APPENDIX P
PUBLIC HEALTH DATA

Toxic Air Contaminant Emission Calculations For the San Gabriel Generating Station

Toxic Air Contaminant Emissions from Each Turbine

Max Fuel Flow HHV (no duct burner)	**2046.3**	**MMBtu/hr**
Maximum annual hours of operation - no duct burner	**3791**	**hr/yr**
Max Fuel Flow HHV (with duct burner)	**2662.3**	**MMBtu/hr**
Maximum annual hours of operation - with duct burner	**4000**	**hr/yr**

No duct burner hours include startups and shutdowns
Operations Fuel Flow based on Case 3A - 25°F - 60% RH, 100% load with duct burner

Pollutant	CAS	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMcf)	Maximum Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
Ammonia	7664417			17.32	1.35E+05
1,3-Butadiene	106990	4.30E-07		1.14E-03	7.91E+00
Acetaldehyde	75070	4.00E-05		1.06E-01	7.36E+02
Acrolein	107028	3.62E-06		9.64E-03	6.66E+01
Benzene	71432	3.26E-06		8.68E-03	6.00E+01
Ethylbenzene	100414	3.20E-05		8.52E-02	5.89E+02
Formaldehyde	50000	3.60E-04		9.58E-01	6.63E+03
Propylene Oxide	75569	2.90E-05		7.72E-02	5.34E+02
Toluene	108883	1.30E-04		3.46E-01	2.39E+03
Xylenes	1330207	6.40E-05		1.70E-01	1.18E+03
Naphthalene	91203	1.30E-06		3.46E-03	2.39E+01
Benzo(a)anthracene	56553	2.24E-08	2.26E-05	5.97E-05	4.12E-01
Benzo(a)pyrene	50328	1.38E-08	1.39E-05	3.67E-05	2.54E-01
Benzo(b)fluoranthene	205992	1.12E-08	1.13E-05	2.98E-05	2.06E-01
Benzo(k)fluoranthene	207089	1.09E-08	1.10E-05	2.90E-05	2.01E-01
Chrysene	218019	2.50E-08	2.52E-05	6.65E-05	4.60E-01
Dibenz(a,h)anthracene	53703	2.33E-08	2.35E-05	6.20E-05	4.29E-01
Indeno(1,2,3-cd)pyrene	193395	2.33E-08	2.35E-05	6.20E-05	4.29E-01

Notes:

a. Emission factors obtained from US EPA AP-42 Table 3.1-3 for uncontrolled natural gas-fired stationary turbines. Formaldehyde, Benzene, and Acrolein emission factors are from the Background document for AP-42 Section 3.1, Table 3.4-1 for a natural gas-fired combustion turbine with a CO catalyst.

b. Ammonia emission rate based on an exhaust NH_3 limit of 5 ppmv @ 15% O_2 provided by the turbine vendor.

c. PAH emission factors (other than naphthalene) obtained from the CATEF database for natural gas-fired combustion turbines with SCR and CO catalyst.

d. Used a HHV of 1008.6 Btu/scf.

Toxic Air Contaminant Emissions from Auxiliary Boiler

Heat Input (HHV)	**56**	**MMBtu/hr**	
Expected non-emergency usage	**4000**	**hr/yr**	

Pollutant	**CAS**	**Emission Factor (lb/MMBtu)**	**Emission Factor (lb/MMcf)**	**Hourly Emission Rate (lb/hr)**	**Annual Emission Rate (lb/yr)**
Acetaldehyde	75070	3.07E-06	0.0031	1.72E-04	6.88E-01
Acrolein	107028	2.68E-06	0.0027	1.50E-04	6.00E-01
Benzene	71432	5.75E-06	0.0058	3.22E-04	1.29E+00
Ethylbenzene	100414	6.84E-06	0.0069	3.83E-04	1.53E+00
Formaldehyde	50000	1.22E-05	0.0123	6.83E-04	2.73E+00
Hexane	110543	4.56E-06	0.0046	2.55E-04	1.02E+00
Propylene	115071	5.25E-04	0.5300	2.94E-02	1.18E+02
Toluene	108883	2.63E-05	0.0265	1.47E-03	5.89E+00
Xylenes	1330207	1.95E-05	0.0197	1.09E-03	4.38E+00
Naphthalene	91203	2.97E-07	0.0003	1.67E-05	6.66E-02
7,12-Dimethylbenz(a)anthracene	57976	1.59E-08	1.60E-05	8.88E-07	3.55E-03
3-Methylchloranthrene	56495	1.78E-09	1.80E-06	9.99E-08	4.00E-04
Benz(a)anthracene	56553	1.78E-09	1.80E-06	9.99E-08	4.00E-04
Benzo(a)pyrene	50328	1.19E-09	1.20E-06	6.66E-08	2.67E-04
Benzo(b)fluoranthene	205992	1.78E-09	1.80E-06	9.99E-08	4.00E-04
Benzo(k)fluoranthene	205823	1.78E-09	1.80E-06	9.99E-08	4.00E-04
Chrysene	218019	1.78E-09	1.80E-06	9.99E-08	4.00E-04
Dibenzo(a,h)anthracene	53703	1.19E-09	1.20E-06	6.66E-08	2.67E-04
Indeno(1,2,3-cd)pyrene	193395	1.78E-09	1.80E-06	9.99E-08	4.00E-04

Notes:

a Emission factors obtained from the Ventura County Air Pollution Control District AB2588 Combustion Emission Factors for Natural Gas fired external Combustion Equipment. May 17, 2001

b Used a HHV of 1008.6 Btu/scf.

c PAH Emission factors (other than naphthalene) obtained from the AP-42 Section 1.4 Natural Gas External Combustion

Toxic Air Contaminant Emission Calculations For the Existing Etiwanda Generating Station Units 3 and 4

Toxic Air Contaminant Emissions from Each of Units 3 and 4 Boilers

Max Fuel Flow HHV	**1400**	**MMBtu/hr**
Maximum annual hours of operation	**5756**	**hr/yr**

Maximum operational hours for either Unit 3 or 4 in 2005 or 2006
Operations Fuel Flow based maximum monthly MMBtu/hr for either Unit 3 or 4 in 2005 or 2006

Pollutant	CAS	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMcf)	Maximum Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
Ammonia	7664417			13.2	7.60E+04
Acetaldehyde	75070	8.92E-07	0.0009	1.25E-03	7.19E+00
Acrolein	107028	7.93E-07	0.0008	1.11E-03	6.39E+00
Benzene	71432	1.69E-06	0.0017	2.36E-03	1.36E+01
Ethylbenzene	100414	1.98E-06	0.0020	2.78E-03	1.60E+01
Formaldehyde	50000	3.57E-06	0.0036	5.00E-03	2.88E+01
Hexane	110543	1.29E-06	0.0013	1.80E-03	1.04E+01
Propylene	115071	1.54E-05	0.0155	2.16E-02	1.24E+02
Toluene	108883	7.73E-06	0.0078	1.08E-02	6.23E+01
Xylenes	1330207	5.75E-06	0.0058	8.05E-03	4.63E+01
Naphthalene	91203	2.97E-07	0.0003	4.16E-04	2.40E+00
7,12-Dimethylbenz(a)anthracene	57976	1.59E-08	1.60E-05	2.22E-05	1.28E-01
3-Methylchloranthrene	56495	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Benz(a)anthracene	56553	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Benzo(a)pyrene	50328	1.19E-09	1.20E-06	1.67E-06	9.59E-03
Benzo(b)fluoranthene	205992	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Benzo(k)fluoranthene	205823	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Chrysene	218019	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Dibenzo(a,h)anthracene	53703	1.19E-09	1.20E-06	1.67E-06	9.59E-03
Indeno(1,2,3-cd)pyrene	193395	1.78E-09	1.80E-06	2.50E-06	1.44E-02
Total PAHs (other than naphthalene)					2.33E-01

Notes:

a. Emission factors obtained from the Ventura County Air Pollution Control District AB2588 Combustion Emission Factors for Natural Gas fired external Combustion Equipment. May 17, 2001

b. Ammonia emission rate based on an exhaust NH_3 limit of 10 ppmv @ 15% O_2 from the mitigated negative declaration application for addition of SCR to Units 3 & 4.

c. Used a HHV of 1008.6 Btu/scf.

d PAH Emission factors (other than naphthalene) obtained from the AP-42 Section 1.4 Natural Gas External Combustion

Etiwanda Generating Station Existing Units 3 & 4 Maximum Fuel Flow Rate

Site: EGS3

	2005 Hour	MMBtu	MMBtu/hr
Jan	406.52	485870	1195
Feb	102.09	120306.1	1178
Mar	137.11	165402.8	1206
Apr	0	0	
May	375.26	516638.7	1377
Jun	511.33	614601.4	1202
Jul	511.63	716247.9	1400
Aug	324.56	400198.8	1233
Sep	301.47	312964	1038
Oct	508.56	412738.9	812
Nov	531.7	600891.4	1130
Dec	675.76	633586.2	938
Yearly	4385.99	4979446	1135
Yearly Max			1400
	2006 Hour	MMBtu	MMBtu/hr
Jan	437.06	319831.7	732
Feb	409.4	432622.8	1057
Mar	744	653784.8	879
Apr	303.5	327728.2	1080
May	314.83	338053.9	1074
Jun	633.39	640197.6	1011
Jul	743.32	1039069.7	1398
Aug	553.28	509103.4	920
Sep	432.95	439296.6	1015
Oct	10.52	3207.9	305
Nov	429.86	594244.4	1382
Dec	744	708348.4	952
Yearly	5756.11	6005489	1043
Yearly Max			1398

Site: EGS4

	2005 Hour	MMBtu	MMBtu/hr
Jan	55.24	41381	749
Feb	517.46	627281.1	1212
Mar	154.02	178002.7	1156
Apr	0	0	
May	233.24	322300.8	1382
Jun	313.96	311736.8	993
Jul	565.51	588131.1	1040
Aug	466.59	536585	1150
Sep	340.86	255597.6	750
Oct	397.52	314708.8	792
Nov	561.38	503348.9	897
Dec	613.29	529425.9	863
Yearly	4219.07	4208499.5	997
Yearly Max			1382
	2006 Hour	MMBtu	MMBtu/hr
Jan	344.21	247680.9	720
Feb	369.98	400761.8	1083
Mar	744	601360.8	808
Apr	420.17	649656.8	
May	5.95	1212.7	204
Jun	509.82	380405.1	746
Jul	614.3	665734.9	1084
Aug	359.24	289864.1	807
Sep	328.29	287706.4	876
Oct	7.78	2039	262
Nov	409.17	514976.5	1259
Dec	578.09	511874	885
Yearly	4691	4553273	971
Yearly Max			1259

Max MMBTU/hr either unit **1400**

Source: CEM data