

APPENDIX F

Air Quality Data

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GHG OPERATIONAL EMISSIONS

Moss Landing Project

GHGs from Electricity Consumption			
GHG	Emission Factor (lb/kWh)	kWhr	CO ₂ e (metric tons)
CO ₂	0.524	42,000,000	9982.76
CH ₄	0.0000067	42,000,000	2.68
N ₂ O	0.0000037	42,000,000	21.85
Total =			10,007.30

Note: kWhrs include an offset (5,300,000) associated with pre-project energy use at Carmel River, Segunda PS, and Seaside and ASR wells.

GHGs from SF ₆ Leakage			
GHG	Emission Factor (% leak/year)	Circuit breaker SF ₆ Capacity (pounds)	CO ₂ e (tons/year)
SF ₆	1	30	3.25

Mobile Sources									
On-road Sources	Miles/trip	Trips	Running Exhaust Emission Factor (pound/mile)		Starting Emission Factor (pound/trip)		Total Emissions (Metric tons)		
			CO ₂	CH ₄	CO ₂	CH ₄	CO ₂	CH ₄	CO ₂ e
Light duty truck	10	6240	0.9426	0.0001	0	0	28.05	0.00	28.12
Medium duty truck	0	0	1.3045	0.0001	0.3330	0.0002	0.00	0.00	0.00
Heavy duty truck	15	1040	3.9014	0.0002	0.1974	0.0011	27.70	0.00	27.73
Total							55.75	0.00	55.85

Total CO₂e from Operation of Moss Landing Project = **10,066.40**

North Marina Project

GHGs from Electricity Consumption			
GHG	Emission Factor (lb/kWh)	kWhr	CO ₂ e (metric tons)
CO ₂	0.524	47,700,000	11337.57
CH ₄	0.0000067	47,700,000	3.04
N ₂ O	0.0000037	47,700,000	24.82
Total =			11,365.43

Note: kWhrs include an offset (5,300,000) associated with pre-project energy use at Carmel River, Segunda PS, and Seaside and ASR wells.

GHGs from SF ₆ Leakage			
GHG	Emission Factor (% leak/year)	Circuit breaker SF ₆ Capacity (pounds)	CO ₂ e (tons/year)
SF ₆	1	30	3.25

Mobile Sources									
On-road Sources	Miles/trip	Trips	Running Exhaust Emission Factor (pound/mile)		Starting Emission Factor (pound/trip)		Total Emissions (Metric tons)		
			CO ₂	CH ₄	CO ₂	CH ₄	CO ₂	CH ₄	CO ₂ e
Light duty truck	10	6240	0.9426	0.0001	0	0	28.05	0.00	28.12
Medium duty truck	0	0	1.3045	0.0001	0.3330	0.0002	0.00	0.00	0.00
Heavy duty truck	20	1040	3.9014	0.0002	0.1974	0.0011	36.90	0.00	36.94
Total							64.96	0.00	65.06

Total CO₂e from Operation of North Marina Project = **11,433.74**

Regional Project

GHGs from Electricity Consumption			
GHG	Emission Factor (lb/kWh)	kWhr	CO ₂ e (metric tons)
CO ₂	0.524	47,300,000	11242.49
CH ₄	0.0000067	47,300,000	3.02
N ₂ O	0.0000037	47,300,000	24.61
Total =			11,270.12

Note: kWhrs include an offset (5,300,000) associated with pre-project energy use at Carmel River, Segunda PS, and Seaside and ASR wells.

GHGs from SF ₆ Leakage			
GHG	Emission Factor (% leak/year)	Circuit breaker SF ₆ Capacity (pounds)	CO ₂ e (tons/year)
SF ₆	1	30	3.25

Mobile Sources									
On-road Sources	Miles/trip	Trips	Running Exhaust Emission Factor (pound/mile)		Starting Emission Factor (pound/trip)		Total Emissions (Metric tons)		
			CO ₂	CH ₄	CO ₂	CH ₄	CO ₂	CH ₄	CO ₂ e
Light duty truck	10	6240	0.9426	0.0001	0	0	28.05	0.00	28.12
Medium duty truck	0	0	1.3045	0.0001	0.3330	0.0002	0.00	0.00	0.00
Heavy duty truck	20	1040	3.9014	0.0002	0.1974	0.0011	36.90	0.00	36.94
Total							64.96	0.00	65.06

Total CO₂e from Operation of Regional Project = **11,338.43**

Notes:

Electricity Consumption Emission Factors	Source
0.524 CO ₂ (lb/kWh)	PG&E (http://www.pge.com/mybusiness/environment/calculator/assumptions.shtml)
0.0000067 CH ₄ (lbs/kWh)	average
0.0000037 N ₂ O (lbs/kWh)	average

Emission Factors for Mobile Sources derived from EMFAC2007; daily trips were assumed to occur 5 days per week (260 days per year)

GHG	Global Warming Potential for 100-year horizon
CO ₂	1
CH ₄	21
N ₂ O	310
SF ₆	23,900

GHG CONSTRUCTION EMISSIONS - MOSS LANDING PROJECT

Moss Landing Desalination Plant									
Off-Road Equipment	MaxHP	Number	Hour/day	Days	Emission Factor (pounds/hour)		Total Emissions (Metric Tons)		
					CO ₂	CH ₄	CO ₂	CH ₄	CO _{2e}
Pavers	132	1	8	20	82.01	0.016	5.95	0.001	5.98
Rollers	114	1	8	20	56.11	0.012	4.07	0.001	4.09
Paving Equipment	111	1	8	20	50.52	0.012	3.67	0.001	3.69
Trenchers	82	1	8	480	47.49	0.016	82.72	0.028	83.31
Bore/Drill Rigs	218	1	8	440	166.45	0.009	265.77	0.015	266.08
Cranes	190	1	8	440	86.63	0.012	138.32	0.018	138.71
Graders	174	1	8	40	122.92	0.017	17.84	0.002	17.89
Off-Highway Trucks	417	1	8	480	237.00	0.021	412.81	0.036	413.57
Off-Highway Tractors	255	1	8	40	134.67	0.018	19.55	0.003	19.60
Other Construction Equipment	190	1	8	460	113.23	0.012	189.01	0.019	189.42
Total							1139.72	0.125	1142.33

Desalinated Water Conveyance - Pipeline									
Off-Road Equipment	MaxHP	Number	Hour/day	Days	Emission Factor (pounds/hour)		Total Emissions (Metric Tons)		
					CO ₂	CH ₄	CO ₂	CH ₄	CO _{2e}
Pavers	132	1	8	20	82.01	0.016	5.95	0.001	5.98
Rollers	114	1	8	20	56.11	0.012	4.07	0.001	4.09
Paving Equipment	111	1	8	20	50.52	0.012	3.67	0.001	3.69
Signal Boards	119	1	8	40	79.47	0.014	11.53	0.002	11.58
Trenchers	82	1	8	440	47.49	0.016	75.83	0.026	76.37
Bore/Drill Rigs	218	1	8	40	166.45	0.009	24.16	0.001	24.19
Excavators	180	1	8	40	115.22	0.014	16.72	0.002	16.77
Cranes	190	1	8	440	86.63	0.012	138.32	0.018	138.71
Graders	174	1	8	40	122.92	0.017	17.84	0.002	17.89
Off-Highway Trucks	417	3	8	40	237.00	0.021	103.20	0.009	103.39
Crushing/Proc. Equipment	154	1	8	40	135.02	0.020	19.60	0.003	19.66
Tractors/Loaders/Backhoes	79	1	8	40	39.17	0.011	5.69	0.002	5.72
Off-Highway Tractors	255	1	8	480	134.67	0.018	234.58	0.032	235.24
Other Construction Equipment	190	2	8	460	113.23	0.012	378.02	0.039	378.83
Total							1039.19	0.139	1042.10

ASR Well Facilities									
Off-Road Equipment	MaxHP	Number	Hour/day	Days	Emission Factor (pounds/hour)		Total Emissions (Metric Tons)		
					CO ₂	CH ₄	CO ₂	CH ₄	CO _{2e}
Pavers	132	1	8	20	82.01	0.016	5.95	0.001	5.98
Rollers	114	1	8	20	56.11	0.012	4.07	0.001	4.09
Paving Equipment	111	1	8	20	50.52	0.012	3.67	0.001	3.69
Trenchers	82	1	8	300	47.49	0.016	51.70	0.017	52.07
Bore/Drill Rigs	218	1	8	300	166.45	0.009	181.21	0.010	181.42
Cranes	190	1	8	300	86.63	0.012	94.31	0.013	94.57
Graders	174	1	8	60	122.92	0.017	26.76	0.004	26.84
Off-Highway Trucks	417	2	8	360	237.00	0.021	619.21	0.054	620.36
Tractors/Loaders/Backhoes	79	1	8	60	39.17	0.011	8.53	0.002	8.58
Off-Highway Tractors	255	1	8	60	134.67	0.018	29.32	0.004	29.41
Other Construction Equipment	190	1	8	20	113.23	0.012	8.22	0.001	8.24
Total							1032.95	0.108	1035.23

Pump Station									
Off-Road Equipment	MaxHP	Number	Hour/day	Days	Emission Factor (pounds/hour)		Total Emissions (Metric Tons)		
					CO ₂	CH ₄	CO ₂	CH ₄	CO _{2e}
Trenchers	82	1	8	100	47.49	0.016	17.23	0.006	17.36
Cranes	190	1	8	100	86.63	0.012	31.44	0.004	31.52
Graders	174	1	8	20	122.92	0.017	8.92	0.001	8.95
Off-Highway Trucks	417	2	8	120	237.00	0.021	206.40	0.018	206.79

Off-Highway Tractors	255	1	8	20	134.67	0.018	9.77	0.001	9.80
Total							273.77	0.031	274.41

Off-Site Sources									
On-road Sources	Miles/trip	Trips	Running Exhaust Emission Factor (pound/mile)		Starting Emission Factor (pound/trip)		Total Emissions (Metric tons)		
			CO ₂	CH ₄	CO ₂	CH ₄	CO ₂	CH ₄	CO ₂ e
			Light duty truck	10	358800	0.94265	9E-05	0	0
Medium duty truck	65	127400	1.30452	9.1E-05	0.33301	0.00017	4919.34	0.35	4926.76
Heavy duty truck	65	78000	3.90138	0.00015	0.19742	0.0011	8979.14	0.39	8987.35
Total							15511.62	0.92	15530.88

Total CO₂e from construction = **19,024.95**

Notes:

Off-road emission factors were derived using OFFROAD2007

On-road emission factors were derived using EMFAC2007. Model years 1989 through 2009 were assumed with average speeds of 25 mph and 55 mph.

The assumed length for medium and heavy duty trips (65 miles) represents the distance from Marina to San Jose.

Trips are based on maximum daily trip rates for one year, five days a week. The total construction period would be two years.

CRITERIA POLLUTANT CONSTRUCTION EMISSIONS

Moss Landing Desalination Plant - Site Grading												
Off Road Equipment	MaxHP	Number	Hour/Day	Emission Factor (pounds/hour)				Emissions (pounds/day)				
				ROG	CO	NOX	PM	ROG	CO	NOX	PM10	PM2.5
Trenchers	82	1	8	0.177	0.466	0.633	0.060	1.42	3.73	5.07	0.48	0.44
Graders	174	1	8	0.184	0.740	1.428	0.082	1.47	5.92	11.43	0.66	0.61
Off-Highway Trucks	417	1	8	0.231	0.692	2.231	0.082	1.85	5.54	17.85	0.66	0.61
Off-Highway Tractors	255	1	8	0.202	0.593	1.837	0.080	1.62	4.74	14.70	0.64	0.59
Total =								6.35	19.92	49.04	2.43	2.25

Desalinated Water Conveyance - Pipeline												
Off Road Equipment	MaxHP	Number	Hour/Day	Emission Factor (pounds/hour)				Emissions (pounds/day)				
				ROG	CO	NOX	PM	ROG	CO	NOX	PM10	PM2.5
Pavers	132	1	8	0.182	0.588	1.161	0.090	1.45	4.71	9.29	0.72	0.66
Rollers	114	1	8	0.128	0.413	0.735	0.064	1.03	3.31	5.88	0.51	0.47
Paving Equipment	111	1	8	0.136	0.403	0.728	0.065	1.09	3.22	5.83	0.52	0.48
Signal Boards	119	1	8	0.157	0.538	0.984	0.082	1.26	4.30	7.87	0.65	0.60
Trenchers	82	1	8	0.177	0.466	0.633	0.060	1.42	3.73	5.07	0.48	0.44
Bore/Drill Rigs	218	1	8	0.102	0.533	1.176	0.046	0.82	4.26	9.41	0.36	0.34
Excavators	180	1	8	0.156	0.654	1.224	0.069	1.25	5.23	9.79	0.55	0.51
Cranes	190	1	8	0.128	0.465	1.049	0.055	1.03	3.72	8.39	0.44	0.41
Graders	174	1	8	0.184	0.740	1.428	0.082	1.47	5.92	11.43	0.66	0.61
Off-Highway Trucks	417	3	8	0.231	0.692	2.231	0.082	5.54	16.61	53.54	1.97	1.82
Crushing/Proc. Equipment	154	1	8	0.224	0.832	1.627	0.106	1.80	6.66	13.01	0.85	0.79
Tractors/Loaders/Backhoes	79	1	8	0.122	0.367	0.436	0.043	0.98	2.94	3.49	0.34	0.32
Off-Highway Tractors	255	1	8	0.202	0.593	1.837	0.080	1.62	4.74	14.70	0.64	0.59
Other Construction Equipment	190	2	8	0.128	0.594	1.113	0.058	2.05	9.50	17.80	0.93	0.86
Total =								78.84	175.50	3.24	9.62	8.90

ASR Wells												
Off Road Equipment	MaxHP	Number	Hour/Day	Emission Factor (pounds/hour)				Emissions (pounds/day)				
				ROG	CO	NOX	PM	ROG	CO	NOX	PM10	PM2.5
Pavers	132	1	8	0.182	0.588	1.161	0.090	1.45	4.71	9.29	0.72	0.66
Rollers	114	1	8	0.128	0.413	0.735	0.064	1.03	3.31	5.88	0.51	0.47
Paving Equipment	111	1	8	0.136	0.403	0.728	0.065	1.09	3.22	5.83	0.52	0.48
Trenchers	82	1	8	0.177	0.466	0.633	0.060	1.42	3.73	5.07	0.48	0.44
Bore/Drill Rigs	218	1	24	0.102	0.533	1.176	0.046	2.45	12.79	28.24	1.09	1.01
Cranes	190	1	8	0.128	0.465	1.049	0.055	1.03	3.72	8.39	0.44	0.41
Graders	174	1	8	0.184	0.740	1.428	0.082	1.47	5.92	11.43	0.66	0.61
Off-Highway Trucks	417	2	8	0.231	0.692	2.231	0.082	3.70	11.07	35.70	1.31	1.22
Tractors/Loaders/Backhoes	79	1	8	0.122	0.367	0.436	0.043	0.98	2.94	3.49	0.34	0.32
Off-Highway Tractors	255	1	8	0.202	0.593	1.837	0.080	1.62	4.74	14.70	0.64	0.59
Other Construction Equipment	190	1	8	0.128	0.594	1.113	0.058	1.02	4.75	8.90	0.46	0.43
Total =								17.25	60.90	136.90	7.17	6.63

Tarp Flats Pump Station												
Off Road Equipment	MaxHP	Number	Hour/Day	Emission Factor (pounds/hour)				Emissions (pounds/day)				
				ROG	CO	NOX	PM	ROG	CO	NOX	PM10	PM2.5
Trenchers	82	1	8	0.177	0.466	0.633	0.060	1.42	3.73	5.07	0.48	0.44
Cranes	190	1	8	0.128	0.465	1.049	0.055	1.03	3.72	8.39	0.44	0.41
Graders	174	1	8	0.184	0.740	1.428	0.082	1.47	5.92	11.43	0.66	0.61
Off-Highway Trucks	417	2	8	0.231	0.692	2.231	0.082	3.70	11.07	35.70	1.31	1.22
Off-Highway Tractors	255	1	8	0.202	0.593	1.837	0.080	1.62	4.74	14.70	0.64	0.59
Total =								9.23	29.18	75.28	3.53	3.26
TOTAL =								111.7	285.5	264.5	22.7	21.0

Other Construction Equipment

Off Road Equipment	MaxHP	Number	Hour/Day	Emission Factor (pounds/hour)				Emissions (pounds/day)				
				ROG	CO	NOX	PM	ROG	CO	NOX	PM10	PM2.5
Bore/Drill Rigs	218	1	8	0.102	0.533	1.176	0.046	0.82	4.26	9.41	0.36	0.34
Crushing/Proc. Equipment	154	1	8	0.224	0.832	1.627	0.106	1.80	6.66	13.01	0.85	0.79
Bore/Drill Rigs	218	1	24	0.102	0.533	1.176	0.046	2.45	12.79	28.24	1.09	1.01
TOTAL =								5.06		50.66		

CONSTRUCTION FUGITIVE DUST

Grading and Earth Moving Fugitive Dust (Moss Landing and North Marina)

Fugitive dust from Desalination Plant and Pump Station Soil Disturbance

Area Disturbed (acres)	Emission Factor (pounds/acre) ¹	Emissions ² (pounds/day)	
		PM10	PM2.5 ³
2	20	40.0	8.3
	Mitigated =	18.0	3.7

Fugitive dust from Pipeline Construction Earth Moving Activities

Soil Disturbed ⁴ (cubic yards/day)	Emission Factor (pounds/cubic yard) ⁵	Emissions (pounds/day)	
		PM10	PM2.5 ³
444	0.118	52.4	10.9
	Mitigated =	23.6	4.9

1

The Midwest Research Institute has derived a value of 0.11 tons/acre/month, which converts to 10 pounds per day, assuming 22 workdays per month. 1 California Air Resources Board review has reviewed this factor and concluded that it represents PM10 emissions with watering. Consequently, ARB concludes that 20 pounds per acre day is more appropriate for unmitigated fugitive dust conditions (<http://www.arb.ca.gov/ei/areasrc/fulpdf/ful7-7.pdf>)

2 Mitigation is assumed to reduce emissions by 55 percent, based URBEMIS 2007

3 PM2.5 fractions for soil disturbance and earth moving were obtained from SCAQMD, 2006.

4 Assumes 444 cubic yards of soil = daily trench dimensions (6 feet * 8 feet * 250 feet) = 12,000 ft³ = 444 cubic yards

5 Based on low level of detail emission factors included in URBEMIS 2007. Assumes 0.059 tons of PM10 per 1,000 cubic yards handled or approximately 0.118 pounds per cubic yard.

Unpaved Fugitive Dust From Truck Travel

Moss Landing Project - Unpaved Road Fugitive Dust from Trucks

VMT ⁶ (miles/day)	Emission Factors (pounds/VMT) ⁷		Emissions (pounds/day)	
	PM10	PM2.5	PM10	PM2.5
12.84	1.6	0.2	20.9	2.1
74.5	1.6	0.2	121.5	12.1
		Unmitigated =	142.4	14.2
		Mitigated ⁸ =	30.4	3.0

North Marina Project - Unpaved Road Fugitive Dust from Trucks

VMT ⁹ (miles/day)	Emission Factors (pounds/VMT)		Emissions (pounds/day)	
	PM10	PM2.5	PM10	PM2.5
12.84	1.6	0.2	20.9	2.1
212.4	1.6	0.2	346.4	34.6
61.5	1.6	0.2	100.3	10.0
		Unmitigated =	467.6	46.8
		Mitigated ¹⁰ =	25.1	2.5

6 Assumes that there would be 214 daily trips along a 0.06 mile unpaved road to the terminal reservoir site, resulting in 12.84 VMT on unpaved roads. Also assumes 298 trips per day along a 0.25 dirt road, resulting in an additional 74.5 VMT per day on unpaved roads.

7 Based on AP-42 Emission Factor: $E \text{ (lbs/VMT)} = k \text{ (s/12)}^a \text{ (W/3)}^b$

Where:

E = emission rate in pounds per vehicle mile traveled

k = particle size multiplier (assumed 1.5 lb/VMT for PM10 and 0.15 lb/VMT for PM2.5 per AP-42, Table 13.2.2-2)

a = 0.9

b = 0.45

s = silt content (assumed 8.5% for a construction site per AP-42, Table 13.2.2-1)

W = average weight (tons) of vehicles (assumed 7.2 tons; 64% trucks weigh 2 tons, 23% weigh 8 tons, and 14% weigh 30 tons)

8 Mitigated emissions assume that the 0.06 miles of unpaved road to the terminal reservoir site would be paved, thereby eliminating fugitive emissions from the 12.84 VMT. For the 0.25 dirt road, it was assumed that twice daily and limiting speeds to 15 mph, emissions could be reduced by 75%, based URBEMIS 2007.

9 Assumes that there would be 214 daily trips along a 0.06 mile unpaved road to the terminal reservoir site, resulting in 12.84 VMT on unpaved roads. Also assumes 354 trips per day along a 0.6 dirt road to the WTP and 246 trips along a 0.25 mile road during pipeline construction, resulting in an additional 212.4 and 61.5 VMT per day on unpaved roads respectively.

10 Mitigated emissions assume that the 0.06 miles of unpaved road to the terminal reservoir site and 0.6 miles to WTP would be paved, thereby eliminating fugitive emissions from the 12.84 and 212.4 VMT. For the 0.25 mile dirt road used during pipeline construction, it was assumed that twice daily watering and limiting speeds to 15 mph, emissions could be reduced by 75%.

Total Fugitive Dust

Moss Landing

TOTAL	Emissions (pounds/day)	
	PM10	PM2.5
Unmitigated =	234.8	33.5
Mitigated =	72.0	17.7

North Marina

TOTAL	Emissions (pounds/day)	
	PM10	PM2.5
Unmitigated =	560.0	66.0
Mitigated =	66.6	17.1

Moss Landing Construction Emissions

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>
Off-road Exhaust	111.7	285.5	264.5	22.7	21.0
Onroad Exhaust	30.6	214.4	370.7	9.0	7.1
Fugitive Dust	---	---	---	234.8	33.5
Total	142.3	499.9	635.2	266.6	61.6
Significance Criteria	---	---	---	82	---
Significant Impact?	No	No	No	YES	NO

Mitigated PM10 103.7

North Marina Construction Emissions

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>
Off-road Exhaust	111.7	285.5	264.5	22.7	21.0
Onroad Exhaust	35.8	276.2	414.4	11.6	9.2
Fugitive Dust	---	---	---	560.0	66.0
Total	147.5	561.7	678.8	594.3	96.3
Significance Criteria	---	---	---	82	---
Significant Impact?	No	No	No	YES	NO

Mitigated PM10 101.0

Moss Landing Operational Emissions

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>
Onroad Exhaust	0.4	2.8	4.7	0.1	0.1
Significance Criteria	137	137	550	82	---
Significant Impact?	No	No	No	YES	NO

North Marina Operational Emissions

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>PM10</u>	<u>PM2.5</u>
Onroad Exhaust	0.5	3.6	5.1	0.1	0.1
Significance Criteria	137	137	550	82	---
Significant Impact?	No	No	No	YES	NO

ONROAD CRITERIA POLLUTANT EMISSIONS

Emission Factors

Vehicle Type	Running Exhaust Emission Factors (pounds/mile)					Starting Emission Factors (pounds/trip)				
	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5
Light duty truck	0.0003	0.0012	0.0084	8.3E-05	5.0E-05	0.0031	0.0016	0.0319	4.409E-05	3.968E-05
Medium duty truck	0.0002	0.0014	0.0067	1.4E-04	6.9E-05	0.0031	0.0030	0.0357	6.173E-05	4.850E-05
Heavy duty truck	0.0031	0.0389	0.0181	1.5E-03	1.3E-03	0.0195	0.0305	0.2057	2.646E-05	2.205E-05

Note: used EMFAC 2007, for model years 1989 through 2009; average of speeds 25 mph and 55 mph.

Daily Construction Emissions (pounds/day)

Moss Landing							
Vehicle Type	Trips/day	miles/trip	ROG	NOx	CO	PM10	PM2.5
Light duty truck	1380	10	7.82	18.31	160.56	1.20	0.74
Medium duty truck	490	15	3.08	11.93	66.99	1.03	0.53
Heavy duty truck	300	15	19.74	184.16	143.17	6.75	5.85
Total	2170	NA	30.64	214.39	370.72	8.99	7.12

North Marina							
Vehicle Type	Trips/day	miles/trip	ROG	NOx	CO	PM10	PM2.5
Light duty truck	1380	10	7.82	18.31	160.56	1.20	0.74
Medium duty truck	490	20	3.60	15.41	83.49	1.37	0.70
Heavy duty truck	300	20	24.37	242.49	170.32	9.00	7.80
Total	2170	NA	35.79	276.22	414.37	11.57	9.24

For the Moss Landing project, average truck trip length represents from the County line (south of Watsonville) down to Marina.
 For the North Marina project, average truck trip length represents from the County line (south of Watsonville) down to Seaside.
 Daily trip amounts obtained from the EIR Team traffic engineer.

Daily Operational Emissions (pounds/day)

Moss Landing							
Vehicle Type	Trips/day	miles/trip	ROG	NOx	CO	PM10	PM2.5
Light duty truck	24	10	0.14	0.32	2.79	0.02	0.01
Medium duty truck	0	0	0.00	0.00	0.00	0.00	0.00
Heavy duty truck	4	15	0.26	2.46	1.91	0.09	0.08
Total	28	NA	0.40	2.77	4.70	0.11	0.09

North Marina							
Vehicle Type	Trips/day	miles/trip	ROG	NOx	CO	PM10	PM2.5
Light duty truck	24	10	0.14	0.32	2.79	0.02	0.01
Medium duty truck	0	0	0.00	0.00	0.00	0.00	0.00
Heavy duty truck	4	20	0.32	3.23	2.27	0.12	0.10
Total	28	NA	0.46	3.55	5.06	0.14	0.12

Equipment	MaxHP	ROG EF	CO EF	NOX EF	CO2 EF	SO2 EF	PM EF	N2O EF	CH4 EF
Pavers	25	2.93E-02	8.70E-02	1.64E-01	1.86E+01	2.37E-04	1.00E-02	0.00E+00	2.65E-03
Pavers	50	1.71E-01	3.95E-01	3.15E-01	2.80E+01	3.62E-04	3.71E-02	0.00E+00	1.54E-02
Pavers	120	1.73E-01	5.28E-01	1.02E+00	6.91E+01	8.11E-04	8.87E-02	0.00E+00	1.56E-02
Pavers	132	1.82E-01	5.88E-01	1.16E+00	8.20E+01	9.49E-04	8.98E-02	0.00E+00	1.64E-02
Pavers	175	2.14E-01	8.03E-01	1.68E+00	1.28E+02	1.44E-03	9.38E-02	0.00E+00	1.94E-02
Pavers	250	2.55E-01	7.38E-01	2.45E+00	1.94E+02	2.19E-03	1.01E-01	0.00E+00	2.30E-02
Pavers	500	2.75E-01	1.27E+00	2.66E+00	2.33E+02	2.29E-03	1.08E-01	0.00E+00	2.48E-02
Plate Compactors	15	5.08E-03	2.63E-02	3.21E-02	4.31E+00	6.71E-05	#NAME?	0.00E+00	4.59E-04
Rollers	15	7.37E-03	3.86E-02	4.62E-02	6.31E+00	9.83E-05	2.32E-03	0.00E+00	6.65E-04
Rollers	25	1.68E-02	5.54E-02	1.08E-01	1.33E+01	1.69E-04	5.98E-03	0.00E+00	1.52E-03
Rollers	50	1.35E-01	3.26E-01	2.79E-01	2.60E+01	3.36E-04	3.07E-02	0.00E+00	1.22E-02
Rollers	114	1.28E-01	4.13E-01	7.35E-01	5.61E+01	6.61E-04	6.40E-02	0.00E+00	1.16E-02
Rollers	120	1.28E-01	4.22E-01	7.78E-01	5.89E+01	6.91E-04	6.71E-02	0.00E+00	1.15E-02
Rollers	175	1.56E-01	6.30E-01	1.27E+00	1.08E+02	1.22E-03	6.86E-02	0.00E+00	1.41E-02
Rollers	250	1.64E-01	4.80E-01	1.71E+00	1.53E+02	1.72E-03	6.42E-02	0.00E+00	1.48E-02
Rollers	500	2.11E-01	8.42E-01	2.21E+00	2.19E+02	2.15E-03	8.30E-02	0.00E+00	1.90E-02
Scrapers	120	2.36E-01	7.25E-01	1.37E+00	9.38E+01	1.10E-03	1.23E-01	0.00E+00	2.13E-02
Scrapers	175	2.51E-01	9.36E-01	1.92E+00	1.48E+02	1.66E-03	1.10E-01	0.00E+00	2.26E-02
Scrapers	250	2.75E-01	7.75E-01	2.61E+00	2.09E+02	2.35E-03	1.07E-01	0.00E+00	2.48E-02
Scrapers	500	3.81E-01	1.65E+00	3.61E+00	3.21E+02	3.15E-03	1.46E-01	0.00E+00	3.44E-02
Scrapers	750	6.61E-01	2.85E+00	6.35E+00	5.55E+02	5.58E-03	2.54E-01	0.00E+00	5.97E-02
Paving Equipment	25	1.59E-02	5.24E-02	1.02E-01	1.26E+01	1.60E-04	5.66E-03	0.00E+00	1.44E-03
Paving Equipment	50	1.45E-01	3.35E-01	2.69E-01	2.39E+01	3.09E-04	3.15E-02	0.00E+00	1.31E-02
Paving Equipment	111	1.36E-01	4.03E-01	7.28E-01	5.05E+01	5.96E-04	6.45E-02	0.00E+00	1.23E-02
Paving Equipment	120	1.35E-01	4.13E-01	7.96E-01	5.45E+01	6.39E-04	6.94E-02	0.00E+00	1.22E-02
Paving Equipment	175	1.67E-01	6.26E-01	1.32E+00	1.01E+02	1.14E-03	7.31E-02	0.00E+00	1.51E-02
Paving Equipment	250	1.59E-01	4.60E-01	1.53E+00	1.22E+02	1.37E-03	6.28E-02	0.00E+00	1.43E-02
Surfacing Equipment	50	6.28E-02	1.56E-01	1.47E-01	1.41E+01	1.82E-04	1.49E-02	0.00E+00	5.67E-03
Surfacing Equipment	120	1.27E-01	4.38E-01	8.09E-01	6.37E+01	7.47E-04	6.54E-02	0.00E+00	1.15E-02
Surfacing Equipment	175	1.13E-01	4.81E-01	9.68E-01	8.57E+01	9.64E-04	4.93E-02	0.00E+00	1.02E-02
Surfacing Equipment	250	1.34E-01	4.09E-01	1.45E+00	1.35E+02	1.52E-03	5.24E-02	0.00E+00	1.20E-02
Surfacing Equipment	500	1.97E-01	8.39E-01	2.17E+00	2.21E+02	2.17E-03	7.82E-02	0.00E+00	1.78E-02
Surfacing Equipment	750	3.14E-01	1.32E+00	3.47E+00	3.47E+02	3.49E-03	1.24E-01	0.00E+00	2.84E-02
Signal Boards	15	7.18E-03	3.76E-02	4.49E-02	6.16E+00	9.59E-05	1.84E-03	0.00E+00	6.47E-04
Signal Boards	50	1.58E-01	3.91E-01	3.74E-01	3.62E+01	4.67E-04	3.80E-02	0.00E+00	1.43E-02
Signal Boards	119	1.57E-01	5.38E-01	9.84E-01	7.95E+01	9.32E-04	8.16E-02	0.00E+00	1.42E-02
Signal Boards	120	1.59E-01	5.42E-01	9.92E-01	8.01E+01	9.40E-04	8.23E-02	0.00E+00	1.43E-02
Signal Boards	175	2.01E-01	8.46E-01	1.71E+00	1.54E+02	1.74E-03	8.77E-02	0.00E+00	1.82E-02
Signal Boards	250	2.20E-01	6.52E-01	2.64E+00	2.55E+02	2.87E-03	8.43E-02	0.00E+00	1.98E-02
Trenchers	15	9.84E-03	5.16E-02	6.16E-02	8.46E+00	1.32E-04	2.52E-03	0.00E+00	8.88E-04
Trenchers	25	4.02E-02	1.35E-01	2.58E-01	3.29E+01	4.17E-04	1.41E-02	0.00E+00	3.63E-03
Trenchers	50	1.93E-01	4.46E-01	3.66E-01	3.29E+01	4.25E-04	4.21E-02	0.00E+00	1.74E-02
Trenchers	82	1.77E-01	4.66E-01	6.33E-01	4.75E+01	5.78E-04	5.97E-02	0.00E+00	1.60E-02
Trenchers	120	1.59E-01	4.90E-01	9.51E-01	6.48E+01	7.61E-04	8.05E-02	0.00E+00	1.43E-02
Trenchers	175	2.36E-01	8.93E-01	1.88E+00	1.44E+02	1.62E-03	1.03E-01	0.00E+00	2.13E-02
Trenchers	250	2.92E-01	8.58E-01	2.81E+00	2.23E+02	2.51E-03	1.16E-01	0.00E+00	2.63E-02
Trenchers	500	3.64E-01	1.77E+00	3.57E+00	3.11E+02	3.05E-03	1.44E-01	0.00E+00	3.28E-02
Trenchers	750	6.93E-01	3.34E+00	6.84E+00	1.69E+06	5.90E-03	2.74E-01	0.00E+00	6.25E-02
Bore/Drill Rigs	15	1.21E-02	6.31E-02	7.56E-02	1.03E+01	1.61E-04	3.80E-03	0.00E+00	1.09E-03
Bore/Drill Rigs	25	2.01E-02	6.64E-02	1.30E-01	1.60E+01	2.03E-04	7.17E-03	0.00E+00	1.82E-03
Bore/Drill Rigs	50	6.68E-02	2.61E-01	2.85E-01	3.10E+01	4.01E-04	2.22E-02	0.00E+00	6.03E-03
Bore/Drill Rigs	120	8.57E-02	4.86E-01	6.80E-01	7.71E+01	9.04E-04	5.21E-02	0.00E+00	7.73E-03
Bore/Drill Rigs	175	1.05E-01	7.53E-01	1.02E+00	1.41E+02	1.59E-03	5.27E-02	0.00E+00	9.47E-03
Bore/Drill Rigs	218	1.02E-01	5.33E-01	1.18E+00	1.66E+02	1.87E-03	4.55E-02	0.00E+00	9.21E-03
Bore/Drill Rigs	250	9.98E-02	3.48E-01	1.31E+00	1.88E+02	2.11E-03	3.95E-02	0.00E+00	9.00E-03
Bore/Drill Rigs	500	1.52E-01	5.59E-01	1.84E+00	3.11E+02	3.05E-03	6.24E-02	0.00E+00	1.37E-02
Bore/Drill Rigs	750	3.08E-01	1.10E+00	3.79E+00	6.15E+02	6.18E-03	1.26E-01	0.00E+00	2.77E-02
Bore/Drill Rigs	1000	5.74E-01	1.73E+00	8.75E+00	9.27E+02	9.33E-03	2.16E-01	0.00E+00	5.18E-02
Excavators	25	2.00E-02	6.76E-02	1.27E-01	1.64E+01	2.08E-04	6.64E-03	0.00E+00	1.80E-03
Excavators	50	1.25E-01	3.26E-01	2.68E-01	2.50E+01	3.23E-04	2.97E-02	0.00E+00	1.13E-02
Excavators	120	1.52E-01	5.37E-01	8.98E-01	7.36E+01	8.63E-04	8.39E-02	0.00E+00	1.37E-02
Excavators	175	1.56E-01	6.71E-01	1.20E+00	1.12E+02	1.26E-03	7.02E-02	0.00E+00	1.41E-02
Excavators	180	1.56E-01	6.54E-01	1.22E+00	1.15E+02	1.30E-03	6.92E-02	0.00E+00	1.41E-02
Excavators	250	1.53E-01	4.14E-01	1.60E+00	1.59E+02	1.78E-03	5.55E-02	0.00E+00	1.38E-02
Excavators	500	2.07E-01	6.00E-01	2.06E+00	2.34E+02	2.29E-03	7.54E-02	0.00E+00	1.87E-02
Excavators	750	3.46E-01	1.09E+00	3.52E+00	3.87E+02	3.89E-03	1.27E-01	0.00E+00	3.12E-02
Concrete/Industrial Saws	25	2.01E-02	6.78E-02	1.29E-01	1.65E+01	2.09E-04	7.05E-03	0.00E+00	1.82E-03
Concrete/Industrial Saws	50	1.32E-01	3.31E-01	3.12E-01	3.02E+01	3.90E-04	3.17E-02	0.00E+00	1.19E-02
Concrete/Industrial Saws	120	1.44E-01	5.02E-01	9.10E-01	7.41E+01	8.69E-04	7.54E-02	0.00E+00	1.30E-02
Concrete/Industrial Saws	175	2.05E-01	8.82E-01	1.75E+00	1.60E+02	1.80E-03	9.02E-02	0.00E+00	1.85E-02
Cement and Mortar Mixers	15	8.24E-03	3.91E-02	5.31E-02	6.31E+00	9.83E-05	3.28E-03	0.00E+00	7.43E-04
Cement and Mortar Mixers	25	3.75E-02	9.91E-02	1.68E-01	1.75E+01	2.23E-04	1.16E-02	0.00E+00	3.38E-03

Cranes	50	1.37E-01	3.26E-01	2.58E-01	2.32E+01	2.99E-04	3.04E-02	0.00E+00	1.24E-02
Cranes	120	1.19E-01	3.76E-01	6.89E-01	5.01E+01	5.88E-04	6.32E-02	0.00E+00	1.07E-02
Cranes	175	1.27E-01	4.90E-01	9.84E-01	8.03E+01	9.03E-04	5.63E-02	0.00E+00	1.15E-02
Cranes	190	1.28E-01	4.65E-01	1.05E+00	8.66E+01	9.75E-04	5.50E-02	0.00E+00	1.16E-02
Cranes	250	1.31E-01	3.66E-01	1.31E+00	1.12E+02	1.26E-03	5.01E-02	0.00E+00	1.19E-02
Cranes	500	1.91E-01	7.16E-01	1.88E+00	1.80E+02	1.77E-03	7.27E-02	0.00E+00	1.73E-02
Cranes	750	3.24E-01	1.21E+00	3.23E+00	3.03E+02	3.04E-03	1.24E-01	0.00E+00	2.92E-02
Cranes	9999	1.15E+00	4.47E+00	1.26E+01	9.70E+02	9.75E-03	3.97E-01	0.00E+00	1.04E-01
Graders	50	1.51E-01	3.69E-01	3.00E-01	2.75E+01	3.56E-04	3.42E-02	0.00E+00	1.36E-02
Graders	120	1.66E-01	5.51E-01	9.81E-01	7.49E+01	8.79E-04	8.96E-02	0.00E+00	1.50E-02
Graders	174	1.84E-01	7.40E-01	1.43E+00	1.23E+02	1.38E-03	8.22E-02	0.00E+00	1.66E-02
Graders	175	1.84E-01	7.44E-01	1.44E+00	1.24E+02	1.39E-03	8.21E-02	0.00E+00	1.66E-02
Graders	250	1.86E-01	5.19E-01	1.90E+00	1.72E+02	1.93E-03	7.05E-02	0.00E+00	1.67E-02
Graders	500	2.25E-01	8.12E-01	2.25E+00	2.29E+02	2.25E-03	8.53E-02	0.00E+00	2.03E-02
Graders	750	4.79E-01	1.72E+00	4.88E+00	4.85E+02	4.88E-03	1.83E-01	0.00E+00	4.33E-02
Off-Highway Trucks	175	1.84E-01	7.64E-01	1.37E+00	1.25E+02	1.41E-03	8.15E-02	0.00E+00	1.66E-02
Off-Highway Trucks	250	1.72E-01	4.53E-01	1.73E+00	1.66E+02	1.87E-03	6.14E-02	0.00E+00	1.56E-02
Off-Highway Trucks	417	2.31E-01	6.92E-01	2.23E+00	2.37E+02	2.41E-03	8.21E-02	0.00E+00	2.08E-02
Off-Highway Trucks	500	2.60E-01	8.10E-01	2.48E+00	2.72E+02	2.67E-03	9.24E-02	0.00E+00	2.35E-02
Off-Highway Trucks	750	4.25E-01	1.31E+00	4.14E+00	4.41E+02	4.44E-03	1.52E-01	0.00E+00	3.83E-02
Off-Highway Trucks	1000	6.76E-01	2.23E+00	7.65E+00	6.24E+02	6.28E-03	2.33E-01	0.00E+00	6.10E-02
Crushing/Proc. Equipment	50	2.40E-01	5.72E-01	4.76E-01	4.40E+01	5.69E-04	5.43E-02	0.00E+00	2.17E-02
Crushing/Proc. Equipment	120	1.86E-01	6.00E-01	1.09E+00	8.31E+01	9.74E-04	9.97E-02	0.00E+00	1.68E-02
Crushing/Proc. Equipment	154	2.24E-01	8.32E-01	1.63E+00	1.35E+02	1.53E-03	1.06E-01	0.00E+00	2.02E-02
Crushing/Proc. Equipment	175	2.48E-01	9.76E-01	1.96E+00	1.67E+02	1.88E-03	1.11E-01	0.00E+00	2.24E-02
Crushing/Proc. Equipment	250	2.39E-01	6.61E-01	2.68E+00	2.44E+02	2.75E-03	9.00E-02	0.00E+00	2.15E-02
Crushing/Proc. Equipment	500	3.27E-01	1.15E+00	3.65E+00	3.73E+02	3.66E-03	1.26E-01	0.00E+00	2.95E-02
Crushing/Proc. Equipment	750	5.23E-01	1.77E+00	5.94E+00	5.88E+02	5.92E-03	2.01E-01	0.00E+00	4.72E-02
Crushing/Proc. Equipment	9999	1.46E+00	5.20E+00	1.66E+01	1.31E+03	1.31E-02	5.03E-01	0.00E+00	1.32E-01
Rough Terrain Forklifts	50	1.73E-01	4.32E-01	3.61E-01	3.38E+01	4.37E-04	4.01E-02	0.00E+00	1.56E-02
Rough Terrain Forklifts	120	1.30E-01	4.49E-01	7.79E-01	6.24E+01	7.32E-04	7.15E-02	0.00E+00	1.18E-02
Rough Terrain Forklifts	175	1.74E-01	7.32E-01	1.37E+00	1.25E+02	1.40E-03	7.86E-02	0.00E+00	1.57E-02
Rough Terrain Forklifts	250	1.62E-01	4.54E-01	1.78E+00	1.71E+02	1.92E-03	6.11E-02	0.00E+00	1.47E-02
Rough Terrain Forklifts	500	2.22E-01	7.49E-01	2.35E+00	2.56E+02	2.52E-03	8.43E-02	0.00E+00	2.00E-02
Rubber Tired Loaders	25	2.07E-02	6.96E-02	1.33E-01	1.69E+01	2.15E-04	7.25E-03	0.00E+00	1.87E-03
Rubber Tired Loaders	50	1.68E-01	4.13E-01	3.38E-01	3.11E+01	4.02E-04	3.83E-02	0.00E+00	1.52E-02
Rubber Tired Loaders	120	1.29E-01	4.31E-01	7.65E-01	5.89E+01	6.90E-04	6.97E-02	0.00E+00	1.16E-02
Rubber Tired Loaders	175	1.56E-01	6.35E-01	1.22E+00	1.06E+02	1.20E-03	6.97E-02	0.00E+00	1.41E-02
Rubber Tired Loaders	250	1.58E-01	4.43E-01	1.63E+00	1.49E+02	1.67E-03	5.99E-02	0.00E+00	1.42E-02
Rubber Tired Loaders	500	2.28E-01	8.22E-01	2.30E+00	2.37E+02	2.32E-03	8.67E-02	0.00E+00	2.05E-02
Rubber Tired Loaders	750	4.70E-01	1.68E+00	4.83E+00	4.85E+02	4.88E-03	1.80E-01	0.00E+00	4.24E-02
Rubber Tired Loaders	1000	6.51E-01	2.41E+00	7.42E+00	5.93E+02	5.97E-03	2.26E-01	0.00E+00	5.88E-02
Rubber Tired Dozers	175	2.49E-01	8.77E-01	1.87E+00	1.29E+02	1.46E-03	1.08E-01	0.00E+00	2.25E-02
Rubber Tired Dozers	250	2.89E-01	8.11E-01	2.56E+00	1.83E+02	2.06E-03	1.12E-01	0.00E+00	2.61E-02
Rubber Tired Dozers	500	3.76E-01	1.86E+00	3.35E+00	2.65E+02	2.60E-03	1.43E-01	0.00E+00	3.39E-02
Rubber Tired Dozers	750	5.67E-01	2.81E+00	5.12E+00	3.98E+02	4.01E-03	2.17E-01	0.00E+00	5.12E-02
Rubber Tired Dozers	1000	8.83E-01	4.49E+00	8.76E+00	5.91E+02	5.95E-03	3.16E-01	0.00E+00	7.96E-02
Tractors/Loaders/Backhoes	25	2.24E-02	6.96E-02	1.35E-01	1.58E+01	2.01E-04	7.91E-03	0.00E+00	2.02E-03
Tractors/Loaders/Backhoes	50	1.39E-01	3.68E-01	3.16E-01	3.03E+01	3.92E-04	3.36E-02	0.00E+00	1.25E-02
Tractors/Loaders/Backhoes	79	1.22E-01	3.67E-01	4.36E-01	3.92E+01	4.81E-04	4.26E-02	0.00E+00	1.10E-02
Tractors/Loaders/Backhoes	120	9.90E-02	3.66E-01	6.06E-01	5.17E+01	6.06E-04	5.53E-02	0.00E+00	8.93E-03
Tractors/Loaders/Backhoes	175	1.30E-01	5.88E-01	1.04E+00	1.01E+02	1.14E-03	5.96E-02	0.00E+00	1.18E-02
Tractors/Loaders/Backhoes	250	1.50E-01	4.23E-01	1.66E+00	1.72E+02	1.93E-03	5.57E-02	0.00E+00	1.35E-02
Tractors/Loaders/Backhoes	500	2.75E-01	9.00E-01	2.92E+00	3.45E+02	3.88E-03	1.04E-01	0.00E+00	2.48E-02
Tractors/Loaders/Backhoes	750	4.17E-01	1.35E+00	4.51E+00	5.17E+02	5.82E-03	1.58E-01	0.00E+00	3.76E-02
Crawler Tractors	50	1.54E-01	3.61E-01	2.81E-01	2.49E+01	3.21E-04	3.36E-02	0.00E+00	1.39E-02
Crawler Tractors	120	1.64E-01	5.07E-01	9.51E-01	6.58E+01	7.71E-04	8.58E-02	0.00E+00	1.48E-02
Crawler Tractors	175	2.04E-01	7.66E-01	1.56E+00	1.21E+02	1.36E-03	8.94E-02	0.00E+00	1.84E-02
Crawler Tractors	250	2.15E-01	6.04E-01	2.05E+00	1.66E+02	1.87E-03	8.31E-02	0.00E+00	1.94E-02
Crawler Tractors	500	3.04E-01	1.30E+00	2.87E+00	2.59E+02	2.54E-03	1.16E-01	0.00E+00	2.74E-02
Crawler Tractors	750	5.47E-01	2.32E+00	5.25E+00	4.64E+02	4.67E-03	2.10E-01	0.00E+00	4.94E-02
Crawler Tractors	1000	8.40E-01	3.68E+00	8.91E+00	6.58E+02	6.61E-03	2.95E-01	0.00E+00	7.58E-02
Skid Steer Loaders	25	2.70E-02	7.36E-02	1.28E-01	1.38E+01	1.75E-04	8.58E-03	0.00E+00	2.43E-03
Skid Steer Loaders	50	8.91E-02	2.61E-01	2.50E-01	2.55E+01	3.30E-04	2.37E-02	0.00E+00	8.04E-03
Skid Steer Loaders	120	6.76E-02	2.85E-01	4.47E-01	4.27E+01	5.01E-04	3.87E-02	0.00E+00	6.10E-03
Off-Highway Tractors	120	2.57E-01	7.52E-01	1.48E+00	9.37E+01	1.10E-03	1.30E-01	0.00E+00	2.32E-02
Off-Highway Tractors	175	2.42E-01	8.64E-01	1.85E+00	1.30E+02	1.47E-03	1.05E-01	0.00E+00	2.19E-02
Off-Highway Tractors	250	1.96E-01	5.60E-01	1.78E+00	1.30E+02	1.47E-03	7.73E-02	0.00E+00	1.77E-02
Off-Highway Tractors	255	2.02E-01	5.93E-01	1.84E+00	1.35E+02	1.51E-03	7.95E-02	0.00E+00	1.82E-02
Off-Highway Tractors	750	7.71E-01	3.83E+00	7.15E+00	5.68E+02	5.71E-03	2.99E-01	0.00E+00	6.96E-02
Off-Highway Tractors	1000	1.17E+00	5.95E+00	1.18E+01	8.14E+02	8.18E-03	4.20E-01	0.00E+00	1.06E-01
Dumpers/Tenders	25	1.14E-02	3.45E-02	6.61E-02	7.62E+00	9.67E-05	3.94E-03	0.00E+00	1.02E-03
Other Construction Equipment	15	1.18E-02	6.17E-02	7.39E-02	1.01E+01	1.57E-04	3.72E-03	0.00E+00	1.06E-03

Other Construction Equipment	25	1.67E-02	5.49E-02	1.07E-01	1.32E+01	1.68E-04	5.93E-03	0.00E+00	1.50E-03
Other Construction Equipment	50	1.13E-01	3.03E-01	2.83E-01	2.80E+01	3.62E-04	2.82E-02	0.00E+00	1.02E-02
Other Construction Equipment	120	1.44E-01	5.47E-01	9.23E-01	8.08E+01	9.48E-04	7.88E-02	0.00E+00	1.30E-02
Other Construction Equipment	175	1.25E-01	5.91E-01	1.06E+00	1.06E+02	1.20E-03	5.72E-02	0.00E+00	1.13E-02
Other Construction Equipment	190	1.28E-01	5.94E-01	1.11E+00	1.13E+02	1.26E-03	5.79E-02	0.00E+00	1.16E-02
Other Construction Equipment	500	1.81E-01	6.53E-01	2.12E+00	2.54E+02	2.49E-03	7.21E-02	0.00E+00	1.64E-02

Title : Onroad Monterey County
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2008/10/16 10:21:02
 Scen Year: 2009 -- All model years in the range 1989 to 2009 selected
 Season : Annual
 Area : Monterey

 Year: 2009 -- Model Years 1989 to 2009 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant	Name:	Reactive	Org	Gases	Temperatu 60F	Relative	Humidity:	50%
Speed								
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
	25	0	0.15	0.126	1.801	0	0	0.287
	55	0	0.08	0.066	1	0	0	0.156
	40		0.115	0.096	1.4005			

Pollutant	Name:	Methane	Temperatu 60F	Relative	Humidity:	50%		
Speed								
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
	25	0	0.048	0.048	0.087	0	0	0.052
	55	0	0.034	0.035	0.052	0	0	0.036
	40		0.041	0.0415	0.0695			

Pollutant	Name:	Carbon	Monoxide	Temperatu 60F	Relative	Humidity:	50%	
Speed								
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
	25	0	4.646	3.715	10.347	0	0	4.789
	55	0	3.013	2.394	6.075	0	0	3.044
	40		3.8295	3.0545	8.211			

Pollutant	Name:	Oxides	of	Nitrogen	Temperatu 60F	Relative	Humidity:	50%
Speed								
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
	25	0	0.545	0.683	17.991	0	0	2.145
	55	0	0.513	0.607	17.292	0	0	2.036
	40		0.529	0.645	17.6415			

Pollutant	Name:	Carbon	Dioxide	Temperatu 60F	Relative	Humidity:	50%	
Speed								
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
	25	0	474.531	659.381	1953.146	0	0	677.434
	55	0	380.641	524.083	1586.187	0	0	543.246
	40		427.586	591.732	1769.667			

Pollutant	Name:	PM10	Temperatu 60F	Relative	Humidity:	50%
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Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.021	0.033	0.656	0	0	0.082
55	0	0.012	0.019	0.579	0	0	0.065
40		0.0165	0.026	0.6175			

Pollutant Name: PM10 - Tire Wear Temperaturu 60F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.008	0.008	0.034	0	0	0.01
55	0	0.008	0.008	0.034	0	0	0.01
40		0.008	0.008	0.034			

Pollutant Name: PM10 - Break Wear Temperaturu 60F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.013	0.013	0.028	0	0	0.014
55	0	0.013	0.013	0.028	0	0	0.014
40		0.013	0.013	0.028			

Pollutant Name: PM2.5 Temperaturu 60F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.02	0.031	0.603	0	0	0.076
55	0	0.011	0.018	0.533	0	0	0.06
40		0.0155	0.0245	0.568			

Pollutant Name: PM2.5 - Tire Wear Temperaturu 60F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.002	0.002	0.009	0	0	0.003
55	0	0.002	0.002	0.009	0	0	0.003
40		0.002	0.002	0.009			

Pollutant Name: PM2.5 - Break Wear Temperaturu 60F Relative Humidity: 50%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0	0.005	0.005	0.012	0	0	0.006
55	0	0.005	0.005	0.012	0	0	0.006
40		0.005	0.005	0.012			

Title : Onroad Monterey County
 Version : Emfac2007 V2.3 Nov 1 2006
 Run Date : 2008/10/16 10:21:02
 Scen Year: 2009 -- All model years in the range 1989 to 2009 selected
 Season : Annual
 Area : Monterey

Year: 2009 -- Model Years 1989 to 2009 Inclusive -- Annual
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Monterey County Average

Table 2: Starting Emissions (grams/trip)

Pollutant	Name:	Reactive	Org	Gases	Temperatu 60F	Relative	Humidity: ALL
Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0.105	0.104	1.07	0	0	0.132
10	0	0.206	0.204	2.085	0	0	0.257
20	0	0.392	0.392	3.953	0	0	0.491
30	0	0.559	0.563	5.604	0	0	0.701
40	0	0.707	0.717	7.037	0	0	0.887
50	0	0.836	0.856	8.253	0	0	1.049
60	0	0.945	0.977	9.252	0	0	1.188
120	0	1.162	1.332	8.823	0	0	1.441
180	0	0.934	1.051	9.362	0	0	1.214
240	0	0.988	1.114	9.883	0	0	1.284
300	0	1.041	1.175	10.388	0	0	1.353
360	0	1.092	1.236	10.875	0	0	1.42
420	0	1.142	1.296	11.346	0	0	1.485
480	0	1.19	1.354	11.799	0	0	1.549
540	0	1.237	1.412	12.235	0	0	1.611
600	0	1.283	1.468	12.654	0	0	1.671
660	0	1.328	1.523	13.056	0	0	1.73
720	0	1.371	1.577	13.441	0	0	1.787

Pollutant Name: Methane Temperatu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0.006	0.006	0.06	0	0	0.007
10	0	0.012	0.012	0.118	0	0	0.015
20	0	0.022	0.022	0.223	0	0	0.028
30	0	0.032	0.032	0.316	0	0	0.04
40	0	0.04	0.04	0.397	0	0	0.05
50	0	0.047	0.048	0.465	0	0	0.059
60	0	0.053	0.055	0.522	0	0	0.067
120	0	0.065	0.075	0.497	0	0	0.081
180	0	0.053	0.059	0.528	0	0	0.068
240	0	0.056	0.063	0.557	0	0	0.072
300	0	0.059	0.066	0.586	0	0	0.076
360	0	0.062	0.07	0.613	0	0	0.08
420	0	0.064	0.073	0.64	0	0	0.084

480	0	0.067	0.076	0.665	0	0	0.087
540	0	0.07	0.08	0.69	0	0	0.091
600	0	0.072	0.083	0.713	0	0	0.094
660	0	0.075	0.086	0.736	0	0	0.098
720	0	0.077	0.089	0.758	0	0	0.101

Pollutant Name: Carbon Monoxide Temperatu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	1.285	1.177	11.816	0	0	1.535
10	0	2.524	2.315	23.153	0	0	3.015
20	0	4.864	4.477	44.385	0	0	5.809
30	0	7.02	6.484	63.697	0	0	8.382
40	0	8.992	8.337	81.088	0	0	10.735
50	0	10.78	10.035	96.559	0	0	12.868
60	0	12.384	11.58	110.11	0	0	14.78
120	0	16.262	16.197	93.303	0	0	18.374
180	0	11.891	11.609	96.03	0	0	14.115
240	0	12.481	12.311	98.847	0	0	14.811
300	0	13.035	12.953	101.755	0	0	15.465
360	0	13.553	13.535	104.752	0	0	16.077
420	0	14.035	14.058	107.839	0	0	16.647
480	0	14.48	14.52	111.016	0	0	17.175
540	0	14.89	14.923	114.283	0	0	17.661
600	0	15.263	15.265	117.64	0	0	18.105
660	0	15.601	15.548	121.086	0	0	18.507
720	0	15.902	15.771	124.623	0	0	18.868

Pollutant Name: Oxides of Nitrogen Temperatu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0.358	0.741	3.16	0	0	0.586
10	0	0.417	0.818	4.762	0	0	0.695
20	0	0.523	0.955	7.574	0	0	0.888
30	0	0.609	1.07	9.866	0	0	1.047
40	0	0.678	1.162	11.637	0	0	1.172
50	0	0.729	1.232	12.887	0	0	1.264
60	0	0.761	1.28	13.616	0	0	1.321
120	0	0.8	1.369	13.82	0	0	1.384
180	0	0.826	1.416	13.769	0	0	1.417
240	0	0.821	1.406	13.692	0	0	1.407
300	0	0.812	1.39	13.587	0	0	1.393
360	0	0.801	1.368	13.456	0	0	1.375
420	0	0.787	1.34	13.298	0	0	1.351
480	0	0.77	1.307	13.113	0	0	1.323
540	0	0.75	1.268	12.902	0	0	1.291
600	0	0.728	1.223	12.663	0	0	1.253
660	0	0.702	1.172	12.398	0	0	1.211
720	0	0.674	1.116	12.106	0	0	1.164

Pollutant Name: Carbon Dioxide Temperaturu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	11.103	18.055	4.525	0	0	13.648
10	0	14.161	21.701	9.025	0	0	16.977
20	0	20.621	29.637	17.951	0	0	24.084
30	0	27.538	38.434	26.776	0	0	31.791
40	0	34.912	48.09	35.501	0	0	40.098
50	0	42.742	58.607	44.126	0	0	49.005
60	0	51.03	69.984	52.65	0	0	58.511
120	0	104.659	151.054	89.549	0	0	122.442
180	0	120.582	172.966	105.796	0	0	140.723
240	0	136.078	194.504	121.083	0	0	158.584
300	0	151.148	215.668	135.412	0	0	176.024
360	0	165.791	236.46	148.782	0	0	193.044
420	0	180.008	256.877	161.193	0	0	209.643
480	0	193.797	276.922	172.644	0	0	225.822
540	0	207.16	296.592	183.138	0	0	241.58
600	0	220.097	315.89	192.672	0	0	256.917
660	0	232.606	334.813	201.247	0	0	271.834
720	0	244.689	353.364	208.863	0	0	286.331

Pollutant Name: PM10 Temperaturu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0.001	0.002	0.001	0	0	0.001
10	0	0.002	0.003	0.002	0	0	0.002
20	0	0.004	0.006	0.003	0	0	0.005
30	0	0.005	0.009	0.005	0	0	0.007
40	0	0.007	0.011	0.006	0	0	0.009
50	0	0.008	0.014	0.007	0	0	0.01
60	0	0.01	0.016	0.008	0	0	0.012
120	0	0.014	0.024	0.011	0	0	0.018
180	0	0.015	0.026	0.011	0	0	0.019
240	0	0.016	0.028	0.012	0	0	0.02
300	0	0.017	0.029	0.012	0	0	0.021
360	0	0.017	0.031	0.012	0	0	0.022
420	0	0.018	0.032	0.013	0	0	0.023
480	0	0.019	0.033	0.013	0	0	0.024
540	0	0.019	0.034	0.013	0	0	0.025
600	0	0.02	0.035	0.014	0	0	0.025
660	0	0.02	0.035	0.014	0	0	0.026
720	0	0.02	0.036	0.015	0	0	0.026

Pollutant Name: PM2.5 Temperaturu 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0.001	0.001	0.001	0	0	0.001
10	0	0.002	0.003	0.002	0	0	0.002
20	0	0.003	0.006	0.003	0	0	0.004

30	0	0.005	0.008	0.004	0	0	0.006
40	0	0.006	0.011	0.005	0	0	0.008
50	0	0.008	0.013	0.007	0	0	0.01
60	0	0.009	0.015	0.007	0	0	0.011
120	0	0.013	0.022	0.01	0	0	0.017
180	0	0.014	0.024	0.01	0	0	0.018
240	0	0.015	0.026	0.011	0	0	0.019
300	0	0.015	0.027	0.011	0	0	0.02
360	0	0.016	0.028	0.011	0	0	0.021
420	0	0.017	0.03	0.012	0	0	0.022
480	0	0.017	0.031	0.012	0	0	0.022
540	0	0.018	0.031	0.012	0	0	0.023
600	0	0.018	0.032	0.013	0	0	0.023
660	0	0.018	0.033	0.013	0	0	0.024
720	0	0.019	0.033	0.014	0	0	0.024

Title : Onroad Monterey County
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/10/16 10:21:02
Scen Year: 2009 -- All model years in the range 1989 to 2009 selected
Season : Annual
Area : Monterey

Year: 2009 -- Model Years 1989 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Monterey County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant	Name:	Reactive		Gases		Temperatu 60F		Relative Humidity: ALL
		Org						
Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL	
5	0	0.047	0.028	0.005	0	0	0.039	
10	0	0.088	0.052	0.01	0	0	0.071	
20	0	0.15	0.089	0.018	0	0	0.122	
30	0	0.194	0.115	0.023	0	0	0.158	
40	0	0.21	0.125	0.026	0	0	0.171	
21		0.1378	0.0818	0.0164				

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).