APPENDIX 5.1C

Dispersion Modeling and Climate Information

APPENDIX 5.1C

Dispersion Modeling and Climate Information

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Mariposa Energy Project
Table 5.1C-1
Commissioning Source Parameters for AERMOD Input
June 2009

Point Sources

Scenario	Building Name	Easting (X)	Northing (Y)	Base Elevation	Stack Height	Temperature	Exit Velocity	Stack Diameter	NO_2		CO		SO_2		PM_{10}		$PM_{2.5}$	
		(m)	(m)	(m)	(m)	(K)	(m/s)	(m)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
5	Stack 1	623209	4183021	38.4	24.2	734	41.5	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 2	623224	4183066	38.4	24.2	734	41.5	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 3	623244	4183127	38.4	24.2	734	41.5	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 4	623259	4183171	38.4	24.2	734	41.5	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
6	Stack 1	623209	4183021	38.4	24.2	689	33.0	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 2	623224	4183066	38.4	24.2	689	33.0	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 3	623244	4183127	38.4	24.2	689	33.0	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00
	Stack 4	623259	4183171	38.4	24.2	689	33.0	3.66	6.43	51.0	5.67	45.0	0.115	0.910	0.378	3.00	0.378	3.00

Mariposa Energy Project
Table 5.1C-2
Commissioning Modeling Results Summary
June 2009

Scenario	Year	Source	NO_2 (µg/m^3)	CO (µg/m^3)		SO_2 (µg/m^3)			PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
			1-hr	1-hr	8-hr	1-hr	3-hr	24-hr	24-hr	24-hr
5	1997	Stacks 1,2,3	182.3	166.5	57.4	3.37	1.976	0.458	1.509	1.509
		Stacks 2,3,4	182.1	165.0	52.7	3.34	1.915	0.461	1.519	1.519
		Stack 1	60.9	57.0	20.4	1.15	0.671	0.153	0.505	0.505
		Stack 2	60.9	56.5	19.5	1.14	0.669	0.155	0.511	0.511
		Stack 3	60.8	56.0	17.7	1.13	0.646	0.156	0.516	0.516
		Stack 4	60.8	56.0	17.1	1.13	0.621	0.158	0.520	0.520
5	1998	Stacks 1,2,3	176.7	167.2	46.1	3.38	1.290	0.341	1.124	1.124
		Stacks 2,3,4	176.6	168.1	43.3	3.40	1.297	0.349	1.150	1.150
		Stack 1	59.2	57.3	16.3	1.16	0.453	0.112	0.370	0.370
		Stack 2	59.4	56.7	15.5	1.15	0.444	0.115	0.379	0.379
		Stack 3	61.7	57.0	14.3	1.15	0.442	0.118	0.390	0.390
		Stack 4	62.3	56.6	14.1	1.14	0.444	0.118	0.389	0.389
5	1999	Stacks 1,2,3	177.1	170.3	48.9	3.44	1.681	0.333	1.099	1.099
		Stacks 2,3,4	176.2	163.2	45.6	3.30	1.687	0.311	1.026	1.026
		Stack 1	61.4	57.3	16.9	1.16	0.587	0.115	0.380	0.380
		Stack 2	60.6	58.9	17.0	1.19	0.580	0.116	0.381	0.381
		Stack 3	59.0	56.2	15.5	1.14	0.582	0.106	0.349	0.349
		Stack 4	59.1	57.4	14.2	1.16	0.581	0.097	0.320	0.320
5	2003	Stacks 1,2,3	179.4	167.7	38.4	3.39	1.696	0.373	1.231	1.231
		Stacks 2,3,4	175.7	168.6	37.9	3.41	1.670	0.364	1.201	1.201
		Stack 1	63.0	55.6	13.1	1.12	0.587	0.133	0.438	0.438
		Stack 2	61.5	56.8	12.9	1.15	0.572	0.126	0.416	0.416
		Stack 3	60.5	57.2	12.6	1.16	0.560	0.122	0.402	0.402
		Stack 4	58.3	56.7	12.4	1.15	0.542	0.118	0.390	0.390
6	1997	Stacks 1,2,3	201.4	196.1	69.4	3.97	2.358	0.551	1.815	1.815
		Stacks 2,3,4	201.0	196.5	65.8	3.97	2.312	0.561	1.851	1.851
		Stack 1	67.1	67.8	24.4	1.37	0.795	0.184	0.607	0.607
		Stack 2	67.3	66.7	23.6	1.35	0.799	0.186	0.612	0.612
		Stack 3	67.1	66.8	22.0	1.35	0.781	0.190	0.627	0.627
		Stack 4	67.1	67.1	21.0	1.36	0.756	0.185	0.611	0.611
6	1998	Stacks 1,2,3	213.3	204.8	55.7	4.14	1.616	0.409	1.348	1.348
		Stacks 2,3,4	214.2	201.1	52.3	4.07	1.591	0.425	1.401	1.401
		Stack 1	71.2	68.6	19.7	1.39	0.548	0.137	0.452	0.452
		Stack 2	71.8	69.8	18.7	1.41	0.554	0.138	0.456	0.456
		Stack 3	73.0	68.3	17.4	1.38	0.542	0.145	0.478	0.478
		Stack 4	73.1	67.6	17.4	1.37	0.555	0.145	0.479	0.479
6	1999	Stacks 1,2,3	200.7	197.7	62.3	4.00	1.997	0.424	1.399	1.399
		Stacks 2,3,4	195.7	199.5	58.6	4.03	1.986	0.399	1.316	1.316
		Stack 1	71.0	70.4	21.6	1.42	0.693	0.147	0.485	0.485
		Stack 2	71.0	68.9	21.6	1.39	0.689	0.147	0.485	0.485
		Stack 3	68.7	69.1	20.0	1.40	0.683	0.136	0.449	0.449
		Stack 4	68.3	68.1	18.0	1.38	0.679	0.123	0.406	0.406
6	2003	Stacks 1,2,3	216.2	205.3	49.3	4.15	2.053	0.480	1.583	1.583
		Stacks 2,3,4	207.6	201.8	47.5	4.08	2.008	0.454	1.496	1.496
		Stack 1	73.3	68.7	17.0	1.39	0.732	0.168	0.553	0.553
		Stack 2	73.2	69.9	16.5	1.41	0.695	0.162	0.535	0.535
		Stack 3	70.7	68.6	15.8	1.39	0.675	0.151	0.498	0.498
		Stack 4	69.5	67.8	15.2	1.37	0.656	0.145	0.476	0.476

Mariposa Energy Project
Table 5.1C-3
Stack Parameters for AERMOD Input
June 2009

Point Sources

Scenario	Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
1	Stack 1	623205	4183020	38.4	24.2	689	47.2	3.66
	Stack 2	623220	4183064	38.4	24.2	689	47.2	3.66
	Stack 3	623241	4183125	38.4	24.2	689	47.2	3.66
	Stack 4	623257	4183170	38.4	24.2	689	47.2	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
2	Stack 1	623205	4183020	38.4	24.2	722	47.5	3.66
	Stack 2	623220	4183064	38.4	24.2	722	47.5	3.66
	Stack 3	623241	4183125	38.4	24.2	722	47.5	3.66
	Stack 4	623257	4183170	38.4	24.2	722	47.5	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
3	Stack 1	623205	4183020	38.4	24.2	726	46.4	3.66
	Stack 2	623220	4183064	38.4	24.2	726	46.4	3.66
	Stack 3	623241	4183125	38.4	24.2	726	46.4	3.66
	Stack 4	623257	4183170	38.4	24.2	726	46.4	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
4	Stack 1	623205	4183020	38.4	24.2	668	34.2	3.66
	Stack 2	623220	4183064	38.4	24.2	668	34.2	3.66
	Stack 3	623241	4183125	38.4	24.2	668	34.2	3.66
	Stack 4	623257	4183170	38.4	24.2	668	34.2	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
5	Stack 1	623205	4183020	38.4	24.2	734	41.5	3.66
	Stack 2	623220	4183064	38.4	24.2	734	41.5	3.66
	Stack 3	623241	4183125	38.4	24.2	734	41.5	3.66
	Stack 4	623257	4183170	38.4	24.2	734	41.5	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
6	Stack 1	623205	4183020	38.4	24.2	689	33.0	3.66
	Stack 2	623220	4183064	38.4	24.2	689	33.0	3.66
	Stack 3	623241	4183125	38.4	24.2	689	33.0	3.66
	Stack 4	623257	4183170	38.4	24.2	689	33.0	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152
7	Stack 1	623205	4183020	38.4	24.2	735	37.7	3.66
	Stack 2	623220	4183064	38.4	24.2	735	37.7	3.66
	Stack 3	623241	4183125	38.4	24.2	735	37.7	3.66
	Stack 4	623257	4183170	38.4	24.2	735	37.7	3.66
	Fire Pump	623292	4183265	38.4	3.66	741	35.3	0.152

Mariposa Energy Project
Table 5.1C-4
Building Parameters for AERMOD Input
June 2009

Building Name	Number of Tiers	Tier Number	Base Elevation (m)	Tier Height (m)	Number of Corners	Corner 1 East (X) (m)	Corner 1 North (Y) (m)	Corner 2 East (X) (m)	Corner 2 North (Y) (m)	Corner 3 East (X) (m)	Corner 3 North (Y) (m)	Corner 4 East (X) (m)	Corner 4 North (Y) (m)
CTG1	1	1	38.4	10.1	4	623170	4183027	623206	4183014	623210	4183023	623173	4183037
CTG2	1	1	38.4	10.1	4	623185	4183072	623222	4183059	623225	4183068	623189	4183081
CTG3	1	1	38.4	10.1	4	623206	4183133	623243	4183120	623246	4183129	623210	4183142
CTG4	1	1	38.4	10.1	4	623222	4183178	623258	4183164	623262	4183174	623225	4183187
MAINT	1	1	38.4	7.0	4	623215	4183270	623230	4183265	623240	4183293	623225	4183298
PDC	1	1	38.4	5.6	4	623213	4183224	623235	4183216	623237	4183223	623215	4183232
ADMIN	1	1	38.4	4.1	4	623201	4183095	623223	4183087	623225	4183095	623204	4183103
FGC	1	1	38.4	7.6	4	623212	4183254	623239	4183244	623233	4183229	623207	4183239
FPENCL	1	1	38.4	3.0	4	623292	4183266	623295	4183264	623293	4183256	623290	4183258
ACC	1	1	42.4	1.0	4	623262	4183246	623279	4183240	623264	4183197	623247	4183203

Tank Name	Base Elevation (m)	Center East (X) (m)	Center North (Y) (m)	Tank Height (m)	Tank Diameter (m)
RawH20	38.3	623288	4183273	13.716	13.716
WasteH2O	38.3	623278	4183267	6.096	6.096
DeminH20	38.3	623282	4183256	12.192	12.192

Mariposa Energy Project
Table 5.1C-5
Operational Modeling Parameters - Emission Rates
June 2009

Emission Rates for 1-hr, 3-hr, 8-hr, and 24-hr Modeling

Source ID	1-hr NO_2		1-hr CO		8-hr CO		1-hr SO_2		3-hr SO_2		24-hr SO_2		24-hr PM_{10}		24-hr $PM_{2.5}$	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
Stack 1	2.83	22.5	3.78	30.0	1.92	15.3	0.115	0.910	0.115	0.910	0.115	0.910	0.378	3.00	0.378	3.00
Stack 2	2.83	22.5	3.78	30.0	1.92	15.3	0.115	0.910	0.115	0.910	0.115	0.910	0.378	3.00	0.378	3.00
Stack 3	2.83	22.5	3.78	30.0	1.92	15.3	0.115	0.910	0.115	0.910	0.115	0.910	0.378	3.00	0.378	3.00
Stack 4	2.83	22.5	3.78	30.0	1.92	15.3	0.115	0.910	0.115	0.910	0.115	0.910	0.378	3.00	0.378	3.00
Fire Pump	0.047	0.370	0.023	0.180	0.003	0.022	1.01E-04	8.00E-04	3.35E-05	2.66E-04	4.18E-06	3.32E-05	8.57E-05	6.80E-04	8.57E-05	6.80E-04

Emission Rates for Annual Modeling

Source ID	Annual NO_2		Annual SO_2		Annual PM_{10}		Annual $PM_{2.5}$	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
Stack 1	0.331	2.63	0.021	0.165	0.186	1.47	0.186	1.47
Stack 2	0.331	2.63	0.021	0.165	0.186	1.47	0.186	1.47
Stack 3	0.331	2.63	0.021	0.165	0.186	1.47	0.186	1.47
Stack 4	0.331	2.63	0.021	0.165	0.186	1.47	0.186	1.47
Fire Pump	6.43E-05	5.10E-04	1.39E-07	1.10E-06	2.77E-06	2.20E-05	2.77E-06	2.20E-05

Mariposa Energy Project
Table 5.1C-6
Operational Modeling Results Summary
June 2009

Case 1: 17oF, 100% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.053	137	23.3	4.14	2.42	0.560	3.33E-03	1.84	2.97E-02	1.84	2.97E-02
	CTG	6.88	0.053	137	23.3	4.14	2.42	0.560	3.33E-03	1.84	2.97E-02	1.84	2.97E-02
	STACK1	2.11	0.014	35.7	6.50	1.08	0.634	0.142	8.80E-04	0.469	7.87E-03	0.469	7.87E-03
	STACK2	2.05	0.014	35.1	6.24	1.06	0.628	0.144	8.80E-04	0.473	7.84E-03	0.473	7.84E-03
	STACK3	1.97	0.014	35.3	5.66	1.07	0.601	0.145	8.80E-04	0.478	7.85E-03	0.478	7.85E-03
	STACK4	1.97	0.014	35.0	5.45	1.06	0.574	0.146	8.80E-04	0.482	7.82E-03	0.482	7.82E-03
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.047	137	18.7	4.16	1.57	0.420	2.94E-03	1.38	2.62E-02	1.38	2.62E-02
	CTG	6.79	0.049	137	18.7	4.16	1.57	0.420	3.06E-03	1.38	2.73E-02	1.38	2.73E-02
	STACK1	1.99	0.013	36.0	5.13	1.09	0.427	0.105	7.90E-04	0.347	7.05E-03	0.347	7.05E-03
	STACK2	2.05	0.012	35.8	4.87	1.08	0.420	0.106	7.70E-04	0.348	6.90E-03	0.348	6.90E-03
	STACK3	2.00	0.012	35.8	4.52	1.09	0.412	0.109	7.80E-04	0.359	6.91E-03	0.359	6.91E-03
	STACK4	1.97	0.012	35.6	4.37	1.08	0.416	0.107	7.70E-04	0.354	6.88E-03	0.354	6.88E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	127	0.053	137	19.2	4.16	2.11	0.385	3.34E-03	1.27	2.97E-02	1.27	2.97E-02
	CTG	7.00	0.053	137	19.2	4.16	2.11	0.385	3.34E-03	1.27	2.97E-02	1.27	2.97E-02
	STACK1	2.02	0.014	34.9	5.29	1.06	0.557	0.106	8.90E-04	0.351	7.95E-03	0.351	7.95E-03
	STACK2	2.00	0.014	36.8	5.27	1.12	0.559	0.106	8.80E-04	0.349	7.83E-03	0.349	7.83E-03
	STACK3	2.04	0.014	36.1	4.83	1.09	0.553	0.097	8.80E-04	0.320	7.85E-03	0.320	7.85E-03
	STACK4	1.98	0.014	36.3	4.53	1.10	0.553	0.091	8.80E-04	0.300	7.81E-03	0.300	7.81E-03
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.062	138	16.1	4.18	2.09	0.453	3.88E-03	1.49	3.46E-02	1.49	3.46E-02
	CTG	14.0	0.062	138	16.1	4.18	2.09	0.453	3.88E-03	1.49	3.46E-02	1.49	3.46E-02
	STACK1	3.92	0.016	34.7	4.15	1.05	0.550	0.120	1.04E-03	0.396	9.23E-03	0.396	9.23E-03
	STACK2	3.92	0.016	35.1	4.09	1.07	0.536	0.115	1.03E-03	0.380	9.14E-03	0.380	9.14E-03
	STACK3	3.93	0.016	36.0	3.99	1.09	0.525	0.113	1.01E-03	0.373	8.95E-03	0.373	8.95E-03
	STACK4	3.91	0.016	35.8	3.90	1.08	0.508	0.110	1.03E-03	0.362	9.13E-03	0.362	9.13E-03
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Case 2: 46oF, 100% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.051	133	22.6	4.04	2.34	0.542	3.22E-03	1.79	2.87E-02	1.79	2.87E-02
	CTG	6.72	0.051	133	22.6	4.04	2.34	0.542	3.22E-03	1.79	2.86E-02	1.79	2.86E-02
	STACK1	2.05	0.014	34.6	6.29	1.05	0.619	0.137	8.50E-04	0.453	7.61E-03	0.453	7.61E-03
	STACK2	1.99	0.014	34.4	6.03	1.04	0.608	0.139	8.50E-04	0.458	7.56E-03	0.458	7.56E-03
	STACK3	1.90	0.014	34.5	5.48	1.04	0.582	0.141	8.50E-04	0.465	7.57E-03	0.465	7.57E-03
	STACK4	1.92	0.013	33.8	5.28	1.03	0.551	0.141	8.50E-04	0.466	7.55E-03	0.466	7.55E-03
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.045	132	18.0	4.01	1.53	0.403	2.83E-03	1.33	2.52E-02	1.33	2.52E-02
	CTG	6.59	0.047	132	18.0	4.01	1.53	0.403	2.96E-03	1.33	2.63E-02	1.33	2.63E-02
	STACK1	1.94	0.012	34.9	4.96	1.06	0.415	0.102	7.70E-04	0.336	6.82E-03	0.336	6.82E-03
	STACK2	1.98	0.012	34.7	4.69	1.05	0.409	0.102	7.50E-04	0.338	6.66E-03	0.338	6.66E-03
	STACK3	1.93	0.012	34.8	4.42	1.05	0.401	0.105	7.50E-04	0.345	6.67E-03	0.345	6.67E-03
	STACK4	1.91	0.012	34.6	4.26	1.05	0.403	0.103	7.50E-04	0.338	6.64E-03	0.338	6.64E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	127	0.051	133	18.4	4.03	2.06	0.369	3.22E-03	1.22	2.87E-02	1.22	2.87E-02
	CTG	6.80	0.051	133	18.4	4.03	2.06	0.369	3.22E-03	1.22	2.87E-02	1.22	2.87E-02
	STACK1	1.97	0.014	33.7	5.10	1.02	0.546	0.102	8.60E-04	0.337	7.68E-03	0.337	7.68E-03
	STACK2	1.93	0.013	35.6	5.05	1.08	0.547	0.101	8.50E-04	0.334	7.55E-03	0.334	7.55E-03
	STACK3	1.98	0.014	35.4	4.65	1.07	0.540	0.093	8.50E-04	0.308	7.57E-03	0.308	7.57E-03
	STACK4	1.92	0.013	35.4	4.39	1.07	0.538	0.088	8.50E-04	0.291	7.53E-03	0.291	7.53E-03
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.059	133	15.6	4.03	2.02	0.437	3.72E-03	1.44	3.32E-02	1.44	3.32E-02
	CTG	13.5	0.059	133	15.6	4.03	2.02	0.437	3.72E-03	1.44	3.32E-02	1.44	3.32E-02
	STACK1	3.79	0.016	33.6	4.01	1.02	0.533	0.114	9.90E-04	0.377	8.86E-03	0.377	8.86E-03
	STACK2	3.78	0.016	33.9	3.96	1.03	0.517	0.111	9.90E-04	0.367	8.79E-03	0.367	8.79E-03
	STACK3	3.80	0.015	34.9	3.86	1.06	0.507	0.109	9.70E-04	0.360	8.60E-03	0.360	8.60E-03
	STACK4	3.77	0.016	34.7	3.77	1.05	0.490	0.106	9.80E-04	0.349	8.75E-03	0.349	8.75E-03
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Mariposa Energy Project
Table 5.1C-6
Operational Modeling Results Summary

Case 3: 59oF, 100% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.053	135	23.0	4.10	2.38	0.551	3.29E-03	1.82	2.93E-02	1.82	2.93E-02
	CTG	6.83	0.052	135	23.0	4.10	2.38	0.551	3.29E-03	1.82	2.93E-02	1.82	2.93E-02
	STACK1	2.09	0.014	35.2	6.41	1.07	0.627	0.140	8.80E-04	0.462	7.80E-03	0.462	7.80E-03
	STACK2	2.03	0.014	34.8	6.14	1.06	0.619	0.141	8.70E-04	0.466	7.75E-03	0.466	7.75E-03
	STACK3	1.96	0.014	34.9	5.57	1.06	0.592	0.143	8.70E-04	0.471	7.76E-03	0.471	7.76E-03
	STACK4	1.96	0.014	34.5	5.37	1.04	0.563	0.144	8.70E-04	0.475	7.73E-03	0.475	7.73E-03
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.046	135	18.4	4.09	1.55	0.412	2.90E-03	1.36	2.58E-02	1.36	2.58E-02
	CTG	6.73	0.048	135	18.4	4.09	1.55	0.412	3.01E-03	1.36	2.68E-02	1.36	2.68E-02
	STACK1	1.98	0.012	35.5	5.05	1.08	0.422	0.104	7.80E-04	0.342	6.99E-03	0.342	6.99E-03
	STACK2	2.04	0.012	35.3	4.78	1.07	0.415	0.104	7.70E-04	0.343	6.82E-03	0.343	6.82E-03
	STACK3	1.98	0.012	35.4	4.47	1.07	0.407	0.107	7.70E-04	0.353	6.83E-03	0.353	6.83E-03
	STACK4	1.95	0.012	35.2	4.31	1.07	0.409	0.105	7.60E-04	0.347	6.80E-03	0.347	6.80E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	127	0.053	135	18.8	4.10	2.09	0.378	3.30E-03	1.25	2.94E-02	1.25	2.94E-02
	CTG	6.94	0.052	135	18.8	4.10	2.09	0.378	3.30E-03	1.25	2.94E-02	1.25	2.94E-02
	STACK1	2.01	0.014	34.3	5.20	1.04	0.552	0.104	8.80E-04	0.344	7.88E-03	0.344	7.88E-03
	STACK2	1.98	0.014	36.3	5.17	1.10	0.553	0.104	8.70E-04	0.342	7.74E-03	0.342	7.74E-03
	STACK3	2.03	0.014	35.8	4.74	1.08	0.547	0.095	8.70E-04	0.314	7.76E-03	0.314	7.76E-03
	STACK4	1.96	0.014	35.9	4.47	1.09	0.546	0.090	8.70E-04	0.296	7.72E-03	0.296	7.72E-03
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.061	135	15.9	4.11	2.05	0.446	3.82E-03	1.47	3.40E-02	1.47	3.40E-02
	CTG	13.8	0.061	135	15.9	4.11	2.05	0.446	3.82E-03	1.47	3.40E-02	1.47	3.40E-02
	STACK1	3.86	0.016	34.2	4.09	1.04	0.542	0.117	1.02E-03	0.387	9.09E-03	0.387	9.09E-03
	STACK2	3.85	0.016	34.6	4.03	1.05	0.527	0.113	1.01E-03	0.374	9.02E-03	0.374	9.02E-03
	STACK3	3.87	0.016	35.5	3.93	1.07	0.517	0.111	9.90E-04	0.367	8.83E-03	0.367	8.83E-03
	STACK4	3.84	0.016	35.3	3.84	1.07	0.500	0.108	1.01E-03	0.356	8.99E-03	0.356	8.99E-03
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Case 4: 59oF, 50% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.076	170	30.2	5.16	3.06	0.728	4.76E-03	2.40	4.24E-02	2.40	4.24E-02
	CTG	9.09	0.076	170	30.2	5.16	3.06	0.727	4.76E-03	2.40	4.24E-02	2.40	4.24E-02
	STACK1	2.80	0.021	44.9	8.24	1.36	0.792	0.183	1.29E-03	0.602	1.15E-02	0.602	1.15E-02
	STACK2	2.81	0.020	44.3	7.97	1.34	0.794	0.183	1.27E-03	0.605	1.13E-02	0.605	1.13E-02
	STACK3	2.91	0.020	44.3	7.44	1.34	0.774	0.188	1.26E-03	0.621	1.13E-02	0.621	1.13E-02
	STACK4	2.82	0.020	44.5	7.08	1.35	0.750	0.184	1.26E-03	0.605	1.13E-02	0.605	1.13E-02
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.067	176	24.3	5.34	2.08	0.540	4.17E-03	1.78	3.72E-02	1.78	3.72E-02
	CTG	9.07	0.066	176	24.3	5.34	2.08	0.540	4.17E-03	1.78	3.72E-02	1.78	3.72E-02
	STACK1	2.67	0.018	45.4	6.65	1.38	0.541	0.136	1.15E-03	0.448	1.02E-02	0.448	1.02E-02
	STACK2	2.94	0.018	46.2	6.31	1.40	0.548	0.136	1.11E-03	0.449	9.87E-03	0.449	9.87E-03
	STACK3	2.82	0.018	45.2	5.84	1.37	0.539	0.143	1.11E-03	0.471	9.86E-03	0.471	9.86E-03
	STACK4	2.82	0.018	44.7	5.85	1.36	0.549	0.144	1.11E-03	0.474	9.85E-03	0.474	9.85E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	128	0.076	169	26.7	5.12	2.56	0.536	4.76E-03	1.77	4.24E-02	1.77	4.24E-02
	CTG	9.17	0.076	169	26.7	5.12	2.56	0.536	4.76E-03	1.77	4.24E-02	1.77	4.24E-02
	STACK1	2.75	0.021	46.6	7.25	1.41	0.690	0.145	1.31E-03	0.480	1.16E-02	0.480	1.16E-02
	STACK2	2.89	0.020	45.8	7.28	1.39	0.685	0.146	1.27E-03	0.481	1.13E-02	0.481	1.13E-02
	STACK3	2.84	0.020	45.8	6.74	1.39	0.680	0.135	1.26E-03	0.446	1.12E-02	0.446	1.12E-02
	STACK4	2.95	0.020	45.1	6.03	1.37	0.675	0.121	1.26E-03	0.399	1.12E-02	0.399	1.12E-02
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.093	177	21.6	5.35	2.66	0.615	5.86E-03	2.03	5.22E-02	2.03	5.22E-02
	CTG	17.5	0.093	177	21.6	5.35	2.66	0.615	5.86E-03	2.03	5.22E-02	2.03	5.22E-02
	STACK1	5.00	0.025	45.4	5.72	1.38	0.728	0.167	1.57E-03	0.549	1.40E-02	0.549	1.40E-02
	STACK2	4.99	0.025	46.3	5.54	1.40	0.690	0.161	1.56E-03	0.530	1.39E-02	0.530	1.39E-02
	STACK3	5.00	0.024	45.3	5.28	1.37	0.670	0.150	1.53E-03	0.493	1.36E-02	0.493	1.36E-02
	STACK4	5.00	0.025	44.9	5.13	1.36	0.651	0.143	1.56E-03	0.472	1.39E-02	0.472	1.39E-02
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Mariposa Energy Project
Table 5.1C-6
Operational Modeling Results Summary

Case 5: 93oF, 100% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.059	145	24.9	4.41	2.58	0.604	3.69E-03	1.99	3.29E-02	1.99	3.29E-02
	CTG	7.41	0.059	145	24.9	4.41	2.58	0.604	3.69E-03	1.99	3.29E-02	1.99	3.29E-02
	STACK1	2.29	0.016	38.1	6.94	1.15	0.672	0.153	9.90E-04	0.506	8.82E-03	0.506	8.82E-03
	STACK2	2.24	0.016	37.7	6.66	1.14	0.670	0.155	9.80E-04	0.511	8.70E-03	0.511	8.70E-03
	STACK3	2.22	0.016	37.4	6.03	1.13	0.647	0.156	9.80E-04	0.516	8.70E-03	0.516	8.70E-03
	STACK4	2.22	0.016	37.4	5.82	1.13	0.623	0.158	9.80E-04	0.520	8.69E-03	0.520	8.69E-03
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.052	148	20.3	4.48	1.70	0.456	3.25E-03	1.50	2.89E-02	1.50	2.89E-02
	CTG	7.39	0.053	148	20.3	4.48	1.70	0.456	3.31E-03	1.50	2.95E-02	1.50	2.95E-02
	STACK1	2.17	0.014	38.2	5.55	1.16	0.453	0.112	8.80E-04	0.370	7.88E-03	0.370	7.88E-03
	STACK2	2.31	0.014	37.9	5.27	1.15	0.445	0.115	8.60E-04	0.378	7.66E-03	0.378	7.66E-03
	STACK3	2.24	0.014	38.1	4.88	1.15	0.443	0.118	8.60E-04	0.390	7.66E-03	0.390	7.66E-03
	STACK4	2.16	0.014	37.8	4.80	1.15	0.444	0.118	8.60E-04	0.389	7.64E-03	0.389	7.64E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	127	0.059	146	21.0	4.43	2.20	0.422	3.70E-03	1.39	3.29E-02	1.39	3.29E-02
	CTG	7.62	0.059	146	21.0	4.43	2.20	0.422	3.70E-03	1.39	3.29E-02	1.39	3.29E-02
	STACK1	2.21	0.016	38.2	5.77	1.16	0.588	0.116	1.00E-03	0.381	8.91E-03	0.381	8.91E-03
	STACK2	2.24	0.016	39.3	5.78	1.19	0.581	0.116	9.80E-04	0.382	8.69E-03	0.382	8.69E-03
	STACK3	2.24	0.016	37.5	5.30	1.14	0.582	0.107	9.80E-04	0.351	8.70E-03	0.351	8.70E-03
	STACK4	2.18	0.015	38.3	4.84	1.16	0.582	0.097	9.70E-04	0.321	8.67E-03	0.321	8.67E-03
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.069	148	17.3	4.50	2.23	0.488	4.34E-03	1.61	3.87E-02	1.61	3.87E-02
	CTG	15.0	0.069	148	17.3	4.50	2.23	0.488	4.34E-03	1.61	3.87E-02	1.61	3.87E-02
	STACK1	4.23	0.018	37.2	4.44	1.13	0.588	0.133	1.16E-03	0.440	1.04E-02	0.440	1.04E-02
	STACK2	4.23	0.018	37.8	4.38	1.15	0.574	0.127	1.15E-03	0.417	1.02E-02	0.417	1.02E-02
	STACK3	4.22	0.018	38.2	4.30	1.16	0.561	0.122	1.13E-03	0.403	1.00E-02	0.403	1.00E-02
	STACK4	4.23	0.018	37.9	4.20	1.15	0.543	0.118	1.15E-03	0.391	1.03E-02	0.391	1.03E-02
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Case 6: 93oF, 50% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.077	171	30.5	5.19	3.08	0.736	4.84E-03	2.43	4.31E-02	2.43	4.31E-02
	CTG	9.20	0.077	171	30.5	5.19	3.08	0.736	4.83E-03	2.43	4.31E-02	2.43	4.31E-02
	STACK1	2.84	0.021	45.3	8.30	1.37	0.796	0.185	1.32E-03	0.609	1.18E-02	0.609	1.18E-02
	STACK2	2.87	0.021	44.5	8.03	1.35	0.799	0.186	1.29E-03	0.612	1.15E-02	0.612	1.15E-02
	STACK3	2.97	0.020	44.6	7.51	1.35	0.782	0.190	1.28E-03	0.628	1.14E-02	0.628	1.14E-02
	STACK4	3.32	0.020	44.8	7.15	1.36	0.758	0.186	1.29E-03	0.612	1.15E-02	0.612	1.15E-02
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.068	178	24.5	5.38	2.09	0.546	4.24E-03	1.80	3.78E-02	1.80	3.78E-02
	CTG	9.22	0.067	178	24.5	5.38	2.09	0.546	4.24E-03	1.80	3.78E-02	1.80	3.78E-02
	STACK1	2.71	0.019	45.9	6.72	1.39	0.548	0.137	1.17E-03	0.453	1.04E-02	0.453	1.04E-02
	STACK2	2.98	0.018	46.6	6.37	1.41	0.554	0.138	1.13E-03	0.455	1.00E-02	0.455	1.00E-02
	STACK3	2.87	0.018	45.6	5.91	1.38	0.543	0.145	1.13E-03	0.477	1.00E-02	0.477	1.00E-02
	STACK4	3.11	0.018	45.1	5.93	1.37	0.555	0.145	1.13E-03	0.479	1.00E-02	0.479	1.00E-02
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	128	0.077	170	27.0	5.16	2.58	0.542	4.84E-03	1.79	4.31E-02	1.79	4.31E-02
	CTG	9.28	0.077	170	27.0	5.16	2.58	0.542	4.84E-03	1.79	4.31E-02	1.79	4.31E-02
	STACK1	2.80	0.021	47.0	7.34	1.42	0.694	0.147	1.33E-03	0.485	1.19E-02	0.485	1.19E-02
	STACK2	2.94	0.021	46.1	7.36	1.40	0.690	0.148	1.30E-03	0.486	1.16E-02	0.486	1.16E-02
	STACK3	2.89	0.020	46.1	6.81	1.40	0.684	0.137	1.28E-03	0.451	1.14E-02	0.451	1.14E-02
	STACK4	3.37	0.020	45.5	6.12	1.38	0.679	0.123	1.28E-03	0.405	1.14E-02	0.405	1.14E-02
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.095	178	22.0	5.39	2.68	0.623	5.96E-03	2.05	5.31E-02	2.05	5.31E-02
	CTG	17.2	0.095	178	22.0	5.39	2.68	0.623	5.96E-03	2.05	5.31E-02	2.05	5.31E-02
	STACK1	4.86	0.025	45.8	5.80	1.39	0.736	0.168	1.60E-03	0.555	1.43E-02	0.555	1.43E-02
	STACK2	4.87	0.025	46.7	5.62	1.42	0.697	0.163	1.59E-03	0.536	1.41E-02	0.536	1.41E-02
	STACK3	4.87	0.025	45.8	5.36	1.39	0.676	0.151	1.56E-03	0.499	1.39E-02	0.499	1.39E-02
	STACK4	4.86	0.025	45.3	5.18	1.37	0.657	0.145	1.59E-03	0.477	1.42E-02	0.477	1.42E-02
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Mariposa Energy Project
Table 5.1C-6
Operational Modeling Results Summary

Case 7: 112oF, 100% Load

Year	Source	NO2 (µg/m3)		CO (µg/m3)		SO2 (µg/m3)				PM10 (µg/m3)		PM2.5 (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
1997	ALL	128	0.065	156	26.6	4.73	2.75	0.645	4.07E-03	2.13	3.63E-02	2.13	3.63E-02
	CTG	8.03	0.065	156	26.6	4.73	2.75	0.645	4.07E-03	2.12	3.63E-02	2.12	3.63E-02
	STACK1	2.48	0.017	40.7	7.35	1.23	0.722	0.163	1.10E-03	0.538	9.80E-03	0.538	9.80E-03
	STACK2	2.43	0.017	40.5	7.11	1.23	0.713	0.166	1.08E-03	0.546	9.62E-03	0.546	9.62E-03
	STACK3	2.47	0.017	40.3	6.46	1.22	0.699	0.167	1.08E-03	0.549	9.61E-03	0.549	9.61E-03
	STACK4	2.45	0.017	39.8	6.23	1.21	0.673	0.168	1.08E-03	0.554	9.60E-03	0.554	9.60E-03
	Fire Pump	128	0.045	67.6	6.8	0.300	0.084	0.008	1.00E-04	0.16	1.96E-03	0.16	1.96E-03
1998	ALL	120	0.057	158	21.9	4.79	1.85	0.486	3.58E-03	1.60	3.19E-02	1.60	3.19E-02
	CTG	7.95	0.057	158	21.9	4.79	1.85	0.486	3.58E-03	1.60	3.19E-02	1.60	3.19E-02
	STACK1	2.36	0.016	40.9	5.98	1.24	0.478	0.119	9.80E-04	0.391	8.73E-03	0.391	8.73E-03
	STACK2	2.55	0.015	40.9	5.68	1.24	0.475	0.122	9.50E-04	0.402	8.45E-03	0.402	8.45E-03
	STACK3	2.47	0.015	40.7	5.25	1.23	0.480	0.126	9.50E-04	0.416	8.44E-03	0.416	8.44E-03
	STACK4	2.37	0.015	40.2	5.17	1.22	0.472	0.127	9.50E-04	0.418	8.43E-03	0.418	8.43E-03
	Fire Pump	120	0.041	69	6.1	0.308	0.081	0.007	9.00E-05	0.14	1.76E-03	0.14	1.76E-03
1999	ALL	127	0.065	155	23.0	4.69	2.32	0.463	4.07E-03	1.53	3.63E-02	1.53	3.63E-02
	CTG	8.20	0.065	155	23.0	4.69	2.32	0.463	4.07E-03	1.53	3.63E-02	1.53	3.63E-02
	STACK1	2.41	0.018	41.5	6.25	1.26	0.629	0.125	1.11E-03	0.414	9.89E-03	0.414	9.89E-03
	STACK2	2.48	0.017	41.5	6.32	1.26	0.620	0.127	1.08E-03	0.418	9.63E-03	0.418	9.63E-03
	STACK3	2.43	0.017	40.8	5.82	1.24	0.615	0.117	1.08E-03	0.385	9.61E-03	0.385	9.61E-03
	STACK4	2.37	0.017	40.0	5.15	1.21	0.612	0.104	1.08E-03	0.342	9.59E-03	0.342	9.59E-03
	Fire Pump	126	0.042	64.5	6.0	0.287	0.084	0.007	9.00E-05	0.14	1.81E-03	0.14	1.81E-03
2003	ALL	130	0.077	159	18.5	4.81	2.38	0.525	4.86E-03	1.73	4.33E-02	1.73	4.33E-02
	CTG	16.0	0.077	159	18.5	4.81	2.38	0.525	4.86E-03	1.73	4.33E-02	1.73	4.33E-02
	STACK1	4.56	0.021	40.2	4.79	1.22	0.630	0.145	1.30E-03	0.479	1.16E-02	0.479	1.16E-02
	STACK2	4.55	0.020	41.0	4.72	1.24	0.611	0.138	1.29E-03	0.456	1.15E-02	0.456	1.15E-02
	STACK3	4.56	0.020	40.8	4.60	1.24	0.596	0.131	1.26E-03	0.431	1.13E-02	0.431	1.13E-02
	STACK4	4.56	0.021	40.3	4.51	1.22	0.577	0.127	1.29E-03	0.419	1.15E-02	0.419	1.15E-02
	Fire Pump	130	0.039	63.6	6.5	0.283	0.083	0.007	9.00E-05	0.14	1.70E-03	0.14	1.70E-03

Mariposa Energy Project
Table 5.1C-7
Construction Source Parameters for AERMOD Input
June 2009

Area Sources

Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Length (m)	Width (m)	Angle from North
FUG1	623123	4183025	38.3	1	85	310	20
FUG2	623229	4183068	38.3	1	148	170	20

Volume Sources

Source ID	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
VOL1	623281	4183162	38.3	4.6	50.7	2.14

Mariposa Energy Project
Table 5.1C-8
Construction Modeling Parameters - Emission Rates
June 2009

Emission Rates for 1-hr, 3-hr, 8-hr, and 24-hr Modeling

Source ID	1-hr NO_2		1-hr CO		8-hr CO		1-hr SO_2		3-hr SO_2		24-hr SO_2		24-hr PM_{10}		24-hr $PM_{2.5}$	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
VOL1	0.756	6.00	0.730	5.79	0.730	5.79	9.44E-04	7.49E-03	9.44E-04	7.49E-03	5.90E-04	4.68E-03	0.018	0.144	0.016	0.125
FUG1	--	--	--	--	--	--	--	--	--	--	--	--	0.058	0.460	0.008	0.062
FUG2	--	--	--	--	--	--	--	--	--	--	--	--	0.055	0.440	0.007	0.059

Emission Rates for Annual Modeling

Source ID	Annual NO_2		Annual SO_2		Annual PM_{10}		Annual $PM_{2.5}$	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
VOL1	0.144	1.14	1.80E-04	1.43E-03	5.73E-03	4.55E-02	5.04E-03	4.00E-02
FUG1	--	--	--	--	1.20E-02	9.54E-02	1.36E-03	1.08E-02
FUG2	--	--	--	--	1.15E-02	9.11E-02	1.30E-03	1.03E-02

DGC Mariposa Energy Project
Table 5.1C-9
Construction Modeling Results
June 2009

Source	Year	NO_2 (µg/m^3)		CO (µg/m3)		SO_2 (µg/m3)				PM_{10} (µg/m3)		$PM_{2.5}$ (µg/m3)	
		1-hr	Annual	1-hr	8-hr	1-hr	3-hr	24-hr	Annual	24-hr	Annual	24-hr	Annual
ALL	1997	191	15.6	920	390	1.19	0.894	0.169	0.021	106	4.81	16.9	0.990
VOL1		191	15.6	920	390	1.19	0.894	0.169	0.021	103	4.53	13.8	0.513
FUG1		--	--	--	--	--	--	--	--	58.4	3.75	7.83	0.425
FUG2		--	--	--	--	--	--	--	--	48.8	3.01	6.55	0.341
ALL	1998	190	15.6	883	410	1.14	0.872	0.158	0.020	95.4	4.76	14.3	0.949
VOL1		190	15.6	883	410	1.14	0.872	0.158	0.020	93.7	4.52	12.6	0.512
FUG1		--	--	--	--	--	--	--	--	51.5	3.55	6.91	0.402
FUG2		--	--	--	--	--	--	--	--	45.9	2.87	6.16	0.325
ALL	1999	226	19.5	957	406	1.24	1.051	0.162	0.025	112	5.95	17.9	1.18
VOL1		226	19.5	957	406	1.24	1.051	0.162	0.025	109	5.60	14.6	0.634
FUG1		--	--	--	--	--	--	--	--	73.0	4.46	9.79	0.504
FUG2		--	--	--	--	--	--	--	--	45.4	3.58	6.09	0.406
ALL	2003	205	13.6	883	416	1.14	0.872	0.194	0.017	109	4.12	17.6	0.822
VOL1		205	13.6	883	416	1.14	0.872	0.194	0.017	105	4.03	14.1	0.456
FUG1		--	--	--	--	--	--	--	--	62.2	3.04	8.34	0.345
FUG2		--	--	--	--	--	--	--	--	55.4	2.59	7.42	0.293

Mariposa Energy Project
Table 5.1C-10a
First Quarter Wind Table
June 2009

Frequency Distribution (Hours)
Date Range: Jan 1 - Mar 31 (1997-1999, 2003)

Wind Speed (m/s)	0.5 -2.1	2.1 -3.6	3.6 -5.7	5.7 -8.8	8.8 - 11.1	>= 11.1	Total
Wind Direction (from)							
N	138	68	19	5	2	0	232
NNE	85	15	0	3	1	0	104
NE	94	13	1	0	0	0	108
ENE	135	26	1	0	0	0	162
E	274	124	18	2	0	0	418
ESE	340	172	24	0	0	0	536
SE	302	151	43	12	1	0	509
SSE	147	58	15	1	0	0	221
S	129	48	13	4	0	0	194
SSW	162	86	7	3	0	0	258
SW	204	349	38	20	2	0	613
WSW	198	392	403	451	55	0	1499
W	172	334	368	231	20	0	1125
WNW	162	216	109	19	0	0	506
NW	174	191	158	92	4	0	619
NNW	146	221	116	61	5	0	549
Total	2862	2464	1333	904	90	0	7653

Frequency of Calm Winds: 386

Mariposa Energy Project
Table 5.1C-10b
Second Quarter Wind Table
June 2009

Frequency Distribution (Hours)
Date Range: Apr 1 - Jun 30 (1997-1999, 2003)

Wind Speed (m/s)	0.5 -2.1	2.1 -3.6	3.6 -5.7	5.7 -8.8	8.8 - 11.1	>= 11.1	Total
Wind Direction (from)							
N	45	114	148	31	0	0	338
NNE	41	20	5	0	0	0	66
NE	46	10	0	0	0	0	56
ENE	39	20	0	0	0	0	59
E	78	43	4	0	0	0	125
ESE	100	37	6	0	0	0	143
SE	91	27	2	3	0	0	123
SSE	48	21	5	3	0	0	77
S	45	13	2	3	0	0	63
SSW	58	44	9	13	0	0	124
SW	69	125	79	78	28	6	385
WSW	396	282	499	1648	809	187	3821
W	86	169	440	912	206	6	1819
WNW	37	151	163	49	0	0	400
NW	41	142	105	109	11	0	408
NNW	59	106	144	120	19	0	448
Total	1279	1324	1611	2969	1073	199	8455

Frequency of Calm Winds: 274

Mariposa Energy Project
Table 5.1C-10c
Third Quarter Wind Table
June 2009

Frequency Distribution (Hours)
Date Range: Jul 1 - Sep 30 (1997-1999, 2003)

Wind Speed (m/s)	0.5 -2.1	2.1 -3.6	3.6 -5.7	5.7 -8.8	8.8 - 11.1	>= 11.1	Total
Wind Direction (from)							
N	84	490	283	31	0	0	888
NNE	76	120	18	1	0	0	215
NE	71	45	2	0	0	0	118
ENE	112	28	3	4	0	0	147
E	130	21	8	20	9	0	188
ESE	153	14	5	18	23	12	225
SE	142	16	1	0	0	0	159
SSE	87	9	1	0	0	0	97
S	85	18	3	0	0	0	106
SSW	90	32	5	2	0	0	129
SW	113	139	66	56	16	4	394
WSW	344	230	349	1148	737	122	2930
W	91	108	328	1068	261	12	1868
WNW	41	97	173	89	2	0	402
NW	47	85	83	22	0	0	237
NNW	51	146	93	41	0	0	331
Total	1717	1598	1421	2500	1048	150	8434

Frequency of Calm Winds: 361

Mariposa Energy Project
Table 5.1C-10d
Fourth Quarter Wind Table
June 2009

Frequency Distribution (Hours)
Date Range: Oct 1 - Dec 31 (1997-1999, 2003)

Wind Speed (m/s)	0.5 -2.1	2.1 -3.6	3.6 -5.7	5.7 -8.8	8.8 - 11.1	>= 11.1	Total
Wind Direction (from)							
N	216	220	42	10	0	0	488
NNE	152	48	0	0	0	0	200
NE	137	18	0	0	0	0	155
ENE	107	30	3	0	0	0	140
E	185	99	13	3	0	0	300
ESE	266	89	22	1	0	0	378
SE	197	96	18	4	0	0	315
SSE	132	32	12	3	0	0	179
S	117	40	3	4	0	0	164
SSW	131	75	13	6	2	0	227
SW	216	582	53	18	2	0	871
WSW	258	488	308	507	125	30	1716
W	206	361	426	308	31	2	1334
WNW	177	234	123	28	0	0	562
NW	183	192	153	129	11	0	668
NNW	170	252	128	89	16	1	656
Total	2850	2856	1317	1110	187	33	8353

Frequency of Calm Winds: 372

Mariposa Energy Project
Table 5.1C-11
June 2009
Ambient Air Quality Standards Summary

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[8]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990 California Air Resources Board (04/01/08)

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calender year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

8. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Mariposa Energy Project
Table 5.1C-12a
June 2009
Climatic Summary for Tracy Pumping Plant, CA

TRACY PUMPING PLANT, CALIFORNIA (049001)

Period of Record Monthly Climate Summary

Period of Record : 2/ 1/1955 to 12/31/2007

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	54.6	61.2	66.4	72.2	79.7	87.2	92.6	91.9	87.5	78.4	64.7	55.2	74.3
Average Min. Temperature (F)	38.2	41.8	44.6	47.7	53.3	57.6	60.4	60.4	58.1	52.2	44.0	38.5	49.8
Average Total Precipitation (in.)	2.62	2.15	1.59	0.84	0.41	0.11	0.03	0.06	0.24	0.62	1.60	1.93	12.19
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 96.5% Min. Temp.: 95.6% Precipitation: 98.7% Snowfall: 99.6% Snow Depth: 99.5%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Mariposa Energy Project
Table 5.1C-12b
June 2009
Climatic Summary for Livermore, CA

LIVERMORE, CALIFORNIA (044997)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1903 to 12/31/2007

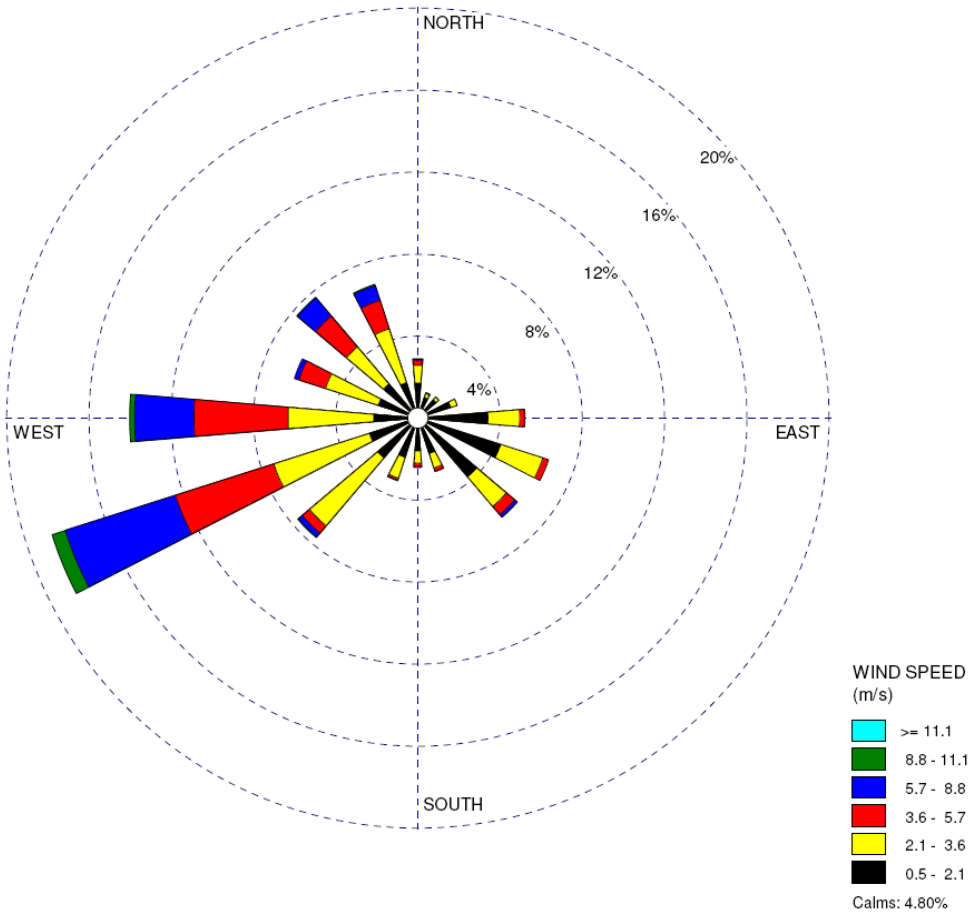
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	56.7	61.2	65.2	70.5	76.4	83.1	89.0	88.2	85.8	77.8	66.4	57.6	73.2
Average Min. Temperature (F)	36.6	39.4	41.2	43.5	47.6	51.6	54.2	54.0	52.3	47.6	41.0	37.0	45.5
Average Total Precipitation (in.)	3.02	2.47	2.16	1.00	0.45	0.10	0.02	0.04	0.22	0.64	1.56	2.58	14.27
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 97.5% Min. Temp.: 97.5% Precipitation: 97.6% Snowfall: 72.8% Snow Depth: 72.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Mariposa Energy Project
Figure 5.1C-1a - June 2009
First Quarter Wind Rose
Date Range: January 1 – March 31

WIND ROSE PLOT:	DISPLAY:
Patterson Pass **2323799999**	**Wind Speed** **Direction (blowing from)**



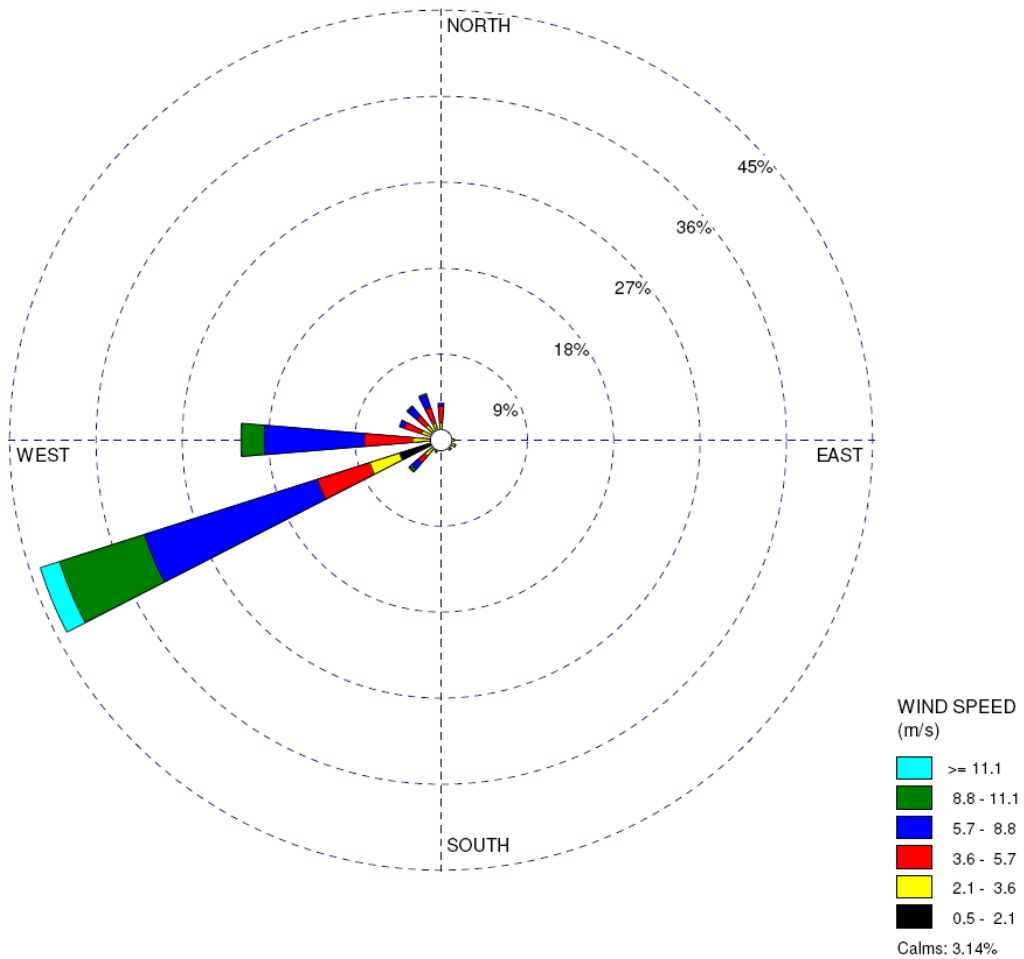
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1997-1999, 2003 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **4.80%**	TOTAL COUNT: **8039 hrs.**	
	AVG. WIND SPEED: **2.97 m/s**	DATE: **5/11/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Mariposa Energy Project
Figure 5.1C-1b – June 2009
Second Quarter Wind Rose
Date Range: April 1 – June

WIND ROSE PLOT:
Patterson Pass
2323799999

DISPLAY:
Wind Speed
Direction (blowing from)

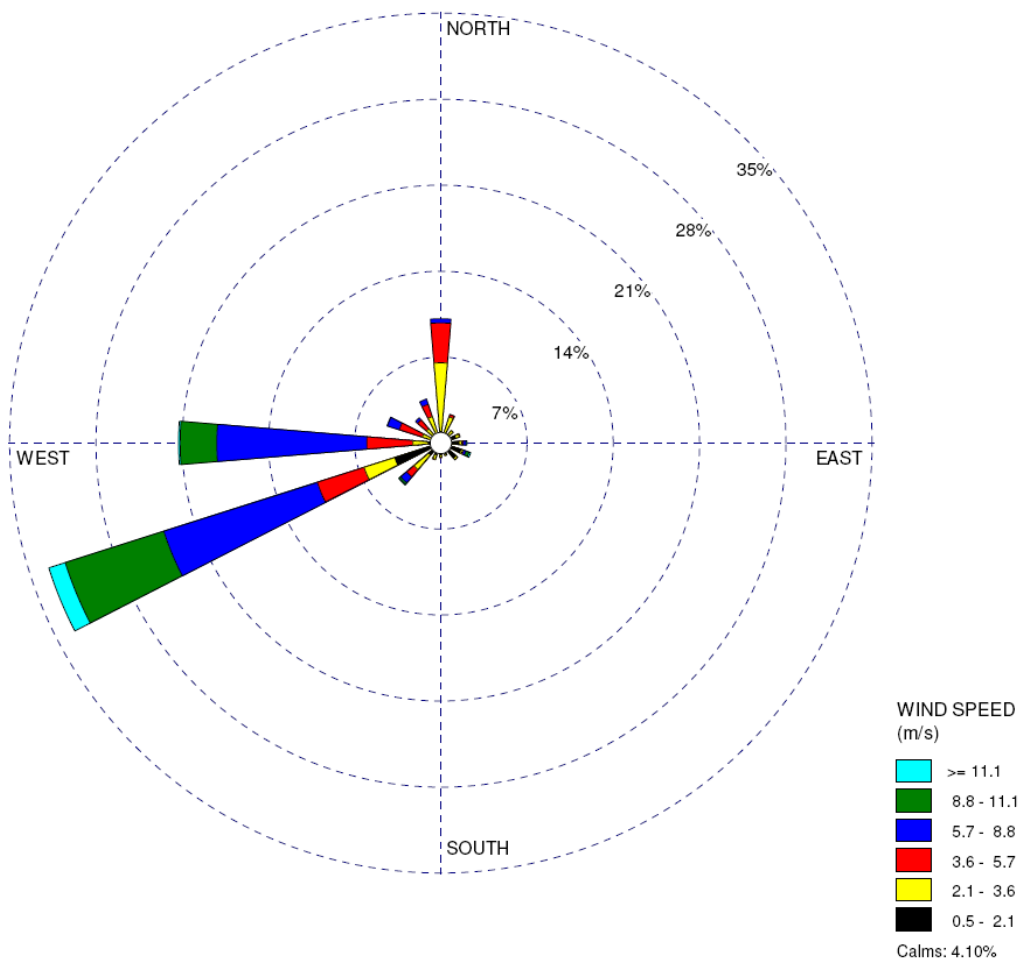


COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1997-1999, 2003 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **3.14%**	TOTAL COUNT: **8729 hrs.**	
	AVG. WIND SPEED: **5.39 m/s**	DATE: **5/11/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Mariposa Energy Project
Figure 5.1C-1c - June 2009
Third Quarter Wind Rose
Date Range: July 1 – September 30

WIND ROSE PLOT:	DISPLAY:
Patterson Pass **2323799999**	**Wind Speed** **Direction (blowing from)**



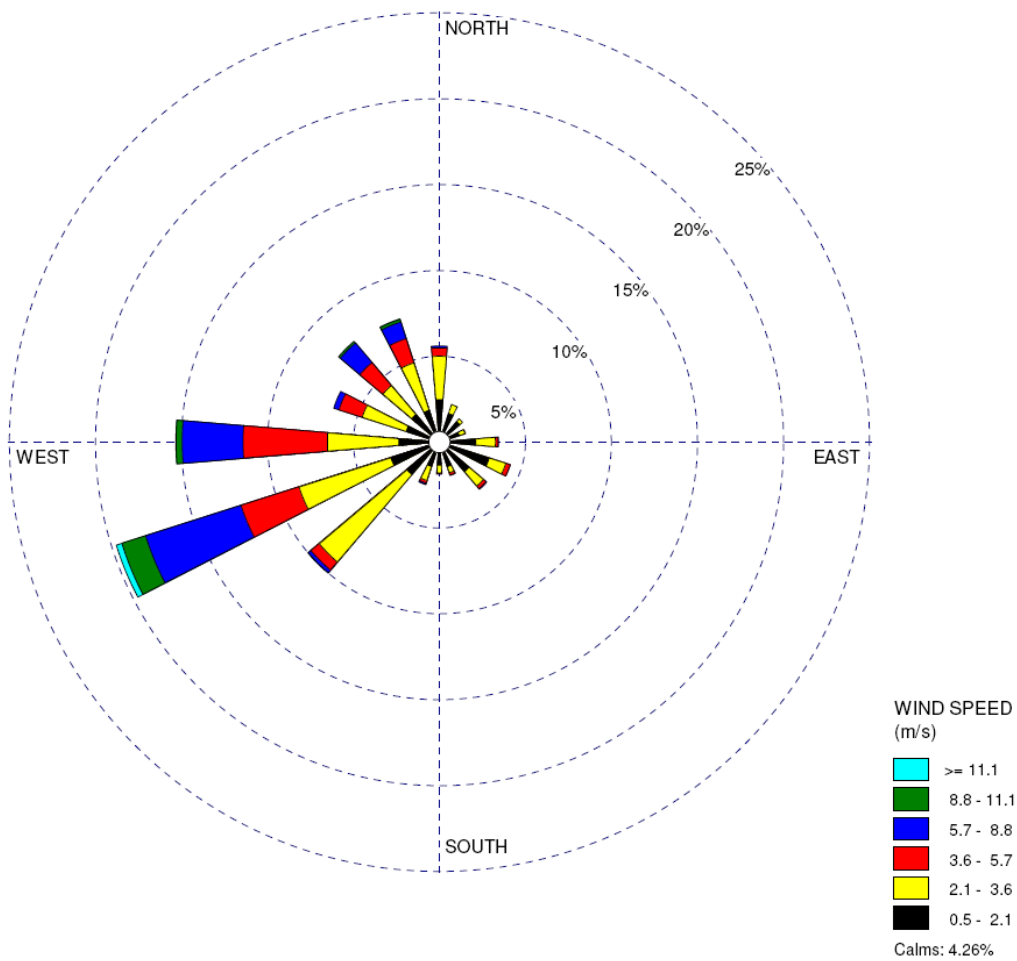
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1997-1999, 2003 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **4.10%**	TOTAL COUNT: **8795 hrs.**	
	AVG. WIND SPEED: **4.93 m/s**	DATE: **5/11/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Mariposa Energy Project
Figure 5.1C-1d- June 2009
Fourth Quarter Wind Rose
Date Range: October 1 – December 31

WIND ROSE PLOT:
Patterson Pass
2323799999

DISPLAY:
Wind Speed
Direction (blowing from)

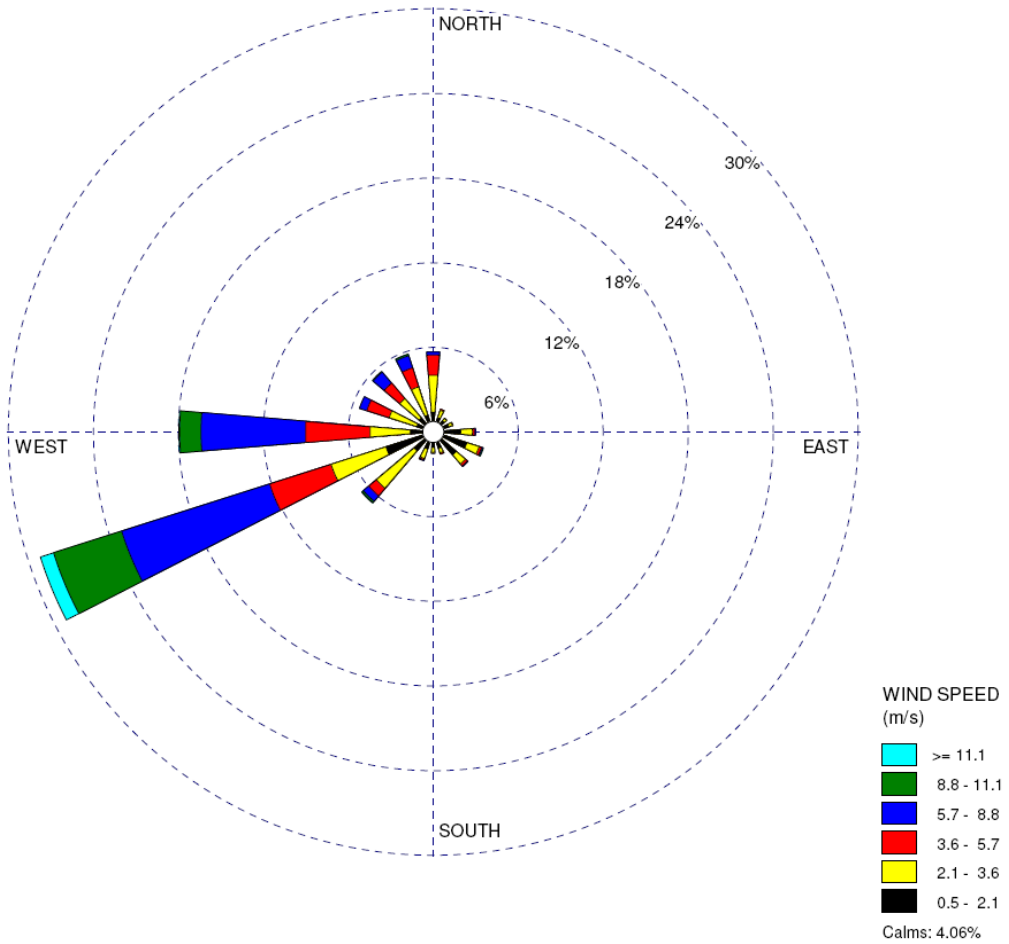


COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1997-1999, 2003 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **4.26%**	TOTAL COUNT: **8725 hrs.**	
	AVG. WIND SPEED: **3.17 m/s**	DATE: **5/11/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Mariposa Energy Project
Figure 5.1C-1e - June 2009
Annual Wind Rose

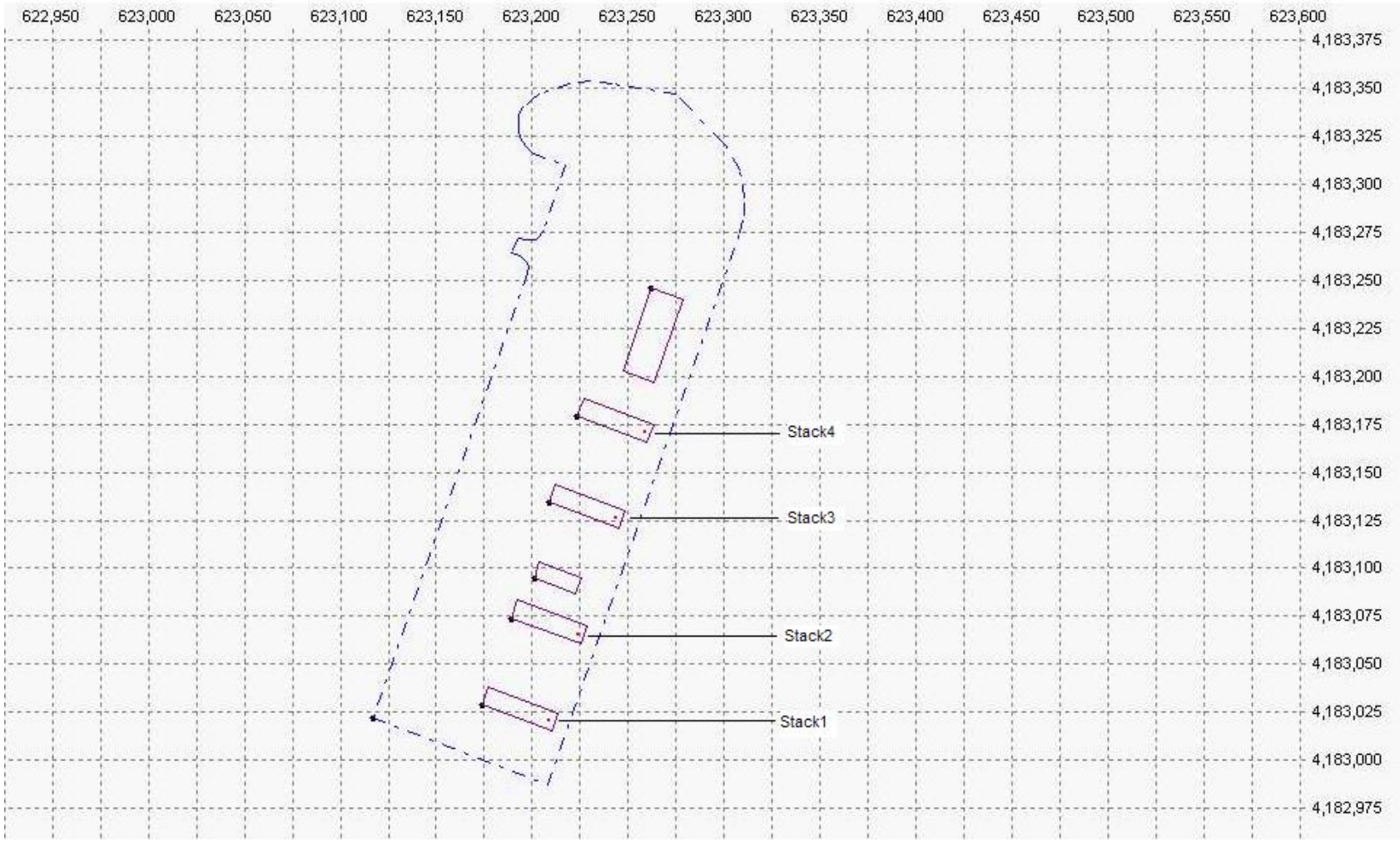
WIND ROSE PLOT:	DISPLAY:
Patterson Pass **2323799999**	**Wind Speed** **Direction (blowing from)**



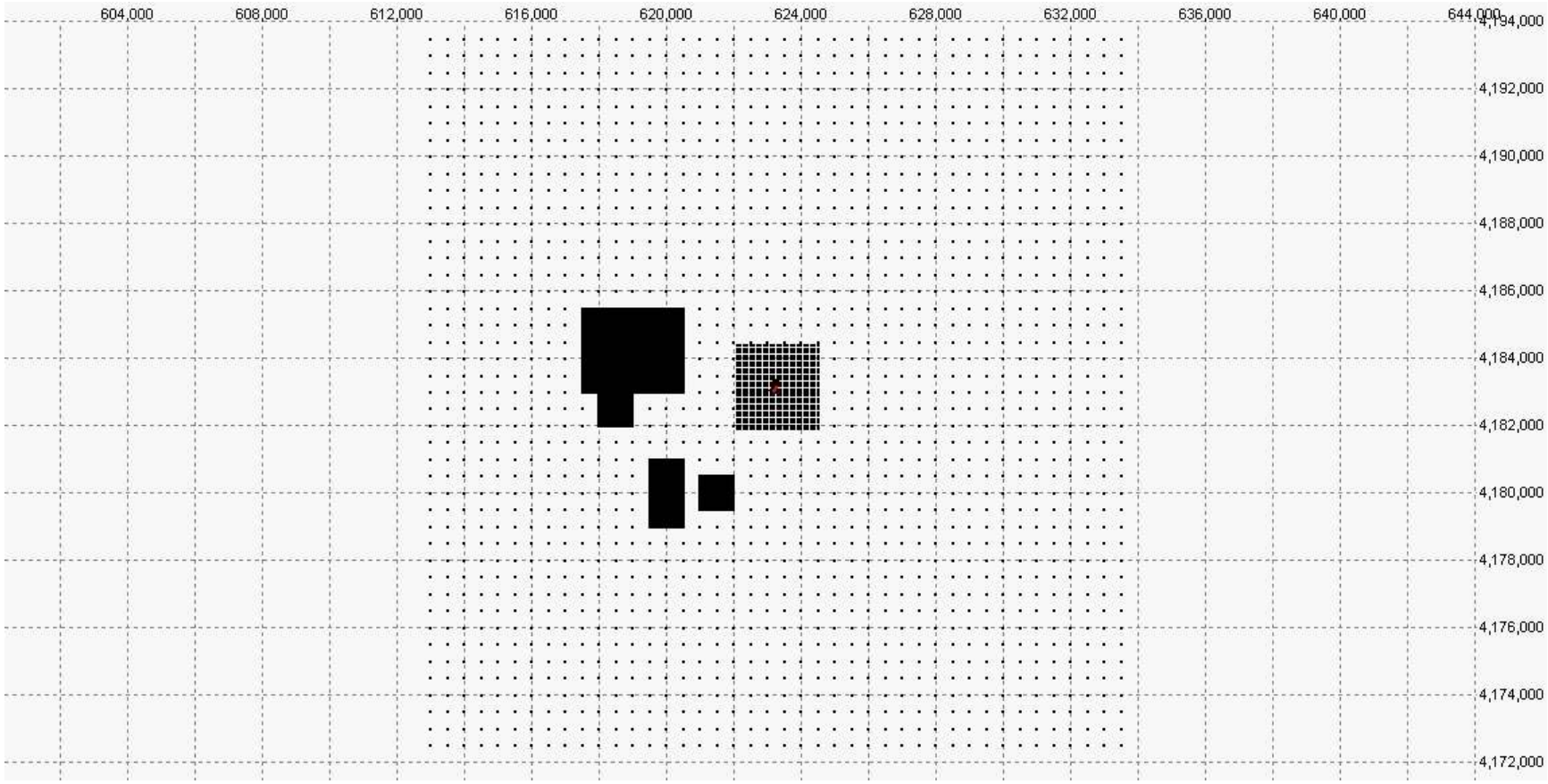
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1997-1999, 2003 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **4.06%**	TOTAL COUNT: **34288 hrs.**	
	AVG. WIND SPEED: **4.14 m/s**	DATE: **5/11/2009**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

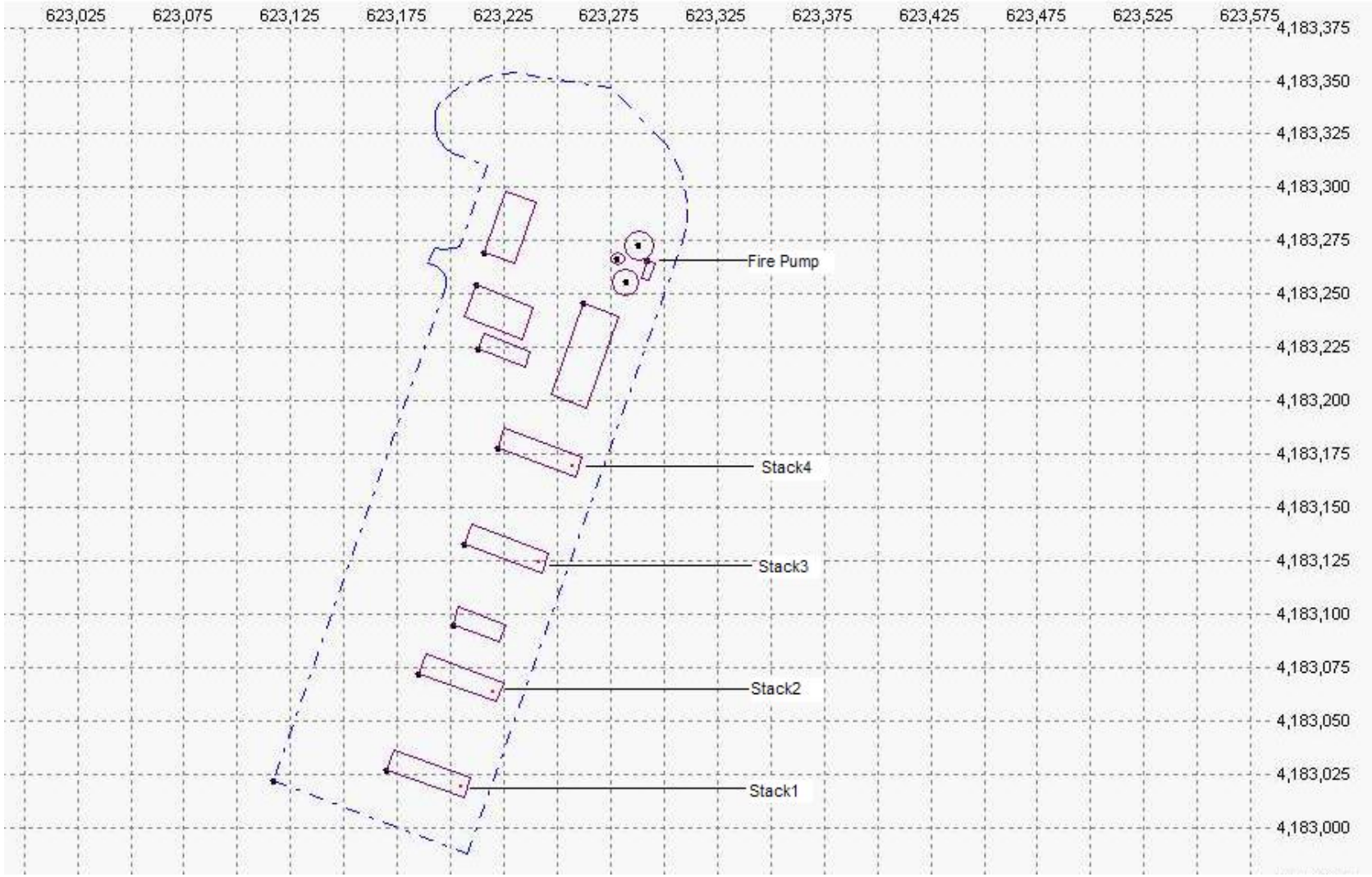
Mariposa Energy Project
Figure 5.1C-2
June 2009
Commissioning Model Setup



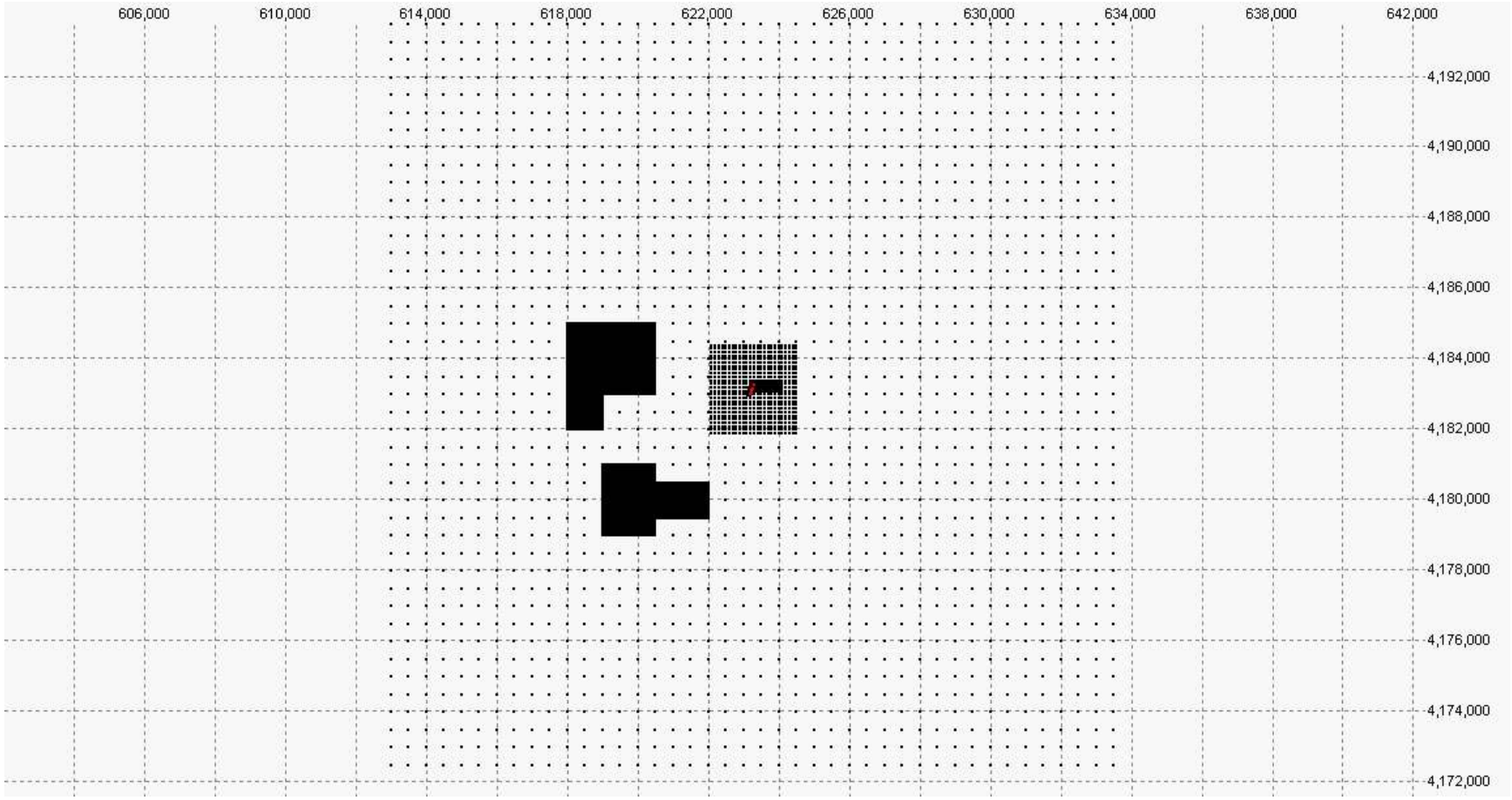
Mariposa Energy Project
Figure 5.1C-3
June 2009
Commissioning Coarse and Refined Receptor Grids



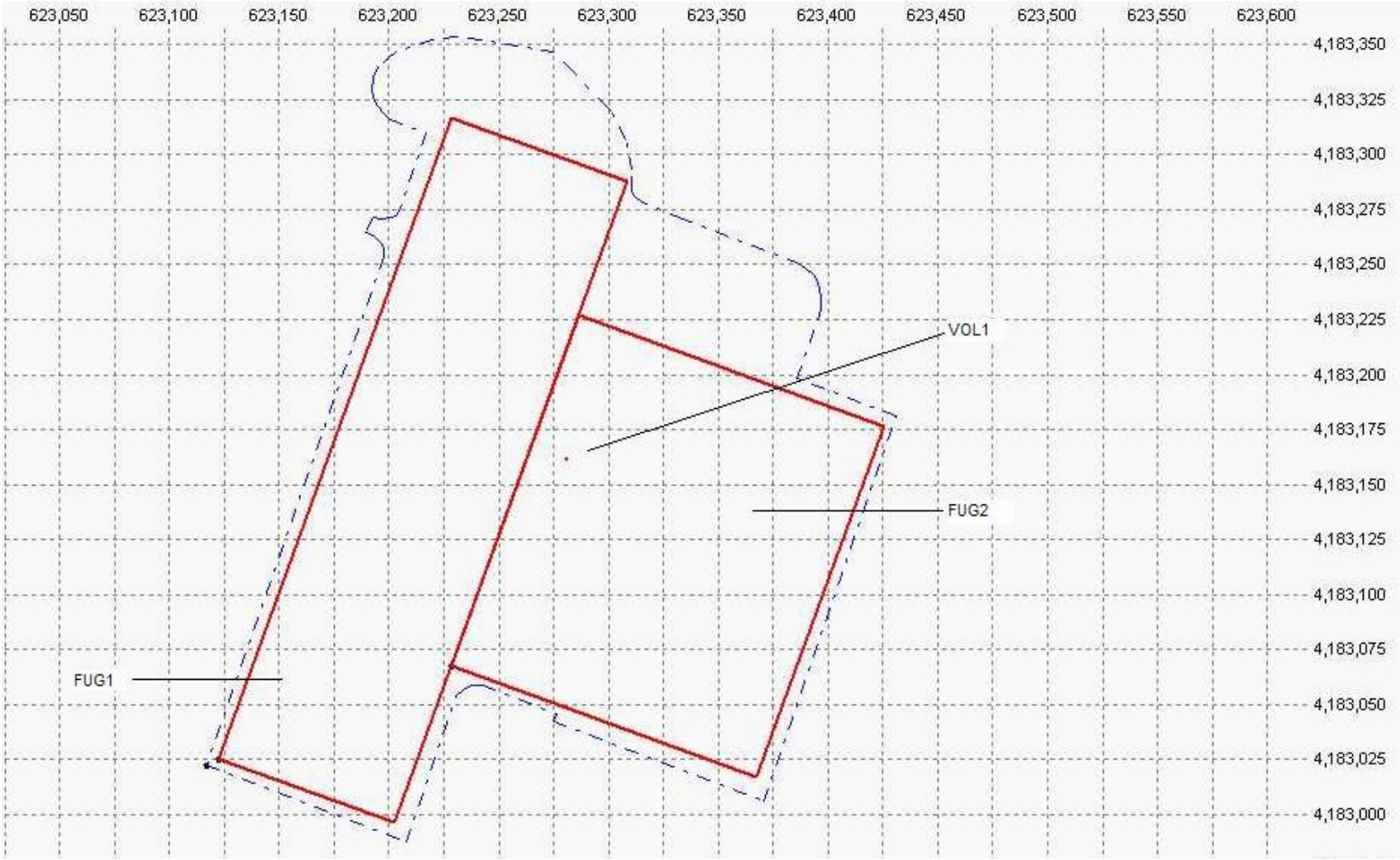
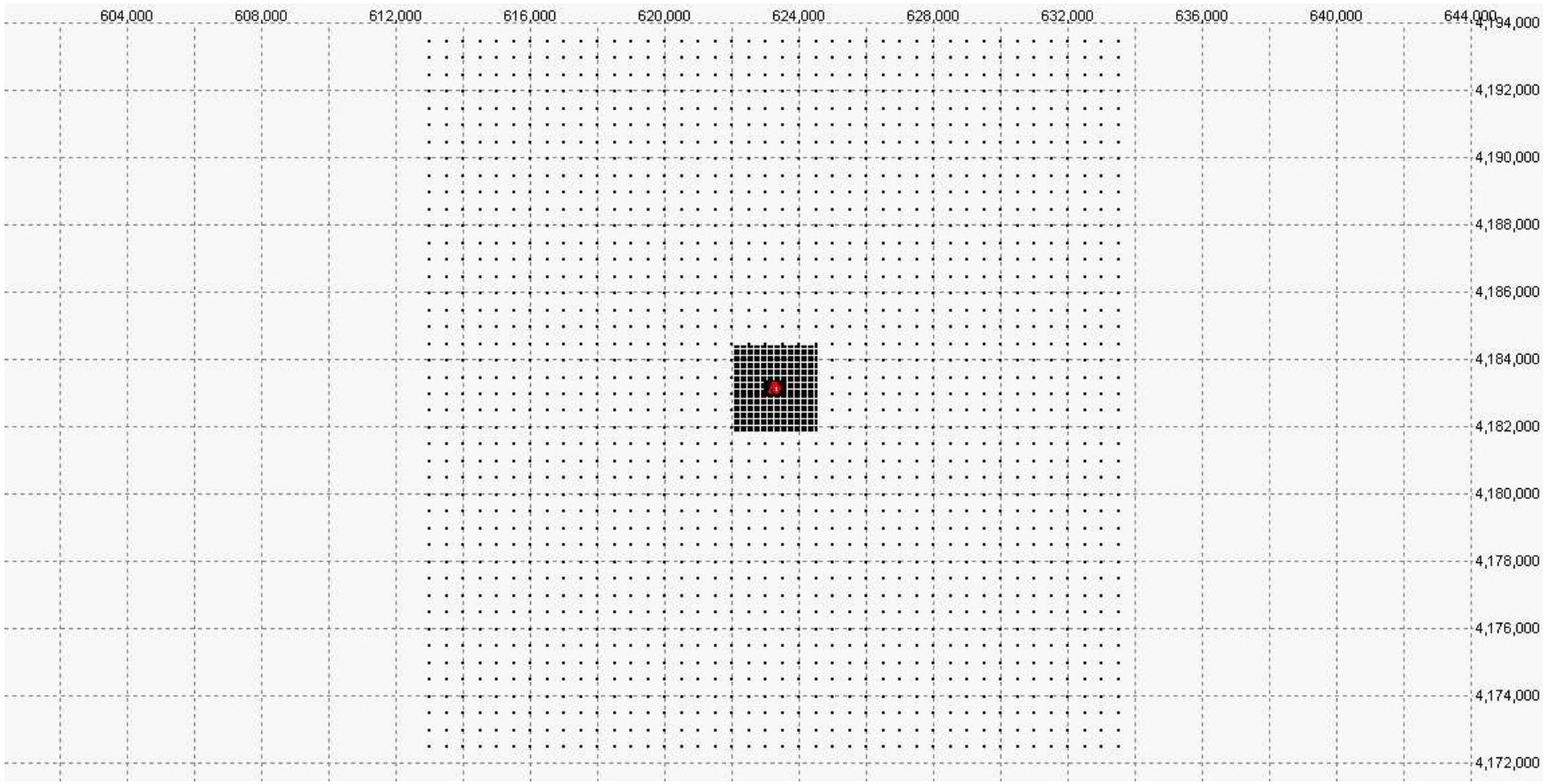
Mariposa Energy Project
Figure 5.1C-4
June 2009
Operational Model Setup



Mariposa Energy Project
Figure 5.1C-5
June 2009
Operational Coarse and Refined Receptor Grids



Mariposa Energy Project
Figure 5.1C-6
June 2009
Construction Model Setup



Mariposa Energy Project
Figure 5.1C-7
June 2009
Construction Coarse and Refined Receptor Grids