Annex B

Air Quality Assessment - Supporting Information

Annex B1

1997-1999 Monthly Statistics of Sulphur Dioxide monitored at CLP's Air Monitoring Station at Penny's Bay

1999 -- MONTHLY STATISTICS: SULPHUR DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-------RANGE------->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	3	1	8	11	20	26	0 - 36	0 - 21	0	0
FEB	2	0	5	7	11	13	0 - 26	0 - 7	0	0
MAR	5	3	10	15	19	23	0 - 58	0 - 21	0	0
APR	5	5	9	11	15	21	0 - 29	2 - 13	0	0
MAY	5	5	10	12	15	19	0 - 19	2 - 14	0	0
JUN	4	4	8	9	10	11	0 - 16	2 - 8	0	0
JUL	5	5	8	8	9	9	0 - 11	1 - 8	0	0
AUG	11	8	24	29	54	55	0 - 58	2 - 30	0	0
SEP	10	8	16	23	35	51	0 - 64	2 - 39	0	0
OCT	17	15	31	38	46	51	0 - 69	6 - 40	0	0

1998 -- MONTHLY STATISTICS: SULPHUR DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-------RANGE------->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	5	4	8	12	19	23	0 - 57	1 - 15	0	0
FEB	5	4	9	11	14	17	0 - 23	1 - 9	0	0
MAR	6	6	10	15	19	21	0 - 24	3 - 14	0	0
APR	5	5	9	10	12	16	0 - 21	2 - 11	0	0
MAY	4	3	7	8	8	11	0 - 12	1 - 5	0	0
JUN	3	3	5	6	9	10	0 - 13	1 - 6	0	0
JUL	3	3	5	6	7	8	0 - 12	1- 7	0	0
AUG	3	2	5	5	6	7	0 - 9	1 - 5	0	0
SEP	3	3	6	8	8	9	0 - 12	2 - 6	0	0
OCT	3	3	6	8	8	9	0 - 12	2 - 6	0	0
NOV	4	4	7	8	10	11	0 - 18	1 - 8	0	0
DEC	3	3	8	10	12	13	0 - 17	0 - 8	0	0

1997 -- MONTHLY STATISTICS: SULPHUR DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-----RANGE----->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	8	6	14	17	22	24	0 - 38	1 - 15	0	0
FEB	4	4	7	8	10	12	0 - 23	0 - 8	0	0
MAR	6	5	13	17	24	30	0 - 77	2 - 18	0	0
APR	4	3	7	9	13	15	0 - 24	0 - 12	0	0
MAY	3	2	5	6	7	8	0 - 9	0 - 6	0	0
JUN	2	1	4	5	6	8	0 - 13	0 - 7	0	0
JUL	2	2	3	4	5	5	0 - 6	0 - 4	0	0
AUG	2	1	4	6	8	9	0 - 15	0 - 7	0	0
SEP	2	1	4	4	7	7	0 - 11	0 - 6	0	0
OCT	2	2	4	4	6	6	0 - 17	0 - 6	0	0
NOV	3	2	5	6	9	15	0 - 24	1 - 8	0	0
DEC	4	3	9	13	18	23	0 - 35	0 - 12	0	0

Annex B2

1997-1999 Monthly Statistics of Nitrogen Dioxide monitored at CLP's Air Monitoring Station at Penny's Bay

1999 -- MONTHLY STATISTICS: NITROGEN DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-------RANGE------->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	55	52	88	105	135	147	9 - 183	30 - 108	0	0
FEB	46	42	80	93	107	128	6 - 202	18 - 93	0	0
MAR	No Data Provided									
APR	34	30	58	66	85	89	4 - 129	11 - 60	0	0
MAY	28	27	51	60	68	74	1 - 86	4 - 56	0	0
JUN	11	8	23	29	37	41	1 - 64	2 - 28	0	0
JUL	13	10	26	38	57	67	1 - 82	5 - 47	0	0
AUG	19	15	33	47	64	69	0 - 83	6 - 54	0	0
SEP	31	26	60	70	77	81	1 - 101	5 - 53	0	0
OCT	41	39	66	74	84	90	8 - 110	18 - 60	0	0

1998 -- MONTHLY STATISTICS: NITROGEN DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-------RANGE------->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	41	41	65	71	80	85	5 - 92	14 - 57	0	0
FEB	44	40	73	89	102	107	5 - 118	18 - 77	0	0
MAR	48	48	76	82	85	88	9 - 108	16 - 70	0	0
APR	37	35	64	76	98	104	5 - 113	12 - 72	0	0
MAY	28	26	45	51	61	66	6 - 76	15 - 51	0	0
JUN	15	11	29	38	51	59	2 - 88	4 - 39	0	0
JUL	12	9	23	29	36	47	0 - 66	8 - 19	0	0
AUG	17	15	28	35	43	48	3 - 76	7 - 32	0	0
SEP	29	27	47	54	65	71	5 - 99	15 - 50	0	0
OCT	31	27	53	61	73	96	4 - 116	11 - 53	0	0
NOV	41	39	67	77	92	105	9 - 163	26 - 74	0	0
DEC	45	43	75	86	102	112	9 - 191	20 - 92	0	0

1997 -- MONTHLY STATISTICS: NITROGEN DIOXIDE

	Monthly	<----------PERCENTILE---------->					<-----RANGE----->		NUMBER OF TIMES ABOVE OBJECTIVE	
	Avg	50	90	95	98	99	1-HR	24-HR	1 HR	24 HR
JAN	56	55	87	98	108	116	10 - 121	25 - 89	0	0
FEB	44	41	70	89	97	102	11 - 117	24 - 78	0	0
MAR	49	48	75	85	102	111	10 - 132	26 - 73	0	0
APR	49	47	76	84	96	115	12 - 146	29 - 71	0	0
MAY	27	23	54	60	70	74	3 - 97	6 - 49	0	0
JUN	25	23	49	56	63	66	2 - 82	6 - 52	0	0
JUL	20	19	31	34	39	39	3 - 81	8 - 39	0	0
AUG	22	18	45	56	67	70	1 - 82	5 - 51	0	0
SEP	27	25	45	53	61	72	2 - 88	6 - 45	0	0
OCT	31	29	50	56	61	68	4 - 77	18 - 47	0	0
NOV	36	32	64	77	91	99	3 -109	8 - 61	0	0
DEC	49	46	79	89	100	105	7 - 123	25 - 82	0	0

Annex B3a **Dust Emission Rates Calculations**

Construction period :

16 hour/day
24 hour/day (for Theme Park Phase I only)
12 hour/day (for Penny's Bay Rail Link only)
6 day/wk
24 day/month

(i) Dust Emission Rate for Each Construction Works Area

Activities	*Yam O PTI Reclamation*		*Yam O Excavation (CKWLR)*			*Disney Rail Link*		*CKWLR (TCT Excavation)*			*CKWLR (East of TCT upto R10 Toll Plaza)*		*Penny's Bay Stage 1*		*Penny's Bay Stage 2*		*Lake*	*Concrete Batching Plant*	*Road Construction*
	Seawall Dredging	*Filling*	*Blasting*	*Rock*	*Soft Sand*	*Blasting*	*Excavation*	*Blasting*	*Rock*	*Soft Sand*	*Seawall Dredging*	*Filling*	*Seawall Dredging*	*Filling*	*Seawall Dredging*	*Filling*	*Excavation*		
Without Mitigation																			
Mat'l handling (g/m2/s)	2.91E-07	1.46E-06	Refer to	3.99E-07	1.64E-07	refer to hand-	1.68E-08	Refer to	5.36E-07	2.38E-07	1.62E-07	6.78E-07	2.53E-06	8.47E-08	2.41E-07	3.72E-07	5.77E-07		
Wind Erosion (g/m2/s) (surcharge)	-	2.70E-06	hand-written	2.70E-06	2.70E-06	written	2.70E-06	hand-written	2.70E-06	2.70E-06	-	2.70E-06	-	2.70E-06	-	2.70E-06	2.70E-06		
Road Construction (g/m2/s)																			3.24E-05
Concrete Batching Plant (AP-42) (g/s)		-	calcuation	-	-	calculation	-	calcuation	-	-	-	-	-	-	-	-	-	1.03E+01	
Haul Road with 10kph (g/m/s)		1.39E-03		0.00E+00	4.62E-03		7.71E-04		1.39E-02	1.39E-02	0.00E+00	3.70E-03		4.62E-03		2.31E-03	4.62E-03		
With Mitigation																			
Mat'l Handling (g/m2/s)	1.46E-07	7.28E-07		2.00E-07	8.18E-08		8.39E-09		2.68E-07	1.19E-07	8.10E-08	3.39E-07	1.26E-06	3.23E-08	1.21E-07	1.86E-07	2.89E-07		
Haul Road with 10kph + paved (85% reduction) (g/m/s)		1.30E-04			4.33E-04		7.22E-05		1.30E-03	1.30E-03	0.00E+00	3.47E-04	0.00E+00	4.33E-04	-	2.17E-04	4.33E-04		
Road Construction (Assume 30% active) (g/m2/s)																			9.73E-06
Concrete Batching Plant (g/s)		-		-	-		-		-	-	-	-	-	-	-	-	-	1.03E+00	
Material handling Rate (m^3/day)	833	4167		590	242		159		3571	1587	789	3299	165185	5556	4556	8523	1984		
Material handled by trucks (m3/day)																			
Volume of Spoil (m3)	240000	900000		340000	140000		68500		1800000	800000	397500	1900000	40000000	2000000	4920000	6750000	1000000		
Construction Period (days)	288	216		576	576		432		504	504	504	576	216	360	1080	792	504		504
Construction Period (months)	12	9		24	24		18		21	21	21	24	9	15	45	33	21		21
Concrete Batch Capacity (m3/hr)											93.75							93.75	
Material handling Rate (m^3/day/area)	0.008	0.042		0.011	0.005		0.000		0.015	0.007	0.005	0.019	0.109	0.003	0.007	0.011	0.017		
(Mg/s)	2.61E-02	1.40E-01		1.99E-02	8.14E-03		5.34E-03		1.20E-01	5.35E-02	2.66E-02	1.11E-01	4.16E+00	1.25E-01	1.53E-01	2.87E-01	6.68E-02		
Number of dump trucks (veh/day)							20												
Number of dump trucks (veh/hr)	-	3			10		2		30	30	-	8	-	10	-	5	10		
Capacity of trucks (m3)	7.50E+00	-			-		-				7.50E+00		7.50E+00		7.50E+00				
Worksite Area (m2)	100000	100000		51604	51604		330000		232689	232689	170000	170000	1704930	2000000	659918	800000	120000		

Remark: It is assumed that on average dump truck will travel half of the length of the haul road for each journey.
The dust emission from concrete batching plant is based on the BPM Note of Cement Works (Concrete Batching Plant)

(ii) Parameters used in Calculation of Dust Emission Factor

Parameters:	*Code*	*w/o Mitigation*	*w Mitigation*			
Particle size multiplier	k	10				for TSP, haul road
Particle size multiplier	k	24				for TSP, paved road
Particle size multiplier	k	0.74				for TSP, aggregate handling
Mean no. of wheel	w	10				
Mean vehicle weight	W	12.5			Mg	
No. of days with at least 0.254 mm ppt.	p	100	100		days	
Mean wind speed	U	5.1	1		m/s	
Material Silt Content	S					
For Bulldozing		6.9			%	Geometric mean for overburden, from Table 11.9-3
Material moisture Content w/o watering	M					
For Material Handling		4.8			%	Mositure for soil and rock = 4.8%, the maximum valid levels
For Bulldozing		7.9			%	Geometric mean for overburden, from Table 11.9-3
For Haul Road		10				
Silt content of road surface	s	10			%	
Road surface silt loading	sL	18			g/m2	
Density						
Loose		1.94			Mg/m3	

(iii) Worksite Area

Construction work zone	*Dimension Width*	*Length*	*Total Area*
Yam O PTI Reclamation			150000
Yam O Excavation (CKWLR)	150.68	342.47	51604
Disney Rail Link			330000
CKWLR (TCT Excavation)			232689
CKWLR (East of TCT upto R10 Toll Plaza)			170000
Theme Park Phase 1			1704930
Theme Park Phase 2			659918
SDU			10000
Lake			12000
Yam O Tuk Reservoir			

(iv) Calculation of Dust Emission Factors

Activities	*Values:* W/O Mitigation	*Values:* W Mitigation	*Units:*	*Equations:*			
Material Handling	1.0369E+00		g/Mg	k(0.0016)[(U/2.2)^1.3]/[(M/2)^1.4]	kg/Mg	Section 13.2.4-4	
Haul road	1.6645E+03	1.5601E+02	g/VKT	k(s/12)^0.8(W/3)^0.5*281.9/(M/0.2)^0.3	kg/VKT	Section 13.2.2-1	
Paved road	6.5144E+02		g/VKT	k(sL/2)^0.65(W/3)^1.5	g/VKT	Section 13.2.1-1	
					Mg/hec/month of		
Heavy construction	3.2432E-05		g/m2/s	2.69	activity	Section 13.2.3-1	
Bulldozing	4.9931E-01		g/s	2.6(S)^1.2/(M)^1.3	kg/hr	Section 11.9-5	Table 11.9-1
Wind erosion of exposed area	2.6953E-06		g/m2/s	0.85	Mg/hectare/yr	Section 11.9-12	Table 11.9-4
Batching Plant	1.6400E+02		g/Mg	0.164	Kg/Mg	Section 11.12-3	Table 11.12-1
Drilling	5.9000E-01		Kg/hole	0.59	Kg/hole	Section 11.9-11	Table 11.9-4
Wet Drilling	8.4000E-02		g/Mg	8.40E-05	Kg/Mg	Section 11.19.2-5	Table 11.19.2-1
Blasting	3.6150E+01		g/blast	0.00022A^1.5	kg/blast	Section 11.9-5	Table 11.9-1

Annex B3b Blasting Emission Rates Calculations

Penny's Bay Rail Link

- Two blast per day
- Blast Area: 35 m^2
- Release height = 3m

Emission Factor = $0.00022A^{1.5}$
where A = 35 m^2
∴ Emission Factor = 0.0456 kg/blast

Hourly Emission Rate = 0.0456x2/3600x1000
= 0.025 g/s

Daily Emission Rate = 0.0456x2/24/3600x1000
= 0.001054 g/s

CKWLR (Yam O and Tsing Chau Tsai Section)

- One blast per day
- Blast Area: 500 m^2
- Release height = 5m

Emission Factor = $0.00022A^{1.5}$
where A = 500 m^2
∴ Emission Factor = 2.46 kg/blast

Hourly Emission Rate = 2.46/3600x1000
= 0.68 g/s

Daily Emission Rate = 2.46/24/3600x1000
= 0.028 g/s

Road P1

- One blast per day
- Blast Area: 90 m^2
- Release height = 3m

Emission Factor = $0.00022A^{1.5}$
where A = 90 m^2
∴ Emission Factor = 0.188 kg/blast

Hourly Emission Rate = 0.188/3600x1000
= 0.052 g/s

Daily Emission Rate = 0.188/24/3600x1000
= 0.00218 g/s

Annex B4 Sample FDM Output File

```
1          FDM - (DATED 91109)

           IBM-PC VERSION (1.01)
           (C) COPYRIGHT 1991, TRINITY CONSULTANTS, INC.
           SERIAL NUMBER 9142  SOLD TO ERM HONG KONG
           RUN BEGAN ON  2/26/00 AT 15:29:34


  RUN TITLE:
     Cumulative Dust Impact for Theme Park (10kph)

     INPUT FILE NAME: RPARK2_2.DAT
     OUTPUT FILE NAME: RPARK2_2.LST


     CONVERGENCE OPTION 1=OFF, 2=ON                1
     MET OPTION SWITCH, 1=CARDS, 2=PREPROCESSED    1
     PLOT FILE OUTPUT, 1=NO, 2=YES                 1
     MET DATA PRINT SWITCH, 1=NO, 2=YES            1
     POST-PROCESSOR OUTPUT, 1=NO, 2=YES            1
     DEP. VEL./GRAV. SETL. VEL., 1=DEFAULT, 2=USER 1
     PRINT 1-HOUR AVERAGE CONCEN, 1=NO, 2=YES      3
     PRINT 3-HOUR AVERAGE CONCEN, 1=NO, 2=YES      1
     PRINT 8-HOUR AVERAGE CONCEN, 1=NO, 2=YES      1
     PRINT 24-HOUR AVERAGE CONCEN, 1=NO, 2=YES     3
     PRINT LONG-TERM AVERAGE CONCEN, 1=NO, 2=YES   1
     BYPASS RAMMET CALMS RECOGNITION, 1=NO, 2=YES  1
     NUMBER OF SOURCES PROCESSED                 100
     NUMBER OF RECEPTORS PROCESSED                14
     NUMBER OF PARTICLE SIZE CLASSES               5
     NUMBER OF HOURS OF MET DATA PROCESSED      8760
     LENGTH IN MINUTES OF 1-HOUR OF MET DATA     60.
     ROUGHNESS LENGTH IN CM                   80.00
     SCALING FACTOR FOR SOURCE AND RECPTORS     1.0000
     PARTICLE DENSITY IN G/CM**3              2.50
     ANEMOMETER HEIGHT IN M                   10.00


     GENERAL PARTICLE SIZE CLASS INFORMATION

                     GRAV.          FRACTION
      PARTICLE       CHAR. SETTLING DEPOSITION  IN EACH
        SIZE          DIA. VELOCITY  VELOCITY    SIZE
        CLASS         (UM) (M/SEC)   (M/SEC)     CLASS
        ----- --------- ----- ------- -----
          1 30.0000000    **      **   .4900
          2 10.0000000    **      **   .2100
          3  5.0000000    **      **   .1900
          4  2.0000000    **      **   .0700
          5  1.0000000    **      **   .0400
     -------
     ** COMPUTED BY FDM
          1

     RECEPTOR COORDINATES (X,Y,Z)

( 2306., 20179., 5.) ( 1493., 19396.,140.) ( 1436., 20164.,180.)
( 1087., 20848.,120.) ( 544., 21462., 15.) (  0., 18200., 5.)
( 2500., 17000., 5.) ( 2306., 20179., 15.) ( 1493., 19396.,150.)
( 1434., 20164.,190.) ( 1087., 20848.,130.) ( 544., 21462., 25.)
(  0., 18200., 15.) ( 2500., 17000., 15.) (
          1

     SOURCE INFORMATION

        ENTERED EMIS.    TOTAL
        RATE (G/SEC,  EMISSION   WIND
         G/SEC/M OR      RATE  SPEED   X1     Y1     X2     Y2 HEIGHT  WIDTH
      TYPE  G/SEC/M**2) (G/SEC)  FAC.  (M)    (M)    (M)    (M)   (M)    (M)
      ---- ------------ --------- ------ ------- -------- ------ ------- ------ ------
        3   .000003400  .05352  .000  835.  21334.  186.   85.  5.00  44.55
        3   .000003400  .03182  .000  949.  21470.  168.   56.  5.00  46.22
```

3	.000003400	.03852	.000	1078.	21598.	195.	58.	5.00	42.75
3	.000003400	.11918	.000	1295.	21790.	388.	90.	5.00	44.93
3	.000002700	.17103	.000	1452.	21092.	189.	335.	5.00	26.65
3	.000002700	.01921	.000	592.	20962.	160.	45.	5.00	43.25
3	.000002700	.01813	.000	698.	21069.	148.	45.	5.00	47.92
3	.000002700	.01554	.000	797.	21178.	147.	39.	5.00	49.04
3	.000002700	.01763	.000	902.	21287.	155.	42.	5.00	46.58
3	.000002700	.11171	.000	1080.	21474.	358.	116.	5.00	43.60
3	.000002700	.09116	.000	1329.	21665.	265.	127.	5.00	44.36
3	.000002700	.05469	.000	1243.	21453.	151.	134.	5.00	44.33
3	.000002700	.02916	.000	1355.	21532.	118.	91.	5.00	44.98
3	.000002700	.01753	.000	1680.	20968.	82.	79.	5.00	-89.10
3	.000002700	.03438	.000	1679.	20813.	222.	57.	5.00	88.81
3	.000002700	.02514	.000	1674.	20611.	182.	51.	5.00	85.84
3	.000002700	.05106	.000	1699.	20402.	82.	229.	5.00	19.91
3	.000002700	.04264	.000	1782.	20204.	80.	198.	5.00	21.87
3	.000002700	.03982	.000	1855.	20031.	83.	177.	5.00	24.68
3	.000002700	.10925	.000	1981.	19836.	163.	248.	5.00	75.52
3	.000002700	.10097	.000	2159.	19718.	170.	220.	5.00	43.72
3	.000002700	.20035	.000	2604.	19683.	181.	409.	5.00	-89.70
3	.000002700	.23937	.000	2535.	19702.	280.	316.	5.00	15.57
3	.000002800	.08892	.000	2558.	20451.	123.	257.	20.00	89.41
3	.000002800	.22216	.000	2941.	20382.	219.	362.	20.00	89.37
3	.000002800	.28272	.000	3353.	20464.	534.	189.	20.00	16.83
3	.000003000	.08751	.000	3693.	20565.	223.	131.	5.00	36.31
3	.000003000	.10483	.000	3799.	20777.	333.	105.	5.00	73.32
3	.000003000	.09541	.000	3845.	21062.	111.	287.	5.00	4.68
3	.000002700	.17751	.000	1631.	20614.	157.	419.	5.00	15.80
3	.000002700	.18124	.000	1754.	20227.	171.	394.	5.00	18.91
3	.000002700	.15088	.000	1966.	20617.	126.	443.	5.00	65.92
3	.000002700	.06017	.000	2211.	20393.	93.	240.	5.00	42.60
3	.000002700	.11694	.000	2097.	20296.	223.	194.	5.00	28.74
3	.000002700	.13165	.000	2133.	20080.	239.	204.	5.00	29.24
3	.000002700	.06805	.000	1753.	19973.	132.	191.	5.00	-4.50
3	.000002700	.67105	.000	2168.	19876.	690.	360.	5.00	-.30
3	.000002700	.30736	.000	2043.	19601.	582.	196.	5.00	.20
3	.000002700	.34752	.000	2671.	19596.	681.	189.	5.00	.11
3	.000002700	.90420	.000	2298.	19346.	1095.	306.	5.00	-.08
3	.000002700	.09039	.000	1757.	19096.	176.	190.	5.00	-4.31
3	.000002700	.22709	.000	2083.	19096.	458.	184.	5.00	-.78
3	.000002700	.26161	.000	2581.	19098.	535.	181.	5.00	1.25
3	.000002700	.31773	.000	1729.	18892.	546.	215.	5.00	-.30
3	.000002700	.18178	.000	1813.	18691.	366.	184.	5.00	-1.28
3	.000002700	.57860	.000	2250.	18784.	494.	434.	5.00	-.48
3	.000002700	.32424	.000	2674.	18830.	343.	350.	5.00	.78
3	.000002700	.08789	.000	2866.	19752.	252.	129.	5.00	-1.17
3	.000002700	.04995	.000	2914.	19888.	135.	137.	5.00	-.13
3	.000002700	.23407	.000	3167.	19826.	335.	259.	5.00	.12
3	.000002900	.18533	.000	2930.	19305.	162.	394.	5.00	-.28
3	.000002900	.19680	.000	2931.	18897.	164.	413.	5.00	1.12
3	.000002900	.06687	.000	3128.	18777.	228.	101.	5.00	.86
3	.000002900	.11661	.000	3237.	18885.	445.	90.	5.00	1.31
3	.000002900	.18896	.000	3234.	19010.	438.	149.	5.00	2.09
3	.000002900	.12557	.000	3602.	19021.	295.	147.	5.00	4.68
3	.000002900	.88389	.000	3386.	19295.	742.	411.	5.00	1.22
3	.000002900	.41666	.000	3371.	19602.	711.	202.	5.00	-.16
3	.000002900	.19282	.000	3502.	19809.	329.	202.	5.00	2.20
3	.000002900	.11883	.000	3454.	19999.	244.	168.	5.00	-.92
3	.000002900	.38783	.000	1899.	20420.	235.	570.	5.00	63.78
3	.000002900	.15344	.000	1885.	20220.	128.	415.	5.00	59.83
3	.000002900	.10447	.000	1880.	20077.	122.	296.	5.00	66.42
1	1.030000000	1.03000	.000	1545.	20773.	0.	0.	5.00	.00
2	.000009700	.00351	.000	2015.	22202.	1702.	22021.	5.00	15.00
2	.000009700	.00295	.000	1702.	22021.	1398.	22026.	5.00	15.00
2	.000009700	.00195	.000	1398.	22026.	1385.	21826.	5.00	15.00
2	.000009700	.00313	.000	1422.	21682.	1335.	21372.	5.00	15.00
2	.000009700	.00627	.000	1335.	21372.	1643.	20804.	20.00	15.00
2	.000009700	.00176	.000	1643.	20804.	1807.	20727.	10.00	15.00
2	.000009700	.00284	.000	1807.	20727.	2100.	20722.	5.00	15.00
2	.000009700	.00111	.000	2100.	20722.	2186.	20646.	5.00	15.00
2	.000009700	.00355	.000	1321.	21644.	1304.	21278.	5.00	15.00
2	.000009700	.00266	.000	1031.	21304.	1304.	21278.	5.00	15.00
2	.000009700	.00514	.000	1304.	21278.	1569.	20819.	20.00	55.00
2	.000009700	.00395	.000	1569.	20819.	1866.	20541.	10.00	38.00
2	.000009700	.00338	.000	1866.	20541.	2209.	20480.	5.00	38.00
2	.000009700	.00163	.000	2186.	20646.	2209.	20480.	5.00	15.00
2	.000009700	.00856	.000	2209.	20480.	1842.	19677.	5.00	38.00

2	.000009700	.00551	.000	1842.	19677.	1955.	19120.	5.00	15.00
2	.000009700	.00172	.000	1955.	19120.	2045.	18968.	5.00	15.00
2	.000009700	.00237	.000	2045.	18968.	2267.	18866.	5.00	15.00
2	.000009700	.00365	.000	2267.	18866.	2641.	18910.	5.00	15.00
2	.000009700	.00745	.000	2209.	20480.	2972.	20390.	20.00	30.00
2	.000009700	.00776	.000	2972.	20390.	3756.	20551.	20.00	30.00
2	.000009700	.00639	.000	3756.	20551.	3850.	21203.	20.00	30.00
2	.000009700	.00680	.000	2693.	19863.	2030.	20091.	20.00	30.00
2	.000208000	.19388	.000	753.	21279.	1427.	21923.	5.00	5.00
2	.000116000	.02461	.000	1126.	21535.	1337.	21517.	5.00	5.00
2	.000116000	.06557	.000	1683.	21015.	1679.	20450.	5.00	5.00
2	.000116000	.07376	.000	1679.	20450.	1939.	19870.	5.00	5.00
2	.000116000	.04297	.000	1939.	19870.	2264.	19691.	5.00	5.00
2	.000694000	13.68593	.000	1365.	1230.	1527.	20950.	20.00	5.00
2	.000694000	.54591	.000	1579.	20816.	1968.	20132.	5.00	5.00
2	.002080000	.53128	.000	2434.	20471.	2689.	20448.	20.00	5.00
2	.000555000	.43964	.000	2971.	20385.	3747.	20543.	5.00	5.00
2	.000555000	.36834	.000	3747.	20543.	3858.	21198.	5.00	5.00
2	.000694000	.69461	.000	1574.	20785.	1882.	19832.	5.00	5.00
2	.000694000	.68968	.000	1882.	19832.	1888.	18839.	5.00	5.00
2	.000347000	.29103	.000	3397.	19998.	3530.	19170.	5.00	5.00

==========

TOTAL EMISSIONS 29.89258

1

TOP 50 TABLE FOR 1 HOUR AVERAGES

RANK	RECEPTOR	X-COORDINATE	Y-COORDINATE	ENDING HOUR	CONCENTRATION	DEPOSITION
1	5	544.0	21462.0	7083	115.1804	.7633
2	1	2306.0	20179.0	6053	113.4374	.8399
3	5	544.0	21462.0	7631	108.0072	.7223
4	12	544.0	21462.0	7083	101.0200	.6624
5	8	2306.0	20179.0	6053	96.5943	.6918
6	5	544.0	21462.0	7634	95.8806	.6751
7	1	2306.0	20179.0	2956	95.5058	.6914
8	1	2306.0	20179.0	6123	95.5047	.6984
9	1	2306.0	20179.0	4923	95.1707	.7855
10	12	544.0	21462.0	7631	94.7843	.6271
11	1	2306.0	20179.0	6069	91.8716	.7530
12	1	2306.0	20179.0	1759	91.3897	.5938
13	1	2306.0	20179.0	7804	90.9163	1.5831
14	5	544.0	21462.0	1412	90.8740	.6349
15	5	544.0	21462.0	4100	90.8258	.8740
16	1	2306.0	20179.0	8730	89.7629	.5968
17	5	544.0	21462.0	1589	88.4383	.5409
18	1	2306.0	20179.0	3889	88.3088	.6778
19	1	2306.0	20179.0	1169	88.0910	1.4535
20	5	544.0	21462.0	2997	87.0353	.8689
21	7	2500.0	17000.0	5450	86.4323	.5410
22	1	2306.0	20179.0	7338	85.0731	1.6558
23	12	544.0	21462.0	7634	84.2630	.5870
24	3	1436.0	20164.0	1589	84.2469	.5208
25	10	1434.0	20164.0	1589	84.0721	.5197
26	5	544.0	21462.0	8469	83.6611	.8556
27	5	544.0	21462.0	1781	83.6300	.8626
28	5	544.0	21462.0	7636	83.5836	.8732
29	8	2306.0	20179.0	1169	83.1343	1.2826
30	14	2500.0	17000.0	5450	83.0351	.5144
31	8	2306.0	20179.0	8730	82.7640	.5494
32	5	544.0	21462.0	1562	82.5216	.5198
33	1	2306.0	20179.0	8425	82.5149	1.6727
34	1	2306.0	20179.0	7364	82.4452	1.6850
35	5	544.0	21462.0	1753	82.3856	.5319
36	1	2306.0	20179.0	4999	82.2735	1.7155
37	1	2306.0	20179.0	7613	82.1569	.6507
38	1	2306.0	20179.0	2667	82.1566	.6530
39	8	2306.0	20179.0	1759	81.5674	.5248
40	8	2306.0	20179.0	4923	81.3764	.6520
41	7	2500.0	17000.0	186	80.5796	.4645
42	5	544.0	21462.0	1415	80.5394	.8583
43	12	544.0	21462.0	1412	79.8726	.5518
44	4	1087.0	20848.0	7083	79.8106	.5317
45	11	1087.0	20848.0	7083	79.8096	.5317

46	12	544.0	21462.0	4100	79.1038	.6995
47	3	1436.0	20164.0	1562	78.4518	.4989
48	3	1436.0	20164.0	1753	78.4510	.5113
49	10	1434.0	20164.0	1562	78.2886	.4978
50	10	1434.0	20164.0	1753	78.2879	.5101

1

HIGHEST AND SECOND HIGHEST VALUES FOR 1 HOUR AVERAGES

RECEPTOR	X-COORDINATE	Y-COORDINATE	HIGHEST VALUE	ENDING HOUR	DEPOSITION	SECOND HIGH	ENDING HOUR	DEPOSTION
1	2306.0	20179.0	113.4374	6053.	.8399	95.5058	2956.	.6914
2	1493.0	19396.0	68.1195	1750.	.4347	63.4357	5409.	.4309
3	1436.0	20164.0	84.2469	1589.	.5208	78.4518	1562.	.4989
4	1087.0	20848.0	79.8106	7083.	.5317	74.6696	7631.	.5011
5	544.0	21462.0	115.1804	7083.	.7633	108.0072	7631.	.7223
6	.0	18200.0	66.5790	4483.	.4171	61.6902	412.	.3686
7	2500.0	17000.0	86.4323	5450.	.5410	80.5796	186.	.4645
8	2306.0	20179.0	96.5943	6053.	.6918	83.1343	1169.	1.2826
9	1493.0	19396.0	68.1194	1750.	.4347	63.4356	5409.	.4309
10	1434.0	20164.0	84.0721	1589.	.5197	78.2886	1562.	.4978
11	1087.0	20848.0	79.8096	7083.	.5317	74.6686	7631.	.5011
12	544.0	21462.0	101.0200	7083.	.6624	94.7843	7631.	.6271
13	.0	18200.0	63.8055	4483.	.3955	59.2186	412.	.3501
14	2500.0	17000.0	83.0351	5450.	.5144	77.4829	186.	.4419

1

TOP 50 TABLE FOR 24 HOUR AVERAGES

RANK	RECEPTOR	X-COORDINATE	Y-COORDINATE	ENDING HOUR	CONCENTRATION	DEPOSITION
1	1	2306.0	20179.0	4944C	38.8939	1.0329
2	1	2306.0	20179.0	2880C	35.8313	.7781
3	8	2306.0	20179.0	4944C	34.8127	.9014
4	1	2306.0	20179.0	7632C	33.7574	.8682
5	1	2306.0	20179.0	5016C	33.3485	1.1177
6	1	2306.0	20179.0	2520C	33.2331	.9088
7	1	2306.0	20179.0	6144C	32.4753	1.0287
8	8	2306.0	20179.0	2880C	32.2323	.6850
9	1	2306.0	20179.0	3288C	31.9291	.9932
10	1	2306.0	20179.0	2928C	31.8112	1.0935
11	8	2306.0	20179.0	7632C	31.3133	.7720
12	1	2306.0	20179.0	1776C	31.2840	.5940
13	3	1436.0	20164.0	1752C	31.0593	.6855
14	10	1434.0	20164.0	1752C	30.9823	.6829
15	8	2306.0	20179.0	3288C	30.6388	.9443
16	8	2306.0	20179.0	5016C	30.5941	1.0027
17	1	2306.0	20179.0	4992C	30.4223	1.2715
18	1	2306.0	20179.0	2856C	30.0438	.6261
19	1	2306.0	20179.0	6120C	30.0354	1.0390
20	1	2306.0	20179.0	4920C	29.9166	.9983
21	1	2306.0	20179.0	7056C	29.6668	1.1473
22	8	2306.0	20179.0	1776C	29.5120	.5700
23	8	2306.0	20179.0	2928C	29.2115	1.0104
24	1	2306.0	20179.0	7920C	28.9507	1.3046
25	8	2306.0	20179.0	2520C	28.7558	.7854
26	1	2306.0	20179.0	3240C	28.6043	1.1094
27	8	2306.0	20179.0	6144C	27.9518	.8754
28	8	2306.0	20179.0	4920C	27.7579	.9188
29	8	2306.0	20179.0	3240C	27.7524	1.0675
30	2	1493.0	19396.0	1752C	27.7443	.4932
31	1	2306.0	20179.0	5928C	27.7359	1.0875
32	9	1493.0	19396.0	1752C	27.7344	.4928
33	1	2306.0	20179.0	6072C	27.6122	.7268
34	1	2306.0	20179.0	4176C	27.5513	1.1493
35	1	2306.0	20179.0	2904C	27.4421	.9521
36	8	2306.0	20179.0	2856C	27.3920	.5338
37	8	2306.0	20179.0	7056C	27.3787	1.0186
38	1	2306.0	20179.0	3912C	27.3290	.8963
39	3	1436.0	20164.0	2232C	27.2325	.8894
40	8	2306.0	20179.0	7920C	27.1980	1.2195

41	10	1434.0	20164.0	2232C	27.1721	.8866
42	8	2306.0	20179.0	4992C	26.7130	1.0998
43	1	2306.0	20179.0	4968C	26.5648	1.1984
44	8	2306.0	20179.0	4176C	26.2002	1.0785
45	1	2306.0	20179.0	4200C	26.1678	1.2567
46	8	2306.0	20179.0	2904C	25.9679	.8643
47	8	2306.0	20179.0	5928C	25.9415	.9960
48	1	2306.0	20179.0	6048C	25.8949	.9830
49	1	2306.0	20179.0	3672C	25.8711	1.2730
50	1	2306.0	20179.0	4152C	25.6585	1.2466

1

HIGHEST AND SECOND HIGHEST VALUES FOR 24 HOUR AVERAGES

RECEPTOR	X-COORDINATE	Y-COORDINATE	HIGHEST VALUE	ENDING HOUR	DEPOSITION	SECOND HIGH	ENDING HOUR	DEPOSTION
1	2306.0	20179.0	38.8939	4944.C	1.0329	35.8313	2880.C	.7781
2	1493.0	19396.0	27.7443	1752.C	.4932	20.9321	2232.C	.6277
3	1436.0	20164.0	31.0593	1752.C	.6855	27.2325	2232.C	.8894
4	1087.0	20848.0	18.0598	7656.C	.5155	17.4526	1728.C	.5558
5	544.0	21462.0	22.2016	7656.C	.6068	20.8613	1416.C	.3635
6	.0	18200.0	14.8921	432.C	.2077	10.7651	2424.C	.2019
7	2500.0	17000.0	14.2388	5472.C	.2179	14.1067	960.C	.4058
8	2306.0	20179.0	34.8127	4944.C	.9014	32.2323	2880.C	.6850
9	1493.0	19396.0	27.7344	1752.C	.4928	20.9222	2232.C	.6274
10	1434.0	20164.0	30.9823	1752.C	.6829	27.1721	2232.C	.8866
11	1087.0	20848.0	17.9427	7656.C	.5099	17.2690	1728.C	.5480
12	544.0	21462.0	20.1328	7656.C	.5602	18.9592	1416.C	.3278
13	.0	18200.0	14.2873	432.C	.1900	10.2622	2424.C	.1892
14	2500.0	17000.0	13.9174	960.C	.3999	13.8106	5472.C	.2109

RUN ENDED ON 2/26/00 AT 19:36:50

Annex B5
Industrial Emissions from Boilers in Theme Park

Boilers - heating

						Natural Gas									
	QUANTITY	HEIGHTAG	TOPDIA	GTEMP_EXIT	GTEMP_EXIT	Total Fuel Cons.	#MAX_NG	PM		SO2		NO2		CO	
		(m)	(mm)	degree C	degree K	kWh/yr	(m3/s)	g/s		g/s		g/s		g/s	
								total	each	total	each	total	each	total	each
Park #1															
Main Street	1	6.0	500	190	463	356,400	1.091E-03	7.857E-05	7.857E-05	1.048E-05	1.048E-05	5.238E-04	5.238E-04	3.274E-04	3.274E-04
Fantasyland	2	6.0	500	190	463	712,800	2.183E-03	1.571E-04	7.857E-05	2.095E-05	1.048E-05	1.048E-03	5.238E-04	6.548E-04	3.274E-04
Tomorowland	2	6.0	500	190	463	712,800	2.183E-03	1.571E-04	7.857E-05	2.095E-05	1.048E-05	1.048E-03	5.238E-04	6.548E-04	3.274E-04
Adventureland	1	6.0	500	190	463	356,400	1.091E-03	7.857E-05	7.857E-05	1.048E-05	1.048E-05	5.238E-04	5.238E-04	3.274E-04	3.274E-04
Frontierland	2	6.0	500	190	463	712,800	2.183E-03	1.571E-04	7.857E-05	2.095E-05	1.048E-05	1.048E-03	5.238E-04	6.548E-04	3.274E-04
Toon Town	2	6.0	500	190	463	712,800	2.183E-03	1.571E-04	7.857E-05	2.095E-05	1.048E-05	1.048E-03	5.238E-04	6.548E-04	3.274E-04
Expansion	2	6.0	500	190	463	712,800	2.183E-03	1.571E-04	7.857E-05	2.095E-05	1.048E-05	1.048E-03	5.238E-04	6.548E-04	3.274E-04
Back of House	3	6.0	500	190	463	1,069,200	3.274E-03	2.357E-04	7.857E-05	3.143E-05	1.048E-05	1.571E-03	5.238E-04	9.821E-04	3.274E-04
Park #2															
Entrance	1	6.0	500	190	463	470,448	1.440E-03	1.037E-04	1.037E-04	1.383E-05	1.383E-05	6.914E-04	6.914E-04	4.321E-04	4.321E-04
Land #1	2	6.0	500	190	463	940,896	2.881E-03	2.074E-04	1.037E-04	2.766E-05	1.383E-05	1.383E-03	6.914E-04	8.643E-04	4.321E-04
Land #2	1	6.0	500	190	463	470,448	1.440E-03	1.037E-04	1.037E-04	1.383E-05	1.383E-05	6.914E-04	6.914E-04	4.321E-04	4.321E-04
Land #3	2	6.0	500	190	463	940,896	2.881E-03	2.074E-04	1.037E-04	2.766E-05	1.383E-05	1.383E-03	6.914E-04	8.643E-04	4.321E-04
Land #4	1	6.0	500	190	463	470,448	1.440E-03	1.037E-04	1.037E-04	1.383E-05	1.383E-05	6.914E-04	6.914E-04	4.321E-04	4.321E-04
Land #5	2	6.0	500	190	463	940,896	2.881E-03	2.074E-04	1.037E-04	2.766E-05	1.383E-05	1.383E-03	6.914E-04	8.643E-04	4.321E-04
Land #6	1	6.0	500	190	463	470,448	1.440E-03	1.037E-04	1.037E-04	1.383E-05	1.383E-05	6.914E-04	6.914E-04	4.321E-04	4.321E-04
Back of House	1	6.0	500	190	463	470,448	1.440E-03	1.037E-04	1.037E-04	1.383E-05	1.383E-05	6.914E-04	6.914E-04	4.321E-04	4.321E-04
RD&E	12	6.0	500	190	463	4,276,800	1.310E-02	9.428E-04	7.857E-05	1.257E-04	1.048E-05	6.286E-03	5.238E-04	3.929E-03	3.274E-04
RD&E	7	6.0	500	190	463	3,293,136	1.008E-02	7.260E-04	1.037E-04	9.680E-05	1.383E-05	4.840E-03	6.914E-04	3.025E-03	4.321E-04
Hotel #1	16	6.0	500	190	463	5,702,400	1.746E-02	1.257E-03	7.857E-05	1.676E-04	1.048E-05	8.381E-03	5.238E-04	5.238E-03	3.274E-04
Hotel#2	24	6.0	500	190	463	8,553,600	2.619E-02	1.886E-03	7.857E-05	2.514E-04	1.048E-05	1.257E-02	5.238E-04	7.857E-03	3.274E-04
Hotel #3	9	6.0	500	190	463	3,207,600	9.821E-03	7.071E-04	7.857E-05	9.428E-05	1.048E-05	4.714E-03	5.238E-04	2.946E-03	3.274E-04
Hotel #4	21	6.0	500	190	463	9,879,408	3.025E-02	2.178E-03	1.037E-04	2.904E-04	1.383E-05	1.452E-02	6.914E-04	9.075E-03	4.321E-04
Hotel #5	25	6.0	500	190	463	11,761,200	3.601E-02	2.593E-03	1.037E-04	3.457E-04	1.383E-05	1.729E-02	6.914E-04	1.080E-02	4.321E-04

Boilers - domestic hot water

								Natural Gas							
	QUANTITY	HEIGHTAG	TOPDIA	GTEMP_EXIT	GTEMP_EXIT	Total Fuel Cons.	#MAX_NG	PM		SO2		NO2		CO	
		(m)	(mm)	degree C	degree K	kWh/yr	(m3/s)	g/s		g/s		g/s		g/s	
								total	each	total	each	total	each	total	each
Park #1															
Main Street	1	6.0	500	190	463	399,456	1.223E-03	8.806E-05	8.806E-05	1.174E-05	1.174E-05	5.871E-04	5.871E-04	3.669E-04	3.67E-04
Fantasyland	2	6.0	500	190	463	798,912	2.446E-03	1.761E-04	8.806E-05	2.348E-05	1.174E-05	1.174E-03	5.871E-04	7.339E-04	3.67E-04
Tomorowland	2	6.0	500	190	463	798,912	2.446E-03	1.761E-04	8.806E-05	2.348E-05	1.174E-05	1.174E-03	5.871E-04	7.339E-04	3.67E-04
Adventureland	2	6.0	500	190	463	798,912	2.446E-03	1.761E-04	8.806E-05	2.348E-05	1.174E-05	1.174E-03	5.871E-04	7.339E-04	3.67E-04
Frontierland	2	6.0	500	190	463	832,200	2.548E-03	1.835E-04	9.173E-05	2.446E-05	1.223E-05	1.223E-03	6.115E-04	7.644E-04	3.82E-04
Toon Town	2	6.0	500	190	463	832,200	2.548E-03	1.835E-04	9.173E-05	2.446E-05	1.223E-05	1.223E-03	6.115E-04	7.644E-04	3.82E-04
Expansion	1	6.0	500	190	463	416,100	1.274E-03	9.173E-05	9.173E-05	1.223E-05	1.223E-05	6.115E-04	6.115E-04	3.822E-04	3.82E-04
Back of House	2	6.0	500	190	463	210,240	6.437E-04	4.635E-05	2.317E-05	6.180E-06	3.090E-06	3.090E-04	1.545E-04	1.931E-04	9.66E-05
Park #2															
Entrance	2	6.0	500	190	463	865,488	2.650E-03	1.908E-04	9.540E-05	2.544E-05	1.272E-05	1.272E-03	6.360E-04	7.950E-04	3.98E-04
Land #1	2	6.0	500	190	463	865,488	2.650E-03	1.908E-04	9.540E-05	2.544E-05	1.272E-05	1.272E-03	6.360E-04	7.950E-04	3.98E-04
Land #2	1	6.0	500	190	463	462,744	1.417E-03	1.020E-04	1.020E-04	1.360E-05	1.360E-05	6.801E-04	6.801E-04	4.251E-04	4.25E-04
Land #3	2	6.0	500	190	463	865,488	2.650E-03	1.908E-04	9.540E-05	2.544E-05	1.272E-05	1.272E-03	6.360E-04	7.950E-04	3.98E-04
Land #4	1	6.0	500	190	463	432,744	1.325E-03	9.540E-05	9.540E-05	1.272E-05	1.272E-05	6.360E-04	6.360E-04	3.975E-04	3.98E-04
Land #5	2	6.0	500	190	463	865,488	2.650E-03	1.908E-04	9.540E-05	2.544E-05	1.272E-05	1.272E-03	6.360E-04	7.950E-04	3.98E-04
Land #6	1	6.0	500	190	463	432,744	1.325E-03	9.540E-05	9.540E-05	1.272E-05	1.272E-05	6.360E-04	6.360E-04	3.975E-04	3.98E-04
Back of House	1	6.0	500	190	463	113,880	3.487E-04	2.511E-05	2.511E-05	3.347E-06	3.347E-06	1.674E-04	1.674E-04	1.046E-04	1.05E-04
RD&E	6	6.0	500	190	463	2,396,736	7.339E-03	5.284E-04	8.806E-05	7.045E-05	1.174E-05	3.522E-03	5.871E-04	2.202E-03	3.67E-04
RD&E	4	6.0	500	190	463	1,664,400	5.096E-03	3.669E-04	9.173E-05	4.892E-05	1.223E-05	2.446E-03	6.115E-04	1.529E-03	3.82E-04
RD&E	6	6.0	500	190	463	2,596,464	7.950E-03	5.724E-04	9.540E-05	7.632E-05	1.272E-05	3.816E-03	6.360E-04	2.385E-03	3.98E-04
Hotel #1	11	6.0	500	190	463	4,818,000	1.475E-02	1.062E-03	9.656E-05	1.416E-04	1.287E-05	7.081E-03	6.437E-04	4.426E-03	4.02E-04
Hotel #2	8	6.0	500	190	463	3,504,000	1.073E-02	7.725E-04	9.656E-05	1.030E-04	1.287E-05	5.150E-03	6.437E-04	3.219E-03	4.02E-04
Hotel #2	9	6.0	500	190	463	3,784,320	1.159E-02	8.343E-04	9.270E-05	1.112E-04	1.236E-05	5.562E-03	6.180E-04	3.476E-03	3.86E-04
Hotel #3	7	6.0	500	190	463	2,943,360	9.012E-03	6.489E-04	9.270E-05	8.652E-05	1.236E-05	4.326E-03	6.180E-04	2.704E-03	3.86E-04
Hotel #4	17	6.0	500	190	463	7,743,840	2.371E-02	1.707E-03	1.004E-04	2.276E-04	1.339E-05	1.138E-02	6.695E-04	7.113E-03	4.18E-04
Hotel #5	20	6.0	500	190	463	9,110,400	2.789E-02	2.008E-03	1.004E-04	2.678E-04	1.339E-05	1.339E-02	6.695E-04	8.368E-03	4.18E-04

Efflux Velocity 6 m/s

Density of Town Gas= 673 kg/m^3 From AP42

Emission Factors	PM	SO_2	NO_x	CO	Unit	
(assume as natural gas)	72	9.6	1600	300	$kg/10^6m^3$	(uncontrolled - low NO burners)

Raw Information

1	kWh/yr	=	3600	kJ/yr
1.0551	kJ/yr	=	1	BTU/yr
1	ft3 of Natural Gas	generate	1000	BTU
1	ft3	=	0.0283	m3

Operation time	24	hrs
	7	days/week
Stack Height	6	m
Stack Diamater	500	m
StackTemp	190	oC

Calculation

#Max_NG for each plant = fuel consumption*3600/1.0551/1000/365/24/3600*0.0283 m3/s

Emission = #max_NG/100000*1000 g/s

Annex B6 Sample CALINE4 Output File

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 1999, TRINITY CONSULTANTS

Run Began on 2/16/2000 at 18:56:22

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: NO2
RUN: Ground Level (WORST CASE ANGLE)
POLLUTANT: Inert Gases

I. SITE VARIABLES

U= 1.0 M/S Z0= 80. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 4 (D) VS= 0.0 CM/S
MIXH= 500. M AMB= 0.0 PPM
SIGTH= 12. DEGREES TEMP= 25.5 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* LINK COORDINATES (M) * X1	Y1	X2	Y2 *	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Link 1	* *****	*****	*****	***** *	BG	9101	39.4	10.0	36.0
2. Link 2	* *****	*****	*****	***** *	BG	9101	39.4	10.0	36.0
3. Link 3	* *****	*****	*****	***** *	BG	9101	39.4	10.0	36.0
4. Link 4	* *****	*****	*****	***** *	BG	9101	39.4	10.0	36.0
5. Link 5	* *****	*****	*****	***** *	AG	9101	39.4	9.0	36.0
6. Link 6	* *****	*****	*****	***** *	AG	9101	39.4	4.0	36.0
7. Link 7	* *****	*****	*****	***** *	BG	9427	38.1	4.0	46.0
8. Link 8	* *****	*****	*****	***** *	BG	9427	25.8	9.0	46.0
9. Link 9	* *****	*****	*****	***** *	BG	8627	31.7	10.0	36.0
10. Link 10	* *****	*****	*****	***** *	FL	8627	31.7	10.0	36.0
11. Link 11	* *****	*****	*****	***** *	FL	8627	31.7	9.0	46.0
12. Link 12	* *****	*****	*****	***** *	FL	8627	31.7	4.0	36.0
13. Link 13	* *****	*****	*****	***** *	AG	8627	31.7	4.0	36.0
14. Link 14	* *****	*****	*****	***** *	AG	8627	31.7	4.0	36.0
15. Link 15	* *****	*****	*****	***** *	AG	8627	31.7	4.0	36.0
16. Link 16	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
17. Link 17	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
18. Link 18	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
19. Link 19	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
20. Link 21	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
21. Link 22	* *****	*****	*****	***** *	AG	6117	23.8	4.0	36.0
22. Link 23	* *****	*****	*****	***** *	AG	2445	21.7	4.0	36.0
23. Link 24	* *****	*****	*****	***** *	AG	2445	21.7	0.0	36.0
24. Link 25	* *****	*****	*****	***** *	AG	2445	21.7	0.0	36.0
25. Link 26	* *****	*****	*****	***** *	BG	6117	23.8	10.0	36.0
26. Link 27	* *****	*****	*****	***** *	BG	5470	22.9	10.0	31.0
27. Link 28	* *****	*****	*****	***** *	FL	5470	22.9	10.0	31.0

28. Link 29	* ***** ***** ***** ***** *	BG	5470	22.9	10.0	31.0
29. Link 30	* ***** ***** ***** ***** *	BG	5470	22.9	9.0	31.0
30. Link 31	* ***** ***** ***** ***** *	BG	5470	22.9	4.0	46.0
31. Link 32	* ***** ***** ***** ***** *	AG	4890	21.7	4.0	31.0
32. Link 33	* ***** ***** ***** ***** *	AG	4890	21.7	4.0	31.0
33. Link 34	* ***** ***** ***** ***** *	AG	5470	22.9	4.0	31.0
34. Link 35	* ***** ***** ***** ***** *	AG	4890	21.7	4.0	31.0
35. Link 36	* ***** ***** ***** ***** *	AG	4890	21.7	0.0	31.0
36. Link 37	* ***** ***** ***** ***** *	BG	6462	21.7	10.0	36.0
37. Link 38	* ***** ***** ***** ***** *	BG	6462	21.7	10.0	36.0
38. Link 39	* ***** ***** ***** ***** *	BG	6462	21.7	10.0	36.0
39. Link 40	* ***** ***** ***** ***** *	BG	6462	21.7	10.0	36.0
40. Link 41	* ***** ***** ***** ***** *	FL	9026	28.5	10.0	41.0
41. Link 42	* ***** ***** ***** ***** *	BG	9026	28.5	10.0	41.0
42. Link 43	* ***** ***** ***** ***** *	FL	9026	28.5	10.0	41.0
43. Link 44	* ***** ***** ***** ***** *	BG	6462	21.7	9.0	66.0
44. Link 45	* ***** ***** ***** ***** *	BG	6462	21.7	9.0	66.0
45. Link 46	* ***** ***** ***** ***** *	BG	6462	21.7	9.0	66.0
46. Link 47	* ***** ***** ***** ***** *	AG	2445	21.7	2.0	31.0
47. Link 48	* ***** ***** ***** ***** *	AG	2445	21.7	0.0	31.0
48. Link 49	* ***** ***** ***** ***** *	AG	2445	21.7	0.0	31.0
49. Link 50	* ***** ***** ***** ***** *	AG	2445	21.7	0.0	31.0
50. Link 51	* ***** ***** ***** ***** *	AG	2445	21.7	0.0	31.0
51. Link 52	* ***** ***** ***** ***** *	AG	2445	21.7	0.0	31.0

III. RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (M) X	Y	Z
1. REC1	* 822306	820179	0.0
2. REC2	* 821493	819396	135.0
3. REC3	* 821434	820164	175.0
4. REC4	* 821087	820848	115.0
5. REC5	* 820544	821462	10.0
6. REC6	* 822742	819534	0.0
7. REC7	* 822224	818782	0.0
8. REC8	* 823917	819897	0.0
9. REC9	* 822229	819837	0.0
10. REC10	* 822608	819792	0.0
11. REC11	* 823242	819765	0.0
12. REC12	* 821955	820036	0.0
13. REC13	* 820309	821067	15.0
14. REC14	* 820968	821684	0.0
15. REC15	* 821515	822141	0.0
16. REC16	* 822203	822380	0.0
17. REC17	* 820000	818200	0.0
18. REC18	* 822500	817000	0.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. REC1	* 316.	* 2.7	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. REC2	* 359.	* 0.4	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. REC3	* 80.	* 0.3	* 0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
4. REC4	* 104.	* 0.8	* 0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
5. REC5	* 111.	* 2.7	* 0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

6. REC6	* 322. *	1.6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. REC7	* 345. *	1.3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. REC8	* 356. *	2.7 *	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.0
9. REC9	* 333. *	2.2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. REC10	* 320. *	2.3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. REC11	* 25. *	1.7 *	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.0
12. REC12	* 92. *	1.9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
13. REC13	* 72. *	2.8 *	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
14. REC14	* 138. *	3.3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. REC15	* 210. *	2.9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. REC16	* 227. *	3.0 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17. REC17	* 23. *	0.6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. REC18	* 16. *	0.6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0

	CONC/LINK (PPM)							
RECEPTOR	* 9	10	11	12	13	14	15	16
1. REC1	* 0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
2. REC2	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3. REC3	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. REC4	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. REC5	* 0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
6. REC6	* 0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
7. REC7	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
8. REC8	* 0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. REC9	* 0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
10. REC10	* 0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
11. REC11	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. REC12	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. REC13	* 0.0	0.1	0.7	0.0	0.0	0.0	0.0	0.0
14. REC14	* 0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
15. REC15	* 0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
16. REC16	* 0.0	0.3	0.9	0.1	0.0	0.0	0.0	0.0
17. REC17	* 0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0
18. REC18	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	CONC/LINK (PPM)							
RECEPTOR	* 17	18	19	20	21	22	23	24
1. REC1	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
2. REC2	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. REC3	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. REC4	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. REC5	* 0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
6. REC6	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
7. REC7	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. REC8	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. REC9	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
10. REC10	* 0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
11. REC11	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. REC12	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. REC13	* 0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
14. REC14	* 0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
15. REC15	* 0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.0
16. REC16	* 0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2
17. REC17	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. REC18	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	*	CONC/LINK (PPM)							
RECEPTOR	*	25	26	27	28	29	30	31	32
1. REC1	*	0.1	0.0	0.2	0.2	0.0	0.4	0.0	0.0
2. REC2	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. REC3	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. REC4	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
5. REC5	*	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0
6. REC6	*	0.1	0.0	0.1	0.1	0.0	0.2	0.3	0.0
7. REC7	*	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
8. REC8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. REC9	*	0.1	0.1	0.1	0.1	0.0	0.4	0.4	0.0
10. REC10	*	0.1	0.0	0.1	0.1	0.0	0.2	0.7	0.0
11. REC11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
12. REC12	*	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2
13. REC13	*	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0
14. REC14	*	0.3	0.1	0.3	0.1	0.0	0.1	0.1	0.0
15. REC15	*	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
16. REC16	*	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
17. REC17	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. REC18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	*	CONC/LINK (PPM)							
RECEPTOR	*	33	34	35	36	37	38	39	40
1. REC1	*	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.4
2. REC2	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
3. REC3	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. REC4	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. REC5	*	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3
6. REC6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
7. REC7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
8. REC8	*	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0
9. REC9	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
10. REC10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
11. REC11	*	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
12. REC12	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13. REC13	*	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0
14. REC14	*	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.4
15. REC15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
16. REC16	*	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.0
17. REC17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. REC18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	*	CONC/LINK (PPM)							
RECEPTOR	*	41	42	43	44	45	46	47	48
1. REC1	*	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. REC2	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. REC3	*	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. REC4	*	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
5. REC5	*	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
6. REC6	*	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. REC7	*	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.4
8. REC8	*	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0

9. REC9	*	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. REC10	*	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. REC11	*	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.0
12. REC12	*	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0
13. REC13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. REC14	*	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
15. REC15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. REC16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17. REC17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. REC18	*	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

*CONC/LINK
*(PPM)

RECEPTOR	*	49	50	51
1. REC1	*	0.0	0.0	0.0
2. REC2	*	0.0	0.0	0.0
3. REC3	*	0.0	0.0	0.0
4. REC4	*	0.0	0.0	0.0
5. REC5	*	0.0	0.0	0.0
6. REC6	*	0.0	0.0	0.0
7. REC7	*	0.0	0.0	0.0
8. REC8	*	0.0	0.0	0.0
9. REC9	*	0.0	0.0	0.0
10. REC10	*	0.0	0.0	0.0
11. REC11	*	0.0	0.0	0.0
12. REC12	*	0.0	0.0	0.0
13. REC13	*	0.0	0.0	0.0
14. REC14	*	0.0	0.0	0.0
15. REC15	*	0.0	0.0	0.0
16. REC16	*	0.0	0.0	0.0
17. REC17	*	0.0	0.0	0.0
18. REC18	*	0.0	0.0	0.0

1

Run Ended on 2/16/2000 at 19:04:43

Mr. Timothy Pierson-Smith
Technical Director
Environmental Resources Management
6th Floor Hecny Tower
9 Chatham Road
Tsimshatsui, Kowloon
Hong Kong

As a part of being responsible member of the Hong Kong business community we agree to the following. In the quest of minimizing any potential exposure to harmful air contaminants at the proposed theme park in Hong Kong, we agree not to purchase and use any pyrotechnics that specifically use chromium, lead, mercury, arsenic, manganese, nickel or zinc in their formulation for color and/or effects. We agree to include language to this effect in our agreements to purchase pyrotechnics for the proposed theme park.

Please note that despite this directive to suppliers not to use these metals, some pyrotechnics formulations could still contain small quantities of these metals as a result of contamination during pyrotechnics manufacturing. Since such contamination would be beyond our reasonable control, purchase and use of pyrotechnics that contain small amounts of these metals due to contamination would be beyond the scope of this agreement.

Respectfully,

Bernard Durgin
Fireworks Production Manager
Walt Disney Entertainment