



October 3, 2008

Brian K. Lusher  
Air Quality Engineer II  
Bay Area Air Quality Management District  
949 Ellis Street  
San Francisco, CA 94109

**Subject: Application Number 18404, Plant Number 19169  
Submittal of Revised Modeling – Marsh Landing Generating Station**

Dear Mr. Lusher:

Mirant Marsh Landing LLC, is submitting the attached document showing revisions to the air dispersion modeling results as requested by the BAAQMD.

Also enclosed is a CD containing electronic copies of air quality and public health modeling input and output files.

Please contact me at (510) 874-3055 if you have any questions or require additional information.

Sincerely,

Mark A. Strehlow, P.E.  
Leader, Air Quality and Public Health  
URS Corporation

Enclosures:

Application Revision with CD – 3 sets

cc: Mike Monasmith, California Energy Commission  
Jon Sacks, Mirant  
Ron Kino, Mirant  
Lisa Cottle, Winston and Strawn  
Anne Connell, URS

**Application for Authority to Construct  
and Permit to Operate Revision  
for  
MARSH LANDING  
GENERATING STATION  
Contra Costa County, California**

**Application #18404  
Plant #19169**

*Submitted to:*  
**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

**October 2008**

*Prepared for:*



*Prepared by:*





# MARSH LANDING GENERATING STATION PROJECT

APPLICATION #18404

PLANT # 19169

MEMO: ATC/PTO APPLICATION REVISION  
CONTRA COSTA COUNTY, CALIFORNIA

*Prepared For:*

- Bay Area Air Quality Management District

*Prepared on behalf of*

**Mirant Marsh Landing, LLC**

October 3, 2008

**URS**

1333 Broadway, Suite 800  
Oakland, CA 94612



# **ATC/PTO Application Marsh Landing Generating Station**

## **1.0 INTRODUCTION**

The purpose of this submittal is to present revised Marsh Landing Generating Station (MLGS) air quality and health risk modeling results. Air dispersion and health risk remodeling was necessary because BAAQMD required processing corrections to the meteorological data set used in the original modeling and the use of the most recent version of the health risk model HARP (version 1.4a). An offsite worker health risk analysis has also been included. Corrections to the meteorological data include processing onsite meteorological data with a local time stamp instead of using Greenwich Mean Time (GMT) in AERMET, and using onsite meteorological station coordinates of 608,644 m E; 4,208,274 m N (UTM NAD83) for surface characteristics processing in AERSURFACE. New surface characteristics can be found in Table 7-2 (Revised). Turbine impact screening, 1-hour startup scenario, commissioning, normal operational modeling, and health risk assessment modeling were re-run with new meteorological data. Tables 7-2, 7-4, 7-5, 7-9, 7-12, 9-2 and Figure 7-4 have been revised below and are meant to replace the tables and figure in the ATC application with the same name. All modeling and meteorological processing files are included in a CD accompanying this memo.

The following revised tables and figure are enclosed:

### **List of Tables**

- TABLE 7-2 (REVISED) LAND USE CHARACTERISTICS USED IN AERMET
- TABLE 7-4 (REVISED) MARSH LANDING TURBINE SCREENING RESULTS FP10 COMBINED-CYCLE UNITS
- TABLE 7-5 (REVISED) MARSH LANDING TURBINE SCREENING RESULTS SIMPLE CYCLE UNITS
- TABLE 7-9 (REVISED) AERMOD MODELING RESULTS FOR PROJECT OPERATIONS (ALL PROJECT SOURCES COMBINED)
- TABLE 7-12 (REVISED) PROJECT COMMISSIONING MODELING RESULTS
- TABLE 9-2 (REVISED) ESTIMATED CANCER RISK AND ACUTE AND CHRONIC NONCANCER TOTAL HAZARD INDICES DUE TO MLGS EMISSIONS OF TACs

### **List of Figures**

- FIGURE 7-4 (REVISED) LOCATIONS OF MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS FOR THE OPERATIONAL PROJECT AREA

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 7-2 (Revised) Land Use Characteristics Used in AERMET**

Month	Sector	Range	Land Use Characteristics				
			Albedo ( $\alpha$ )	Bowen Ratio ( $\beta$ ) Avg. sfc moisture	Bowen Ratio ( $\beta$ ) Dry sfc moisture	Bowen Ratio ( $\beta$ ) Wet sfc moisture	Surface Roughness ( $Z_0$ ) (m)
Jan	1	62°-150°	0.16	0.49	0.94	0.33	0.437
Jan	2	150°-182°	0.16	0.49	0.94	0.33	0.317
Jan	3	182°-243°	0.16	0.49	0.94	0.33	0.433
Jan	4	243°-274°	0.16	0.49	0.94	0.33	0.609
Jan	5	274°-62°	0.16	0.49	0.94	0.33	0.041
Feb	1	62°-150°	0.15	0.34	0.7	0.27	0.493
Feb	2	150°-182°	0.15	0.34	0.7	0.27	0.397
Feb	3	182°-243°	0.15	0.34	0.7	0.27	0.488
Feb	4	243°-274°	0.15	0.34	0.7	0.27	0.634
Feb	5	274°-62°	0.15	0.34	0.7	0.27	0.042
Mar	1	62°-150°	0.15	0.34	0.7	0.27	0.493
Mar	2	150°-182°	0.15	0.34	0.7	0.27	0.397
Mar	3	182°-243°	0.15	0.34	0.7	0.27	0.488
Mar	4	243°-274°	0.15	0.34	0.7	0.27	0.634
Mar	5	274°-62°	0.15	0.34	0.7	0.27	0.042
Apr	1	62°-150°	0.16	0.42	0.83	0.3	0.55
Apr	2	150°-182°	0.16	0.42	0.83	0.3	0.46
Apr	3	182°-243°	0.16	0.42	0.83	0.3	0.534
Apr	4	243°-274°	0.16	0.42	0.83	0.3	0.651
Apr	5	274°-62°	0.16	0.42	0.83	0.3	0.042
May	1	62°-150°	0.16	0.42	0.83	0.3	0.55
May	2	150°-182°	0.16	0.42	0.83	0.3	0.46
May	3	182°-243°	0.16	0.42	0.83	0.3	0.534
May	4	243°-274°	0.16	0.42	0.83	0.3	0.651
May	5	274°-62°	0.16	0.42	0.83	0.3	0.042
Jun	1	62°-150°	0.16	0.42	0.83	0.3	0.55
Jun	2	150°-182°	0.16	0.42	0.83	0.3	0.46
Jun	3	182°-243°	0.16	0.42	0.83	0.3	0.534
Jun	4	243°-274°	0.16	0.42	0.83	0.3	0.651
Jun	5	274°-62°	0.16	0.42	0.83	0.3	0.042
Jul	1	62°-150°	0.16	0.42	0.83	0.3	0.55

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 7-2 (Revised) Land Use Characteristics Used in AERMET (Continued)**

Month	Sector	Range	Land Use Characteristics				
			Albedo ( $\alpha$ )	Bowen Ratio ( $\beta$ ) Avg. sfc moisture	Bowen Ratio ( $\beta$ ) Dry sfc moisture	Bowen Ratio ( $\beta$ ) Wet sfc moisture	Surface Roughness ( $Z_0$ ) (m)
Jul	2	150°-182°	0.16	0.42	0.83	0.3	0.46
Jul	3	182°-243°	0.16	0.42	0.83	0.3	0.534
Jul	4	243°-274°	0.16	0.42	0.83	0.3	0.651
Jul	5	274°-62°	0.16	0.42	0.83	0.3	0.042
Aug	1	62°-150°	0.16	0.49	0.94	0.33	0.55
Aug	2	150°-182°	0.16	0.49	0.94	0.33	0.46
Aug	3	182°-243°	0.16	0.49	0.94	0.33	0.534
Aug	4	243°-274°	0.16	0.49	0.94	0.33	0.651
Aug	5	274°-62°	0.16	0.49	0.94	0.33	0.042
Sep	1	62°-150°	0.16	0.49	0.94	0.33	0.55
Sep	2	150°-182°	0.16	0.49	0.94	0.33	0.46
Sep	3	182°-243°	0.16	0.49	0.94	0.33	0.534
Sep	4	243°-274°	0.16	0.49	0.94	0.33	0.651
Sep	5	274°-62°	0.16	0.49	0.94	0.33	0.042
Oct	1	62°-150°	0.16	0.49	0.94	0.33	0.55
Oct	2	150°-182°	0.16	0.49	0.94	0.33	0.46
Oct	3	182°-243°	0.16	0.49	0.94	0.33	0.534
Oct	4	243°-274°	0.16	0.49	0.94	0.33	0.651
Oct	5	274°-62°	0.16	0.49	0.94	0.33	0.042
Nov	1	62°-150°	0.16	0.49	0.94	0.33	0.437
Nov	2	150°-182°	0.16	0.49	0.94	0.33	0.317
Nov	3	182°-243°	0.16	0.49	0.94	0.33	0.433
Nov	4	243°-274°	0.16	0.49	0.94	0.33	0.609
Nov	5	274°-62°	0.16	0.49	0.94	0.33	0.041
Dec	1	62°-150°	0.16	0.49	0.94	0.33	0.437
Dec	2	150°-182°	0.16	0.49	0.94	0.33	0.317
Dec	3	182°-243°	0.16	0.49	0.94	0.33	0.433
Dec	4	243°-274°	0.16	0.49	0.94	0.33	0.609
Dec	5	274°-62°	0.16	0.49	0.94	0.33	0.041



ATC/PTO Application  
Marsh Landing Generating Station

Table 7-4 (Revised) Marsh Landing Turbine Screening Results FP10 Combined-Cycle Units

Normal Operations – New Siemens Peaker Flex-Plant 10 Emissions and stack parameters per Turbine												
Case	Case 1A	Case 1B	Case 1C	Case 2A	Case 2B	Case 2C	Case 3A	Case 3B	Case 3C	Case 3D	Case 3E	Case 3F
Ambient Temperature	Winter Minimum - 20° F, 90% RH				Yearly Average-59° F				Summer Maximum - 94° F			
CTG Load Level	100%	85%	60%	100%	85%	60%	100%	100%	100%	100%	85%	60%
Evaporative Cooler Status/Effectiveness	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
Power Augmentation Status	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
Stack Outlet Temperature (°F)	350.0	346.0	343.7	340.0	337.0	328.7	338.0	348.0	333.0	341.0	346.0	323.3
Stack Outlet Temperature (°K)	449.82	447.59	446.32	444.26	442.59	437.98	443.15	448.71	440.37	444.82	447.59	434.98
Stack Exit Velocity (ft/s)	70.5	61.5	50.1	64.3	57.0	44.9	65.2	62.5	61.6	59.0	53.4	42.8
Stack Exit Velocity (m/s)	21.488	18.745	15.270	19.599	17.374	13.694	19.873	19.050	18.776	17.983	16.276	13.054
NO <sub>x</sub> as NO <sub>2</sub> (@ 2.0 ppm) (lb/hr)	17.4	15.1	12.0	15.8	13.9	10.0	16.3	15.2	15.3	14.3	12.9	10.0
CO (@ 3.0 ppm) (lb/hr)	15.9	13.8	10.7	14.6	12.8	9.5	15.0	14.0	14.1	13.1	11.7	9.0
SO <sub>2</sub> (lb/hr) (based on 0.4 gr total S/100 scf)	2.6	2.3	1.8	2.3	2.1	1.6	2.4	2.2	2.3	2.1	1.9	1.5
SO <sub>2</sub> (lb/hr) (based on 1.0 gr total S/100 scf)	6.4	5.6	4.5	5.8	5.2	4.0	6.0	5.6	5.6	5.3	4.7	3.8
PM <sub>10</sub> (lb/hr)	10.0	8.9	8.0	9.3	8.3	8.0	8.9	8.8	8.5	8.5	7.7	8.0
NO <sub>x</sub> (g/s)	2.194	1.904	1.513	1.993	1.753	1.261	2.056	1.917	1.930	1.803	1.627	1.261
CO (g/s)	2.005	1.740	1.343	1.835	1.608	1.192	1.892	1.759	1.778	1.646	1.481	1.135
SO <sub>2</sub> (g/s) (based on 0.4 gr total S/100 scf)	0.324	0.284	0.226	0.294	0.260	0.201	0.303	0.283	0.285	0.266	0.239	0.191
SO <sub>2</sub> (g/s) (based on 1.0 gr total S/100 scf)	0.811	0.710	0.565	0.736	0.650	0.501	0.758	0.707	0.712	0.664	0.598	0.477
PM <sub>10</sub> (g/s)	1.261	1.122	1.009	1.173	1.047	1.009	1.122	1.110	1.072	1.072	0.965	1.009

Model Results - Maximum X/Q concentration (µg/m<sup>3</sup>/(g/s)) predicted from AERMOD

1 hour	4.57125	5.09533	6.33506	4.89909	5.69637	7.08030	4.84001	4.96336	5.27753	5.42818	5.95778	7.31555
3 hour	2.76708	3.09711	3.79445	3.00288	3.40759	4.26950	2.97478	3.03305	3.18808	3.26449	3.55679	4.45570
8 hour	1.61213	1.72424	2.01161	1.70350	1.81094	2.23727	1.69671	1.71161	1.73855	1.75165	1.89202	2.32178
24 hour	0.64627	0.68995	0.80544	0.68190	0.72643	0.89391	0.67927	0.68505	0.69548	0.70050	0.75839	0.92691
annual	0.03423	0.03782	0.04197	0.03709	0.03991	0.04372	0.03686	0.03735	0.03844	0.03899	0.04080	0.04411

Maximum Concentration (µg/m<sup>3</sup>) predicted per Pollutant Normal Operations

NO <sub>x</sub>	1 hour	10.03085	9.70292	9.58706	9.76171	9.98542	8.92905	9.94918	9.51421	<b>10.18299</b>	9.78912	9.69232	9.22572
	annual	0.07511	0.07202	0.06351	0.07390	0.06996	0.05514	<b>0.07577</b>	0.07160	0.07417	0.07031	0.06637	0.05563
CO	1 hour	9.16612	8.86757	8.50851	8.98942	9.15929	8.43795	9.15569	8.73179	<b>9.38433</b>	8.93343	8.82451	8.30315
	8 hour	<b>3.23259</b>	3.00075	2.70176	3.12578	2.91184	2.66627	3.20961	3.01115	3.09143	2.88278	2.80241	2.63522
SO <sub>2</sub>	1 hour	3.70677	3.61544	3.58211	3.60693	3.70453	3.55006	3.66799	3.50847	<b>3.75817</b>	3.60690	3.56293	3.48587
	3 hour	2.24379	2.19758	2.14554	2.21085	2.21606	2.14073	2.25443	2.14398	<b>2.27026</b>	2.16918	2.12707	2.12315
	24 hour	<b>0.52405</b>	0.48956	0.45543	0.50204	0.47242	0.44821	0.51478	0.48424	0.49526	0.46547	0.45354	0.44167
	annual	0.01110	0.01073	0.00949	0.01092	0.01038	0.00877	<b>0.01117</b>	0.01056	0.01095	0.01036	0.00976	0.00841
PM <sub>10</sub>	24 hour	0.81502	0.77439	0.81260	0.79976	0.76037	0.90186	0.76241	0.76025	0.74552	0.75090	0.73166	<b>0.93515</b>
	annual	0.04317	0.04245	0.04234	0.04350	0.04177	0.04411	0.04137	0.04145	0.04121	0.04180	0.03936	<b>0.04450</b>
		Case 1A	Case 1B	Case 1C	Case 2A	Case 2B	Case 2C	Case 3A	Case 3B	Case 3C	Case 3D	Case 3E	Case 3F

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 7-5 (Revised) Marsh Landing Turbine Screening Results Simple Cycle Units**

<b>Normal Operations – New Siemens SSC6-5000F Simple Cycle Gas Turbines</b>										
Case	Case A1	Case A2	Case A3	Case B1	Case B2	Case B3	Case C1	Case C2	Case C3	
Ambient Temperature	<b>Winter Minimum - 20°F / 90% RH</b>			<b>Yearly Average- 60°F / 64% RH</b>			<b>Summer Maximum - 94°F</b>			
CTG Load Level	100%	75%	60%	100%	75%	60%	100%	75%	60%	
Evaporative Cooler Status/Effectiveness	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	
Gas Turbine Outlet Temperature (°F)	1,065	1,065	1,065	1,090	1,090	1,091	1,123	1,123	1,122	
Stack Outlet Temperature (°F)	750	750	750	750	750	750	750	750	750	
Stack Outlet Temperature (°K)	672.04	672.04	672.04	672.04	672.04	672.04	672.04	672.04	672.04	
Stack Exit Velocity (ft/s)	70.9	57.6	50.8	68.3	56.6	37.2	65.9	55.4	49.1	
Stack Exit Velocity (m/s)	21.600	17.544	15.498	20.814	17.256	11.347	20.086	16.900	14.965	
NO <sub>x</sub> as NO <sub>2</sub> (@ 2.5 ppm)	20.83	16.39	13.89	18.89	15.00	12.78	16.94	13.89	11.67	
CO (@ 3.0 ppm)	15.00	12.00	10.20	13.50	11.25	9.30	12.75	9.75	8.70	
SO <sub>2</sub> (lb/hr) (based on 0.4 gr total S/100 scf)	2.48	1.96	1.67	2.25	1.80	1.54	2.03	1.65	1.41	
SO <sub>2</sub> (lb/hr) (based on 1.0 gr total S/100 scf)	6.21	4.90	4.17	5.63	4.51	3.84	5.08	4.11	3.52	
PM10 (lb/hr)	9.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	
NO <sub>x</sub> (g/s)	2.627	2.067	1.752	2.382	1.892	1.611	2.137	1.752	1.471	
CO (g/s)	1.892	1.513	1.286	1.703	1.419	1.173	1.608	1.230	1.097	
SO <sub>2</sub> (g/s) (based on 0.4 gr total S/100 scf)	0.313	0.247	0.210	0.284	0.227	0.194	0.256	0.208	0.178	
SO <sub>2</sub> (g/s) (based on 1.0 gr total S/100 scf)	0.783	0.617	0.526	0.710	0.569	0.485	0.641	0.519	0.444	
PM <sub>10</sub> (g/s)	1.135	1.009	1.009	1.009	1.009	1.009	1.009	1.009	1.009	
<b>Model Results - Maximum X/Q concentration (µg/m<sup>3</sup>/(g/s)) predicted from AERMOD</b>										
1 hour	3.21325	3.62447	3.9356	3.28569	3.68305	5.56813	3.35861	3.71423	4.03071	
3 hour	2.80997	3.41213	3.71891	2.95419	3.45856	4.44506	3.07153	3.49427	3.8085	
8 hour	1.98887	2.47072	2.74417	2.03324	2.50777	3.53366	2.08557	2.55855	2.81452	
24 hour	1.26546	1.56318	1.85228	1.29255	1.59579	2.41397	1.32487	1.63723	1.94123	
annual	0.02046	0.02165	0.02285	0.02066	0.02182	0.0245	0.02083	0.02203	0.02314	
<b>Maximum Concentration (µg/m<sup>3</sup>) predicted per Pollutant Normal Operations</b>										
NO <sub>x</sub>	1 hour	8.44222	7.49113	6.89337	7.82684	6.96710	<b>8.97259</b>	7.17696	6.50563	5.93037
	annual	<b>0.05375</b>	0.04475	0.04002	0.04921	0.04128	0.03948	0.04451	0.03859	0.03405
CO	1 hour	6.07840	5.48503	5.06249	5.59389	5.22533	<b>6.53049</b>	5.40036	4.56696	4.42236
	8 hour	3.76228	3.73902	3.52992	3.46159	3.55790	<b>4.14439</b>	3.35342	3.14595	3.08800
SO <sub>2</sub>	1 hour	2.51510	2.23784	2.06972	2.33344	2.09396	<b>2.69996</b>	2.15187	1.92692	1.78897
	3 hour	<b>2.19944</b>	2.10673	1.95576	2.09801	1.96633	2.15539	1.96793	1.81281	1.69035
	24 hour	0.99051	0.96515	0.97411	0.91794	0.90727	<b>1.17052</b>	0.84885	0.84939	0.86159
	annual	<b>0.00641</b>	0.00535	0.00481	0.00587	0.00496	0.00475	0.00534	0.00457	0.00411
PM <sub>10</sub>	24 hour	1.43630	1.57707	1.86874	1.30404	1.60997	<b>2.43543</b>	1.33665	1.65178	1.95849
	annual	0.02322	0.02184	0.02305	0.02084	0.02201	<b>0.02472</b>	0.02102	0.02223	0.02335
		<b>Case A1</b>	<b>Case A2</b>	<b>Case A3</b>	<b>Case B1</b>	<b>Case B2</b>	<b>Case B3</b>	<b>Case C1</b>	<b>Case C2</b>	<b>Case C3</b>

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 7-9 (Revised) AERMOD Modeling Results for Project Operations (All Project Sources Combined)**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Maximum Predicted Impact (µg/m<sup>3</sup>)</b>	<b>Significant Air Quality Impacts<sup>6</sup> (µg/m<sup>3</sup>)</b>	<b>Background Concentration (µg/m<sup>3</sup>)<sup>1</sup></b>	<b>Total Concentration (µg/m<sup>3</sup>)</b>	<b>NAAQS (µg/m<sup>3</sup>)</b>	<b>CAAQS (µg/m<sup>3</sup>)</b>	<b>Maximum UTMX NAD27 (m)</b>	<b>Maximum UTMY NAD27 (m)</b>
<b>NO<sub>2</sub></b>	1-hour <sup>2</sup>	20.2 (Normal Operations)	19	122.1	142	NA	339 <sup>5</sup>	601150	4200725
		43.6 (Startup Operations)	NA	122.1	166	NA	339 <sup>5</sup>	600925	4202775
	Annual <sup>2</sup>	0.13	1.0	22.4	23	100	57 <sup>5</sup>	608569	4208311
<b>SO<sub>2</sub></b>	1-hour	7.2	NA	235.8	243	NA	655	600800	4202750
	3-hour	3.8	25	114.4	118	1300	NA	601800	4200575
	24-hour	1.9	5	26.3	28	365	105	608569	4208485
	Annual	0.01	1.0	5.3	5	80	NA	600725	4203225
<b>CO</b>	1-hour	22.3 (Normal Operations)	2,000	4,715	4,737	40,000	23,000	608344	4208185
		319.5 (Startup Operations)	NA	4,715	5,035	40,000	23,000	600925	4202775
	8-hour	53.9	500	2,222	2,276	10,000	10,000	608556	4208465
<b>PM<sub>10</sub></b>	24-hour <sup>3,4</sup>	2.7	5	84.0	87	150	50	608569	4208485
	Annual <sup>3,4</sup>	0.03	1.0	22.0	22	NA	20	600850	4203425
<b>PM<sub>2.5</sub></b>	24-hour <sup>3,4</sup>	2.7	NA	74.0	77	35	NA	608569	4208485
	Annual <sup>3,4</sup>	0.03	NA	12.0	12	15	12	600850	4203425

Notes:

<sup>1</sup> Background represents the maximum values measured at the monitoring stations

<sup>2</sup> Results for NO<sub>2</sub> during operations used ozone limiting method (OLM) with ambient ozone data collected at the Bethel Island monitoring station for the years 2000-2002 and 2004-2005.

<sup>3</sup> PM<sub>10</sub> and PM<sub>2.5</sub> background levels exceed ambient standards.

<sup>4</sup> All PM<sub>10</sub> emissions from project sources were also considered to be PM<sub>2.5</sub>.

<sup>5</sup> In February 2007, CARB approved new, more stringent CAAQS for NO<sub>2</sub> as shown in the table above. These changes became effective in March 2008.

<sup>6</sup> Significant Air Quality Impact is applicable only for normal operations.

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 7-12 (Revised) Project Commissioning Modeling Results**

<b>Modeling Scenario<sup>4</sup></b>	<b>Pollutant</b>	<b>Averaging Period</b>	<b>Maximum Estimated Impact (µg/m<sup>3</sup>)</b>	<b>Background<sup>1</sup> (µg/m<sup>3</sup>)</b>	<b>Total Predicted Concentration (µg/m<sup>3</sup>)</b>	<b>Most Stringent Standard (µg/m<sup>3</sup>)</b>
Simple Cycle Turbines commissioning only	CO	1 hour	1,688.0	4,715	6,403.0	23,000
		8 hours	1,070.6	2,222	3,292.6	10,000
	NO <sub>2</sub> <sup>3</sup>	1 hour	109.1	122.1	231.2	339 <sup>2</sup>
FP10 Turbines commissioning with fuel gas heater while Simple Cycle turbines undergo startup with fuel gas heater	CO	1 hour	3,607.5	4,715	8,322.5	23,000
		8 hours	1,272.5	2,222	3,494.5	10,000
	NO <sub>2</sub> <sup>3</sup>	1 hour	174.4	122.1	296.5	339 <sup>2</sup>
Notes: <sup>1</sup> Background represents the maximum values measured at the monitoring stations. <sup>2</sup> In February 2007, the CARB approved new, more stringent CAAQS for NO <sub>2</sub> . The new standards of 339 µg/m <sup>3</sup> (1 hour) and 57 µg/m <sup>3</sup> (annual) became effective in March 2008. <sup>3</sup> NO <sub>2</sub> modeling for Commissioning was conducted with the OLM algorithm. <sup>4</sup> The SC units are expected to be operational by July 2011, while the FP10 units are expected to be operational by June 2012. CO = carbon monoxide µg/m <sup>3</sup> = micrograms per cubic meter NO <sub>2</sub> = nitrogen dioxide						

**ATC/PTO Application  
Marsh Landing Generating Station**

**Table 9-2 (Revised) Estimated Cancer Risk and Acute and Chronic Noncancer Total Hazard Indices Due to MLGS Emissions of TACs**

<b>Receptor Type</b>	<b>Risk Type</b>	<b>Maximum Risk</b>	<b>NAD 83 UTM Easting (m)</b>	<b>NAD83 UTM Northing (m)</b>	<b>Description &amp; Distance of Receptor</b>
Point of Maximum Impact	Cancer Risk (in 1 million)	0.036	608904	4208758	Approximately 470 meters northeast of the MLGS property boundary
	Chronic Total Hazard Index	0.002	608904	4208758	Approximately 470 meters northeast of the MLGS property boundary
	Acute Total Hazard Index	0.065	603154	4201946	Approximately 8 kilometers southwest of the MLGS site
Sensitive/ Residential Receptor	Cancer Risk (in 1 million)	0.030	608016	4207668	Residence approximately 900 meters southwest of MLGS property boundary
	Chronic Total Hazard Index	0.001	608016	4207668	Residence approximately 900 meters southwest of MLGS property boundary
	Acute Total Hazard Index	0.052	608016	4207668	Residence approximately 900 meters southwest of MLGS property boundary
Offsite Worker Receptor	Cancer Risk (in 1 million)	0.0007	609106	4208686	Sportsman Yacht Club approximately 475 meters northeast of property boundary
	Chronic Total Hazard Index	0.0003	608960	4208241	Gateway Guard Shack approximately 300 meters southeast of property boundary
	Acute Total Hazard Index	0.039	608909	4208605	CCPP Warehouse approximately 265 meters northeast of property boundary



LEGEND	
Maximum Predicted Ground Level Pollutant Concentrations	
▲	CO, 1-Hour Startup Operations (319.5 $\mu\text{g}/\text{m}^3$ )
	NO <sub>2</sub> , 1-Hour Startup Operations, (43.6 $\mu\text{g}/\text{m}^3$ )
●	SO <sub>2</sub> , 24-Hour, (1.9 $\mu\text{g}/\text{m}^3$ )
	PM <sub>2.5</sub> , 24-Hour, (2.7 $\mu\text{g}/\text{m}^3$ )
	PM <sub>10</sub> , 24-Hour, (2.7 $\mu\text{g}/\text{m}^3$ )
■	PM <sub>2.5</sub> , Annual, (0.03 $\mu\text{g}/\text{m}^3$ )
	PM <sub>10</sub> , Annual, (0.03 $\mu\text{g}/\text{m}^3$ )
◆	CO, 1-Hour Normal Operations, (22.3 $\mu\text{g}/\text{m}^3$ )
+	CO, 8-Hour, (53.9 $\mu\text{g}/\text{m}^3$ )
⊕	NO <sub>2</sub> , 1-Hour Normal Operations, (20.2 $\mu\text{g}/\text{m}^3$ )
▲	NO <sub>2</sub> , Annual, (0.1 $\mu\text{g}/\text{m}^3$ )
●	SO <sub>2</sub> , 1-Hour, (7.2 $\mu\text{g}/\text{m}^3$ )
⊗	SO <sub>2</sub> , 3-Hour, (3.8 $\mu\text{g}/\text{m}^3$ )
●	SO <sub>2</sub> , Annual, (0.01 $\mu\text{g}/\text{m}^3$ )
—	Marsh Landing Generating Station Proposed Project Boundary
- - -	Contra Costa Power Plant Property Boundary
—	Bridgehead Lift Station
—	Water Supply and Discharge Pipelines

**LOCATIONS OF MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS FOR THE OPERATIONAL PROJECT AREA**

October 2008  
28067344

Mirant Marsh Landing, LLC  
Contra Costa County, California

**REVISED FIGURE 7-4**

SOURCES: USGS (7.5' quads):  
Antioch North 1978,  
Jersey Island 1978,  
Brentwood 1978,  
Antioch South 1980);

1500 0 1500 3000

Scale in Feet  
1"=3,000 Feet (1:36,000)

SCALE CORRECT WHEN PRINTED AT 11X17

Path: G:\gis\projects\1577\28067344\marsh\_receptors\_groundlevel\_pollutants\_11x17\_rev09-11-08a.mxd, 10/02/08, Randall, Clark