Appendix B, C, D.

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APPENDIX B

AIR EMISSION RATE CALCULATIONS

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AIR EMISSION RATE CALCULATIONS

I. MINE CONSTRUCTION

1. Drilling and Blasting - These procedures were used to estimate TSP emissions from the different shaft sinkings (i.e., main, intake air) and general underground development, and are presented under its respective heading below.

   a. Construct Mine Support Facilities - Blasting using dynamite

   Emission Factor and Source: TSP-EF for emitted particles of less than or equal to 30 um; U.S. EPA (EPA, 1983) AP-42, Table 8.24-2, Blasting - Surface Coal Mining

$$TSP\text{-}EF = \frac{344(A)^{0.8}}{(D)^{1.8}(M)^{1.9}}$$

   where:

   A = area blasted - m^2
   D = hole depth - m
   M = material moisture content - %

   $SO_2(H_2S)$ - 3.0 kg/t of dynamite, AP-42, Table 11.3-1
   CO - 141.0 kg/t of dynamite, AP-42, Table 11.3-1

   Sink Main Shaft

   A = $(8.5\ m/2)^2$ x 3.14 ÷ 2 = 28.36 m^2 (i.e., one-half of area/blast)
   D = 2.12 m
   M = 15%

$$TSP\text{-}EF = \frac{344(28.36)^{0.8}}{(2.12)^{1.8}(15)^{1.9}} = 7.5\ kg/blast \times 2\ blasts/day = 15.1\ kg/d$$

   Process Rate:

   TSP - 2 blasts/day, 30 blast days/month and 514 blast days/17 months
   SO_2(CO) - 160 kg dynamite/blast
   - 160 kg dynamite/h, 319 kg dynamite/d, 115 t dynamite/y

Example Calculation:

TSP - 514 blast days/17 months x 15.1 kg/day x t/1000 kg = 7.8 t/17 months

SO_2 - 160 kg dynamite/h x 3.0 kg/t x t/1000 kg = 0.48 kg/h

Total TSP (Sink Main Shaft) = 8.6 st/17 months (1986-87); 6.1 st/yr (1986)

SO_2 = 0.49 t/17 months (0.54 st/17 months); 0.35 t/y (0.39 st/yr)

CO = 23.1 t/17 months (25.4 st/17 months); 16.3 t/y (17.9 st/yr)

Sink and Equip Air Intake Shaft

$A = (6.1\ m/2)^2 \times 3.14 \div 2 = 14.6\ m^2$ (i.e., one-half of area/blast)

D = 2.12 m

M = 15%

$$TSP\text{-}EF = \frac{344(14.6)^{0.8}}{(2.12)^{1.8}(15)^{1.9}} = 4.4 \text{ kg/blast x 3 blasts/day} = 13.3 \text{ kg/d}$$

Process Rate:

TSP - 3 blasts/day, 75 blast days/month and 326 blast days/10 months

SO_2(CO) - 84.4 kg/dynamite blast
- 84.4 kg/dynamite/h, 253 kg dynamite/d, 27.5 t dynamite/10 months

Example Calculation:

TSP - 326 blast days/10 months x 13.3 kg/day x t/1000 kg = 4.3 t/10 months

SO_2 - 84.4 kg dynamite/h x 3.0 kg/t x t/1000 kg = 0.25 kg/h

Total TSP (Air Intake Shaft) = 4.7 st/10 months (1986-87); 2.6 st/yr (1986)

SO_2 = 0.08 t/10 months (0.09 st/10 months)

CO = 3.9 t/10 months (4.3 st/10 months)

Construct East Exhaust Shaft (Raise) - EER

$A = (6.1\ m/2)^2 \times 3.14 - (2.4\ m/2)^2 \times 3.14 = 24.7\ m^2$

D = 3.0 m

M = 15%

$$TSP\text{-}EF = \frac{344(14.6)^{0.8}}{(3.0)^{1.8}(15)^{1.9}} = 3.6 \text{ kg/blast x 3 blasts/day} = 10.8 \text{ kg/d}$$

Process Rate:

TSP - 3 blasts/day, 21 blast days/total(yr)
SO_2(CO) - 220.0 kg dynamite/blast
- 220.0 kg dynamite/h, 660 kg dynamite/d, 13.9 t dynamite/total(yr)

Example Calculation:

TSP - 21 blast days/total x 10.8 kg/day x t/1000 kg = 0.2 t/yr
SO_2 - 220 kg dynamite/h x 3.0 kg/t x t/1000 kg = 0.66 kg/h

Total TSP (EER) = 0.3 st/yr (Construction Phase - Year 3)
SO_2 = 0.04 st/yr
CO = 2.2 st/yr

Construct West Exhaust Shaft (Raise) - WER

TSP = Same as EER

Total TSP (WER) = 0.3 st/yr (Construction Phase - Year 4)
SO_2 = 0.04 st/yr
CO = 2.2 st/yr

b. Underground Mine Development - Use of 90% ANFO and 10% water gel for blasting rock openings of varying dimensions during shaft construction.

Emission Factors and Source:

TSP - 0.0013 kg/t (for blasting overburden and coal); From AMC* report on "Fugitive Dust Emission Factors for the Mining Industry," Appendix p. D-3 - Colorado Fugitive Emissions.

SO_2 - 1.0 kg/t of ANFO, AP-42, Table 11.3-1

NO_x - 8.0 kg/t of ANFO, AP-42, Table 11.3-1

CO - 34.0 kg/t of ANFO, AP-42, Table 11.3-1

Pb - 0.0094 kg/t of rock, AP-42, Tables 7.18-1 and 8.22-1.

*American Mining Congress

Process Rate:

Year	Waste Rock (k-st)	Ore (k-st)	Total (k-st)	st/yr
1986	11	-	11	0.01
1987	66	-	66	0.09
1988	763	532	1295	1.7
1989	1146	1700	2846	3.7
1990	396	2814	3210	4.2*

*See Table 4.1 - Mine (Operation) Production, 1. Initial

Peak Production Levels Expected

	Hourly	Daily	Yearly
Rock			
Stope	163,400 t	163,400 t	1,545,455 t
Drifts	1,793 t	5,380 t	1,041,818 t
ANFO Ratio			
Stope	0.45 kg/t	0.45 kg/t	0.45 kg/t
Drifts	1.81 kg/t	1.81 kg/t	1.81 kg/t
ANFO Total	76.8 t	83.3 t	3,107 t

Duration: As required by process rate.

Control Method and Efficiency: Residence settling and humid underground environment.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSP - 2,846,000 st/yr x 0.0026 lb/st x st/2000 lbs = 3.7 st/yr

SO_2 - 3,107 t/yr x 1.0 kg/t x 2.2 lb/kg x t/1.1 st x st/2000 lbs = 3.1 st/yr

Total TSP (Underground Mine Development) = 3.7 st/yr

SO_2 = 3.1 st/yr

NO_x = 24.9 st/yr

CO = 105.6 st/yr

Pb = 0.003 st/yr

Emitting Device: Total quantity of component air emissions will exit the mine at the east and west exhaust shafts (EER & WER). Each shaft will have two fans similar to a Joy M108-58 that will produce approximately 460,000 cfm at 900 hp each.

2. Power Generation (Construction) - The use of temporary diesel generators may be necessary for the first six months of the construction phase if transmission line electrical power is not available at the site. One 2500-kw unit will be required during these months to supply electrical power for mine shaft and mine/mill surface facilities construction. The resultant emissions from this unit were estimated as follows:

Diesel Generator

Emission Factors and Source: AP-42, Appendix - C, Internal Combustion - electric generation - diesel

TSP	-	13.0 lbs/10^3 gal
SO_x	-	140.0 lbs/10^3 gal
NO_x	-	370.0 lbs/10^3 gal
CO	-	225.0 lbs/10^3 gal
HC	-	37.0 lbs/10^3 gal

Process Rate: 161 gal/hr, 3,864 gal/day, and 108,192 gal/month

Duration: First six months of construction phase

Control Method and Efficiency: None

Example Calculation:

TSP - 108,192 gal/month x 13.0 lbs/10^3 gal x 6 months x st/2000 lbs = 4.2 st/yr

	st/yr
TSP:	4.2
SO_x:	45.4
NO_x:	120.0
CO :	73.0
HC :	12.0

3. Mine Air Heating - Use of natural gas for direct fired mine air heating during construction. Heat content is 1000 btu/ft^3.

Emission Factors and Source:

TSP - 10.0 lb/$10^6 ft^3$, NEDS-APP.C-12/75, Nat. Gas 10-100 10^6btu/hr
SO_2 - 0.6 lb/$10^6 ft^3$, NEDS-APP.C-12/75, Nat. Gas 10-100 10^6btu/hr
NO_x - 120.0 lb/$10^6 ft^3$, NEDS-APP.C-12/75, Nat. Gas 10-100 10^6btu/hr

CO - 20.0 lb/10^6ft^3, NEDS-APP.C-12/75, Nat. Gas 10-100 10^6btu/hr
HC - 8.0 lb/10^6ft^3, NEDS-APP.C-12/75, Nat. Gas 10-100 10^6btu/hr

Process Rate:

Estimated Peak Production Levels

Hourly	Daily	Yearly
0.0844 10^6ft^3	2.026 10^6ft^3	76.01 10^6ft^3

Duration: As required by process rate.

Control Method and Efficiency: Use of clean burning natural gas in a highly efficient direct fired furnace.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSP:

0.0844 10^6ft^3/hr x 10.0 lb/10^6ft^3 = 0.84 lb/hr

Emitting Device: Same as drilling and blasting

4. Mine Vehicles - Use of diesel equipment to move personnel, materials, and rock during mine construction. Diesel fuel will contain 0.4 weight percent sulfur maximum.

Emission Factors and Source:

TSP - 11.0 lb/10^3 gal fuel (1.61 g/kg fuel) - page 62*

SO_2 - 31.0 lb/10^3 gal fuel NEDS-off road construction equipment

NO_x - 108.5 lb/10^3 gal fuel (15.9 g/kg fuel) - page 81*

CO - 1.01 lb/10^3 gal fuel (0.295 g/kg fuel) - page 69*

HC - 1.97 lb/10^3 gal fuel (0.289 g/kg fuel) - page 66*

*All factors were obtained from "Emission Control of a Deutz F6L-714 diesel engine, derated for underground use, by application of water/oil fuel emissions" by A. Lawson, E. W. Simmons, and M. Piett, March 30, 1979.

Process Rate:

Peak Volumes of Diesel Fuel Used

Hourly	Daily	Yearly
157.8 gal	3076.7 gal	926,398 gal

Duration: As noted by process rate.

Control Method and Efficiency: Use of cleaning burning air cooled Deutz engines with a catalytic scrubber. All emission factors include control, except SO_2.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSP:

$0.1578\ 10^3$ gal/hr x 11.0 lb/10^3 gal fuel = 1.73 lb/hr

II. MINE OPERATION

1. Drilling and Blasting - Blasting of rock using 90% ANFO and 10% water gel for production stope blasting and drift development.

a. Underground Blasting

Emission Factor and Source: AP-42, Table 8.24-2, Blasting-surface coal mining.

TSP-EF = $\leq$ 30 um

$$\text{TSP-EF} = \frac{344(A)^{0.8}}{(D)^{1.8}(M)^{1.9}}$$

where:

A = area blasted - m^2
D = hole depth - m
M = material moisture content - %

SO_2 - 1.0 kg/t of ANFO, AP-42, Table 11.3

NO_x - 8.0 kg/t of ANFO, AP-42, Table 11.3

CO - 34.0 kg/t of ANFO, AP-42, Table 11.3

Pb - 0.00094 kg/t of rock, AP-42, Tables 7.18-1 and 8.22-1

Process Rate:

Estimated Peak Production Levels (1993)

	Hourly	Daily	Yearly
Rock			
Stope	163,400 t	163,400 t	3,276,000 t
Drifts	1,130 t	3,390 t	353,000 t
ANFO Ratio			
Stope	0.45 kg/t	0.45 kg/t	0.45 kg/t
Drifts	1.81 kg/t	1.81 kg/t	1.81 kg/t
ANFO Total	75.6 t	79.7 t	2,113 t

Production Stopes

A = 45 m x 20 m = 900 m^2
D = 1/2 depth of stope drillhole - 60 m
M = material moisture content - 4% minimum

$$\text{TSP-EF} = \frac{344(900)^{0.8}}{(60)^{1.8}(4)^{1.9}} = 3.6 \text{ kg/blast}$$

Stope blast material weight (W) = Volume (V) x Density
V = 900 m^2 x 60 m = 54,000 m^3/stope blast
Density = 3.026 t/m^3

W = 54,000 m^3/stope blast x 3.026 t/m^3 = 163,404 t/stope blast
3,276,000 t/yr ÷ 163,404 t/stope blast x 3.6 kg/blast x t/1000 kg = 0.07 t/yr

Development Headings

A = 3.5 m x 5 m = 17.5 m^2
D = depth of heading drill hole - 3.66 m
M = material moisture content - 4%

$$\text{TSP-EF} = \frac{344(17.5)^{0.8}}{(366)^{1.8}(4)^{1.9}} = 23.6 \text{ kg/blast}$$

W = V x Density
V = 17.5 m^2 x 3.2 m = 56 m^3
Density = 3.026 t/m^3

Duration: As required by process rate.

Control Method and Efficiency: Residence settling and humid underground environment.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

SO_2 - 75.6 t/h x 1.0 kg/t = 75.6 kg/h

TSP:

W = 56 m^3/heading blast x 3.026 t/m^3 = 169.5 t/heading blast
353,000 t/yr ÷ 169.5 t/heading blast x 23.6 kg/heading blast x t/1000 kg = 49.2 t/yr

Total TSP (underground blasting) = 49.2 t/yr before gravity settling.

Underground Blasting Emissions With Gravity Settling:

Production Stopes and Development Headings - using average distances and velocities to the mine exhaust shafts (Use 350 m level stope 3-18 as a typical scheme).

Mine ventilation air stream branch velocities:

Horizontal Velocity ft/minute	Distance ft	Time Minutes
137	345	2.5
86	267	3.1
621	628	1.0
417	510	1.2
732	979	1.3

Total = 9.1 minutes (546 seconds) - (i.e. horizontal airways only) for travel time from blast area to exhaust shaft.

Emission Factor and Source: AP-42, Appendix A-1, Stone quarrying and processing - crushing

Particle Size Distribution

< 5 um	5 to 10 um	10 to 20 um	20 to 30 um	>30 um
25%	25%	25%	25%	0

Settling velocity: Particle density = 3.026 t/m^3

Settling height, average: 2.0 m

Weight Percent	Particle Size (um)	Vertical Settling Velocity (m/sec)		Time (sec)		Settled Distance
25%	<5	0.0036	x	546	=	1.96 m passed
25%	7.5 (5-10)	0.00637	x	546	=	3.48 m settled
25%	15 (10-20)	0.0254	x	546	=	13.87 m settled
25%	25 (20-30)	0.058	x	546	=	31.67 m settled

Determination of % Control (i.e. percent settled): Using a settling height of 2 m, all particles in the <5 um range are assumed to remain in the air stream. Therefore, 75% overall control (i.e. percent settled) is estimated for gravity settling of blasting TSP emissions.

Total TSP (underground blasting) with gravity settling estimated in the air stream from mine exhaust shafts.

49.3 t/yr x 0.25 (i.e. 1 - decimal fraction settled) = 12.3 t(13.6 st)/yr

b. Rock Handling

Handling Emissions at Stope Drawpoints and Development Headings:

Rock handling performed by LHD equipment. A maximum of 12 units in operation at any given time.

Emission Factor and Source: AP-42, Table 8.23-1, p. 8.23-4.

The use of this AP-42 section is not directly applicable because of the large size of the mined rock. However, the ore and waste rock is expected to have a moisture content of no less than 4% by weight and is considerably larger than that encountered after coarse rock crushing. Therefore, the values presented in EPA Table 8.23-1 are a conservative estimate of TSP emissions.

TSP-EF = 0.005 kg/t - Handling of high moisture rock

Process Rate: 900 t/hr, 16,000 t/day, 3,629,000 t/yr for ore and waste rock at maximum production rate.

Duration: As noted in process rate.

Control Method and Efficiency: Wetting dry piles.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t = 18.1 t/yr

Total TSP (stope drawpoints and development headings) = 18.1 t/yr before gravity settling.

Handling Emissions at Stope Drawpoints and Development Headings With Gravity Settling:

Emission Factor and Source: AP-42 Appendix A, Table A-1, p. A-3, Stone quarrying and processing - crushing

Particle Size Distribution

<5 um	5 to 10 um	10 to 20 um	20 to 44 um	>44 um
5%	5%	5%	10%	75%

Settling parameters and mine ventilation air stream branch velocities are the same as for the underground blasting emissions.

Weight Percent	Particle Size (um)	Vertical Settling Velocity (m/sec)		Time (sec)		Settled Distance
5%	<5	0.0036	x	546	=	1.96 m passed
5%	7.5 (5-10)	0.00637	x	546	=	3.48 m settled
5%	15 (10-20)	0.0254	x	546	=	13.87 m settled
10%	25 (20-44)	0.058	x	546	=	31.67 m settled
75%	>44	0.181	x	546	=	98.83 m settled

Determination of % Control (i.e. percent settled): Using a settling height of 2 m, all particles <5 um are assumed to settle. Therefore, 95% overall control (i.e. percent settled) is estimated for gravity settling of stope and development headings rock handling.

Total TSP (stope drawpoints and development headings) with gravity settling estimated in the air stream from the mine exhaust shafts.

18.1 t/yr x 0.05 (i.e. 1 - decimal fraction settled) = 0.9 t(1.0 st)/yr

Emissions from Handling at Orepasses and Waste Rock Passes:

Emission Factor and Source: AP-42, Table 8.23-1.

TSP-EF = 0.005 kg/t - Handling of high moisture rock

Process Rate: 900 t/hr, 16,000 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Wetting if necessary.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t = 18.1 t/yr

Total TSP (orepasses and waste rock passes) = 18.1 t/yr before gravity settling.

Emissions from Handling at Orepasses and Waste Rock Passes with Gravity Settling:

Mine ventilation air stream branch velocities:

Horizontal Velocity ft/Minute	Distance ft	Time Minutes
621	628	1.0
417	510	1.2
732	979	1.3

Total = 3.5 minutes (210 seconds) - (i.e. horizontal airways only) for air travel time from load area to exhaust shaft.

Emission Factor and Source: AP-42, Appendix A, Table A-1, p. A-3, Stone quarrying and processing - crushing

Particle Size Distribution				
<5 um	5 to 10 um	10 to 20 um	20 to 44 um	>44 um
5%	5%	5%	10%	75%

Settling parameters are the same as for the underground blasting emissions.

Weight Percent	Particle Size (um)	Vertical Settling Velocity (m/sec)		Time (sec)		Settled Distance
5	<5	0.0036	x	210	=	0.76 m passed
5	7.5 (5-10)	0.00637	x	210	=	1.34 m passed
5	15 (10-20)	0.0254	x	210	=	5.33 m settled
10	25 (20-44)	0.058	x	210	=	12.18 m settled
75	>44	0.181	x	210	=	38.01 m settled

Determination of % Control (i.e. percent settled) Using a settling height of 2 m, all particles >10 um are assumed to settle. Therefore, 90% overall control (i.e. percent settled) is estimated for gravity settling for rock handling at orepasses and waste rock passes.

Total TSP (orepasses and waste rock passes) with gravity settling estimated in the air stream from mine exhaust shafts.

18.1 t/yr x 0.10 (i.e. 1 - decimal fraction settled) = 1.8 t(2.0 st)/yr

Emissions from Handling - Chute to Railcar:

Emission Factor and Source: AP-42, Table 8.23-1

TSP-EF = 0.005 kg/t - Handling of high moisture ore

Process Rate: 700 t/hr, 14,000 t/day, 3,276,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Wetting if necessary.

Example Calculation:

TSP = 3,276,000 t/yr x 0.005 kg/t ÷ 1000 kg/t = 16.4 t/yr

Total TSP (chute to railcar) = 16.4 t/yr before gravity settling.

Emissions from Handling - Chute to Railcars with Gravity Settling:

Particle size ranges are the same as for handling at orepasses and waste rock passes.

Mine ventilation air stream branch velocities:

Horizontal Velocity ft/minute	Distance ft	Time Minutes
285	50	0.18
285	100	0.35
1156	1235	1.07
1077	498	0.46
1268	479	0.38
1268	403	0.32
2536	160	0.06

Total = 2.82 minutes (169 seconds) - (i.e. horizontal airways only) for travel time from load area to exhaust shaft.

Settling parameters are the same as for the underground blasting emissions.

Weight Percent	Particle Size (um)	Vertical Settling Velocity (m/sec)		Time (sec)		Settled Distance
5	5	0.0036	x	169	=	0.61 m passed
5	7.5 (5-10)	0.00637	x	169	=	1.08 m passed
5	15 (10-20)	0.0254	x	169	=	4.29 m settled
10	25 (20-44)	0.058	x	169	=	9.80 m settled
75	>44	0.181	x	169	=	30.59 m settled

Determination of % Control (i.e. percent settled): Same as for handling at orepasses and waste rock passes.

Total TSP (chute to railcars) with gravity settling estimated in the air stream from mine exhaust shafts.

16.4 t/yr x 0.10 (i.e. 1 - decimal fraction settled) = 1.6 t(1.8 st)/yr

Handling from Railcars into Crusher Feed Bins:

Emission Factor and Source: AP-42, Table 8.23-1

TSP-EF = 0.005 kg/t - Handling of high moisture ore

Process Rate: 700 t/hr, 14,000 t/day, 3,276,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Wetting if necessary.

Example Calculation:

TSP - 3,276,000 t/yr x 0.005 kg/t ÷ 1000 kg/t = 16.4 t/yr

Total TSP (railcar to crusher feed bins) = 16.4 t/yr before gravity settling.

Handling from Railcars into Crusher Feed Bins with Gravity Settling:

Particle size ranges are the same as for handling at orepasses and waste rock passes.

Mine ventilation air stream branch velocities:

Horizontal Velocity ft/minutes	Distance ft	Time Minutes
200	100	0.50
379	136	0.36
427	165	0.39
513	632	1.23
513	632	1.23
606	543	0.90
768	714	0.93
1609	890	0.55
1612	360	0.22
1610	242	0.15

Total = 6.46 minutes (387 seconds) - (i.e. horizontal airways only) for travel time from loadout area to exhaust shaft.

Settling parameters are the same as for the underground blasting emissions.

Weight Percent	Particle Size (um)	Vertical Settled Velocity (m/sec)		Time (sec)		Settled Distance
5	5	0.0036	x	387	=	1.39 m passed
5	7.5 (5-10)	0.00637	x	387	=	2.47 m settled
5	15 (10-20)	0.0254	x	387	=	9.83 m settled
10	25 (20-44)	0.058	x	387	=	22.45 m settled
75	>44	0.181	x	387	=	70.05 m settled

Determination of % Control (i.e. percent settled): Same as for handling at stope drawpoints and development headings.

Total TSP (railcar to crusher feed bins) with gravity settling estimated in the air stream from mine exhaust shafts.

16.4 t/yr x 0.05 (i.e. 1 - decimal fraction settled) = 0.8 t(0.9 st)/yr

Crusher Feed Bins to Primary Crusher:

Emission Factor and Source: AP-42, Table 8.23-1

TSP = 0.005 kg/t - Handling of high moisture rock

Process Rate: 1200 t/hr, 16,000 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Wetting if necessary.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t = 18.1 t/yr

Total TSP (feed bins to primary crusher) = 18.1 t/yr before gravity settling.

Crusher Feed Bins to Primary Crusher with Gravity Settling:

Particle size ranges, mine ventilation air stream branch velocities, settling parameters, and determination of % settled are the same as for handling from railcars into crusher feed bins.

Total TSP (feed bins to primary crusher) with gravity settling estimated in the air stream from mine exhaust shafts.

18.1 t/yr x 0.05 (1 - decimal fraction settled) = 0.9 t(1.0 st)/yr

Coarse Crushing to -150 mm (-6 inches):

Emission Factor and Source: AP-42, Table 8.23-1

TSP = 0.01 kg/t - Primary crushing of high moisture rock

Process Rate: 1200 t/hr, 16,000 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Insertable Dust Collector, similar to DCE Vokes Model No. DLMV 45/15 F1 - 99% efficiency.

Example Calculation:

TSP - 3,629,000 t/yr x 0.01 kg/t ÷ 1000 kg/t x (1-0.99) = 0.4 t(0.4 st)/yr

Crusher Discharge to Picking Belt:

Emission Factor and Source: AP-42, Table 8.23-1

TSP - 0.005 kg/t - Transfer of high moisture rock

Process Rate: 1200 t/hr, 14,700 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Insertable Dust Collector, similar to DCE Vokes Model No. DLMV 45/15 F1 - 99% efficiency.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t x (1-0.99) = 0.2 t(0.2 st)/yr

Transfer from Picking Belt to Loading Belt:

Emission Factor and Source: AP-42, Table 8.23-1

TSP - 0.005 kg/t - Transfer of high moisture rock

Process Rate: 1200 t/hr, 14,400 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Insertable Dust Collector, similar to DCE Vokes Model No. DLMV 45/15 F1 - 99% efficiency.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t x (1-0.99) = 0.2 t(0.2 st)/yr

Transfer from Loading Belt to Hoisting Pocket:

Emission Factor and Source: AP-42, Table 8.23-1

TSP - 0.005 kg/t - Transfer of high moisture rock

Process Rate: 1200 t/hr, 14,400 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Insertable Dust Collector, similar to DCE Vokes Model No. DLMV 45/15 F1 - 99% efficiency.

Example Calculation:

TSP - 3,629,000 x 0.005 kg/t ÷ 1000 kg/t x (1-0.99) = 0.2 t(0.2 st)/yr

Transfer from Hoisting Pocket into Skip:

Emission Factor and Source: AP-42, Table 8.23-1

TSP = 0.005 kg/t - Transfer of high moisture rock

Process Rate: 1100 t/hr, 14,400 t/day, 3,629,000 t/yr

Duration: As noted in process rate.

Control Method and Efficiency: Insertable Dust Collector, similar to DCE Vokes Model No. DLMV 45/15 F1 - 99% efficiency.

Example Calculation:

TSP - 3,629,000 t/yr x 0.005 kg/t ÷ 1000 kg/t x (1-0.99) = 0.2 t (0.2 st)/yr

TOTAL Estimated Underground Emissions

	st/yr
TSP =	
Blasting	13.6
Rock Handling	
Stope Drawpoints and development headings	1.0
Orepasses and waste rock passes	2.0
Chute to railcars	1.8
Railcar to crusher feed bins	0.9
Feed bins to primary crusher	1.0
Coarse crushing	0.4
Crusher discharge to picking belt	0.2
Picking belt to loading belt	0.2
Loading belt to hoisting pocket	0.2
Hoisting pocket into skip	0.2
Total	21.5

SO_2 = 2.3 st/yr

NO_x = 18.6 st/yr

CO = 79.0 st/yr

Pb = 0.002 st/yr

2. Mine Air Heating - Use of natural gas (heat content 1000 BTU/SCF) for direct-fired mine air heating.

Emission Factor and Source: EPA NEDS - Source classification codes, Appendix C, p. C-5, 12/75.

TSP - 10.0 lb/10^6 SCF (4.54 kg/10^6 SCF)

SO_x - 0.6 lb/10^6 SCF (0.27 kg/10^6 SCF)

NO_x - 120.0 lb/10^6 SCF (54.48 kg/10^6 SCF)

CO - 20.0 lb/10^6 SCF (9.08 kg/10^6 SCF)

HC - 8.0 lb/10^6 SCF (3.63 kg/10^6 SCF)

Process Rate: 91,800 SCF/hr, 2.203 x 10^6 SCF/day, 110.6 x 10^6 SCF/yr

Duration: When weather conditions require.

Control Method and Efficiency: Use of natural gas.

Example Calculation:

TSP - 110.6 x 10^6 SCF/yr x 4.54 kg/10^6 SCF ÷ 1000 kg/t = 0.5 t (0.6 st)/yr

3. Mine Vehicles (Mobile Equipment) - Use of diesel equipment to move personnel, materials, and rock. Diesel fuel will contain 0.4 weight percent sulfur maximum.

Emission Factor and Source: "Emission control of a Deutz F6L-714 diesel engine, derated for underground use, by application of water/oil fuel emissions" by A. Lawson, E. W. Simmons, and M. Piett, March 30, 1979.

TSP - 11.0 lb/10^3 gal (1.61 g/kg) - Lawson, et al. 1979, p. 62

SO_x - 31.0 lb/10^3 gal (4.54 g/kg) - off road construction equipment from EPA NEDS

NO_x - 108.5 lb/10^3 gal (15.9 g/kg) - Lawson, et al. 1979, p. 81

CO - 2.01 lb/10^3 gal (0.295 g/kg) - Lawson, et al. 1979, p. 69

HC - 1.97 lb/10^3 gal (0.289 g/kg) - Lawson, et al. 1979, p. 66

Process Rate: 879 l/hr, 15,841 l/day, 3,654,000 l/yr

Duration: As noted by process rate.

Control Method and Efficiency: Use of clean burning air cooled Deutz engines with a catalytic scrubber.

Example Calculation:

$$TSP - \frac{3{,}654{,}000\ l/yr \times 0.845\ kg/l \times 0.00161\ kg(TSP)/kg}{1000\ kg/t} = 5\ t(5.5\ st)/yr$$

Emitting Device (Mine Operation): Total quantities of component air emissions will exit the mine at the east and west exhaust shafts (EER and WER). Each shaft will have two fans similar to a Joy M108-580D that will produce approximately 630,000 cfm at 900 hp each.

III. MINE/MILL SURFACE FACILITIES CONSTRUCTION

1. Concrete Batch Plant - Mixing of aggregate, sand, and cement for use during plant construction activities:

Emission Factor and Source: AP-42, Table 8.10-2

	kg/t
TSP - Transfer of sand and aggregate to elevated bins	= 0.02
Cement unloading to elevated storage silos	= 0.118
Weight hopper loading of cement, sand, and aggregate	= 0.118
Mixer loading of cement, sand, and aggregate	= 0.01
Loading of dry-batch truck	= 0.02

Process Rate: 38.3 m^3/shift, 1 shift/day, 5 days/wk, 52 wks/yr

Sand and Aggregate	75.2 t/day	19,558 t/yr
Cement	16.7 t/day	4,342 t/yr
Total	91.9 t/day	23,900 t/yr

Control Method and Efficiency: Baghouse with ducting and insertable collector - 99% control efficiency, AP-42, Table 8.10-1; Other - 90% control efficiency.

Example Calculation:

Yearly -
19,558 t/yr x 0.02 kg/t x (1-0.90) ÷ 1000 kg/t = 0.04 t/yr
4,342 t/yr x 0.118 kg/t x (1-0.99) ÷ 1000 kg/t = 0.005 t/yr
23,900 t/yr x 0.118 kg/t x (1-0.90) ÷ 1000 kg/t = 0.282 t/yr
23,900 t/yr x 0.01 kg/t x (1-0.90) ÷ 1000 kg/t = 0.024 t/yr
23,900 t/yr x 0.02 kg/t x (1-0.90) ÷ 1000 kg/t = 0.048 t/yr
0.399 t/yr
(0.44 st/yr)

Total Annual Estimated Emissions = 0.40 t/yr (0.44 st/yr)

2. Site Preparation

a. Mine Shafts - The surface construction activities necessary to prepare for sinking of the main mine and intake air shafts, east and west exhaust shafts (i.e. raises), and the road to the potable water supply well are the estimates provided under the heading of mine/mill surface facilities construction. The estimated TSP air emissions for the construction of these individual areas are provided below.

Emission Factor and Source: AP-42, Section 11.2.4

TSP-EF - 1.2 st/acre/month

Access road to potable water supply well with pad - outside fence

Process Rate:

Road - $\frac{235\ m \times 6\ m}{4047\ m^2/acre}$ = 0.35 acres

Pad - $\frac{(25\ m/2)^2}{4047\ m^2/acre}$ = 0.12 acres

0.47 acres

Access road to east exhaust shaft (EER) with pad - outside fence

Process Rate:

Road - $\frac{135\ m \times 6\ m}{4047\ m^2/acre}$ = 0.20 acres

Pad - $\frac{20\ m \times 20\ m}{4047\ m^2/acre}$ = 0.10 acres

0.30 acres

Access road to west exhaust shaft (WER) with pad - outside fence

Process Rate:

Road - $\frac{45\ m \times 6\ m}{4047\ m^2/acre}$ = 0.07 acres

Pad - $\frac{20\ m \times 20\ m}{4047\ m^2/acre}$ = 0.10 acres

0.17 acres

Access road to explosives magazine and pad - outside fence

Process Rate:

Road - $\frac{88\ m \times 6\ m}{4047\ m^2/acre}$ = 0.13 acres

- $\frac{527\ m \times 8\ m}{4047\ m^2/acre}$ = 1.04 acres

Pad - $\frac{55\ m \times 120\ m}{4047\ m^2/acre}$ = 1.63 acres

2.80 acres

Access road to preproduction ore storage pad - outside fence

Process Rate:

Road - $\frac{240\ m \times 24\ m}{4047\ m^2/acre}$ = 1.42 acres

Pad - $\frac{188\ m \times 188\ m}{4047\ m^2/acre}$ = 8.73 acres

- $\frac{125\ m \times 25\ m}{4047\ m^2/acre}$ = 0.77 acres

10.92 acres

Total All = 14.7 acres

Duration: Assume all activities occur in the same month.

Control Method and Efficiency: Watering of disburbed area if necessary

Example Calculation:

TSP - 1.2 st/acre/month x 14.7 acres = 17.6 st

b. Mine/Mill Site - Earthmoving and excavation activities will occur to clear and grade site to allow foundation work for structures and roads.

Major mine/mill surface facilities development will be completed within the first 12 months of the construction phase.

The following calculations estimate the air emissions if burning instead of mulching occurs for the tree stumps and brush accumulated from the mine/mill site construction (see also Kulibert, 1984). Burning will be on the surface in an open area.

Emission Factors and Source: AP-42, Table 2.4-2, Forest residues - unspecified.

Particulate (TSP)	NO_x	CO	HC
lb/st	lb/st	lb/st	lb/st
17	4	140	24.7

Process Rate: Total burn

Duration: 12 months

Control Method and Efficiency: None

Example Calculations: 1732 st of Forest residues for 104 acres

TSP: st of brush/yr x TSP lbs/st x st/2000 lbs =
1732 st/yr x 17 lb/st x st/2000 lbs = 14.7 st/yr

NO_x: 1732 x 4 ÷ 2000 = 3.5 st/yr

CO : 1732 x 140 ÷ 2000 = 121.2 st/yr

HC : 1732 x 24.7 ÷ 2000 = 21.4 st/yr

Construction Activities

Emission Factors and Source: Two emission factors are used to represent fugitive dust (TSP) emissions from site area construction activities. On-site construction activities will be represented by the general factor 1.2 st/acre/month. This general factor was not adjusted based on the site area estimated silt content of 15% from soil classification tests. However, some of the surface till will be hauled to the MWDF. Hauling emissions will be based on the following factor from AP-42 and as specified by WDNR in the September 12, 1983, letter.

Emission Factor and Source: AP-42 (i.e. May 1983), Section 11.2.1 - Unpaved roads

$$TSP\text{-}EF = k\ 5.9\ (s/12)(S/30)^{2*}(W/3)^{0.7}(w/4)^{0.5}\ (d/365) = lb/veh\text{-}mile$$

TSP-EF = Suspended particulate emissions - lb/veh-mile
k = Particle size multiplier - 0.8
s = Silt content of gravel road surface material in % - 6%**
S = Average vehicle speed - 15 mi/hr
W = Average vehicle weight - tons(st)
w = Average number of wheels per vehicle
d = Dry days per year - 230 days

* The factor (S/30) is valid for a speed range of 30 to 50 mph. Below 30 mph the square of the factor is recommended (WDEQ 1979. Fugitive dust emission factors. Cheyenne, WY: Wyoming Department of Environmental Quality, Division of Air Quality. January 24 Memorandum from Charles Collins).

** The silt content (i.e. 6%) used in this calculation was as recommended by the DNR. Further, the calculations estimating the emissions are for the total year and not just the summer months.

Process Rate: 12 months.

Control Method and Efficiency: Wetting of disturbed area if necessary.

Example Calculations:

On-site construction

Site preparation completed in 12 months
Mine/mill site = 104 acres
Area disturbed/month = 104 ÷ 12 = 8.7 acres

Emissions (uncontrolled) = 1.2 st/acre/month x 8.7 acres x 12 months/yr
= 125.3 st/yr

Emissions (controlled) = 125.3 x 0.5* = 62.6 st/yr

* Control factor for watering from AP-42, Section 11.2.4

Hauling of excavated till from mine/mill site to MWDF

Total soil material hauled:

96,396 yd^3 x 2,970 lb/yd^3 x st/2,000 lbs = 143,148 st
Assume 35 st/haul truck
Total number of trips = 4,090
Round trip miles from mine/mill site to MWDF = 4 miles
Total miles = 4,090 trips x 4 miles/trip = 16,360 miles

$$TSP\text{-}EF = (0.8)5.9(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365) = lb/veh\text{-}mile$$
$$= (0.8)5.9(6/12)(15/30)^2(51/3)^{0.7}(6/4)^{0.5}(230/365 =$$
$$= 3.3 \text{ lb/veh-mile}$$

Emissions (uncontrolled) = 3.3 lb/veh-mile x 16,360 miles x st/2,000 lb
= 27.0 st/yr

Emissions (controlled) = 27.0 st x 0.15** = 4.1 st/yr

** 85% control with chemical stabilization

Total TSP emissions from mine/mill site development including earthmoving excavation activites = 66.7 st/yr.

c. MWDF Area - Estimates included here are for clearing the land, and surface earthwork (excavation to approximately 10 ft). The estimates use the primary emission factor from AP-42 for construction activities for project facilities. However, where deep excavation (greater than 10 ft) and major hauling of soil material within the excavated area is involved, the TSP emissions from hauling and loading and dumping of the soil material were calculated separately (i.e., in addition to the general construction emissions).

Emission Factor and Source: 1.2 st/acre/month; EPA AP-42, Section 11.2.4; Clearing and excavation (i.e., heavy construction)

Assume: Based on largest surface area disturbed in one year - Tailing Pond T1 - approximately 94 acres

Duration: 12 months (94 ÷12 = 7.83 acres/month)

Example Calculation:

TSP = 1.2 st/acre/month x 7.83 acres/month x 12 months/yr = 112.8 st/yr

d. Access Road/Powerline Clearing and Grading - The following calculations estimate the air emissions if burning instead of mulching occurs for the tree stumps and brush accumulated from the access road/powerline construction (see also Kulibert, 1984). Burning will be on the surface in an open area.

Emission Factors and Source: AP-42, Table 2.4-2; Forest residues - unspecified

Particulate (TSP)	NO_x	CO	HC
lb/st	lb/st	lb/st	lb/st
17	4	140	24.7

Process Rate: Total burn

Duration: 12 months

Control Method and Efficiency: None

Example Calculation: 316 st of Forest residues for 37 acres

TSP: st of brush/yr x TSP lbs/st x st/2000 lbs
316 st/yr x 17 lb/st x st/2000 lbs = 2.7 st/yr

NO_x: 316 x 4 ÷ 2000 = 0.6 st/yr

CO : 316 x 140 ÷ 2000 = 22.1 st/yr

HC : 316 x 24.7 ÷ 2000 = 3.9 st/yr

Mine/Mill Site Fugitive Dust TSP Emissions from Traffic During the Construction Phase after Access Road Completion

Current estimates indicate that approximately 703 operation phase personnel will be employed by the Crandon Project. It is also assumed that there will be 1.6 employees/vehicle traveling 2.5 miles (one way) of access road to the mine/mill site. Therefore, at this rate (2 trips/day x 2.5 miles/trip x 703/1.6 employees per vehicle), approximately 2,200 vehicle miles would be traveled per day. The calculation of fugitive dust (TSP) emissions from vehicle travel is based on the most recent EPA AP-42 update (i.e. May 1983), and current estimates of employee traffic loads of 439 (703 ÷ 1.6) vehicles per day (i.e. 439 x 5 = 2195 miles/day).

Access Road

Emission Factors and Source: AP-42, Table 11.2.5-1

TSP-EF = 0.012 lb/veh-mile

Process Rate: 2195 miles/day for employee vehicles
(i.e. 439 vehicles x 5 miles/round trip)
100 miles/day for off-site delivery vehicles
(i.e. 20 vehicles x 5 miles/round trip)
Total miles traveled/day on access road =
2295 veh-miles/day

Duration: 230 dry days/yr

Control Method and Efficiency: Paving

Example Calculation:

TSP - 2295 veh-miles/day x 230 dry days/yr x 0.012 lbs/veh-mile
x st/2000 lb = 3.2 st/yr

Tailpipes

Emission Factor and Source: AP-42, Appendix D, Table D.1-19 (1987)

Process Rate: Employee vehicles - 2200 mi/day (LDV)

Duration: 350 days/yr

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation: Process Rate x Emission Factor = Emission Rate

TSP: 2200 mi/day x 0.05 g/mi x 0.002 lbs/g x 350 days/yr x st/2000 lbs = 0.04 st/yr

SO_x: 2200 x 0.13 (Table D.1-21) x 0.002 x 350 ÷ 2000 = 0.1 st/yr

NO_x: 2200 x 0.40 x 0.002 x 350 ÷2000 = 0.3 st/yr

CO : 2200 x 3.6 x 0.002 x 350 ÷ 2000 = 2.8 st/yr

HC : 2200 x 0.43 x 0.002 x 350 ÷ 2000 = 0.3 st/yr

Emitting Device: Tailpipes of vehicles.

e. Railroad Spur Clearing and Grading - The following calculations estimate the air emissions if burning instead of mulching occurs for the tree stumps and brush accumulated from the railroad spur construction (see also Kulibert, 1984). Burning will be on the surface in an open area.

Emission Factors and Source: AP-42, Table 2.4-2; Forest residues - unspecified

Particulate (TSP)	NO_x	CO	HC
lb/st	lb/st	lb/st	lb/st
17	4	140	24.7

Process Rate: Total burn

Duration: 12 months

Control Method and Efficiency: None

Example Calculations: 497 st of Forest residues for 45 acres

TSP: st of brush/yr x TSP lbs/st x st/2000 lbs
497 st/yr x 17 lbs/st x st/2000 lbs = 4.2 st/yr

NO_x: 497 x 4 ÷ 2000 = 1.0 st/yr

CO : 497 x 140 ÷ 2000 = 34.8 st/yr

HC : 497 x 24.7 ÷ 2000 = 6.1 st/yr

Diesel Locomotive - Used for on-site location and switching of railroad cars.

Emission Factors and Source: EPA - NEDS specific codes, emission factor file report, 7/23/82.

TSP - 25 lb/10^3 gal

SO_x - 57 lb/10^3 gal

NO_x - 370 lb/10^3 gal

CO - 130 lb/10^3 gal

HC - 90 lb/10^3 gal

Process Rate: 5 gal/hr, 30 gal/day, 10,800 gal/yr

Duration: 2 hrs/shift, 3 shifts/day, 360 days/yr (included in process rate).

Control Method and Efficiency: None

Example Calculation:

TSP - 10,800 gal/yr x 25.0 lb/10^3 gal x st/2000 lbs = 0.14 st/yr

Emission rates for the diesel locomotive are estimated to be as follows:

	st/yr
TSP:	0.14
SO_x:	0.3
NO_x:	2.0
CO :	0.7
HC :	0.5

h. Haul Road - Hauling of excavated till from mine/mill site to MWDF.

Emission Factors and Source: Some of the surface till will be hauled to the MWDF. Hauling emissions will be based on the following factor from AP-42.

$$\text{TSP-EF (lbs/veh-mile)} = k\ 5.9\ (s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}\ (d/365)$$

The silt content (i.e. 6%) used in this calculation was as recommended by the DNR.

Process Rate:

Total soil material hauled:

96,396 yd^3 x 2,970 lb/yd^3 x st/2,000 lbs = 143,148 st
Assume 35 st/haul truck
Total number of trips = 4,090
Round trip miles from mine/mill site to MWDF = 4 miles
Total miles = 4,090 trips x 4 miles/trip = 16,360 miles

$$TSP\text{-}EF = (0.8)5.9(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365) = lb/veh\text{-}mile$$
$$= (0.8)5.9(6/12)(15/30)^2(51/3)^{0.7}(6/4)^{0.5}(230/365)$$
$$= 3.3 \text{ lb/veh-mile}$$

Emissions (uncontrolled) = 3.3 lb/veh-mile x 16,360 miles x st/2,000 lb
= 27.0 st/yr

Emissions (controlled) = 27.0 st x 0.15* = 4.1 st/yr

* 85% control with chemical stabilization

g. Water Discharge Pipeline - Emissions are primarily generated from general excavation, and stripping and hauling of sand and gravel.

Process Rate:

Assume:

Total construction area	= 15 acres
Pipeline distance	= 6.1 miles
Total disturbed width	= 20 ft
Sand and gravel backfill	= 3,500 yd^3
Average haul distance	= 3 miles
Pipeline construction period	= 6 months

General Construction

Emission Factor and Source: AP-42, Section 11.2.4

TSP-EF = 1.2 st/acre/month

Process Rate:

Area disturbed/month = 15 acres/6 months = 2.5 acres/month

Emissions (uncontrolled) = 1.2 st/acre/month x 2.5 acres/month x 6 months
= 18.0 st

Emissions (controlled) = 18.0 st x 0.5** = 9.0 st

** 50% control with watering.

Hauling

Emission Factor and Source: AP-42

$$TSP\text{-}EF = (0.8)5.9(15/12)(10/30)^2(10/3)^{0.7}(6/4)^{0.5}(230/365) = 1.2 \text{ lb/veh-mile}$$

Process Rate:

3,500 yd^3 sand and gravel ÷ 5 yd^3/haul = 700 hauls
700 hauls at 6 miles round trip/haul = 4,200 veh-miles

Emissions (uncontrolled) = 1.2 x 4,200 veh-miles x st/2000 lb = 2.5 st/yr

Emissions (controlled) = 2.5 st/yr x 0.5* = 1.3 st/yr

* 50% control with watering

Total construction phase TSP emissions for the wastewater discharge pipeline are conservatively estimated to be 10.3 st/yr.

h. In-Plant Roads - Vehicle traffic on roads within and adjacent to the main portion of the Project facilities.

Fugitive dust

Emissions of fugitive dust (TSP) from using existing gravel roads will be primarily from delivery of bentonite from the Woodlawn siding 6 miles east of the MWDF before the railroad spur is completed during 1987. Emission estimates are based on the following assumptions:

1) The access road and railroad will be constructed during the first 12 months of project development;

2) Most traffic prior to construction of the new access road will use Sand Lake road to a 1/2-mile gravel access road to the mine/mill site;

3) Distance from the Woodlawn siding to the MWDF is approximately 6 miles;

4) Construction personnel traffic during the first 12 months is estimated to be: 413 vehicles/day (i.e. 1.6 persons/vehicle and 1 mile round trip per vehicle);

5) Bentonite hauled during the first year would be 2,000 tons in 25 ton tractor trailers at 15 miles/hr along the 6 mile distance from the Woodlawn siding to the MWDF; and

6) An additional 12 service trucks and 3 equipment delivery trucks would come on-site per day (i.e. 1 mile round trip).

Fugitive dust (TSP) emissions on gravel roads are based on the following factor:

$$TSP\text{-}EF = (0.8)5.9(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365)$$

Personnel traffic

Assume average vehicle weighs 1.7 tons with 4 wheels.

$$TSP\text{-}EF = (0.8)5.9(12/12)(15/30)^2(1.75/3)^{0.7}(4/4)^{0.5}\ (230/365) =$$
lb/veh-mile = 0.5 lb/veh-mile

Total miles traveled = 413 veh-miles/day x 5 days/week x 50 weeks/yr = 103,250 veh-miles/yr

Emissions (uncontrolled) = 103,250 veh-miles/yr x 0.5 lbs/veh-mile x st/2000 lbs = 25.8 st/yr

Emissions (controlled) = 25.8 st/yr x 0.15* = 3.9 st/yr

Equipment truck traffic

Assume average weight of heavy equipment trucks = 10 st
and service trucks = 5 st.

Heavy equipment truck traffic

3 truck miles/day x 5 days/week x 50 weeks/yr = 750 veh-miles/yr

$$TSP\text{-}EF = (0.8)5.9(12/12)(15/3)^2(10/3)^{0.7}(18/4)^{0.5}(230/365) = \text{lb/veh-mile}$$
= 3.7 lb/veh-mile

Emissions (uncontrolled) = 3.7 lb/veh-mile x 750 veh-mile/yr x st/2000 lbs
= 1.4 st/yr

Emissions (controlled) = 1.4 x 0.15* = 0.2 st/yr

Service truck traffic

12 truck miles/day x 5 days/week x 50 weeks/yr = 3,000 veh-miles/yr

$$TSP\text{-}EF = (0.8)5.9(1)(0.25)(5/30)^{0.7}(10/4)^{0.5}(0.6) = \text{lb/veh-mile}$$
= 1.7 lb/veh-mile

Emissions (uncontrolled) = 1.7 lb/veh-mile x 3,000 veh-mile/yr
x st/2000 lbs = 2.6 st/yr

Emissions (controlled) = 2.6 st/yr x 0.15* = 0.4 st/yr

* 85% control with chemical stabilization.

Mine/Mill Site-Paved Roads

Emission Factors and Source: AP-42 (i.e. May 1983), Section 11.2.6 - Industrial Paved Roads

$$TSP\text{-}EF = k(0.09)\ I\ (4/n)(s/10)(L/1000)(W/3)^{0.7} = lb/veh\text{-}mile$$

where:

k = particle size multiplier	= 0.86
I = industrial augmentation factor	= 3.5 for LDGV = 7.0 for HDGV and HDDV
n = number of traffic lanes	= 2
s = surface material silt content (%)	= 20%
L = surface dust loading (lb/mile)	= 1000
W = average vehicle weight (tons)	= 2 st (i.e. 4000 lbs) - for light duty gasoline vehicles (LDGV) = 5 st avg. - heavy-duty gasoline vehicle (HDGV) = 15 st avg. - heavy-duty diesel vehicle (HDDV)

Process Rate:

Light Duty Gas Vehicle (LDGV)

(Pick-up Trucks)
Assume: 20 miles/hr
4 wheels
W = 2 st
230 dry days per year

Duty	miles/day
Environmental	25
Inspections	45
Security	50
Maintenance	10
Warehouse	2.5
Total	132.5

Heavy Duty Gas Vehicle (HDGV)

Assume: 15 miles/hr
6 wheels
W = 5 st (average)
230 dry days per year

Duty	miles/day
Water Truck	20
Trucks	6.5
Total	26.5

Heavy Duty Diesel Vehicle (HDDV)

Assume: 10 miles/hr
6 wheels
W = 15 st (average)
230 dry days per year

Duty	miles/day
Grader	5
Backhoe	0.5
60 st Crane	0.5
10 st Crane	0.5
Tractor/Trailer	0.5
Forklifts	20
Total	27.0

Control Method and Efficiency: Paving - asphalt.

Example Calculation:

LDGV TSP-EF = $k(0.09)\ I\ (4/n)(s/10)(L/1000)(W/3)^{0.7}$ = lb/veh-mile
= $0.86\ (0.09)\ 3.5\ (4/2)(20/10)(1000/1000)(2/3)^{0.7}$
= 0.8 lb/veh-mile
LDGV TSP - 0.8 lb/veh-mile x 132.5 miles/day x 230 dry days/yr x st/2000 lbs = 12.2 st/yr

HDGV TSP-EF = $0.08 \times 7.0 \times 2 \times 2 \times 1 \times (5/3)^{0.7}$ = 3.2 lb/veh-mile
HDGV TSP - 3.2 x 26.5 x 230 ÷ 2000 = 9.8 st/yr

HDDV TSP-EF = $0.08 \times 7.0 \times 2 \times 2 \times 2 \times (15/3)^{0.7}$ = 6.9 veh-mile
HDDV TSP - 6.9 x 27 x 230 ÷ 2000 = 21.4 st/yr

Total estimated TSP emissions = 43.4 st/yr

Gravel Roads

Emission Factors and Source: AP-42, Section 11.2.1.3

TSP-EF = $k\ 5.9\ (s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365)$ = lb/veh-mile

k = 0.8
s = silt content, %
S = vehicle speed, mph
W = vehicle weight, st
w = number of tires
d = number of dry days

LDGV = 132.5 miles/day
HDGV = 26.5 miles/day
HDDV = 27.0 miles/day
s = 6%

Duration: 230 dry days/yr

Control Method and Efficiency: Watering as necessary.

Example Calculations:

LDGV TSP-EF = $k\ 5.9\ (s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365)$ lb/veh-mile
= $(0.8)\ 5.9\ (6/12)(20/30)^2(2/3)^{0.7}(1)^{0.5}(230/365)$
= 0.5 lb/veh-mile
LDGV TSP - 0.5 lb/veh-mile x 132.5 mi/day x 230 days/yr x st/2000 lbs
= 7.6 st/yr

HDGV TSP-EF = $0.8\ (5.9)(6/12)(15/30)^2(5/3)^{0.7}(6/4)^{0.5}(0.6)$
= 0.6 lb/veh-mile
HDGV TSP - 0.6 x 26.5 x 230 ÷ 2000 = 1.8 st/yr

HDDV TSP-EF = $0.8\ (5.9)(6/12)(10/30)^2(15/3)^{0.7}(6/4)^{0.5}(0.6)$
= 0.5 lb/veh-mile
HDDV TSP - 0.5 x 27.0 x 230 ÷ 2000 = 1.9 st/yr

Total estimated TSP emissions (uncontrolled) = 11.3 st/yr

Total estimated TSP emissions (controlled) = 11.3 st/yr x 0.5* = 5.7 st/yr

*50% control with watering

Total estimated TSP emissions for employee and plant operation traffic = 49.1 st/yr

3. Construct Major Surface Facilities

a. Fuel Transfer and Storage - Diesel fuel and gasoline will be transferred from a tank wagon to temporary storage tanks until dispensed to equipment and vehicles.

Emission Factors and Source: AP-42, Tables 4.3 and 4.4

HC/VOC 1.08000 kg/10^3 l Gasoline Dispensing Loss
HC/VOC 0.00259 kg/10^3 l Diesel Fuel Dispensing Loss
HC/VOC 0.98000 kg/10^3 l Gasoline Tank Loading Loss
HC/VOC 0.00236 kg/10^3 l Diesel Tank Loading Loss
HC/VOC 0.08400 kg/10^3 l Gasoline Spillage Loss
HC/VOC 0.00020 kg/10^3 l Diesel Spillage Loss
HC/VOC 0.01200 kg/10^3 l Gasoline Breathing Loss
HC/VOC 0.00029 kg/10^3 l Diesel Breathing Loss

Process Rate:

Peak construction levels use

	Diesel	Gasoline
Winter	22,450 l/d	530 l/d
Summer	32,850 l/d	660 l/d

Duration: Winter - 5 months (4.3 wk/month, 5 day/wk);
Summer - 7 months (4.3 wk/month, 5 day/wk)

Control Method and Efficiency: None

Example Calculation: Summation of processes

Process Rate x Emission Factor x Duration = Emission Rate

HC/VOC:

(Gasoline - Summer)
0.66 x 10^3 l/d x 1.080 kg/10^3 l = 0.710 kg/d
0.66 x 10^3 l/d x 0.980 kg/10^3 l = 0.650 kg/d
0.66 x 10^3 l/d x 0.084 kg/10^3 l = 0.080 kg/d
0.66 x 10^3 l/d x 0.012 kg/10^3 l = 0.008 kg/d

(Diesel - Summer)

32.85×10^3 l/d x 0.00259 kg/10^3 l = 0.085 kg/d
32.85×10^3 l/d x 0.00236 kg/10^3 l = 0.078 kg/d
32.85×10^3 l/d x 0.00020 kg/10^3 l = 0.007 kg/d
32.85×10^3 l/d x 0.00029 kg/10^3 l = 0.010 kg/d

Total 1.608 kg/d

Emitting Device: Temporary fuel storage tanks and filling hoses.

b. Reclaim Ponds R1 and R2

Reclaim Ponds R1 and R2 are estimated to have construction activities including excavation over approximately 49.4 and 29.6 acres, respectively. Using the TSP emission factor of 1.2 st/acre from EPA AP-42 results in calculated total TSP emissions of approximately 59.3 and 36 st, respectively. Since Reclaim Pond R2 is constructed over two years, the estimated TSP emissions of 36 st are approximately 18 st/yr.

c. Tailpipe Emissions - Use of diesel fuel to power off-road equipment during construction of mine/mill site. Diesel fuel will contain 0.4 weight percent sulfur maximum.

Emission Factors and Source: EPA NEDS-National Air Data Branch (MD-14) (Off-road construction equipment).

	Diesel
TSP	- 39.35 lb/10^3 gal burned
SO_2	- 31.0 lb/10^3 gal burned
NO_x	- 376.2 lb/10^3 gal burned
CO	- 112.3 lb/10^3 gal burned
HC/VOC	- 56.4 lb/10^3 gal burned

Process Rate: 2.3×10^2 gal/day

Duration: 13.5 hr/day, 5 day/wk, 4.3 wk/month, 7 month/yr

Control Method and Efficiency: None - Values are best estimate of tailpipe exit components.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSP - 2.3×10^2 gal/day x 39.35 lb/10^3 gal = 9.1 lb/day

- 9.1 lb/day x 5 day/wk x 4.3 wk/month x 7 months/yr x st/2000 lbs = 0.7 st/yr

Total Estimated Tailpipe Emissions, Diesel Vehicles

	st/yr
TSP:	0.7
SO_2:	0.5
NO_x:	6.5
CO :	1.9
HC/VOC:	1.0

IV. MILL/CONCENTRATOR OPERATIONS

1. Mine/Mill Surface Facilities Operation

a. Coarse Ore Transport - During the construction and operation phases, preproduction ore will be utilized or stored on the following schedule.

Year	Ore Handled (k-st)	Ore In Storage (k-st)
1	-	-
2	11	9*
3	523	532
4	366	898
5	898	-

* 2 k-st (k = thousand) processed in pilot plant.

Estimates of fugitive dust (TSP) generated from various activities associated with the preproduction ore handling and storage are presented below.

Transportation emissions:

Emission Factor and Source: AP-42, Section 11.2.1.3

TSP-EF = k 5.9 (s/12)(S/30)2**(W/3)0.7(w/4)0.5(d/365) = lb/veh-mile

- k = particle size multiplier (AP-42)
- s = silt content (%)
- S = vehicle speed (mph)
- W = vehicle weight (st)
- w = number of vehicle tires
- d = number of dry days per year

** For speeds less than 30 mph, the square of the ratio of $(S/30)^2$ [i.e. $(5/30)^2$] is used as recommended by the Wyoming Deparment of Environmental Quality (Fugitive dust emission factors. WDEQ, Division of Air Quality. January 24, Memorandum from Charles A. Collins, 1979).

Ore transport (Hauling)

- k = 0.8
- s = 6%
- S = 15 mph
- W = 51 st average (33 st truck empty)
- w = 6 tires
- d = 230 dry days

Maximum transport year = 1990
Tons hauled in year 1990 = 898,000 st
At 35 st/haul = 25,657 hauls
Average haul distance = 1.0 mile/round trip.
Total mile haulage in 1990 = 25,657 hauls x 1.0 veh-mile/haul = 25,657 veh-miles.

Hauling from main shaft to storage pad in 35 st dump truck.

Haul distance = to storage - 1.2 mile round trip
from storage - 1.0 mile round trip

$$TSP\text{-}EF = (0.8)(5.9)(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365) = \text{lb/veh-mile}$$
$$= (4.72)(6/12)(15/30)^2(51/3)^{0.7}(6/4)^{0.5}(230/365)$$
$$= 3.3 \text{ lb/veh-mile (uncontrolled)}$$

Process Rate:

Year	Volume Hauled (k-st) To Storage	Volume Hauled (k-st) From Storage	No. of Hauls	Miles Traveled	Emission (tons)
1	-	-	-	-	-
2	11	2*	371	446	0.1
3	524	-	14,971	17,965	4.5
4	366	-	10,457	12,548	3.1
5	-	898	25,657	25,657	6.4

Example Calculations:

Emissions (uncontrolled) = 25,657 miles x 3.3 lb/veh-mile x st/2000 lbs
= 42.3 st

Emissions (controlled) = 42.3 st x 0.15** = 6.4 st

Emissions (controlled) = 3.3 lb veh-mile x 446 veh-miles/yr x st/2000 lbs
x 0.15** = 0.1 st/yr

* Used in pilot plant testing.
** 85% control with watering and chemical stabilization.

Loading and dumping (L&D)

Loading: Cat 988B - 7 yd^3 bucket

$$TSP\text{-}EF = (0.73)(0.0018)\frac{(1.6/5)(7.2/5)(4/5)}{(4/2)^2(7/6)^{0.33}} = 0.00012 \text{ lb/ton}$$

Dumping: 35 st dump truck - 35 st ÷ 2,500 lb/yd^3 x 2,000 lb/st = 28 yd^3

$$TSP\text{-}EF = (0.73)(0.0018)\frac{(1.6/5)(7.2/5)(4/5)}{(4/2)^2(28/6)^{0.33}} = 0.000073 \text{ lb/st}$$

Combined (loading and dumping) emission rate = 0.000193 lb/st

Example Calculation:

Emissions (uncontrolled) = 0.000193 lb/st x 898,000 st/yr x st/2000 lbs
= 0.09 (0.1) st/yr.

Year	Volume Loaded and Dumped (k-st)	Emissions (st/yr)
2	13	0.00
3	524	0.05
4	366	0.04
5	898	0.10

Wind-blown emissions:

Emission Factors and Source: Evaluation of Fugitivie Dust Emissions from Mining Task 1 Report. Identification of Fugitive Dust Sources Associated with Mining. PEDCO - Environmental Specialists, Inc., 1976. Cincinnati, Ohio.

TSP-EF = a I K C L V*

a = Portion of total wind erosion losses measured as suspended particles (a = 0.025 for waste rock and preproduction ore)

I = Soil erodibility, tons(st)/acre/year = 38 for waste rock and preproduction ore

K = Accounts for resistance to wind erosion provided by ridges and furrows or large soil clumps in the field. Ranges from 0.5 for a field with optimum ratio of ridge height to ridge spacing, to 1.0 (no reduction) for field with smooth surface.

Assume 0.75 for storage areas and MWDF.

C = Climatic factor = 0.05 in site area

L = Unsheltered field width = 0.7

V = Vegetation cover factor. Assume unvegetated. V = 1.0

* Universal soil loss equation

Ore wind-blown emissions

Total disturbed area in 1989 = 8 acres

TSP-EF = a I K C L V

a = 0.025
I = 38
K = 0.75
C = 0.05
L = 0.7
V = 1.0

TSP-EF = 0.02494 st/acre/yr

Example Calculation:

Emissions (uncontrolled) = 0.2494 st/acre/yr x 8 acres = 0.2 st/yr.

Preproduction Ore Crushing and Handling:

Emission Factors and Source: AP-42, Table 8.23-1

TSP-EF = 0.5 lb/st - Primary Crushing
= 0.12 lb/st - Materials Handling

Process Rate: 440 st/hr, 5,510 st/day, 898,000 st/yr

Duration: 18 months (maximum in year 1990)

Control Method and Efficiency: Baghouse collector, 99% efficiency

Example Calculation:

TSP - 898,000 st/yr x 0.5 lb/st x (1-0.99) x st/2000 lbs = 2.2 st/yr
898,000 x 0.12 x 2 x (1-0.99) x st/2000 lbs = 1.1 st/yr
Total = 3.3 st/yr

Activity	TSP Emissions (st/yr)
Hauling of preproduction ore	6.4
Loading and dumping of preproduction ore	0.1
Ore wind-blown emissions	0.2
Preproduction ore crushing and handling	3.3
	10.0

Total Preproduction Ore Handling (Coarse Ore Transport) Emissions

Year	Hauling	L&D	Crushing	Wind-Blown	Total (TSP - st/yr)
1	-	-	-	-	-
2	0.1	0.0	-	0.2	0.3
3	4.4	0.05	-	0.2	4.7
4	3.1	0.04	-	0.2	3.3
5	6.4	0.1	3.3	0.2	10.0

b. Fine Ore Crushing and Screening - Crushing and screening of high moisture ore

Emission Factors and Source: AP-42, Table 8.23-1

TSP-EF = 0.03 kg/t secondary and tertiary crushing
0.005 kg/t handling

Duration: 24 hr/day, 365 days/yr

Process Rate: 620 t/hr, 14,880 t/day, 3,629,000 t/yr

Control Method and Efficiency: Wet impingement scrubber - 97.9%

Example Calculation:

TSP = 3,629,000 t/yr x 0.03 kg/t x 2 (crushing and screening) x (1-0.979) ÷ t/1000 kg = 4.6 t/yr
= 4.6 t/yr x 1.1 st/t = 5.1 st/yr

TSP = 3,629,000 x 0.005 x 9 (handling) x (1-0.979) ÷ 1000 = 3.4 t/yr
= 3.4 t/yr x 1.1 st/yr = 3.8 st/yr

Total estimated TSP emissions from crushing and screening are 8.9 st/yr.

c. Fine Ore Bin Loading and Unloading - Loading and unloading of Zn-Cu-Pb and Cu-Zn ore into and from fine ore storage bins.

Emission Factor and Source: AP-42, Table 8.23-1

TSP - Ore Handling = 0.005 kg/t

Process Rate: 620 t/hr, 14,880 t/day, 3,629,000 t/yr

Control Method and Efficiency: Wet impingement scrubber - 97.9%

Example Calculation:

TSP - 3,629,000 t/yr x 14(pickup points) x 0.005 kg/t x (1-0.979) x t/1,000 kg = 5.3 t/yr (5.8 st/yr)

d. Concrete Batch Plant - Typical batching of concrete for miscellaneous mine/mill site applications.

Emission Factor and Source: AP-42, Table 8.10-2

	kg/mt
TSP - Transfer of sand and aggregate to elevated bins	= 0.02
Cement unloading to elevated storage silos	= 0.118
Weight hopper loading of cement, sand, and aggregate	= 0.118
Mixer loading of cement, sand, and aggregate	= 0.01
Loading of dry-batch truck	= 0.02

Process Rate: 38.3 m^3/shift, 1 shift/day, 5 days/wk, 52 wks/yr

Sand and Aggregate	75.2 t/day	19,558 t/yr
Cement	16.7 t/day	4,342 t/yr
Total	91.9 t/day	23,900 t/yr

Control Method and Efficiency: Baghouse with ducting and insertable collector - 99% control efficiency, AP-42, Table 8.10-1; Other - 90% control efficiency

Example Calculation:

TSP (annual):

19,558 t/yr x 0.02 kg/t x (1-0.90) ÷ 1,000 kg/t = 0.04 t/yr
4,342 t/yr x 0.118 kg/t x (1-0.99) ÷ 1,000 kg/t = 0.005 t/yr
23,900 t/yr x 0.118 kg/t x (1-0.90) ÷ 1,000 kg/t = 0.282 t/yr
23,900 t/yr x 0.01 kg/t x (1-0.90) ÷ 1,000 kg/t = 0.024 t/yr
23,900 t/yr x 0.02 kg/t x (1-0.90) ÷ 1,000 kg/t = 0.048 t/yr
0.399 t/yr
(0.44 st/yr)

Total Annual Estimated Emissions = 0.40 t/yr x 1.1 st/t = 0.44 st/yr

e. Facility Heating - Natural gas is used for three purposes in the surface facilities. They are: 1) heating the buildings, 2) water heating, and 3) water treatment (brine crystallizer). Each of these processes is described in the following under its respective heading.

Heating Buildings - Use of natural gas unit heaters. Heat content is 1000 BTU/SCF for natural gas.

Emission Factors and Source: EPA-NEDS, Appendix C, p. C-3, December 1975 - <10M BTU/hr.

TSP-EF = 10.0 lb/10^6 SCF of natural gas

SO_x-EF = 0.6 lb/10^6 SCF of natural gas

NO_x-EF = 120.0 lb/10^6 SCF of natural gas

CO-EF = 17.0 lb/10^6 SCF of natural gas

HC-EF = 3.0 lb/10^6 SCF of natural gas

Process Rate: 17,350 SCF/hr, 416,400 SCF/day, and 33,960,000 SCF/yr of natural gas

Duration: As required by weather conditions

Control Method and Efficiency: Use of natural gas

Example Calculation:

TSP - (33,960,000)(10.0/1,000,000)/2000 = 0.17 st/yr

Water Heating - Heating of water in the concentrator building for the process using a 42,000 BTU/hr boiler. Also, heating water in the plant services building for washrooms and showers using a 1,005,000 BTU/hr water heater.

Emission Factors and Source: Same as building heating.

Process Rate: 1,047 SCF/hr, 25,128 SCF/day, and 9,172,000 SCF/yr of natural gas.

Duration: 24 hrs/day, 365 days/yr

Control Method and Efficiency: Use of natural gas

Example Calculation:

TSP - (9,172,000)(10.0/1,000,000)/2000 = 0.05 st/yr

Water Treatment - Use of a boiler for VCE (i.e. initial) and brine crystallization operations in the vapor compression evaporator process. Boiler will consume 14,600,000 BTU/hr of natural gas.

Emission Factors and Source: Same as for heating buildings.

Process Rate: 14,600 SCF/hr, 350,400 SCF/day, and 127,900,000 SCF/yr of natural gas

Duration: 24 hrs/day, 365 days/yr

Control Method and Efficiency: Use of natural gas

Example Calculation:

TSP - (127,900,000)(10.0/1,000,000)/2000 = 0.64 st/yr

Total Estimated Facility Heating TSP Emissions

	TSP (st/yr)
Heating Buildings	0.17
Water Heating	0.05
Water Treatment	0.64
Total	0.86 (0.90)

f. Fuel Transfer and Storage (Bulk Storage Facility and Service Station) - Transfer and storage of gasoline and diesel fuel (2 - 30,000 gal tanks).

Emission Factors and Source: AP-42, Table 4.3-5

$$HC - 2 \times lb\ (lb/yr) = 2.26 \times 10^{-2} M \left[\frac{P}{14.7-P}\right]^{0.68} D^{1.7} H^{0.51} T^{0.5} F_p C K_c$$

M = 130 (Molecular Weight of Vapor), AP-42, Table 4.3-1

P = 0.0064 psia (vapor pressure @ 60%F), AP-42, Table 4.3-1

D = 26 ft (tank diameter)

H = 6.3 ft (vapor space at 1/2 tank height)

T = 15°F (temperature variation from day to night)

F_P = 1 (paint factor), AP-42, Table 4.3-2

C = 1 (adjustment factor), AP-42, Figure 4.3-10

K_c = 1 AP-42, Table 4.3-6

Adjustment for fixed roof working loss

$LW = 2.4 \times 10^{-2} MPK_h K_c$, AP-42, Table 4.3-8

Gasoline - Tank emissions, AP-42, Table 4.4-4

1) 0.88 kg/10^3 l (filling buried tank) x 1892.5 l/d for 350 days/yr

2) 0.12 kg/10^3 l (breathing loss) x 1892.5 l/d for 350 days/yr

3) 1.08 kg/10^3 l (dispensing loss) x 1892.5 l/d for 350 days/yr

Diesel - Tank emissions, AP-42, Tables 4.3-1 and 4.4-4.
A direct proportion of gasoline to diesel use exists for fixed roof tank working loss and is shown below.

$$\frac{(0.0064 \text{ v.p.})\ (130 \text{ mw}) \text{ Diesel}}{(5.2 \text{ v.p.})\ (66 \text{ mw}) \text{ Gasoline}} = 0.0024$$ multiplier for 1), 2), and 3) above

Process Rate: 6000 gal/day

Control Method and Efficiency: Vapor balance system for fuel loading at the storage facility and service station - 95% efficiency

Example Calculations:

(Process Rate) x (Emission Factor) x (1-Efficiency) = Emission Rate

HC: 6000 gal/day x 34.1 lbs/gal/yr x st/2000 lbs x .05 = 5.1 st/yr

g. Emergency Diesel Generators - The use of 3 emergency (i.e. backup) diesel generators is required to supply electrical power in the event transmission line service is interrupted to the Project facilities. For this purpose two 2500- and one 1000-kw units will supply emergency power for the mine and for the mill facilities, respectively. These units are intended for use only in emergencies. However, to assure their ability to perform, weekly operation of each unit is necessary for a maximum of 1 hour. Also, emergency operation was estimated to be 2.5 hours per year. Total diesel fuel usage will be 192 gallons per hour per 2500-kw unit, 461 gallons per day (i.e. weekly test), and 25,125 gallons per year including the weekly and emergency operation of each unit.

Use of two 2500-kw for the mine and one 1000-kw generator for the mill for emergencies.

Emission Factors and Source: EPA, AP-42, Appendix-C, Internal combustion-electric generation-diesel, p.C-6.

TSP - 13.0 lbs/10^3 gal
SO_x - 140.0 lbs/10^3 gal
NO_x - 370.0 lbs/10^3 gal
CO - 225.0 lbs/10^3 gal
HC 37.0 lbs/10^3 gal

Process Rate: 192 gal/hr, 461 gal/day, 25,125 gal/yr

Duration: Each unit will be operated a maximum of 1 hr/wk, and estimated emergency purposes are 2.5 hr/yr.

Control Method and Efficiency: None

Example Calculation:

TSP - 25,125 gal/yr x 13.0 lbs/10^3 gal x st/2000 lbs = 0.2 st/yr

Total estimated emissions are as follows:

	st/yr
TSP:	0.2
SO_x:	1.8
NO_x:	4.7
CO :	2.8
HC :	0.5

h. Vehicular Travel, Plant Vehicles Exhaust - The current estimated mine/mill plant operation traffic load is 186 miles/day. A conservative assumption was used in that the estimated plant operation miles traveled of 186 miles/day was equally on paved and gravel roads. The calculations, therefore, overestimate the potential TSP emissions since only portions of the miles traveled will be on either road surface.

Mine/Mill Site

Emission Factors and Source: AP-42, Appendix D, Tables D.2-10 and D.2-16 (LDGV-1990); Tables D.4-10 and D.4-15 (HDGV-1990); Tables D.5-1 and D.5-4 (HDDV-1990).

LDGV (g/mi)		HDGV (g/mi)		HDDV (g/mi)	
TSP-EF	0.05	TSP-EF	0.91	TSP-EF	1.3
SO_2-EF	0.18	SO_2-EF	0.36	SO_2-EF	2.8
NO_x-EF	2.3	NO_x-EF	11.4	NO_x-EF	18.1
CO -EF	9.8	CO -EF	117.0	CO -EF	28.7
HC -EF	1.0	HC -EF	6.0	HC -EF	4.6

Process Rate:

Light Duty Gasoline Vehicle (LDGV)

(Pick-up Trucks)
Assume: 20 miles/hr
4 wheels

Duty	miles/day
Environmental	25
Inspections	45
Security	50
Maintenance	10
Warehouse	2.5
Total	132.5

Heavy Duty Gasoline Vehicle (HDGV)

Assume: 15 miles/hr
6 wheels

Duty	miles/day
Water Truck	20
Trucks	6.5
Total	26.5

Heavy Duty Diesel Vehicle (HDDV)

Assume: 10 miles/hr
6 wheels

Duty	miles/day
Grader	5
Backhoe	0.5
60 st Crane	0.5
10 st Crane	0.5
Tractor/Trailer	0.5
Forklifts	20
Total	27.0

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation: Process Rate x Emission Factor = Emission Rate.

LDGV TSP - 132.5 mi/d x 350 d/yr x 0.05 g/mi x 0.002 lbs/g x st/2000 l
= 0.002 st/yr

SO_x - 132.5 x 350 x 0.18 x 0.002 x 0.0005 = 0.008 st/yr
NO_x - 132.5 x 350 x 2.3 x 0.002 x 0.0005 = 0.11 st/yr
CO - 132.5 x 350 x 9.8 x 0.002 x 0.0005 = 0.46 st/yr
HC - 132.5 x 350 x 1.0 x 0.002 x 0.0005 = 0.05 st/yr

HDGV TSP - 26.5 mi/d x 350 d/yr x 0.91 g/mi x 0.002 lbs/g x st/2000 lb
= 0.008 st/yr

SO_x - 26.5 x 350 x 0.36 x 0.002 x 0.0005 = 0.003 st/yr
NO_x - 26.5 x 350 x 11.4 x 0.002 x 0.0005 = 0.11 st/yr
CO - 26.5 x 350 x 117.0 x 0.002 x 0.0005 = 1.09 st/yr
HC - 26.5 x 350 x 6.0 x 0.002 x 0.0005 = 0.06 st/yr

HDDV TSP - 27.0 mi/d x 350 d/yr x 1.3 g/mi x 0.002 lbs/g x st/2000 lbs
= 0.01 st/yr

SO_x - 27 x 350 x 2.8 x 0.002 x 0.0005 = 0.03 st/yr
NO_x - 27 x 350 x 18.1 x 0.002 x 0.0005 = 0.17 st/yr
CO - 27 x 350 x 28.7 x 0.002 x 0.0005 = 0.27 st/yr
HC - 27 x 350 x 4.6 x 0.002 x 0.0005 = 0.04 st/yr

Total estimated plant vehicle exhaust emissions

TSP: 0.02 st/yr
SO_x: 0.04 st/yr
NO_x: 0.39 st/yr
CO : 1.82 st/yr
HC : 0.15 st/yr

i. Vehicular Travel, Employee Vehicles - Current estimates indicate that approximately 703 operation phase personnel will be employed by the Crandon Project. It is also assumed that there will be 1.6 employees/vehicle traveling 2.5 miles (one way) of access road to the mine/mill site. Therefore, at this rate (2 trips/day x 2.5 miles/trip x 703/1.6 employees per vehicle), approximately 2,200 vehicle miles would be traveled per day.

Emission Factor and Source: AP-42, Appendix D, Table D.1-19 (1987)

Process Rate: Employee vehicles - 2200 mi/day (LDV).

Duration: 350 days/yr

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation: Process Rate x Emission Factor = Emission Rate.

TSP: 2200 mi/day x 0.05 g/mi x 0.002 lbs/g x 350 days/yr x st/2000 lbs = 0.04 st/yr
SO_x: 2200 x 0.13 (Table D.1-21) x 0.002 x 350 ÷ 2000 = 0.1 st/yr
NO_x: 2200 x 0.40 x 0.002 x 350 ÷ 2000 = 0.3 st/yr
CO : 2200 x 3.6 x 0.002 x 350 ÷ 2000 = 2.8 st/yr
HC : 2200 x 0.43 x 0.002 x 350 ÷ 2000 = 0.3 st/yr

Emitting Device: Tailpipes of vehicles

V. MWDF CONSTRUCTION AND OPERATIONS

1. Site Preparation

MWDF Area - The surface area of construction disturbance for tailing pond T1 is estimated to be approximately 94 acres. Within this area, site preparation includes clearing the land and surface earthwork for stump removal and soil storage for reclamation (i.e. excavation to approximately 10 ft). This estimate uses the primary emission factor from AP-42 for construction activities for project facilities. However, where deep excavation (greater than 10 ft) and major hauling of soil material within the excavated area is involved, the estimated TSP emissions from hauling, and loading and dumping of the soil material were calculated separately (i.e. in addition to the surface area construction estimate).

Emission Factor and Source: AP-42, Section 11.2.4

TSP-EF = 1.2 st/acre/month.

Process Rate: Based on largest surface area disturbed in one year - Tailing Pond T1 - 94 acres.

Because many areas of the additional tailing ponds are part of the previous construction activities (i.e. common embankment sections), it was assumed that 94 acres represents the additional surface area disturbance for the other ponds. Therefore, the estimated TSP emissions of 112.8 st was used for the early construction activities for the other tailing ponds.

Duration: 12 months (94 ÷ 12 = 7.83 acres/month)

Control Method and Efficiency: Watering, if necessary.

Example Calculation:

TSP = 1.2 st/acre/month x 7.8 acres/month x 12 months/yr = 112.8 st/yr

2. Construct MWDF Facilities

a. Waste Rock Handling - Loading and dumping

Emission Factor and Source: AP-42, Section 11.2.3

$$TSP\text{-}EF = (k)(0.0018)\frac{(s/5)(U/5)(H/5)}{(M/2)^2(Y/6)0.33} = lb/st$$

TSP-EF = emission factor - lb/st
k = particle size multiplier (dimensionless) - 0.73
s = silt content - %
U = wind speed (mph) - 7.2 mph (Crandon Project EIR, p. 2.1-17)
H = drop height - ft
M = material moisture content - %
Y = capacity of dumping device (yd^3)

Process Rate: See below.

Duration: See below.

Control Method and Efficiency: None

Example Calculation:

$$\text{TSP-EF(Loading)} = (0.73)(0.0018)\frac{(1.6/5)(7.2/5)(4/5)}{(4/2)^2(7/6)^{0.33}} = 0.00012 \text{ lb/st}$$

$$\text{TSP-EF(Dumping)} = (0.73)(0.0018)\frac{(1.6/5)(7.2/5)(4/5)}{(4/2)^2(28/6)^{0.33}} = 0.000073 \text{ lb/st}$$

Combined TSP-EF = 0.000193 lb/st for loading and dumping

761,000 st/yr x 0.000193 lb/st x st/2000 lbs = 0.07 st/yr

Year	Waste Rock (k-st)	Emissions (st/yr)**
1	11	-
2	66	0.01
3	761	0.07
4	1,144	0.11
5-8	297	0.03
9-27	136	0.01

b. Hauling

Emission Factor and Source: AP-42, Section 11.2.1

$$\text{TSP-EF} = (0.8)(5.9)(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365)$$
$$= \text{lb/veh-mile}$$

TSP-EF = suspended particulates - lb/veh-mile
s = silt content of road material - %
S = vehicle speed (mph)
W = average vehicle weight - st
w = number of wheels on vehicle
d = dry days/year - 230

Process Rate: See below.

Duration: See below.

Control Method and Efficiency: Watering and chemical stabilization.

Example Calculation:

$$TSP\text{-}EF = (0.8)(5.9)(6/12)(15/30)^2(51/8)^{0.7}(6/4)^{0.5}(0.63)$$
$$= 3.3 \text{ lb/veh-mile}$$

Emissions (controlled) = 3.3 lb/veh-mile x 1400 veh-miles x st/2000 lbs x 0.15*
= 0.35 st/yr

Year	Waste Rock Hauled (k-st)	Miles Traveled (k)	Controlled Emissions (st/yr)*
1	11	1.4	0.35
2	66	8.3	2.1
3	761	95.7	23.7
4	1,144	143.8	35.6
5-8	297	37.3	9.23
9-27	136	17.1	4.23

* 85% control with watering and chemical stabilization.

3. Construct Tailing Pipeline - The estimated acreage disturbed for construction of the tailings pipeline including excavation is approximately 10 acres.

Emission Factor and Source: AP-42, Section 11.2.4

TSP-EF = 1.2 st/acre/month

Process Rate: The tailing pipeline is constructed over 2 years. Therefore, approximately 5 acres per year is the estimated acreage disturbed during construction.

Duration: 2 years

Control Method and Efficiency: Watering, if necessary.

Example Calculation:

TSP = 1.2 st/acre/month x 5 acres/yr = 6.0 st/yr

4. Construct Tailing Pond T4 - Till excavation is assumed to occur equally over two years for each pond. Other activities such as loading and dumping, and hauling of other construction soil materials (i.e. drain layer, liner) were conservatively assumed to be completed in the second year of each pond development.

   a. Hauling - TSP emissions generated by hauling excavated till within the pond construction area, within the MWDF boundary, and between the mine/mill site and MWDF.

      Emission Factor and Source: EPA AP-42, Section 11.2.1

      $$TSP\text{-}EF = (0.8)(5.9)(s/12)(S/30)^2(W/3)^{0.7}(w/4)^{0.5}(d/365) = lb/veh\text{-}mile$$

      TSP-EF = suspended particulate - lb/veh-mile

      s = silt content of road material - %
      S = vehicle speed (mph)
      W = average vehicle weight - st
      w = number of wheels on vehicle
      d = dry days/year - 230

      Assume: Pond with largest quantity of soil material (till) excavation - Tailing Pond T4 (i.e. average excavation is 40 ft - upper 10 ft included in emissions from site preparation). Therefore, 75% of excavated till haulage is within the pond area.

      Process Rate:

Source	s	S	w	W	d	Emission Factor lbs/veh-mile	Control Efficiency	Soil Material Moved k-yd^3	Miles Traveled
1. Hauling excavated till within pond	15	15	4	63	230	7.82	50%[a]	1,913[b]	34,434
2. Bentonite/soil to pond	6	15	6	30	230	2.27	85%c	90[d]	5,012
3. Underdrain to pond	6	15	6	30	230	2.27	85%	264[d]	12,375
4. Filter mat'l to pond	6	15	6	16	230	2.27	85%	383[d]	20,826
5. Rip-rap to pond	6	15	6	16	230	2.27	85%	237[d]	11,109

a 50% control with watering.
b Each of the two years of construction.
c 85% control with watering and chemical stabilization.
d All in second year of T-4 construction.

Duration: Two years of construction for each pond with the development of the new storage capacity phased to coincide with disposal needs.

Control Method and Efficiency: See above - Process Rate

Example Calculation:

$$TSP = (0.8)(5.9)(15/12)(15/30)^2(63/3)^{0.7}(4/4)^{0.5}(230/365) = \text{lb/veh-}$$
$$= (4.72)(1.25)(0.25)(8.42)(1)(0.63) = 7.82 \text{ lb/veh-mile}$$

Emissions (controlled) = 7.82 lb/veh-mile x 34,434 miles x st/2000 lb
x 0.5*
= 67.3 st

* 50% control with watering.

Total Estimated Emissions from Hauling	TSP (st/yr)
1. Hauling excavated till within pond	67.3
2. Bentonite/soil to pond	0.85
3. Underdrain to pond	2.11
4. Filter material to pond	3.55
5. Rip-rap to pond	1.89
	75.7

b. Loading and Dumping

Emission Factor and Source: AP-42, Section 11.2.3

$$TSP\text{-}EF = (k)(0.0018)\frac{(s/5)(U/5)(H/5)}{(M/2)^2(Y/6)^{0.33}} = \text{lb/st}$$

TSP-EF = emission factor - lb/st
k = particle size multiplier (dimensionless) - 0.73
s = silt content - %
U = wind speed (mph) - 7.2 mph (Crandon Project EIR, p. 2.1-17)
H = drop height - ft
M = material moisture content - %
Y = capacity of dumping device (yd^3)

Assume: Construction of Tailing Pond T-4

Process Rate:

Source	s	U	H		M	Y		Soil Material (k-st)	Emission Factor (lb/st)	
			Loading	Dumping		Loading	Dumping		Loading	Dumping
1. Till at batch plant	15	7.2	3	3	2	4.5	8	122	0.0037	0.0031
2. Underdrain	1.6	7.2	3	3	4	4.5	9.6	330	0.0001	0.00008
3. Filter	15	7.2	3	3	2	4.5	8	569	0.0037	0.0031
4. Rip-rap	1.6	7.2	3	3	4	4.5	9.6	296	0.0001	0.00008

Duration: Two years of construction for each pond, but most likely in last year only.

Control Method and Efficiency: None

Example Calculation:

$$\text{TSP-EF(Loading Till)} = (0.73)(0.0018)\frac{(15/5)(7.2/5)(3/5)}{(2/2)^2(4.5/6)^{0.33}} = 0.0037 \text{ lb/st}$$

$$\text{Emissions (uncontrolled)} = 0.0037 \text{ lb/st} \times 82{,}800 \text{ yd}^3 \times 2970 \text{ lb/yd}^3 \times \text{st}/2000 \text{ lb} \times \text{st}/2000 \text{ lb} = 0.23 \text{ st}$$

Total Estimated Emissions from Loading and Dumping	TSP (st/yr) Loading	Dumping
1. Till at batch plant	0.23	0.19
2. Underdrain	0.017	0.013
3. Filter	1.05	0.88
4. Rip-rap	0.015	0.012

c. Wind-blown

Emission Factor and Source: Guide for Wind Erosion Control on Cropland in Great Plains States, Craig and Turelle, USDA-SCS, July 1964, in: Evaluation of fugitive dust emissions (PEDCo, 1976).

TSP-EF = aIKCLV

TSP-EF = st/acre/yr
- a = total of wind erosion losses measured as suspended particulates (0.01 for ponds and storage area and 0.025 for haul roads)
- I = soil erodibility factor (st/acre/yr) (134 for ponds and storage areas and 38 for haul road)
- K = surface roughness factor - 1.0
- C = climate factor; 0.05 for Crandon Project site area
- L = unsheltered field width; 0.7 to 1.0 for Crandon Project site area
- V = vegetative cover factor - 1.0

Process Rate:

Source	Acreage	Control*	Emission Factor
Haul Road	16	0.85	0.03325 st/acre
Storage Area	20	0.85	0.0469 st/acre
Ponds	119	--	0.0469 st/acre

Duration: Two years of construction for each pond, but most likely in last year only.

Control Method and Efficiency: See above - Process Rate

Example Calculation:

TSP = aIKCLV = st/acre
= (0.025)(38)(1)(0.05)(0.7)(1) = 0.03325 st/acre
= 0.03325 st/acre x 16 acres/yr x 0.15* = 0.08 st/yr

* 85% control with watering and chemical stabilization

Total Estimated Wind-blown Emissions	TSP (st/yr)
Haul Road	0.08
Storage area	0.14
Ponds	5.58
	5.80

d. Summary of Estimated MWDF Construction Emissions

Process Rate:

Activity	Vehicle Size	Mat'l Bulk Density	Round Trip Distance/ Haul	Volume of Material Moved by Area (k-yd^3) T-1	T-2	T-3	T-4
Excavation	25 yd^3	2970 lb/yd^3	0.45 mi	3,068	4,652	3,750	5,100
Soil/Bentonite Mixture	12 st	2970 lb/yd^3	0.45 mi	95	99	82	90
Underdrain	12 st	2500 lb/yd^3	0.45 mi	288	296	234	264
Filter Mat'l	12 st	2900 lb/yd3	0.45 mi	280	460	357	383
Rip-rap	12 st	2500 lb/yd^3	0.45 mi	353	318	222	237

Total Estimated MWDF Construction Emissions		TSP (st/yr) Year 1	Year 2
Tailing Pond T-1 (Construction Year 3-4)	Hauling	41.0	49.6
	Loading and Dumping	--	1.8
	Wind-Blown	5.8	5.8
		46.8	57.2
Tailing Pond T-2 (Operation Years 4-5)	Hauling	61.0	71.1
	Loading and Dumping	--	2.7
	Wind-Blown	5.8	5.8
		66.8	79.6
Tailing Pond T-3 (Operation Years 11-12)	Hauling	50.0	57.7
	Loading and Dumping	--	2.1
	Wind-Blown	5.8	5.8
		55.8	65.6
Tailing Pond T-4 (Operation Years 17-18)	Hauling	67.3	75.7
	Loading and Dumping	--	2.4
	Wind-Blown	5.8	5.8
		73.1	83.9

5. Tailpipe Emissions

a. Diesel Vehicles - Assumes all excavation and scraper equipment will use diesel fuel. Therefore, estimated miles for construction are for heavy duty diesel vehicles (HDDV).

Emission Factor and Source: AP-42, Appendix D, Tables D.5-1 and D.5-4 (HDDV-1990).

HDDV	(g/mi)
TSP-EF =	1.3
SO_x-EF =	2.8
NO_x-EF =	18.1
CO -EF =	28.7
HC -EF =	4.6

Process Rate: 34,434 miles over two years of construction for each pond.

Duration: Two years of construction for each pond with the development of the new storage capacity phased to coincide with disposal needs.

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation:

Process Rate x Emission Factor = Emission Rate.

TSP = 34,434 mi/2 yr x 1.3 g/mi x t/10^6g x st/1.1 t = 0.02 st/yr

Total Estimated Emissions for Diesel Vehicle Tailpipe Emissions	st/yr
TSP	0.02
SO_x	0.04
NO_x	0.28
CO	0.45
HC	0.07

b. Gasoline Vehicles - Assumes all of this activity occurs in the second year of construction.

Emission Factor and Source: AP-42, Appendix D, Tables D.2-10 and D.2-16 (LDGV-1990); Tables D.4-10 and D.4-15 (HDGV-1990).

LDGV	(g/mi)
TSP-EF =	0.05
SO_x-EF =	0.18
NO_x-EF =	2.3
CO -EF =	9.8
HC -EF =	1.0

Process Rate: LDGV - 49,322 miles per year

Duration: Mainly during second year of construction of each pond.

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSP = 49322 mi/yr x 0.05 g/mi x t/10^6 g x st/1.1 t = 0.002 st/yr

Total Estimated Emissions for Gasoline Vehicles	st/yr
TSP	0.002
SO_x	0.008
NO_x	0.103
CO	0.439
HC	0.045

6. Install Liner - Soil processing and liner batch plants

a. Batch Plant

Emission Factors and Source: AP-42, Section 8.10, Concrete Batching

TSP-EF = 0.21 lb/yd^3 processed

Process Rate: 102,020 yd^3/yr

Duration: Not applicable

Control Method and Efficiency: Enclosed facility with air vented to filters - 90%

Example Calculation:

Emission Factor x Process Rate x Unit Conversion x Control Factor = Annual Emission Rate

TSP = 0.2 lb/yd^3 x 102,020 yd^3/yr x st/2000 lb x 0.10 = 1.02 st/yr

b. Processing Plant

Emission Factors and Sources: AP-42, Section 8.19, Sand and Gravel Processing

TSP-EF = 0.1 lb/st processed

Process Rate: 139,380 st/yr

Duration: Not applicable

Control Method and Efficiency: Facility enclosed, air passed through baghouse - 99.6%

Example Calculation:

Emission Factor x Process Rate x Unit Conversion x Control Factor = Annual Emission Rate

TSP = 0.1 lb/st x 139,380 st/yr x st/2000 lb x 0.004 = 0.028 st/yr

c. Hauling of Bentonite From Mill To Batch Plant Area

Emission Factor and Source: AP-42, Section 11.2.1

Assume 12 st tractor/trailer
Vehicle weight empty = 10 st
Vehicle weight loaded = 22 st
s = 6%
S = 15 mi/hr
W = 16 st avg.
w = 18
d = 230 days

$$TSP\text{-}EF = (0.8)(5.9)(6/12)(15/30)^2(16/3)^{0.7}(18/4)^{0.5}(0.6) = 2.4 \text{ lb/veh-mile}$$

Process Rate: 4,995 miles travelled/yr of liner material production.

Duration: Mainly during second year of construction of each pond.

Control Method and Efficiency: Watering and chemical stabilization.

Example Calculations:

Total annual TSP emissions (uncontrolled) = 4,995 miles/yr x 2.4 lb/veh-mile x st/2000 = 6.0 st/yr

Total annual TSP emissions (controlled) = 6.0 st/yr x 0.15* = 0.9 st/yr

* 85% control with chemical stabilization of haul road.

VI. Closure

Reclamation - The following calculations estimate the reclamation phase TSP air emissions. The general emission factor for TSP of 1.2 st/acre/month provided in U.S. EPA AP-42, Section 11.2.4 represents an emission rate for heavy construction activities.

a. Reclaim Tailing Pond T1 - Earthmoving, regrading, and replanting activities will occur to develop final grades, surface water drainage patterns, and final use compatibility with the Reclamation Plan.

Emission Factors and Source: AP-42, Section 11.2.4

TSP-EF = 1.2 short tons/acre/month.

Process Rate: 24 months for 82 acres or approximately 3.4 acres/month

Duration: 24 months (Operation Years 6-7)

Control Method and Efficiency: Watering of disturbed area, if necessary

Example Calculation:

Process Rate x Emission Factor x Duration = Emission Rate

TSP = 3.4 acres/month x 1.2 st/acre/month x 12 months/yr = 49.0 st/yr

b. Reclaim Tailing Pond T2 (partial)

Process Rate: 12 months for 54 acres or approximately 4.5 acres/month

Duration: 12 months (Operation Year 14)

Example Calculation:

TSP = 4.5 acres/month x 1.2 st/acre/month x 12 months/yr = 64.8 st/yr

c. Reclaim Tailing Pond T3

Process Rate: 24 months for 100 acres or approximately 4.2 acres/month

Duration: 24 months (Operation Years 20-21)

Example Calculation:

TSP = 4.2 acres/month x 1.2 st/acre/month x 12 months/yr = 60.5 st/yr

d. Reclaim Tailing Pond T2 (remainder)

Process Rate: 18 months for 54 acres or approximately 3.0 acres/month.

Duration: 18 months (Closure (Reclamation) Years 1-2)

Example Calculation:

TSP = 3.0 acres/month x 1.2 st/acre/month x 12 months/yr = 43.2 st/yr

e. Reclaim Mine/Mill Site

Process Rate: 36 months for 104 acres or approximately 2.9 acres/month

Duration: 36 months (Closure (Reclamation) Years 1-4)

Example Calculation:

TSP = 2.9 acres/month x 1.2 st/acre/month x 12 months/yr = 41.8 st/yr

f. Reclaim Tailing Pond T4

Process Rate: 36 months for 99 acres or approximately 2.8 acres/month.

Duration: 36 months (Closure (Reclamation) Years 5-7)

Example Calculation:

TSP = 2.8 acres/month x 1.2 st/acre/month x 12 months/yr = 40.3 st/yr

g. Reclaim Ponds R1 and R2

Process Rate: 36 months for 75 acres or approximately 2.1 acres/month

Duration: 36 months (Closure (Reclamation) Years 3-5)

Example Calculation:

TSP = 2.1 acres/month x 1.2 st/acre/month x 12 months/yr = 30.2 st/yr

h. Reclaim Railroad Spur

Process Rate: 24 months for 40 acres or approximately 1.7 acres/month

Duration: 24 months (Closure Years 5-6)

Example Calculation:

TSP = 1.7 acres/month x 1.2 st/acre/month x 12 months/yr = 24.5 st/yr

i. Reclaim Access Road

Process Rate: 24 months for 35 acres or approximately 1.5 acres/month.

Duration: 24 months (Closure Years 6-7)

Example Calculation:

TSP = 1.5 acres/month x 1.2 st/acre/month x 12 months/yr = 21.6 st/yr

j. Reclamation Activities Tailpipe Emissions

Diesel Vehicles - Assumes all excavation and scraper equipment will use diesel fuel. Therefore, estimated miles for reclamation activities are for heavy duty diesel vehicles (HDDV).

Emission Factor and Source: AP-42, Appendix D, Tables D.5-1 and D.5-4 (HDDV-1990).

HDDV	(g/mi)
TSP-EF =	1.3
SO_x-EF =	2.8
NO_x-EF =	18.1
CO -FE =	28.1
HC -FE =	4.6

Process Rate: 34,434 miles over two years for reclamation of each pond.

Duration: Two years of reclamation filling, grading and cap development for each pond.

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation:

Process Rate x Emission Factor = Emission Rate.

TSP = 34,434 mi/2 yr x 1.3 g/mi x t/10^6g x st/1.1 t = 0.02 st/yr

Total Estimated Emissions for Diesel Vehicle Tailpipe Emissions

	st/yr
TSP:	0.02
SO_x:	0.04
NO_x:	0.28
CO :	0.45
HC :	0.07

Gasoline Vehicles - Assumes all of this activity occurs each year of pond reclamation.

Emission Factor and Source: AP-42, Appendix D, Tables D.2-10 and D.2-16 (LDGV-1990); Tables D.4-10 and D.4-15 (HDGV-1990).

LDGV	(g/mi)
TSP-EF =	0.05
SO_x-EF =	0.18
NO_x-EF =	2.3
CO -EF =	9.8
HC -EF =	1.0

Process Rate: LDGV - 49,322 miles per year

Duration: Mainly during second year of reclamation of each pond.

Control Method and Efficiency: As per EPA vehicle emission controls.

Example Calculation:

Process Rate x Emission Factor = Emission Rate

TSp = 49322 mi/yr x 0.05 g/mi x $t/10^6$ x st/1.1 t = 0.002 st/yr

Total Estimated Emissions for Gasoline Vehicles Tailpipe Emissions

	st/yr
TSP:	0.002
SO_x:	0.008
NO_x:	0.103
CO :	0.439
HC :	0.045

APPENDIX B

American Mining Congress. 1983. Fugitive Dust Emission Factors for the Mining Industry. Appendix D, p. D-3, Colorado Fugitive Emissions. July 1983. American Mining Congress. Washington, D.C.

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Kulibert, G. 1984. Personal Communication. Exxon Minerals Company Letter dated November 9, 1984. Exxon Minerals Company. Rhinelander, WI.

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PEDCo - Environmental Specialists, Inc. 1976. Evaluation of Fugitive Dust Emissions from Mining. Task 1 Report. Identification of Fugitive Dust Sources Associated with Mining. Cincinnati, Ohi.

APPENDIX C

ISC MODEL INPUT AND OUTPUT

TABLE C-1. ISC MODEL INPUTS - ANNUAL EMISSION RATES

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ISCST  (VERSION 88335)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 3. MODELS PROPOSED SEP80 FOR 81 GUIDELINES.
IN UNAMAP (VERSION 4) DEC 80
SOURCE: FILE 16 ON UNAMAP MAGNETIC TAPE FROM NTIS.

          *** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES*       ***

CALCULATE (CONCENTRATION=1,DEPOSITION=2)                          ISW(1) =    1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)           ISW(2) =    1
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)                  ISW(3) =    1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)                          ISW(4) =    0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)                     ISW(5) =    0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)                  ISW(6) =    2

COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)
WITH THE FOLLOWING TIME PERIODS:
  HOURLY (YES=1,NO=0)                                             ISW(7) =    0
  2-HOUR (YES=1,NO=0)                                             ISW(8) =    0
  3-HOUR (YES=1,NO=0)                                             ISW(9) =    0
  4-HOUR (YES=1,NO=0)                                            ISW(10) =    0
  6-HOUR (YES=1,NO=0)                                            ISW(11) =    0
  8-HOUR (YES=1,NO=0)                                            ISW(12) =    0
  12-HOUR (YES=1,NO=0)                                           ISW(13) =    0
  24-HOUR (YES=1,NO=0)                                           ISW(14) =    1
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)                              ISW(15) =    1

PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE
SPECIFIED BY ISW(7) THROUGH ISW(14):
  DAILY TABLES (YES=1,NO=0)                                      ISW(16) =    0
  HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)                   ISW(17) =    1
  MAXIMUM 50 TABLES (YES=1,NO=0)                                 ISW(18) =    1
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)        ISW(19) =    1
RURAL-URBAN OPTION (RURAL=0,URBAN MODE 1=1,URBAN MODE 2=2)       ISW(20) =    0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)        ISW(21) =    1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3) ISW(22) =    1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES>0)                ISW(23) =    0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)            ISW(24) =    1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)      ISW(25) =    1

NUMBER OF INPUT SOURCES                                          NSOURC =   32
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)                         NGROUP =   11
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)              IPERD =    0
NUMBER OF X (RANGE) GRID VALUES                                  NXPNTS =    9
NUMBER OF Y (THETA) GRID VALUES                                  NYPNTS =    0
NUMBER OF DISCRETE RECEPTORS                                     NXWYPT = 123
SOURCE EMISSION RATE UNITS CONVERSION FACTOR                         TK =.10000E 07
ENTRAINMENT COEFFICIENT FOR UNSTABLE ATMOSPHERE                   BETA1 =0.600
ENTRAINMENT COEFFICIENT FOR STABLE ATMOSPHERE                     BETA2 =0.600
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED                 ZR =   10.00  METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA                         IMET =    1
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION              DECAY =0.0
SURFACE STATION NO.                                                 ISS = 14991
YEAR OF SURFACE DATA                                                ISY = 77
UPPER AIR STATION NO.                                               IUS = 14926
YEAR OF UPPER AIR DATA                                              IUY = 77
ALLOCATED DATA STORAGE                                           LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN                       MIMIT = 17701 WORDS
```

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 0
```

*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

```
1,   2,   3,   4,   5,   6,   -8,   9,   -19,   20,   -24,   25,   -31,   32,
1,  -32,
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

SZ	:0	:0	:0	:0	:0	:0
SZ	:0	:0	:0	:0	:0	:0
SZ	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
SZ	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** X,Y COORDINATES OF DISCRETE RECEPTORS ***
(METERS)

(691000.0,	38000.0),	(691000.0,	38500.0),	(691000.0,	37500.0),	(691500.0,	39000.0),	(691500.0,	38000.0),
(692000.0,	39500.0),	(692000.0,	39000.0),	(692000.0,	38000.0),	(692000.0,	37500.0),	(692000.0,	36500.0),
(692000.0,	35500.0),	(692000.0,	34500.0),	(692000.0,	33500.0),	(692500.0,	39000.0),	(692500.0,	38000.0),
(693000.0,	39500.0),	(693000.0,	39000.0),	(693000.0,	38000.0),	(693000.0,	37500.0),	(693000.0,	36500.0),
(693020.0,	36120.0),	(693020.0,	35720.0),	(693020.0,	35320.0),	(693100.0,	34960.0),	(693050.0,	34500.0),
(693000.0,	33500.0),	(693500.0,	39000.0),	(693500.0,	38000.0),	(693500.0,	37500.0),	(693360.0,	36940.0),
(693355.0,	36500.0),	(693350.0,	36120.0),	(694000.0,	39500.0),	(694000.0,	39000.0),	(694000.0,	38500.0),
(693840.0,	36960.0),	(694000.0,	34860.0),	(693700.0,	34500.0),	(694000.0,	33500.0),	(694000.0,	32500.0),
(694000.0,	31500.0),	(694500.0,	38500.0),	(694500.0,	38000.0),	(694500.0,	37500.0),	(694340.0,	36980.0),
(694420.0,	35160.0),	(695000.0,	39500.0),	(695000.0,	38500.0),	(695000.0,	37500.0),	(694840.0,	37000.0),
(694860.0,	35020.0),	(694840.0,	34380.0),	(694840.0,	33740.0),	(695000.0,	33000.0),	(695000.0,	32500.0),
(695000.0,	32000.0),	(695000.0,	31500.0),	(695500.0,	37500.0),	(695340.0,	37020.0),	(695500.0,	33760.0),
(695560.0,	33200.0),	(695500.0,	32760.0),	(695490.0,	32240.0),	(695500.0,	31500.0),	(696000.0,	39500.0),
(696000.0,	38500.0),	(696000.0,	37500.0),	(695820.0,	37000.0),	(696000.0,	32250.0),	(696000.0,	31500.0),
(695500.0,	37500.0),	(696500.0,	37000.0),	(696500.0,	32260.0),	(696500.0,	31500.0),	(697000.0,	39500.0),
(697000.0,	38500.0),	(697000.0,	37500.0),	(696960.0,	37000.0),	(696960.0,	36250.0),	(696960.0,	35820.0),
(697080.0,	33020.0),	(697080.0,	32640.0),	(697080.0,	32250.0),	(697000.0,	31500.0),	(697500.0,	37500.0),
(697500.0,	37000.0),	(697500.0,	36500.0),	(697360.0,	35860.0),	(697400.0,	35300.0),	(697420.0,	34780.0),
(697460.0,	34240.0),	(697440.0,	33020.0),	(697500.0,	32500.0),	(697500.0,	32000.0),	(698000.0,	39500.0),
(698000.0,	38500.0),	(698000.0,	37500.0),	(698000.0,	37000.0),	(698000.0,	36500.0),	(698000.0,	36000.0),
(698000.0,	35500.0),	(698000.0,	35000.0),	(698000.0,	34500.0),	(697840.0,	34220.0),	(697880.0,	33600.0),
(697820.0,	33020.0),	(698000.0,	32500.0),	(698000.0,	31500.0),	(698500.0,	37000.0),	(698500.0,	36000.0),
(698500.0,	34500.0),	(698500.0,	34000.0),	(698500.0,	33500.0),	(698500.0,	33000.0),	(699000.0,	39500.0),
(699000.0,	38500.0),	(699000.0,	37500.0),	(699000.0,	36500.0),	(699000.0,	35500.0),	(699000.0,	34500.0),
(699000.0,	33500.0),	(699000.0,	32500.0),	(699000.0,	31500.0),	(			

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	0	0	0	0.24200E 00	694215.0	35770.0	0.0	26.00	294.30	0.01	1.00	35.00	21.00	22.00
2	0	0	0	0.16800E 00	694140.0	35770.0	0.0	38.00	294.30	20.40	0.84	35.00	15.00	30.00
3	0	0	0	0.16000E-01	694470.0	35550.0	0.0	8.00	294.30	0.01	0.43	20.00	50.00	25.00
4	0	0	0	0.39700E 00	693285.0	35590.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
5	0	0	0	0.39700E 00	694625.0	35460.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
6	0	0	0	0.23100E-02	694155.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
7	0	0	0	0.23100E-02	694160.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
8	0	0	0	0.13800E-02	694165.0	35710.0	0.0	13.00	623.00	0.01	0.50	10.00	23.50	30.00
9	2	0	3	0.84500E-06	691500.0	38500.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
10	2	0	3	0.84500E-06	691900.0	38450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
11	2	0	3	0.84500E-06	692300.0	38400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0

12	2	0	3	0.84500E-06	692700.0	38350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
13	2	0	3	0.84500E-06	693100.0	38300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
14	2	0	3	0.84500E-06	693500.0	38250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
15	2	0	3	0.84500E-06	693800.0	38000.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
16	2	0	3	0.84500E-06	693850.0	37600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
17	2	0	3	0.84500E-06	693850.0	37200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
18	2	0	3	0.84500E-06	693850.0	36800.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
19	2	0	3	0.84500E-06	693850.0	36400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
20	2	0	3	0.42700E-05	693900.0	35700.0	0.0	1.00	0.0	300.00	0.0	0.0	0.0	0.0
21	2	0	3	0.41600E-05	694100.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
22	2	0	3	0.42700E-05	694200.0	35600.0	0.0	1.00	0.0	400.00	0.0	0.0	0.0	0.0
23	2	0	3	0.41600E-05	694200.0	35400.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
24	2	0	3	0.41700E-05	694600.0	35800.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
25	2	0	3	0.38300E-05	694700.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
26	2	0	3	0.38300E-05	694700.0	35450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
27	2	0	3	0.38300E-05	694900.0	35350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
28	2	0	3	0.38300E-05	695100.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
29	2	0	3	0.38300E-05	695250.0	35200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
30	2	0	3	0.38300E-05	695450.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
31	2	0	3	0.33300E-05	695650.0	35300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
32	2	0	13	0.50700E-05	695850.0	34700.0	0.0	1.00	0.0	900.00	0.0	0.0	0.0	0.0

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 9 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 10 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 11 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 12 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 13 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 14 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 15 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 16 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 17 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 18 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 19 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 20 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 21 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 22 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 23 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 24 ***

MASS FRACTION =

0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 25 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 26 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 27 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 28 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 29 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 30 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 31 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 32 ***

MASS FRACTION =
0.03800,0.08600,0.14800,0.16800,0.08400,0.07300,0.08100,0.07700,0.06700,0.07300,
0.07200,0.02000,0.01000,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480, 0.0960, 0.1550, 0.2300, 0.3220, 0.4300, 0.5500, 0.6900,
0.8300, 1.0100, 1.2300,

SURFACE REFLECTION COEFFICIENT =
1.00000,0.71000,0.63000,0.51000,0.36000,0.17000,0.0 ,0.0 ,0.0 ,0.0 ,
0.0 ,0.0 ,0.0 ,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 100 METERS OR THREE BUILDING
HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

SOURCE NUMBER	- - RECEPTOR LOCATION - - X OR RANGE (METERS)	Y (METERS) OR DIRECTION (DEGREES)	DISTANCE BETWEEN (METERS)
18	693840.0	36960.0	68.88

TABLE C-2. ISC MODEL OUTPUT - ANNUAL EMISSION RATES

'N'-DAY
365 DAYS
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
691000.0	39000.0	0.29486	691000.0	38500.0	0.30559	691000.0	37500.0	0.34749
691500.0	39000.0	0.37513	691500.0	38000.0	0.42670	692000.0	39500.0	0.30153
692000.0	39000.0	0.43062	692000.0	38000.0	0.51986	692000.0	37500.0	0.53419
692000.0	36500.0	0.51292	692000.0	35500.0	0.41884	692000.0	34500.0	0.54238
692000.0	33500.0	0.38905	692500.0	39000.0	0.44455	692500.0	38000.0	0.60493
693000.0	39500.0	0.35064	693000.0	39000.0	0.47101	693000.0	38000.0	0.67640
693000.0	37500.0	0.82771	693000.0	36500.0	1.29499	693020.0	36120.0	1.16708
693020.0	35720.0	0.97567	693020.0	35320.0	1.22489	693100.0	34960.0	1.35347
693050.0	34500.0	0.89831	693000.0	33500.0	0.42426	693500.0	39000.0	0.54335
693500.0	39000.0	0.85984	693500.0	37500.0	1.00028	693360.0	36940.0	1.38672
693355.0	36500.0	1.92895	693350.0	36120.0	2.04913	694000.0	39500.0	0.44279
694000.0	39000.0	0.56536	694000.0	38500.0	0.80568	693840.0	36960.0	1.78747
694000.0	34860.0	1.89100	693700.0	34500.0	0.97775	694000.0	33500.0	0.70507
694000.0	32500.0	0.37721	694000.0	31500.0	0.22147	694500.0	38500.0	0.69867
694500.0	38000.0	0.93351	694500.0	37500.0	1.27818	694340.0	36980.0	2.15623
694420.0	35160.0	4.69619	695000.0	39500.0	0.39371	695000.0	38500.0	0.57252
695000.0	37500.0	1.07719	694840.0	37000.0	1.79843	694860.0	35020.0	3.42589
694840.0	34380.0	1.56953	694840.0	33740.0	0.95516	695000.0	33000.0	0.48277
695000.0	32500.0	0.33840	695000.0	32000.0	0.27056	695000.0	31500.0	0.22728
695500.0	37500.0	1.07238	695340.0	37020.0	1.74781	695500.0	33760.0	0.91774
695560.0	33200.0	0.55519	695500.0	32760.0	0.44237	695490.0	32240.0	0.35148
695500.0	31500.0	0.25169	696000.0	39500.0	0.36478	696000.0	38500.0	0.55595
696000.0	37500.0	1.15256	695820.0	37000.0	1.84210	696000.0	32250.0	0.33984
696000.0	31500.0	0.25285	696500.0	37500.0	1.05653	696500.0	37000.0	1.75397
696500.0	32260.0	0.31122	696500.0	31500.0	0.21509	697000.0	39500.0	0.32459
697000.0	38500.0	0.52355	697000.0	37500.0	1.04434	696960.0	37000.0	1.32663
696960.0	36250.0	1.82924	696560.0	35820.0	3.81989	697080.0	33020.0	0.47091
697080.0	32640.0	0.39837	697080.0	32250.0	0.33160	697000.0	31500.0	0.21845
697500.0	37500.0	0.95434	697500.0	37000.0	1.02827	697500.0	36500.0	1.21261
697360.0	35860.0	2.47021	697400.0	35300.0	2.68103	697420.0	34780.0	1.45740
697460.0	34240.0	0.89971	697440.0	33020.0	0.42295	697500.0	32500.0	0.33193
697500.0	32000.0	0.27882	698000.0	39500.0	0.31773	698000.0	38500.0	0.47192
698000.0	37500.0	0.79569	698000.0	37000.0	0.86083	698000.0	36500.0	1.06078
698000.0	36000.0	1.34609	698000.0	35500.0	1.27949	698000.0	35000.0	0.90870
698000.0	34500.0	0.64350	697840.0	34220.0	0.63035	697880.0	33600.0	0.46369
697920.0	33020.0	0.36863	698000.0	32500.0	0.29081	698000.0	31500.0	0.21470
698500.0	37000.0	0.74947	698500.0	36000.0	0.94543	698500.0	34500.0	0.47587
698500.0	34000.0	0.39072	698500.0	33500.0	0.31392	698500.0	33000.0	0.28651

TABLE C-2 (CONTINUED)

'N'-DAY
365 DAYS
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* 365-DAY AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
699000.0	39500.0	0.27463	699000.0	38500.0	0.52126	699000.0	37500.0	0.56803
699000.0	36500.0	0.67901	699000.0	35500.0	0.59058	699000.0	34500.0	0.36909
699000.0	33500.0	0.26934	699000.0	32500.0	0.21517	699000.0	31500.0	0.18441

TABLE C-3. ISC MODEL OUTPUT - ANNUAL EMISSION RATES 50 MAXIMUM (MAX) CONCENTRATIONS

MAX 50
24-HR
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* 50 MAXIMUM 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *

* FROM SOURCES: 1, -32,

RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)	RANK	CON.	PER.	DAY	X OR RANGE (METERS)	Y(METERS) OR DIRECTION (DEGREES)
1	101.20410	1	248	694420.0	35160.0	26	19.52008	1	177	694860.0	35020.0
2	43.12348	1	46	694420.0	35160.0	27	19.07994	1	118	694420.0	35160.0
3	43.10016	1	300	694420.0	35160.0	28	19.07159	1	40	696960.0	35820.0
4	40.81929	1	275	694420.0	35160.0	29	18.46288	1	46	694860.0	35020.0
5	38.20253	1	129	694420.0	35160.0	30	18.40520	1	236	694420.0	35160.0
6	37.45081	1	176	694420.0	35160.0	31	18.34418	1	158	693350.0	36120.0
7	36.15314	1	130	694420.0	35160.0	32	17.93166	1	363	694000.0	34860.0
8	32.61824	1	214	694420.0	35160.0	33	17.91298	1	45	694420.0	35160.0
9	29.36451	1	256	694420.0	35160.0	34	17.89699	1	294	694420.0	35160.0
10	29.34734	1	248	694860.0	35020.0	35	17.81532	1	67	693355.0	36500.0
11	28.12485	1	308	694420.0	35160.0	36	17.30527	1	311	693020.0	36120.0
12	27.63768	1	316	694420.0	35160.0	37	17.20624	1	220	694420.0	35160.0
13	26.34236	1	248	694840.0	34380.0	38	17.11934	1	276	696960.0	35820.0
14	26.30901	1	176	694860.0	35020.0	39	16.98866	1	322	694420.0	35160.0
15	23.64068	1	311	693350.0	36120.0	40	16.92863	1	117	693350.0	36120.0
16	22.33652	1	153	694420.0	35160.0	41	16.83954	1	266	693350.0	36120.0
17	22.19609	1	115	694420.0	35160.0	42	16.81425	1	247	694860.0	35020.0
18	22.19131	1	196	694860.0	35020.0	43	16.68060	1	175	694420.0	35160.0
19	21.72830	1	111	694420.0	35160.0	44	16.44473	1	225	694420.0	35160.0
20	21.25562	1	9	694420.0	35160.0	45	16.42267	1	248	694840.0	33740.0
21	21.20767	1	57	694420.0	35160.0	46	16.41533	1	118	694000.0	34860.0
22	21.08125	1	364	693020.0	35320.0	47	16.32750	1	206	694420.0	35160.0
23	20.46721	1	86	694420.0	35160.0	48	16.29143	1	228	694860.0	35020.0
24	19.76669	1	318	693355.0	36500.0	49	16.25572	1	231	694420.0	35160.0
25	19.57494	1	9	694000.0	34860.0	50	16.22362	1	279	694000.0	34860.0

TABLE C-4. ISC - CALMPRO MODEL INPUTS - ANNUAL EMISSION RATES

```
ISCST  (VERSION 80339)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 3. MODELS PROPOSED SEP80 FOR 81 GUIDELINES.
IN UNAMAP (VERSION 4) DEC 80
SOURCE: FILE 16 ON UNAMAP MAGNETIC TAPE FROM NTIS.


          *** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES*       ***

CALCULATE (CONCENTRATION=1,DEPOSITION=2)                          ISW(1) =   1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)           ISW(2) =   1
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)                  ISW(3) =   1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)                          ISW(4) =   0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)                     ISW(5) =   0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)                  ISW(6) =   2

COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)
WITH THE FOLLOWING TIME PERIODS:
  HOURLY (YES=1,NO=0)                                             ISW(7) =   0
  2-HOUR (YES=1,NO=0)                                             ISW(8) =   0
  3-HOUR (YES=1,NO=0)                                             ISW(9) =   0
  4-HOUR (YES=1,NO=0)                                            ISW(10) =   0
  6-HOUR (YES=1,NO=0)                                            ISW(11) =   0
  8-HOUR (YES=1,NO=0)                                            ISW(12) =   0
  12-HOUR (YES=1,NO=0)                                           ISW(13) =   0
  24-HOUR (YES=1,NO=0)                                           ISW(14) =   1
PRINT "N"-DAY TABLE(S) (YES=1,NO=0)                              ISW(15) =   1

PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE
SPECIFIED BY ISW(7) THROUGH ISW(14):
  DAILY TABLES (YES=1,NO=0)                                      ISW(16) =   0
  HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)                   ISW(17) =   1
  MAXIMUM 50 TABLES (YES=1,NO=0)                                 ISW(18) =   1
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)        ISW(19) =   1
RURAL-URBAN OPTION (RURAL=0,URBAN MODE 1=1,URBAN MODE 2=2)       ISW(20) =   0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)        ISW(21) =   1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3) ISW(22) =   1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES>0)                ISW(23) =   0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)            ISW(24) =   1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)      ISW(25) =   1

NUMBER OF INPUT SOURCES                                          NSOURC =  32
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)                         NGROUP =  11
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)             IPERD =   0
NUMBER OF X (RANGE) GRID VALUES                                  NXPNTS =   0
NUMBER OF Y (THETA) GRID VALUES                                  NYPNTS =   0
NUMBER OF DISCRETE RECEPTORS                                     NXWYPT = 123
SOURCE EMISSION RATE UNITS CONVERSION FACTOR                         TK =.10000E 07
ENTRAINMENT COEFFICIENT FOR UNSTABLE ATMOSPHERE                   BETA1 =0.600
ENTRAINMENT COEFFICIENT FOR STABLE ATMOSPHERE                     BETA2 =0.600
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED                 ZR =   10.00  METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA                        IMET =   1
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION             DECAY =0.0
SURFACE STATION NO.                                                ISS = 14991
YEAR OF SURFACE DATA                                               ISY = 77
UPPER AIR STATION NO.                                              IUS = 14926
YEAR OF UPPER AIR DATA                                             IUY = 77
ALLOCATED DATA STORAGE                                           LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN                       MIMIT = 17701 WORDS
```

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
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 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 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 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 0 0 0 0 1 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 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 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 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 0 0 0 0 0 0 0   0 0 0 0 0 0 0 1 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 1 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
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 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 0 0 0 0 0 0 0 0   0 0 0 0 0 0
```

*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

1, 2, 3, 4, 5, 6, -8, 9, -19, 20, -24, 25, -31, 32,
1, -32,

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
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 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 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 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 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   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 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 0 0 0 0 0 0 0 0   0 0 0 1 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   0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 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 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 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 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   0 0 0 0 0 0
```

*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

```
1,    2,    3,    4,    5,    6,   -8,    9,  -19,   20,  -24,   25,  -31,   32,
1,  -32,
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

D	:0	:0	:0	:0	:0	:0
D	:0	:0	:0	:0	:0	:0
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
E	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** X,Y COORDINATES OF DISCRETE RECEPTORS ***
(METERS)

(691000.0, 39000.0),	(691000.0, 38500.0),	(691000.0, 37500.0),	(691500.0, 39000.0),	(691500.0, 38000.0),
(692000.0, 39500.0),	(692000.0, 39000.0),	(692000.0, 38000.0),	(692000.0, 37500.0),	(692000.0, 36500.0),
(692000.0, 35500.0),	(692000.0, 34500.0),	(692000.0, 33500.0),	(692500.0, 39000.0),	(692500.0, 38000.0),
(693000.0, 39500.0),	(693000.0, 39000.0),	(693000.0, 38000.0),	(693000.0, 37500.0),	(693000.0, 36500.0),
(693020.0, 36120.0),	(693020.0, 35720.0),	(693020.0, 35320.0),	(693100.0, 34960.0),	(693050.0, 34500.0),
(693000.0, 33500.0),	(693500.0, 39000.0),	(693500.0, 38000.0),	(693500.0, 37500.0),	(693360.0, 36940.0),
(693355.0, 36500.0),	(693350.0, 36120.0),	(694000.0, 39500.0),	(694000.0, 39000.0),	(694000.0, 38500.0),
(693340.0, 36960.0),	(694000.0, 34860.0),	(693700.0, 34500.0),	(694000.0, 33500.0),	(694000.0, 32500.0),
(694000.0, 31500.0),	(694500.0, 38500.0),	(694500.0, 39000.0),	(694500.0, 37500.0),	(694340.0, 36980.0),
(694420.0, 35160.0),	(695000.0, 39500.0),	(695000.0, 39500.0),	(695000.0, 37500.0),	(694840.0, 37000.0),
(694360.0, 35020.0),	(694840.0, 34380.0),	(694840.0, 33740.0),	(695000.0, 33000.0),	(695000.0, 32500.0),
(695000.0, 32000.0),	(695000.0, 31500.0),	(695500.0, 37500.0),	(695340.0, 37020.0),	(695500.0, 33760.0),
(695560.0, 33200.0),	(695500.0, 32760.0),	(695490.0, 32240.0),	(695500.0, 31500.0),	(696000.0, 39500.0),
(696000.0, 38500.0),	(696000.0, 37500.0),	(695820.0, 37000.0),	(696000.0, 32250.0),	(696000.0, 31500.0),
(695500.0, 37500.0),	(696500.0, 37000.0),	(696500.0, 32250.0),	(696500.0, 31500.0),	(697000.0, 39500.0),
(697000.0, 38500.0),	(697000.0, 37500.0),	(696960.0, 37000.0),	(696960.0, 36250.0),	(696960.0, 35820.0),
(697080.0, 33020.0),	(697080.0, 32640.0),	(697080.0, 32250.0),	(697000.0, 31500.0),	(697500.0, 37500.0),
(697500.0, 37000.0),	(697500.0, 36500.0),	(697360.0, 35860.0),	(697400.0, 35300.0),	(697420.0, 34780.0),
(697460.0, 34240.0),	(697440.0, 33020.0),	(697500.0, 32500.0),	(697500.0, 32000.0),	(698000.0, 39500.0),
(698000.0, 38500.0),	(698000.0, 37500.0),	(698000.0, 37000.0),	(698000.0, 36500.0),	(698000.0, 36000.0),
(698000.0, 35500.0),	(698000.0, 35000.0),	(698000.0, 34500.0),	(697840.0, 34220.0),	(697880.0, 33600.0),
(697920.0, 33020.0),	(698000.0, 32500.0),	(698000.0, 31500.0),	(698500.0, 37000.0),	(698500.0, 36000.0),
(698500.0, 34600.0),	(698500.0, 34000.0),	(698500.0, 33500.0),	(698500.0, 33000.0),	(699000.0, 39500.0),
(699000.0, 38500.0),	(699000.0, 37500.0),	(699000.0, 36500.0),	(699000.0, 35500.0),	(699000.0, 34500.0),
(699000.0, 33500.0),	(699000.0, 32500.0),	(699000.0, 31500.0),	(	

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	2	0	0	0.24200E 00	694215.0	35770.0	0.0	26.00	294.30	0.01	1.00	35.00	21.00	22.00
2	2	0	0	0.16800E 00	694140.0	35770.0	0.0	38.00	294.30	20.40	0.84	35.00	15.00	30.00
3	2	0	0	0.16000E-01	694470.0	35550.0	0.0	8.00	294.30	0.01	0.43	20.00	50.00	25.00
4	2	0	0	0.39700E 00	693285.0	35590.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
5	2	0	0	0.39700E 00	694625.0	35460.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
6	2	0	0	0.23100E-02	694155.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
7	2	0	0	0.23100E-02	694160.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
8	2	0	0	0.13800E-02	694165.0	35710.0	0.0	13.00	623.00	0.01	0.50	10.00	23.50	30.00
9	2	0	3	0.84500E-06	691500.0	38500.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
10	2	0	3	0.84500E-06	691300.0	38450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
11	2	0	3	0.84500E-06	692300.0	38400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0

12	2	0	3	0.345000E-06	692700.0	38350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
13	2	0	3	0.345000E-06	693100.0	38300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
14	2	0	3	0.345000E-06	693500.0	36250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
15	2	0	3	0.345000E-06	693800.0	38000.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
16	2	0	3	0.345000E-06	693850.0	37600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
17	2	0	3	0.345000E-06	693850.0	37200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
18	2	0	3	0.345000E-06	693850.0	36800.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
19	2	0	3	0.345000E-06	693850.0	36400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
20	2	0	3	0.427000E-05	693900.0	35700.0	0.0	1.00	0.0	300.00	0.0	0.0	0.0	0.0
21	2	0	3	0.416000E-05	694100.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
22	2	0	3	0.427000E-05	694200.0	35600.0	0.0	1.00	0.0	400.00	0.0	0.0	0.0	0.0
23	2	0	3	0.416000E-05	694200.0	35400.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
24	2	0	3	0.417000E-05	694600.0	35800.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
25	2	0	3	0.383000E-05	694700.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
26	2	0	3	0.393000E-05	694700.0	35450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
27	2	0	3	0.383000E-05	694900.0	35350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
28	2	0	3	0.383000E-05	695100.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
29	2	0	3	0.383000E-05	695250.0	35200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
30	2	0	3	0.383000E-05	695450.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
31	2	0	3	0.383000E-05	695650.0	35300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
32	2	0	13	0.507000E-05	695850.0	34700.0	0.0	1.00	0.0	800.00	0.0	0.0	0.0	0.0

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 9 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 10 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 11 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 12 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 13 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 14 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 15 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 16 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 17 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 18 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 19 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 20 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 21 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 22 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 23 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 24 ***

MASS FRACTION =

0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 25 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 26 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 27 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 28 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 29 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 30 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 31 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 32 ***

MASS FRACTION =
0.03800,0.08600,0.14800,0.16800,0.08400,0.07300,0.08100,0.07700,0.06700,0.07300,
0.07200,0.02000,0.01000,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480, 0.0960, 0.1550, 0.2300, 0.3220, 0.4300, 0.5500, 0.6900,
0.8300, 1.0100, 1.2300,

SURFACE REFLECTION COEFFICIENT =
1.00000,0.71000,0.63000,0.51000,0.36000,0.17000,0.0 ,0.0 ,0.0 ,0.0 ,
0.0 ,0.0 ,0.0 ,

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 100 METERS OR THREE BUILDING
HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

TABLE C-4 (CONTINUED)

FIVE HIGHEST 24-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR			1	2	3	4	5
1(	0.00,	0.00)	6.01C (308,24)	0.00C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
2(	0.00,	0.00)	8.35C (308,24)	3.14C (256,24)	0.00C (300,24)	0.00 (0, 0)	0.00 (0, 0)
3(	0.00,	0.00)	11.90C (308,24)	1.25C (256,24)	0.06C (300,24)	0.01C (275,24)	0.00 (0, 0)
4(	0.00,	0.00)	4.30C (308,24)	0.85C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
5(	0.00,	0.00)	11.10C (308,24)	3.99C (256,24)	0.42C (300,24)	0.16C (275,24)	0.00C (248,24)
6(	0.00,	0.00)	2.48C (308,24)	0.01C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
7(	0.00,	0.00)	3.09C (308,24)	0.26C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
8(	0.00,	0.00)	10.12C (308,24)	3.93C (256,24)	0.28C (275,24)	0.26C (300,24)	0.01C (248,24)
9(	0.00,	0.00)	15.07C (308,24)	4.56C (256,24)	0.09C (300,24)	0.08C (275,24)	0.00C (248,24)
10(	0.00,	0.00)	20.17C (308,24)	0.12C (256,24)	0.06C (275,24)	0.06C (300,24)	0.01C (248,24)
11(	0.00,	0.00)	13.44C (308,24)	0.10C (256,24)	0.07C (300,24)	0.03C (275,24)	0.00C (248,24)
12(	0.00,	0.00)	14.63C (308,24)	2.75C (300,24)	1.51C (256,24)	0.02C (275,24)	0.00C (248,24)
13(	0.00,	0.00)	4.73C (300,24)	4.09C (256,24)	0.96C (308,24)	0.45C (275,24)	0.00C (248,24)
14(	0.00,	0.00)	2.96C (308,24)	0.11C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
15(	0.00,	0.00)	8.84C (308,24)	2.83C (256,24)	0.25C (275,24)	0.17C (300,24)	0.13C (248,24)
16(	0.00,	0.00)	1.40C (308,24)	0.01C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
17(	0.00,	0.00)	2.62C (308,24)	0.07C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
18(	0.00,	0.00)	5.94C (308,24)	1.03C (256,24)	0.25C (300,24)	0.14C (275,24)	0.00C (248,24)
19(	0.00,	0.00)	12.64C (308,24)	4.54C (256,24)	0.22C (275,24)	0.21C (300,24)	0.06C (248,24)
20(	0.00,	0.00)	29.91C (308,24)	5.36C (256,24)	0.10C (300,24)	0.06C (275,24)	0.00C (248,24)
21(	0.00,	0.00)	33.93C (308,24)	0.20C (256,24)	0.07C (300,24)	0.07C (275,24)	0.01C (248,24)
22(	0.00,	0.00)	27.74C (308,24)	0.25C (256,24)	0.07C (275,24)	0.05C (300,24)	0.01C (248,24)
23(	0.00,	0.00)	21.58C (308,24)	2.49C (256,24)	2.47C (300,24)	0.06C (275,24)	0.00C (248,24)
24(	0.00,	0.00)	23.77C (308,24)	11.15C (300,24)	3.39C (275,24)	1.35C (256,24)	0.00C (248,24)
25(	0.00,	0.00)	18.36C (308,24)	9.41C (300,24)	5.70C (275,24)	5.51C (256,24)	0.01C (248,24)
26(	0.00,	0.00)	13.53C (300,24)	5.61C (256,24)	2.42C (275,24)	0.30C (308,24)	0.00C (248,24)
27(	0.00,	0.00)	1.37C (308,24)	0.05C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
28(	0.00,	0.00)	5.05C (308,24)	0.82C (300,24)	0.45C (275,24)	0.40C (256,24)	0.00C (248,24)
29(	0.00,	0.00)	9.73C (308,24)	2.48C (256,24)	0.29C (300,24)	0.08C (275,24)	0.00C (248,24)
30(	0.00,	0.00)	22.56C (308,24)	6.56C (256,24)	0.27C (300,24)	0.10C (275,24)	0.00C (248,24)
31(	0.00,	0.00)	32.02C (308,24)	7.04C (256,24)	0.23C (300,24)	0.08C (275,24)	0.01C (248,24)
32(	0.00,	0.00)	44.80C (308,24)	2.06C (256,24)	0.22C (300,24)	0.11C (275,24)	0.01C (248,24)
33(	0.00,	0.00)	0.05C (308,24)	0.02C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
34(	0.00,	0.00)	0.30C (308,24)	0.03C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
35(	0.00,	0.00)	1.30C (308,24)	0.00C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
36(	0.00,	0.00)	17.82C (308,24)	6.75C (256,24)	1.10C (300,24)	0.48C (275,24)	0.02C (248,24)
37(	0.00,	0.00)	40.13C (308,24)	15.73C (300,24)	13.04C (275,24)	12.31C (256,24)	0.01C (248,24)
38(	0.00,	0.00)	21.83C (308,24)	11.55C (256,24)	7.43C (300,24)	4.99C (275,24)	0.01C (248,24)
39(	0.00,	0.00)	31.66C (300,24)	6.71C (275,24)	6.66C (256,24)	1.54C (308,24)	0.15C (248,24)
40(	0.00,	0.00)	13.96C (300,24)	12.12C (275,24)	10.21C (256,24)	1.23C (308,24)	1.06C (248,24)
41(	0.00,	0.00)	10.03C (300,24)	8.60C (256,24)	3.07C (275,24)	1.53C (308,24)	0.03C (248,24)
42(	0.00,	0.00)	0.16C (308,24)	0.02C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
43(	0.00,	0.00)	1.13C (308,24)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
44(	0.00,	0.00)	4.35C (308,24)	0.02C (256,24)	0.02C (300,24)	0.01C (275,24)	0.00 (0, 0)
45(	0.00,	0.00)	13.01C (308,24)	2.28C (256,24)	0.05C (275,24)	0.02C (300,24)	0.00C (248,24)
46(	0.00,	0.00)	75.29C (308,24)	33.00C (300,24)	29.92C (256,24)	26.90C (275,24)	6.20C (248,24)
47(	0.00,	0.00)	0.02C (256,24)	0.00C (308,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
48(	0.00,	0.00)	0.02C (256,24)	0.00C (308,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
49(	0.00,	0.00)	0.78C (308,24)	0.01C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
50(	0.00,	0.00)	6.93C (308,24)	0.20C (256,24)	0.03C (275,24)	0.02C (300,24)	0.00 (0, 0)
51(	0.00,	0.00) *	94.53C (308,24)	41.63C (300,24)	36.46C (275,24)	31.96C (256,24)	7.27C (248,24)
52(	0.00,	0.00)	49.42C (300,24)	31.78C (256,24)	15.26C (308,24)	10.24C (275,24)	2.10C (248,24)
53(	0.00,	0.00)	31.96C (300,24)	24.55C (275,24)	17.61C (256,24)	2.39C (248,24)	1.93C (308,24)
54(	0.00,	0.00)	16.76C (275,24)	15.52C (256,24)	12.43C (300,24)	2.50C (248,24)	1.82C (308,24)
55(	0.00,	0.00)	13.50C (300,24)	10.20C (256,24)	9.15C (275,24)	2.15C (248,24)	1.75C (308,24)
56(	0.00,	0.00)	14.97C (300,24)	10.82C (275,24)	6.42C (256,24)	1.85C (308,24)	0.79C (248,24)

TABLE C-4 (CONTINUED)

57(	0.00,	0.00)	14.38C (300,24)	12.69C (275,24)	5.38C (256,24)	1.96C (308,24)	0.19C (248,24)
58(	0.00,	0.00)	0.70C (256,24)	0.00C (308,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
59(	0.00,	0.00)	1.12C (308,24)	0.57C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
60(	0.00,	0.00)	50.27C (275,24)	* 46.75C (300,24)	23.86C (256,24)	2.01C (308,24)	0.86C (248,24)
61(	0.00,	0.00)	44.28C (300,24)	36.36C (275,24)	18.18C (256,24)	10.98C (308,24)	0.82C (248,24)
62(	0.00,	0.00)	33.49C (300,24)	31.96C (275,24)	13.14C (256,24)	8.23C (308,24)	1.51C (248,24)
63(	0.00,	0.00)	30.66C (300,24)	27.03C (275,24)	13.73C (256,24)	8.35C (308,24)	2.96C (248,24)
64(	0.00,	0.00)	29.04C (300,24)	21.95C (275,24)	14.58C (256,24)	7.42C (308,24)	2.22C (248,24)
65(	0.00,	0.00)	0.01C (256,24)	0.00C (308,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
66(	0.00,	0.00)	0.01C (256,24)	0.00C (308,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
67(	0.00,	0.00)	0.78C (256,24)	0.00C (308,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
68(	0.00,	0.00)	2.28C (256,24)	0.00C (308,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)
69(	0.00,	0.00)	43.40C (300,24)	40.10C (256,24)	23.74C (275,24)	9.31C (308,24)	0.52C (248,24)
70(	0.00,	0.00)	30.58C (256,24)	29.81C (300,24)	10.90C (275,24)	7.08C (308,24)	0.62C (248,24)
71(	0.00,	0.00)	1.53C (256,24)	0.00C (300,24)	0.00C (308,24)	0.00C (275,24)	0.00 (0, 0)
72(	0.00,	0.00)	1.36C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00C (308,24)	0.00 (0, 0)
73(	0.00,	0.00)	42.36C (256,24)	22.50C (275,24)	22.45C (300,24)	9.02C (308,24)	2.96C (248,24)
74(	0.00,	0.00)	27.62C (256,24)	13.73C (300,24)	10.77C (275,24)	5.48C (308,24)	0.33C (248,24)
75(	0.00,	0.00)	0.01C (256,24)	0.00C (308,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
76(	0.00,	0.00)	0.79C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
77(	0.00,	0.00)	1.70C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
78(	0.00,	0.00)	0.41C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
79(	0.00,	0.00)	19.26C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
80(	0.00,	0.00)	32.46C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
81(	0.00,	0.00)	48.04C (256,24)	32.91C (275,24)	12.18C (248,24)	10.69C (300,24)	5.63C (308,24)
82(	0.00,	0.00)	38.21C (256,24)	30.98C (275,24)	11.59C (300,24)	10.14C (248,24)	8.27C (308,24)
83(	0.00,	0.00)	29.13C (256,24)	28.14C (275,24)	9.73C (300,24)	8.64C (248,24)	8.19C (308,24)
84(	0.00,	0.00)	22.18C (275,24)	21.25C (256,24)	7.15C (300,24)	6.75C (248,24)	6.71C (308,24)
85(	0.00,	0.00)	0.36C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
86(	0.00,	0.00)	0.86C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
87(	0.00,	0.00)	14.39C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
88(	0.00,	0.00)	21.89C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
89(	0.00,	0.00)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
90(	0.00,	0.00)	3.80C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
91(	0.00,	0.00)	30.96C (275,24)	13.86C (300,24)	8.45C (256,24)	0.00 (0, 0)	0.00 (0, 0)
92(	0.00,	0.00)	25.85C (256,24)	17.94C (275,24)	5.67C (300,24)	0.04C (248,24)	0.00C (308,24)
93(	0.00,	0.00)	24.52C (256,24)	8.54C (275,24)	4.02C (300,24)	1.21C (248,24)	0.00C (308,24)
94(	0.00,	0.00)	22.36C (256,24)	13.83C (275,24)	5.32C (248,24)	2.59C (300,24)	0.02C (308,24)
95(	0.00,	0.00)	1.16C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
96(	0.00,	0.00)	1.46C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
97(	0.00,	0.00)	0.59C (256,24)	0.00C (300,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
98(	0.00,	0.00)	0.42C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
99(	0.00,	0.00)	11.45C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
100(	0.00,	0.00)	8.70C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
101(	0.00,	0.00)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
102(	0.00,	0.00)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
103(	0.00,	0.00)	0.28C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
104(	0.00,	0.00)	6.93C (256,24)	2.04C (300,24)	0.47C (275,24)	0.00 (0, 0)	0.00 (0, 0)
105(	0.00,	0.00)	23.56C (275,24)	9.76C (300,24)	6.57C (256,24)	0.00 (0, 0)	0.00 (0, 0)
106(	0.00,	0.00)	22.38C (275,24)	9.40C (300,24)	8.21C (256,24)	0.00C (248,24)	0.00C (308,24)
107(	0.00,	0.00)	15.15C (275,24)	11.53C (256,24)	4.74C (300,24)	0.00C (248,24)	0.00C (308,24)
108(	0.00,	0.00)	14.07C (256,24)	3.98C (275,24)	2.48C (300,24)	0.01C (248,24)	0.00C (308,24)
109(	0.00,	0.00)	8.26C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
110(	0.00,	0.00)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
111(	0.00,	0.00)	0.00C (256,24)	0.00C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
112(	0.00,	0.00)	1.67C (256,24)	0.01C (300,24)	0.00C (275,24)	0.00 (0, 0)	0.00 (0, 0)
113(	0.00,	0.00)	5.05C (256,24)	2.93C (300,24)	1.33C (275,24)	0.00 (0, 0)	0.00 (0, 0)
114(	0.00,	0.00)	11.95C (275,24)	7.62C (300,24)	4.50C (256,24)	0.00 (0, 0)	0.00 (0, 0)
115(	0.00,	0.00)	1.33C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
116(	0.00,	0.00)	0.32C (256,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
117(	0.00,	0.00)	6.46C (256,24)	0.00C (300,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-4 (CONTINUED)

118(	0.00,	0.00)	0.010 (256,24)	0.000 (300,24)	0.000 (275,24)	0.00 (0, 0)	0.00 (0, 0)
119(	0.00,	0.00)	0.000 (256,24)	0.000 (300,24)	0.000 (275,24)	0.00 (0, 0)	0.00 (0, 0)
120(	0.00,	0.00)	0.000 (256,24)	0.000 (300,24)	0.000 (275,24)	0.00 (0, 0)	0.00 (0, 0)
121(	0.00,	0.00)	2.480 (256,24)	0.040 (300,24)	0.000 (275,24)	0.00 (0, 0)	0.00 (0, 0)
122(	0.00,	0.00)	7.780 (275,24)	6.530 (300,24)	3.240 (256,24)	0.00 (0, 0)	0.00 (0, 0)
123(	0.00,	0.00)	11.520 (275,24)	3.580 (300,24)	2.070 (256,24)	0.000 (248,24)	0.00 (0, 0)

TABLE C-5. EAU CLAIRE, WISCONSIN METEOROLOGICAL DATA-CALM PERIODS

TABLE C-5 (CONTINUED)

TABLE C-5 (CONTINUED)

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364       12   1   3   2   0   0   2   3   1
365        1   1   0   0   0   0   0   0   0
TOTAL NUMBER OF CALM HOURS
        1243

 NUMBER OF 3-HR PERIODS WITH
    1     2     3 CALM HRS
  251   184   208

 NUMBER OF 24-HR PERIODS WITH
    1     2     3     4     5     6     7     8     9    10    11    12    13    14    15    16    17    18    19    20    21    22    23    24 CALM HRS
   43    34    25    21    28    17    13    15    16     8     9     5     3     2     2     0     1     0     0     0     0     0     1     0

      123 STATIONS WILL BE PROCESSED IN THIS RUN OF CALMPRO.
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TABLE C-6. CALMPRO ADJUSTMENT - TSP ANNUAL AVERAGE CONCENTRATIONS - ANNUAL EMISSION RATES

RECEPTOR	RECEPTORS IDENTIFICATION	EAST COORD (USER UNITS)	NORTH COORD (USER UNITS)	RECEPTOR HT ABV LOCAL GRD LVL (METERS)	RECEPTOR GROUND LEVEL ELEVATION (USER HT UNITS)	DAY	AVG CONC FOR PERIOD 1.HR 1. TO DAY365.HR24. (MICROGRAMS/M**3)	
1		0.00	0.00				-0.00	C
2		0.00	0.00				-0.19	C
3		0.00	0.00				-0.21	C
4		0.00	0.00				-0.08	C
5		0.00	0.00				-0.25	C
6		0.00	0.00				-0.04	C
7		0.00	0.00				-0.05	C
8		0.00	0.00				-0.24	C
9		0.00	0.00				-0.32	C
10		0.00	0.00				-0.33	C
11		0.00	0.00				-0.22	C
12		0.00	0.00				-0.30	C
13		0.00	0.00				-0.17	C
14		0.00	0.00				-0.05	C
15		0.00	0.00				-0.20	C
16		0.00	0.00				-0.02	C
17		0.00	0.00				-0.04	C
18		0.00	0.00				-0.12	C
19		0.00	0.00				-0.29	C
20		0.00	0.00				-0.57	C
21		0.00	0.00				-0.55	C
22		0.00	0.00				-0.45	C
23		0.00	0.00				-0.43	C
24		0.00	0.00				-0.64	C
25		0.00	0.00				-0.63	C
26		0.00	0.00				-0.36	C
27		0.00	0.00				-0.02	C
28		0.00	0.00				-0.11	C
29		0.00	0.00				-0.20	C
30		0.00	0.00				-0.48	C
31		0.00	0.00				-0.64	C
32		0.00	0.00				-0.76	C
33		0.00	0.00				-0.00	C
34		0.00	0.00				-0.01	C
35		0.00	0.00				-0.02	C
36		0.00	0.00				-0.43	C
37		0.00	0.00				-1.31	C
38		0.00	0.00				-0.74	C
39		0.00	0.00				-0.75	C
40		0.00	0.00				-0.63	C

TABLE C-6 (CONTINUED)

41	0.00	0.00		-0.38
42	0.00	0.00		-0.00
43	0.00	0.00		-0.02
44	0.00	0.00		-0.07
45	0.00	0.00		-0.25
46	0.00	0.00		-2.77
47	0.00	0.00		-0.00
48	0.00	0.00		-0.00
49	0.00	0.00		-0.01
50	0.00	0.00		-0.12
51	0.00	0.00		-3.42
52	0.00	0.00		-1.77
53	0.00	0.00		-1.27
54	0.00	0.00		-0.80
55	0.00	0.00		-0.60
56	0.00	0.00		-0.56
57	0.00	0.00		-0.56
58	0.00	0.00		-0.01
59	0.00	0.00		-0.03
60	0.00	0.00		-2.00
61	0.00	0.00		-1.79
62	0.00	0.00		-1.43
63	0.00	0.00		-1.34
64	0.00	0.00		-1.22
65	0.00	0.00		-0.00
66	0.00	0.00		-0.00
67	0.00	0.00		-0.01
68	0.00	0.00		-0.04
69	0.00	0.00		-1.91
70	0.00	0.00		-1.29
71	0.00	0.00		-0.03
72	0.00	0.00		-0.02
73	0.00	0.00		-1.63
74	0.00	0.00		-0.96
75	0.00	0.00		-0.00
76	0.00	0.00		-0.01
77	0.00	0.00		-0.03
78	0.00	0.00		-0.01
79	0.00	0.00		-0.33
80	0.00	0.00		-0.55
81	0.00	0.00		-1.80
82	0.00	0.00		-1.62
83	0.00	0.00		-1.37
84	0.00	0.00		-1.05
85	0.00	0.00		-0.01
86	0.00	0.00		-0.01
87	0.00	0.00		-0.24
88	0.00	0.00		-0.37
89	0.00	0.00		-0.00
90	0.00	0.00		-0.06
91	0.00	0.00		-0.86
92	0.00	0.00		-0.82
93	0.00	0.00		-0.64
94	0.00	0.00		-0.73
95	0.00	0.00		-0.02
96	0.00	0.00		-0.02
97	0.00	0.00		-0.01
98	0.00	0.00		-0.16
99	0.00	0.00		-0.19
100	0.00	0.00		-0.15
101	0.00	0.00		-0.00

TABLE C-6 (CONTINUED)

102	0.00	0.00	-0.00	C
103	0.00	0.00	-0.00	C
104	0.00	0.00	-0.16	C
105	0.00	0.00	-0.65	C
106	0.00	0.00	-0.65	C
107	0.00	0.00	-0.51	C
108	0.00	0.00	-0.34	C
109	0.00	0.00	-0.14	C
110	0.00	0.00	-0.00	C
111	0.00	0.00	-0.00	C
112	0.00	0.00	-0.03	C
113	0.00	0.00	-0.15	C
114	0.00	0.00	-0.39	C
115	0.00	0.00	-0.02	C
116	0.00	0.00	-0.01	C
117	0.00	0.00	-0.11	C
118	0.00	0.00	-0.00	C
119	0.00	0.00	-0.00	C
120	0.00	0.00	-0.00	C
121	0.00	0.00	-0.04	C
122	0.00	0.00	-0.29	C
123	0.00	0.00	-0.28	C

TABLE C-7. ISC MODEL INPUTS - 24-HOUR EMISSION RATES
ISCST (VERSION 80339)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 5. MODELS PROPOSED SEP80 FOR 81 GUIDELINES.
IN UNAMAP (VERSION 4) DEC 80
SOURCE: FILE 16 ON UNAMAP MAGNETIC TAPE FROM NTIS.

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

CALCULATE (CONCENTRATION=1,DEPOSITION=2)	ISW(1) =	1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)	ISW(2) =	1
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)	ISW(3) =	1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)	ISW(4) =	0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)	ISW(5) =	1
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)	ISW(6) =	2
COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)		
WITH THE FOLLOWING TIME PERIODS:		
HOURLY (YES=1,NO=0)	ISW(7) =	1
2-HOUR (YES=1,NO=0)	ISW(8) =	0
3-HOUR (YES=1,NO=0)	ISW(9) =	0
4-HOUR (YES=1,NO=0)	ISW(10) =	0
6-HOUR (YES=1,NO=0)	ISW(11) =	0
8-HOUR (YES=1,NO=0)	ISW(12) =	0
12-HOUR (YES=1,NO=0)	ISW(13) =	0
24-HOUR (YES=1,NO=0)	ISW(14) =	0
PRINT *N*-DAY TABLE(S) (YES=1,NO=0)	ISW(15) =	0
PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE		
SPECIFIED BY ISW(7) THROUGH ISW(14):		
DAILY TABLES (YES=1,NO=0)	ISW(16) =	0
HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)	ISW(17) =	0
MAXIMUM 50 TABLES (YES=1,NO=0)	ISW(18) =	0
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)	ISW(19) =	1
RURAL-URBAN OPTION (RURAL=0,URBAN MODE 1=1,URBAN MODE 2=2)	ISW(20) =	0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(21) =	1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(22) =	1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES>0)	ISW(23) =	0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)	ISW(24) =	1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)	ISW(25) =	1
NUMBER OF INPUT SOURCES	NSOURC =	32
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)	NGROUP =	1
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)	IPERD =	0
NUMBER OF X (RANGE) GRID VALUES	NXPNTS =	0
NUMBER OF Y (THETA) GRID VALUES	NYPNTS =	0
NUMBER OF DISCRETE RECEPTORS	NXWYPT =	123
SOURCE EMISSION RATE UNITS CONVERSION FACTOR	TK =	.10000E 07
ENTRAINMENT COEFFICIENT FOR UNSTABLE ATMOSPHERE	BETA1 =	0.600
ENTRAINMENT COEFFICIENT FOR STABLE ATMOSPHERE	BETA2 =	0.600
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED	ZR =	10.00 METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA	IMET =	1
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION	DECAY =	0.0
SURFACE STATION NO.	ISS =	14991
YEAR OF SURFACE DATA	ISY =	77
UPPER AIR STATION NO.	IUS =	14926
YEAR OF UPPER AIR DATA	IUY =	77
LOGICAL UNIT OF CALCULATION *SAVE* TAPE	ITAP =	12
ALLOCATED DATA STORAGE	LIMIT =	43500 WORDS

REQUIRED DATA STORAGE FOR THIS PROBLEM RUN   MIMIT = 7495 WORDS

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.*   ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
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 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 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 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 0 0 0 0 1 1   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 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 0 0 0 0 0 0 0 0   0 0 0 1 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   0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 1 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 0 0 1 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
0 0 0 0 0 0 0 1 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 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   0 0 0 0 0 0
```

*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

1,   -32,

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.*   ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0

3	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0
6	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
7	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** X,Y COORDINATES OF DISCRETE RECEPTORS ***
(METERS)

(691000.0,	39000.0),	(691000.0,	38500.0),	(691000.0,	37500.0),	(691500.0,	39000.0),	(691500.0,	38000.0),
(692000.0,	38500.0),	(692000.0,	38000.0),	(692000.0,	38000.0),	(692000.0,	37500.0),	(692000.0,	36500.0),
(692000.0,	35500.0),	(692000.0,	34500.0),	(692000.0,	33500.0),	(692500.0,	39000.0),	(692500.0,	38000.0),
(693000.0,	39500.0),	(693000.0,	39000.0),	(693000.0,	38000.0),	(693000.0,	37500.0),	(693000.0,	36500.0),
(693020.0,	35120.0),	(693020.0,	35720.0),	(693020.0,	35320.0),	(693100.0,	34960.0),	(693050.0,	34500.0),
(693000.0,	33500.0),	(693500.0,	39000.0),	(693500.0,	38000.0),	(693500.0,	37500.0),	(693360.0,	36940.0),
(693355.0,	36500.0),	(693350.0,	35120.0),	(694000.0,	39500.0),	(694000.0,	39000.0),	(694000.0,	38500.0),
(693340.0,	35960.0),	(694000.0,	34860.0),	(693700.0,	34500.0),	(694000.0,	33500.0),	(694000.0,	32500.0),
(694000.0,	31500.0),	(694500.0,	38500.0),	(694500.0,	38000.0),	(694500.0,	37500.0),	(694340.0,	36980.0),
(694420.0,	35160.0),	(695000.0,	39500.0),	(695000.0,	38500.0),	(695000.0,	37500.0),	(694840.0,	37000.0),
(694460.0,	35020.0),	(694840.0,	34380.0),	(694840.0,	33740.0),	(695000.0,	33000.0),	(695000.0,	32500.0),
(695000.0,	32000.0),	(695000.0,	31500.0),	(695500.0,	37500.0),	(695340.0,	37020.0),	(695500.0,	33760.0),
(695560.0,	33200.0),	(695500.0,	32760.0),	(695480.0,	32240.0),	(695500.0,	31500.0),	(696000.0,	39500.0),
(696000.0,	38500.0),	(696000.0,	37500.0),	(695820.0,	37000.0),	(696000.0,	32250.0),	(696000.0,	31500.0),
(696500.0,	37500.0),	(696500.0,	37000.0),	(696500.0,	32260.0),	(696500.0,	31500.0),	(697000.0,	39500.0),
(697000.0,	38500.0),	(697000.0,	37500.0),	(696960.0,	37000.0),	(696950.0,	36250.0),	(696960.0,	35820.0),
(697030.0,	33020.0),	(697080.0,	32640.0),	(697080.0,	32250.0),	(697000.0,	31500.0),	(697500.0,	37500.0),
(697500.0,	37000.0),	(697500.0,	36500.0),	(697360.0,	35860.0),	(697400.0,	35300.0),	(697420.0,	34780.0),
(697460.0,	34240.0),	(697440.0,	33020.0),	(697500.0,	32500.0),	(697500.0,	32000.0),	(698000.0,	39500.0),
(698000.0,	38500.0),	(698000.0,	37500.0),	(698000.0,	37000.0),	(698000.0,	36500.0),	(698000.0,	36000.0),
(698000.0,	35500.0),	(698000.0,	35000.0),	(698000.0,	34500.0),	(697840.0,	34220.0),	(697880.0,	33600.0),
(697820.0,	33020.0),	(698000.0,	32500.0),	(698000.0,	31500.0),	(698500.0,	37000.0),	(698500.0,	36000.0),
(698500.0,	34500.0),	(698500.0,	34000.0),	(698500.0,	33500.0),	(698500.0,	33000.0),	(699000.0,	39500.0),
(699000.0,	38500.0),	(699000.0,	37500.0),	(699000.0,	36500.0),	(699000.0,	35500.0),	(699000.0,	34500.0),
(699000.0,	33500.0),	(699000.0,	32500.0),	(699000.0,	31500.0),	(			

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE DATA ***

SOURCE NUMBER	TYPE	WAKE	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 GRAMS/SECOND TYPE=2 GRAMS/SECOND *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	1	0	0	0.783000E 00	694215.0	35770.0	0.0	26.00	294.30	0.01	1.00	35.00	21.00	22.00
2	1	0	0	0.565000E 00	694140.0	35770.0	0.0	38.00	294.30	20.40	0.84	35.00	15.00	30.00
3	1	0	0	0.341000E 00	694470.0	35550.0	0.0	8.00	294.30	0.01	0.43	20.00	50.00	25.00
4	1	0	0	0.345000E 01	693285.0	35590.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
5	1	0	0	0.345000E 01	694625.0	35460.0	0.0	3.70	294.30	8.33	6.71	0.0	0.0	0.0
6	1	0	0	0.116000E 00	694155.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
7	1	0	0	0.116000E 00	694160.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
8	1	0	0	0.697000E-01	694165.0	35710.0	0.0	13.00	623.00	0.01	0.60	10.00	23.50	30.00
9	2	0	3	0.348000E-06	691500.0	38500.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
10	2	0	3	0.345000E-06	691900.0	38450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0

11	2	0	3	0.345000E-06	693300.0	38400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
12	2	0	3	0.345000E-06	693700.0	38350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
13	2	0	3	0.345000E-06	693100.0	38300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
14	2	0	3	0.345000E-06	693500.0	38250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
15	2	0	3	0.345000E-06	693900.0	38000.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
16	2	0	3	0.345000E-06	693350.0	37600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
17	2	0	3	0.345000E-06	693650.0	37200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
18	2	0	3	0.345000E-06	693850.0	36800.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
19	2	0	3	0.345000E-06	693550.0	36400.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
20	2	0	3	0.433000E-05	693900.0	35700.0	0.0	1.00	0.0	300.00	0.0	0.0	0.0	0.0
21	2	0	3	0.416000E-05	694100.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
22	2	0	3	0.433000E-05	694200.0	35600.0	0.0	1.00	0.0	400.00	0.0	0.0	0.0	0.0
23	2	0	3	0.416000E-05	694200.0	35400.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
24	2	0	3	0.417000E-05	694600.0	35800.0	0.0	1.00	0.0	200.00	0.0	0.0	0.0	0.0
25	2	0	3	0.290000E-04	694700.0	35600.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
26	2	0	3	0.290000E-04	694700.0	35450.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
27	2	0	3	0.290000E-04	694800.0	35350.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
28	2	0	3	0.290000E-04	695100.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
29	2	0	3	0.290000E-04	695250.0	35200.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
30	2	0	3	0.290000E-04	695450.0	35250.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
31	2	0	3	0.290000E-04	695650.0	35300.0	0.0	1.00	0.0	100.00	0.0	0.0	0.0	0.0
32	2	0	13	0.685000E-05	695450.0	34700.0	0.0	1.00	0.0	800.00	0.0	0.0	0.0	0.0

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 9 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 10 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 11 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 12 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 13 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 14 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 15 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =

0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 16 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 17 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 18 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 19 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 20 ***

MASS FRACTION =

0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 21 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 22 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** SOURCE NUMBER = 23 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.97000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 24 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER =   25 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER =   26 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER =   27 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER =   28 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
 0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 29 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

*** SOURCE PARTICULATE DATA ***

*** SOURCE NUMBER = 30 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 31 ***

MASS FRACTION =
0.12700,0.32100,0.55200,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480,

SURFACE REFLECTION COEFFICIENT =
0.87000,0.71000,0.63000,

*** SOURCE NUMBER = 32 ***

MASS FRACTION =
0.03900,0.08600,0.14800,0.16800,0.08400,0.07300,0.08100,0.07700,0.06700,0.07300,
0.07200,0.02000,0.01000,

SETTLING VELOCITY(METERS/SEC) =
0.0030, 0.0200, 0.0480, 0.0960, 0.1550, 0.2300, 0.3220, 0.4300, 0.5500, 0.6900,
0.8300, 1.0100, 1.2300,

SURFACE REFLECTION COEFFICIENT =
1.00000,0.71000,0.63000,0.51000,0.36000,0.17000,0.0 ,0.0 ,0.0 ,0.0 ,
0.0 ,0.0 ,0.0 ,

*** *24HR EMISSION RATES-W/*HI 10 DAYS FROM ANNUAL 50 MAX.* ***

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 100 METERS OR THREE BUILDING
HEIGHTS IN DISTANCE. NO AVERAGE CONCENTRATION IS CALCULATED *

TABLE C-8. ISC-CALMPRO MODEL OUTPUT - 24-HOUR EMISSION RATES WITH 10 MAXIMUM DAYS FROM ANNUAL EMISSION RATES

FIVE HIGHEST 24-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR			1	2	3	4	5
1(	0.00,	0.00)	3.01C (308,24)	0.00C (123,24)	0.00C (256,24)	0.00C (130,24)	0.00 (0, 0)
2(	0.00,	0.00)	2.10C (306,24)	1.91C (214,24)	1.02C (128,24)	0.98C (130,24)	0.52C (256,24)
3(	0.00,	0.00)	7.75C (130,24)	4.30C (308,24)	1.06C (129,24)	0.80C (256,24)	0.67C (214,24)
4(	0.00,	0.00)	1.01C (308,24)	0.90C (129,24)	0.71C (130,24)	0.64C (214,24)	0.08C (256,24)
5(	0.00,	0.00)	2.68C (306,24)	2.68C (214,24)	1.87C (130,24)	1.39C (129,24)	1.06C (256,24)
6(	0.00,	0.00)	1.17C (130,24)	0.52C (129,24)	0.43C (214,24)	0.30C (308,24)	0.01C (256,24)
7(	0.00,	0.00)	1.08C (130,24)	0.87C (129,24)	0.74C (214,24)	0.65C (308,24)	0.10C (46,24)
8(	0.00,	0.00)	1.96C (306,24)	1.57C (130,24)	1.35C (214,24)	1.05C (129,24)	0.56C (256,24)
9(	0.00,	0.00)	4.18C (308,24)	3.98C (130,24)	2.40C (214,24)	2.39C (129,24)	1.64C (256,24)
10(	0.00,	0.00)	7.80C (308,24)	7.78C (129,24)	3.49C (130,24)	0.36C (214,24)	0.11C (256,24)
11(	0.00,	0.00)	6.72C (306,24)	2.15C (129,24)	0.10C (256,24)	0.07C (300,24)	0.03C (214,24)
12(	0.00,	0.00)	2.75C (300,24)	1.40C (308,24)	1.06C (256,24)	0.78C (129,24)	0.20C (214,24)
13(	0.00,	0.00)	2.81C (300,24)	2.04C (129,24)	0.85C (214,24)	0.57C (256,24)	0.45C (275,24)
14(	0.00,	0.00)	1.24C (130,24)	0.71C (129,24)	0.46C (214,24)	0.34C (308,24)	0.14C (46,24)
15(	0.00,	0.00)	1.67C (130,24)	1.61C (308,24)	1.56C (129,24)	1.25C (214,24)	0.41C (256,24)
16(	0.00,	0.00)	2.36C (130,24)	0.40C (129,24)	0.13C (214,24)	0.08C (308,24)	0.06C (46,24)
17(	0.00,	0.00)	2.57C (130,24)	0.52C (129,24)	0.21C (214,24)	0.18C (308,24)	0.09C (46,24)
18(	0.00,	0.00)	1.90C (130,24)	1.19C (214,24)	1.05C (129,24)	0.79C (308,24)	0.28C (46,24)
19(	0.00,	0.00)	2.16C (308,24)	2.10C (130,24)	1.93C (129,24)	1.88C (214,24)	0.41C (256,24)
20(	0.00,	0.00)	20.63C (130,24)	11.14C (308,24)	5.16C (129,24)	4.09C (256,24)	2.51C (214,24)
21(	0.00,	0.00)	16.55C (125,24)	13.32C (308,24)	4.82C (130,24)	0.49C (214,24)	0.17C (256,24)
22(	0.00,	0.00)	11.61C (308,24)	6.88C (129,24)	0.61C (130,24)	0.25C (256,24)	0.07C (275,24)
23(	0.00,	0.00)	7.08C (308,24)	3.58C (129,24)	2.49C (256,24)	2.47C (300,24)	0.06C (275,24)
24(	0.00,	0.00)	11.15C (300,24)	5.54C (129,24)	3.59C (308,24)	3.39C (275,24)	1.30C (256,24)
25(	0.00,	0.00)	9.41C (300,24)	5.70C (275,24)	3.41C (129,24)	2.55C (214,24)	2.13C (256,24)
26(	0.00,	0.00)	4.95C (300,24)	3.67C (256,24)	2.88C (214,24)	2.42C (275,24)	1.03C (129,24)
27(	0.00,	0.00)	2.16C (130,24)	0.39C (129,24)	0.13C (214,24)	0.07C (308,24)	0.06C (46,24)
28(	0.00,	0.00)	3.78C (130,24)	1.00C (214,24)	0.82C (300,24)	0.80C (308,24)	0.72C (129,24)
29(	0.00,	0.00)	4.95C (130,24)	1.25C (129,24)	1.12C (214,24)	1.00C (308,24)	0.42C (256,24)
30(	0.00,	0.00)	4.53C (130,24)	4.17C (308,24)	3.25C (214,24)	3.14C (129,24)	0.78C (256,24)
31(	0.00,	0.00)	13.13C (130,24)	10.20C (308,24)	7.27C (129,24)	4.87C (214,24)	3.17C (256,24)
32(	0.00,	0.00)	15.72C (130,24)	13.16C (308,24)	15.15C (129,24)	1.77C (256,24)	0.61C (214,24)
33(	0.00,	0.00)	1.22C (130,24)	0.22C (129,24)	0.05C (46,24)	0.03C (214,24)	0.02C (256,24)
34(	0.00,	0.00)	1.56C (130,24)	0.28C (129,24)	0.06C (214,24)	0.05C (46,24)	0.03C (256,24)
35(	0.00,	0.00)	2.07C (130,24)	0.37C (129,24)	0.16C (46,24)	0.13C (214,24)	0.07C (308,24)
36(	0.00,	0.00)	6.53C (130,24)	2.11C (214,24)	1.89C (129,24)	1.76C (308,24)	1.10C (300,24)
37(	0.00,	0.00)	15.73C (300,24)	13.04C (275,24)	11.78C (214,24)	8.56C (256,24)	5.60C (308,24)
38(	0.00,	0.00)	7.03C (300,24)	4.99C (275,24)	4.68C (256,24)	4.28C (214,24)	3.46C (129,24)
39(	0.00,	0.00)	13.40C (300,24)	6.71C (275,24)	5.68C (256,24)	6.29C (214,24)	3.47C (129,24)
40(	0.00,	0.00)	8.68C (300,24)	6.30C (256,24)	5.25C (275,24)	4.50C (214,24)	1.23C (308,24)
41(	0.00,	0.00)	7.32C (300,24)	4.82C (256,24)	3.25C (214,24)	2.46C (275,24)	1.53C (308,24)
42(	0.00,	0.00)	1.74C (130,24)	0.23C (129,24)	0.07C (46,24)	0.05C (214,24)	0.04C (176,24)
43(	0.00,	0.00)	2.32C (130,24)	0.40C (129,24)	0.25C (214,24)	0.13C (46,24)	0.10C (176,24)
44(	0.00,	0.00)	3.57C (130,24)	0.96C (129,24)	0.36C (214,24)	0.22C (308,24)	0.17C (176,24)
45(	0.00,	0.00)	5.90C (130,24)	2.07C (129,24)	0.91C (214,24)	0.79C (308,24)	0.52C (176,24)
46(	0.00,	0.00)	33.00C (300,24)	29.69C (256,24)	28.86C (46,24)	26.90C (275,24)	20.47C (214,24)
47(	0.00,	0.00)	1.21C (130,24)	0.07C (129,24)	0.04C (46,24)	0.02C (256,24)	0.01C (176,24)
48(	0.00,	0.00)	2.10C (130,24)	0.23C (129,24)	0.07C (176,24)	0.02C (46,24)	0.02C (256,24)
49(	0.00,	0.00)	3.18C (130,24)	1.07C (214,24)	0.92C (129,24)	0.49C (176,24)	0.09C (46,24)
50(	0.00,	0.00)	4.73C (130,24)	1.46C (214,24)	1.11C (129,24)	1.05C (176,24)	0.35C (308,24)
51(	0.00,	0.00) *	41.52C (300,24) *	36.46C (275,24)	19.25C (256,24)	17.58C (129,24)	17.18C (214,24)
52(	0.00,	0.00)	20.12C (256,24)	12.85C (46,24)	11.23C (300,24)	10.24C (275,24)	8.42C (214,24)
53(	0.00,	0.00)	11.35C (275,24)	10.05C (256,24)	7.19C (300,24)	6.48C (46,24)	5.30C (129,24)
54(	0.00,	0.00)	7.97C (256,24)	7.72C (275,24)	5.26C (300,24)	3.66C (46,24)	3.01C (214,24)
55(	0.00,	0.00)	7.16C (256,24)	6.30C (275,24)	4.61C (300,24)	2.98C (214,24)	2.15C (248,24)
56(	0.00,	0.00)	6.07C (256,24)	4.51C (275,24)	4.27C (300,24)	2.55C (214,24)	1.85C (308,24)

TABLE C-8 (CONTINUED)

57(	0.00,	0.00)	4.35C (256,24)	4.04C (300,24)	3.09C (275,24)	1.95C (309,24)	1.94C (214,24)
58(	0.00,	0.00)	2.14C (130,24)	0.90C (214,24)	0.85C (129,24)	0.75C (176,24)	0.70C (256,24)
59(	0.00,	0.00)	3.44C (130,24)	1.84C (214,24)	1.72C (46,24)	1.31C (129,24)	1.10C (176,24)
60(	0.00,	0.00)	11.23C (256,24)	6.90C (46,24)	7.45C (214,24)	7.14C (300,24)	6.36C (275,24)
61(	0.00,	0.00)	8.51C (256,24)	7.45C (46,24)	5.33C (275,24)	4.91C (300,24)	4.63C (214,24)
62(	0.00,	0.00)	8.94C (256,24)	6.73C (275,24)	4.95C (46,24)	4.44C (129,24)	3.59C (300,24)
63(	0.00,	0.00)	6.56C (256,24)	5.66C (275,24)	4.39C (46,24)	3.62C (129,24)	3.07C (300,24)
64(	0.00,	0.00)	6.24C (256,24)	4.93C (275,24)	3.13C (300,24)	2.33C (46,24)	2.22C (248,24)
65(	0.00,	0.00)	0.92C (130,24)	0.21C (129,24)	0.05C (176,24)	0.03C (46,24)	0.01C (214,24)
66(	0.00,	0.00)	0.85C (130,24)	0.75C (214,24)	0.51C (129,24)	0.30C (176,24)	0.05C (46,24)
67(	0.00,	0.00)	3.17C (46,24)	1.83C (130,24)	1.36C (214,24)	1.09C (129,24)	0.86C (176,24)
68(	0.00,	0.00)	3.73C (130,24)	2.76C (46,24)	2.28C (256,24)	1.63C (129,24)	1.36C (214,24)
69(	0.00,	0.00)	5.55C (256,24)	4.18C (46,24)	3.94C (275,24)	2.99C (300,24)	2.58C (214,24)
70(	0.00,	0.00)	5.12C (256,24)	3.62C (46,24)	3.13C (129,24)	2.68C (275,24)	2.04C (300,24)
71(	0.00,	0.00)	2.10C (130,24)	1.59C (46,24)	1.71C (214,24)	1.53C (256,24)	0.93C (176,24)
72(	0.00,	0.00)	3.61C (46,24)	2.92C (130,24)	1.36C (256,24)	1.08C (176,24)	0.81C (214,24)
73(	0.00,	0.00)	5.38C (256,24)	4.41C (46,24)	2.97C (275,24)	2.67C (214,24)	1.49C (300,24)
74(	0.00,	0.00)	4.85C (256,24)	4.20C (46,24)	2.37C (275,24)	2.00C (214,24)	1.22C (129,24)
75(	0.00,	0.00)	0.61C (214,24)	0.47C (130,24)	0.42C (129,24)	0.21C (176,24)	0.09C (46,24)
76(	0.00,	0.00)	1.97C (46,24)	1.03C (214,24)	0.91C (130,24)	0.79C (256,24)	0.66C (129,24)
77(	0.00,	0.00)	3.16C (46,24)	1.83C (130,24)	1.70C (256,24)	0.87C (214,24)	0.78C (176,24)
78(	0.00,	0.00)	4.73C (46,24)	2.25C (130,24)	0.62C (176,24)	0.52C (214,24)	0.41C (256,24)
79(	0.00,	0.00)	3.99C (46,24)	1.90C (130,24)	1.17C (176,24)	1.10C (256,24)	0.81C (214,24)
80(	0.00,	0.00)	6.17C (46,24)	3.02C (176,24)	1.83C (130,24)	1.65C (256,24)	1.57C (214,24)
81(	0.00,	0.00)	4.46C (275,24)	4.09C (46,24)	3.17C (256,24)	2.20C (214,24)	1.73C (300,24)
82(	0.00,	0.00)	5.31C (275,24)	3.52C (46,24)	2.88C (256,24)	1.72C (176,24)	1.49C (300,24)
83(	0.00,	0.00)	4.61C (275,24)	2.96C (46,24)	2.53C (256,24)	1.96C (176,24)	1.14C (214,24)
84(	0.00,	0.00)	3.52C (46,24)	3.26C (256,24)	2.43C (275,24)	1.38C (214,24)	0.80C (129,24)
85(	0.00,	0.00)	3.01C (46,24)	1.33C (130,24)	0.50C (176,24)	0.44C (214,24)	0.36C (256,24)
86(	0.00,	0.00)	2.71C (46,24)	1.16C (130,24)	0.86C (256,24)	0.54C (176,24)	0.48C (214,24)
87(	0.00,	0.00)	2.94C (46,24)	0.93C (130,24)	0.74C (176,24)	0.73C (256,24)	0.58C (214,24)
88(	0.00,	0.00)	3.92C (46,24)	2.27C (176,24)	1.22C (130,24)	1.12C (214,24)	1.11C (256,24)
89(	0.00,	0.00)	6.69C (214,24)	4.93C (176,24)	2.87C (46,24)	0.63C (130,24)	0.00C (256,24)
90(	0.00,	0.00)	6.99C (214,24)	2.51C (176,24)	0.98C (46,24)	0.39C (129,24)	0.20C (256,24)
91(	0.00,	0.00)	4.94C (214,24)	2.24C (46,24)	1.58C (275,24)	1.01C (176,24)	0.72C (129,24)
92(	0.00,	0.00)	2.76C (46,24)	2.39C (214,24)	2.16C (256,24)	2.15C (275,24)	1.18C (129,24)
93(	0.00,	0.00)	3.10C (275,24)	2.85C (46,24)	1.79C (256,24)	1.50C (214,24)	1.22C (300,24)
94(	0.00,	0.00)	3.87C (275,24)	2.59C (46,24)	1.76C (256,24)	1.66C (176,24)	1.04C (214,24)
95(	0.00,	0.00)	1.42C (46,24)	1.16C (256,24)	0.92C (214,24)	0.41C (129,24)	0.41C (130,24)
96(	0.00,	0.00)	1.46C (256,24)	0.88C (46,24)	0.82C (214,24)	0.74C (130,24)	0.48C (176,24)
97(	0.00,	0.00)	3.18C (46,24)	1.03C (130,24)	0.58C (256,24)	0.41C (176,24)	0.40C (214,24)
98(	0.00,	0.00)	2.34C (46,24)	0.84C (130,24)	0.50C (256,24)	0.50C (176,24)	0.42C (214,24)
99(	0.00,	0.00)	2.74C (46,24)	0.30C (130,24)	0.59C (176,24)	0.58C (256,24)	0.47C (214,24)
100(	0.00,	0.00)	1.70C (46,24)	1.10C (176,24)	0.64C (130,24)	0.44C (256,24)	0.12C (214,24)
101(	0.00,	0.00)	2.79C (176,24)	2.04C (214,24)	0.98C (46,24)	0.16C (130,24)	0.00C (129,24)
102(	0.00,	0.00)	6.26C (214,24)	2.55C (176,24)	0.02C (46,24)	0.00C (129,24)	0.00C (256,24)
103(	0.00,	0.00)	4.53C (214,24)	0.91C (176,24)	0.71C (46,24)	0.11C (129,24)	0.02C (256,24)
104(	0.00,	0.00)	4.86C (214,24)	1.33C (46,24)	0.47C (176,24)	0.45C (129,24)	0.36C (256,24)
105(	0.00,	0.00)	1.65C (214,24)	1.28C (46,24)	1.20C (275,24)	0.91C (129,24)	0.64C (256,24)
106(	0.00,	0.00)	1.43C (256,24)	1.42C (214,24)	1.40C (275,24)	1.19C (46,24)	0.85C (129,24)
107(	0.00,	0.00)	1.84C (214,24)	1.63C (275,24)	1.28C (46,24)	1.25C (256,24)	0.96C (300,24)
108(	0.00,	0.00)	2.32C (275,24)	1.89C (46,24)	1.32C (176,24)	1.07C (256,24)	0.90C (214,24)
109(	0.00,	0.00)	1.81C (46,24)	0.65C (130,24)	0.42C (256,24)	0.38C (176,24)	0.34C (214,24)
110(	0.00,	0.00)	1.11C (46,24)	0.38C (176,24)	0.30C (130,24)	0.09C (214,24)	0.00C (129,24)
111(	0.00,	0.00)	3.53C (214,24)	0.84C (176,24)	0.26C (46,24)	0.01C (129,24)	0.00C (256,24)
112(	0.00,	0.00)	3.61C (214,24)	0.91C (46,24)	0.32C (176,24)	0.19C (129,24)	0.09C (256,24)
113(	0.00,	0.00)	1.81C (214,24)	1.05C (46,24)	0.50C (129,24)	0.31C (256,24)	0.15C (300,24)
114(	0.00,	0.00)	0.89C (214,24)	0.75C (129,24)	0.74C (46,24)	0.65C (256,24)	0.62C (275,24)
115(	0.00,	0.00)	1.33C (256,24)	0.71C (214,24)	0.61C (46,24)	0.42C (130,24)	0.34C (176,24)
116(	0.00,	0.00)	1.86C (46,24)	0.73C (130,24)	0.32C (256,24)	0.28C (214,24)	0.28C (176,24)
117(	0.00,	0.00)	2.05C (46,24)	0.61C (130,24)	0.33C (256,24)	0.29C (176,24)	0.26C (214,24)

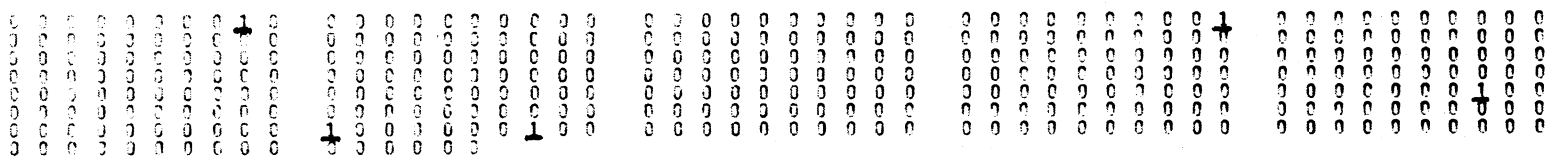
TABLE C-8 (CONTINUED)

118(	0.00,	0.00)	1.040 (46,24)	0.330 (130,24)	0.230 (176,24)	0.010 (214,24)	0.000 (256,24)
119(	0.00,	0.00)	1.740 (176,24)	1.330 (214,24)	0.020 (46,24)	0.000 (130,24)	0.000 (129,24)
120(	0.00,	0.00)	3.070 (214,24)	0.770 (176,24)	0.070 (46,24)	0.000 (129,24)	0.000 (256,24)
121(	0.00,	0.00)	2.220 (214,24)	0.810 (46,24)	0.240 (129,24)	0.160 (176,24)	0.130 (256,24)
122(	0.00,	0.00)	0.680 (256,24)	0.660 (214,24)	0.630 (129,24)	0.480 (46,24)	0.400 (275,24)
123(	0.00,	0.00)	1.160 (275,24)	1.160 (214,24)	0.800 (300,24)	0.560 (256,24)	0.440 (46,24)

TABLE C-9. ISC-CALMPRO MODEL INPUT - ANNUAL EMISSION RATES FOR NEXT HIGHEST 15 DAYS TO 10 MAX

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IFE=1)



*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

1, 2, 3, 4, 5, 6, -8, 9, -19, 20, -24, 25, -31, 32,
1, -32,

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

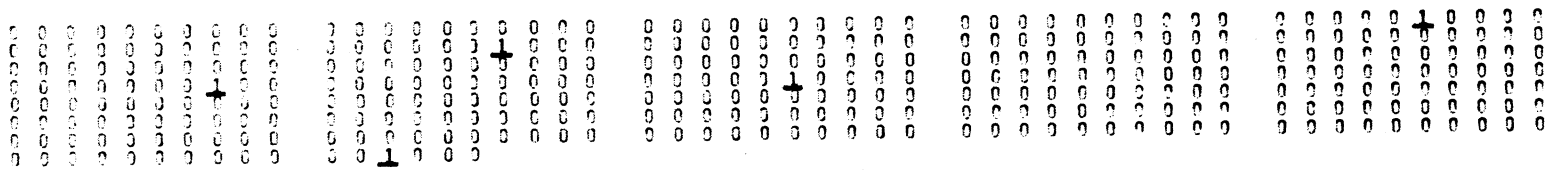
*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

TABLE C-9 (CONTINUED)

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IFE=1)



*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

1, 2, 3, 4, 5, 6, -8, 9, -19, 20, -24, 25, -31, 32,
1, -32,

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

TABLE C-9 (CONTINUED)

```
*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES*        ***

                     *** METEOROLOGICAL DAYS TO BE PROCESSED ***
                                        (IF=1)

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 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 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 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 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 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   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 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 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 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 0 1 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 1 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 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 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0   0 0 0 1 0 0

          *** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
                                     (NSOGRP)

   1,   1,   1,   1,   1,   2,   2,   2,   2,   1,   2,

                     *** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
                                      (IDSOR)

     1,      2,      3,      4,      5,      6,     -8,      9,    -19,     20,    -24,     25,    -31,     32,
     1,    -32,

          *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                   (METERS/SEC)

                       1.54,    3.09,    5.14,    8.23,   10.80,

                           *** WIND PROFILE EXPONENTS ***

STABILITY                              WIND SPEED CATEGORY
CATEGORY       1              2              3              4              5              6
    A     .10000E 00     .10000E 00     .10000E 00     .10000E 00     .10000E 00     .10000E 00
    B     .15000E 00     .15000E 00     .15000E 00     .15000E 00     .15000E 00     .15000E 00
    C     .20000E 00     .20000E 00     .20000E 00     .20000E 00     .20000E 00     .20000E 00
    D     .25000E 00     .25000E 00     .25000E 00     .25000E 00     .25000E 00     .25000E 00
    E     .30000E 00     .30000E 00     .30000E 00     .30000E 00     .30000E 00     .30000E 00
    F     .30000E 00     .30000E 00     .30000E 00     .30000E 00     .30000E 00     .30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES*        ***

                *** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
                          (DEGREES KELVIN PER METER)

STABILITY                              WIND SPEED CATEGORY
CATEGORY       1              2              3              4              5              6
    A     .0             .0             .0             .0             .0             .0
    B     .0             .0             .0             .0             .0             .0
```

TABLE C-10. ISC-CALMPRO MODEL OUTPUT - HIGHEST 5 DAYS NEXT TO 10 MAX

HIGH
24-HR
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,PER.)	- X -	- Y -	CON.	(DAY,PER.)
691000.0	38000.0	3.90028	(67, 1)	691000.0	38500.0	4.99301	(342, 1)
691000.0	37500.0	4.94428	(117, 1)	691500.0	39000.0	5.03723	(317, 1)
691500.0	39000.0	6.13903	(342, 1)	692000.0	39500.0	3.66045	(165, 1)
692000.0	39000.0	4.00641	(165, 1)	692000.0	38000.0	5.39876	(67, 1)
692000.0	37500.0	7.51166	(342, 1)	692000.0	36500.0	7.44452	(266, 1)
692000.0	35500.0	6.97804	(112, 1)	692000.0	34500.0	6.98966	(98, 1)
692000.0	33500.0	5.05522	(22, 1)	692500.0	39000.0	4.97265	(165, 1)
692500.0	38000.0	6.15236	(317, 1)	693000.0	39500.0	3.80254	(293, 1)
693000.0	39000.0	4.12435	(237, 1)	693000.0	39000.0	7.01366	(165, 1)
693000.0	37500.0	7.63795	(317, 1)	693000.0	36500.0	14.01438	(138, 1)
693020.0	36120.0	17.30527	(311, 1)	693020.0	35720.0	11.34248	(112, 1)
693020.0	35320.0	21.08125	(364, 1)	693100.0	34960.0	15.41970	(22, 1)
693050.0	34500.0	11.24359	(22, 1)	693000.0	33500.0	6.85768	(363, 1)
693500.0	39000.0	4.46710	(283, 1)	693500.0	38000.0	6.49951	(293, 1)
693500.0	37500.0	10.05390	(165, 1)	693360.0	36940.0	11.93750	(317, 1)
693355.0	36500.0	19.76669	(318, 1)	693350.0	36120.0	23.64088	(311, 1)
694000.0	39500.0	3.96636	(293, 1)	694000.0	39000.0	4.47501	(293, 1)
694000.0	38500.0	5.39955	(293, 1)	693840.0	36960.0	15.03049	(165, 1)
694000.0	34860.0	19.57494	(3, 1)	693700.0	34500.0	11.82588	(363, 1)
694000.0	33500.0	7.30348	(118, 1)	694000.0	32500.0	3.97357	(111, 1)
694000.0	31500.0	2.68018	(111, 1)	694500.0	38500.0	5.18974	(186, 1)
694500.0	38000.0	7.39846	(227, 1)	694500.0	37500.0	10.97342	(227, 1)
694340.0	36980.0	13.27757	(227, 1)	694420.0	35160.0	101.20410	(248, 1)
695000.0	39500.0	4.29612	(334, 1)	695000.0	38500.0	4.73863	(334, 1)
695000.0	37500.0	10.10880	(67, 1)	694840.0	37000.0	13.76239	(232, 1)
694860.0	36020.0	29.34734	(248, 1)	694840.0	34380.0	26.34236	(248, 1)
694840.0	33740.0	16.42267	(248, 1)	695000.0	33000.0	8.31408	(248, 1)
695000.0	32500.0	4.67486	(176, 1)	695000.0	32000.0	4.97864	(176, 1)
695000.0	31500.0	4.60701	(300, 1)	695500.0	37500.0	8.65343	(66, 1)
695340.0	37020.0	14.84680	(41, 1)	695500.0	33760.0	9.18639	(46, 1)
695560.0	33200.0	8.05420	(248, 1)	695500.0	32760.0	11.60905	(248, 1)
695480.0	32240.0	10.36492	(248, 1)	695500.0	31500.0	5.24727	(248, 1)
696000.0	39500.0	4.07759	(67, 1)	696000.0	38500.0	5.54838	(232, 1)
696000.0	37500.0	9.25570	(257, 1)	695820.0	37000.0	11.75045	(38, 1)
696000.0	32250.0	5.37960	(248, 1)	696000.0	31500.0	8.14358	(248, 1)
696500.0	37500.0	7.00748	(38, 1)	696500.0	37000.0	10.48105	(216, 1)
696500.0	32260.0	4.42566	(46, 1)	696500.0	31500.0	2.86405	(248, 1)
697000.0	39500.0	3.30339	(66, 1)	697000.0	38500.0	4.84764	(257, 1)

TABLE C-9 (CONTINUED)

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
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 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 0 0 0 0 0 0 0 0   0 0 0 0 0 1 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 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 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 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   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 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 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 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 0 1 0 0 0 0   0 0 0 0 0 0 0 0 0 0   0 0 1 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 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 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0   0 0 0 1 0 0
```

*** NUMBER OF SOURCE NUMBERS REQUIRED TO DEFINE SOURCE GROUPS ***
(NSOGRP)

1, 1, 1, 1, 1, 2, 2, 2, 2, 1, 2,

*** SOURCE NUMBERS DEFINING SOURCE GROUPS ***
(IDSOR)

1, 2, 3, 4, 5, 6, -8, 9, -19, 20, -24, 25, -31, 32,
1, -32,

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00	.10000E 00
B	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00	.15000E 00
C	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00	.20000E 00
D	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00	.25000E 00
E	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00
F	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00	.30000E 00

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.0	.0	.0	.0	.0	.0
B	.0	.0	.0	.0	.0	.0

TABLE C-10. ISC-CALMPRO MODEL OUTPUT - HIGHEST 5 DAYS NEXT TO 10 MAX

HIGH
24-HR
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,PER.)	- X -	- Y -	CON.	(DAY,PER.)
691000.0	39000.0	3.90028	(67, 1)	691000.0	38500.0	4.99301	(342, 1)
691000.0	37500.0	4.94428	(117, 1)	691500.0	39000.0	5.03723	(317, 1)
691500.0	39000.0	6.13903	(342, 1)	692000.0	39500.0	3.66045	(165, 1)
692000.0	39000.0	4.00641	(165, 1)	692000.0	38000.0	5.39876	(67, 1)
692000.0	37500.0	7.51166	(342, 1)	692000.0	36500.0	7.44452	(266, 1)
692000.0	35500.0	6.97804	(112, 1)	692000.0	34500.0	6.98966	(98, 1)
692000.0	33500.0	5.05522	(22, 1)	692500.0	39000.0	4.97265	(165, 1)
692500.0	38000.0	6.15236	(317, 1)	693000.0	39500.0	3.80254	(293, 1)
693000.0	39000.0	4.12435	(237, 1)	693000.0	38000.0	7.01366	(165, 1)
693000.0	37500.0	7.63795	(317, 1)	693000.0	36500.0	14.01438	(138, 1)
693020.0	36120.0	17.30527	(311, 1)	693020.0	35720.0	11.34248	(112, 1)
693020.0	35320.0	21.08125	(364, 1)	693100.0	34960.0	15.41970	(22, 1)
693050.0	34500.0	11.24359	(22, 1)	693000.0	33500.0	6.85768	(363, 1)
693500.0	39000.0	4.46710	(283, 1)	693500.0	38000.0	6.49951	(293, 1)
693500.0	37500.0	10.05390	(165, 1)	693360.0	36940.0	11.93750	(317, 1)
693355.0	36500.0	19.76669	(318, 1)	693350.0	36120.0	23.64088	(311, 1)
694000.0	39500.0	3.96636	(293, 1)	694000.0	39000.0	4.47501	(293, 1)
694000.0	38500.0	5.39955	(293, 1)	693840.0	36960.0	15.03049	(165, 1)
694000.0	34860.0	18.57494	(9, 1)	693700.0	34500.0	11.82588	(363, 1)
694000.0	33500.0	7.30348	(118, 1)	694000.0	32500.0	3.97357	(111, 1)
694000.0	31500.0	2.68018	(111, 1)	694500.0	38500.0	5.18974	(186, 1)
694500.0	38000.0	7.39846	(227, 1)	694500.0	37500.0	10.97342	(227, 1)
694340.0	36980.0	13.27757	(227, 1)	694420.0	35160.0	101.20410	(248, 1)
695000.0	39500.0	4.29612	(334, 1)	695000.0	38500.0	4.73863	(334, 1)
695000.0	37500.0	10.10880	(67, 1)	694840.0	37000.0	13.76239	(232, 1)
694860.0	35020.0	29.34734	(248, 1)	694840.0	34380.0	26.34236	(248, 1)
694840.0	33740.0	16.42267	(248, 1)	695000.0	33000.0	8.31408	(248, 1)
695000.0	32500.0	4.67486	(176, 1)	695000.0	32000.0	4.97864	(176, 1)
695000.0	31500.0	4.60701	(300, 1)	695500.0	37500.0	8.65343	(66, 1)
695340.0	37020.0	14.84680	(41, 1)	695500.0	33760.0	9.18639	(46, 1)
695560.0	33200.0	8.05420	(248, 1)	695500.0	32760.0	11.60905	(248, 1)
695490.0	32240.0	10.36492	(248, 1)	695500.0	31500.0	5.24727	(248, 1)
696000.0	39500.0	4.07759	(67, 1)	696000.0	38500.0	5.54838	(232, 1)
696000.0	37500.0	9.25570	(257, 1)	695820.0	37000.0	11.75045	(38, 1)
696000.0	32250.0	5.37960	(248, 1)	696000.0	31500.0	8.14358	(248, 1)
696500.0	37500.0	7.00748	(38, 1)	696500.0	37000.0	10.48105	(216, 1)
696500.0	32260.0	4.42566	(46, 1)	696500.0	31500.0	2.86405	(248, 1)
697000.0	39500.0	3.30339	(66, 1)	697000.0	38500.0	4.84764	(257, 1)

TABLE C-11. ISC-CALMPRO MODEL OUTPUT - HIGHEST 10 DAYS OF SECOND HIGHEST NEXT TO 10 MAX

2ND HIGH
24-HR
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,PER.)	- X -	- Y -	CON.	(DAY,PER.)
691000.0	39000.0	3.22999	(318, 1)	691000.0	38500.0	3.74369	(318, 1)
691000.0	37500.0	3.82533	(263, 1)	691500.0	39000.0	3.72597	(258, 1)
691500.0	38000.0	4.72936	(318, 1)	692000.0	39500.0	2.67003	(164, 1)
692000.0	39000.0	3.43606	(317, 1)	692000.0	38000.0	4.56977	(318, 1)
692000.0	37500.0	5.95964	(318, 1)	692000.0	36500.0	6.51426	(311, 1)
692000.0	35500.0	4.68619	(86, 1)	692000.0	34500.0	6.95883	(364, 1)
692000.0	33500.0	3.84382	(221, 1)	692500.0	39000.0	3.57093	(164, 1)
692500.0	38000.0	4.57743	(78, 1)	693000.0	39500.0	2.90361	(237, 1)
693000.0	39000.0	3.57692	(165, 1)	693000.0	38000.0	5.21412	(164, 1)
693000.0	37500.0	6.94859	(165, 1)	693000.0	36500.0	11.41079	(116, 1)
693020.0	36120.0	15.02805	(158, 1)	693020.0	35720.0	10.75543	(227, 1)
693020.0	35320.0	11.06507	(115, 1)	693100.0	34960.0	14.33829	(364, 1)
693050.0	34500.0	8.04107	(122, 1)	693000.0	33500.0	5.45011	(279, 1)
693500.0	39000.0	4.15566	(334, 1)	693500.0	38000.0	5.52944	(346, 1)
693500.0	37500.0	7.33846	(237, 1)	693360.0	36940.0	10.86824	(78, 1)
693355.0	36500.0	17.81532	(67, 1)	693350.0	36120.0	18.34418	(158, 1)
694000.0	39500.0	2.95979	(204, 1)	694000.0	39000.0	3.76335	(204, 1)
694000.0	38500.0	4.93638	(204, 1)	693840.0	36960.0	15.00499	(293, 1)
694000.0	34860.0	17.93166	(363, 1)	693700.0	34500.0	9.19708	(279, 1)
694000.0	33500.0	7.14513	(111, 1)	694000.0	32500.0	3.90310	(118, 1)
694000.0	31500.0	2.40118	(300, 1)	694500.0	38500.0	4.85292	(227, 1)
694500.0	38000.0	6.32671	(186, 1)	694500.0	37500.0	8.21622	(186, 1)
694340.0	36980.0	12.59860	(186, 1)	694420.0	35160.0	43.12349	(46, 1)
695000.0	39500.0	3.91545	(227, 1)	695000.0	38500.0	3.72150	(186, 1)
695000.0	37500.0	9.03543	(132, 1)	694840.0	37000.0	13.49288	(67, 1)
694360.0	35020.0	26.30901	(176, 1)	694840.0	34380.0	11.12902	(46, 1)
694840.0	33740.0	7.18872	(22, 1)	695000.0	33000.0	4.20843	(275, 1)
695000.0	32500.0	4.11996	(300, 1)	695000.0	32000.0	4.76382	(300, 1)
695000.0	31500.0	3.97413	(176, 1)	695500.0	37500.0	7.26817	(232, 1)
695340.0	37020.0	14.69221	(66, 1)	695500.0	33760.0	7.96017	(214, 1)
695560.0	33200.0	5.42607	(46, 1)	695500.0	32760.0	4.14824	(129, 1)
695490.0	32240.0	4.44949	(129, 1)	695500.0	31500.0	2.71870	(275, 1)
696000.0	39500.0	3.68323	(132, 1)	696000.0	38500.0	4.57584	(299, 1)
696000.0	37500.0	8.66961	(41, 1)	695820.0	37000.0	11.34083	(257, 1)
696000.0	32250.0	3.18189	(46, 1)	696000.0	31500.0	3.03919	(129, 1)
696500.0	37500.0	6.67290	(257, 1)	696500.0	37000.0	9.95802	(68, 1)
696500.0	32260.0	3.63578	(214, 1)	696500.0	31500.0	2.59613	(46, 1)
697000.0	39500.0	2.59723	(299, 1)	697000.0	38500.0	4.43546	(41, 1)

TABLE C-11 (CONTINUED)

2ND HIGH
24-H
SGROUP# 11

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1, -32,
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,PER.)	- X -	- Y -	CON.	(DAY,PER.)
697000.0	37500.0	6.71899	(61, 1)	696960.0	37000.0	7.03872	(68, 1)
696960.0	36250.0	9.01320	(5, 1)	696960.0	35820.0	17.11934	(276, 1)
697080.0	33020.0	4.88937	(288, 1)	697080.0	32640.0	4.39237	(176, 1)
697080.0	32250.0	4.82966	(176, 1)	697000.0	31500.0	2.52119	(214, 1)
697500.0	37500.0	6.30906	(276, 1)	697500.0	37000.0	7.33333	(344, 1)
697500.0	36500.0	6.11182	(40, 1)	697360.0	35860.0	11.84233	(14, 1)
697400.0	35300.0	13.71947	(344, 1)	697420.0	34780.0	11.85223	(259, 1)
697460.0	34240.0	6.88643	(354, 1)	697440.0	33020.0	3.83173	(46, 1)
697500.0	32500.0	3.62516	(288, 1)	697500.0	32000.0	3.15498	(196, 1)
698000.0	39500.0	2.99172	(323, 1)	698000.0	38500.0	3.35603	(5, 1)
698000.0	37500.0	4.76358	(14, 1)	698000.0	37000.0	6.42203	(14, 1)
698000.0	36500.0	5.30424	(337, 1)	698000.0	36000.0	6.98080	(14, 1)
698000.0	35500.0	7.08294	(344, 1)	698000.0	35000.0	7.15057	(270, 1)
698000.0	34500.0	6.41549	(59, 1)	697840.0	34220.0	6.06099	(59, 1)
697380.0	33600.0	4.39309	(171, 1)	697920.0	33020.0	3.81821	(272, 1)
698000.0	32500.0	2.75640	(196, 1)	698000.0	31500.0	2.52694	(228, 1)
698500.0	37000.0	4.49859	(218, 1)	698500.0	36000.0	5.32291	(14, 1)
698500.0	34500.0	4.40052	(59, 1)	698500.0	34000.0	3.93073	(59, 1)
698500.0	33500.0	3.33264	(25, 1)	698500.0	33000.0	2.83205	(244, 1)
699000.0	39500.0	2.29668	(5, 1)	699000.0	38500.0	4.40333	(216, 1)
699000.0	37500.0	4.61756	(14, 1)	699000.0	36500.0	3.90551	(14, 1)
699000.0	35500.0	4.08405	(241, 1)	699000.0	34500.0	3.48528	(270, 1)
699000.0	33500.0	2.89722	(354, 1)	699000.0	32500.0	2.64318	(244, 1)
699000.0	31500.0	2.15112	(288, 1)				

TABLE C-12. ISC-CALMPRO MODEL OUTPUT OF NEXT HIGHEST 5 DAYS TO 10 MAX - 24-HOUR EMISSION RATES

FIVE HIGHEST 24-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR			1	2	3	4	5
1(	0.00,	0.00)	0.020 (311,24)	0.000 (315,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)
2(	0.00,	0.00)	2.690 (318,24)	0.360 (311,24)	0.010 (364,24)	0.000 (9,24)	0.00 (0, 0)
3(	0.00,	0.00)	4.410 (318,24)	3.240 (311,24)	0.070 (364,24)	0.040 (9,24)	0.00 (0, 0)
4(	0.00,	0.00)	1.590 (318,24)	0.330 (311,24)	0.000 (40,24)	0.000 (364,24)	0.00 (0, 0)
5(	0.00,	0.00)	3.800 (318,24)	0.340 (311,24)	0.180 (364,24)	0.130 (9,24)	0.000 (248,24)
6(	0.00,	0.00)	1.490 (318,24)	1.220 (311,24)	0.000 (9,24)	0.000 (40,24)	0.00 (0, 0)
7(	0.00,	0.00)	1.790 (318,24)	0.960 (311,24)	0.100 (40,24)	0.090 (9,24)	0.000 (364,24)
8(	0.00,	0.00)	2.830 (318,24)	0.300 (364,24)	0.290 (311,24)	0.170 (9,24)	0.010 (248,24)
9(	0.00,	0.00)	5.740 (318,24)	0.660 (311,24)	0.100 (9,24)	0.100 (364,24)	0.000 (248,24)
10(	0.00,	0.00)	10.050 (311,24)	5.800 (318,24)	0.070 (364,24)	0.040 (9,24)	0.010 (248,24)
11(	0.00,	0.00)	6.160 (311,24)	1.990 (318,24)	0.470 (364,24)	0.030 (9,24)	0.000 (248,24)
12(	0.00,	0.00)	5.280 (364,24)	2.590 (311,24)	1.160 (9,24)	0.720 (318,24)	0.000 (248,24)
13(	0.00,	0.00)	3.440 (364,24)	0.910 (9,24)	0.600 (311,24)	0.420 (318,24)	0.000 (248,24)
14(	0.00,	0.00)	1.530 (318,24)	1.350 (311,24)	0.150 (40,24)	0.120 (9,24)	0.00 (0, 0)
15(	0.00,	0.00)	2.800 (318,24)	0.560 (311,24)	0.350 (364,24)	0.190 (9,24)	0.130 (248,24)
16(	0.00,	0.00)	1.100 (318,24)	0.500 (311,24)	0.090 (40,24)	0.060 (9,24)	0.00 (0, 0)
17(	0.00,	0.00)	1.210 (318,24)	0.790 (311,24)	0.130 (9,24)	0.090 (40,24)	0.00 (0, 0)
18(	0.00,	0.00)	2.050 (318,24)	1.980 (311,24)	0.220 (9,24)	0.190 (364,24)	0.000 (248,24)
19(	0.00,	0.00)	3.400 (318,24)	1.660 (311,24)	0.220 (364,24)	0.100 (9,24)	0.060 (248,24)
20(	0.00,	0.00)	13.350 (318,24)	7.590 (311,24)	0.120 (364,24)	0.050 (9,24)	0.000 (248,24)
21(	0.00,	0.00)	20.190 (311,24)	14.560 (318,24)	0.130 (364,24)	0.070 (9,24)	0.010 (248,24)
22(	0.00,	0.00)	13.970 (311,24)	12.720 (318,24)	0.900 (364,24)	0.070 (9,24)	0.010 (248,24)
23(	0.00,	0.00)	10.010 (311,24)	7.630 (364,24)	2.210 (318,24)	0.640 (9,24)	0.000 (248,24)
24(	0.00,	0.00)	11.430 (364,24)	4.940 (311,24)	4.050 (318,24)	2.920 (9,24)	0.000 (248,24)
25(	0.00,	0.00)	8.800 (364,24)	3.710 (9,24)	2.100 (311,24)	1.550 (318,24)	0.010 (248,24)
26(	0.00,	0.00)	5.630 (364,24)	3.360 (9,24)	0.660 (318,24)	0.400 (311,24)	0.000 (248,24)
27(	0.00,	0.00)	1.330 (318,24)	0.520 (311,24)	0.180 (9,24)	0.080 (40,24)	0.00 (0, 0)
28(	0.00,	0.00)	2.100 (318,24)	1.110 (311,24)	0.200 (364,24)	0.120 (9,24)	0.000 (40,24)
29(	0.00,	0.00)	3.030 (318,24)	1.640 (311,24)	0.310 (364,24)	0.090 (9,24)	0.000 (248,24)
30(	0.00,	0.00)	5.720 (318,24)	2.670 (311,24)	0.260 (364,24)	0.170 (9,24)	0.000 (248,24)
31(	0.00,	0.00)	12.090 (318,24)	4.020 (311,24)	0.290 (364,24)	0.160 (9,24)	0.010 (248,24)
32(	0.00,	0.00) *	26.210 (311,24) *	17.660 (318,24)	0.270 (364,24)	0.170 (9,24)	0.010 (248,24)
33(	0.00,	0.00)	1.260 (311,24)	0.410 (318,24)	0.090 (40,24)	0.040 (9,24)	0.00 (0, 0)
34(	0.00,	0.00)	1.490 (311,24)	0.610 (318,24)	0.190 (40,24)	0.170 (9,24)	0.00 (0, 0)
35(	0.00,	0.00)	1.780 (311,24)	0.930 (318,24)	0.360 (40,24)	0.060 (9,24)	0.00 (0, 0)
36(	0.00,	0.00)	5.010 (318,24)	2.280 (311,24)	0.180 (9,24)	0.130 (364,24)	0.020 (248,24)
37(	0.00,	0.00)	18.330 (364,24)	9.400 (9,24)	4.650 (311,24)	0.890 (318,24)	0.010 (248,24)
38(	0.00,	0.00)	10.020 (364,24)	7.590 (9,24)	2.260 (311,24)	0.820 (318,24)	0.010 (248,24)
39(	0.00,	0.00)	4.330 (364,24)	3.410 (9,24)	0.470 (318,24)	0.150 (248,24)	0.130 (311,24)
40(	0.00,	0.00)	1.900 (364,24)	1.790 (9,24)	1.060 (248,24)	0.000 (318,24)	0.000 (311,24)
41(	0.00,	0.00)	1.320 (364,24)	1.230 (9,24)	0.030 (248,24)	0.000 (311,24)	0.000 (318,24)
42(	0.00,	0.00)	1.130 (311,24)	0.430 (318,24)	0.240 (40,24)	0.150 (9,24)	0.00 (0, 0)
43(	0.00,	0.00)	1.350 (311,24)	0.610 (318,24)	0.330 (40,24)	0.010 (9,24)	0.00 (0, 0)
44(	0.00,	0.00)	1.700 (311,24)	0.890 (318,24)	0.840 (40,24)	0.040 (9,24)	0.00 (0, 0)
45(	0.00,	0.00)	2.360 (318,24)	2.100 (311,24)	1.100 (40,24)	0.120 (9,24)	0.000 (248,24)
46(	0.00,	0.00)	19.230 (364,24)	13.060 (9,24)	10.640 (311,24)	6.200 (248,24)	3.030 (318,24)
47(	0.00,	0.00)	0.360 (40,24)	0.290 (311,24)	0.210 (318,24)	0.050 (9,24)	0.00 (0, 0)
48(	0.00,	0.00)	1.650 (40,24)	0.400 (311,24)	0.350 (318,24)	0.080 (9,24)	0.00 (0, 0)
49(	0.00,	0.00)	2.430 (40,24)	0.920 (311,24)	0.680 (318,24)	0.580 (9,24)	0.00 (0, 0)
50(	0.00,	0.00)	3.360 (40,24)	1.410 (9,24)	1.380 (311,24)	1.110 (318,24)	0.000 (364,24)
51(	0.00,	0.00)	21.280 (364,24)	10.510 (9,24)	9.990 (311,24)	7.270 (248,24)	6.590 (318,24)
52(	0.00,	0.00)	8.740 (364,24)	5.490 (9,24)	2.100 (248,24)	1.840 (311,24)	0.910 (318,24)
53(	0.00,	0.00)	4.250 (364,24)	3.180 (9,24)	2.390 (248,24)	0.710 (318,24)	0.010 (311,24)
54(	0.00,	0.00)	2.500 (248,24)	2.060 (9,24)	1.590 (364,24)	0.000 (311,24)	0.000 (318,24)
55(	0.00,	0.00)	2.150 (248,24)	1.190 (9,24)	0.680 (364,24)	0.000 (311,24)	0.00 (0, 0)
56(	0.00,	0.00)	0.840 (9,24)	0.790 (248,24)	0.320 (364,24)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-12 (CONTINUED)

TABLE C-12 (CONTINUED)

119(	0.00,	0.00))	1.610 (40,24)	1.190 (8,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
119(	0.00,	0.00))	0.470 (9,24)	0.220 (40,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
120(	0.00,	0.00)	0.000 (40,24)	0.000 (8,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
121(	0.00,	0.00)	0.000 (40,24)	0.000 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
122(	0.00,	0.00)	0.000 (40,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
123(	0.00,	0.00)	0.000 (364,24)	0.000 (248,24)	0.00 (0,24)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-13. ISC-CALMPRO MODEL OUTPUT OF TOP 5 DAYS OF HIGHEST, SECOND HIGHEST DAYS - 24-HOUR EMISSION RATES

FIVE HIGHEST 24-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR	1	2	3	4	5
1(0.00, 0.00)	0.92C (158,24)	0.83C (363,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
2(0.00, 0.00)	1.89C (67,24)	0.94C (158,24)	0.00C (363,24)	0.00 (0, 0)	0.00 (0, 0)
3(0.00, 0.00)	2.84C (158,24)	0.42C (67,24)	0.05C (363,24)	0.00C (46,24)	0.00C (176,24)
4(0.00, 0.00)	3.36C (158,24)	0.44C (67,24)	0.00C (363,24)	0.00C (176,24)	0.00 (0, 0)
5(0.00, 0.00)	1.57C (67,24)	0.70C (158,24)	0.07C (363,24)	0.01C (46,24)	0.00C (176,24)
6(0.00, 0.00)	1.79C (158,24)	1.44C (67,24)	0.00C (176,24)	0.00C (363,24)	0.00C (46,24)
7(0.00, 0.00)	2.01C (158,24)	1.84C (67,24)	0.10C (46,24)	0.03C (363,24)	0.02C (176,24)
8(0.00, 0.00)	4.23C (67,24)	2.53C (158,24)	0.14C (363,24)	0.09C (46,24)	0.04C (176,24)
9(0.00, 0.00)	1.27C (158,24)	1.27C (67,24)	0.09C (46,24)	0.04C (363,24)	0.00C (176,24)
10(0.00, 0.00)	5.46C (158,24)	0.03C (363,24)	0.02C (67,24)	0.01C (46,24)	0.00C (176,24)
11(0.00, 0.00)	8.41C (158,24)	0.12C (363,24)	0.01C (67,24)	0.01C (46,24)	0.00C (176,24)
12(0.00, 0.00)	2.16C (363,24)	0.10C (158,24)	0.01C (67,24)	0.00C (46,24)	0.00C (176,24)
13(0.00, 0.00)	1.85C (363,24)	0.00C (67,24)	0.00C (46,24)	0.00C (158,24)	0.00C (176,24)
14(0.00, 0.00)	3.04C (158,24)	1.58C (67,24)	0.14C (46,24)	0.11C (363,24)	0.02C (176,24)
15(0.00, 0.00)	3.81C (158,24)	3.35C (67,24)	0.29C (46,24)	0.23C (363,24)	0.01C (176,24)
16(0.00, 0.00)	2.25C (158,24)	1.44C (67,24)	0.06C (46,24)	0.05C (363,24)	0.01C (176,24)
17(0.00, 0.00)	3.17C (158,24)	1.75C (67,24)	0.09C (46,24)	0.02C (363,24)	0.01C (176,24)
18(0.00, 0.00)	4.34C (158,24)	2.24C (67,24)	0.28C (46,24)	0.17C (363,24)	0.05C (176,24)
19(0.00, 0.00)	4.61C (158,24)	3.35C (67,24)	0.08C (46,24)	0.08C (363,24)	0.02C (176,24)
20(0.00, 0.00)	4.12C (158,24)	1.89C (67,24)	0.06C (46,24)	0.06C (363,24)	0.00C (176,24)
21(0.00, 0.00)	12.38C (158,24)	0.55C (67,24)	0.06C (363,24)	0.04C (46,24)	0.00C (176,24)
22(0.00, 0.00)	14.06C (158,24)	0.24C (363,24)	0.04C (46,24)	0.02C (67,24)	0.00C (176,24)
23(0.00, 0.00)	4.49C (158,24)	2.26C (363,24)	0.02C (46,24)	0.02C (67,24)	0.00C (176,24)
24(0.00, 0.00)	3.04C (363,24)	0.88C (158,24)	0.04C (67,24)	0.02C (46,24)	0.00C (176,24)
25(0.00, 0.00)	3.32C (363,24)	0.44C (67,24)	0.09C (158,24)	0.02C (46,24)	0.00C (176,24)
26(0.00, 0.00)	3.81C (363,24)	1.28C (67,24)	0.03C (46,24)	0.00C (176,24)	0.00C (158,24)
27(0.00, 0.00)	4.79C (158,24)	1.37C (67,24)	0.06C (46,24)	0.02C (363,24)	0.01C (176,24)
28(0.00, 0.00)	4.84C (156,24)	2.71C (67,24)	0.06C (363,24)	0.05C (46,24)	0.04C (176,24)
29(0.00, 0.00)	5.55C (158,24)	3.22C (67,24)	0.20C (363,24)	0.13C (46,24)	0.02C (176,24)
30(0.00, 0.00)	8.44C (158,24)	5.13C (67,24)	0.10C (363,24)	0.07C (46,24)	0.01C (176,24)
31(0.00, 0.00)	7.89C (158,24)	6.70C (67,24)	0.10C (363,24)	0.06C (46,24)	0.01C (176,24)
32(0.00, 0.00)	16.27C (158,24)	0.10C (363,24)	0.08C (67,24)	0.04C (46,24)	0.01C (176,24)
33(0.00, 0.00)	4.27C (158,24)	0.55C (67,24)	0.05C (46,24)	0.05C (363,24)	0.01C (176,24)
34(0.00, 0.00)	4.91C (158,24)	0.77C (67,24)	0.11C (363,24)	0.05C (46,24)	0.01C (176,24)
35(0.00, 0.00)	4.87C (158,24)	1.02C (67,24)	0.16C (46,24)	0.15C (363,24)	0.04C (176,24)
36(0.00, 0.00)	7.19C (158,24)	4.96C (67,24)	0.07C (46,24)	0.06C (176,24)	0.04C (363,24)
37(0.00, 0.00)	9.59C (363,24)	3.13C (67,24)	1.08C (158,24)	0.48C (46,24)	0.34C (176,24)
38(0.00, 0.00)	6.39C (363,24)	2.22C (67,24)	0.08C (158,24)	0.03C (176,24)	0.03C (46,24)
39(0.00, 0.00)	2.49C (363,24)	1.14C (67,24)	0.25C (46,24)	0.00C (176,24)	0.00C (158,24)
40(0.00, 0.00)	1.29C (363,24)	0.90C (67,24)	0.21C (46,24)	0.00C (176,24)	0.00 (0, 0)
41(0.00, 0.00)	0.94C (363,24)	0.79C (67,24)	0.35C (46,24)	0.00C (176,24)	0.00 (0, 0)
42(0.00, 0.00)	3.78C (158,24)	0.56C (67,24)	0.36C (363,24)	0.07C (46,24)	0.04C (176,24)
43(0.00, 0.00)	4.45C (158,24)	0.88C (363,24)	0.68C (67,24)	0.13C (46,24)	0.10C (176,24)
44(0.00, 0.00)	5.95C (158,24)	3.69C (363,24)	1.07C (67,24)	0.17C (176,24)	0.16C (46,24)
45(0.00, 0.00)	7.36C (158,24)	2.72C (67,24)	1.74C (363,24)	0.52C (176,24)	0.27C (46,24)
46(0.00, 0.00) *	28.86C (46,24) *	9.16C (363,24)	2.89C (158,24)	2.38C (67,24)	2.14C (176,24)
47(0.00, 0.00)	2.50C (363,24)	2.14C (158,24)	0.25C (67,24)	0.04C (46,24)	0.01C (176,24)
48(0.00, 0.00)	2.34C (158,24)	1.51C (363,24)	0.42C (67,24)	0.07C (176,24)	0.02C (46,24)
49(0.00, 0.00)	4.53C (158,24)	1.40C (363,24)	0.62C (67,24)	0.49C (176,24)	0.09C (46,24)
50(0.00, 0.00)	5.89C (158,24)	2.80C (363,24)	1.35C (67,24)	1.05C (176,24)	0.08C (46,24)
51(0.00, 0.00)	17.11C (46,24)	7.50C (363,24)	6.07C (176,24)	2.87C (158,24)	1.74C (67,24)
52(0.00, 0.00)	12.85C (46,24)	4.76C (363,24)	1.06C (67,24)	0.16C (176,24)	0.00C (158,24)
53(0.00, 0.00)	6.48C (46,24)	1.99C (363,24)	1.00C (176,24)	0.88C (67,24)	0.00C (158,24)
54(0.00, 0.00)	3.65C (46,24)	1.50C (363,24)	0.90C (67,24)	0.48C (176,24)	0.00 (0, 0)
55(0.00, 0.00)	2.08C (46,24)	1.03C (363,24)	0.77C (67,24)	0.05C (176,24)	0.00 (0, 0)
56(0.00, 0.00)	1.55C (46,24)	0.57C (67,24)	0.41C (363,24)	0.01C (176,24)	0.00 (0, 0)

TABLE C-13 (CONTINUED)

TABLE C-13 (CONTINUED)

118(	0.00,	0.00)	1.040 (46,24)	0.[illegible] (363,24)	0.280 (176,24)	0.070 (158,24)	0.00 (0, 0)
119(	0.00,	0.00)	1.740 (176,24)	0.460 (363,24)	0.020 (46,24)	0.000 (158,24)	0.00 (0, 0)
120(	0.00,	0.00)	0.770 (176,24)	0.070 (46,24)	0.000 (363,24)	0.00 (0, 0)	0.00 (0, 0)
121(	0.00,	0.00)	0.510 (46,24)	0.160 (176,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
122(	0.00,	0.00)	0.480 (46,24)	0.140 (176,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
123(	0.00,	0.00)	0.440 (46,24)	0.340 (176,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-14. ISC-CALMPRO MODEL OUTPUT OF TOP 6-10 DAYS OF HIGHEST, SECOND HIGHEST DAYS - 24-HOUR EMISSION RATES

FIVE HIGHEST 24-HOUR PART CONCENTRATIONS((ENDING ON JULIAN DAY, HOUR)
(MICROGRAMS/M**3)

RECEPTOR			1	2	3	4	5
1(	0.00,	0.00)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
2(	0.00,	0.00)	0.010 (364,24)	0.000 (66,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
3(	0.00,	0.00)	0.100 (293,24)	0.070 (364,24)	0.000 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
4(	0.00,	0.00)	0.300 (293,24)	0.050 (66,24)	0.000 (364,24)	0.000 (276,24)	0.00 (0, 0)
5(	0.00,	0.00)	0.130 (364,24)	0.080 (293,24)	0.000 (66,24)	0.00 (0, 0)	0.00 (0, 0)
6(	0.00,	0.00)	0.310 (293,24)	0.100 (66,24)	0.000 (276,24)	0.000 (344,24)	0.00 (0, 0)
7(	0.00,	0.00)	0.840 (293,24)	0.290 (66,24)	0.150 (276,24)	0.000 (344,24)	0.000 (364,24)
8(	0.00,	0.00)	0.300 (364,24)	0.100 (293,24)	0.000 (66,24)	0.000 (276,24)	0.00 (0, 0)
9(	0.00,	0.00)	0.250 (293,24)	0.100 (364,24)	0.000 (66,24)	0.000 (276,24)	0.00 (0, 0)
10(	0.00,	0.00)	0.250 (293,24)	0.070 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
11(	0.00,	0.00)	0.470 (364,24)	0.000 (293,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
12(	0.00,	0.00)	5.250 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
13(	0.00,	0.00)	3.440 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
14(	0.00,	0.00)	1.530 (293,24)	0.460 (66,24)	0.180 (276,24)	0.140 (344,24)	0.00 (0, 0)
15(	0.00,	0.00)	2.540 (293,24)	0.350 (364,24)	0.020 (66,24)	0.000 (276,24)	0.000 (344,24)
16(	0.00,	0.00)	7.740 (293,24)	0.400 (66,24)	0.080 (276,24)	0.020 (344,24)	0.00 (0, 0)
17(	0.00,	0.00)	6.950 (293,24)	0.430 (66,24)	0.160 (344,24)	0.140 (276,24)	0.00 (0, 0)
18(	0.00,	0.00)	3.050 (293,24)	0.370 (66,24)	0.180 (364,24)	0.010 (276,24)	0.000 (344,24)
19(	0.00,	0.00)	2.300 (293,24)	0.380 (66,24)	0.220 (364,24)	0.000 (276,24)	0.000 (344,24)
20(	0.00,	0.00)	4.840 (293,24)	0.120 (364,24)	0.040 (66,24)	0.000 (276,24)	0.00 (0, 0)
21(	0.00,	0.00)	1.030 (293,24)	0.130 (364,24)	0.000 (66,24)	0.000 (276,24)	0.00 (0, 0)
22(	0.00,	0.00)	0.990 (364,24)	0.000 (293,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)
23(	0.00,	0.00)	7.630 (364,24)	0.000 (293,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)
24(	0.00,	0.00)	11.430 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
25(	0.00,	0.00)	8.880 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
26(	0.00,	0.00)	5.690 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
27(	0.00,	0.00)	8.650 (293,24)	1.030 (66,24)	0.160 (344,24)	0.130 (276,24)	0.00 (0, 0)
28(	0.00,	0.00)	9.200 (293,24)	0.880 (66,24)	0.200 (364,24)	0.010 (276,24)	0.000 (344,24)
29(	0.00,	0.00)	8.680 (293,24)	1.020 (66,24)	0.310 (364,24)	0.000 (276,24)	0.000 (344,24)
30(	0.00,	0.00)	1.700 (293,24)	0.560 (66,24)	0.260 (364,24)	0.000 (276,24)	0.00 (0, 0)
31(	0.00,	0.00)	3.940 (293,24)	0.530 (66,24)	0.290 (364,24)	0.000 (276,24)	0.00 (0, 0)
32(	0.00,	0.00)	13.430 (293,24)	0.270 (364,24)	0.230 (66,24)	0.000 (276,24)	0.00 (0, 0)
33(	0.00,	0.00)	4.870 (293,24)	2.070 (66,24)	0.100 (276,24)	0.080 (344,24)	0.00 (0, 0)
34(	0.00,	0.00)	5.570 (293,24)	2.300 (66,24)	0.150 (276,24)	0.150 (344,24)	0.00 (0, 0)
35(	0.00,	0.00)	6.620 (293,24)	2.430 (66,24)	0.510 (344,24)	0.230 (276,24)	0.00 (0, 0)
36(	0.00,	0.00)	15.250 (293,24)	1.960 (66,24)	0.130 (364,24)	0.000 (276,24)	0.000 (344,24)
37(	0.00,	0.00)	18.380 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
38(	0.00,	0.00)	10.020 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
39(	0.00,	0.00)	4.330 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
40(	0.00,	0.00)	1.900 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
41(	0.00,	0.00)	1.320 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
42(	0.00,	0.00)	7.940 (293,24)	3.000 (66,24)	0.180 (276,24)	0.130 (344,24)	0.00 (0, 0)
43(	0.00,	0.00)	10.830 (293,24)	5.100 (66,24)	0.270 (276,24)	0.200 (344,24)	0.00 (0, 0)
44(	0.00,	0.00)	11.760 (293,24)	9.540 (66,24)	0.280 (344,24)	0.270 (276,24)	0.00 (0, 0)
45(	0.00,	0.00)	16.110 (293,24)	7.720 (66,24)	0.420 (276,24)	0.300 (344,24)	0.000 (364,24)
46(	0.00,	0.00)	19.230 (364,24)	1.570 (276,24)	0.000 (293,24)	0.000 (344,24)	0.00 (0, 0)
47(	0.00,	0.00)	5.520 (66,24)	3.830 (293,24)	0.090 (344,24)	0.090 (276,24)	0.00 (0, 0)
48(	0.00,	0.00)	6.220 (66,24)	5.750 (293,24)	0.160 (276,24)	0.130 (344,24)	0.00 (0, 0)
49(	0.00,	0.00)	11.950 (66,24)	8.740 (293,24)	0.860 (276,24)	0.090 (344,24)	0.00 (0, 0)
50(	0.00,	0.00)	14.560 (66,24)	11.040 (293,24)	2.750 (276,24)	0.110 (344,24)	0.000 (364,24)
51(	0.00,	0.00) *	~~21.280~~ (364,24)	0.970 (276,24)	0.000 (293,24)	0.000 (344,24)	0.00 (0, 0)
52(	0.00,	0.00)	~~8.740~~ (364,24)	0.010 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
53(	0.00,	0.00)	4.250 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
54(	0.00,	0.00)	1.590 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
55(	0.00,	0.00)	0.880 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
56(	0.00,	0.00)	0.320 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-14 (CONTINUED)

57(	0.00,	0.00)	0.280 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
58(	0.00,	0.00)	7.910 (293,24)	6.730 (66,24)	5.570 (276,24)	0.030 (344,24)	0.00 (0, 0)
59(	0.00,	0.00)	12.100 (66,24)	10.700 (293,24)	9.420 (276,24)	0.250 (344,24)	0.00 (0, 0)
60(	0.00,	0.00)	2.670 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
61(	0.00,	0.00)	0.690 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
62(	0.00,	0.00)	0.450 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
63(	0.00,	0.00)	0.350 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
64(	0.00,	0.00)	0.310 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
65(	0.00,	0.00)	4.190 (66,24)	2.690 (293,24)	0.390 (276,24)	0.080 (344,24)	0.00 (0, 0)
66(	0.00,	0.00)	5.080 (66,24)	4.230 (293,24)	1.860 (276,24)	0.080 (344,24)	0.00 (0, 0)
67(	0.00,	0.00)	6.740 (276,24)	6.420 (66,24)	4.050 (293,24)	0.280 (344,24)	0.00 (0, 0)
68(	0.00,	0.00)	11.230 (276,24)	6.510 (66,24)	6.130 (293,24)	1.930 (344,24)	0.00 (0, 0)
69(	0.00,	0.00)	0.350 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
70(	0.00,	0.00)	0.250 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
71(	0.00,	0.00)	7.840 (276,24)	5.120 (66,24)	2.620 (293,24)	1.210 (344,24)	0.00 (0, 0)
72(	0.00,	0.00)	9.890 (276,24)	8.130 (344,24)	4.920 (66,24)	3.280 (293,24)	0.00 (0, 0)
73(	0.00,	0.00)	0.090 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
74(	0.00,	0.00)	0.060 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
75(	0.00,	0.00)	3.200 (66,24)	2.570 (276,24)	2.010 (293,24)	0.060 (344,24)	0.00 (0, 0)
76(	0.00,	0.00)	5.190 (276,24)	4.270 (66,24)	1.170 (293,24)	0.100 (344,24)	0.00 (0, 0)
77(	0.00,	0.00)	7.420 (276,24)	3.770 (344,24)	3.700 (66,24)	1.360 (293,24)	0.00 (0, 0)
78(	0.00,	0.00)	10.310 (276,24)	9.590 (344,24)	5.110 (66,24)	1.760 (293,24)	0.00 (0, 0)
79(	0.00,	0.00)	10.030 (276,24)	8.100 (344,24)	6.200 (66,24)	2.010 (293,24)	0.00 (0, 0)
80(	0.00,	0.00)	17.320 (344,24)	* 13.680 (276,24)	6.440 (66,24)	2.100 (293,24)	0.00 (0, 0)
81(	0.00,	0.00)	0.010 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
82(	0.00,	0.00)	0.000 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
83(	0.00,	0.00)	0.000 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
84(	0.00,	0.00)	0.000 (364,24)	0.000 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
85(	0.00,	0.00)	8.030 (276,24)	6.310 (344,24)	2.370 (66,24)	0.940 (293,24)	0.00 (0, 0)
86(	0.00,	0.00)	8.460 (344,24)	7.500 (276,24)	2.400 (66,24)	0.980 (293,24)	0.00 (0, 0)
87(	0.00,	0.00)	7.450 (276,24)	7.440 (344,24)	1.890 (66,24)	0.560 (293,24)	0.00 (0, 0)
88(	0.00,	0.00)	12.330 (344,24)	9.210 (276,24)	1.990 (66,24)	0.000 (293,24)	0.00 (0, 0)
89(	0.00,	0.00)	10.570 (344,24)	4.960 (276,24)	0.000 (66,24)	0.00 (0, 0)	0.00 (0, 0)
90(	0.00,	0.00)	1.240 (276,24)	0.860 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
91(	0.00,	0.00)	1.250 (276,24)	0.000 (344,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)
92(	0.00,	0.00)	0.030 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
93(	0.00,	0.00)	0.000 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
94(	0.00,	0.00)	0.000 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
95(	0.00,	0.00)	3.440 (276,24)	2.530 (66,24)	0.550 (293,24)	0.050 (344,24)	0.00 (0, 0)
96(	0.00,	0.00)	4.740 (276,24)	1.540 (66,24)	1.010 (344,24)	0.680 (293,24)	0.00 (0, 0)
97(	0.00,	0.00)	7.450 (276,24)	7.150 (344,24)	1.230 (66,24)	0.430 (293,24)	0.00 (0, 0)
98(	0.00,	0.00)	7.490 (344,24)	5.690 (276,24)	1.070 (66,24)	0.070 (293,24)	0.00 (0, 0)
99(	0.00,	0.00)	7.490 (344,24)	5.530 (276,24)	0.960 (66,24)	0.000 (293,24)	0.00 (0, 0)
100(	0.00,	0.00)	8.350 (344,24)	4.220 (276,24)	0.000 (66,24)	0.000 (293,24)	0.00 (0, 0)
101(	0.00,	0.00)	6.220 (344,24)	2.240 (276,24)	0.000 (66,24)	0.00 (0, 0)	0.00 (0, 0)
102(	0.00,	0.00)	0.710 (344,24)	0.460 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
103(	0.00,	0.00)	0.830 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
104(	0.00,	0.00)	1.140 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
105(	0.00,	0.00)	0.330 (276,24)	0.000 (344,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)
106(	0.00,	0.00)	0.060 (276,24)	0.000 (364,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)
107(	0.00,	0.00)	0.010 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
108(	0.00,	0.00)	0.000 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
109(	0.00,	0.00)	6.860 (344,24)	3.990 (276,24)	0.550 (66,24)	0.000 (293,24)	0.00 (0, 0)
110(	0.00,	0.00)	6.100 (344,24)	2.510 (276,24)	0.000 (66,24)	0.000 (293,24)	0.00 (0, 0)
111(	0.00,	0.00)	0.470 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
112(	0.00,	0.00)	0.630 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
113(	0.00,	0.00)	0.440 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
114(	0.00,	0.00)	0.130 (276,24)	0.000 (344,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)
115(	0.00,	0.00)	2.920 (276,24)	1.020 (66,24)	0.390 (344,24)	0.300 (293,24)	0.00 (0, 0)
116(	0.00,	0.00)	5.310 (276,24)	3.570 (344,24)	0.630 (66,24)	0.040 (293,24)	0.00 (0, 0)
117(	0.00,	0.00)	6.360 (344,24)	3.820 (276,24)	0.350 (66,24)	0.000 (293,24)	0.00 (0, 0)

TABLE C-14 (CONTINUED)

118(	0.00,	0.00)	5.310 (344,24)	2.310 (276,24)	0.000 (0,24)	0.000 (293,24)	0.00 (0, 0)
119(	0.00,	0.00)	1.670 (344,24)	0.640 (276,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
120(	0.00,	0.00)	0.240 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
121(	0.00,	0.00)	0.550 (276,24)	0.000 (344,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)
122(	0.00,	0.00)	0.000 (276,24)	0.000 (344,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)
123(	0.00,	0.00)	0.000 (276,24)	0.000 (364,24)	0.00 (0, 0)	0.00 (0, 0)	0.00 (0, 0)

TABLE C-15. ISC MODEL OUTPUT - STATIONARY SOURCES ONLY

HIGH
24-HR
SGROUP# 1

*** *FILE:ISCFINAA-CRANDON TSP WITH ANNUAL EMISSION RATES* ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION MICROGRAMS/CUBIC METER *
* FROM SOURCES: 1, *
* FOR THE DISCRETE RECEPTOR POINTS *

- X -	- Y -	CON.	(DAY,PER.)	- X -	- Y -	CON.	(DAY,PER.)
691000.0	39000.0	0.98477	(67, 1)	691000.0	38500.0	0.95827	(318, 1)
691000.0	37500.0	1.46884	(117, 1)	691500.0	39000.0	1.10562	(258, 1)
691500.0	38000.0	1.22865	(318, 1)	692000.0	39500.0	0.85306	(165, 1)
692000.0	39000.0	1.13713	(165, 1)	692000.0	39000.0	1.42946	(67, 1)
692000.0	37500.0	1.41758	(318, 1)	692000.0	36500.0	0.81907	(199, 1)
692000.0	35500.0	1.55581	(112, 1)	692000.0	34500.0	2.01439	(98, 1)
692000.0	33500.0	0.87613	(122, 1)	692500.0	39000.0	0.86783	(164, 1)
692500.0	38000.0	1.20671	(144, 1)	693000.0	39500.0	0.89696	(293, 1)
693000.0	39000.0	0.86598	(198, 1)	693000.0	38000.0	1.27406	(165, 1)
693000.0	37500.0	1.71512	(165, 1)	693000.0	36500.0	3.66405	(138, 1)
693020.0	36120.0	1.99064	(311, 1)	693020.0	35720.0	1.62445	(227, 1)
693020.0	35320.0	3.60228	(364, 1)	693100.0	34960.0	2.41302	(93, 1)
693050.0	34500.0	2.07360	(122, 1)	693000.0	33500.0	1.46203	(363, 1)
693500.0	39000.0	1.34266	(283, 1)	693500.0	38000.0	1.61047	(293, 1)
693500.0	37500.0	1.39375	(307, 1)	693360.0	36940.0	1.94922	(144, 1)
693355.0	36500.0	3.73205	(318, 1)	693350.0	36120.0	2.10739	(199, 1)
694000.0	39500.0	1.24151	(293, 1)	694000.0	39000.0	1.35155	(293, 1)
694000.0	38500.0	1.36915	(293, 1)	693840.0	36960.0	3.03085	(293, 1)
694000.0	34860.0	4.11941	(236, 1)	693700.0	34500.0	0.84137	(145, 1)
694000.0	33500.0	1.92906	(111, 1)	694000.0	32500.0	0.74710	(300, 1)
694000.0	31500.0	0.45496	(153, 1)	694500.0	38500.0	1.35431	(227, 1)
694500.0	38000.0	2.45142	(227, 1)	694500.0	37500.0	3.86196	(227, 1)
694340.0	36980.0	3.23873	(227, 1)	694420.0	35160.0	18.80455	(248, 1)
695000.0	39500.0	1.07563	(227, 1)	695000.0	38500.0	1.04785	(292, 1)
695000.0	37500.0	2.67916	(67, 1)	694840.0	37000.0	3.32881	(232, 1)
694860.0	35020.0	4.60511	(196, 1)	694840.0	34380.0	4.94439	(248, 1)
694840.0	33740.0	3.73300	(248, 1)	695000.0	33000.0	1.93495	(248, 1)
695000.0	32500.0	1.46746	(176, 1)	695000.0	32000.0	2.01401	(176, 1)
695000.0	31500.0	1.60543	(176, 1)	695500.0	37500.0	1.93746	(66, 1)
695340.0	37020.0	4.15546	(41, 1)	695500.0	33760.0	2.06818	(46, 1)
695560.0	33200.0	1.18865	(231, 1)	695500.0	32760.0	2.62195	(248, 1)
695480.0	32240.0	2.87683	(248, 1)	695500.0	31500.0	1.32098	(248, 1)
696000.0	39500.0	1.05495	(67, 1)	696000.0	38500.0	1.21061	(232, 1)
696000.0	37500.0	2.14895	(257, 1)	695820.0	37080.0	2.55046	(32, 1)
696000.0	32250.0	0.81521	(231, 1)	696000.0	31500.0	1.91377	(248, 1)
696500.0	37500.0	1.87321	(32, 1)	696500.0	37000.0	2.53859	(183, 1)
696500.0	32260.0	1.12757	(46, 1)	696500.0	31500.0	0.69739	(231, 1)
697000.0	39500.0	0.86971	(41, 1)	697000.0	39500.0	1.38718	(323, 1)

APPENDIX D

SO_2, NO_x, CO AND HC

ANNUAL TOTAL EMISSION RATE ESTIMATES

TABLE D - 1 Schedule Associated With Project Activities During the Construction and Operation Phases and the Estimated SO_2 Air Emissions from the Proposed Sources (st/yr).

Project Activities	CONSTRUCTION				OPERATION																	
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Site Preparation (trees & brush)																						
1. Mine Shafts																						
2. Mine/Mill Site																						
3. MWF Area																						
4. Access Road/Powerline	0.1																					
5. Railroad Spur		0.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6. Haul Road		0.1	*	*																		
7. Water Discharge Pipeline																						
8. In-Plant Roads					0.14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9. Concrete Batch Plant																						
Construct Mine Support Facilities																						
1. Sink Main Shaft	0.39	0.15																				
2. Sink and Equip Air Intake Shaft	0.05	0.04																				
3. Construct East Exhaust Shaft			0.04																			
4. Construct West Exhaust Shaft				0.04																		
5. Power Generation	45.4	2.2	*	*																		
Underground Mine Development																						
1. Develop Drifts and Stopes	0.007	0.07	1.4	3.1																		
2. Mine Air Heating		0.02	*	*																		
3. Mine Vehicles		14.4	*	*																		

TABLE D - 1 (continued)

Project Activities	CONSTRUCTION				OPERATION																	
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Construct Major Surface Facilities																						
1. Construct Reclaim Pond R1																						
2. Construct Reclaim Pond R2																						
3. Mobile Sources	0.5	*	*	*																		
4. Construct Temporary Ore Storage Pad																						
Construct MWDF Facilities (Operations)																						
1. Waste Rock Handling																						
a. Loading and Dumping																						
b. Hauling																						
2. Construct Tailing Pipeline																						
3. Construct Tailing Pond T1																						
4. Construct Tailing Pond T2																						
5. Reclaim Tailing Pond T1																						
6. Construct Tailing Pond T3																						
7. Reclaim Tailing Pond T2																						
8. Construct Tailing Pond T4																						
9. Reclaim Tailing Pond T3																						
10. Mobile Sources	0.05	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11. Install Liner																						
a. Hauling of Bentonite to MWDF																						

TABLE D - 1 (continued)

Project Activities	CONSTRUCTION 1	2	3	4	OPERATION 1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Mine Operation (Production)																						
1. Full (Total Estimated Underground Emissions)																						
a. Drilling & Blasting (Rock Handling)					2.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
b. Mine Air Heating					0.03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
c. Mobile Equipment					15.4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mill/Concentrator Operations																						
1. Facility Heating					0.05	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2. Emergency Diesel Generators					1.8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Project Activities	CLOSURE 1	2	3	4-7
Reclamation Phase				
1. Mobile Sources	0.05[a]	*	*	*
TOTAL	46.5	17.8	19.0	20.7

*Means previous annual estimate is used for this year.
[a] Total in years 1-7 only.

TABLE D - 2 Schedule Associated With Project Activities During the Construction and Operation Phases and the Estimated NO_x Air Emissions from the Proposed Sources (st/yr).

Project Activities	CONSTRUCTION				OPERATION																	
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Site Preparation (trees & brush)																						
1. Mine Shafts	4.1																					
2. Mine/Mill Site																						
3. MWDF Area																						
4. Access Road/Powerline	0.9	0.3	*	*																		
5. Railroad Spur	1.0	2.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6. Haul Road		0.3	*	*																		
7. Water Discharge Pipeline																						
8. In-Plant Roads					0.7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9. Concrete Batch Plant																						
Construct Mine Support Facilities																						
1. Sink Main Shaft																						
2. Sink and Equip Air Intake Shaft																						
3. Construct East Exhaust Shaft																						
4. Construct West Exhaust Shaft																						
5. Power Generation	120.0	5.8	*	*																		
Underground Mine Development																						
1. Develop Drifts and Stopes	0.06	0.6	11.3	24.9																		
2. Mine Air Heating		4.6	*	*																		
3. Mine Vehicles		50.3	*	*																		

TABLE D - 2 (continued)

Project Activities	CONSTRUCTION				OPERATION																	
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Construct Major Surface Facilities																						
1. Construct Reclaim Pond R1																						
2. Construct Reclaim Pond R2																						
3. Mobile Sources	6.5	*	*	*																		
4. Construct Temporary Ore Storage Pad																						
Construct MWDF Facilities (Operations)																						
1. Waste Rock Handling																						
a. Loading and Dumping																						
b. Hauling																						
2. Construct Tailing Pipeline																						
3. Construct Tailing Pond T1																						
4. Construct Tailing Pond T2																						
5. Reclaim Tailing Pond T1																						
6. Construct Tailing Pond T3																						
7. Reclaim Tailing Pond T2																						
8. Construct Tailing Pond T4																						
9. Reclaim Tailing Pond T3																						
10. Mobile Sources	0.4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11. Install Liner																						
a. Hauling of Bentonite to MWDF																						

TABLE D - 2 (continued)

Project Activities	CONSTRUCTION 1	2	3	4	OPERATION 1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Mine Operation (Production)																						
1. Full (Total Estimated Underground Emissions)																						
a. Drilling & Blasting (Rock Handling)					18.6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
b. Mine Air Heating					6.6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
c. Mobile Equipment					54.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mill/Concentrator Operations																						
1. Facility Heating					10.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2. Emergency Diesel Generators					4.7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	CLOSURE 1	2	3	4-7
Reclamation Phase				
1. Mobile Sources	0.4[a]	*	*	*
TOTAL	133.0	70.8	81.5	95.1

TOTAL	97.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

*Means previous annual estimate is used for this year.
[a] Total in years 1-7 only.

TABLE D - 3 Schedule Associated With Project Activities During the Construction and Operation Phases and the Estimated CO Air Emissions from the Proposed Sources (st/yr).

Project Activities	CONSTRUCTION				OPERATION																	
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Site Preparation (trees & brush)																						
1. Mine Shafts		46.2																				
2. Mine/Mill Site	75.0																					
3. MWDF Area																						
4. Access Road/Powerline		22.1																				
5. Railroad Spur	34.8	0.7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6. Haul Road		2.8	*	*																		
7. Water Discharge Pipeline																						
8. In-Plant Roads					4.6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9. Concrete Batch Plant																						
Construct Mine Support Facilities																						
1. Sink Main Shaft	17.9	7.5																				
2. Sink and Equip Air Intake Shaft	2.4	1.9																				
3. Construct East Exhaust Shaft			2.2																			
4. Construct West Exhaust Shaft				2.2																		
5. Power Generation	73.0	3.5	*	*																		
Underground Mine Development																						
1. Develop Drifts and Stopes	0.3	2.5	47.9	105.6																		
2. Mine Air Heating		0.8	*	*																		
3. Mine Vehicles		0.5	*	*																		

TABLE D - 3 (continued)

Project Activities	CONSTRUCTION 1	2	3	4	OPERATION 1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Mine Operation (Production)																						
1. Full (Total Estimated Underground Emissions)																						
a. Drilling & Blasting (Rock Handling)					79.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
b. Mine Air Heating					1.1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
c. Mobile Equipment					1.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mill/Concentrator Operations																						
1. Facility Heating					1.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2. Emergency Diesel Generators					2.8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Project Activities	CLOSURE 1	2	3	4-7
Reclamation Phase				
1. Mobile Sources	0.9[a]	*	*	*
TOTAL	206.2	91.3	61.2	118.9

*Means previous annual estimate is used for this year.
[a] Total in years 1-7 only.

TABLE D - 3 (continued)

Project Activities	CONSTRUCTION 1	2	3	4	OPERATION 1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Mine Operation (Production)																						
1. Full (Total Estimated Underground Emissions)																						
a. Drilling & Blasting (Rock Handling)					79.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
b. Mine Air Heating					1.1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
c. Mobile Equipment					1.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mill/Concentrator Operations																						
1. Facility Heating					1.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2. Emergency Diesel Generators					2.8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Project Activities	CLOSURE 1	2	3	4-7
Reclamation Phase				
1. Mobile Sources	0.9[a]	*	*	*
TOTAL	206.2	91.3	61.2	118.9

*Means previous annual estimate is used for this year.
[a] Total in years 1-7 only.

TABLE D - 4 Schedule Associated With Project Activities During the Construction and Operation Phases and the Estimated HC Air Emissions from the Proposed Sources (st/yr).

Project Activities	CONSTRUCTION				OPERATION																
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Site Preparation (trees & brush)																						
1. Mine Shafts																						
2. Mine/Mill Site	25.3																					
3. MWDF Area																						
4. Access Road/Powerline	4.2	0.3	*	*																		
5. Railroad Spur	6.1	0.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6. Haul Road		0.3	*	*																		
7. Water Discharge Pipeline																						
8. In-Plant Roads					0.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9. Concrete Batch Plant																						
Construct Mine Support Facilities																						
1. Sink Main Shaft																						
2. Sink and Equip Air Intake Shaft																						
3. Construct East Exhaust Shaft																						
4. Construct West Exhaust Shaft																						
5. Power Generation	12.0	0.6	*	*																		
Underground Mine Development																						
1. Develop Drifts and Stopes																						
2. Mine Air Heating		0.3	*	*																		
3. Mine Vehicles		0.9	*	*																		

TABLE D - 4 (continued)

Project Activities	CONSTRUCTION				OPERATION																
	1	2	3	4	1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Construct Major Surface Facilities																						
1. Construct Reclaim Pond R1																						
2. Construct Reclaim Pond R2																						
3. Mobile Sources	1.0	*	*	*																		
4. Construct Temporary Ore Storage Pad																						
Construct MWDF Facilities (Operations)																						
1. Waste Rock Handling																						
a. Loading and Dumping																						
b. Hauling																						
2. Construct Tailing Pipeline																						
3. Construct Tailing Pond T1																						
4. Construct Tailing Pond T2																						
5. Reclaim Tailing Pond T1																						
6. Construct Tailing Pond T3																						
7. Reclaim Tailing Pond T2																						
8. Construct Tailing Pond T4																						
9. Reclaim Tailing Pond T3																						
10. Mobile Sources	0.12	*	*	*																		
11. Install Liner																						
a. Hauling of Bentonite to MWDF																						

TABLE D - 4 (continued)

Project Activities	CONSTRUCTION 1	2	3	4	OPERATION 1	2-3	4	5	6	7	8	9-11	12	13	14	15	16-17	18	19	20	21	22
Mine Operation (Production)																						
1. Full (Total Estimated Underground Emissions)																						
a. Drilling & Blasting (Rock Handling)																						
b. Mine Air Heating					0.4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
c. Mobile Equipment					1.0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mill/Concentrator Operations																						
1. Facility Heating					0.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2. Emergency Diesel Generators					0.5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3. Fuel Storage and Transfer	0.5	*	*	*	5.1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	CLOSURE 1	2	3	4-7
Reclamation Phase				
1. Mobile Sources	1.2[a]	*	*	*
TOTAL	49.2	4.5	*	*

TOTAL	49.2	4.5	*	*	8.3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

*Means previous annual estimate is used for this year.
[a] Total in years 1-7 only.