Appendix A

Toxic Risk Analysis Input Data

Los Esteros Critical Energy Facility, P#13289, AN3213 -
Turbine Inputs

Max. fuel use rate per turbine	4,139,976 MMBtu/yr	472.600 MMBtu/hr	Fuel HHV	1022 Btu/scf

Pollutant	Emission Factors for Natural Gas Firing (1), lbs/MMscf	Annual average emissions per turbine, g/s	Max. 1-hr. average emissions per turbine, g/s	unit risk (ug/m3)-1	Cancer Risk Model Input per turbine (4)	Chronic REL (ug/m3)	Chronic REL Model Input per turbine (5)	Acute REL (ug/m3)	Acute REL Model Input per turbine (6)
Acetaldehyde	1.80E-01	1.05E-02	1.05E-02	2.7E-06	2.8E-02	9.0E+00	1.2E-03		
Acrolein	3.69E-03	2.15E-04	2.15E-04			6.0E-02	3.6E-03	1.9E-01	1.1E-03
Ammonia (2)		7.98E-01	7.98E-01			2.0E+02	4.0E-03	3.2E+03	2.5E-04
Benzene	3.33E-03	1.94E-04	1.94E-04	2.9E-05	5.6E-03	6.0E+01	3.2E-06	1.3E+03	1.5E-07
1,3-Butadiene	4.38E-04	2.55E-05	2.55E-05	1.7E-04	4.3E-03	2.0E+01	1.3E-06		
Ethylbenzene	3.27E-02	1.91E-03	1.91E-03			2.0E+03	9.5E-07		
Formaldehyde	3.67E-01	2.14E-02	2.14E-02	6.0E-06	1.3E-01	3.0E+00	7.1E-03	9.4E+01	2.3E-04
Hexane	2.59E-01	1.51E-02	1.51E-02			7.0E+03	2.2E-06		
Naphthalene	1.66E-03	9.67E-05	9.67E-05			9.0E+00	1.1E-05		
Propylene	7.71E-01	4.49E-02	4.49E-02			3.0E+03	1.5E-05		
Propylene Oxide	2.92E-03	1.70E-04	1.70E-04	3.7E-06	6.3E-04	3.0E+01	5.7E-06	3.1E+03	5.5E-08
PAH: Benzo(a)anthracene	2.26E-05								
PAH: Benzo(a)pyrene	1.39E-05								
PAH: Benzo(b)fluoranthene	1.13E-05								
PAH: Benzo(k)fluoranthene	1.10E-05								
PAH: Dibenz(a,h)anthracene	2.35E-05								
PAH: Indeno(1,2,3-cd)pyrene	2.35E-05								
PAHs, Total (3)	1.06E-04	6.16E-06	6.16E-06	6.5E-03	4.0E-02				
Toluene	1.37E-01	7.98E-03	7.98E-03			3.0E+02	2.7E-05	3.7E+04	2.2E-07
Xylene (Total)	6.50E-02	3.79E-03	3.79E-03			7.0E+02	5.4E-06	2.2E+04	1.7E-07
				TOTALS	2.1E-01		1.6E-02		1.6E-03

(1) Except for PAHs, hexane and propylene, the emission factors are from the AP42 Background Document Table 3.4-1 for controls with CO catalyst. CATEF II Database mean emission factors are used for PAHs, hexane and propylene .

(2) The ammonia emission rate is estimated by the applicant based on 10 ppm ammonia slip from SCR system.

(3) Cancer potency value for PAHs (as benzo(a)pyrene) addreses the following exposure pathways: inhalation, soil ingestion, dermal absorption, and mother's milk ingestion

(4) Model Input for Cancer Risk per million = (annual emission rate, g/s) * (unit risk factor, (ug/m3)-1) * 10 E6

(5) Model Input for Chronic Hazard Index = (annual emission rate, g/s) / (inhalation Chronic REL, (ug/m3))

(6) Model Input for Acute Hazard Index = (Max. 1-hour emission rate, g/s) / (Acute REL, ug/m3)

Los Esteros Critical Energy Facility, P#13289, AN3213 - Cooling Tower Inputs

Max. drift rate, lbs/hr :	39.98
Number of cells:	2

Pollutant	Cooling Tower Water concentration , ppb	Max. Ann. and 1-hr. average emissions per cell, g/s	unit risk (ug/m3)-1	Cancer Risk Model Input per cell (2)	Chronic Inhalation REL (ug/m3)	Chronic non-inhalation HI per (ug/m3) (g/s) (3)	Chronic REL Model Input per cell (4)	Acute REL (ug/m3)	Acute REL Model Input per cell (5)
Ammonia	3.0	7.56E-09			2.0E+02		3.8E-11	3.2E+03	2.4E-12
Arsenic (1)	1.4	3.53E-09	7.3E-03	2.6E-05	3.0E-02	8.9E+00	1.5E-07	1.9E-01	1.9E-08
Cadmium	2.9	7.30E-09	4.2E-03	3.1E-05	2.0E-02	2.7E+00	3.9E-07		
Copper	12.3	3.10E-08			2.4E+00		1.3E-08	1.0E+02	3.1E-10
Lead (1)	3.2	8.06E-09	3.5E-05	2.8E-07					
Mercury	0.3	6.55E-10			9.0E-02	1.1E+01	1.4E-08	1.8E+00	3.6E-10
Nickel	22.6	5.69E-08	2.6E-04	1.5E-05	5.0E-02	5.3E-02	1.1E-06	6.0E+00	9.5E-09
Zinc	144.0	3.63E-07			3.5E+01		1.0E-08		
			TOTALS	7.1E-05			1.7E-06		2.9E-08

(1) Cancer potency value for Arsenic, Lead, addreses the following exposure pathways: inhalation, soil ingestion, dermal absorption, and mother's milk ingestion

(2) Model Input for Cancer Risk per million = (annual emission rate, g/s) * (unit risk factor, (ug/m3)-1) * 10 E6

(3) Values are from CARB's HRA Program version 2.0e using the October 5, 2000 database.

(4) Model Input for Chronic Hazard Index = (annual emission rate, g/s) / (inhalation Chronic REL, (ug/m3)) + (annual emission rate, g/s) * (non-inhalation Chronic HI (ug/m3 g/s)-1)

(5) Model Input for Acute Hazard Index = (Max. 1-hour emission rate, g/s) / (Acute REL, ug/m3)

Los Esteros Critical Energy Facility, P#13289, AN3213 -
Emergency Generator Inputs

Operating rate	6.30E-03 MMscf/hr
Annual hours of operation	200 hr/yr

Pollutant	Emission Factors, lbs/MMscf Max. (1)	Annual Average Emissions g/s	One-hour Average Emissions g/s	unit risk (ug/m3)-1	Cancer Risk Model Input (3)	Chronic REL (ug/m3)	Chronic REL Model Input (4)	Acute REL (ug/m3)	Acute REL Model Input (5)
Acetaldehyde	2.62E+00	4.75E-05	2.08E-03	2.7E-06	1.3E-04	9.0E+00	5.3E-06		
Acrolein	1.61E-01	2.92E-06	1.28E-04			6.0E-02	4.9E-05	1.9E-01	6.7E-04
1,3-Butadiene	4.15E-01	7.52E-06	3.29E-04	1.7E-04	1.3E-03	2.0E+01	3.8E-07		
Benzene	2.59E-01	4.69E-06	2.06E-04	2.9E-05	1.4E-04	6.0E+01	7.8E-08	1.3E+03	1.6E-07
Ethylbenzene	1.15E-01	2.08E-06	9.13E-05			2.0E+03	1.0E-09		
Formaldehyde	2.09E+01	3.79E-04	1.66E-02	6.0E-06	2.3E-03	3.0E+00	1.3E-04	9.4E+01	1.8E-04
Naphthalene	3.10E-02	5.62E-07	2.46E-05			9.0E+00	6.2E-08		
Benzo(a)anthracene	9.92E-05								
Benzo(a)pyrene	3.88E-06								
Benzo(b)fluoranthene	1.21E-05								
Benzo(k)fluoranthene	3.88E-06								
Dibenz(a,h)anthracen	2.70E-06								
Ideno(1,2,3-c,d)pyren	1.09E-05								
PAHs, Total (2)	1.33E-04	2.40E-09	1.05E-07	6.5E-03	1.6E-05				
Propylene	1.21E+01	2.19E-04	9.60E-03			3.0E+03	7.3E-08		
Toluene	3.94E-01	7.14E-06	3.13E-04			3.0E+02	2.4E-08	3.7E+04	8.4E-09
Xylene	9.65E-01	1.75E-05	7.66E-04			7.0E+02	2.5E-08	2.2E+04	3.5E-08
				TOTALS	3.8E-03		1.8E-04		8.5E-04

(1) CARB's CATEF II Database emission factors, maximun values for 4S/Lean/>650Hp NG IC engine.
(2) Cancer potency value for PAHs addreses the following exposure pathways: inhalation, soil ingestion, dermal absorption, and mother's milk ingestion
(3) Model Input for Cancer Risk per million = (annual emission rate, g/s) * (unit risk factor, (ug/m3)-1) * (10 E6)
(4) Model Input for Chronic Hazard Index = (annual emission rate, g/s) / (inhalation Chronic REL, (ug/m3))
(5) Model Input for Acute Hazard Index = (Max. 1-hour emission rate, g/s) / (Acute REL, ug/m3)

Los Esteros Critical Energy Facility, P#13289, AN3213 -
Fire Pump Inputs Revised ~~1/4/2002~~
1/15/02

Brake Horsepower	300.0 bhp
Diesel PM Emission rate	0.09 g/bhp-hr
Annual hours of operation	100 ~~200~~ hrs/yr

Pollutant	Annual average emissions, g/s	unit risk (ug/m3)-1	Cancer Risk Model Input (1)	Chronic REL (ug/m3)	Chronic REL Model Input (2)
Diesel PM	~~1.74E-04~~ 8.56E-5	3.0E-04	~~5.1E-02~~ 2.55E-2	5.0E+00	~~3.4E-05~~ 1.7E-5

(1) Model Input for Cancer Risk per million = (annual emission rate, g/s) * (unit risk factor, (ug/m3)-1) * 10 E6
(2) Model Input for Chronic Hazard Index = (annual emission rate, g/s) / (inhalation Chronic REL, (ug/m3))

Appendix B

Certificate of Compliance

Certification of Los Esteros Critical Energy Facility

I, Barbara McBride, on behalf of Calpine Corporation, hereby certify under penalty of perjury as follows:

1. I am authorized to make this certification on behalf of Calpine Corporation.
2. This certification is made pursuant to Section 2-2-307 of the Rules and Regulations of the Bay Area Air Quality Management District.
3. To the best of the undersigned's knowledge, all major stationary sources owned or operated by Calpine Corporation in the State of California are either in compliance or on a schedule of compliance with all applicable state and federal emission limitations and standards.

Delta Energy Center
Los Medanos Energy Center
Sutter Power Plant
Gilroy Power Plant
King City Power Plant
Pittsburg Power Plant (at Dow Chemical)
Greenleaf 1
Greenleaf 2
Agnews Power Plant
Watsonville Power Plant
Aidlin Geothermal Power Plant
Bear Canyon Geothermal Power Plant
Sonoma Geothermal Power Plant
West Ford Flat Geothermal Power Plant
McCabe Geothermal Power Plant
Ridgeline Geothermal Power Plant
Fumarole Geothermal Power Plant
Eagle Rock Geothermal Power Plant
Cobb Creek Geothermal Power Plant
Big Geysers Geothermal Power Plant
Sulphur Springs Geothermal Power Plant
Quicksilver Geothermal Power Plant
Lake View Geothermal Power Plant
Socrates Geothermal Power Plant
Calistoga Geothermal Power Plant
Grant Geothermal Power Plant
And supporting Steam Fields

Each of the statements herein is made in good faith. Accordingly, it is Calpine Corporation's understanding in submitting this certification that the BAAQMD shall take no action against Calpine Corporation or any of its employees based on any statement made in this certification.

Barbara McBride
Environmental Manager
Calpine Corporation

Dated: 1/16/02