011	2,012	2,013	Peak Yr
Total	2,010	5,971	4,250	105	5,971

Table E-4. Alternative 4 - Emissions Summary

Emissions of CO2 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	1188.48	912.92	177.25	50.90	1188.48
Haul Trucks	1589.01	5255.88	1784.73	-	5255.88
Concrete Batching	-	-	-	-	0.00
Employee Commuting	313.06	451.20	199.31	49.80	451.20
Total	3090.54	6620.00	2161.29	100.70	6620.00
Emissions of CH4 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.06	0.05	0.01	0.00	0.06
Haul Trucks	0.04	0.11	0.03	-	0.11
Concrete Batching	-	-	-	-	0.00
Employee Commuting	0.02	0.03	0.01	0.00	0.03
Total	0.12	0.19	0.06	0.01	0.19
Emissions of N2O (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	0.000	0.000	0.000	0.000	0.000
Haul Trucks	0.004	0.013	0.004	-	0.013
Concrete Batching	-	-	-	-	0.000
Employee Commuting	0.076	0.110	0.048	0.012	0.110
Total	0.080	0.123	0.053	0.012	0.123

Global Warming Potential	CO2	CH4	N2O
	1	21	310

Notes:

Construction Equipment emissions from "Alt4 Emissions_GHG.xlsx" spreadsheet.

Haul Trucks emissions from "Haul Trucks_GHG.xlsx" spreadsheet.

Employee Commuting emissions from "Employee Commuting_GHG.xlsx" spreadsheet.

CO2e Emissions of CO2 (metric tons/year)					
Equipment	2010	2011	2012	2013	Peak Yr
Construction Equipment	1,188	913	177	51	1,188
Haul Trucks	1,589	5,256	1,785	-	5,256
Concrete Batching	-	-	-	-	0
Employee Commuting	313	451	199	50	451
Total	3,091	6,620	2,161	101	6,620
CO2e Emissions of CH4 (metric tons/year)					
Equipment	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	1.3	1.1	0.3	0.1	1.3
Haul Trucks	0.8	2.4	0.7	-	2.4
Concrete Batching	-	-	-	-	0.0
Employee Commuting	0.4	0.5	0.2	0.0	0.5
Total	2.5	4.0	1.2	0.1	4.0
CO2e Emissions of N2O (metric tons/year)					
Equipment	2,010	2,011	2,012	2,013	Peak Yr
Construction Equipment	0.0	0.0	0.0	0.0	0.0
Haul Trucks	1.2	4.1	1.4	-	4.1
Concrete Batching	-	-	-	-	0.0
Employee Commuting	23.6	34.0	15.0	3.8	34.0
Total	24.8	38.0	16.4	3.8	38.0

Emissions of CO2e (metric tons/year)					
	2,010	2,011	2,012	2,013	Peak Yr
Total	3,118	6,662	2,179	105	6,662

Table E-5. Global Warming Potentials

Pollutant	GWP
CO2	1
CH4	21
N2O	310

Table E-6. Summary of Annual Greenhouse Gas Emissions (Alternative 1)

Emissions of CO2 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	716	-	-	-	716
2b Detention Pond Operations	192	461	230	-	461
5a Overlay Materials Supply	-	-	-	-	0
3 Excavation	94	372	-	-	372
4 Excavation Backfill	-	45	44	-	45
Dam Stripping	-	23	-	-	23
5b Filter Placement	-	53	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	1,008	990	452	51	1,008
Emissions of CH4 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.001	-	-	-	0.0007
2a Well Installation	0.031	-	-	-	0.0314
2b Detention Pond Operations	0.000	0.000	0.000	-	0.0000
5a Overlay Materials Supply	-	-	-	-	0.0000
3 Excavation	0.011	0.043	-	-	0.0431
4 Excavation Backfill	-	0.004	0.004	-	0.0040
Dam Stripping	-	0.002	-	-	0.0020
5b Filter Placement	-	0.005	0.007	0.002	0.0075
Shell Placement	-	0.003	0.007	0.002	0.0075
TOTAL	0.04	0.06	0.02	0.00	0.06
Emissions of N2O (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0	-	-	-	0
2a Well Installation	0	-	-	-	0
2b Detention Pond Operations	0	0	0	-	0
5a Overlay Materials Supply	-	-	-	-	0
3 Excavation	0	0	-	-	0
4 Excavation Backfill	-	0	0	-	0
Dam Stripping	-	0	-	-	0
5b Filter Placement	-	0	0	0	0
Shell Placement	-	0	0	0	0
TOTAL	0.00	0.00	0.00	0.00	0.00

Table E-7. Summary of Annual CO2e Emissions (Alternative 1)

Emissions of CO2 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	716	-	-	-	716
2b Detention Pond Operations	192	461	230	-	461
5a Overlay Materials Supply	-	-	-	-	0
3 Excavation	94	372	-	-	372
4 Excavation Backfill	-	45	44	-	45
Dam Stripping	-	23	-	-	23
5b Filter Placement	-	53	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	1,008	990	452	51	1,008
CO2e Emissions of CH4 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.0141	-	-	-	0.0141
2a Well Installation	0.6604	-	-	-	0.6604
2b Detention Pond Operations	0.0000	0.0000	0.0000	-	0.0000
5a Overlay Materials Supply	-	-	-	-	0.0000
3 Excavation	0.2392	0.9045	-	-	0.9045
4 Excavation Backfill	-	0.0833	0.0783	-	0.0833
Dam Stripping	-	0.0416	-	-	0.0416
5b Filter Placement	-	0.0971	0.1566	0.0369	0.1566
Shell Placement	-	0.0694	0.1566	0.0493	0.1566
TOTAL	0.91	1.20	0.39	0.09	1.20
CO2e Emissions of N2O (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.00	-	-	-	0.00
2b Detention Pond Operations	0.00	0.00	0.00	-	0.00
5a Overlay Materials Supply	-	-	-	-	0.00
3 Excavation	0.00	0.00	-	-	0.00
4 Excavation Backfill	-	0.00	0.00	-	0.00
Dam Stripping	-	0.00	-	-	0.00
5b Filter Placement	-	0.00	0.00	0.00	0.00
Shell Placement	-	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00
Emissions of CO2e (tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	716	-	-	-	716
2b Detention Pond Operations	192	461	230	-	461
5a Overlay Materials Supply	-	-	-	-	0
3 Excavation	95	373	-	-	373
4 Excavation Backfill	-	45	44	-	45
Dam Stripping	-	23	-	-	23
5b Filter Placement	-	53	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	1,009	991	452	51	1,009

Exhaust Emissions - Construction Equipment (Alternative 1 - Large Open Cut)

Total duration: 38 months continuous

Table E-8. Step 1 - Clearing and Grubbing

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	1.39E+00	-	1.14E-04
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	1.66E+00	-	1.88E-04
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	2.20E+00	-	2.71E-04
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	9.89E-02	-	8.94E-06
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	1.00E+00	-	8.90E-05
						Total	6.35E+00	-	6.71E-04

Table E-9. Step 2a - Dewatering Well Installation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.45E+02	-	1.52E-02	7.16E+02	-	3.14E-02

Table E-10. Step 2b - Detention Pond Operations

Quantity	Equipment	OFFROAD Category	Rating (kw)	Emission Factors (g/kw-hr)			Year	Emissions (tons per year)		
				CO2	N2O	CH4		CO2	N2O	CH4
3	1000 gpm Diesel Pump (2008 model) Diesel fired industrial engine emission factors from AP-42 Table 3.3-1.	N/A	75	6.99E+02			2010	1.92E+02	-	-
				1.15E+00			2011	4.61E+02	-	-
				6.99E+02			2012	2.30E+02	-	-

Table E-11. Step 3 - Excavation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	3.05E+00	-	2.52E-04
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	3.66E+00	-	4.13E-04
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	4.84E+00	-	5.96E-04
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.56E+02	-	1.93E-02	7.99E+01	-	9.87E-03
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	2.17E-01	-	1.97E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.62E+00	-	2.17E-04	6.00E-01	-	4.96E-05
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	2.20E+00	-	1.96E-04
						Total	9.44E+01	-	1.14E-02
Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.20E+01	-	9.42E-04
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.26E+01	-	2.42E-03	1.44E+01	-	1.54E-03
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.91E+01	-	2.26E-03
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.54E+02	-	1.83E-02	3.14E+02	-	3.73E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.35E+00	-	1.15E-04	8.56E-01	-	7.30E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.36E+00	-	1.86E-04
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	8.68E+00	-	7.29E-04
						Total	3.72E+02	-	4.31E-02

Table E-12. Step 4 - Excavation Backfill

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	2 Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	9.81E+00	-	7.71E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.56E+01	-	1.85E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	1.06E+01	-	6.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.93E+00	-	1.52E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	7.10E+00	-	5.96E-04
						Total	4.50E+01	-	3.96E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	2 Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	9.66E+00	-	7.24E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	1.53E+01	-	1.75E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	1.04E+01	-	5.61E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	1.90E+00	-	1.42E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	6.99E+00	-	5.56E-04
						Total	4.43E+01	-	3.73E-03

Table E-13. Dam Stripping

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	4.91E+00	-	3.86E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	7.80E+00	-	9.23E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	5.29E+00	-	3.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	9.67E-01	-	7.59E-05
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	3.55E+00	-	2.98E-04
						Total	2.25E+01	-	1.98E-03

Table E-14. Step 5b - Filter Placement and Overlay

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.14E+01	-	9.00E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.82E+01	-	2.15E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	1.24E+01	-	7.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.26E+00	-	1.77E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	8.28E+00	-	6.96E-04
						Total	5.25E+01	-	4.63E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	4.75E+00	-	3.42E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	7.55E+00	-	8.25E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	5.13E+00	-	2.65E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	9.37E-01	-	6.66E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	3.44E+00	-	2.61E-04
						Total	2.18E+01	-	1.76E-03

Table E-15. Shell Placement

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	8.18E+00	-	6.43E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.30E+01	-	1.54E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	8.82E+00	-	5.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.61E+00	-	1.27E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	5.92E+00	-	4.97E-04
						Total	3.75E+01	-	3.30E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	6.34E+00	-	4.56E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	1.01E+01	-	1.10E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	6.84E+00	-	3.53E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	1.25E+00	-	8.88E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	4.59E+00	-	3.48E-04
						Total	2.91E+01	-	2.35E-03

Water Truck Rating = URBEMIS default

Table E-16. Summary of Annual Greenhouse Gas Emissions (Alternative 2)

Emissions of CO2 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	537	-	-	-	537
3 Wall Construction	21	-	-	-	21
2b Detention Pond Operations	192	461	231	-	461
6a Overlay Materials Supply	-	-	-	-	0
4 Excavation	93	365	-	-	365
5 Excavation Backfill	-	45	89	-	89
Dam Stripping	-	23	-	-	23
6b Filter Placement	-	68	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	849	999	497	51	999
Emissions of CH4 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.02	-	-	-	0.02
3 Wall Construction	0.00	-	-	-	0.00
2b Detention Pond Operations	0.00	0.00	0.00	-	0.00
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.01	0.04	-	-	0.04
5 Excavation Backfill	-	0.00	0.01	-	0.01
Dam Stripping	-	0.00	-	-	0.00
6b Filter Placement	-	0.01	0.01	0.00	0.01
Shell Placement	-	0.00	0.01	0.00	0.01
TOTAL	0.04	0.06	0.02	0.00	0.06
Emissions of N2O (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.00	-	-	-	0.00
3 Wall Construction	0.00	-	-	-	0.00
2b Detention Pond Operations	0.00	0.00	0.00	-	0.00
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.00	0.00	-	-	0.00
5 Excavation Backfill	-	0.00	0.00	-	0.00
Dam Stripping	-	0.00	-	-	0.00
6b Filter Placement	-	0.00	0.00	0.00	0.00
Shell Placement	-	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00

Table E-17. Summary of Annual CO2e Emissions (Alternative 2)

Emissions of CO2 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	537	-	-	-	537
3 Wall Construction	21	-	-	-	21
2b Detention Pond Operation	192	461	231	-	461
6a Overlay Materials Supply	-	-	-	-	0
4 Excavation	93	365	-	-	365
5 Excavation Backfill	-	45	89	-	89
Dam Stripping	-	23	-	-	23
6b Filter Placement	-	68	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	849	999	497	51	999
CO2e Emissions of CH4 (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.01	-	-	-	0.01
2a Well Installation	0.50	-	-	-	0.50
3 Wall Construction	0.02	-	-	-	0.02
2b Detention Pond Operation	0.00	0.00	0.00	-	0.00
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.23	0.89	-	-	0.89
5 Excavation Backfill	-	0.08	0.16	-	0.16
Dam Stripping	-	0.04	-	-	0.04
6b Filter Placement	-	0.12	0.16	0.04	0.16
Shell Placement	-	0.07	0.16	0.05	0.16
TOTAL	0.76	1.21	0.47	0.09	1.21
CO2e Emissions of N2O (metric tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	0.00	-	-	-	0.00
2a Well Installation	0.00	-	-	-	0.00
3 Wall Construction	0.00	-	-	-	0.00
2b Detention Pond Operation	0.00	0.00	0.00	-	0.00
6a Overlay Materials Supply	-	-	-	-	0.00
4 Excavation	0.00	0.00	-	-	0.00
5 Excavation Backfill	-	0.00	0.00	-	0.00
Dam Stripping	-	0.00	-	-	0.00
6b Filter Placement	-	0.00	0.00	0.00	0.00
Shell Placement	-	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00
Emissions of CO2e (tons per year)					
Phase	2010	2011	2012	2013	Peak
1 Clear & Grub	6	-	-	-	6
2a Well Installation	538	-	-	-	538
3 Wall Construction	21	-	-	-	21
2b Detention Pond Operation	192	461	231	-	461
6a Overlay Materials Supply	-	-	-	-	0
4 Excavation	93	366	-	-	366
5 Excavation Backfill	-	45	89	-	89
Dam Stripping	-	23	-	-	23
6b Filter Placement	-	68	89	22	89
Shell Placement	-	38	89	29	89
TOTAL	850	1000	498	51	1000

Exhaust Emissions - Construction Equipment (Alternative 2 - Single Downstream Wall)

Total duration: 38 months - 4 mo break on excavation, December through March

Table E-18. Step 1 - Clearing and Grubbing

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	1.39E+00	-	1.14E-04
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	1.66E+00	-	1.88E-04
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	2.20E+00	-	2.71E-04
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	9.89E-02	-	8.94E-06
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	1.00E+00	-	8.90E-05
						Total	6.35E+00	-	6.71E-04

Table E-19. Step 2a - Dewatering Well Installation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.45E+02	-	1.52E-02	5.37E+02	-	2.36E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	7.12E-01	-	6.44E-05
						Total	5.37E+02	-	2.36E-02

Table E-20. Step 2b - Detention Pond Operations

Quantity	Equipment	OFFROAD Category	Rating (kw)	Emission Factors (g/kw-hr)			Year	Emissions (tons per year)		
				CO2	N2O	CH4		CO2	N2O	CH4
3	1000 gpm Diesel Pump (2008 model)	N/A	75	6.99E+02			2010	1.92E+02	-	-
Diesel fired industrial engine emission factors from AP-42 Table 3.3-1.				1.15E+00			2011	4.61E+02	-	-
				6.99E+02			2012	2.31E+02	-	-

Table E-21. Step 3 - Wall (secant and sheet pile) Construction

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
1	Wirth Ecodrill 40 Secant Pile Drill - 48 days	Bore/Drill Rigs	364	3.34E+01	-	1.44E-03	1.17E+01	-	5.04E-04
1	Sheet Pile Driver (need specs) - 48 days	Bore/Drill Rigs	261	3.34E+01	-	1.44E-03	8.37E+00	-	3.61E-04
1	Cat 938H Wheel Loader 180 hp - 96 days	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	4.75E-01	-	4.29E-05
						Total	2.05E+01	-	9.08E-04

Table E-22. Step 4 - Excavation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	2.99E+00	-	2.47E-04
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	3.60E+00	-	4.05E-04
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	4.75E+00	-	5.85E-04
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.56E+02	-	1.93E-02	7.84E+01	-	9.69E-03
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	2.14E-01	-	1.93E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.62E+00	-	2.17E-04	5.90E-01	-	4.87E-05
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	2.16E+00	-	1.92E-04
						Total	9.27E+01	-	1.12E-02
Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.18E+01	-	9.25E-04
6	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.26E+01	-	2.42E-03	1.42E+01	-	1.52E-03
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.87E+01	-	2.21E-03
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.54E+02	-	1.83E-02	3.09E+02	-	3.67E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.35E+00	-	1.15E-04	8.40E-01	-	7.17E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.32E+00	-	1.82E-04
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	8.52E+00	-	7.15E-04
						Total	3.65E+02	-	4.23E-02

Table E-23. Step 5 - Excavation Backfill

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	2 Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	9.81E+00	-	7.71E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.56E+01	-	1.85E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	1.06E+01	-	6.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.93E+00	-	1.52E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	7.10E+00	-	5.96E-04
						Total	4.50E+01	-	3.96E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	2 Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	9.66E+00	-	7.24E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	1.53E+01	-	1.75E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	1.04E+01	-	5.61E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	1.90E+00	-	1.42E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	6.99E+00	-	5.56E-04
						Total	8.93E+01	-	7.69E-03

Table E-24. Dam Stripping

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	4.91E+00	-	3.86E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	7.80E+00	-	9.23E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	5.29E+00	-	3.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	9.67E-01	-	7.59E-05
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	3.55E+00	-	2.98E-04
						Total	2.25E+01	-	1.98E-03

Table E-25. Step 6b - Filter Placement and Overlay

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.47E+01	-	1.16E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	2.34E+01	-	2.77E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	1.59E+01	-	9.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.90E+00	-	2.28E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	1.06E+01	-	8.94E-04
						Total	6.75E+01	-	5.95E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	4.75E+00	-	3.42E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	7.55E+00	-	8.25E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	5.13E+00	-	2.65E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	9.37E-01	-	6.66E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	3.44E+00	-	2.61E-04
						Total	2.18E+01	-	1.76E-03

Table E-26. Shell Placement

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	8.18E+00	-	6.43E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.30E+01	-	1.54E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	8.82E+00	-	5.00E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.61E+00	-	1.27E-04
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	5.92E+00	-	4.97E-04
						Total	3.75E+01	-	3.30E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
1	Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	6.34E+00	-	4.56E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	1.01E+01	-	1.10E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	6.84E+00	-	3.53E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	1.25E+00	-	8.88E-05
1	Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	4.59E+00	-	3.48E-04
						Total	2.91E+01	-	2.35E-03

Water Truck Rating = URBEMIS default

Table E-27. Summary of Annual Greenhouse Gas Emissions (Alternative 3)

Emissions of CO2 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	56	-	-	-	56
2b	Detention Pond Operations	192	461	384	-	461
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	-	499	307	-	499
5	Excavation Backfill	-	-	137	-	137
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	703	1088	1005	51	1088
Emissions of CH4 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.001	-	-	-	0.001
2a	Well Installation	0.020	-	-	-	0.020
3	Wall Construction	0.002	-	-	-	0.002
2b	Detention Pond Operations	0.000	0.000	0.000	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	-	0.058	0.034	-	0.058
5	Excavation Backfill	-	-	0.013	-	0.013
	Dam Stripping	-	0.002	-	-	0.002
6b	Filter Placement	-	0.006	0.007	0.002	0.007
	Shell Placement	-	0.003	0.007	0.002	0.007
	TOTAL	0.023	0.069	0.062	0.004	0.069
Emissions of N2O (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.000	-	-	-	0.000
2a	Well Installation	0.000	-	-	-	0.000
3	Wall Construction	0.000	-	-	-	0.000
2b	Detention Pond Operations	0.000	0.000	0.000	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	-	0.000	0.000	-	0.000
5	Excavation Backfill	-	-	0.000	-	0.000
	Dam Stripping	-	0.000	-	-	0.000
6b	Filter Placement	-	0.000	0.000	0.000	0.000
	Shell Placement	-	0.000	0.000	0.000	0.000
	TOTAL	0.000	0.000	0.000	0.000	0.000

Table E-28. Summary of Annual CO2e Emissions (Alternative 3)

Emissions of CO2 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	56	-	-	-	56
2b	Detention Pond Operation	192	461	384	-	461
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	-	499	307	-	499
5	Excavation Backfill	-	-	137	-	137
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	703	1088	1005	51	1088
CO2e Emissions of CH4 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.014	-	-	-	0.014
2a	Well Installation	0.414	-	-	-	0.414
3	Wall Construction	0.052	-	-	-	0.052
2b	Detention Pond Operation	0.000	0.000	0.000	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	-	1.214	0.717	-	1.214
5	Excavation Backfill	-	-	0.279	-	0.279
	Dam Stripping	-	0.042	-	-	0.042
6b	Filter Placement	-	0.125	0.157	0.037	0.157
	Shell Placement	-	0.069	0.157	0.049	0.157
	TOTAL	0.480	1.450	1.310	0.086	1.450
CO2e Emissions of N2O (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.000	-	-	-	0.000
2a	Well Installation	0.000	-	-	-	0.000
3	Wall Construction	0.000	-	-	-	0.000
2b	Detention Pond Operation	0.000	0.000	0.000	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	-	0.000	0.000	-	0.000
5	Excavation Backfill	-	-	0.000	-	0.000
	Dam Stripping	-	0.000	-	-	0.000
6b	Filter Placement	-	0.000	0.000	0.000	0.000
	Shell Placement	-	0.000	0.000	0.000	0.000
	TOTAL	0.000	0.000	0.000	0.000	0.000
Emissions of CO2e (tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	56	-	-	-	56
2b	Detention Pond Operation	192	461	384	-	461
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	-	500	308	-	500
5	Excavation Backfill	-	-	137	-	137
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	703	1089	1006	51	1089

Exhaust Emissions - Construction Equipment (Alternative 3 - Dual Wall Excavation)

Total duration: 38 months - 4 mo break on excavation, December through March

Table E-29. Step 1 - Clearing and Grubbing

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	1.39E+00	-	1.14E-04
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	1.66E+00	-	1.88E-04
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	2.20E+00	-	2.71E-04
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	9.89E-02	-	8.94E-06
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	1.00E+00	-	8.90E-05
Total							6.35E+00	-	6.71E-04

Table E-30. Step 2a - Dewatering Well Installation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.45E+02	-	1.52E-02	4.47E+02	-	1.97E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	5.93E-01	-	5.36E-05
Total							4.48E+02	-	1.97E-02

Table E-31. Step 2b - Detention Pond Operations

Quantity	Equipment	OFFROAD Category	Rating (kw)	Emission Factors (g/kw-hr)			Year	Emissions (tons per year)		
				CO2	N2O	CH4		CO2	N2O	CH4
3	1000 gpm Diesel Pump (2008 model)	N/A	75	6.99E+02			2010	1.92E+02	-	-
Diesel fired industrial engine emission factors from AP-42 Table 3.3-1.				1.15E+00			2011	4.61E+02	-	-
				6.99E+02			2012	3.84E+02	-	-

Table E-32. Step 3 - Dual Wall (secant and sheet pile) Construction

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
1	Wirth Ecodrill 40 Secant Pile Drill - 132 days	Bore/Drill Rigs	364	3.34E+01	-	1.44E-03	3.21E+01	-	1.39E-03
1	Sheet Pile Driver (need specs) - 132 days	Bore/Drill Rigs	261	3.34E+01	-	1.44E-03	2.30E+01	-	9.94E-04
1	Cat 938H Wheel Loader 180 hp - 264 days	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	1.30E+00	-	1.18E-04
Total							5.64E+01	-	2.50E-03

Table E-33. Step 4 - Excavation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	6 Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.61E+01	-	1.27E-03
	4 Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.26E+01	-	2.42E-03	1.94E+01	-	2.07E-03
	3 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	2.56E+01	-	3.03E-03
	2 Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.54E+02	-	1.83E-02	4.22E+02	-	5.01E-02
	1 Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.35E+00	-	1.15E-04	1.15E+00	-	9.80E-05
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	3.17E+00	-	2.49E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	1.17E+01	-	9.78E-04
						Total	4.99E+02	-	5.78E-02
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	6 Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	9.91E+00	-	7.43E-04
	4 Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.23E+01	-	2.27E-03	1.19E+01	-	1.21E-03
	3 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	1.57E+01	-	1.79E-03
	2 Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.52E+02	-	1.73E-02	2.60E+02	-	2.96E-02
	1 Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.33E+00	-	1.07E-04	7.07E-01	-	5.70E-05
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	1.95E+00	-	1.46E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	7.17E+00	-	5.71E-04
						Total	3.07E+02	-	3.42E-02

Table E-34. Step 5 - Excavation Backfill

Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	2 Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	9.66E+00	-	7.24E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	1.53E+01	-	1.75E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	1.04E+01	-	5.61E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	1.90E+00	-	1.42E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	6.99E+00	-	5.56E-04
						Total	1.37E+02	-	1.33E-02

Table E-35. Dam Stripping

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	4.91E+00	-	3.86E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	7.80E+00	-	9.23E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	5.29E+00	-	3.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	9.67E-01	-	7.59E-05
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	3.55E+00	-	2.98E-04
						Total	2.25E+01	-	1.98E-03

Table E-36. Step 6b - Filter Placement and Overlay

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.47E+01	-	1.16E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	2.34E+01	-	2.77E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	1.59E+01	-	9.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.90E+00	-	2.28E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	1.06E+01	-	8.94E-04
						Total	6.75E+01	-	5.95E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	4.75E+00	-	3.42E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	7.55E+00	-	8.25E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	5.13E+00	-	2.65E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	9.37E-01	-	6.66E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	3.44E+00	-	2.61E-04
						Total	2.18E+01	-	1.76E-03

Table E-37. Shell Placement

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	8.18E+00	-	6.43E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.30E+01	-	1.54E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.05E+01	-	5.95E-04	8.82E+00	-	5.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.61E+00	-	1.27E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	5.92E+00	-	4.97E-04
						Total	3.75E+01	-	3.30E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	6.34E+00	-	4.56E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	1.01E+01	-	1.10E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equipment	350	1.02E+01	-	5.25E-04	6.84E+00	-	3.53E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	1.25E+00	-	8.88E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	4.59E+00	-	3.48E-04
						Total	2.91E+01	-	2.35E-03

Water Truck Rating = URBEMIS default

Table E-38. Summary of Annual Greenhouse Gas Emissions (Alternative 4)

Emissions of CO2 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	34	21	-	-	34
2b	Detention Pond Operations	346	384	-	-	384
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	309	304	-	-	309
5	Excavation Backfill	45	76	-	-	76
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	1188	913	177	51	1188
Emissions of CH4 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.001	-	-	-	0.001
2a	Well Installation	0.020	-	-	-	0.020
3	Wall Construction	0.002	0.001	-	-	0.002
2b	Detention Pond Operations	0.000	0.000	-	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	0.037	0.035	-	-	0.037
5	Excavation Backfill	0.004	0.007	-	-	0.007
	Dam Stripping	-	0.002	-	-	0.002
6b	Filter Placement	-	0.006	0.007	0.002	0.007
	Shell Placement	-	0.003	0.007	0.002	0.007
	TOTAL	0.063	0.054	0.015	0.004	0.063
Emissions of N2O (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.000	-	-	-	0.000
2a	Well Installation	0.000	-	-	-	0.000
3	Wall Construction	0.000	0.000	-	-	0.000
2b	Detention Pond Operations	0.000	0.000	-	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	0.000	0.000	-	-	0.000
5	Excavation Backfill	0.000	0.000	-	-	0.000
	Dam Stripping	-	0.000	-	-	0.000
6b	Filter Placement	-	0.000	0.000	0.000	0.000
	Shell Placement	-	0.000	0.000	0.000	0.000
	TOTAL	0.000	0.000	0.000	0.000	0.000

Table E-39. Summary of Annual CO2e Emissions (Alternative 4)

Emissions of CO2 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	34	21	-	-	34
2b	Detention Pond Operations	346	384	-	-	384
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	309	304	-	-	309
5	Excavation Backfill	45	76	-	-	76
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	1188	913	177	51	1188
CO2e Emissions of CH4 (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.014	-	-	-	0.014
2a	Well Installation	0.414	-	-	-	0.414
3	Wall Construction	0.032	0.018	-	-	0.032
2b	Detention Pond Operations	0.000	0.000	-	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	0.783	0.740	-	-	0.783
5	Excavation Backfill	0.087	0.140	-	-	0.140
	Dam Stripping	-	0.042	-	-	0.042
6b	Filter Placement	-	0.125	0.157	0.037	0.157
	Shell Placement	-	0.069	0.157	0.049	0.157
	TOTAL	1.330	1.135	0.313	0.086	1.330
CO2e Emissions of N2O (metric tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	0.000	-	-	-	0.000
2a	Well Installation	0.000	-	-	-	0.000
3	Wall Construction	0.000	0.000	-	-	0.000
2b	Detention Pond Operations	0.000	0.000	-	-	0.000
6a	Overlay Materials Supply	-	-	-	-	0.000
4	Excavation	0.000	0.000	-	-	0.000
5	Excavation Backfill	0.000	0.000	-	-	0.000
	Dam Stripping	-	0.000	-	-	0.000
6b	Filter Placement	-	0.000	0.000	0.000	0.000
	Shell Placement	-	0.000	0.000	0.000	0.000
	TOTAL	0.000	0.000	0.000	0.000	0.000
Emissions of CO2e (tons per year)						
Phase		2010	2011	2012	2013	Peak
1	Clear & Grub	6	-	-	-	6
2a	Well Installation	448	-	-	-	448
3	Wall Construction	34	21	-	-	34
2b	Detention Pond Operations	346	384	-	-	384
6a	Overlay Materials Supply	-	-	-	-	0
4	Excavation	310	305	-	-	310
5	Excavation Backfill	45	76	-	-	76
	Dam Stripping	-	23	-	-	23
6b	Filter Placement	-	68	89	22	89
	Shell Placement	-	38	89	29	89
	TOTAL	1190	914	178	51	1190

Exhaust Emissions - Construction Equipment (Alternative 4 - Cellular Wall Excavation)

Total duration: 38 months - 4 mo break on excavation, December through March

Table E-40. Step 1 - Clearing and Grubbing

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat 740 Articulated Truck 31.4 yd3/450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	1.39E+00	-	1.14E-04
1	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	1.66E+00	-	1.88E-04
1	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	2.20E+00	-	2.71E-04
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	9.89E-02	-	8.94E-06
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	1.00E+00	-	8.90E-05
Total							6.35E+00	-	6.71E-04

Table E-41. Step 2a - Dewatering Well Installation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
3	Atlas Copco DM30 Drill Rig 540 hp	Bore/Drill Rigs	540	3.45E+02	-	1.52E-02	4.47E+02	-	1.97E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	5.93E-01	-	5.36E-05
Total							4.48E+02	-	1.97E-02

Table E-42. Step 2b - Detention Pond Operations

Quantity	Equipment	OFFROAD Category	Rating (kw)	Emission Factors (g/kw-hr)			Year	Emissions (tons per year)		
				CO2	N2O	CH4		CO2	N2O	CH4
3	1000 gpm Diesel Pump (2008 model)	N/A	75	6.99E+02			2010	3.46E+02	-	-
Diesel fired industrial engine emission factors from AP-42 Table 3.3-1.				1.15E+00			2011	3.84E+02	-	-
				6.99E+02						

Table E-43. Step 3 - Cellular Wall (secant and sheet pile) Construction

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
1	Wirth Ecodrill 40 Secant Pile Drill - 132 days	Bore/Drill Rigs	364	3.34E+01	-	1.44E-03	1.98E+01	-	8.53E-04
1	Sheet Pile Driver (need specs) - 132 days	Bore/Drill Rigs	261	3.34E+01	-	1.44E-03	1.42E+01	-	6.11E-04
1	Cat 938H Wheel Loader 180 hp - 264 days	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	4.02E-01	-	3.63E-05
Total							3.43E+01	-	1.50E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
1	Wirth Ecodrill 40 Secant Pile Drill - 132 days	Bore/Drill Rigs	364	3.29E+01	-	1.35E-03	1.21E+01	-	4.98E-04
1	Sheet Pile Driver (need specs) - 132 days	Bore/Drill Rigs	261	3.29E+01	-	1.35E-03	8.71E+00	-	3.57E-04
1	Cat 938H Wheel Loader 180 hp - 264 days	Rubber Tired Loaders	180	1.35E+00	-	1.15E-04	2.47E-01	-	2.11E-05
Total							2.11E+01	-	8.77E-04

Table E-44. Step 4 - Excavation

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	9.97E+00	-	8.23E-04
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.30E+01	-	2.59E-03	1.20E+01	-	1.35E-03
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	1.58E+01	-	1.95E-03
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.56E+02	-	1.93E-02	2.61E+02	-	3.23E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.37E+00	-	1.24E-04	7.12E-01	-	6.44E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.62E+00	-	2.17E-04	1.97E+00	-	1.62E-04
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	7.21E+00	-	6.41E-04
Total							3.09E+02	-	3.73E-02

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
6	Cat 740 Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	9.81E+00	-	7.71E-04
4	Cat 613 G Scraper 11 yd3 181 hp	Scrapers	181	2.26E+01	-	2.42E-03	1.18E+01	-	1.26E-03
3	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.56E+01	-	1.85E-03
2	Cat D10T Dozer 580 hp	Rubber Tired Dozers	580	1.54E+02	-	1.83E-02	2.57E+02	-	3.06E-02
1	Cat 938H Wheel Loader 180 hp	Rubber Tired Loaders	180	1.35E+00	-	1.15E-04	7.00E-01	-	5.97E-05
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.93E+00	-	1.52E-04
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	7.10E+00	-	5.96E-04
						Total	3.04E+02	-	3.52E-02

Table E-45. Step 5 - Excavation Backfill

Quantity	Equipment	OFFROAD Category	Rating (hp)	2010 Emission Factors (g/hp-hr)			2010 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.69E+00	-	6.35E-04	9.80E+00	-	8.09E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.34E+01	-	1.65E-03	1.56E+01	-	1.92E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.07E+01	-	6.46E-04	1.06E+01	-	6.40E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.62E+00	-	2.17E-04	1.93E+00	-	1.60E-04
1	Water Truck	Off-Highway Trucks	189	1.33E+01	-	1.18E-03	7.09E+00	-	6.30E-04
						Total	4.50E+01	-	4.15E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
2	Cat Articulated Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.65E+01	-	1.30E-03
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	2.63E+01	-	3.11E-03
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.05E+01	-	5.95E-04	1.78E+01	-	1.01E-03
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	3.26E+00	-	2.56E-04
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	1.20E+01	-	1.00E-03
						Total	7.58E+01	-	6.68E-03

Table E-46. Dam Stripping

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
4	Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	4.91E+00	-	3.86E-04
2	Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	7.80E+00	-	9.23E-04
2	Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.05E+01	-	5.95E-04	5.29E+00	-	3.00E-04
2	Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	9.67E-01	-	7.59E-05
1	Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	3.55E+00	-	2.98E-04
						Total	2.25E+01	-	1.98E-03

Table E-47. Step 6b - Filter Placement and Overlay

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	1.47E+01	-	1.16E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	2.34E+01	-	2.77E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.05E+01	-	5.95E-04	1.59E+01	-	9.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	2.90E+00	-	2.28E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	1.06E+01	-	8.94E-04
						Total	6.75E+01	-	5.95E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	4.75E+00	-	3.42E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	7.55E+00	-	8.25E-04
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.02E+01	-	5.25E-04	5.13E+00	-	2.65E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	9.37E-01	-	6.66E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	3.44E+00	-	2.61E-04
						Total	2.18E+01	-	1.76E-03

Table E-48. Shell Placement

Quantity	Equipment	OFFROAD Category	Rating (hp)	2011 Emission Factors (g/hp-hr)			2011 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.57E+00	-	5.95E-04	8.18E+00	-	6.43E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.32E+01	-	1.56E-03	1.30E+01	-	1.54E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.05E+01	-	5.95E-04	8.82E+00	-	5.00E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.58E+00	-	2.03E-04	1.61E+00	-	1.27E-04
	1 Water Truck	Off-Highway Trucks	189	1.30E+01	-	1.10E-03	5.92E+00	-	4.97E-04
						Total	3.75E+01	-	3.30E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2012 Emission Factors (g/hp-hr)			2012 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.45E+00	-	5.59E-04	1.93E+01	-	1.45E-03
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.30E+01	-	1.48E-03	3.07E+01	-	3.49E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.03E+01	-	5.57E-04	2.08E+01	-	1.12E-03
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.54E+00	-	1.90E-04	3.81E+00	-	2.84E-04
	1 Water Truck	Off-Highway Trucks	189	1.28E+01	-	1.02E-03	1.40E+01	-	1.11E-03
						Total	8.86E+01	-	7.46E-03
Quantity	Equipment	OFFROAD Category	Rating (hp)	2013 Emission Factors (g/hp-hr)			2013 Emissions (tons per year)		
				CO2	N2O	CH4	CO2	N2O	CH4
	4 Cat Articulated Dump Truck 31.4 yd3 450 hp	Off-Highway Trucks	450	7.34E+00	-	5.27E-04	6.34E+00	-	4.56E-04
	2 Cat D9T Dozer 410 hp	Rubber Tired Dozers	410	1.28E+01	-	1.40E-03	1.01E+01	-	1.10E-03
	2 Cat 825 H Soil Compactor 350 hp	Other Construction Equ	350	1.02E+01	-	5.25E-04	6.84E+00	-	3.53E-04
	2 Cat 966H Wheel Loader 260 hp	Rubber Tired Loaders	260	2.50E+00	-	1.78E-04	1.25E+00	-	8.88E-05
	1 Water Truck	Off-Highway Trucks	189	1.26E+01	-	9.59E-04	4.59E+00	-	3.48E-04
						Total	2.91E+01	-	2.35E-03

Water Truck Rating = URBEMIS default

Table E-49. Alternative 1 Unmitigated Haul Truck GHG Emissions

Phase	Description	Year	VMT per Year ¹	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
4	Excavation Backfill	2011	408,100	785	0.017	0.0020	786
		2012	408,100	785	0.015	0.0020	786
5a	Filter Material Supply	2010	454,286	874	0.020	0.0022	875
		2011	1,665,714	3205	0.068	0.0080	3209

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-50. Alternative 2 Unmitigated Haul Truck GHG Emissions

Phase	Description	Year	VMT per Year	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
3	Wall Construction	2010	81,408	157	0.004	0.0004	157
5	Excavation Backfill	2011	371,000	714	0.015	0.0018	715
		2012	371,000	714	0.014	0.0018	715
6a	Filter Material Supply	2010	454,286	874	0.017	0.0022	875
		2011	1,665,714	3205	0.073	0.0080	3209

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-51. Alternative 3 Unmitigated Haul Truck GHG Emissions

Phase	Description	Year	VMT per Year	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
3	Wall Construction	2010	162,816	313	0.007	0.0008	314
5	Excavation Backfill	2012	530,000	1020	0.020	0.0025	1021
6a	Filter Material Supply	2010	454,286	874	0.020	0.0022	875
		2011	1,665,714	3205	0.068	0.0080	3209
6b	Filter Placement and Overlay	2011	695,625	1339	0.029	0.0033	1340
		2012	927,500	1785	0.034	0.0045	1787
		2013	231,875	446	0.010	0.0011	447

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-52. Alternative 4 Unmitigated Haul Truck GHG Emissions

Phase	Description	Year	VMT per Year	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
3 3	Wall Construction	2010	162,816	313	0.007	0.0008	314
		2011	101,760	196	0.004	0.0005	196
5 5	Excavation Backfill	2010	208,688	402	0.009	0.0010	402
		2011	268,313	516	0.011	0.0013	517
6a	Filter Material Supply	2010	454,286	874	0.020	0.0022	875
		2011	1,665,714	3205	0.068	0.0080	3209
6b	Filter Placement and Overlay	2011	695,625	1339	0.029	0.0033	1340
		2012	927,500	1785	0.034	0.0045	1787
		2013	231,875	446	0.008	0.0011	447

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 106 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

Table E-53. Alternative 1 Summary

Phase	Description	Daily Truck Trips	Work Days	Project VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
4	Excavation Backfill	27	288	816,200	12	17	Jul-11	28	Jun-12
5a	Filter Material Supply	60	336	2,120,000	14	8	Oct-10	21	Nov-11

Daily vehicle miles traveled (round-trip) 106 (*estimated value*)

Distance traveled from Folsom to Marysville (worst-case)

Table E-54. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	1924.23	1924.23	1924.24	1924.23	1
CH4	0.044	0.041	0.037	0.034	1
N2O	0.0048	0.0048	0.0048	0.0048	2

Table E-55. Greenhouse Gas Emissions Summary

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
4	Excavation Backfill	2011	50.0%	408,100	785.3	0.02	0.002
4		2012	50.0%	408,100	785.3	0.02	0.002
5a	Filter Material Supply	2010	21.4%	454,286	874.2	0.02	0.002
5a		2011	78.6%	1,665,714	3,205.2	0.07	0.008

Table E-56. CO2e Emissions Summary

Year	CO2	CH4	N2O	Ref No. 3
2010	874.15	0.02	0.002	
2011	3,990.50	0.09	0.010	
2012	785.28	0.02	0.002	
GWP	1	21	310	
CO2e Emissions by Pollutant				
2010	874.15	0.42	0.68	
2011	3,990.50	1.79	3.09	
2012	785.28	0.32	0.61	
Total CO2e				
2010	875.25			
2011	3,995.38			
2012	786.20			

Reference No.

1 EMFAC2007 model

2 California Climate Action Registry. 2009. General Reporting Protocol. January.

3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-57. Alternative 2 Summary

Phase	Description	Daily Truck Trips	Work Days	Project VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
3	Wall Construction	8	96	81,408	4	3	May-10	6	Aug-10
5	Excavation Backfill	24	288	742,000	12	17	Jul-11	28	Jun-12
6a	Filter Material Supply	60	336	2,120,000	14	8	Oct-10	21	Nov-11

Daily vehicle miles traveled (round-trip) 106 (*estimated value*)

Distance traveled from Folsom to Marysville (worst-case)

Table E-58. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	1924.23	1924.23	1924.24	1924.23	1
CH4	0.044	0.041	0.037	0.034	1
N2O	0.0048	0.0048	0.0048	0.0048	2

Table E-59. Greenhouse Gas Emissions Summary

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
3	Wall Construction	2010	100.0%	81,408	156.6	0.00	0.000
5	Excavation Backfill	2011	50.0%	371,000	713.9	0.02	0.002
5		2012	50.0%	371,000	713.9	0.01	0.002
6a	Filter Material Supply	2010	21.4%	454,286	874.2	0.02	0.002
6a		2011	78.6%	1,665,714	3,205.2	0.07	0.008

Table E-60. CO2e Emissions Summary

Year	CO2	CH4	N2O	Ref No. 3
2010	1,030.80	0.02	0.003	
2011	3,919.11	0.09	0.010	
2012	713.89	0.01	0.002	
GWP	1	21	310	
CO2e Emissions by Pollutant				
2010	1,030.80	0.43	0.80	
2011	3,919.11	1.86	3.03	
2012	713.89	0.29	0.55	
Total CO2e				
2010	1,032.03			
2011	3,924.00			
2012	714.73			

Reference No.

1 EMFAC2007 model

2 California Climate Action Registry. 2009. General Reporting Protocol. January.

3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-61. Alternative 3 Summary

Phase	Description	Daily Truck Trips	Work Days	Project VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
3	Wall Construction	8	192	162,816	8	3	May-10	10	Dec-10
5	Excavation Backfill	35	144	530,000	6	28	Jun-12	33	Nov-12
6a	Filter Material Supply	60	336	2,120,000	14	8	Oct-10	21	Nov-11
6b	Filter Placement and Overlay	30	576	1,855,000	24	14	Apr-11	37	Mar-13

Daily vehicle miles traveled (round-trip) 106 (estimated value)

Distance traveled from Folsom to Marysville (worst-case)

Table E-62. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	1924.23	1924.23	1924.24	1924.23	1
CH4	0.044	0.041	0.037	0.034	1
N2O	0.0048	0.0048	0.0048	0.0048	2

Table E-63. Greenhouse Gas Emissions Summary

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
3	Wall Construction	2010	100.0%	162,816	313.3	0.01	0.001
5	Excavation Backfill	2012	100.0%	530,000	1,019.8	0.02	0.003
6a	Filter Material Supply	2010	21.4%	454,286	874.2	0.02	0.002
6a		2011	78.6%	1,665,714	3,205.2	0.07	0.008
6b	Filter Placement and Overlay	2011	37.5%	695,625	1,338.5	0.03	0.003
6b		2012	50.0%	927,500	1,784.7	0.03	0.004
6b		2013	12.5%	231,875	446.2	0.01	0.001

Table E-64. CO2e Emissions Summary

Year	CO2	CH4	N2O	Ref No. 3
2010	1,187.45	0.03	0.003	
2011	4,543.77	0.10	0.011	
2012	2,804.57	0.05	0.007	
GWP	1	21	310	
CO2e Emissions by Pollutant				
2010	1,187.45	0.57	0.92	
2011	4,543.77	2.03	3.51	
2012	2,804.57	1.13	2.17	
Total CO2e				
2010	1,188.94			
2011	4,549.32			
2012	2,807.87			

Reference No.

1 EMFAC2007 model

2 California Climate Action Registry. 2009. General Reporting Protocol. January.

3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-65. Alternative 4 Summary

Phase	Description	Daily Truck Trips	Work Days	Project VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
3	Wall Construction	8	312	264,576	13	3	May-10	15	May-11
5	Excavation Backfill	12	384	477,000	16	4	Jun-10	19	Sep-11
6a	Filter Material Supply	60	336	2,120,000	14	8	Oct-10	21	Nov-11
6b	Filter Placement and Overlay	30	576	1,855,000	24	14	Apr-11	37	Mar-13

Daily vehicle miles traveled (round-trip) 106 (estimated value)

Distance traveled from Folsom to Marysville (worst-case)

Table E-66. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	1924.23	1924.23	1924.24	1924.23	1
CH4	0.044	0.041	0.037	0.034	1
N2O	0.0048	0.0048	0.0048	0.0048	2

Table E-67. Greenhouse Gas Emissions Summary

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
3	Wall Construction	2010	61.5%	162,816	313.3	0.01	0.001
3		2011	38.5%	101,760	195.8	0.00	0.000
5	Excavation Backfill	2010	43.8%	208,688	401.6	0.01	0.001
5		2011	56.3%	268,313	516.3	0.01	0.001
6a	Filter Material Supply	2010	21.4%	454,286	874.2	0.02	0.002
6a		2011	78.6%	1,665,714	3,205.2	0.07	0.008
6b	Filter Placement and Overlay	2011	37.5%	695,625	1,338.5	0.03	0.003
6b		2012	50.0%	927,500	1,784.7	0.03	0.004
6b		2013	12.5%	231,875	446.2	0.01	0.001

Table E-68. CO2e Emissions Summary

Year	CO2	CH4	N2O	Ref No. 3
2010	1,589.01	0.04	0.004	
2011	5,255.88	0.11	0.013	
2012	1,784.73	0.03	0.004	
GWP	1	21	310	
CO2e Emissions by Pollutant				
2010	1,589.01	0.76	1.23	
2011	5,255.88	2.35	4.06	
2012	1,784.73	0.72	1.38	
Total CO2e				
2010	1,591.00			
2011	5,262.29			
2012	1,786.83			

Reference No.

1 EMFAC2007 model

2 California Climate Action Registry. 2009. General Reporting Protocol. January.

3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-69. Alternative 1 Unmitigated Employee Commuting GHG Emissions

Phase	Description	Year	VMT per Year ¹	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
1	Clearing and Grubbing	2010	16,000	5.5	0.0003	0.0013	6
2	Dewatering Well Installation	2010	184,320	63.9	0.0040	0.0155	69
3	Excavation	2010	103,680	35.9	0.0022	0.0087	39
		2011	414,720	143.6	0.0081	0.0349	155
4	Excavation Backfill	2011	288,000	99.7	0.0056	0.0242	107
		2012	288,000	99.7	0.0050	0.0242	107
5	Filter Placement and Overlay	2011	336,000	116.3	0.0066	0.0283	125
		2012	576,000	199.3	0.0101	0.0484	215
		2013	144,000	49.8	0.0023	0.0121	54

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-70. Alternative 2 Unmitigated Employee Commuting GHG Emissions

Phase	Description	Year	VMT per Year ¹	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
1	Clearing and Grubbing	2010	16,000	5.5	0.0003	0.0013	6
2	Dewatering Well Installation	2010	138,240	47.9	0.0030	0.0116	52
3	Wall Construction	2010	92,160	31.9	0.0020	0.0078	34
4	Excavation	2010	103,680	35.9	0.0022	0.0087	39
		2011	414,720	143.6	0.0081	0.0349	155
5	Excavation Backfill	2011	288,000	99.7	0.0056	0.0242	107
		2012	288,000	99.7	0.0050	0.0242	107
6	Filter Placement and Overlay	2011	432,000	149.6	0.0084	0.0363	161
		2012	576,000	199.3	0.0101	0.0484	215
		2013	144,000	49.8	0.0023	0.0121	54

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-71. Alternative 2 Unmitigated Employee Commuting GHG Emissions

Phase	Description	Year	VMT per Year ¹	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
1	Clearing and Grubbing	2010	16,000	5.5	0.0003	0.0013	6
2	Dewatering Well Installation	2010	115,200	39.9	0.0025	0.0097	43
3	Wall Construction	2010	184,320	63.9	0.0040	0.0155	69
4	Excavation	2011	460,800	159.5	0.0090	0.0388	172
4		2012	307,200	106.3	0.0054	0.0258	114
5	Excavation Backfill	2012	288,000	99.7	0.0050	0.0242	107
6	Filter Placement and Overlay	2011	432,000	149.6	0.0084	0.0363	161
6		2012	576,000	199.3	0.0101	0.0484	215
6		2013	144,000	49.8	0.0023	0.0121	54

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-72. Alternative 4 Unmitigated Employee Commuting GHG Emissions

Phase	Description	Year	VMT per Year ¹	Emissions (metric tons/year)			
				CO2	CH4	N2O	CO2e
1	Clearing and Grubbing	2010	16,000	5.5	0.0003	0.0013	6
2	Dewatering Well Installation	2010	115,200	39.9	0.0025	0.0097	43
3	Wall Construction	2010	184,320	63.9	0.0040	0.0155	69
3		2011	115,200	39.9	0.0022	0.0097	43
4	Excavation	2010	252,000	87.3	0.0054	0.0212	94
4		2011	324,000	112.2	0.0063	0.0272	121
5	Excavation Backfill	2010	336,000	116.4	0.0072	0.0283	125
5		2011	432,000	149.6	0.0084	0.0363	161
6	Filter Placement and Overlay	2011	432,000	149.6	0.0084	0.0363	161
6		2012	576,000	199.3	0.0101	0.0484	215
6		2013	144,000	49.8	0.0023	0.0121	54

Source: EMFAC2007, CCAR 2009, IPCC 1995

Notes:

¹ Daily round-trip distance estimated to be 40 miles per vehicle.

Key:

VMT = vehicle miles traveled

CO2 = carbon dioxide

CH4 = methane

N2O = nitrous oxide

CO2e = carbon dioxide equivalent

Table E-73 N2O Emissions for Employee Commute

Year	Gasoline Passenger	Gasoline Light Trucks
1993	0.0647	0.1035
1994	0.0560	0.0982
1995	0.0473	0.0908
1996	0.0426	0.0871
1997	0.0422	0.0871
1998	0.0393	0.0728
1999	0.0337	0.0564
2000	0.0273	0.0621
2001	0.0158	0.0164
2002	0.0153	0.0228
2003	0.0135	0.0114
2004	0.0083	0.0132
2005	0.0079	0.0101
Max ¹	0.0647	0.1035
Average ²	0.0841	

Source: CCAR 2009

Notes:

¹ Highest N2O emission factor between 1993 and 2005.

² Average N2O emission calculated using the maximum N2O emissions and assuming 50% passenger vehicle and 50% light trucks.

Table E-74. Alternative 1

Phase	Description	Shifts (per day)	No. of Crew	Work Days	Daily VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
1	Clearing and Grubbing	1	10	40	400	2	1	Mar-10	2	Apr-10
2	Dewatering Well Installation	2	12	192	960	8	2	Apr-10	9	Nov-10
3	Excavation	2	30	216	2,400	10	9	Nov-10	18	Aug-11
4	Excavation Backfill	2	25	288	2,000	12	17	Jul-11	28	Jun-12
5	Filter Placement and Overlay	2	25	528	2,000	22	16	Jun-11	37	Mar-13

Daily vehicle miles traveled (round-trip)40 (estimated value)

Table E-75. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	346.484	346.224	346.020	345.862	1
CH4	0.022	0.020	0.018	0.016	1
N2O	0.0841	0.0841	0.0841	0.0841	2

Note
1993 N2O emissions used assuming 50% passenger vehicles and 50% light trucks

Table E-76. Annual GHG Emissions

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
1	Clearing and Grubbing	2010	100.0%	16,000	5.54	0.0003	0.00135
2	Dewatering Well Installation	2010	100.0%	184,320	63.86	0.0040	0.01550
3	Excavation	2010	20.0%	103,680	35.92	0.0022	0.00872
3		2011	80.0%	414,720	143.59	0.0081	0.03488
4	Excavation Backfill	2011	50.0%	288,000	99.71	0.0056	0.02422
4		2012	50.0%	288,000	99.65	0.0050	0.02422
5	Filter Placement and Overlay	2011	31.8%	336,000	116.33	0.0066	0.02826
5		2012	54.5%	576,000	199.31	0.0101	0.04844
5		2013	13.6%	144,000	49.80	0.0023	0.01211

Table E-77. Annual CO2e Emissions

Year	CO2	CH4	N2O	Ref No. 3
2010	105.33	0.0065	0.0256	
2011	359.63	0.0203	0.0874	
2012	298.96	0.0151	0.0727	
2013	49.80	0.0023	0.0121	
GWP 1 21 310				
CO2e Emissions by Pollutant				
2010	105.33	0.14	7.93	
2011	359.63	0.43	27.08	
2012	298.96	0.32	22.53	
2013	49.80	0.05	3.75	
Total CO2e				
2010	113.39			
2011	387.14			
2012	321.80			
2013	53.61			

Reference No.
1 EMFAC2007 model
2 California Climate Action Registry. 2009. General Reporting Protocol. January.
3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-78. Alternative 2

Phase	Description	Shifts (per day)	No. of Crew	Work Days	Daily VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
1	Clearing and Grubbing	1	10	40	400	2	1	Mar-10	2	Apr-10
2	Dewatering Well Installation	2	12	144	960	6	2	Apr-10	7	Sep-10
3	Wall Construction	2	12	96	960	4	3	May-10	6	Aug-10
4	Excavation	2	30	216	2,400	10	9	Nov-10	18	Aug-11
5	Excavation Backfill	2	25	288	2,000	12	17	Jul-11	28	Jun-12
6	Filter Placement and Overlay	2	25	576	2,000	24	14	Apr-11	37	Mar-13

Daily vehicle miles traveled (round-trip)40 (estimated value)

Table E-79. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	346.484	346.224	346.020	345.862	1
CH4	0.022	0.020	0.018	0.016	1
N2O	0.0841	0.0841	0.0841	0.0841	2

Note
1993 N2O emissions used assuming 50% passenger vehicles and 50% light trucks

Table E-80. Annual GHG Emisisons

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
1	Clearing and Grubbing	2010	100.0%	16,000	5.54	0.0003	0.0013
2	Dewatering Well Installation	2010	100.0%	138,240	47.90	0.0030	0.0116
3	Wall Construction	2010	100.0%	92,160	31.93	0.0020	0.0078
4	Excavation	2010	20.0%	103,680	35.92	0.0022	0.0087
4		2011	80.0%	414,720	143.59	0.0081	0.0349
5	Excavation Backfill	2011	50.0%	288,000	99.71	0.0056	0.0242
5		2012	50.0%	288,000	99.65	0.0050	0.0242
6	Filter Placement and Overlay	2011	37.5%	432,000	149.57	0.0084	0.0363
6		2012	50.0%	576,000	199.31	0.0101	0.0484
6		2013	12.5%	144,000	49.80	0.0023	0.0121

Table E-81. Annual CO2e Emissions

Year	CO2	CH4	N2O	Ref No. 3
2010	121.30	0.0075	0.0294	
2011	392.87	0.0221	0.0954	
2012	298.96	0.0151	0.0727	
2013	49.80	0.0023	0.0121	
GWP 1 21 310				
CO2e Emissions by Pollutant				
2010	121.30	0.16	9.13	
2011	392.87	0.46	29.58	
2012	298.96	0.32	22.53	
2013	49.80	0.05	3.75	
Total CO2e				
2010	130.58			
2011	422.92			
2012	321.80			
2013	53.61			

Reference No.
1 EMFAC2007 model
2 California Climate Action Registry. 2009. General Reporting Protocol. January.
3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-82. Alternative 3

Phase	Description	Shifts (per day)	No. of Crew	Work Days	Daily VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
1	Clearing and Grubbing	1	10	40	400	2	1	Mar-10	2	Apr-10
2	Dewatering Well Installation	2	12	120	960	5	2	Apr-10	6	Aug-10
3	Wall Construction	2	12	192	960	8	3	May-10	10	Dec-10
4	Excavation	2	25	384	2,000	20	11	Jan-11	30	Aug-12
5	Excavation Backfill	2	25	144	2,000	6	28	Jun-12	33	Nov-12
6	Filter Placement and Overlay	2	25	576	2,000	24	14	Apr-11	37	Mar-13

Daily vehicle miles traveled (round-trip)40 (estimated value)

Table E-83. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	346.484	346.224	346.020	345.862	1
CH4	0.022	0.020	0.018	0.016	1
N2O	0.0841	0.0841	0.0841	0.0841	2

Note
1993 N2O emissions used assuming 50% passenger vehicles and 50% light trucks

Table E-84. Annual GHG Emissions

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
1	Clearing and Grubbing	2010	100.0%	16,000	5.54	0.0003	0.0013
2	Dewatering Well Installation	2010	100.0%	115,200	39.91	0.0025	0.0097
3	Wall Construction	2010	100.0%	184,320	63.86	0.0040	0.0155
4	Excavation	2011	60.0%	460,800	159.54	0.0090	0.0388
4		2012	40.0%	307,200	106.30	0.0054	0.0258
5	Excavation Backfill	2012	100.0%	288,000	99.65	0.0050	0.0242
6	Filter Placement and Overlay	2011	37.5%	432,000	149.57	0.0084	0.0363
6		2012	50.0%	576,000	199.31	0.0101	0.0484
6		2013	12.5%	144,000	49.80	0.0023	0.0121

Table E-85. Annual CO2e Emissions

Year	CO2	CH4	N2O	Ref No. 3
2010	109.32	0.0068	0.0265	
2011	309.11	0.0174	0.0751	
2012	405.26	0.0205	0.0985	
2013	49.80	0.0023	0.0121	
GWP 1 21 310				
CO2e Emissions by Pollutant				
2010	109.32	0.14	8.23	
2011	309.11	0.37	23.28	
2012	405.26	0.43	30.53	
2013	49.80	0.05	3.75	
Total CO2e				
2010	117.69			
2011	332.75			
2012	436.22			
2013	53.61			

Reference No.
1 EMFAC2007 model
2 California Climate Action Registry. 2009. General Reporting Protocol. January.
3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-86. Alternative 4

Phase	Description	Shifts (per day)	No. of Crew	Work Days	Daily VMT	Duration (months)	Start Month No.	Start Month	End Month No.	End Month
1	Clearing and Grubbing	1	10	40	400	2	1	Mar-10	2	Apr-10
2	Dewatering Well Installation	2	12	120	960	5	2	Apr-10	6	Aug-10
3	Wall Construction	2	12	312	960	13	3	May-10	15	May-11
4	Excavation	2	25	288	2,000	16	4	Jun-10	19	Sep-11
5	Excavation Backfill	2	25	384	2,000	16	4	Jun-10	19	Sep-11
6	Filter Placement and Overlay	2	25	576	2,000	24	14	Apr-11	37	Mar-13

Daily vehicle miles traveled (round-trip)40 (estimated value)

Table E-87. Emission Factors (g/mi)

Pollutant	Year				Ref No.
	2010	2011	2012	2013	
CO2	346.484	346.224	346.020	345.862	1
CH4	0.022	0.020	0.018	0.016	1
N2O	0.0841	0.0841	0.0841	0.0841	2

Note
1993 N2O emissions used assuming 50% passenger vehicles and 50% light trucks

Table E-88. Annual GHG Emissions

Phase	Description	Year	Percent per Year	VMT per Year	Emissions (metric tons/year)		
					CO2	CH4	N2O
1	Clearing and Grubbing	2010	100.0%	16,000	5.54	0.0003	0.0013
2	Dewatering Well Installation	2010	100.0%	115,200	39.91	0.0025	0.0097
3	Wall Construction	2010	61.5%	184,320	63.86	0.0040	0.0155
3		2011	38.5%	115,200	39.89	0.0022	0.0097
4	Excavation	2010	43.8%	252,000	87.31	0.0054	0.0212
4		2011	56.3%	324,000	112.18	0.0063	0.0272
5	Excavation Backfill	2010	43.8%	336,000	116.42	0.0072	0.0283
5		2011	56.3%	432,000	149.57	0.0084	0.0363
6	Filter Placement and Overlay	2011	37.5%	432,000	149.57	0.0084	0.0363
6		2012	50.0%	576,000	199.31	0.0101	0.0484
6		2013	12.5%	144,000	49.80	0.0023	0.0121

Table E-89. Annual CO2e Emissions

Year	CO2	CH4	N2O	Ref No. 3
2010	313.06	0.0194	0.0760	
2011	451.20	0.0254	0.1096	
2012	199.31	0.0101	0.0484	
2013	49.80	0.0023	0.0121	
GWP 1 21 310				
CO2e Emissions by Pollutant				
2010	313.06	0.41	23.56	
2011	451.20	0.53	33.98	
2012	199.31	0.21	15.02	
2013	49.80	0.05	3.75	
Total CO2e				
2010	337.02			
2011	485.71			
2012	214.54			
2013	53.61			

Reference No.
1 EMFAC2007 model
2 California Climate Action Registry. 2009. General Reporting Protocol. January.
3 IPCC. 1996. IPCC guidelines for National Greenhouse Gas Inventories Reference Manual.

Table E-90. 2010 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Pavers	25	4.75E+02	0.00E+00	6.38E-02
Pavers	50	6.13E+00	0.00E+00	3.21E-03
Pavers	120	5.36E+00	0.00E+00	1.15E-03
Pavers	175	1.10E+01	0.00E+00	1.58E-03
Pavers	250	9.64E+01	0.00E+00	1.08E-02
Pavers	500	5.64E+01	0.00E+00	5.71E-03
Plate Compactors	15	8.53E+00	0.00E+00	9.01E-04
Rollers	15	6.65E+00	0.00E+00	6.99E-04
Rollers	25	2.01E+01	0.00E+00	2.23E-03
Rollers	50	6.31E+00	0.00E+00	2.78E-03
Rollers	120	1.11E+00	0.00E+00	2.04E-04
Rollers	175	3.47E+00	0.00E+00	4.29E-04
Rollers	250	2.43E+01	0.00E+00	2.20E-03
Rollers	500	2.48E+01	0.00E+00	2.02E-03
Scrapers	120	1.92E+02	0.00E+00	4.12E-02
Scrapers	175	2.26E+01	0.00E+00	3.30E-03
Scrapers	250	2.30E+01	0.00E+00	2.59E-03
Scrapers	500	6.41E+00	0.00E+00	6.56E-04
Scrapers	750	1.85E+02	0.00E+00	1.90E-02
Paving Equipment	25	1.86E+02	0.00E+00	2.06E-02
Paving Equipment	50	2.08E+02	0.00E+00	1.08E-01
Paving Equipment	120	1.37E+01	0.00E+00	2.91E-03
Paving Equipment	175	3.70E+01	0.00E+00	5.29E-03
Paving Equipment	250	1.11E+02	0.00E+00	1.23E-02
Surfacing Equipment	50	1.35E+02	0.00E+00	5.08E-02
Surfacing Equipment	120	1.27E+03	0.00E+00	2.14E-01
Surfacing Equipment	175	1.56E+03	0.00E+00	1.76E-01
Surfacing Equipment	250	8.59E+02	0.00E+00	7.20E-02
Surfacing Equipment	500	8.45E+01	0.00E+00	6.38E-03
Surfacing Equipment	750	6.04E+02	0.00E+00	4.65E-02
Signal Boards	15	1.40E+00	0.00E+00	1.47E-04
Signal Boards	50	4.94E+02	0.00E+00	1.84E-01
Signal Boards	120	2.79E+01	0.00E+00	4.69E-03
Signal Boards	175	5.94E+01	0.00E+00	6.62E-03
Signal Boards	250	3.25E+02	0.00E+00	2.35E-02
Trenchers	15	7.19E+01	0.00E+00	7.55E-03
Trenchers	25	1.59E+02	0.00E+00	1.75E-02
Trenchers	50	2.09E+00	0.00E+00	1.05E-03
Trenchers	120	1.27E+00	0.00E+00	2.66E-04
Trenchers	175	1.76E+01	0.00E+00	2.49E-03
Trenchers	250	2.13E+02	0.00E+00	2.38E-02
Trenchers	500	1.17E+02	0.00E+00	1.17E-02
Trenchers	750	5.10E+03	0.00E+00	5.17E-01
Bore/Drill Rigs	15	6.59E+02	0.00E+00	6.92E-02
Bore/Drill Rigs	25	2.04E+02	0.00E+00	2.26E-02
Bore/Drill Rigs	50	4.53E+01	0.00E+00	7.19E-03
Bore/Drill Rigs	120	1.53E+01	0.00E+00	1.29E-03
Bore/Drill Rigs	175	8.28E+01	0.00E+00	4.93E-03
Bore/Drill Rigs	250	8.98E+01	0.00E+00	4.12E-03
Bore/Drill Rigs	500	3.34E+01	0.00E+00	1.44E-03
Bore/Drill Rigs	750	3.45E+02	0.00E+00	1.52E-02
Bore/Drill Rigs	1000	2.33E+02	0.00E+00	1.21E-02
Excavators	25	1.70E+02	0.00E+00	1.85E-02
Excavators	50	3.43E+00	0.00E+00	1.40E-03

Table E-90. 2010 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Excavators	120	1.55E+00	0.00E+00	2.66E-04
Excavators	175	8.39E-01	0.00E+00	9.91E-05
Excavators	250	2.04E+00	0.00E+00	1.69E-04
Excavators	500	2.09E+00	0.00E+00	1.60E-04
Excavators	750	4.30E+02	0.00E+00	3.32E-02
Concrete/Industrial Saws	25	1.57E+03	0.00E+00	1.73E-01
Concrete/Industrial Saws	50	1.65E+02	0.00E+00	6.07E-02
Concrete/Industrial Saws	120	9.67E+01	0.00E+00	1.58E-02
Concrete/Industrial Saws	175	4.37E+03	0.00E+00	4.75E-01
Cement and Mortar Mixers	15	7.87E+00	0.00E+00	8.87E-04
Cement and Mortar Mixers	25	1.46E+02	0.00E+00	2.59E-02
Cranes	50	1.30E+02	0.00E+00	6.52E-02
Cranes	120	1.07E+01	0.00E+00	2.15E-03
Cranes	175	1.18E+01	0.00E+00	1.60E-03
Cranes	250	5.93E+00	0.00E+00	5.92E-04
Cranes	500	1.30E+01	0.00E+00	1.18E-03
Cranes	750	8.11E+01	0.00E+00	7.44E-03
Cranes	9999	1.55E+01	0.00E+00	1.57E-03
Graders	50	3.76E+02	0.00E+00	1.73E-01
Graders	120	6.39E+00	0.00E+00	1.20E-03
Graders	175	2.12E+00	0.00E+00	2.70E-04
Graders	250	3.32E+00	0.00E+00	3.07E-04
Graders	500	7.83E+01	0.00E+00	6.61E-03
Graders	750	8.45E+03	0.00E+00	7.19E-01
Off-Highway Trucks	175	1.05E+02	0.00E+00	1.31E-02
Off-Highway Trucks	250	1.33E+01	0.00E+00	1.18E-03
Off-Highway Trucks	500	7.69E+00	0.00E+00	6.35E-04
Off-Highway Trucks	750	3.66E+01	0.00E+00	3.05E-03
Off-Highway Trucks	1000	8.29E+01	0.00E+00	7.71E-03
Crushing/Proc. Equipment	50	5.25E+01	0.00E+00	2.45E-02
Crushing/Proc. Equipment	120	1.47E+01	0.00E+00	2.81E-03
Crushing/Proc. Equipment	175	4.78E+01	0.00E+00	6.11E-03
Crushing/Proc. Equipment	250	4.92E+02	0.00E+00	4.07E-02
Crushing/Proc. Equipment	500	6.67E+01	0.00E+00	4.98E-03
Crushing/Proc. Equipment	750	6.15E+03	0.00E+00	4.67E-01
Crushing/Proc. Equipment	9999	1.02E+03	0.00E+00	9.77E-02
Rough Terrain Forklifts	50	5.83E+01	0.00E+00	2.47E-02
Rough Terrain Forklifts	120	9.35E-01	0.00E+00	1.64E-04
Rough Terrain Forklifts	175	1.00E+01	0.00E+00	1.19E-03
Rough Terrain Forklifts	250	1.72E+02	0.00E+00	1.38E-02
Rough Terrain Forklifts	500	1.96E+02	0.00E+00	1.45E-02
Rubber Tired Loaders	25	4.62E+02	0.00E+00	5.07E-02
Rubber Tired Loaders	50	2.19E+01	0.00E+00	9.90E-03
Rubber Tired Loaders	120	6.34E-01	0.00E+00	1.17E-04
Rubber Tired Loaders	175	1.39E+00	0.00E+00	1.75E-04
Rubber Tired Loaders	250	1.37E+00	0.00E+00	1.24E-04
Rubber Tired Loaders	500	2.62E+00	0.00E+00	2.17E-04
Rubber Tired Loaders	750	2.09E+02	0.00E+00	1.74E-02
Rubber Tired Loaders	1000	1.79E+03	0.00E+00	1.67E-01
Rubber Tired Dozers	175	7.07E+02	0.00E+00	1.18E-01
Rubber Tired Dozers	250	2.86E+01	0.00E+00	3.90E-03
Rubber Tired Dozers	500	1.34E+01	0.00E+00	1.65E-03
Rubber Tired Dozers	750	1.56E+02	0.00E+00	1.93E-02
Rubber Tired Dozers	1000	2.57E+03	0.00E+00	3.32E-01

Table E-90. 2010 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Tractors/Loaders/Backhoes	25	2.15E+01	0.00E+00	2.61E-03
Tractors/Loaders/Backhoes	50	3.44E+00	0.00E+00	1.29E-03
Tractors/Loaders/Backhoes	120	1.83E-01	0.00E+00	2.91E-05
Tractors/Loaders/Backhoes	175	3.29E+00	0.00E+00	3.57E-04
Tractors/Loaders/Backhoes	250	1.21E+01	0.00E+00	8.99E-04
Tractors/Loaders/Backhoes	500	7.50E+00	0.00E+00	5.16E-04
Tractors/Loaders/Backhoes	750	4.46E+01	0.00E+00	3.10E-03
Crawler Tractors	50	3.39E+02	0.00E+00	1.78E-01
Crawler Tractors	120	6.59E-01	0.00E+00	1.40E-04
Crawler Tractors	175	2.46E+00	0.00E+00	3.56E-04
Crawler Tractors	250	2.75E+00	0.00E+00	3.06E-04
Crawler Tractors	500	3.13E+00	0.00E+00	3.17E-04
Crawler Tractors	750	3.03E+02	0.00E+00	3.09E-02
Crawler Tractors	1000	3.22E+02	0.00E+00	3.52E-02
Skid Steer Loaders	25	2.74E+00	0.00E+00	4.46E-04
Skid Steer Loaders	50	2.80E-01	0.00E+00	7.79E-05
Skid Steer Loaders	120	3.73E-01	0.00E+00	4.79E-05
Off-Highway Tractors	120	7.46E+03	0.00E+00	1.77E+00
Off-Highway Tractors	175	5.82E+00	0.00E+00	9.37E-04
Off-Highway Tractors	250	4.31E+00	0.00E+00	5.60E-04
Off-Highway Tractors	750	5.91E+01	0.00E+00	6.95E-03
Off-Highway Tractors	1000	6.01E+02	0.00E+00	7.47E-02
Dumpers/Tenders	25	1.21E+02	0.00E+00	1.55E-02
Other Construction Equipment	15	1.94E+01	0.00E+00	2.04E-03
Other Construction Equipment	25	9.02E+01	0.00E+00	9.99E-03
Other Construction Equipment	50	6.22E+01	0.00E+00	2.08E-02
Other Construction Equipment	120	4.53E+01	0.00E+00	6.69E-03
Other Construction Equipment	175	2.97E+01	0.00E+00	2.94E-03
Other Construction Equipment	500	1.07E+01	0.00E+00	6.46E-04

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

CO2 = carbon dioxide

N2O = nitrous oxide

CH4 = methane

Table E-91. 2011 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Pavers	25	4.68E+02	0.00E+00	6.00E-02
Pavers	50	6.03E+00	0.00E+00	2.99E-03
Pavers	120	5.27E+00	0.00E+00	1.07E-03
Pavers	175	1.08E+01	0.00E+00	1.48E-03
Pavers	250	9.49E+01	0.00E+00	1.01E-02
Pavers	500	5.55E+01	0.00E+00	5.36E-03
Plate Compactors	15	8.39E+00	0.00E+00	8.82E-04
Rollers	15	6.54E+00	0.00E+00	6.87E-04
Rollers	25	1.98E+01	0.00E+00	2.18E-03
Rollers	50	6.21E+00	0.00E+00	2.56E-03
Rollers	120	1.09E+00	0.00E+00	1.89E-04
Rollers	175	3.42E+00	0.00E+00	3.99E-04
Rollers	250	2.39E+01	0.00E+00	2.03E-03
Rollers	500	2.44E+01	0.00E+00	1.87E-03
Scrapers	120	1.89E+02	0.00E+00	3.83E-02
Scrapers	175	2.23E+01	0.00E+00	3.10E-03
Scrapers	250	2.26E+01	0.00E+00	2.42E-03
Scrapers	500	6.31E+00	0.00E+00	6.17E-04
Scrapers	750	1.82E+02	0.00E+00	1.78E-02
Paving Equipment	25	1.83E+02	0.00E+00	2.00E-02
Paving Equipment	50	2.04E+02	0.00E+00	1.01E-01
Paving Equipment	120	1.35E+01	0.00E+00	2.71E-03
Paving Equipment	175	3.64E+01	0.00E+00	4.97E-03
Paving Equipment	250	1.09E+02	0.00E+00	1.15E-02
Surfacing Equipment	50	1.33E+02	0.00E+00	4.68E-02
Surfacing Equipment	120	1.25E+03	0.00E+00	1.97E-01
Surfacing Equipment	175	1.54E+03	0.00E+00	1.63E-01
Surfacing Equipment	250	8.45E+02	0.00E+00	6.62E-02
Surfacing Equipment	500	8.32E+01	0.00E+00	5.89E-03
Surfacing Equipment	750	5.94E+02	0.00E+00	4.28E-02
Signal Boards	15	1.37E+00	0.00E+00	1.44E-04
Signal Boards	50	4.86E+02	0.00E+00	1.68E-01
Signal Boards	120	2.74E+01	0.00E+00	4.30E-03
Signal Boards	175	5.84E+01	0.00E+00	6.12E-03
Signal Boards	250	3.20E+02	0.00E+00	2.13E-02
Trenchers	15	7.07E+01	0.00E+00	7.43E-03
Trenchers	25	1.57E+02	0.00E+00	1.71E-02
Trenchers	50	2.06E+00	0.00E+00	9.86E-04
Trenchers	120	1.25E+00	0.00E+00	2.48E-04
Trenchers	175	1.73E+01	0.00E+00	2.34E-03
Trenchers	250	2.09E+02	0.00E+00	2.22E-02
Trenchers	500	1.15E+02	0.00E+00	1.09E-02
Trenchers	750	5.02E+03	0.00E+00	4.83E-01
Bore/Drill Rigs	15	6.48E+02	0.00E+00	6.81E-02
Bore/Drill Rigs	25	2.00E+02	0.00E+00	2.20E-02
Bore/Drill Rigs	50	4.45E+01	0.00E+00	5.64E-03
Bore/Drill Rigs	120	1.50E+01	0.00E+00	1.06E-03
Bore/Drill Rigs	175	8.15E+01	0.00E+00	4.32E-03
Bore/Drill Rigs	250	8.84E+01	0.00E+00	3.78E-03
Bore/Drill Rigs	500	3.29E+01	0.00E+00	1.35E-03
Bore/Drill Rigs	750	3.40E+02	0.00E+00	1.41E-02
Bore/Drill Rigs	1000	2.29E+02	0.00E+00	1.09E-02
Excavators	25	1.67E+02	0.00E+00	1.82E-02
Excavators	50	3.38E+00	0.00E+00	1.24E-03

Table E-91. 2011 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Excavators	120	1.52E+00	0.00E+00	2.41E-04
Excavators	175	8.26E-01	0.00E+00	9.15E-05
Excavators	250	2.01E+00	0.00E+00	1.57E-04
Excavators	500	2.05E+00	0.00E+00	1.50E-04
Excavators	750	4.23E+02	0.00E+00	3.11E-02
Concrete/Industrial Saws	25	1.55E+03	0.00E+00	1.69E-01
Concrete/Industrial Saws	50	1.62E+02	0.00E+00	5.53E-02
Concrete/Industrial Saws	120	9.52E+01	0.00E+00	1.45E-02
Concrete/Industrial Saws	175	4.30E+03	0.00E+00	4.38E-01
Cement and Mortar Mixers	15	7.75E+00	0.00E+00	8.43E-04
Cement and Mortar Mixers	25	1.43E+02	0.00E+00	2.35E-02
Cranes	50	1.28E+02	0.00E+00	5.95E-02
Cranes	120	1.05E+01	0.00E+00	1.99E-03
Cranes	175	1.16E+01	0.00E+00	1.50E-03
Cranes	250	5.83E+00	0.00E+00	5.49E-04
Cranes	500	1.28E+01	0.00E+00	1.10E-03
Cranes	750	7.98E+01	0.00E+00	6.94E-03
Cranes	9999	1.53E+01	0.00E+00	1.47E-03
Graders	50	3.70E+02	0.00E+00	1.57E-01
Graders	120	6.29E+00	0.00E+00	1.10E-03
Graders	175	2.09E+00	0.00E+00	2.51E-04
Graders	250	3.27E+00	0.00E+00	2.85E-04
Graders	500	7.70E+01	0.00E+00	6.19E-03
Graders	750	8.31E+03	0.00E+00	6.73E-01
Off-Highway Trucks	175	1.03E+02	0.00E+00	1.22E-02
Off-Highway Trucks	250	1.30E+01	0.00E+00	1.10E-03
Off-Highway Trucks	500	7.57E+00	0.00E+00	5.95E-04
Off-Highway Trucks	750	3.61E+01	0.00E+00	2.85E-03
Off-Highway Trucks	1000	8.16E+01	0.00E+00	7.20E-03
Crushing/Proc. Equipment	50	5.17E+01	0.00E+00	2.24E-02
Crushing/Proc. Equipment	120	1.44E+01	0.00E+00	2.59E-03
Crushing/Proc. Equipment	175	4.70E+01	0.00E+00	5.68E-03
Crushing/Proc. Equipment	250	4.84E+02	0.00E+00	3.72E-02
Crushing/Proc. Equipment	500	6.56E+01	0.00E+00	4.58E-03
Crushing/Proc. Equipment	750	6.05E+03	0.00E+00	4.28E-01
Crushing/Proc. Equipment	9999	1.01E+03	0.00E+00	9.03E-02
Rough Terrain Forklifts	50	5.73E+01	0.00E+00	2.22E-02
Rough Terrain Forklifts	120	9.20E-01	0.00E+00	1.50E-04
Rough Terrain Forklifts	175	9.85E+00	0.00E+00	1.10E-03
Rough Terrain Forklifts	250	1.69E+02	0.00E+00	1.27E-02
Rough Terrain Forklifts	500	1.93E+02	0.00E+00	1.34E-02
Rubber Tired Loaders	25	4.55E+02	0.00E+00	4.97E-02
Rubber Tired Loaders	50	2.15E+01	0.00E+00	8.97E-03
Rubber Tired Loaders	120	6.24E-01	0.00E+00	1.08E-04
Rubber Tired Loaders	175	1.37E+00	0.00E+00	1.62E-04
Rubber Tired Loaders	250	1.35E+00	0.00E+00	1.15E-04
Rubber Tired Loaders	500	2.58E+00	0.00E+00	2.03E-04
Rubber Tired Loaders	750	2.06E+02	0.00E+00	1.63E-02
Rubber Tired Loaders	1000	1.76E+03	0.00E+00	1.55E-01
Rubber Tired Dozers	175	6.95E+02	0.00E+00	1.12E-01
Rubber Tired Dozers	250	2.82E+01	0.00E+00	3.67E-03
Rubber Tired Dozers	500	1.32E+01	0.00E+00	1.56E-03
Rubber Tired Dozers	750	1.54E+02	0.00E+00	1.83E-02
Rubber Tired Dozers	1000	2.53E+03	0.00E+00	3.14E-01

Table E-91. 2011 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Tractors/Loaders/Backhoes	25	2.11E+01	0.00E+00	2.47E-03
Tractors/Loaders/Backhoes	50	3.38E+00	0.00E+00	1.14E-03
Tractors/Loaders/Backhoes	120	1.80E-01	0.00E+00	2.62E-05
Tractors/Loaders/Backhoes	175	3.24E+00	0.00E+00	3.28E-04
Tractors/Loaders/Backhoes	250	1.19E+01	0.00E+00	8.34E-04
Tractors/Loaders/Backhoes	500	7.38E+00	0.00E+00	4.83E-04
Tractors/Loaders/Backhoes	750	4.39E+01	0.00E+00	2.90E-03
Crawler Tractors	50	3.34E+02	0.00E+00	1.64E-01
Crawler Tractors	120	6.49E-01	0.00E+00	1.30E-04
Crawler Tractors	175	2.42E+00	0.00E+00	3.34E-04
Crawler Tractors	250	2.70E+00	0.00E+00	2.86E-04
Crawler Tractors	500	3.08E+00	0.00E+00	2.98E-04
Crawler Tractors	750	2.98E+02	0.00E+00	2.90E-02
Crawler Tractors	1000	3.17E+02	0.00E+00	3.30E-02
Skid Steer Loaders	25	2.70E+00	0.00E+00	4.04E-04
Skid Steer Loaders	50	2.75E-01	0.00E+00	6.69E-05
Skid Steer Loaders	120	3.67E-01	0.00E+00	4.21E-05
Off-Highway Tractors	120	7.34E+03	0.00E+00	1.65E+00
Off-Highway Tractors	175	5.73E+00	0.00E+00	8.84E-04
Off-Highway Tractors	250	4.24E+00	0.00E+00	5.27E-04
Off-Highway Tractors	750	5.81E+01	0.00E+00	6.56E-03
Off-Highway Tractors	1000	5.92E+02	0.00E+00	7.02E-02
Dumpers/Tenders	25	1.19E+02	0.00E+00	1.46E-02
Other Construction Equipment	15	1.91E+01	0.00E+00	2.01E-03
Other Construction Equipment	25	8.87E+01	0.00E+00	9.74E-03
Other Construction Equipment	50	6.12E+01	0.00E+00	1.85E-02
Other Construction Equipment	120	4.46E+01	0.00E+00	6.04E-03
Other Construction Equipment	175	2.92E+01	0.00E+00	2.69E-03
Other Construction Equipment	500	1.05E+01	0.00E+00	5.95E-04

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

CO2 = carbon dioxide

N2O = nitrous oxide

CH4 = methane

Table E-92. 2012 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Pavers	25	4.60E+02	0.00E+00	5.67E-02
Pavers	50	5.94E+00	0.00E+00	2.78E-03
Pavers	120	5.19E+00	0.00E+00	9.95E-04
Pavers	175	1.06E+01	0.00E+00	1.39E-03
Pavers	250	9.34E+01	0.00E+00	9.45E-03
Pavers	500	5.46E+01	0.00E+00	5.03E-03
Plate Compactors	15	8.26E+00	0.00E+00	8.68E-04
Rollers	15	6.44E+00	0.00E+00	6.77E-04
Rollers	25	1.95E+01	0.00E+00	2.13E-03
Rollers	50	6.11E+00	0.00E+00	2.35E-03
Rollers	120	1.08E+00	0.00E+00	1.74E-04
Rollers	175	3.36E+00	0.00E+00	3.71E-04
Rollers	250	2.35E+01	0.00E+00	1.87E-03
Rollers	500	2.40E+01	0.00E+00	1.73E-03
Scrapers	120	1.86E+02	0.00E+00	3.56E-02
Scrapers	175	2.19E+01	0.00E+00	2.91E-03
Scrapers	250	2.23E+01	0.00E+00	2.27E-03
Scrapers	500	6.21E+00	0.00E+00	5.80E-04
Scrapers	750	1.79E+02	0.00E+00	1.68E-02
Paving Equipment	25	1.80E+02	0.00E+00	1.97E-02
Paving Equipment	50	2.01E+02	0.00E+00	9.41E-02
Paving Equipment	120	1.33E+01	0.00E+00	2.53E-03
Paving Equipment	175	3.58E+01	0.00E+00	4.67E-03
Paving Equipment	250	1.08E+02	0.00E+00	1.07E-02
Surfacing Equipment	50	1.30E+02	0.00E+00	4.29E-02
Surfacing Equipment	120	1.23E+03	0.00E+00	1.81E-01
Surfacing Equipment	175	1.51E+03	0.00E+00	1.51E-01
Surfacing Equipment	250	8.32E+02	0.00E+00	6.09E-02
Surfacing Equipment	500	8.18E+01	0.00E+00	5.44E-03
Surfacing Equipment	750	5.85E+02	0.00E+00	3.95E-02
Signal Boards	15	1.35E+00	0.00E+00	1.42E-04
Signal Boards	50	4.78E+02	0.00E+00	1.52E-01
Signal Boards	120	2.70E+01	0.00E+00	3.91E-03
Signal Boards	175	5.75E+01	0.00E+00	5.59E-03
Signal Boards	250	3.15E+02	0.00E+00	1.94E-02
Trenchers	15	6.96E+01	0.00E+00	7.31E-03
Trenchers	25	1.54E+02	0.00E+00	1.68E-02
Trenchers	50	2.02E+00	0.00E+00	9.20E-04
Trenchers	120	1.23E+00	0.00E+00	2.31E-04
Trenchers	175	1.71E+01	0.00E+00	2.20E-03
Trenchers	250	2.06E+02	0.00E+00	2.07E-02
Trenchers	500	1.13E+02	0.00E+00	1.02E-02
Trenchers	750	4.94E+03	0.00E+00	4.52E-01
Bore/Drill Rigs	15	6.38E+02	0.00E+00	6.70E-02
Bore/Drill Rigs	25	1.97E+02	0.00E+00	2.16E-02
Bore/Drill Rigs	50	4.38E+01	0.00E+00	4.47E-03
Bore/Drill Rigs	120	1.48E+01	0.00E+00	8.88E-04
Bore/Drill Rigs	175	8.02E+01	0.00E+00	3.85E-03
Bore/Drill Rigs	250	8.70E+01	0.00E+00	3.49E-03
Bore/Drill Rigs	500	3.24E+01	0.00E+00	1.27E-03
Bore/Drill Rigs	750	3.34E+02	0.00E+00	1.32E-02
Bore/Drill Rigs	1000	2.26E+02	0.00E+00	9.85E-03
Excavators	25	1.64E+02	0.00E+00	1.79E-02
Excavators	50	3.32E+00	0.00E+00	1.10E-03

Table E-92. 2012 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Excavators	120	1.50E+00	0.00E+00	2.18E-04
Excavators	175	8.13E-01	0.00E+00	8.44E-05
Excavators	250	1.98E+00	0.00E+00	1.46E-04
Excavators	500	2.02E+00	0.00E+00	1.41E-04
Excavators	750	4.17E+02	0.00E+00	2.92E-02
Concrete/Industrial Saws	25	1.52E+03	0.00E+00	1.66E-01
Concrete/Industrial Saws	50	1.60E+02	0.00E+00	5.00E-02
Concrete/Industrial Saws	120	9.37E+01	0.00E+00	1.32E-02
Concrete/Industrial Saws	175	4.23E+03	0.00E+00	4.03E-01
Cement and Mortar Mixers	15	7.63E+00	0.00E+00	8.17E-04
Cement and Mortar Mixers	25	1.41E+02	0.00E+00	2.13E-02
Cranes	50	1.26E+02	0.00E+00	5.42E-02
Cranes	120	1.04E+01	0.00E+00	1.83E-03
Cranes	175	1.14E+01	0.00E+00	1.39E-03
Cranes	250	5.74E+00	0.00E+00	5.09E-04
Cranes	500	1.26E+01	0.00E+00	1.03E-03
Cranes	750	7.85E+01	0.00E+00	6.47E-03
Cranes	9999	1.50E+01	0.00E+00	1.38E-03
Graders	50	3.64E+02	0.00E+00	1.41E-01
Graders	120	6.19E+00	0.00E+00	1.01E-03
Graders	175	2.05E+00	0.00E+00	2.33E-04
Graders	250	3.22E+00	0.00E+00	2.66E-04
Graders	500	7.58E+01	0.00E+00	5.80E-03
Graders	750	8.18E+03	0.00E+00	6.30E-01
Off-Highway Trucks	175	1.02E+02	0.00E+00	1.13E-02
Off-Highway Trucks	250	1.28E+01	0.00E+00	1.02E-03
Off-Highway Trucks	500	7.45E+00	0.00E+00	5.59E-04
Off-Highway Trucks	750	3.55E+01	0.00E+00	2.68E-03
Off-Highway Trucks	1000	8.03E+01	0.00E+00	6.71E-03
Crushing/Proc. Equipment	50	5.09E+01	0.00E+00	2.01E-02
Crushing/Proc. Equipment	120	1.42E+01	0.00E+00	2.36E-03
Crushing/Proc. Equipment	175	4.63E+01	0.00E+00	5.23E-03
Crushing/Proc. Equipment	250	4.76E+02	0.00E+00	3.43E-02
Crushing/Proc. Equipment	500	6.46E+01	0.00E+00	4.27E-03
Crushing/Proc. Equipment	750	5.95E+03	0.00E+00	3.98E-01
Crushing/Proc. Equipment	9999	9.91E+02	0.00E+00	8.29E-02
Rough Terrain Forklifts	50	5.64E+01	0.00E+00	1.98E-02
Rough Terrain Forklifts	120	9.05E-01	0.00E+00	1.36E-04
Rough Terrain Forklifts	175	9.69E+00	0.00E+00	1.01E-03
Rough Terrain Forklifts	250	1.66E+02	0.00E+00	1.19E-02
Rough Terrain Forklifts	500	1.90E+02	0.00E+00	1.26E-02
Rubber Tired Loaders	25	4.47E+02	0.00E+00	4.88E-02
Rubber Tired Loaders	50	2.12E+01	0.00E+00	8.09E-03
Rubber Tired Loaders	120	6.14E-01	0.00E+00	9.85E-05
Rubber Tired Loaders	175	1.35E+00	0.00E+00	1.51E-04
Rubber Tired Loaders	250	1.33E+00	0.00E+00	1.07E-04
Rubber Tired Loaders	500	2.54E+00	0.00E+00	1.90E-04
Rubber Tired Loaders	750	2.03E+02	0.00E+00	1.52E-02
Rubber Tired Loaders	1000	1.73E+03	0.00E+00	1.44E-01
Rubber Tired Dozers	175	6.84E+02	0.00E+00	1.05E-01
Rubber Tired Dozers	250	2.77E+01	0.00E+00	3.46E-03
Rubber Tired Dozers	500	1.30E+01	0.00E+00	1.48E-03
Rubber Tired Dozers	750	1.52E+02	0.00E+00	1.73E-02
Rubber Tired Dozers	1000	2.49E+03	0.00E+00	2.97E-01

Table E-92. 2012 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Tractors/Loaders/Backhoes	25	2.08E+01	0.00E+00	2.35E-03
Tractors/Loaders/Backhoes	50	3.33E+00	0.00E+00	1.00E-03
Tractors/Loaders/Backhoes	120	1.77E-01	0.00E+00	2.35E-05
Tractors/Loaders/Backhoes	175	3.19E+00	0.00E+00	3.01E-04
Tractors/Loaders/Backhoes	250	1.17E+01	0.00E+00	7.77E-04
Tractors/Loaders/Backhoes	500	7.27E+00	0.00E+00	4.54E-04
Tractors/Loaders/Backhoes	750	4.32E+01	0.00E+00	2.72E-03
Crawler Tractors	50	3.29E+02	0.00E+00	1.51E-01
Crawler Tractors	120	6.39E-01	0.00E+00	1.21E-04
Crawler Tractors	175	2.38E+00	0.00E+00	3.13E-04
Crawler Tractors	250	2.66E+00	0.00E+00	2.68E-04
Crawler Tractors	500	3.03E+00	0.00E+00	2.80E-04
Crawler Tractors	750	2.94E+02	0.00E+00	2.73E-02
Crawler Tractors	1000	3.12E+02	0.00E+00	3.09E-02
Skid Steer Loaders	25	2.66E+00	0.00E+00	3.67E-04
Skid Steer Loaders	50	2.71E-01	0.00E+00	5.74E-05
Skid Steer Loaders	120	3.61E-01	0.00E+00	3.69E-05
Off-Highway Tractors	120	7.22E+03	0.00E+00	1.55E+00
Off-Highway Tractors	175	5.64E+00	0.00E+00	8.34E-04
Off-Highway Tractors	250	4.17E+00	0.00E+00	4.95E-04
Off-Highway Tractors	750	5.72E+01	0.00E+00	6.19E-03
Off-Highway Tractors	1000	5.82E+02	0.00E+00	6.62E-02
Dumpers/Tenders	25	1.18E+02	0.00E+00	1.39E-02
Other Construction Equipment	15	1.88E+01	0.00E+00	1.98E-03
Other Construction Equipment	25	8.73E+01	0.00E+00	9.55E-03
Other Construction Equipment	50	6.02E+01	0.00E+00	1.64E-02
Other Construction Equipment	120	4.39E+01	0.00E+00	5.42E-03
Other Construction Equipment	175	2.87E+01	0.00E+00	2.46E-03
Other Construction Equipment	500	1.03E+01	0.00E+00	5.57E-04

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

CO2 = carbon dioxide

N2O = nitrous oxide

CH4 = methane

Table E-93. 2013 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Pavers	25	4.53E+02	0.00E+00	5.40E-02
Pavers	50	5.85E+00	0.00E+00	2.58E-03
Pavers	120	5.11E+00	0.00E+00	9.26E-04
Pavers	175	1.04E+01	0.00E+00	1.31E-03
Pavers	250	9.19E+01	0.00E+00	8.84E-03
Pavers	500	5.38E+01	0.00E+00	4.73E-03
Plate Compactors	15	8.13E+00	0.00E+00	8.54E-04
Rollers	15	6.34E+00	0.00E+00	6.66E-04
Rollers	25	1.92E+01	0.00E+00	2.10E-03
Rollers	50	6.01E+00	0.00E+00	2.14E-03
Rollers	120	1.06E+00	0.00E+00	1.60E-04
Rollers	175	3.31E+00	0.00E+00	3.45E-04
Rollers	250	2.31E+01	0.00E+00	1.72E-03
Rollers	500	2.36E+01	0.00E+00	1.61E-03
Scrapers	120	1.83E+02	0.00E+00	3.30E-02
Scrapers	175	2.16E+01	0.00E+00	2.73E-03
Scrapers	250	2.19E+01	0.00E+00	2.13E-03
Scrapers	500	6.11E+00	0.00E+00	5.46E-04
Scrapers	750	1.76E+02	0.00E+00	1.58E-02
Paving Equipment	25	1.77E+02	0.00E+00	1.93E-02
Paving Equipment	50	1.98E+02	0.00E+00	8.73E-02
Paving Equipment	120	1.30E+01	0.00E+00	2.35E-03
Paving Equipment	175	3.53E+01	0.00E+00	4.38E-03
Paving Equipment	250	1.06E+02	0.00E+00	9.99E-03
Surfacing Equipment	50	1.28E+02	0.00E+00	3.92E-02
Surfacing Equipment	120	1.21E+03	0.00E+00	1.66E-01
Surfacing Equipment	175	1.49E+03	0.00E+00	1.40E-01
Surfacing Equipment	250	8.19E+02	0.00E+00	5.62E-02
Surfacing Equipment	500	8.06E+01	0.00E+00	5.03E-03
Surfacing Equipment	750	5.76E+02	0.00E+00	3.65E-02
Signal Boards	15	1.33E+00	0.00E+00	1.40E-04
Signal Boards	50	4.71E+02	0.00E+00	1.35E-01
Signal Boards	120	2.66E+01	0.00E+00	3.52E-03
Signal Boards	175	5.66E+01	0.00E+00	5.09E-03
Signal Boards	250	3.10E+02	0.00E+00	1.79E-02
Trenchers	15	6.85E+01	0.00E+00	7.20E-03
Trenchers	25	1.52E+02	0.00E+00	1.65E-02
Trenchers	50	1.99E+00	0.00E+00	8.57E-04
Trenchers	120	1.21E+00	0.00E+00	2.16E-04
Trenchers	175	1.68E+01	0.00E+00	2.06E-03
Trenchers	250	2.03E+02	0.00E+00	1.93E-02
Trenchers	500	1.11E+02	0.00E+00	9.61E-03
Trenchers	750	4.87E+03	0.00E+00	4.24E-01
Bore/Drill Rigs	15	6.28E+02	0.00E+00	6.60E-02
Bore/Drill Rigs	25	1.94E+02	0.00E+00	2.12E-02
Bore/Drill Rigs	50	4.31E+01	0.00E+00	3.62E-03
Bore/Drill Rigs	120	1.46E+01	0.00E+00	7.60E-04
Bore/Drill Rigs	175	7.89E+01	0.00E+00	3.55E-03
Bore/Drill Rigs	250	8.56E+01	0.00E+00	3.26E-03
Bore/Drill Rigs	500	3.18E+01	0.00E+00	1.19E-03
Bore/Drill Rigs	750	3.29E+02	0.00E+00	1.24E-02
Bore/Drill Rigs	1000	2.22E+02	0.00E+00	8.99E-03
Excavators	25	1.62E+02	0.00E+00	1.76E-02
Excavators	50	3.27E+00	0.00E+00	9.66E-04

Table E-93. 2013 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Excavators	120	1.48E+00	0.00E+00	1.97E-04
Excavators	175	8.00E-01	0.00E+00	7.79E-05
Excavators	250	1.95E+00	0.00E+00	1.38E-04
Excavators	500	1.99E+00	0.00E+00	1.33E-04
Excavators	750	4.10E+02	0.00E+00	2.76E-02
Concrete/Industrial Saws	25	1.50E+03	0.00E+00	1.63E-01
Concrete/Industrial Saws	50	1.57E+02	0.00E+00	4.49E-02
Concrete/Industrial Saws	120	9.22E+01	0.00E+00	1.20E-02
Concrete/Industrial Saws	175	4.17E+03	0.00E+00	3.69E-01
Cement and Mortar Mixers	15	7.51E+00	0.00E+00	7.98E-04
Cement and Mortar Mixers	25	1.39E+02	0.00E+00	1.93E-02
Cranes	50	1.24E+02	0.00E+00	4.92E-02
Cranes	120	1.02E+01	0.00E+00	1.69E-03
Cranes	175	1.12E+01	0.00E+00	1.30E-03
Cranes	250	5.65E+00	0.00E+00	4.73E-04
Cranes	500	1.24E+01	0.00E+00	9.61E-04
Cranes	750	7.73E+01	0.00E+00	6.04E-03
Cranes	9999	1.48E+01	0.00E+00	1.30E-03
Graders	50	3.58E+02	0.00E+00	1.27E-01
Graders	120	6.09E+00	0.00E+00	9.22E-04
Graders	175	2.02E+00	0.00E+00	2.16E-04
Graders	250	3.17E+00	0.00E+00	2.48E-04
Graders	500	7.46E+01	0.00E+00	5.45E-03
Graders	750	8.06E+03	0.00E+00	5.91E-01
Off-Highway Trucks	175	1.00E+02	0.00E+00	1.04E-02
Off-Highway Trucks	250	1.26E+01	0.00E+00	9.59E-04
Off-Highway Trucks	500	7.34E+00	0.00E+00	5.27E-04
Off-Highway Trucks	750	3.49E+01	0.00E+00	2.53E-03
Off-Highway Trucks	1000	7.90E+01	0.00E+00	6.26E-03
Crushing/Proc. Equipment	50	5.01E+01	0.00E+00	1.79E-02
Crushing/Proc. Equipment	120	1.40E+01	0.00E+00	2.14E-03
Crushing/Proc. Equipment	175	4.56E+01	0.00E+00	4.79E-03
Crushing/Proc. Equipment	250	4.69E+02	0.00E+00	3.20E-02
Crushing/Proc. Equipment	500	6.36E+01	0.00E+00	4.01E-03
Crushing/Proc. Equipment	750	5.86E+03	0.00E+00	3.72E-01
Crushing/Proc. Equipment	9999	9.76E+02	0.00E+00	7.59E-02
Rough Terrain Forklifts	50	5.55E+01	0.00E+00	1.75E-02
Rough Terrain Forklifts	120	8.91E-01	0.00E+00	1.23E-04
Rough Terrain Forklifts	175	9.54E+00	0.00E+00	9.35E-04
Rough Terrain Forklifts	250	1.64E+02	0.00E+00	1.12E-02
Rough Terrain Forklifts	500	1.87E+02	0.00E+00	1.20E-02
Rubber Tired Loaders	25	4.40E+02	0.00E+00	4.80E-02
Rubber Tired Loaders	50	2.09E+01	0.00E+00	7.27E-03
Rubber Tired Loaders	120	6.04E-01	0.00E+00	9.01E-05
Rubber Tired Loaders	175	1.33E+00	0.00E+00	1.40E-04
Rubber Tired Loaders	250	1.31E+00	0.00E+00	9.98E-05
Rubber Tired Loaders	500	2.50E+00	0.00E+00	1.78E-04
Rubber Tired Loaders	750	2.00E+02	0.00E+00	1.43E-02
Rubber Tired Loaders	1000	1.70E+03	0.00E+00	1.34E-01
Rubber Tired Dozers	175	6.74E+02	0.00E+00	9.96E-02
Rubber Tired Dozers	250	2.73E+01	0.00E+00	3.26E-03
Rubber Tired Dozers	500	1.28E+01	0.00E+00	1.40E-03
Rubber Tired Dozers	750	1.49E+02	0.00E+00	1.64E-02
Rubber Tired Dozers	1000	2.45E+03	0.00E+00	2.81E-01

Table E-93. 2013 GHG Emission Factors for Diesel Fired Construction Equipment Exhaust

Equipment	Max HP	Emissions (g/hp-hr)		
		CO2	N2O	CH4
Tractors/Loaders/Backhoes	25	2.05E+01	0.00E+00	2.27E-03
Tractors/Loaders/Backhoes	50	3.28E+00	0.00E+00	8.75E-04
Tractors/Loaders/Backhoes	120	1.74E-01	0.00E+00	2.12E-05
Tractors/Loaders/Backhoes	175	3.14E+00	0.00E+00	2.77E-04
Tractors/Loaders/Backhoes	250	1.15E+01	0.00E+00	7.28E-04
Tractors/Loaders/Backhoes	500	7.15E+00	0.00E+00	4.29E-04
Tractors/Loaders/Backhoes	750	4.25E+01	0.00E+00	2.57E-03
Crawler Tractors	50	3.24E+02	0.00E+00	1.38E-01
Crawler Tractors	120	6.29E-01	0.00E+00	1.12E-04
Crawler Tractors	175	2.35E+00	0.00E+00	2.93E-04
Crawler Tractors	250	2.62E+00	0.00E+00	2.51E-04
Crawler Tractors	500	2.98E+00	0.00E+00	2.64E-04
Crawler Tractors	750	2.89E+02	0.00E+00	2.57E-02
Crawler Tractors	1000	3.07E+02	0.00E+00	2.90E-02
Skid Steer Loaders	25	2.62E+00	0.00E+00	3.45E-04
Skid Steer Loaders	50	2.67E-01	0.00E+00	4.90E-05
Skid Steer Loaders	120	3.56E-01	0.00E+00	3.23E-05
Off-Highway Tractors	120	7.11E+03	0.00E+00	1.45E+00
Off-Highway Tractors	175	5.55E+00	0.00E+00	7.86E-04
Off-Highway Tractors	250	4.11E+00	0.00E+00	4.66E-04
Off-Highway Tractors	750	5.63E+01	0.00E+00	5.85E-03
Off-Highway Tractors	1000	5.73E+02	0.00E+00	6.24E-02
Dumpers/Tenders	25	1.16E+02	0.00E+00	1.32E-02
Other Construction Equipment	15	1.85E+01	0.00E+00	1.95E-03
Other Construction Equipment	25	8.60E+01	0.00E+00	9.38E-03
Other Construction Equipment	50	5.93E+01	0.00E+00	1.44E-02
Other Construction Equipment	120	4.32E+01	0.00E+00	4.87E-03
Other Construction Equipment	175	2.83E+01	0.00E+00	2.25E-03
Other Construction Equipment	500	1.02E+01	0.00E+00	5.25E-04

Source: OFFROAD2007

Keys:

g/hp/hr = grams per horsepower per hour

HP = horsepower

CO2 = carbon dioxide

N2O = nitrous oxide

CH4 = methane