

APPENDIX E – AIR QUALITY

ROUTINE FACILITY INSPECTION AND MAINTENANCE - ALTERNATIVE 4

OFF-ROAD SOURCES

Source	Fuel	BHP	Number	Load Factor	Data		lb/BHP-hr						Pounds/day						Tons/yr			
					Hours/Day	Source	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	Days	NOx	ROC	CO	PM10	Sox
Welding Rig	Diesel	35	2	45	8	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	3.83	1.00	2.78	0.42	0.00	12	0.02	0.01	0.02	0.00	0.00
Back Hoe	Diesel	101	1	46.5	8	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	7.25	0.82	2.89	0.57	0.00	12	0.04	0.00	0.02	0.00	0.00
Emergency Generator	Diesel	100	3	43	1	ARB	1.8012E-02	1.4982E-03	5.9525E-03	8.3776E-04	1.0800E-05	2.32	0.19	0.77	0.11	0.00	12	0.01	0.00	0.00	0.00	0.00
Total							13.40	2.01	6.44	1.10	0.01	0.08	0.01	0.04	0.01	0.00						

ON-ROAD SOURCES

Vehicle Class	Number	VMT	NOX			ROC					CO			PM10			SOX			Emissions (lbs/day)						
			Run Exhaust (g/ml)	Start-Up (g/st)	Run Exhaust (g/ml)	Start-Up (g/st)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/ml)	Start-Up (g/st)	Run Exhaust (g/ml)	Start-Up (g/st)	Run Exhaust (g/ml)	Start-Up (g/st)	Run Exhaust (g/ml)	Start-Up (g/st)	Run Exhaust (g/ml)	Start-Up (g/st)	NOX	ROC	CO	PM10	SOX	
LDA-All	0	40	0.273	0.534	0.148	1.497	0.261	0.115	0.263	4.661	15.203	0.009	0.014	0.008	0.013	0.004	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
HHD-Dsl	0	40	8.37		0.535					1.938		0.229		0.036	0.013	0.021		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
MHD-Dsl	4	11	6.375		0.266					1.535		0.252		0.012	0.013	0.014		0.6	0.0	0.2	0.0	0.0	0.0	0.0		
																		lbs/day				0.6	0.0	0.2	0.0	0.0
																		tons/yr				0.0	0.0	0.0	0.0	0.0

Assumptions:

Heavy construction equipment emission factors from ARB offroad model (see air quality references)

Onroad emissions factors from EMFAC 2002, Sonoma County, Summer 2008, 85 degrees F, 60% RH

Assumes startup after 12 hours

Vehicle speed = 35 mph

20 min hot soak per trip

15 min rest each trip

45 minute run time total

Light Duty Truck (LDT) assumes all fuel types

Heavy-Duty Truck (HDD) assumes diesel fuel

Medium Heavy Duty Truck (MHD) assumes diesel fuel

Emergency generator is tested for 1 hour per month per pump station, visual inspection occurs weekly

Component Summary

Pounds/day	14.0	2.1	6.6	1.1	0.0
Tons/yr	0.10	0.01	0.04	0.01	0.00

ROUTINE FACILITY INSPECTION AND MAINTENANCE - ALTERNATIVE 3

OFF-ROAD SOURCES

Source	Fuel	BHP	Number	Load Factor	Hours/day	Data		lb/BHP-hr						Pounds/day						Tons/yr			
						Source	ay	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	Days	NOx	ROC	CO	PM10	Sox
Welding Rig	Diesel	35	2	45	8	ARB		1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	3.83	1.00	2.78	0.42	0.00	12	0.02	0.01	0.02	0.00	0.00
Back Hoe	Diesel	101	1	46.5	8	ARB		1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	7.25	0.82	2.89	0.57	0.00	12	0.04	0.00	0.02	0.00	0.00
Emergency Generator	Diesel	100	2	43	1	ARB		1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	1.55	0.13	0.51	0.07	0.00	12	0.01	0.00	0.00	0.00	0.00
Total								12.83	1.95	6.18	1.07	0.01							0.08	0.01	0.04	0.01	0.00

ON-ROAD SOURCES

Vehicle Class	Number	VMT	NOX		ROC					CO		PM10			SOX		Emissions (lbs/day)													
			Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	NOX	ROC	CO	PM10	SOX									
LDA-All	0	40	0.273	0.534	0.148	1.497	0.261	0.115	3.18	0.263	4.661	15.203	0.009	0.014	0.008	0.013	0.004	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
HHD-Dsl	0	40	8.37		0.535						1.938		0.229		0.036	0.013	0.021		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
MHD-Dsl	4	17	6.375		0.266						1.535		0.252		0.012	0.013	0.014		1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0				
																	lbs/day		1.0		0.1		0.2		0.0		0.0		0.0	
																	tons/yr		0.0		0.0		0.0		0.0		0.0		0.0	

Assumptions:

Heavy construction equipment emission factors from ARB offroad model (see air quality references)
 Onroad emissions factors from EMFAC 2002, Sonoma County, Summer 2008, 85 degrees F, 60% RH
 Assumes startup after 12 hours

Vehicle speed = 35 mph

20 min hot soak per trip

15 min rest each trip

45 minute run time total

Light Duty Truck (LDT) assumes all fuel types

Heavy-Duty Truck (HHD) assumes diesel fuel

Medium Heavy Duty Truck (MHD) assumes diesel fuel

Emergency generator is tested for 1 hour per month per pump station, visual inspection occurs weekly

Component Summary

Pounds/day	13.6	2.0	6.4	1.1	0.0
Tons/yr	0.10	0.01	0.04	0.01	0.00

ROUTINE FACILITY INSPECTION AND MAINTENANCE - ALTERNATIVE 2

OFF-ROAD SOURCES

Source	Fuel	BHP	Number	Load Factor	Hours/Day	Data		lb/BHP-hr						Pounds/day						Tons/yr			
						Source	Hours/Day	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	Days	NOx	ROC	CO	PM10	Sox
Welding Rig	Diesel	35	4	45	8	ARB	8	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	7.67	2.00	5.56	0.84	0.01	12	0.05	0.01	0.03	0.01	0.00
Back Hoe	Diesel	101	4	46.5	8	ARB	8	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	28.99	3.28	11.56	2.29	0.02	12	0.17	0.02	0.07	0.01	0.00
Emergency Generator	Diesel	100	17	43	1	ARB	1	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	13.17	1.10	4.35	0.61	0.01	12	0.08	0.01	0.03	0.00	0.00
Total								49.83	6.38	21.47	3.74	0.03							0.30	0.04	0.13	0.02	0.00

ON-ROAD SOURCES

Vehicle Class	Number	VMT	NOX		ROC							CO		PM10		SOX		Emissions (lbs/day)										
			Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	NOX	ROC	CO	PM10	SOX					
LDA-All	0	40	0.273	0.534	0.148	1.497	0.261	0.115	3.18	0.263	4.661	15.203	0.009	0.014	0.008	0.013	0.004	0.003	0.0	0.0	0.0	0.0	0.0					
HHD-Dsl	0	40	8.37		0.535						1.938		0.229		0.036	0.013	0.021		0.0	0.0	0.0	0.0	0.0					
MHD-Dsl	4	108	6.375		0.266						1.535		0.252		0.012	0.013	0.014		6.1	0.3	1.5	0.3	0.0					
																		lbs/day					6.1	0.3	1.5	0.3	0.0	
																		tons/yr					0.2	0.0	0.0	0.0	0.0	0.0

PUMP STATION CONSTRUCTION

OFF-ROAD SOURCES

Source		Fuel	BHP	Number	Load Factor	Hours per day	Data		lb/BHP-hr						Pounds/day						Tons/Year			
							Source	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox		
Welding Rig	Diesel	35	2	45	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	5.27	1.38	3.82	0.58	0.00	75	0.20	0.05	0.14	0.02	0.00	0.00	
Back Hoe	Diesel	101	1	46.5	11	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	9.97	1.13	3.97	0.79	0.01	75	0.37	0.04	0.15	0.03	0.00	0.00	
Crane	Diesel	194	1	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	16.53	1.38	5.46	0.77	0.01	75	0.62	0.05	0.20	0.03	0.00	0.00	
Total												31.8	3.9	13.3	2.1	0.0		1.19	0.15	0.50	0.00	0.08	0.00	

ON-ROAD SOURCES

Vehicle Class		NOx		ROC		CO		PM10		SOx		Emissions (lbs/day)			
		Run Exhaust (g/mi)	Start-Up (g/st)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	NOx	ROC
LDA-All	20	0.273	0.534	0.148	1.497	0.261	0.263	4.661	15.203	0.009	0.014	0.008	0.013	0.004	0.003
HHD-Dsl	10	40	40	0.535		0.115	3.18	1.938		0.229		0.036	0.013	0.021	0.003
Total												lbs/day	8.0	0.9	11.4
												tons/yr	0.30	0.03	0.43

Fugitive Dust Emissions

Lbs/day/ac	51
acres/day	1
Lbs/day	51
Tons/yr	1.9

Pipeline Installation Summary

	NOx	ROC	CO	PM10	SOx
Pounds/day	39.8	4.8	24.7	53.4	0.0
Tons/Year	1.5	0.2	0.9	2.0	0.0

Assumptions:
Heavy construction equipment emission factors from ARB offroad model (see air quality references)
Onroad emissions factors from EMFAC 2002, Sonoma County, Summer 2008, 85 degrees F, 60% RH

Assumes startup after 12 hours

Vehicle speed = 35 mph

20 min hot soak per trip

15 min rest each trip

45 minute run time total

Light Duty Truck (LDT) assumes all fuel types

Heavy-Duty Truck (HHD) assumes diesel fuel

Fugitive dust emission factor based on BAAQMD CEQA Guidelines

Alternative Summary (Total Tons)

Total Years	NOx	ROC	CO	PM10	SOx
Alternative 2	10	14.9	1.8	9.3	20.0
Alternative 3	2	3.0	0.4	1.9	4.0
Alternative 4	1	1.5	0.2	0.9	2.0

RESERVOIR CONSTRUCTION

OFF-ROAD SOURCES

Source	Fuel	BHP	Number	Load Factor	Hours per day	Data		lb/BHP-hr					Pounds/day					Tons/Year				
						Source	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	Days/Yr	NOx	ROC	CO	PM10	Sox
Tracked Tractor	Diesel	285	1	64	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	36.14	3.01	11.94	1.68	0.02	150	2.71	0.23	0.90	0.13	0.00
	Diesel	215	1	59	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	25.13	2.09	8.31	1.17	0.02	150	1.88	0.16	0.62	0.09	0.00
Soil Compactor	Diesel	365	1	72	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	52.07	4.33	17.21	2.42	0.03	150	3.91	0.33	1.29	0.18	0.00
Scraper	Diesel	150	2	61	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	36.26	3.02	11.98	1.69	0.02	150	2.72	0.23	0.90	0.13	0.00
Grader	Diesel	101	1	46.5	11	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	9.97	1.13	3.97	0.79	0.01	150	0.75	0.08	0.30	0.06	0.00
Backhoe	Diesel	215	2	68	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	57.93	4.82	19.15	2.69	0.03	150	4.35	0.36	1.44	0.20	0.00
Loader	Diesel	350	2	57.5	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	79.75	6.64	26.35	3.71	0.05	150	5.98	0.50	1.98	0.28	0.00
Excavator	Diesel	200	1	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3778E-04	1.0800E-05	17.04	1.42	5.63	0.79	0.01	150	1.28	0.11	0.42	0.06	0.00
Crane	Diesel	100	1	74	11	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	15.70	1.78	6.26	1.24	0.01	150	1.18	0.13	0.47	0.09	0.00
Generator	Diesel	50	2	74	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	12.38	3.23	8.97	1.36	0.01	150	0.93	0.24	0.67	0.10	0.00
Dewatering Pumps	Diesel	50	2	74	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	12.38	3.23	8.97	1.36	0.01	150	0.93	0.24	0.67	0.10	0.00
Total												342.4	31.5	119.8	17.5	0.2		25.68	2.36	8.98	1.32	0.02

ON-ROAD SOURCES

Vehicle Class	Number	VMT	NOx		ROC				CO		PM10		SOx		Emissions (lbs/day)											
			Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Hot-Soak (g/trip)	Rest Loss (g/hr)	Run Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	NOx	ROC	CO	PM10	SOx					
LDA-All	20	40	0.273	0.534	0.148	1.497	0.261	0.115	3.18	0.263	0.009	0.014	0.008	0.013	0.004	0.003	0.5	0.4	9.7	0.1	0.0					
HHD-Dsl	10	40	8.37		0.535						0.229		0.036	0.013	0.021		7.5	0.5	1.7	0.2	0.0					
															lbs/day		8.0		0.9		11.4		0.3		0.0	
															tons/yr		0.60		0.07		0.86		0.02		0.00	

Fugitive Dust Emissions			
Lbs/day/ac	acres/day	Lbs/day	Tons/yr
51	5	255	19.1

Assumptions:

Heavy construction equipment emission factors from ARB offroad model (see air quality references)
 Onroad emissions factors from EMFAC 2002, Sonoma County, Summer 2008, 85 degrees F, 60% RH

Assumes startup after 12 hours

Vehicle speed = 35 mph

20 min hot soak per trip

15 min rest each trip

45 minute run time total

Light Duty Truck (LDT) assumes all fuel types

Heavy-Duty Truck (HDT) assumes diesel fuel

Fugitive dust emission factor based on BAAQMD CEQA Guidelines

Reservoir Construction Summary			
NOx	ROC	CO	SOx
350.4	32.4	131.2	272.8
26.3	2.4	9.8	20.5

Alternative Summary (Total Tons)			
Total Years	NOx	ROC	SOx
Alternative 2	10	262.8	24.3
Alternative 3	2	52.6	4.9
Alternative 4	1	26.3	2.4

TERRESTRIAL PIPELINE TRENCHING/INSTALLATION

OFF-ROAD SOURCES

Source	Fuel	BHP	Number	Load Factor	Hours per day	Data Source	lb/BHP-hr					Pounds/day					Tons/Year					
							NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	NOx	ROC	CO	PM10	Sox	
Slide Boom	Diesel	194	4	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	66.11	5.50	21.85	3.07	0.04	150	4.96	0.41	1.64	0.23	0.00
	Diesel	35	6	45	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	15.81	4.13	11.46	1.74	0.01	150	1.19	0.31	0.86	0.13	0.00
	Diesel	37	1	48	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	2.97	0.78	2.15	0.33	0.00	150	0.22	0.06	0.16	0.02	0.00
Back Hoe	Diesel	101	4	46.5	11	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	39.86	4.51	15.90	3.14	0.02	150	2.99	0.34	1.19	0.24	0.00
	Diesel	158	2	57.5	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	36.00	3.00	11.90	1.67	0.02	150	2.70	0.22	0.89	0.13	0.00
Bending Machine	Diesel	161	1	62	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	19.78	1.85	6.54	0.92	0.01	150	1.48	0.12	0.49	0.07	0.00
	Diesel	486	4	41	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	157.92	13.14	52.19	7.35	0.09	150	11.84	0.99	3.91	0.55	0.01
Boring Machine	Diesel	209	1	75	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	31.06	2.58	10.26	1.44	0.02	150	2.33	0.19	0.77	0.11	0.00
	Diesel	240	2	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	40.89	3.40	13.51	1.90	0.02	150	3.07	0.26	1.01	0.14	0.00
Wacker/Compactor	Diesel	99	1	57.5	11	ARB	1.9291E-02	2.1826E-03	7.6942E-03	1.5212E-03	1.0800E-05	12.08	1.37	4.82	0.95	0.01	150	0.91	0.10	0.36	0.07	0.00
Diesel Fill Pump	Diesel	23	1	74	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	2.85	0.74	2.06	0.31	0.00	150	0.21	0.06	0.15	0.02	0.00
	Diesel	23	1	74	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	2.85	0.74	2.06	0.31	0.00	150	0.21	0.06	0.15	0.02	0.00
Mud Pumps	Diesel	300	1	74	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	43.99	3.66	14.54	2.05	0.03	150	3.30	0.27	1.09	0.15	0.00
	Diesel	22	1	74	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	2.72	0.71	1.97	0.30	0.00	150	0.20	0.05	0.15	0.02	0.00
Light Plant	Diesel	37	1	48	11	ARB	1.5212E-02	3.9683E-03	1.1023E-02	1.6755E-03	1.0800E-05	2.97	0.78	2.15	0.33	0.00	150	0.22	0.06	0.16	0.02	0.00
	Air Compressors <50 HP	194	1	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	16.53	1.38	5.46	0.77	0.01	150	1.24	0.10	0.41	0.06	0.00
Crane	Diesel	194	1	43	11	ARB	1.8012E-02	1.4992E-03	5.9525E-03	8.3776E-04	1.0800E-05	16.53	1.38	5.46	0.77	0.01	150	1.24	0.10	0.41	0.06	0.00
Total												494.4	48.1	178.8	26.6	0.3		37.08	3.60	13.41	1.99	0.02

ON-ROAD SOURCES

Vehicle Class	Number	VMT	NOx		ROC				CO		PM10		SOx		Emissions (lbs/day)																		
			Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Hot-Soak (g/rip)	Rest Loss (g/hr)	Run Evap (g/hr)	Diurnal Evap (g/hr)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	Run Exhaust (g/mi)	Start-Up (g/st)	NOx	ROC	CO	PM10	SOx												
LDA-All	30	40	0.273	0.534	0.148	1.497	0.261	0.115	3.18	0.263	4.661	15.203	0.009	0.014	0.008	0.013	0.004	0.003	0.003	0.0	0.0												
HHD-Dsl	10	40	8.37		0.535						1.938	0.229	0.229		0.036	0.013	0.021			lbs/day	8.3	1.1	16.3	0.3	0.0								
																					tons/yr			0.62	0.08	1.22	0.02	0.00					
																					Fugitive Dust Emissions (PM10)												

Fugitive Dust Emissions (PM10)

Lbs/day/ac	51	5	255	Tons/yr
				19.1

Asphalt Off-Gas Emissions (ROC)

Lbs/day/ac	2.62	3	7.86	Tons/yr
				0.6

Pipeline Installation Summary

NOx	ROC	CO	PM10	SOx
502.7	57.0	195.1	281.9	0.3
37.7	4.3	14.6	21.1	0.0

Alternative Summary (Total Tons)

	Total Years	NOX	ROC	CO	PM10	SOX
Alternative 2	10	377.0	42.8	146.3	211.4	0.2
Alternative 3	2	75.4	8.6	29.3	42.3	0.0
Alternative 4	1	37.7	4.3	14.6	21.1	0.0

Assumptions:

Heavy construction equipment emission factors from ARB offroad model (see air quality references)
Onroad emissions factors from EMFAC 2002, Sonoma County, Summer 2008, 85 degrees F, 60% RH
Assumes startup after 12 hours
Vehicle speed = 35 mph
20 min hot soak per trip
15 min rest each trip
45 minute run time total
Light Duty Truck (LDT) assumes all fuel types
Heavy-Duty Truck (HDD) assumes diesel fuel
Fugitive dust emission factor based on BAAQMD CEQA Guidelines
Asphalt off-gas emission factor based on ARB URBEMIS Model