ESE
904/372-3318

① Did TRW get latest info from Sebring?

② P 2-3, Check NOx PPM @ 100/75 + 50% load

③ Plt needs boiler for ht. to fuel oil. Always heat to WHD

④ 3-17 shows pollutant BACT req'd for

⑤ Cost 1,000 Kw-hr elect. (5-9)
MO

⑥ need Copy Tom Davis Permit

⑦ STACK 6.9 FT Ø, 258,000 ACFM flow in stack

PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS FOR SEBRING UTILITIES COMMISSION

Prepared For:

SEBRING UTILITIES COMMISSION
City of Sebring, Florida

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

December 1980

ESE No. 79-138-001

2-10-81
Conversation with
Mr. Jim Phillips & Mr. Bob Prost,
Sebring 813/385-0191-

① Diesel engines started & stopped with no 2 fuel oil

② Elect. or existing diesel engine located to heat oil initially for new engines

③ 80% plant factor acceptable now.

④ 1,000 KW-hr elect est. to cost $103-113 in 1984

RECEIVED
JAN 07 1981
[illegible] FLA. DISTRICT

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State a complete.

1.0 SUMMARY

Sebring Utilities Commission of the City of Sebring, Florida, is proposing to install one 19.5 MW and two 11.2 MW (capacity at engine shaft), low-speed, two-cycle diesel engines. The facility will also be equipped to recover heat from exhaust gases. This waste heat will be used for supplementary electric power production. The plant will be located in Highlands County, Florida (see Figure 1.1).

The State of Florida Department of Environmental Regulation (FDER) and U.S. Environmental Protection Agency (EPA) have promulgated regulations concerning the Prevention of Significant Deterioration (PSD). All new major sources of air pollution must undergo a PSD review to determine if significant deterioration will be caused by the proposed new source. The proposed action constitutes a new major source under both State and Federal PSD regulations by virtue of emissions greater than 250 tons per year (TPY) for several air pollutants.

In response to these requirements, Sebring Utilities Commission contracted Environmental Science and Engineering, Inc. (ESE) to perform a Prevention of Significant Deterioration (PSD) Analysis for the proposed source. The analysis, conducted utilizing suggested and approved FDER atmospheric dispersion models and modeling techniques, showed that allowable PSD increments and Ambient Air Quality Standards (AAQS) of the State of Florida will not be violated as a result of operation of the proposed units. The analysis was based upon maximum predicted emissions from the proposed units.

Best Available Control Technology (BACT) for all affected pollutants will be met by the proper utilization of appropriate control techniques and proper operation and maintenance procedures for the proposed diesel units. A BACT analysis is presented in the construction permit application, which is being submitted to the State of Florida for State and Federal review concurrently with this report (see Section 5.0).

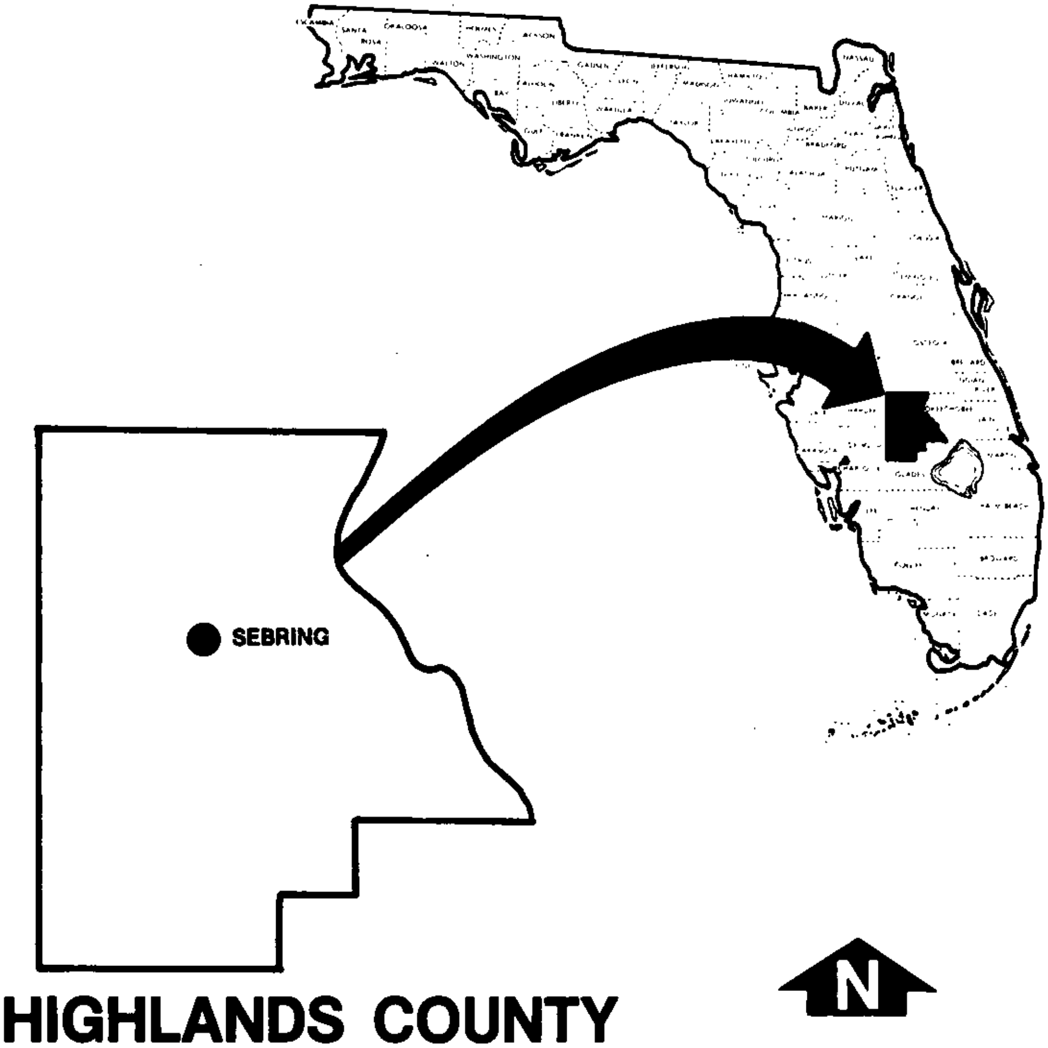

Figure 1.1
LOCATION OF THE PROPOSED SEBRING UTILITIES GENERATING PLANT, HIGHLANDS COUNTY, FLORIDA

**ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.**

The operation of the new units is not expected to have a significant impact upon soils or vegetation, or any area which has been designated Class I for PSD purposes. This report provides an evaluation of the PSD analysis and provides a complete description of the methods, data bases, results, and conclusions of the study.

2.0 PROJECT DESCRIPTION

Sebring Utilities Commission of the City of Sebring, Florida, is proposing to install and operate one 19.5 MW output capacity and two 11.2 MW output capacity (capacity at engine shaft), low-speed, two-cycle diesel generating units equipped with heat recovery systems for auxiliary electric power production. The heat recovery systems are expected to generate an additional 3.34 MW. The Sebring Utilities Commission owns and operates existing facilities (none located at the proposed site) consisting of one fossil-fuel steam generator with a total output capacity of 12 MW and nine diesel generating units with capacities from 400 to 2,750 KW. Construction of the new unit is scheduled to begin in April 1981 and to end in June 1983. Once in operation, the units will be operated at a capacity factor of 80 percent over a year. The engines will be operated at full load utilizing residual fuel oil with a sulfur content of 2.5 percent.

Date

In November 1979, Sebring Utilities Commission filed applications with EPA and DER for approval to construct two 10 MW engines. At the time of filing, neither a specific engine nor a capacity had been established. Bids were received from four engine manufacturers in August 1980. The economics demonstrated that a nominal 40 MW facility was most favorable. A 20 MW plant was not considered a feasible alternative. This report and accompanying permit applications represent a resubmittal of the original request. Engine specific (Sulzer Brothers Limited) information is presented for a 41.9 MW capacity (at engine shaft) facility.

The proposed diesel engines will be used as base load units supplying the majority of the Sebring Utilities Commission's generating capacity. Firing will be accomplished through the use of Residual (No. 6) fuel oil with a maximum sulfur content of 2.5 percent. For each of the 11.2 MW units, the maximum fuel oil consumption rate is 5,264.9 pounds per hour. The maximum heat rate per unit is 98.5 million Btu per hour (HHV of oil). The maximum fuel oil consumption for the 19.5 MW unit is

9,199.5 pounds per hour, with a maximum Btu heat input of 172 million Btu per hour (HHV of oil).

The diesel generating units will be of the large slow-speed, two-cycle type presently used for power generation in Europe, Africa and Asia. One installation exists in the United States--this plant consists of two 9,750 kw diesel generators located in Freeport, New York. Slow-speed diesel engines, an established European technology, are those rotating in the range of 90-150 revolutions per minute (rpm), in contrast to the locomotive diesel engine which operates at 900 rpm. The slow-speed diesel engine has an advantage over currently-used, medium-speed (275-520 rpm) diesel engines because it can burn poor quality and synthetic fuels. The following manufacturers offered slow-speed engines which would meet the requirements of the Sebring Utilities Commission:

Burmeister and Wain AIS, Denmark;
Grandi Motori Trieste Spa (Fiat), Italy;
M.A.N. (Maschienefabrik Augsburg-Nurnberg), West Germany; and
Sulzer Brothers Limited, Switzerland.

Through competitive bidding procedures, Sebring Utilities has contracted Sulzer Brothers, Inc., as turnkey contractor for the diesel facility. The engine types, as specified by Sulzer, are 8RNF68M and 8RNF90M for the 11.2 MW and 19.5 MW units respectively.

The proposed diesel units are designed to comply with all air quality regulations applicable to a PSD analysis. As part of the PSD regulations, major new sources are required to utilize Best Available Control Technology (BACT) to control emissions of atmospheric pollutants.

Table 2.1 presents the Sebring Utility plant operating and pollutant emission parameters being proposed as BACT and utilized in the air quality analysis. For each unit, three plant operational modes are presented: 100, 75, and 50 percent of full capacity. Examination of air quality impacts under each of these loads is required by Florida DER

Table 2.1. Plant Operating and Pollutant Emission Parameters, Sebring Utilities Slow-Speed Diesel Engines

Parameter Load (Percent)	Units 1 and 2 (Each) 100	 75	 50	Unit 3 100	 75	 50
Gross Generation (MW) (At engine shaft)	11.180	8.385	5.590	19.535	14.651	9.768
Heat Input Rate* (million Btu/hr)	98.5	73.2	50.3	172.0	127.8	87.2
Fuel Usage (lb/hr)	5,264.9	3,911.8	2,668.2	9,199.5	6,835.1	4,662.2
Exit Gas Velocity† (ft/sec)	114.8	86.1	57.4			
Flue Gas Rate† (1,000 ACFM)	276.8	207.6	138.4			
Minimum Flue Gas† Temperature (°F)			300.0			
Stack Height† (ft)			150.0			
Stack ID† (ft)			7.2			
Emissions (lb/hr)						
SO_2	263	196	133	460	342	233
Particulate Matter	10	7	5	17	13	9
Nitrogen Oxides	327	343	166	572	425	290
Carbon Monoxide	57	42	29	99	74	50
Hydrocarbons	26	19	13	45	33	23

$\frac{572}{172} = 3.32$ $\frac{425}{127.8} = 3.32$ $\frac{290}{87.2} = 3.32$

2.06

1.43

* Based upon 18,700 Btu/lb. HHV of residual oil.
† Represents the common stack parameters for all three units.

Source: Environmental Science and Engineering, Inc., 1980.

and is also recommended by EPA. Table 2.2 presents the design information for the diesel engines.

The emission rates listed at the bottom of Table 2.1 for pollutants represent fuel consumption and emission factors based on manufacturer guarantee, EPA emission factors, and tests on similar units. The NO_x emission rate is based on a BACT recommended limitation of 650 ppm with corrections for efficiency and oxygen content in stack gas. All emissions are based upon maximum expected emission rates.

Table 2.2. Design Information for Proposed Sebring Utilities Commission Diesel Engines

Unit Size (KW)* (At engine shaft)	Two at 11,180	One at 19,535
Heat Recovery (KW)	891	1,558
Engine Type	8RNF68M	8RNF90M
Fuel Heating Valve	HHV	18,700
	LHV	17,600
Fuel Sulfur Content		2.5%
Specific Fuel Consumption (g/kwh)		213.8(100% load) 211.8(75% load) 216.7(50% load)
Stack Gas Moisture		5.0%
Stack Gas Flow		19.93 lb/kw st. cond. dry
O_2 in Stack Gas		14.14%
Capacity Factor		0.80
Exit Stack Gas Temperature		300°F
Molecular weight of Stack Gas		29.36

* The engines selected are capable of generating 10 percent additional power. However, as this operating condition can only be attained for 1 hour in any 24, the 100-percent load condition represents maximum unit capability.

Source: Intercontinental Engineering Limited, 1980.
CH_2M Hill, 1980.

3.0 AIR QUALITY REVIEW REQUIREMENTS

The following discussions pertain to the regulatory requirements that must be met for the proposed Sebring Utility diesel units. These include demonstrating compliance with Ambient Air Quality Standards (AAQS) and meeting Prevention of Significant Deterioration (PSD) requirements. PSD requirements include demonstrating that New Source Performance Standards (NSPS) will be met and Best Available Control Technology (BACT) will be employed at the facility. NSPS and BACT requirements are addressed in Section 5.0 of this application. PSD regulations also require an air quality impact assessment of emissions from the proposed source.

3.1 AMBIENT AIR QUALITY STANDARDS

As a result of the requirements of the 1970 Amendments of the Clean Air Act, EPA enacted Primary and Secondary National AAQS (Federal Register, 1971) for six air pollutants. Primary National AAQS are required to protect the public health, and Secondary National AAQS are required to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air.

Table 3.1-1 presents the existing applicable National and State of Florida AAQS. Some changes to the National AAQS have been made since the original standards were issued in 1971: EPA has eliminated the annual and 24-hour secondary AAQS for SO_2; the AAQS for photochemical oxidants was renamed ozone and the concentration limit increased; and a new National AAQS for lead was promulgated. The State of Florida in January 1972 promulgated the Secondary National AAQS as the State AAQS. Since states have the discretion of adopting (or maintaining) AAQS more stringent than those established by EPA, the State of Florida has chosen to retain the annual AAQS and 24-hour secondary AAQS for SO_2 that were eliminated by EPA. Pollutants for which AAQS have been established are termed "criteria" pollutants.

Table 3.1-1. National and State of Florida Ambient Air Quality Standards Applicable to the Proposed FPL Coal-Fired Units, Martin County, Florida

Pollutant	Averaging Time	National Primary Standard	National Secondary Standard	Florida
Suspended Particulate Matter	Annual Geometric Mean	75 ug/m^3	60 ug/m^3	60 ug/m^3
	24-Hour Maximum*	260 ug/m^3	150 ug/m^3	150 ug/m^3
Sulfur Dioxide	Annual Arithmetic Mean	80 ug/m^3	NA†	60 ug/m^3
	24-Hour Maximum*	365 ug/m^3	NA†	260 ug/m^3
	3-Hour Maximum*	NA†	1,300 ug/m^3	1,300 ug/m^3
Carbon Monoxide	8-Hour Maximum*	10 mg/m^3	10 mg/m^3	10 mg/m^3
	1-Hour Maximum*	40 mg/m^3	40 mg/m^3	40 mg/m^3
Hydrocarbons	3-Hour Maximum* (6 to 9 A.M.)	160 ug/m^3	160 ug/m^3	160 ug/m^3
Nitrogen Dioxide	Annual Arithmetic Mean	100 ug/m^3	100 ug/m^3	100 ug/m^3
Ozone	1-Hour Maximum*	235 ug/m^3	235 ug/m^3	160 ug/m^3
Lead	Calendar Quarter Arithmetic Mean	1.5 ug/m^3	1.5 ug/m^3	NA†

* Maximum concentration not to be exceeded more than once per year.
† No standard exists.

Source: 40CFR Part 50, 1980.

Areas of the country shown to be in violation of any of the AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements. Areas of the state designated as nonattainment by EPA and the State of Florida (Federal Register, 1980; Florida Administrative Code, Chapter 17-2) are:

1. Sulfur Dioxide
    a. The northwest corner of Pinellas County
2. Ozone
    a. Duval County
    b. Orange County
    c. Pinellas County
    d. Hillsborough County
    e. Dade County
    f. Broward County
    g. Palm Beach County
3. Particulate Matter
    a. Downtown Jacksonville area
    b. A 12-kilometer radius circle in Hillsborough County

In the case of ozone nonattainment areas, emissions of Volatile Organic Compounds (VOC) are of concern and are restricted from new or modified sources. Highlands County has not been designated nonattainment for any pollutant for which an AAQS has been promulgated. The closest designated nonattainment area to the Sebring site is Hillsborough County, which is classified as nonattainment for ozone and particulate. The southeastern border of Hillsborough County is located approximately 65 kilometers to the northwest of the site; however, the total suspended particulate matter (TSP) nonattainment portion of the county is greater than 100 km from the site. No areas within 100 kilometers of the site have been designated as nonattainment for sulfur dioxide, carbon monoxide, nitrogen dioxide, or lead.

3.2 PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

3.2.1 General Requirements

Under PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act must be reviewed and approved by EPA (or in this case, reviewed by Florida DER since technical and administrative review authority has been delegated to the State before final approval by EPA). A "major stationary source" is defined as any one of 28 named source categories which has the potential to emit 100 tons per year or more, or any other stationary source which has the potential to emit 250 tons per year or more, of any pollutant regulated under the Act. "Potential to emit" means the capability at maximum design capacity to emit a pollutant after the application of control equipment.

"Major modification" means any physical change in the design or operation of a major stationary source, or a series of contemporaneous changes in the design or operation of a major stationary source, that would result in a significant net increase in the source's potential to emit the pollutant for which the source is major. "Significant" is defined as any increase in emissions in excess of specified *de minimis* levels (Table 3.2-1).

The PSD review is used to determine whether significant air quality deterioration will result from the new or modified source. This section addresses PSD requirements contained in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality, and in the State of Florida PSD Regulations, Chapter 17-2, Florida Administrative Code. Major sources are required to undergo the following reviews related to PSD:

1. Control technology review,
2. Air quality review,
3. Monitoring,

Table 3.2-1. De Minimis Emission Rates and Air Quality Impact Levels

Pollutant	De Minimis Emission Rate (tons per year)	De Minimis Air Quality Impact Level
Carbon Monoxide	100	575 ug/m^3, 8-hour average
Nitrogen Dioxide	40	14 ug/m^3, annual
Total Suspended Particulates	25	10 ug/m^3, 24-hour
Sulfur Dioxide	40	13 ug/m^3, 24-hour
Ozone*	40 (volatile organic compounds)	
Lead	0.5	0.1 ug/m^3, 3-month
Mercury	0.1	0.25 ug/m^3, 24-hour
Beryllium	0.0004	0.0005 ug/m^3, 24-hour
Asbestos	1	†
Fluorides	3.0	0.25 ug/m^3, 24-hour
Sulfuric Acid Mist	7	†
Vinyl Chloride	1.0	15 ug/m^3, maximum value
Total Reduced Sulfur:		
Hydrogen sulfide	10	10 ug/m^3, 1-hour
Reduced Sulfur Compounds:		
(including H_2S)	10	10 ug/m^3, 1-hour
Hydrogen sulfide	10	2.023 ug/m^3, 1-hour
Benzene	0	0
Radionuclides	0	0
Inorganic Arsenic	0	0

* A de minimis air quality level is not given for ozone. However, a plant which is subject to PSD review and has a net increase of 100 tons per year of volatile organic compounds would be required to perform an ambient air quality analysis.

† No satisfactory monitoring technique available at this time.

Source: EPA, 1980, 40CFR Part 52, Section 52.21.

4. Source information, and
5. Additional impact analyses.

The control technology review includes determination of BACT for each applicable pollutant. The BACT emission limits cannot exceed applicable emission standards (i.e., New Source Performance Standards) promulgated under 40 CFR 60. BACT information is contained in Section 5.0 of this application.

Air quality review requires demonstration of compliance with federal and state AAQS and allowable increment limitations. Projected ambient impacts upon designated nonattainment areas and federally promulgated Class I PSD areas must also be addressed. The monitoring portion of PSD review requires an analysis of continuous ambient air monitoring data to be performed for the impact area of the proposed source. Source information, including process design parameters and control equipment information, must be submitted to the reviewing agencies. Additional impact analysis of the proposed source's impact upon soils, vegetation, and visibility, especially pertaining to Class I PSD areas, must be performed.

Florida DER has promulgated PSD regulations similar to those of EPA. Table 3.2-2 presents the applicable PSD regulations of both Florida DER and EPA. The discussions that follow describe in more detail the PSD requirements and present differences in state and federal regulations.

3.2.2 Increments/Classifications

The Congress, in promulgating the 1977 Clean Air Act Amendments, specified that certain increases above an air quality "baseline" level of sulfur dioxide and TSP concentrations would constitute significant deterioration. The exact increment which cannot be exceeded depends upon the classification of the area impacted by a new plant (or major modification). Three classifications were designated depending upon the criteria established in the Act. Initially, the Congress promulgated areas as Class I (international parks, national wilderness areas, and

Table 3.2-2. Prevention of Significant Deterioration Regulations Applicable to the Proposed Sebring Diesel Units 1, 2, and 3

Requirement	Federal Regulation*	State of Florida Regulation†
General Source Applicability	40 CFR 52.21(i)	FAC 17-2.04(1)
Control Technology Review	40 CFR 52.21(j)	
New Source Performance Standards	40 CFR 52.21(j)(1)	FAC 17-2.03(1)(a)
Best Available Control Technology	40 CFR 52.21(j)(2)	FAC 17-2.04(6)(c)
Air Quality Review	40 CFR 52.21(k)	
Ambient Air Quality Standards	40 CFR 52.21(k)(1)	FAC 17-2.04(6)(a)
Allowable Increments	40 CFR 52.21(k)(2)	FAC 17-2.04(6)(a)
Monitoring	40 CFR 52.21(m)	
Source Information	40 CFR 52.21(n)	FAC 17-2.04(6)(a)
Stack Heights	40 CFR 52.21(h)	
Additional Impact Analyses	40 CFR 52.21(o)	
Public Participation	40 CFR 52.21(q)	FAC 17-2.04(9)
Referenced Requirements		
Best Available Control Technology	40 CFR 52.21(b)(10)	FAC 17-2.03
Ambient Air Quality Standards	40 CFR 50	FAC 17-2.06(1)
Allowable Increments	40 CFR 52.21(c)	FAC 17-2.04(1)

* CFR = Code of Federal Regulations, 1980.
† FAC = Florida Administrative Code, Supplement 101.

memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or Class II (all other areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated by the Act. However, the states were given the authority to redesignate any Class II area to Class III status, provided certain requirements were met. EPA then promulgated as regulations the requirements for classifications and area designations. The State of Florida has adopted the EPA class designations and allowable PSD increments (Table 3.2-3).

The EPA and Florida DER PSD regulations are nearly identical; however, some important differences do exist. The first is in the definition of "potential to emit," which determines if a new or modified source is "major" and therefore subject to PSD review. EPA defines "potential" to emit as emissions after control and takes into account any decrease in emissions due to the application of control equipment which has been incorporated into the design of the source. Florida DER defines "potential" emissions as those emissions before the application of control equipment, unless such equipment is an inherent part of the process.

The second major difference is in the EPA and Florida DER definition of "baseline" air quality. The definitions appropriate to the two agencies are discussed below.

3.2.2.1 Baseline--Federal--The term "baseline" evolves from federal and state PSD regulations and denotes a fictitious concentration level

Table 3.2-3. Federal and State of Florida Prevention of Significant Deterioration Allowable Increments (ug/m^3)

Pollutant/Averaging Time	Class I	Class II	Class III
Particulate Matter			
Annual Geometric Mean	5	19	37
24-Hour Maximum*	10	37	75
Sulfur Dioxide			
Annual Arithmetic Mean	2	20	40
24-Hour Maximum*	5	91	182
3-Hour Maximum*	25	512	700

* Maximum concentration not to be exceeded more than once per year.

Source: Public Law 95-95, Clean Air Act Amendments of 1977.
Federal Register, Vol. 43, No. 118, June 19, 1978.

corresponding to a specified baseline date and certain additional baseline sources. Baseline should not be confused with "background," which, for this PSD report, refers to concentration levels due to sources not accounted for in the point source emission inventories (i.e., natural and distant man-made sources).

EPA defines baseline concentration as:

> . . . that ambient concentration level which exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and shall include:
>
> 1. The allowable emissions of major stationary sources which commenced construction before January 6, 1975, but were not in operation by the applicable baseline date;
>
> 2. The actual emissions representative of sources in existence on the applicable baseline date, except for:
>   a. Actual emissions from any major stationary source on which construction commenced after January 6, 1975; and
>   b. Actual emissions increases and decreases at the stationary source occurring after the baseline date.

In considering actual emission rates, EPA is referring to emissions estimated from source records and any other information reflecting actual source operation over the 2-year time period preceding the baseline date. The baseline date is 1977, and is applicable for both particulate matter and SO_2 for all attainment areas of the state.

In applying the baseline emissions concept, EPA does not require the establishment of a formal baseline concentration. Essentially, only those sources which have changed emission rates and/or stack parameters or new sources which have commenced construction since the baseline date need to be evaluated. In essence, these sources would either expand or consume PSD increments. Other sources would not affect PSD increment consumption. "This policy is consistent with the intent of the Act to base increment consumption on all emission increases from new and modified sources, but to allow consumption of the increment to occur from only certain non-modification activities (e.g., some fuel switches) of existing sources" (Federal Register, 1978).

In considering factors such as hours of operation, capacity utilization, and types of materials combusted, processed, and/or stored, the values existing at the baseline date will generally be used; however, the EPA baseline emissions concept can also include future increases in hours of operation or capacity utilization as they occur (Federal Register, 1978), if it is demonstrated that a source's operation after the baseline date is more representative of normal operation than its operation preceding the baseline date (Federal Register, 1978).

3.2.2.2 Baseline--State of Florida--The State of Florida has defined baseline concentration for PSD purposes to mean:

> For sulfur dioxide and particulate matter, the applicable ambient concentration levels existing during 1974 plus any additional concentrations for the area of impact estimated to result from sources permitted for construction but not operating prior to January 1, 1975 . . . In the case of the 3-hour and 24-hour concentrations, only the second highest concentrations shall be considered [Florida Administrative Code, Chapter 17-2.02(14)].

In October 1978, the Florida DER Bureau of Air Quality Management published "Guidelines on Prevention of Significant Deterioration (PSD)--PSD Review." The document states: "Baseline emissions data consist of the January 1, 1975 allowable emission rates and January 1, 1975 stack configurations for all sources holding either an operating or construction permit during any part of 1974." As a result, Florida DER requires the formal establishment of a baseline concentration level. Because of the adopted definition, only modeling can be utilized to determine the baseline levels.

3.2.3 Monitoring

In accordance with requirements of 40 CFR 52.21(n), any application for a PSD permit must contain, for each pollutant regulated under the Act, an analysis of continuous ambient air quality data in the area the proposed major stationary source or major modification would affect. For a new source, the affected pollutants are those that the source would potentially emit in a significant amount. For a modification, the affected pollutants are those which would have a net increase by a greater than significant amount.

According to the Act, ambient air monitoring for a period up to one year generally is appropriate to complete the PSD requirements of the Act. Existing data from the vicinity of the proposed source may be utilized, if the data meet certain quality assurance requirements, or additional data may need to be gathered.

The regulations, however, include an exemption which excludes or limits the pollutants for which an air quality analysis is conducted. This exemption states that the monitoring requirements of 40 CFR 52.21(n) shall not apply to a proposed major stationary source or major modification with respect to a particular pollutant if the emissions increase of the pollutant from the source or modification would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3.2-1.

3.2.4 Modeling

The PSD regulations specifically require the use of atmospheric dispersion models in performing impact analysis, estimating baseline and future air quality levels, and determining compliance with the AAQS and the allowable PSD increments. Designated EPA models must normally be utilized in performing the impact analysis. Specific applications for other than EPA approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication, "Guideline on Air Quality Models" (EPA, 1978a). (Note: Recently, EPA has held conferences and distributed revised guidelines in draft form.)

Several widely recognized techniques for estimating or predicting ground-level pollutant concentrations can be utilized. Three EPA-approved models, which were utilized in the Sebring Utility PSD analysis, are: Air Quality Display Model (AQDM-Briggs), Point Multiple Model with wind shear effects (PTMTPW), and the CRSTER Single Source Model. Recently, models such as MPTER and the Industrial Source Complex (ISC) model have been promulgated by EPA.

The AQDM with Briggs plume rise equation determines annual average levels of atmospheric pollution from annual emissions and meteorological data for the long-term impact evaluation. The short-term impact assessment can be conducted by using the PTMTPW and CRSTER. These models calculate hourly pollutant concentrations from hourly emissions and meteorological parameters. The hourly levels can be averaged over a longer time period to facilitate comparisons of estimated air quality with air quality standards.

Various lengths of record for meteorological data can be utilized for short-term modeling. A 5-year period can be used with corresponding evaluation of highest, second-highest concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" refers to the highest at all receptors of the second highest concentrations (i.e., the highest concentration at each receptor is discarded). The second highest concentration is of significance because the short-term AAQS specify that the level should not be exceeded at any location more than once a year. If less than five years of meteorological data are used, the highest concentration at any location must be used.

3.2.5 Good Engineering Practice Stack Height

The 1977 Clean Air Act Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds good engineering practice (GEP) or any other dispersion technique. On January 12, 1979, EPA promulgated proposed regulations on stack heights. The proposed GEP stack height means the highest of:

a) 30 meters, or

b) a height established by applying the formula:

$$H_g = H + 1.5L$$

where: H_g = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or width of the structure or nearby structure).

"Nearby" is defined for a specific structure or terrain feature as that distance equal to five times the lesser of the height or width dimension of the structure or terrain feature not greater than one-half mile. While the actual stack height employed can exceed this height, modeling for determining compliance with AAQS and PSD increments must incorporate the GEP stack height.

3.2.6 Control Technology Review--Best Available Control Technology

A Best Available Control Technology (BACT) determination is required for all new major sources of any air pollutant by EPA pursuant to PSD regulations. EPA requires that the owner of the source or representative for each different point emission source prepare a form which evaluates the environmental, energy, and economic impacts of selected and alternative control techniques.

The BACT analysis must include information on aspects of air emissions from the proposed plant, including emission rates, control systems, process equipment, and methods. Design information, if available, should be submitted. Source information should include such items as location, stack parameters used in modeling, and other information considered important. Guidance can be found in "Guidelines for Determining Best Available Control Technology (BACT)," (EPA, 1978b), and memoranda issued by EPA (BACT, 1979).

3.2.7 Impact Analysis/Increments

An atmospheric dispersion modeling impact analysis on ambient air quality levels is required under federal and Florida DER PSD regulations. The air quality impact analysis must demonstrate that the proposed source will not cause or contribute to a violation of either the maximum allowable PSD increments or the AAQS. EPA and Florida DER modeling guidelines must be followed in performing the analysis for the respective review agencies, or prior approval must be obtained for significant deviations from these guidelines.

In addition to air quality impact analyses, the federal PSD regulations require additional analyses of the impairment to visibility and the impacts upon soils and vegetation that would occur as a result of the source. This analysis is to be conducted primarily for Class I PSD areas. Impacts due to general commercial, residential, industrial, and other growth associated with the source must also be addressed.

3.3 SOURCE APPLICABILITY

The Sebring plant will emit more than 250 tons per year of SO_2, NO_x, and CO and is therefore subject to PSD review. Highlands County is designated by EPA and Florida DER as Class II for PSD purposes. The nearest Class I area is the Chassahowitzka Wilderness Area, which is located to the northwest, approximately 169 kilometers from the Sebring site. No areas of Florida are designated as Class III. An impact assessment is not required by EPA for sources located greater than 100 kilometers from a Class I area (EPA, 1980).

3.3.1 EPA Review

In determining the level of PSD review to which the proposed Sebring Diesel Units are applicable, the predicted emissions from the new facility are compared against the de minimis levels presented in Table 3.2-1. For a major new source, such as Sebring Utilities, each pollutant with predicted potential emissions equal to or greater than the de minimis levels must undergo the PSD reviews discussed in Section 3.2.1. As calculated in Appendix A, proposed emissions of particulate matter, SO_2, CO, HC, and NO_x are in excess of the appropriate de minimis level. As such, these pollutants must meet BACT requirements and must be analyzed for air quality and additional impacts.

However, proposed new sources are exempt from the new monitoring requirements associated with the air impacts analysis if an otherwise complete PSD application is submitted between August 7, 1980 and June 7, 1981, and the applicant complies with the 1978 PSD monitoring requirements. This exemption applies to Sebring Utilities due to the December 1980 PSD application submittal and compliance with the 1978 monitoring requirements. (Note: In November 1979, Sebring Utilities Commission filed with EPA and DER permit applications and appropriate analyses for two 10-MW engines. Based on agency determinations, monitoring was not required for this facility.) Monitoring under 1978 PSD regulations was not required.

Table 3.3-1 presents a summary of the analysis required for EPA PSD review. An Impact and BACT analysis is required for those pollutants with predicted emissions in excess of de minimis levels. The de minimis levels and the predicted emissions are also listed in Table 3.3-1 for comparison to indicate the need for each analysis. The monitoring requirement necessity is listed because the proposed action must comply with monitoring requirements under the 1978 PSD regulations. In the August 7, 1980, PSD regulations a transition period of 10 months is identified during which the 1978 PSD monitoring requirements remain in effect.

Table 3.3-1. Summary of Analyses Required for Sebring Utilities PSD Review

Pollutant	De Minimis Values (TPY)	Emissions (TPY)	Source Monitoring* Required	Impact Analysis Required	BACT Required
Carbon Monoxide	100	712.7 832	No	Yes	Yes
Nitrogen Oxides	40	4123 4804	No	Yes	Yes
Sulfur Dioxides	40	3314.3 3864	No	Yes	Yes
Total Suspended Particulates	25	124.0 142	No	Yes	Yes
Ozone (VOC) hydrocarbon	40	322.2 378	No	Yes	Yes
Lead	0.5	.03	No	No	No
Asbestos	1	---	No	No	No
Beryllium	0.0004	6×10^{-6}	No	No	No
Mercury	0.1	0.03	No	No	No
Vinyl Chloride	1.0	---	No	No	No
Fluorides	3	8×10^{-5}	No	No	No
Sulfuric Acid Mist	7	---	No	No	No
Total Reduced Sulfur (including H_2S)	10	---	No	No	No
Reduced Sulfur (including H_2S)	10	---	No	No	No
Hydrogen Sulfide	10	---	No	No	No
Benzene	0	---	No	No	No
Radionuclides	0	---	No	No	No
Inorganic Arsenic	0	---	No	No	No

* The monitoring requirements are based on the 1978 PSD regulations.

Sources: Environmental Science and Engineering, Inc., 1980.
EPA, 1973.
Henry and Knapp, 1980.

A Good Engineering Practice (GEP) determination was made on the proposed Sebring diesel plant. The GEP stack height was calculated as 195 feet. However, the proposed plant location is in proximity to a Federal Aviation Association (FAA) regulated airport. The maximum allowable stack height for this area is 150 feet. After analysis of stack gas exit conditions, a proposed stack height of 150 feet (45.78 meters) coupled with a stack gas velocity of 114.8 feet/sec (35 meters per second) will be sufficient to prevent against excessive ground-level concentrations due to building downwash effects.

3.3.2 Florida DER Review

The Florida State PSD regulations do not refer to the same de minimis levels as do the previously discussed federal regulations in determining the level of PSD review required. All sources subject to PSD review must undergo an air quality impact analysis. The extent of analysis can be minimized, however, through a screening analysis described in the 1978 PSD guideline document. Also, a BACT analysis is required for any pollutant that increases ambient concentrations over the baseline. An additional impacts analysis is not required for DER PSD review.

4.0 AIR QUALITY ANALYSIS

4.1 METHODOLOGY

4.1.1 Ambient Air Monitoring

The Clean Air Act Amendments (CAAA) of August 1977 require that the owner of any proposed major air pollution source conduct ambient air monitoring for applicable pollutants for a period of one year prior to submission of the application for a permit to construct the facility [Clean Air Act Amendments, Sections 165(a)(7) and 165(c)(2)]. However, the use of existing representative data will be permitted in lieu of monitoring, provided that the data meet EPA PSD monitoring criteria. Less than one year of data may also be acceptable if it is determined by EPA that a complete and adequate analysis can be accomplished with data collected over a shorter period of time.

Ambient air quality monitoring is important in assessing compliance with AAQS. To provide guidance in this area, EPA in May 1978 originally promulgated guidelines which included information on the need, type, and procedures for preconstruction PSD air quality monitoring. Generally, from four months to one year of continuous air monitoring at one to four sites will satisfy the PSD requirements for power plants (EPA, 1978a).

The Florida Department of Environmental Regulations (FDER) operates two air quality monitoring stations in Highlands County. The existing air quality monitoring data and EPA determination (see Section 3.3.1) that monitoring was not necessary under the 1978 regulations meet the requisite monitoring for this application.

4.1.2 Dispersion Modeling

The use of dispersion modeling in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments is required by Florida DER and EPA regulations. Specifically, such an assessment will be based on EPA's Guideline on Air Quality Models (EPA, 1978a). The Guideline's recommended models and analytical techniques have been closely followed in the analysis. The models used, the input data, and analysis techniques are discussed in the following sections.

4.1.2.1 Meteorological Data--The diffusion models which were employed require the input of hourly meteorological data consisting of hourly surface observations and upper air data. The Orlando National Weather Service located at the McCoy International Airport is the closest surface station that meets the necessary criteria for hourly surface observations. The Tampa National Weather Service is the closest weather station where upper air (mixing height) data are available.

Two of the atmospheric dispersion models used in this analysis (AQDM and CRSTER) utilized an hourly data record for the years 1974-1978, recorded at Orlando McCoy International Airport by the National Weather Service. The AQDM utilizes this record as a joint frequency distribution of wind direction, wind speed, and atmospheric stability class over the 5-year period. This data format is provided by the National Climatic Center's (NCC) "STAR" program. In addition, annual averaged values of temperature, pressure, and maximum afternoon mixing height are utilized. These data are used in the AQDM to estimate the spatial distribution of annual averaged concentrations of baseline and future ambient concentration levels. An annual wind rose is provided to summarize the wind patterns exemplified by these data (see Figure 4.1).

The CRSTER model utilizes the Orlando McCoy and Tampa data sets to estimate hourly concentrations over the entire 5-year period (1974 through 1978). These concentrations are then averaged over specified time periods to provide the desired short-term concentrations. The meteorological variables input each hour are wind direction, wind speed, dry bulb temperature, atmospheric stability class, and hourly mixing height. The wind directions are randomized within a 10-degree sector by EPA's randomization scheme. Mixing heights are calculated from data obtained from the NCC by utilizing upper air data and hourly surface temperatures.

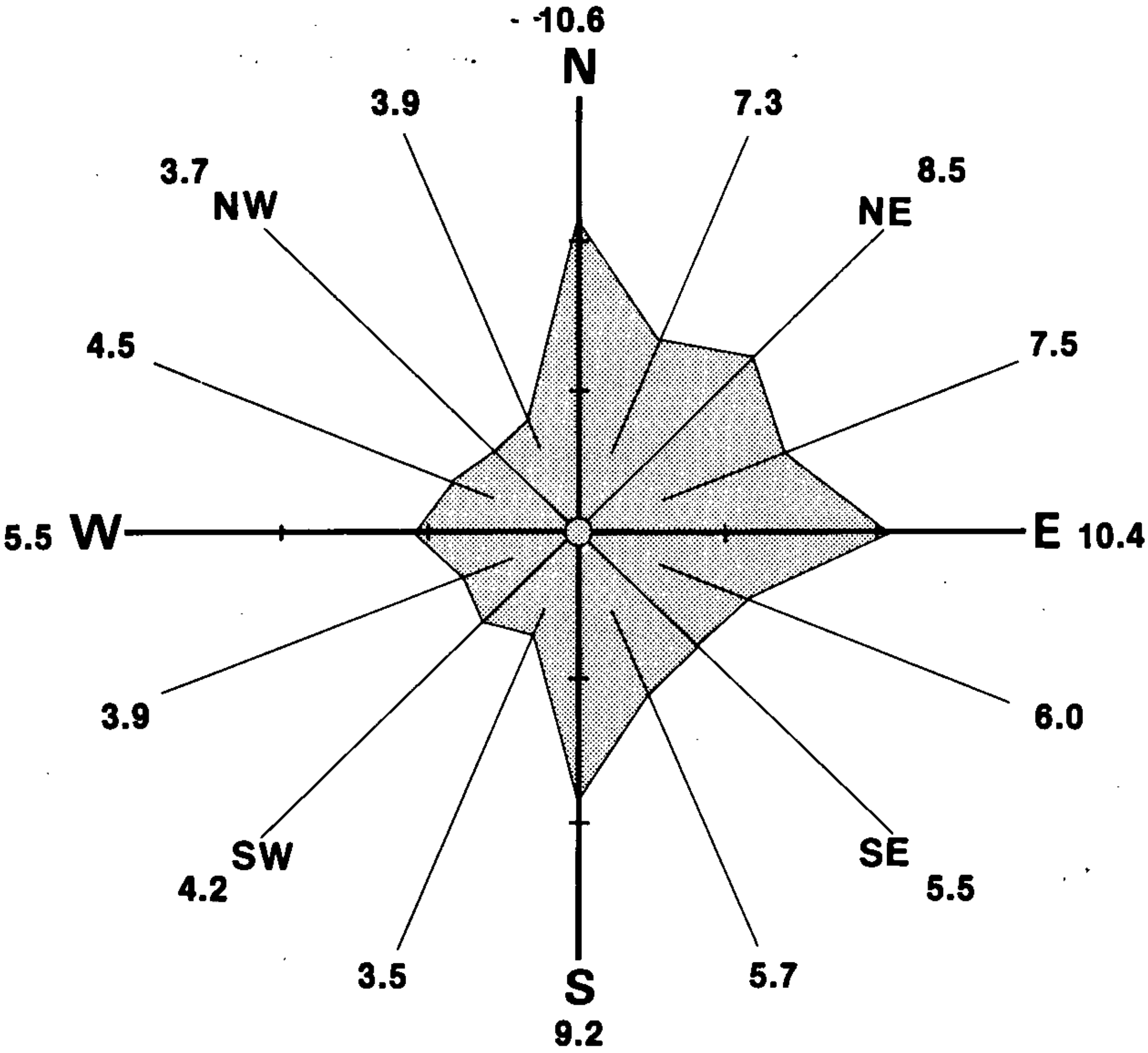

Figure 4.1

ANNUAL AVERAGE WIND ROSE FOR McCOY INTERNATIONAL AIRPORT, ORLANDO, FLORIDA 1974 - 1978

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

The use of a 5-year meteorological record allows the comparison of the highest, second-highest predicted concentration with all short-term AAQS and allowable PSD increments. This is consistent with the regulations which permit a standard concentration level to be exceeded once per year for the short-term (24 hours and less) averaging times.

4.1.2.2 Dispersion Models--Several widely recognized models for estimating or predicting ground-level pollutant concentrations are available. The three EPA-approved models used in this analysis are: the Air Quality Display Model (AQDM-Briggs), the Point Multiple Model with wind shear effects (PTMTPW), and the CRSTER Single Source Model (see Appendix B for description). These models allow comparison with the averaging times for which AAQS and PSD increments have been promulgated, i.e., annual, 24-hour, and 3-hour periods.

The long-term model (annual averaging time) AQDM with Briggs plume rise requires annual average emissions, stack parameters, and meteorological data in order to calculate annual average concentrations. Annual average emissions and stack parameters for all permitted sulfur dioxide and particulate matter sources within 50 kilometers (km) of the site were developed based upon information in the National Emissions Data System (NEDS) and Florida DER permit files. These sources and their PSD baseline and projected emission rates are shown in Appendix C. A 50-km cutoff for annual average dispersion modeling was used and was based upon U.S. EPA and Florida DER guidance regarding use of dispersion models (Federal Register, 1978; State of Florida, 1978).

The AQDM was used to estimate annual average ground-level concentrations for TSP, and SO_2. For these pollutants, modeling was performed for all permitted sources within 50 km of the site, including the Sebring units. For annual NO_x, only the Sebring units were modeled using the ADQM model. A conservative assumption was made that all NO_x is emitted in the form of NO_2 or is converted to NO_2 by the time the plume impacts the ground. In addition, it was also assumed that NO_2 is nonreactive. The computer-modeled predicted concentrations were not calibrated (i.e., no adjustments to model values for either sulfur dioxide, TSP, or nitrogen dioxide were made). All annual model printouts are included in Appendix C.

The evaluation of short-term maximum concentrations with the proposed units in operation was made using two computer models: CRSTER and PTMTP-W. The CRSTER short-term dispersion model (EPA, 1977) was used to identify the meteorological conditions which cause the worst-case (highest, second-highest) 24-hour and 3-hour predicted concentrations for SO_2 emissions and worst-case 24-hour conditions for particulate matter emissions from the proposed diesel Units 1, 2, and 3.

The maximum concentrations and increment consumption for the Sebring units were then determined with the Point Multiple (PTMTP-W) model, utilizing the CRSTER identified worst-case conditions. The PTMTP-W, which allows specification of a receptor grid network, has greater flexibility in determining impacts than CRSTER. A refined grid spacing of 0.1 km was used in the PTMTP-W to refine the short-term concentrations.

4.1.2.3 Increment Consumption--It has been determined through a review of the Florida Department of Environmental Regulation (DER) emission inventory that one increment consuming source is present in the area of impact. However, the increment consuming source is located over 15 km from the Sebring site, and was determined to have minor impacts. As a consequence, the proposed diesel units are the major increment consuming sources in the study area.

Annual increment consumption was determined with the AQDM model. Since the AQDM simulates concentrations due to all interacting sources, future-year and DER baseline-year models were executed and the predicted concentrations were compared receptor-by-receptor. The maximum predicted increase at any receptor was the maximum annual increment consumption.

EPA Region IV does not require the formal establishment of baseline concentrations. To determine the annual EPA PSD increment consumption, the proposed Sebring units were modeled using AQDM. The load utilized for the diesel engines in the annual increment consumption modeling was 100 percent, and the receptor grid spacing was 1.0 km.

The meteorology used in determining the maximum 24-hour and maximum 3-hour increment consumption, termed critical meteorology, is derived from CRSTER model executions. The location of maximum short-term increment consumption was determined from the highest, second-highest predicted concentration from the CRSTER model execution of the proposed Sebring diesel units only. Both Florida DER and EPA require that the three operating modes of 100-, 75-, and 50-percent load be evaluated for determining the critical meteorology.

For each of the five years of meteorology evaluated, the second-highest 24- and 3-hour concentrations were obtained for each receptor. The maximum highest, second-highest 24- and 3-hour concentrations for all five years were then identified and recorded in a summary table. This process was performed for loads of 100, 75, and 50 percent, and the highest concentration for each receptor for any load condition was retained. The maximum concentration represents the maximum increment consumption at each receptor point. The meteorological period which creates this maximum increment consumption can then readily be identified, as well as the critical load causing the maximum increment consumption at each point.

To produce concentration isopleths, a CRSTER is executed twice to obtain ten receptor distances. Two isopleth scenarios were conducted: (1) to represent spatially the maximum impact of the proposed units with receptor distances ranging from 0.2 to 2.0 km, and (2) to spatially represent the percent of increment consumed by the proposed units with receptor distances ranging from 1.0 to 10.0 km. The receptor spacing was 0.2 and 1.0 km, respectively. A computerized interpolating routine, the Synagraphic Mapping System (SYMAP), was used to depict the spatial distribution of concentrations on all base maps for the CRSTER results.

To refine the predicted concentration obtained in the CRSTER, the CRSTER's critical meteorology was input in the PTMTPW model and a more precise receptor grid was requested. Critical meteorology for SO_2 and particulate matter for the Sebring units was identical since maximum allowable emissions of these pollutants are directly proportional.

As previously discussed, the proposed diesel units are the only increment consuming sources of concern for the proposed action. Therefore, no additional modeling than that previously discussed is necessary to predict the maximum impact on air quality. However, appropriate background concentrations determined from ambient air quality data were added to model results to predict maximum concentrations that may be observed in the ambient air for comparison to AAQS. "Background concentrations" represent ambient levels due to natural or other sources, which are not accounted for directly in the dispersion models (i.e., only point sources are modeled). Background should not be confused with PSD "baseline" concentrations, which refer to ambient concentrations existing under specific emission conditions and time periods as required by regulation. Background concentration levels are estimated in Sections 4.2.1.1 and 4.2.1.2.

4.2 BASELINE AIR QUALITY

4.2.1 Existing Ambient Air Quality Data

The Florida Department of Environmental Regulations (FDER) operates two air quality monitoring stations in Highlands County. Their concentrations are summarized in Tables 4.2-1 and 4.2-2.

Table 4.2-1. Total Suspended Particulate Matter Statistical Analysis, Ambient Air Quality, Highlands County (Concentrations in ug/m^3)

Station Number	Station Description	Number Obs.	Year	24-Hour Maximum Obs.	24-Hour Maximum Obs.	Annual Geometric Mean	Geometric Std. Dev.
1	State Road 8	53	1975	59	53	21	1.5
		56	1976	49	44	18	2.1
		52	1977	97	61	24	1.5
		57	1978	--	75	23	--
		38	1979	72	51	24.8	1.7
2	Sebring	20	1974	74	69	37	1.6
		29	1975	97	60	28	1.6
		51	1976	59	52	27	1.5
		55	1977	85	65	32	1.5
		55	1978	--	51	30	--
		46	1979	55	54	30.8	1.5

Source: Florida Department of Environmental Regulation, 1979.

Table 4.2-2. Sulfur Dioxide Statistical Analysis, Ambient Air Quality, Highlands County (Concentrations in ug/m^3)

Station Number	Station Description	Number of Obs.	Year	24-Hour Maximum Obs.	Annual Arithmetic Mean
2	Sebring	30	1975	10.8	2.9
		53	1976	46.0	2.0
		55	1977	28.0	5.0
		55	1978	24.0	3.0
		45	1979	55.0	10.9

Source: Florida Department of Environmental Regulation, 1979.

4.2.1.1 Background Total Suspended Particulate Estimation--For the annual averaging time, a background TSP level was obtained by averaging the geometric mean TSP concentrations presented in Table 4.2-1 for the three most recent years of monitoring the Sebring site. This results in an average concentration of 30.9 ug/m^3. For convenience, an annual background TSP level of 31 ug/m^3 was used in this study. This value was added to all annual average model results to obtain total air quality level predictions.

A statistical approach was utilized to determine an appropriate short-term (24-hour) background TSP level. It is not justified to utilize the highest or second-highest measured values at the monitoring stations, since it is highly unlikely that worst-case meteorological conditions for point source emissions will occur in conjunction with a worst-case background level. A statistically more valid level, used in previous modeling studies in Florida, is a level that is exceeded 16 percent of the time, or the 84th percentile concentration. The probability of occurrence of this background level and worst-case point source model predictions is less than one day in five years, justifying the utilization of this technique.

Analysis of many years of ambient TSP data has shown that such data tend to be lognormally distributed. If the lognormal distribution is assumed, the method of Larsen (1971) can be utilized to estimate the 84th percentile concentration from the annual average concentration. The equation for the conversion is:

$$C = M\ Sg^{z-0.5\ \ln Sg}$$

Where C = 84th percentile concentration
Sg = Geometric standard deviation
z = 1.0, number of standard deviations from mean for 84th percentile
M = arithmetic mean.

The Sg value for the 3 years of data is 1.2. Substituting the value into the above equation yields:

$$C = M \times 1.38$$

Thus, the 84th percentile concentration is equivalent to 1.38 times the arithemetic mean. Applying this factor to the 30.9 ug/m^3 annual average background yields a 24-hour TSP background concentration of approximately 43 ug/m^3.

4.2.1.2 Background Sulfur Dioxide Estimation--Sulfur dioxide is monitored at only one of the FDER monitoring stations. This station, which is located near Sebring, is representative of the proposed site. The maximum 24-hour concentration which occurred in 1979 was 55.0 ug/m^3, or 21 percent of the 24-hour sulfur dioxide standard of 260 ug/m^3. The maximum annual average occurred in 1979 and was 10.9 ug/m^3, or 8 percent of the annual standard.

Because the most recent year of monitoring data (1979) shows the highest concentration levels, these values are used to represent the annual and 24-hour SO_2 background levels. In lieu of the lack of 3-hour SO_2 monitoring data, the highest 24-hour value was used for the 3-hour background level. These background levels were added to the SO_2 monitoring results to obtain total air quality level predictions.

Results from both sampling stations for sulfur dioxide and total suspended particulate matter indicate low ambient air quality background levels. Since these two stations are representative of the area around the proposed Sebring site, additional air quality monitoring is not recommended at this time.

4.2.2 Baseline Analysis

4.2.2.1 Federal EPA--As discussed in Section 3.2.2.1, U.S. EPA does not require the formal establishment of a baseline concentration level. In effect, only those sources, new or modified, which actually consume increment need to be considered in the evaluation. The proposed Sebring diesel units are the only increment consuming sources in the area of concern.

4.2.2.2 State of Florida--In order to fulfill the requirements of the Florida definition of baseline air quality, a 1974 allowable emissions inventory reflecting January 1, 1975 conditions was developed for SO_2 and particulate matter. This emissions inventory was based on available Florida DER information.

An annual AQDM model was executed for the Florida DER baseline analysis. A copy of the results is contained in Appendix C. The annual baseline SO_2 concentrations were less than or equal to 4 ug/m^3 at all receptor points. The annual maximum baseline particulate value was less than 1 ug/m^3.

Background concentrations have not been included in the increment analysis since changes in background cannot be readily determined from monitoring data where point sources may have influence.

4.3 AIR QUALITY IMPACT ASSESSMENT

4.3.1 Maximum Individual Impact of Units 1, 2, and 3

The maximum SO_2 and TSP individual short-term impacts, as determined with the CRSTER for the proposed Sebring diesel units only, are shown for three different loads in Table 4.3-1. The maximum impacts obtained from CRSTER occurred at 100 percent load in each case and were 26 ug/m^3 for the 24-hour SO_2 impact, 109 ug/m^3 for the 3-hour SO_2 impact, and 1 ug/m^3 for the 24-hour TSP maximum impact. Individual plant impacts using CRSTER were predicted utilizing a 0.2 kilometer spacing between receptor rings up to 2.0 kilometers from the proposed plant and 1.0 kilometer spacing from 2.0 to 10.0 kilometers from the plant.

Table 4.3-1. Highest, Second-Highest 24-Hour and 3-Hour Concentrations Using CRSTER for Proposed Sebring Diesel Engine Loads of 100, 75, and 50 Percent (ug/m^3)

Load (%)	24-Hour TSP	24-Hour SO_2	3-Hour SO_2
100	1	26	109
75	<1	23	103
50	<1	22	96

Source: Environmental Science and Engineering, Inc., 1980.

On the basis of the short-term analysis of the diesel engines using PTMTP-W, the maximum 24-hour SO_2 and TSP concentrations were predicted to be 28 and 1 ug/m^3, respectively, and the maximum 3-hour SO_2 was predicted to be 121 ug/m^3.

Based upon the maximum CO emission rate from Sebring Units 3 and 4, the highest, second-highest 8-hour CO concentration due to the proposed units is predicted to be less than 15 ug/m^3. This value is well below the EPA de minimus level of 575 ug/m^3 and the Florida DER significance level of 500 ug/m^3 for an 8-hour averaging time.

The maximum annual average NO_x impact of Sebring Units 1, 2, and 3 is predicted to be 1 ug/m^3, based upon the recommended BACT level. The Florida DER significance level for NO_x is 1 ug/m^3, annual average concentration.

4.3.2 Increment Consumption

With respect to classification for PSD purposes, the Sebring site is located within a Class II area. In this section, the PSD Class II increment consumption for Sebring Diesel Units 1, 2, and 3 is presented for each applicable averaging time and pollutant. There are no significant interacting sources included in the analysis. Impacts on Class I areas due to the proposed coal units are also addressed.

4.3.2.1 EPA Annual Increment Consumption--The annual SO_2 and TSP increment at the site was determined from the AQDM results. The maximum annual SO_2 increment consumed is 1 ug/m^3, and the maximum annual TSP increment consumed is less than 1 ug/m^3.

4.3.2.2 EPA Short-Term Increment Consumption--The short-term increment consumption is the same for EPA as for Florida DER because the proposed Sebring diesel units are the only short-term increment consuming sources of concern. Therefore, refer to Section 4.3.2.3 for a discussion of this analysis.

4.3.2.3 Florida DER Short-Term Increment Consumption--Figures 4.3-1 and 4.3-2 represent the spatial SO_2 (24-hour and 3-hour) percent increment consumption for the proposed Sebring Diesel Units 1, 2, and 3. The maximum 24-hour SO_2 increment consumption, 28 ug/m^3, is located about 3 km west of the Sebring site. This consumption is approximately 30 percent of the allowable increment. The maximum 3-hour SO_2 increment is 121 ug/m^3 and is approximately 24 percent of allowable 3-hour increment. This 3-hour SO_2 increment consumption is predicted to occur approximately 1.4 km south of the Sebring site.

%

The spatial distribution of TSP increment consumption is similar to Figure 4.3-1, since TSP impacts are directly proportional to the SO_2 impact. The percent 24-hour SO_2 increment consumption can be multiplied by 0.09 to obtain the percentage of 24-hour TSP increment consumed. The maximum consumption is less than 1 ug/m^3, which represents less than 2.5 percent of the allowable increment.

4.3.2.4 Class I Impacts--The Class I area nearest to site is the Chassahowitzka Wilderness Area, located 169 km to the northeast. Air quality modeling at such a distance is not required by regulatory guidelines and is not considered reliable or accurate. As a consequence, modeling impacts at this Class 1 area were not conducted.

4.3.3 Ambient Air Quality Standards

4.3.3.1 Compliance of Annual Averaged Values With AAQS--The EPA and Florida DER annual analysis to determine compliance with AAQS utilized all sources within approximately a 50-kilometer radius of the site. Maximum allowable emission rates were used for all sources.

The maximum annual SO_2 concentration (2 ug/m^3) occurred north of the site. The State of Florida SO_2 annual AAQS is 60 ug/m^3. The proposed Sebring diesel Units 1, 2, and 3 contribute 1 ug/m^3 to the air quality in the area.

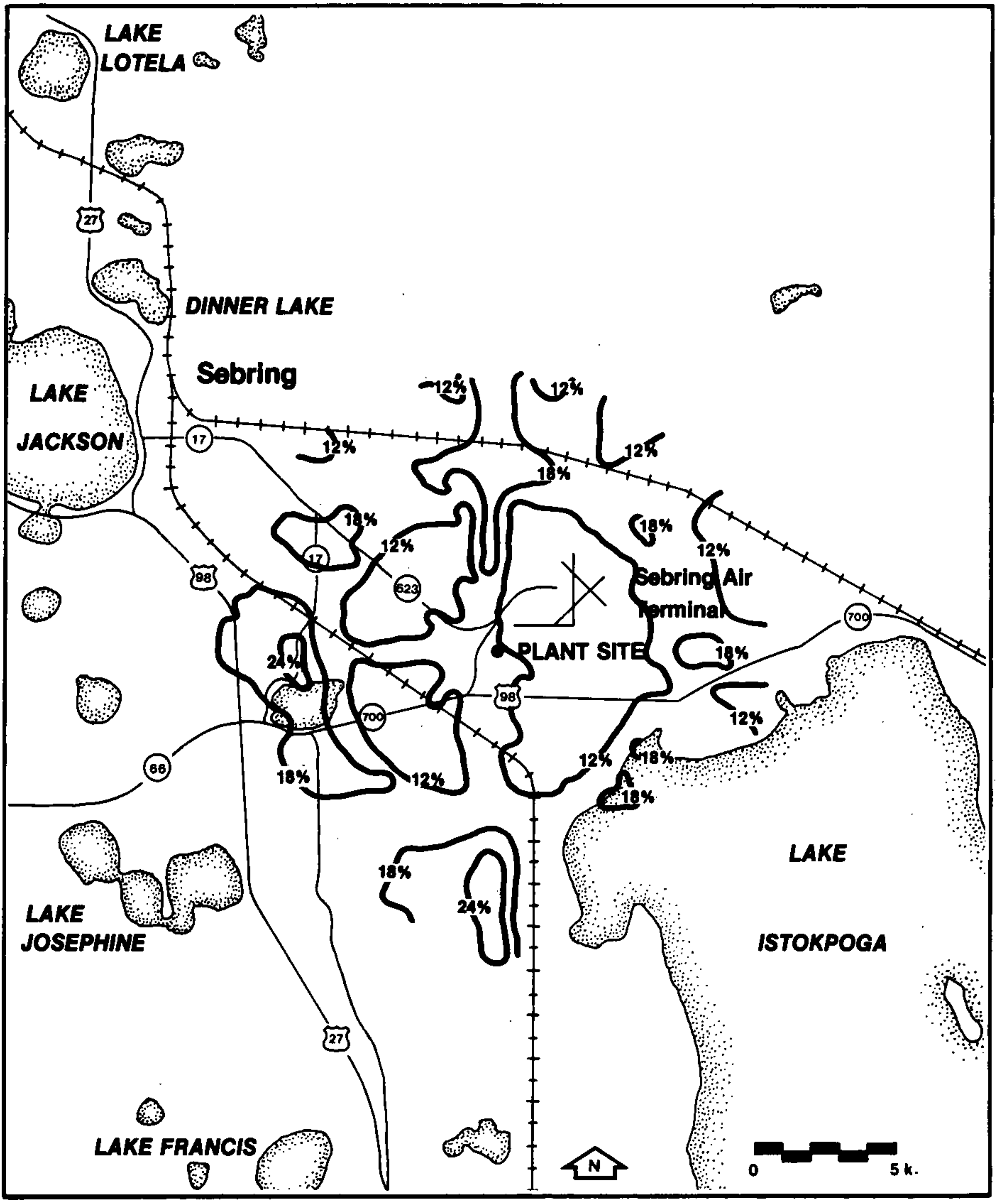

Figure 4.3-1
ISOPLETHS OF PERCENT, 24-HOUR SO_2 INCREMENT CONSUMPTION PREDICTED TO OCCUR, DUE TO THE PROPOSED DIESEL UNITS ONLY, SEBRING FLORIDA

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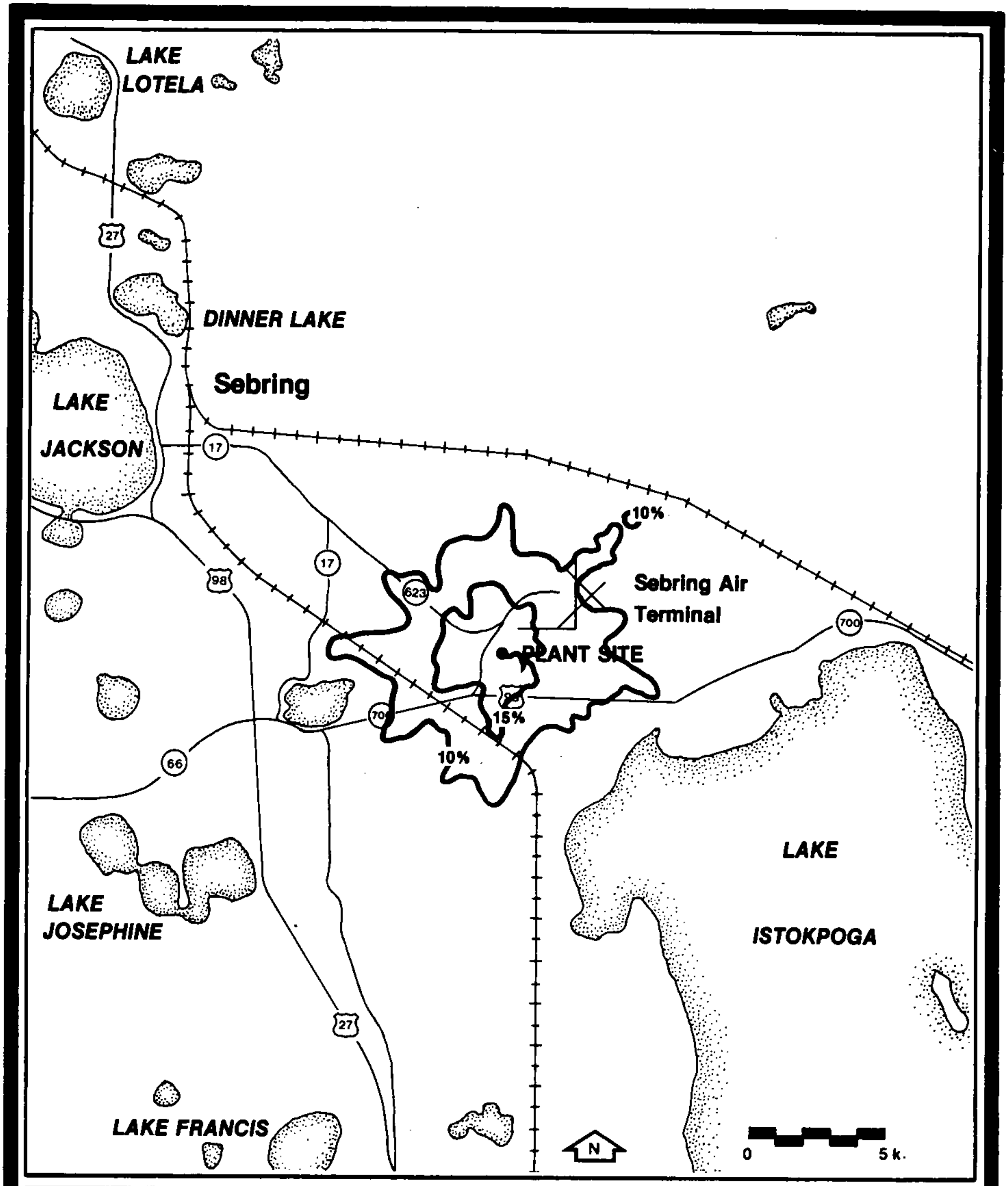

Figure 4.3-2
ISOPLETHS OF PERCENT 3-HOUR SO_2 INCREMENT CONSUMPTION PREDICTED TO OCCUR, DUE TO PROPOSED DIESEL UNITS ONLY, SEBRING, FLORIDA

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4.3.3.2 Compliance Short-Term Values with AAQS--As discussed previously in Section 4.1.2.3, the maximum predicted short-term increment consumption values are also the maximum impacts on air quality. Table 4.3-2 lists the maximum impacts for the Sebring units, including the background concentrations. Also listed for comparison are the AAQS. It can be seen from this comparison that the proposed action poses no threat to compliance with the AAQS.

4.3.4 NO_2 Air Quality Impact

The NO_2 emissions for the proposed diesel units are based on a BACT recommended limitation of 650 ppm with corrections for efficiency and oxygen content in stack gas. The AQDM model was utilized to analyze the potential impacts due to the proposed Sebring diesel units. A maximum annual average of 1 ug/m^3 due to the Sebring units is predicted to occur 2 km north of the site.

4.3.5 Worst-Cast Meteorology

Following is a listing of the worst-case meteorological periods predicted by CRSTER and used in the PTMTP-W modeling to predict the maximum impact of the proposed Sebring diesel units.

Day 124/1974 Period 4, maximum 3-hour impact
Day 143/1978 Period 5, maximum 3-hour impact
Day 149/1978, maximum 24-hour impact
Day 279/1974, maximum 24-hour impact

4.3.6 Fugitive Dust Impacts

There will be no fugitive dust sources associated with the operation of the Sebring plant. Some fugitive dust will be generated associated with construction activities, however; the impacts therefrom will be short term and will impact on the immediate area.

Table 4.3-2. Maximum SO_2 and TSP Annual Average and Short-Term Impact Concentrations Predicted for the Proposed Sebring Diesel Units (ug/m^3)

	Annual		24-Hour		3-Hour
	SO_2	TSP	SO_2	TSP	SO_2
Sebring Diesel Units 1, 2, and 3	1	<<1	28	1	121
Sebring Units Including Background	12	31	83	44	176
Florida Ambient Air Quality Standards	60	150	260	60	1,300

Source: Environmental Science and Engineering, Inc., 1980.

4.4 ADDITIONAL IMPACTS ON SOILS, VEGETATION, AND VISIBILITY

4.4.1 Impacts on Soils and Vegetation

Impacts on soils and vegetation due to operation of the proposed diesel engines are expected to be minor. The proposed highest, second-highest 3-hour SO_2 concentration of 168 ug/m^3 and annual mean concentration of 12 ug/m^3 (see Table 4.3-2) are well below levels generally reported for damage to sensitive plant species. As an example of such damage levels, European studies have found one-half hour levels of 3,406 ug/m^3 and long-term means of 393 ug/m^3 to approximate threshold levels for several species (Heck and Brandt, 1977). Other long-term studies have indicated threshold ranges for sensitive species of 47 ug/m^3 to 78 ug/m^3 over two to four months of exposure and 31 ug/m^3 over seven months (Florida Sulfur Oxides Study, Inc., 1978).

Alfalfa, which is commonly thought to be one of the most SO_2-sensitive species, has a 2-hour threshold level of at least 2,620 ug/m^2 and an 8-hour threshold of 655 ug/m^2 (Heck and Brandt, 1977), far above the predicted impact levels. Based upon results such as these, no discernable impacts are predicted from this source.

Particulate matter is generally considered to have a relatively unimportant effect on vegetation (Jacobson and Hill, 1970). Since background levels are low at this site and the impact levels of the plant are well below background levels, no significant TSP impact will occur as a result of the predicted emissions.

Plant species classified as "sensitive" to NO_2, such as pinto bean, cucumber, lettuce, and tomato, displayed injury when exposed to NO_2 levels of 3,760 to 4,960 ug/m^3 for a 2-hour period. Extremely resistant species, such as heath, were unaffected by an exposure of 1,900,000 ug/m^3 for 1 hour. Blue grass, orange tree plants, and rye are all classified as "intermediate" in resistance to NO_2 injury. It has been found that NO_x concentration is more important to plant injury than the duration of exposure (Jacobson, et al., 1970). Because of the very low levels of NO_2 predicted to occur due to the proposed Sebring plant (140 ug/m^3, maximum 3-hour average), no effect on plants or soils is expected.

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Effects of SO_2, NO_2, and particulate matter emissions upon soils are expected to be negligible. Acid rain effects in the area are generally unknown due to a lack of data for the region (Florida Sulfur Oxides Study, Inc., 1978); the potential for significant acid rain effects due to the proposed source is considered to be very low.

4.4.2 Visibility Impacts

The proposed source is expected to have no significant impairment on visibility in the immediate affected area or upon the nonattainment or Class I PSD areas previously described in Section 3.0. During construction of the diesel units, construction activities will have a small transient effect on local visibility. The visible particulate emissions produced by various construction activities such as earth movement and heavy machinery operation, should have short-term impacts on visibility and should occur only during the actual construction activities. There should be no long-term impairment on visibility due to construction activities for the proposed source.

No significant impact on visibility is expected from operation of the various facilities in the proposed complex, due to the low, predicted emission rates referenced in Table 2-1. These low stack gas and particulate emission rates should not contribute to significant plume blight from any facility within the complex. In addition, the production of haze, causing local and regional visibility impairment, should also be minimized by the low pollutant emission rates and application of BACT to the facility. Due to the great distance to the nearest Class I area, visibility impacts thereon will be nonexistent.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY

5.1 DESCRIPTION OF PROPOSED UNITS

The proposed diesel engines (3 units) will be used as base load units to supplement Sebring Utilities Commission existing generating capacity. Firing will be accomplished through the use of residual (No. 6) fuel oil with a maximum sulfur content of 2.5 percent. For the plant, the maximum fuel oil consumption rate is 19,729.3 pounds per hour. The maximum heat rate for the 11.2 MW units is 95.5 million Btu's per hour and 172 million Btu's per hour for the 19.5 MW unit (based upon capacity at engine shaft and HHV of residual oil).

Through a selective bidding process, Sulzer Brothers Limited has been selected as turnkey contractor for the diesel project. The engine types, as specified by Sulzer Brothers, will be 8RNF68M (~10 MW) and 8RNF90M (~20 MW). Tables 2.1 and 2.2 contain design information and pollutant emissions for the proposed diesel plant.

5.2 NSPS FOR DIESEL ENGINES

On July 23, 1979, EPA proposed New Source Performance Standards for stationary internal combustion engines 560 CID engine size (see attached copy of these standards). The proposed regulations would limit nitrogen oxides emissions to 600 ppm for large diesel engines with corrections for efficiency and oxygen in stack gas. However, these regulations are effective only for new facilities that commence construction 30 months after the proposed date. According to the proposed schedule for the slow-speed diesel units, construction will commence before these promulgated requirements become effective. Consequently, these NSPS are not applicable for the proposed units.

5.3 NITROGEN OXIDES

The proposed NSPS emission limiting standards for diesel engines is 600 ppm, with corrections for shaft efficiency and oxygen content in stack gas. The standard is applicable for new sources that commence construction 30 months from July 23, 1979, or January 23, 1982. Sebring

Utilities Commission on November 12, 1980, signed a contract with Sulzer Brothers as turnkey contractor to commence in 90 days a continuous program of fabricating the slow speed engines. The commitment of a contract and continuous fabrication of engines would constitute commencing construction pursuant to 40 CFR Part 60.1(g) and (i). Since construction will commence prior to January 23, 1982, the NSPS do not apply.

Exhaustive investigation of the NO_x emission characteristics of the several Sebring bid offerings and Stationary Internal Combustion Engines Draft EIS (EPA, 1979) disclosed the following:

1. Engine efficiency and NO_x emission levels are directly related.
2. NO_x emission levels are engine specific.
3. Engines burning residual oil produce approximately 8 percent more NO_x than engines burning distillate because of the nitrogen content of residual oils. EPA only considered emission from engines burning No. 2 distillate fuel (diesel oil) and not residual oil. Nitrogen content for residual oil can be ten times (or more) that of diesel oil.
4. Artificial precooling of inlet air and water injection offer only limited means of NO_x control.
5. Altering compression ratio and engine detuning are the most practical and economical means of reducing NO_x emissions at this time.

Engine modifications

6. Compliance with the 600-ppm EPA NSPS (adjusted for O_2 and efficiency corrections) is feasible; however, compliance requires degradation of performance, resulting in approximately a 6 to 8 percent increase in engine fuel consumption.
7. The annual additional fuel cost to Sebring for compliance with the EPA NSPS 600-ppm emission level will be approximately $660,000 per year at 1980 fuel prices, assuming an 80 percent plant factor and an average fuel performance penalty of 6.25 percent. The cumulative fuel penalty over a 28-year plant

life, assuming a 10 percent annual fuel cost escalation rate, will be $88,578,000.

8. Nitrogen oxide emissions from slow speed diesel are approximately 1,500 ppm. Application of the proposed NSPS level of 600 ppm with correction for shaft efficiency and oxygen content will require an NO_x reduction of 48 percent. ~ 780 ppm This level of control is 20 percent more stringent than the reduction recommended as NSPS (40 percent reduction in NO_x ~ 900 ppm emissions).
9. The diesel engines considered by EPA in promulgating the proposed NSPS did not include data from slow speed diesel engines. Medium speed diesel engines of United States manufacture were primarily considered.

The most critical and overriding issue in the evaluation of bids and the cause of rejection of the apparent low bidder, was the level of NO_x emission control proposed. Rejection of the apparent low bid resulted in a capital cost higher by $3,205,500; however, the selection of the Sulzer Brothers' engines places the Sebring Utilities Commission in the position of recommending a Best Available Control Technology (BACT) consistent with the intent of the EPA proposed NSPS NO_x limit. The rejected bid would have resulted in NO_x levels significantly greater than the recommended level.

~ 650 10.2/Y

The recommended BACT emission level is 650 ppm with corrections for both engine shaft and bottoming cycle efficiency and oxygen content in stack gas. An amount of 50 ppm NO_x over the NSPS level (600 ppm) is recommended on the basis of nitrogen content in residual oil. This is approximately an 8 percent increase over the NSPS level and is consistent with data obtained from slow speed engine bidders and EPA's proposed NSPS levels. EPA recognized in its preamble for the proposed NSPS that burning residual oil could be an approximate 50 ppm increase. In addition, EPA allows an increase in NO_x emission levels for gas turbines burning residual oil. The precise nitrogen content in the

Diesel 19 g/hp-hr

residual oil for the proposed slow speed units is not known. Even if this information were available, it is not known how this would effect nitrogen oxide emissions. As a consequence, a 50 ppm level above the proposed NSPS is reasonably justified.

The proposed NSPS level allows for a correction for shaft efficiency greater than 10.2 kilojoules/watt hour. Sebring Utilities Commission is proposing an innovative system to capture waste heat from diesel engine exhaust gases and use it for supplementary electric generation. Utilization of this waste heat allows a considerable saving in the amount of fuel. As fuel use is directly proportionally to pollutant concentrations, this system will reduce by approximately 7 percent emissions of SO_2, NO_x, particulate, CO, and hydrocarbons. If this system were not installed, generation from the proposed facility (or another facility) would be required, thus resulting in increased pollutant emissions. The benefit of this increased efficiency is recommended for inclusion in determination of BACT. The recommended BACT NO_x emission level will reduce NO_x emission by approximately 37 percent from an uncontrolled engine. This level of control is consistent with the proposed NSPS level that would require a 40 percent reduction.

At higher

NO_x

Sebring Utilities Commission requests that the BACT level be established at 650 ppm with efficiency (shaft plus heat recovery) and oxygen corrections established during testing of units.

5.4 PARTICULATE MATTER

The BACT limitation for particulate matter is based upon emission estimates from manufacturers' estimates and tests performed on the Freeport, New York diesel generating plant. The tests performed on the Village of Freeport's 9750-kw diesel generator indicate an emission of approximately 0.2 lb/10^6 Btu. These units, however, were installed in the late 1960's. Since then, considerable improvements have been made with slow-speed engines. A BACT for particulate is proposed as 0.1 lb/10^6 Btu.

5.5 CARBON MONOXIDE AND HYDROCARBONS

CO
VOC

The emissions estimates of CO and HC incorporate consideration of estimates obtained from Sulzer Brothers Limited. These emission levels are consistent with those found in AP-42. As no NSPS emission limiting standard is proposed for these pollutants, AP-42 estimates are recommended as BACT.

5.6 SULFUR DIOXIDE

The basis for the BACT emission limit on sulfur dioxide is from an analysis of available control technology, environmental impacts, energy impacts, and economic impacts.

5.6.1 Available Control Technology

The only feasible control technology is the use of low-sulfur fuel oil. However, the supply of low-sulfur fuel oil on a long-term basis is questionable. Recent actions by the OPEC countries to limit the export of lighter, lower sulfur crude oils will reduce the availability of these fuels.

5.6.2 Environmental Impacts

The impacts on the environment are limited to air, i.e., PSD increment consumption. Based upon a thorough PSD analysis, the differential maximum PSD consumption of low-sulfur oil (1 percent) and high sulfur oil (2.5 percent) is 18 percent of the 24-hour standard (see Figure 5-1).

This, however, is a direct trade-off. Due to the gross heat rate of these proposed units (8,156 Btu/kWh), it is probably likely that these units will displace electric generation from fossil steam units. If conventional fossil steam units with a gross heat rate of 9,600 Btu/kWh were replaced by the generation from these diesel units, a reduction of 530 tons per year of sulfur dioxide would result. Using high sulfur fuel oil, 70 percent of the PSD increment will be, as a minimum, available for future growth.

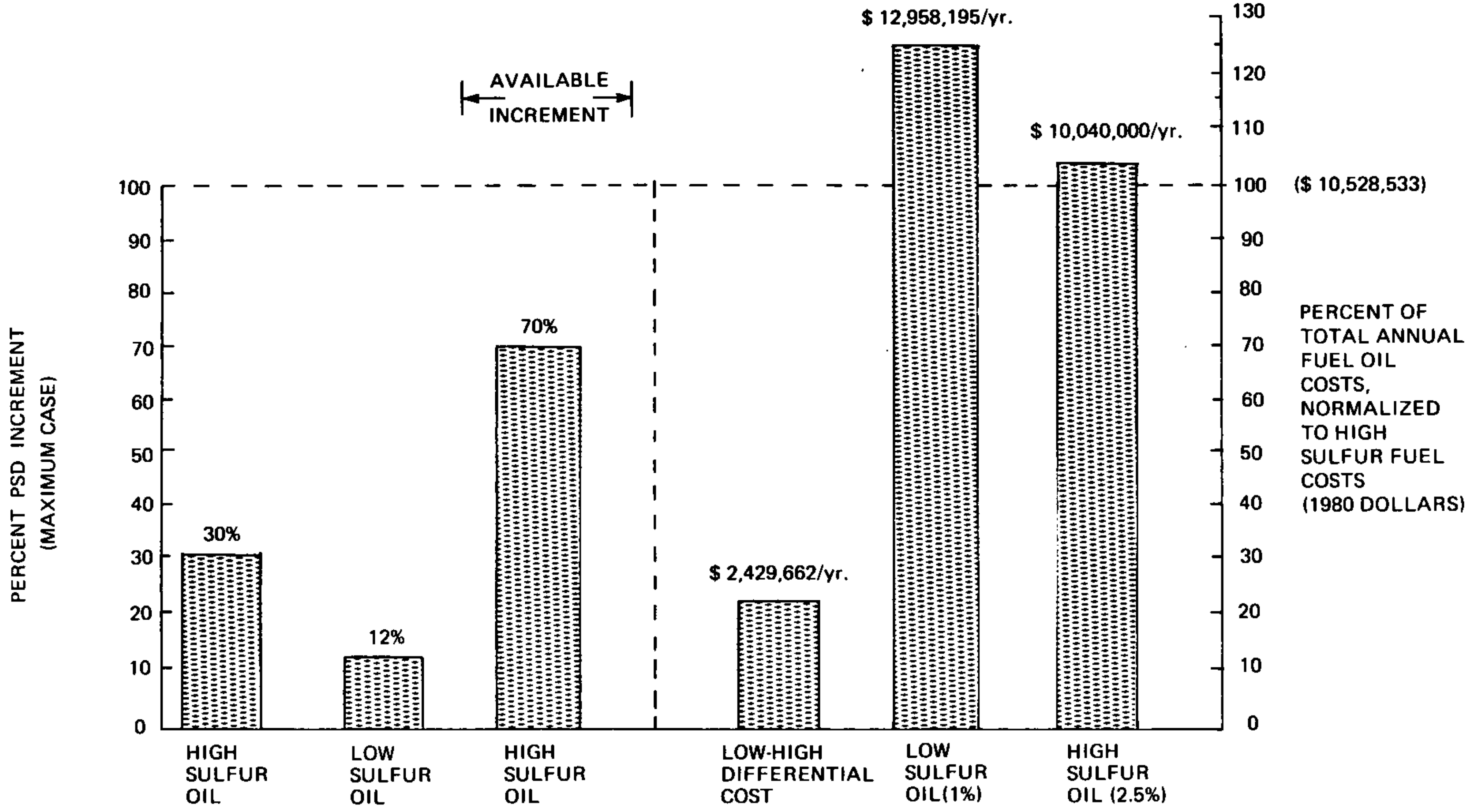

Figure 5.1

ENVIRONMENTAL AND ECONOMIC COMPARISONS, HIGH AND LOW SULFUR OIL, SEBRING UTILITIES COMMISSION PROPOSED DIESEL PLANT

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

5.6.3 Energy Impacts

The impacts on energy are primarily associated with a savings of fuel oil by the proposed units. Based upon the heat rate of the proposed units (8,156 Btu/kWh) and fossil steam units (9,600 Btu/kWh), a differential heat rate of approximately 1,444 Btu/kWh exists. The generation of these units will allow for a savings of over 62,000 BBL (2.6 million gallons) of oil per year. This would be true with both high- or low-sulfur oil. However, overall economic considerations must be a factor in using the proposed new diesel generation. If the total generation costs favor fossil steam at a higher sulfur fuel usage over diesel at a low sulfur fuel usage, then no saving in energy would result.

5.6.4 Economic Impact

The additional cost of using a lower-sulfur fuel is considered to be prohibitive and could jeopardize the project. The recent history of Florida residual oil prices during 1979 and 1980 is illustrated by Figure 5-1, which is a compilation of Federal Energy Regulatory Commission data for that period. Not only have prices varied widely, but the relative price differential between low (0.7 percent) and high (2.5 percent) sulfur residual oil has varied from as little as 15 percent to nearly 100 percent. A differential value of 30 to 35 percent is representative for this period and seems consistent with a long-range forecast by the Electric Power Research Institute (EPRI, 1979) which projects a 22 percent price differential for heavy oils of 0.3 percent sulfur content as compared to 1.0 percent sulfur content.

Throughout the 1979-1980 period, residual oil prices have been erratic; however, a price gradient has consistently existed for various levels of sulfur content. It appears that price is generally inversely proportional to sulfur content and that the gradient is approximately linear. Thus, one may postulate typical residual oil prices and estimate the comparative cost of power generated from a power plant using fuel oils of differing sulfur content. Table 5-1 illustrates the economics of the proposed Sebring Diesel Plant over a 28-year period using residual oils

Table 5-1. Economic Analysis of Using Alternate Sulfur Content Fuels for Sebring Utilities Commission Proposed Diesel Facility

	Fuel Sulfur Content*				
	0.7% Sulfur	1.0% Sulfur	1.5% Sulfur	2.0% Sulfur	2.5% Sulfur
Assumed Fuel Cost, $/Barrel (Late 1980 Prices)	34	32	30	28	26
Assumed Fuel Cost, $/mmBtu	5.38	5.06	4.75	4.43	4.11
Assumed Heat Rate Btu/kWh (Net)	8,754	8,754	8,754	8,754	8,754
Fuel Cost, mills/kWh	47.1	44.3	41.6	38.8	36.0
Relative Price Index	1.31	1.23	1.16	1.08	1.00
Plant Net Capacity, kW	41,730	41,730	41,730	41,730	41,730
Energy Produced kWh/yr @ 80% P.F.	292×10^6	292×10^6	292×10^6	292×10^6	292×10^6
Annual Fuel Use bbl/yr	405,000	405,000	405,000	405,000	405,000
Annual Differential Fuel Cost, $/yr (1980 prices)	$3,239,549	$2,429,662	$1,619,775	$809,888	-0-
Annual Fuel Cost, $/yr (1980 prices)	$13,768,082	$12,958,195	$12,148,308	$11,338,421	$10,528,533
Cumulative Fuel Cost, 28 years, 10% annual increase	$1,847,813,406	$1,739,118,525	$1,630,423,640	$1,521,728,760	$1,413,033.7
Cumulative Differential 28-year Fuel Cost	$434,779,664	$326,084,783	$217,389,898	$108,695,018	-0-

* Fuel heating valve has not been adjusted for sulfur content.

Source: CH_2 M-Hill, 1980.

of various sulfur content. The differential cost is $6 per barrel, or an annual cost of from $2,429,662 in 1980 dollars between high (2.5 percent S) and low (1 percent S) fuel oil. Using a discount rate of 10 percent, the future total cost of using a 1 percent sulfur fuel oil over 28 years would be approximately $1,739,118,525. The differential represents an incremental cost of 27 percent over the cost of high sulfur fuel oil. The incremental costs for a typical 1,000-kWh/per-month customer is $8.3 per month or $99.6 annually. During a 25-year period, this would amount to an additional cost of $9,794 at a discount rate of 10 percent.

Clearly a heavy economic penalty will be experienced if use of low-sulfur residual oil is required. This economic impact will be felt by all users of Sebring power; for Sebring's 8,500 customers, the penalty could be as much as several hunderd dollars per customer each year, depending on the level of sulfur content prescribed.

An examination of fuel use records of other utilities in central Florida discloses extensive use of high-sulfur No. 6 residual oil in many other power plants of far lower efficiency than the proposed Sebring diesel project. Power produced from the more efficient Sebring plant (utilizing high-sulfur oil) will therefore yield a net statewide reduction in sulfur emissions through displacement, since the output of less efficient plants using comparable fuels can be reduced. This displacement of generation and net emission reduction can only occur, however, if the Sebring project is an economically viable power source as compared to power produced by other state utilities. In order for surplus Sebring power to displace other oil-fired generation, it must simply be lower in cost. Thus the sulfur content of fuel burned at Sebring not only is an important consideration from the standpoint of direct consumer power costs at Sebring but also is a vital consideration if high-efficiency power plants such as the Sebring plant, which produce lower emissions, are to be brought into service and used to the maximum extent feasible.

5.6.5 Recommended BACT

SO_2

Based upon the availability, environmental impact, energy impact, economic impact, and NSPS, the recommended BACT emission limiting level for sulfur dioxide is 2.67 lb/10^6 Btu. This recommendation meets the primary purpose of BACT, which is "to optimize consumption of PSD air quality increments, thereby enlarging the potential for future economic growth without significantly degrading air quality" (Guidelines for Determining BACT, OAQPS, EPA, December 1978).

6.0 CONCLUSIONS

Based upon the atmospheric dispersion modeling analysis presented in this report, it is not expected that any allowable Class II PSD increment will be exceeded as a result of operation of the proposed two diesel units in Sebring. In addition, National Ambient Air Quality Standards (AAQS) are not expected to be violated. These results are based upon the modeling of worst-case meteorological conditions, 100 percent load conditions, and maximum allowable emissions from both units.

?

The above conclusions are based upon atmospheric dispersion models which have not been calibrated or validated for the area of interest. It has been ESE's experience that these models tend to overcalculate concentrations for meteorological conditions for which the models are appropriate, i.e., Gaussian plume dispersion.

Significant impact of the proposed units upon the soils and vegetation of the area are not expected. AAQS, which are set to protect against welfare effects, are not predicted to be violated.

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APPENDIX A

PERMIT APPLICATION

Units 1 and 2
Permit Applications

APPLIC. REPLACED WITH 1-20 MW UNIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Diesel Electric Generating Unit [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Sebring Utilities Commission COUNTY: Highlands

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Slow Speed Diesel Unit 1, 11.2 Mw output capacity, Engine Type 8RNF68M

SOURCE LOCATION: Street East of SR 623 City N/A

UTM: East 464.3 km North 3035.4 km

Latitude 27 ° 26 ' 18 "N Longitude 81 ° 21 ' 36 "W

APPLICANT NAME AND TITLE: Sebring Utilities Commission

APPLICANT ADDRESS: 368 South Commerce Avenue, P. O. Box 971, Sebring, Florida 33870

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Sebring Utilities Commission

I certify that the statements made in this application for a Air Pollution Construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed:

J.H. Phillips General Manager
Name and Title (Please Type)

Date: Telephone No. 813/385-0648

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been XXXXXX/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed:

Kennard F. Kosky
Name (Please Type)

(Affix Seal)

Environmental Science and Engineering, Inc.
Company Name (Please Type)

P. O. Box ESE, Gainesville, Florida 32602
Mailing Address (Please Type)

Florida Registration No. 14996 Date: Telephone No. 904/372-3318

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[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Installation of one 19.5 Mw and two 11.2 Mw slow speed, two-cycle diesel engines equipped with heat recovery systems for supplementary electric power production. The project will result in compliance with all applicable air pollution control rules and regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction April 1, 1981 Completion of Construction November 1982

Contract signed for fabrication of engines on November 12, 1980.

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

(Section 5.0 of PSD Report)

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes X No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50* ; if power plant, hrs/yr 8400* ;

if seasonal, describe: N/A

*Temporary shutdowns and/or scheduled maintenance will occur at various times. A duration equivalent to two weeks per unit is estimated. It is unlikely that this occurs at any one time.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant?	No
a. If yes, has "offset" been applied?	
b. If yes, has "Lowest Achievable Emission Rate" been applied?	
c. If yes, list non-attainment pollutants.	
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.	Yes: See Attachment A
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.	Yes: See Attachment A
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	Yes: See Attachment A
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A
2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	236.5 263	884	N/A	263	263	1106++	See
Particulate	8.7 10	33	N/A	10	10	41++	Attachments
Nitrogen Oxides*	261 327	1101	N/A	327	523	2200	C and D
Carbon Monoxide	50 57	190	N/A	57	57	238++	
Hydrocarbons	22.6 26	86	N/A	26	26	108++	

D. Control Devices: (See Section V, Item 4) NO_x emission control is achieved through engine modification.

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

\+ Without NO_x control emissions of SO_2, particulate, NO_x, CO and HC decrease.

* Oxides of nitrogen expressed as nitrogen dioxide.

++ Based upon 100% capacity factor with NOx control.

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Residual Fuel Oil	4211.9 3784 lbs	5264.9 4730 lbs	98.5

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 2.5%
Percent Ash: 0.1% 0.07

Density: 8.04 7.9 lbs/gal
Typical Percent Nitrogen: unknown

Heat Capacity: 18,700 HHV 18,400 17,600 LHV BTU/lb
145,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution):

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum N/A

G. Indicate liquid or solid wastes generated and method of disposal.

There will be no discharges of liquid or solid wastes from the facility that will not be disposed of in either a sanitary sewage system or sanitary landfill as applicable.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 150 125 ft.
Stack Diameter: 7.2 (stack) 3.7 (flue) 20.3 ft.

Gas Flow Rate: 276,800(stack) 73,900(flue) 74300 ACFM
Gas Exit Temperature: 300 250 °F.

Water Vapor Content: 5 %
Velocity: 114.8 41 FPS

The three engine flues are ducted into one common stack. These parameters pertain to the common stack.

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste

Total Weight Incinerated (lbs/hr)
Design Capacity (lbs/hr)

Approximate Number of Hours of Operation per day
days/week

Manufacturer

Date Constructed
Model No.

	Volume (ft)^3	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ________________ ft. Stack Diameter ________________ Stack Temp. ________________

Gas Flow Rate: ________________ ACFM ________________ DSCFM* Velocity ________________ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: ☐ Cyclone ☐ Wet Scrubber ☐ Afterburner ☐ Other (specify) ________________

Brief description of operating characteristics of control devices: ________________

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation. N/A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Attachment B
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachment C
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). N/A
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachment C
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Attachment D
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). See Attachment E
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. See Attachment F

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
☐ Yes ☒ No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) ☐ Yes ☒ No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant		Rate or Concentration
Particulate Matter		0.1 lb/10^6 Btu
Sulfur Dioxide	2.72 lbs/10^6 Btu	Not to exceed 2.5% S Fuel Oil
Nitrogen Oxides*	3 lbs/10^6 BTU	650 ppm with correction for efficiency (shaft and bottoming cycle) and O_2
Carbon Monoxide		0.575 lb/10^6 Btu
Hydrocarbons		0.26 lb/10^6 Btu

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

* Oxides of nitrogen expressed as nitrogen dioxide when given on a mass basis.

10. Stack Parameters (Parameters pertain to common stack)

a. Height: 150 ft. b. Diameter: 7.2 ft.

c. Flow Rate: 276,800 ACFM d. Temperature: 300 °F

e. Velocity: 114.8 FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1. Sulfur Dioxide (refer to Section 5.0 of PSD report)

a. Control Device: low sulfur fuel

b. Operating Principles: Reduction of SO_2 emissions by decreasing sulfur content of fuel

c. Efficiency*: 1% S fuel oil gives a 60% reduction from BACT proposed sulfur content (2.5%)

d. Capital Cost: N/A

e. Useful Life: Life of facility

f. Operating Cost: $12,564,000 year (1980 dollars) Total Facility

g. Energy*: N/A

h. Maintenance Cost: N/A

i. Availability of construction materials and process chemicals: N/A

j. Applicability to manufacturing processes: N/A

k. Ability to construct with control device, install in available space, and operate within proposed levels: N/A

Detuning →

2. Nitrogen Oxides* (refer to Section 5.0 of PSD report)

a. Control Device: Engine modifications * Fuel injection retard

b. Operating Principles: Reduces NO_x emissions by combustion control

air to fuel change

c. Efficiency*: 37.5% reduction 40%

d. Capital Cost: N/A

e. Useful Life: Life of facility

f. Operating Cost: See Section 5.0 of PSD report

g. Energy**: See Section 5.0 of PSD report

h. Maintenance Costs: N/A

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes: N/A

k. Ability to construct with control device, install in available space, and operate within proposed levels: N/A

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3. Carbon Monoxide/Hydrocarbons - Refer to pp. 43154-43155 of July 23, 1979 Federal Register

a. Control Device:

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

*Explain method of determining efficiency above.

* Nitrogen oxides expressed as Nitrogen dioxide when given on a mass basis.

i. [illegible]

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: Nitrogen Oxides

1. Control Device: Engine modifications

2. Efficiency*: 37.5%

3. Capital Cost:

4. Life: Life of facility

5. Operating Cost: See BACT Attachment , Section 5.0 of PSD Report

6. Energy: See BACT Attachment

7. Maintenance Cost:

8. Manufacturer: Sulzer Brothers Limited

9. Other locations where employed on similar processes: This application is the first in U.S. for electrical generation.

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above. (See Attachment C)

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*: N/A

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems: Refer to Section 5.0 of PSD Report

---

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data (No air quality data taken as part of this application)

1. ______ no sites ______ TSP ______ ( ) SO^2* ______ Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___ (month day year to month day year)

Other data recorded ______

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ___ Yes ___ No

b) Was instrumentation calibrated in accordance with Department procedures? ___ Yes ___ No ___ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 74 to 12 / 31 / 78 (month day year to month day year)

2. Surface data obtained from (location) McCoy International Airport, Orlando, Florida

3. Upper air (mixing height) data obtained from (location) Tampa

4. Stability wind rose (STAR) data obtained from (location) McCoy AFB

C. Computer Models Used

1. AQDM Briggs Plume Rise Option — Modified? If yes, attach description.

2. CRSTER 5-yr — Modified? If yes, attach description.

3. PTMTP - W — Modified? If yes, attach description.

4. ______ — Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	11.2 MW: 1.24	grams/sec
SO^2	11.2 MW: 33.2	grams/sec

$33.2\ \frac{gms}{sec} \times \frac{1\ lb}{465\ gms} \times \frac{3600}{1\ hr} = 257\ \frac{lb}{hr}$

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. (Refer to PSD Analysis)

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources. (Refer to BACT Attachment)

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A: Reference Section II G

1. This Sebring Utility's plant will be located in Highlands County which has been designated as attainment for all regulated pollutants.

2. Under Florida DER regulations, BACT is required for any pollutant with emissions causing ambient concentrating over the baseline. Sebring Utility's proposed diesel units will cause concentrations over the DER baseline, therefore, BACT must be applied.

   Under EPA PSD regulations, BACT is required for those pollutants with emissions in excess of de minimus levels. Emissions of particulates, SO_2, NO_x, CO and HC are in excess of these levels, therefore BACT must be applied to these pollutants.

3. Emissions from the units are in excess of 200 tons per year which imposes a PSD review for these units (see PSD report).

4. NSPS have been promulgated (40 CFR 60, Sections 60.320-324) for diesel engines constructed 30 months after July 23, 1979. As the engines for this permit will be installed prior to this date of applicability, NSPS will not apply.

ATTACHMENT B: Reference Section V 2
DESIGN AND EMISSION INFORMATION

DESIGN INFORMATION

Unit size = 11,180 kw gross

Heat input = 98.5 x 10^6 Btu/hr (HHV)

Fuel heating valve = 18,700 Btu/lb (HHV); 17,600 (LHV)

Stack gas flow = 19.93 lb/kw @ std. cond. dry

Heat recovery (bottoming cycle) = 891 kw gross

Stack gas temperature before heat recovery = 600°F

Stack gas temperature after heat recovery = 300°F

Stack gas moisture = 5%

Fuel rate = 5,264.9 lb/hr

Proposed permit hours of operation = 8400

Annual capacity factor = 80%

Heat rate with bottoming cycle = 7676 Btu/kwh(based on LHV)

Heat rate without bottoming cycle = 8288 Btu/kwh(based on LHV)

STACK GAS FLOW

Stack gas mass flow = 19.93 lb/kw x 11,180 kwh = 222,817.4 lb/hr (dry)

Volume stack gas = Mass flow x specific gas constant x absolute temperature ÷ absolute pressure

Specific gas constant =Universalgas constant ÷ molecular weight = 1545 ft/°R ÷ 29.36 = 52.62 ft/°R

Volume stack gas (dry) = 222,817.4 lb/hr x 52.62 ft/°R x 760°R ÷ 2116.8 lb/ft^2 ÷ 60min/hr = 70,200 ft^3/min

Volume stack gas = 73,900 ft^3/min

SULFUR DIOXIDE EMISSIONS

Sulfur Content = 2.5%; equivalent to 2.67 lb/10^6 Btu

All S converted to SO_2

SO_2 emissions = 5,264.9 lbs fuel/hr x $\frac{0.025 \text{ lb S}}{\text{lb fuel}}$ x $\frac{2 \text{ lb SO}_2}{\text{lb S}}$ = 263.2 lbs/hr

= 884.4 TPY

TOTAL PARTICULATE EMISSIONS

BACT Emission level - 0.1 lb/10^6 Btu

Particulate emissions = 98.5 x 10^6 Btu/hr x 0.1 part./10^6 Btu =
9.85 lbs/hr ; 33.1 TPY

NITROGEN DIOXIDE EMISSIONS

@ 650 ppm corrected for 15% O_2 and 10.2 kjoules/watt hr

Lower heat rate = 7676 Btu/kwh

O_2 in stack gas = 14.14%

$10.2 \frac{KJ}{W\text{-}hr} \times \frac{BTU}{1055J} = 9670 \frac{BTU}{kWh}$

Volume = 70,200 ft^3/min (dry)

10.2 kilojoule/watt hr equivalent to 9670 Btu/kwh

$$650 \text{ ppm} \times \frac{9670}{7676} = 819 \text{ ppm corrected for efficiency}$$

$$819 \text{ ppm} \times \frac{(20.9-14.14)}{5.9} = 938 \text{ ppm}$$

$R = 1545\ lb/ft^2\ {}^\circ R$

NO_x emissions on a mass basis

$$m = \frac{\text{Vol. x Press.}}{\text{R x Temp}} \qquad R = \frac{\bar{R}}{M} = \frac{1545}{46} = 33.6 \text{ ft/°R}$$

$$m = \frac{938(10^{-6})\overset{V}{(70,200)}\overset{P}{(14.7)}(144)}{\underset{R}{(33.6)}\underset{T}{(760)}}$$

$$= 5.46 \text{ lb/min} = 327.6 \text{ lb/hr } NO_x \text{ as } NO_2$$

$$= 1100.7 \text{ TPY}$$

$\frac{327.6\ lb/hr}{98.5 \times 10^6\ BTU/hr} = 3.32\ lb/BTU$

CARBON MONOXIDE EMISSIONS

BACT Emission Levels = 0.575 lb/10^6 Btu

CO emissions = 0.575 lb/10^6 Btu x 98.5 x 10^6 Btu/hr = 56.6 lbs/hr

= 190.2 TPY

HYDROCARBON EMISSIONS

BACT Emission Level - 0.26 lb/10^6 Btu

HC emissions = 0.26 lb/10^6 Btu x 98.5 x 10^6 Btu/hr = 25.6 lbs/hr

= 86.0 TPY

$ppm \times \frac{ft^3}{10^6 ft^3}$ 1BTU = 1055.866 int. Joule

$$\frac{\frac{1 ft^3}{10^6 ft^3} \times \frac{ft^3}{min} \times \frac{lbs}{inch^2} \times 144}{\frac{ft}{{}^\circ R} \times 760 \text{ mm Hg}}$$

ATTACHMENT C: Reference Section V 3

Basis for Potential Emissions

Except for the NO_x emissions and the annual emissions for the other pollutants, the emission estimates calculated in Attachment B also represent potential emissions. For annual actual emissions, an annual capacity factor of 80 percent was used. The annual potential emissions are calculated below.

SO_2: 884.4 actual TPY ÷ 0.8 = 1105.5 Potential TPY
Particulate: 33.1 actual TPY ÷ 0.8 = 41.4 Potential TPY
CO: 190.2 actual TPY ÷ 0.8 = 237.8 Potential TPY
HC: 86.0 actual TPY ÷ 0.8 = 107.5 Potential TPY

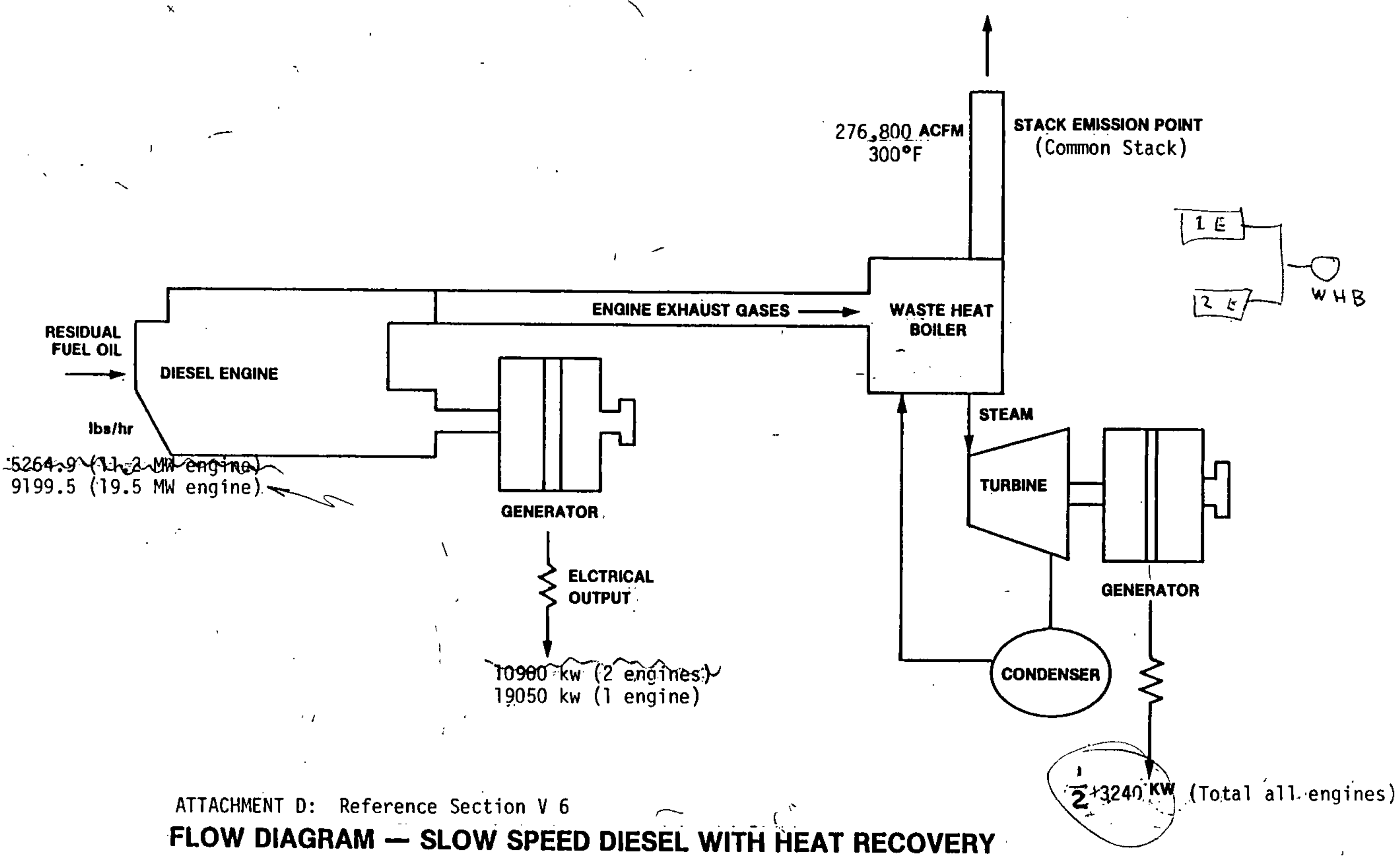
Due to NO_x control, actual emissions of SO_2, particulate, CO and HC will be 6% higher than without control. This is due to loss of efficiency and greater fuel use caused by detuning the engine.

Uncontrolled emissions from slow speed diesels is approximately 1500 ppm. The potential emissions are:

$$NO_x(\text{mass}) = \frac{1500(10^{-6})(70{,}200)(14.7)(144)}{(33.6)(760)} = 8.73 \text{ lb/min, } 523.8 \text{ lb/hr,}$$

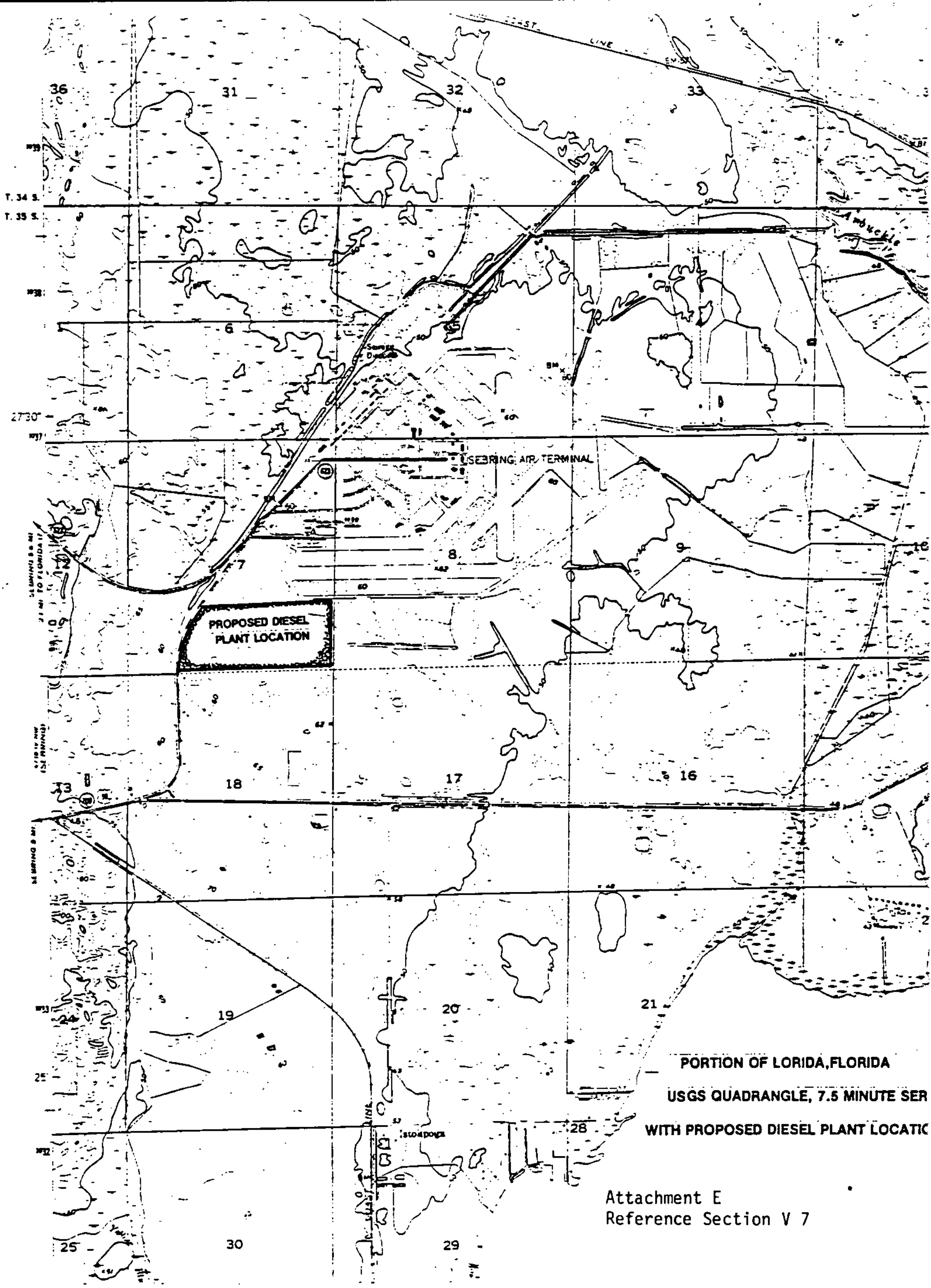
2200 tons/year NO_x as NO_2

$$\text{Reduction in } NO_x \text{ emissions} = \frac{523.8 \text{ lb/hr} - 327.6 \text{ lb/hr}}{523.8 \text{ lb/hr}} \times 100\% = 37.5\%$$



ATTACHMENT D: Reference Section V 6

FLOW DIAGRAM — SLOW SPEED DIESEL WITH HEAT RECOVERY



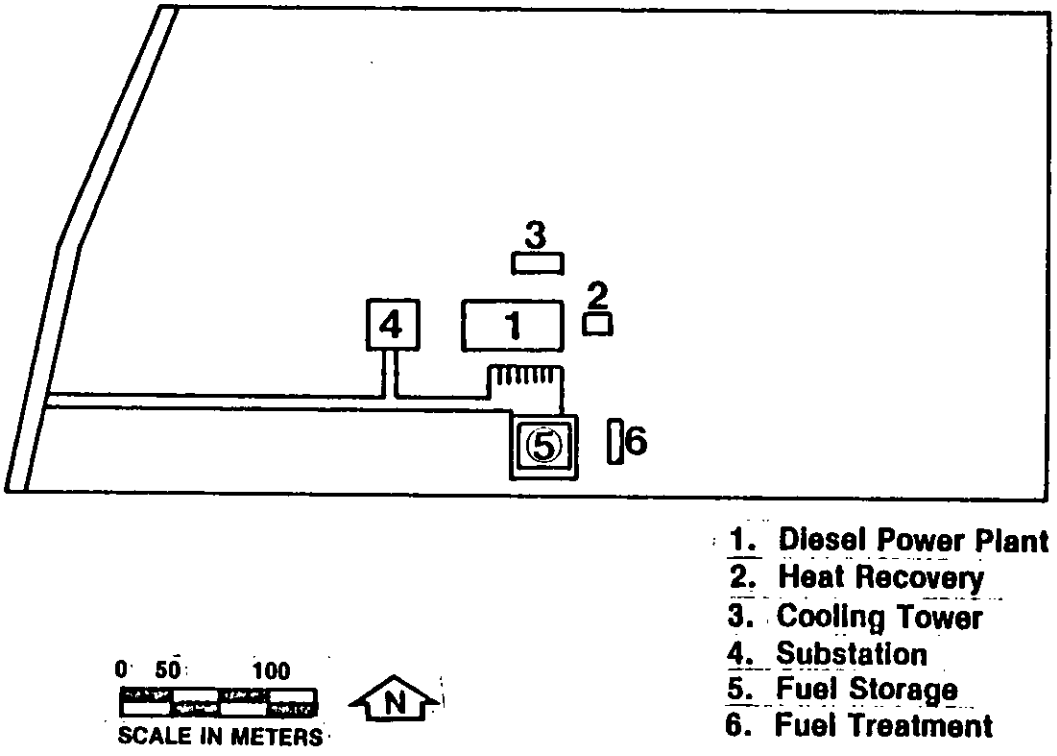
PORTION OF LORIDA,FLORIDA

USGS QUADRANGLE, 7.5 MINUTE SER

WITH PROPOSED DIESEL PLANT LOCATIC

Attachment E
Reference Section V 7

PRELIMINARY SITE LAYOUT, SEBRING UTILITIES COMMISSION



Attachment F: Reference Section V 8

Cost 1,000 KW-hr electricity

January, '81 $\$41^{\underline{75}}$

March 18, 1981 $\$78^{\underline{05}}$

per phone conv. with [illegible]
Utility Commission 3-18-81

% Increase (now)

from applic.

$$\frac{\$8.\underline{30} \times 100}{78.05} = 10.6\%$$

2 UNITS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Diesel Electric Generating Unit [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Sebring Utilities Commission COUNTY: Highlands

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Slow Speed Diesel Unit 3, ~~19.535 Mw output~~ capacity, Engine Type 8RNF90M

SOURCE LOCATION: Street East of SR 623 City N/A

UTM: East 464.3 km North 3035.4 km

Latitude 27 ° 26 ' 18 "N Longitude 81 ° 21 ' 36 "W

APPLICANT NAME AND TITLE: Sebring Utilities Commission

APPLICANT ADDRESS: 368 South Commerce Avenue, P. O. Box 971, Sebring, Florida 33870

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Sebring Utilities Commission

I certify that the statements made in this application for a Air Pollution Construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed:

J.H. Phillips General Manager
Name and Title (Please Type)

Date: Telephone No. 813/385-0648

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed:

Kennard F. Kosky
Name (Please Type)

(Affix Seal)

Environmental Science and Engineering, Inc.
Company Name (Please Type)

P. O. Box ESE, Gainesville, Florida 32602
Mailing Address (Please Type)

Florida Registration No. 14996 Date: Telephone No. 904/372-3318

---

[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Installation of one 19.5 Mw and two 11.2 Mw slow speed, two-cycle diesel engines equipped with heat recovery systems for supplementary electric power production. The project will result in compliance with all applicable air pollution control rules and regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction April 1, 1981 Completion of Construction April 1983

Contract signed for fabrication of engines on November 12, 1980.

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

(Section 5.0 of PSD report)

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ___ Yes X No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50* ; if power plant, hrs/yr 8400* ;

if seasonal, describe: N/A

*Temporary shutdowns and/or scheduled maintenance will occur at various times. A duration equivalent to two weeks per unit is estimated. It is unlikely that this occurs at any one time.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant?	No
a. If yes, has "offset" been applied?	
b. If yes, has "Lowest Achievable Emission Rate" been applied?	
c. If yes, list non-attainment pollutants.	
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.	Yes: See Attachment A
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.	Yes: See Attachment A
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	Yes: See Attachment A
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1) 280% OPERATION

1. Total Process Input Rate (lbs/hr): N/A
2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted: 8400 hr/yr 920 lb/hr

$\frac{8400 \times 460}{2000} = 1932 \times 2 = 3864$

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	460	1546	N/A	460	460	1932++	See
Particulate	17	58	N/A	17	17	73++	Attachment
NOx Nitrogen Oxides*	572	1921	N/A	572	912	3830	D
Carbon Monoxide	99	332	N/A	99	99	415++	
Hydrocarbons	45	150	N/A	45	45	188++	

control

D. Control Devices: (See Section V, Item 4) NO_x emission is achieved through engine modification.

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
			3864 ton/year	
			146	

---

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

\+ Without NO_x control emissions of SO_2, particulate, NO_x, CO and HC decrease.
* Oxides of nitrogen expressed as nitrogen dioxide.
++ Based upon 100% capacity factor with NO_x control.

E. Fuels

Type (Be Specific)	Consumption* avg/hr	Consumption* max./hr	Maximum Heat Input (MMBTU/hr)
Residual Fuel Oil	7359.6 = 80% x	9199.5	172.0 160

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 2.5%

Percent Ash: 0.1%

Density: 8.04 lbs/gal

Typical Percent Nitrogen: unknown

Heat Capacity: 18,700 HHV BTU/lb

17,600 LHV

BTU/gal

Other Fuel Contaminants (which may cause air pollution):

from 20 MW unit

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum N/A

G. Indicate liquid or solid wastes generated and method of disposal.

There will be no discharges of liquid or solid wastes from the facility that will not be disposed of in either a sanitary sewage system or sanitary landfill as applicable.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 150 ft.

Stack Diameter: 7.2(stack) 4.9(flue) ft.

Gas Flow Rate: 276,800(stack) 129,000(flue) ACFM

Gas Exit Temperature: 300 °F.

Water Vapor Content: 5 %

Velocity: 114.8 FPS

The three engine flues are ducted into one common stack. These paremeters pertain to the common stack.

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste

Total Weight Incinerated (lbs/hr)

Design Capacity (lbs/hr)

Approximate Number of Hours of Operation per day

days/week

Manufacturer

Date Constructed

Model No.

18700 BTU/lb x 9199 [illegible] = 172

	Volume (ft)^3	Heat Release (BTU/hr)	Fuel Type	Fuel BTU/hr	Temperature (°F)
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner [ ] Other (specify) ______

Brief description of operating characteristics of control devices: ______

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.): ______

$$\frac{162 \times 10^6 \text{ BTU/hr}}{19.5 \text{ MW}} \times \frac{1.055 \text{ kJ/BTU}}{10^6 \text{ W}} = 8.76$$

SECTION V: SUPPLEMENTAL REQUIREMENTS

162

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation. N/A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Attachment B
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachment C
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). N/A
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachment C
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Attachment D
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). See Attachment E
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. See Attachment F

olication fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of vironmental Regulation.

With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
☐ Yes ☒ No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) ☐ Yes ☒ No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Particulate Matter	0.1 lb/10^6 Btu
Sulfur Dioxide	Not to exceed 2.5% S Fuel Oil
Nitrogen Oxides*	650 ppm with correction for efficiency (shaft and bottoming cycle) and O2
Carbon Monoxide	0.575 lb/10^6 Btu
Hydrocarbons	0.26 lb/10^6 Btu

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

* Oxides of nitrogen expressed as nitrogen dioxide when given on a mass basis.

10. Stack Parameters (Parameters pertain to common stack)

a. Height: 150 ft. b. Diameter: 7.2 ft.

c. Flow Rate: ~~276,800~~ ACFM d. Temperature: 300 °F

e. Velocity: 114.8 FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1. Sulfur Dioxide (refer to Section 5.0 of PSD report)

a. Control Device: low sulfur fuel

b. Operating Principles: Reduction of SO_2 emissions by decreasing sulfur content of fuel

c. Efficiency*: 1% S fuel oil gives a 60% reduction from BACT proposed sulfur content (2.5%) d. Capital Cost: N/A

e. Useful Life: Life of facility f. Operating Cost: $12,564,000 year (1980 dollars) Total Facility

g. Energy*: N/A h. Maintenance Cost: N/A

i. Availability of construction materials and process chemicals: N/A

j. Applicability to manufacturing processes: N/A

k. Ability to construct with control device, install in available space, and operate within proposed levels: N/A

2. Nitrogen Oxides* (refer to Section 5.0 of PSD report)

a. Control Device: Engine modifications

b. Operating Principles: Reduces NO_x emissions by combustion control

c. Efficiency*: 37.3% reduction d. Capital Cost: N/A

e. Useful Life: Life of facility f. Operating Cost: See Section 5.0 of PSD report

g. Energy**: See Section 5.0 of PSD report h. Maintenance Costs: N/A

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes: N/A

k. Ability to construct with control device, install in available space, and operate within proposed levels: N/A

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power — KWH design rate.

3. Carbon Monoxide/Hydrocarbons - Refer to pp. 43154-43155 of July 23, 1979 Federal Register

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

* Nitrogen oxides expressed as Nitrogen dioxide when given on a mass basis.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: Nitrogen Oxides

1. Control Device: Engine modifications

2. Efficiency*: 37.3%

3. Capital Cost:

4. Life: Life of facility

5. Operating Cost: See BACT Attachment, Section 5.0, PSD Report

6. Energy: See BACT Attachment

7. Maintenance Cost:

8. Manufacturer: Sulzer Brothers Limited

9. Other locations where employed on similar processes: This application is the first in U.S. for electrical generation.

altering compression ratio
Engine detuning

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above. (See Attachment C).

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*: N/A

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems: Refer to Section 5.0 of PSD Report

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII — PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data (No air quality data taken as part of this application)

1. ______ no sites ______ TSP ______ ( ) SO2* ______ Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___ (month day year / month day year)

Other data recorded ______

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ____ Yes ____ No

b) Was instrumentation calibrated in accordance with Department procedures? ____ Yes ____ No ____ Unkn[illegible]n

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 74 to 12 / 31 / 78 (month day year / month day year)

2. Surface data obtained from (location) McCoy International Airport, Orlando, Florida

3. Upper air (mixing height) data obtained from (location) Tampa

4. Stability wind rose (STAR) data obtained from (location) McCoy AFB

C. Computer Models Used

1. AQDM Briggs Plume Rise Option ______ Modified? If yes, attach descripti[illegible].

2. CRSTER 5-yr ______ Modified? If yes, attach description.

3. PTMTP - W ______ Modified? If yes, attach descripti[illegible].

4. ______ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	19.5 MW: 2.2 grams/sec
SO2	19.5 MW: 58.0 grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. (Refer to PSD Analysis)

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, [illegible]uction, taxes, energy, etc.). Include assessment of the environmental impact of the sources. (Refer to BACT Attac[illegible]er
Section 5.0, PSD Report

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A: Reference Section II G

1. This Sebring Utility's plant will be located in Highlands County which has been designated as attainment for all regulated pollutants.

2. Under Florida DER regulations, BACT is required for any pollutant with emissions causing ambient concentrating over the baseline. Sebring Utility's proposed diesel units will cause concentrations over the DER baseline, therefore, BACT must be applied.

   Under EPA PSD regulations, BACT is required for those pollutants with emissions in excess of <u>de minimus</u> levels. Emissions of particulates, SO_2, NO_x, CO and HC are in excess of these levels, therefore BACT must be applied to these pollutants.

3. Emissions from the units are in excess of 200 tons per year which imposes a PSD review for these units (see PSD report).

4. NSPS have been promulgated (40 CFR 60, Sections 60.320-324) for diesel engines constructed 30 months after July 23, 1979. As the engines for this permit will be installed prior to this date of applicability, NSPS will not apply.

ATTACHMENT B: Reference Section V 2
DESIGN AND EMISSION INFORMATION

20 KW

DESIGN INFORMATION

Unit size = 19,535 kw gross

Heat input = 172 x 10^6 Btu/hr (HHV) 162×10^6 (LHV)

Fuel heating valve = 18,700 Btu/lb (HHV);17,600 (LHV)

Stack gas flow = 19.93 lb/kw @ std. cond. dry lbs gas/lbs fuel KW

Heat recovery (bottoming cycle) = 1558 kw gross

Stack gas temperature before heat recovery = 600°F

Stack gas temperature after heat recovery = 300°F

Stack gas moisture = 5% ?

Fuel rate = 9199.5 lb/hr

Proposed permit hours of operation = 8400

Annual capacity factor = 80%

Heat rate without bottoming cycle = 8288 Btu/kwh(based on LHV) = $\frac{(9199.5)(17{,}600)}{19{,}535 \text{ KW}}$

Heat rate with bottoming cycle = 7676 Btu/kwh(based on LHV)

STACK GAS FLOW

Gas flow rate 276,800 ACFM

Stack gas mass flow = 19.93 lb/kw x 19,535 kwh = 389,332.6 lb/hr (dry)

Volume stack gas = mass flow x specific gas constant x absolute temperature ÷ absolute pressure

Specific gas constant = Universal gas constant ÷ molecular weight = 1545 ft/°R ÷ 29.36 = 52.62 ft/°R

Volume stack gas (dry) = 389,332.6 lb/hr x 52.62 ft/°R x 760°R ÷ 2116.8 lb/ft³ ÷ 60 min/hr = 122,600

(14.7 psi x 144 in²)

at dry

X 1.05

Volume stack gas = 129,000 ft³/min

at wet

SULFUR DIOXIDE EMISSIONS

Sulfur Content = 2.5%; equivalent to 2.67 lb/10^6 Btu

All S converted to SO_2

SO_2 emissions = 9199.5 lbs fuel/hr x $\frac{0.025 \text{ lb S}}{\text{lb fuel}}$ x $\frac{2 \text{ lb } SO_2}{\text{lb S}}$ = 460.0 lbs/hr

2009 TPY - 24/7/52

= 1545.6 TPY

460#/hr – 80% – 50 wk/yr

?: 938

$$C^{8/9}_{15\%\,X} = \bar{C}_S \left[\frac{20.9 - 15\,X \xrightarrow{} 1}{20.9 - \underset{15}{\%O_2}}\right] \quad 14.14$$

$$\begin{array}{r} 20.9 \\ 14.14 \\ \hline 6.76 \end{array}$$

$$\boxed{\text{Conc NO}_2 \text{ IN STACK GAS} = \text{Conc}^{8/9}_{15\%\,\text{STD}} \left[\frac{20.9 - \%O_2}{20.9 - 15}\right]}$$

$$= 758 \left[\frac{\overset{6.76}{\cancel{20.9 - 14.14}}}{\underset{5.9}{\cancel{20.9 - 15}}}\right]$$

= 868 PPM @ Stack Cond.

STD = 600 10.2

650 7/2 [illegible]

WITH WASTE HEAT BOILER

WITHOUT WASTE HEAT BOILER

TOTAL PARTICULATE EMISSIONS

BACT Emission Level - 0.1 lb/10^6 Btu

Particulate emissions = HHV 172.0 x 10^6 Btu/hr x 0.1 part./10^6 Btu =

17.2 lbs/hr; 57.8 TPY (75.1 TPY Round Clock operation)

50wk/80%

NITROGEN DIOXIDE EMISSIONS

@ 650 ppm corrected for 15% O_2 and 10.2 kjoules/watt hr

Lower heat rate - 7676 Btu/kw   9199.5# x 17,600 BTU/# / 19,535 kw = 8 288 BTU/KW

O_2 in stack gas = 14.14%

Volume = 122,600 ft^3/min (dry)

10.2 kilojoule/watt hr equivalent to 9670 Btu/kwh

650 ppm x $\frac{9670}{7676}$ = 819 ppm corrected for efficiency $650 \frac{9670}{8288}$ = 758 PPM

758

8~~19~~ ppm x $\frac{(20.9-14.14)}{5.9}$ = 868 ~~938 ppm~~ at @ 14.14% O_2 with waste-heat boiler

heat rate bottoming cycle

NO_x emissions on a mass basis

$$m = \frac{\text{Vol x Press.}}{\text{R x Temp}} \qquad R = \frac{\bar{R}}{M} = \frac{1545}{46} = 33.6 \text{ ft/°R}$$

868

$$m = \frac{9\cancel{3}8(10^{-6})(122{,}600)(14.7)(144)}{(33.6)(760)}$$

8.82

= 9.~~5~~3 lb/min = 529 5~~7~~1.8 lb/hr NO_x as NO_2

= 1~~9~~21.2 TPY

1778

2311 TPY (Round clock)

80% / 50wk

CARBON MONOXIDE EMISSIONS

BACT Emission Levels = 0.575 lb/10^6 Btu

CO Emissions = 0.575 lb/10^6 Btu x 172.0 x 10^6 Btu/hr = 98.9 lbs/hr

= 332.3 TPY — 80%/50wk

HYDROCARBON EMISSIONS

BACT Emission Level = 0.26 lb/10^6 Btu

HC emissions = 0.26 lb/10^6 Btu x 172.0 x 10^6 Btu/hr = 44.7 lbs/hr

= 150.2 TPY — 80%/50wk

need time / Capacity limit

ATTACHMENT C: Reference Section V 3

Basis for Potential Emissions

Except for the NO_x emissions and the annual emissions for the other pollutants, the emission estimates calculated in Attachment B also represent potential emissions. For annual actual emissions, an annual capacity factor of 80 percent was used. The annual potential emissions are calculated below.

SO_2: 1546 actual TPY ÷ 0.8 = 1932 Potential TPY — 50 WK

Particulate: 58 actual TPY ÷ 0.8 = 72.5 Potential TPY

CO: 332 actual TPY ÷ 0.8 = 415 Potential TPY

HC: 150 actual TPY ÷ 0.8 - 187.5 Potential TPY

?

Due to NO_x control actual emissions of SO_2, particulate, CO and HC will be 6% higher than without control. This is due to loss of efficiency and greater fuel use caused by detuning the engine.

Uncontrolled emissions from slow speed diesels is approximately 1500 ppm. The potential emissions are:

$$NO_x \text{ (mass)} = \frac{1500(10^{-6})(122{,}600)(14.7)(144)}{(33.6)(760)} = 15.2 \text{ lb/min, } 912.0 \text{ lb/hr,}$$

3830 tons/year NO_x as NO_2

$$\text{Reduction in } NO_x \text{ emissions} = \frac{912.0 \text{ lb/hr} - 571.8 \text{ lb/hr}}{912.0 \text{ lb/hr}} \times 100\% = 37.3\%$$

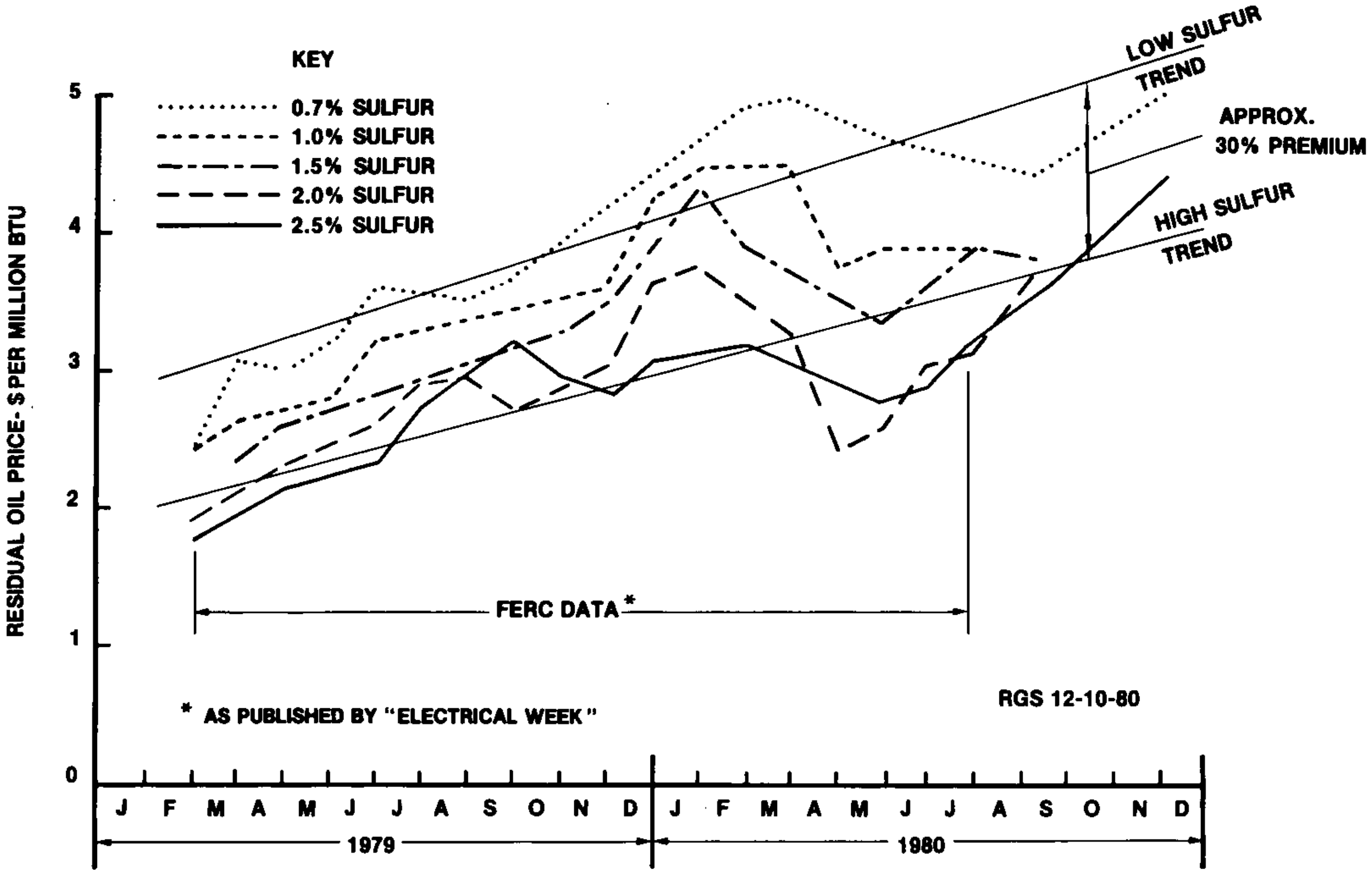


Figure 1; Reference BACT Attachment
CENTRAL FLORIDA RESIDUAL OIL PRICES

SOURCE: CH$_2$ M-HILL.

ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.

APPENDIX B

DESCRIPTION OF ATMOSPHERIC DISPERSION MODELS

DESCRIPTIONS OF ATMOSPHERIC DISPERSION MODELS

THE AIR QUALITY DISPLAY MODEL

The Air Quality Display Model (AQDM) was developed by the U.S. Environmental Protection Agency and is an approved technique for computing annual or seasonal arithmetic average concentrations of gaseous and suspended particulate pollutants. The AQDM is based on the diffusion model developed by Martin and Tikvart (1968). It uses the Pasquill-Gifford plume dispersion equation, which is summarized by Turner (1969) and the plume rise equation developed by Briggs (1972) to simulate plume behavior.

Annual average emissions data and stack parameters from multiple point sources are used as inputs to the AQDM in conjunction with annual or seasonal meteorological stability wind rose data to determine ground-level concentrations at designated receptor points and points comprising a receptor grid network. In addition, an annual average afternoon mixing height, temperature, and pressure are entered.

According to the Pasquill-Gifford diffusion equation, the concentration, C, at a position (x, y, z) for the substances emitted at (o, o, H) is given by:

$$C(x,y,z;H) = \frac{Q}{2\pi\sigma_y\sigma_z u} \qquad \exp\,[-1/2(y/\sigma_y)^2]A$$

for:

$$A = \exp\,[-1/2(z-H/\sigma_z)^2] + \exp\,[-1/2(z+H/\sigma_z)^2]$$

where:

C (x, y, z; H) = pollutant concentration (grams/meter^3) at point x, y, z for an effective stack height, H

Q = emission rate (grams/sec)

σy, σz = standard deviation of the plume concentration distribution in the cross plume and vertical directions (meters). ($_y$ and $_z$ are given as functions of downwind distance and atmospheric stability.)

π = mean wind speed (m/sec).

In the AQDM, the effective stack height, H, is computed from the Briggs plume rise equation according to the relation:

$$H = h + 1.6F^{1/3}u^{-1}\,(3.5z)^{2/3} \quad \text{for } r > 3.5z$$

and

$$H = h + 1.6F^{1/3}u^{-1}\,r^{2/3} \quad \text{for } r \leq 3.5z$$

$$z = 34F^{2/5} \quad \text{if } F > 55$$

$$z = 14F^{5/8} \quad \text{if } F \leq 55$$

H = effective stack height (meters)

h = actual stack height (meters)

$F = gV_sR_s^2\,[(T_s - T_a)/T_s]$ (meters^4/seconds^3)

g = acceleration due to gravity (meters/sec^2)

V_s = exit velocity of stack gases (meters/sec)

R_s = inside radius of stack (meters)

T_s = exit temperature of stack gases (°K)

T_a = ambient air temperature

u = wind speed at stack height

r = distance from source to receptor (meters)

THE PTMTPW SHORT-TERM MODEL

The PTMTPW is an EPA model which is a modified version of the PTMTP model. The major difference in the PTMTPW is that this model accounts for the vertical wind shear effect (increase in wind speed with height) which is known to exist in the atmospheric boundary layer. Hourly wind speeds are input into the model along with the height at which the wind speed sensor was placed. The wind shear correction at stack height for each source is then accomplished by use of the following equation:

$$U_Z = U_L\left(\frac{Z}{Z_o}\right)^P$$

where U_L is the wind speed at height Z_o, Z is the stack height or emission release point, and P depends upon atmospheric stability class (De-Marrais, 1959).

In addition to a wind shear law, the model uses an hourly average emission inventory and stack data from multiple point sources in conjunction with hourly meteorological data to calculate hourly pollutant concentrations at designated receptor points. These hourly concentrations can be averaged over longer periods of time, such as 3 hours or 24 hours, in order to aid in the comparison of calculated concentrations with concentrations observed over a period of time greater than one hour. The averaging times of 3 and 24 hours are consistently utilized in this report since the applicable short-term PSD increments and AAQS are specifically for those averaging times. The PTMTPW uses the Pasquill-Gifford plume dispersion equation in conjunction with the plume rise equation developed by Briggs to simulate plume behavior. Using the Briggs equation, effective stack height, H, is determined according to the following relation:

$$H = h + 1.6F^{1/3}u^{-1}\,(3.5z)^{2/3} \quad \text{for } r > 3.5z$$

and

$$H = h + 1.6F^{1/3}u^{-1}\,r^{2/3} \quad \text{for } r \leq 3.5z$$

$$z = 34F^{2/5} \quad \text{if } F > 55$$

$$z = 14F^{5/8} \quad \text{if } F \leq 55$$

H = effective stack height (meters)

h = actual stack height (meters)

$F = gV_sR_s^2\,[(T_s - T_a)/T_s]$ (meters^4/seconds^3)

g = acceleration due to gravity (meters/sec^2)

V_s = exit velocity of stack gases (meters/sec)

R_s = inside radius of stack (meters)

T_s = exit temperature of stack gases (°K)

T_a = ambient air temperature

u = wind speed at stack height

r = distance from source to receptor (meters)

THE CRSTER MODEL

CRSTER is a steady state Gaussian plume model applicable in flat or complex terrain (U.S. EPA, 1978 and 1979). The purposes of the model are to: (1) determine the highest and second highest concentrations from a single facility for various averaging times using one or more years of meteorological data, (2) determine the meteorological conditions which cause these maximum concentrations and, (3) store concentration information useful in calculating frequency distributions for various averaging times.

A concentration for each hour of the year is calculated from emissions data, stack parameters, and hourly meteorological conditions. Twenty-four hour averages are calculated from midnight-to-midnight of each day. Three-hour averages are calculated for non-overlapping consecutive three-hour periods. Variable averaging times of 8, 4, 2-hour and others are also available through a program option.

General output for the model includes tables of the highest and second highest 1, 3, and 24-hour concentrations at each receptor for each year of meteorological data input plus a table of the annual arithmetical average concentration at each receptor. Receptors are specified for five downwind distances. For each downwind distance, receptors are located along the 36 standard wind directions (10°, 20°, ...360°), resulting in a total of 180 receptors. Hourly concentrations for each receptor can be output onto magnetic tape for further processing of frequency distributions.

ESE's CRSTER model has the following added options:

1. A variable number of years of meteorological data can be entered into one computer run.
2. Composite concentration tables are printed after all years have been processed. There are composite concentration tables for the annual 24, 3, 1, and variable-hour highest and second highest concentrations at each receptor. This option facilitates the development of concentration isopleth maps for selected averaging times.
3. An option is available for writing the composite tables onto disk or tape in order to simplify the determination of maximum PSD increments over the entire 180-receptor grid.

Using the final plume rise equation of Briggs (1972), the effective stack height, H, is determined according to the following equations:

$$H = h + 1.6F^{1/3}U^{-1}\ (3.5z)^{2/3} \quad \text{for } r > 3.5a$$

and

$$H = h + 1.6F^{1/3}u^{-1}\ r^{2/3} \quad \text{for } r \leq 3.5a$$

$$a = 34F^{2/5} \quad \text{if } F > 55$$

$$a = 14F^{5/8} \quad \text{if } F \leq 55$$

H = effective stack height (m)

h = physical stack height (m)

F = buoyancy flux term $gV_sR_s^2\ [(T_s - T_a)/T_s]$ (m^4/sec^3)

g = acceleration of gravity (m/sec^2)

V_s = stack gas exit velocity (m/sec)

R_s = stack inner radius (m)

T_s = exit stack gases temperature (°K)

T_a = ambient air temperature (°K)

u = wind speed at stack height (m/sec)

r = distance from source to receptor (m)

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Briggs, G.A. 1972. "Discussion of Chimney Plumes in Neutral and Stable Surroundings." Atmospheric Environment 6, pp. 507-570.

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Turner, D.B. 1969. "Workbook of Atmospheric Dispersion Estimates," PHS No. 00-AP026 (NTIS PB 191 482), Office of Technical Information and Publications, U.S. EPA, Research Triangle Park, North Carolina.

APPENDIX C

MODEL OUTPUT

```
PLANT NAME: SEBRING UNITS 1-5          POLLUTANT:          AIR QUALITY UNITS: GM/M**3
SO2
FOR MAX IMPACT @ 75%

                 MET FILE      REQUESTED
                STN NO. YR    STN NO. YR
 SURFACE         12815  74     12815  74
 UPPER AIR       12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * *  N O T E  * * * * * * * * * * * * * * *

          ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

          ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

```
  RING DISTANCES(KM)=   0.20   0.40   0.60   0.80   1.00

STACK #  1--UNITS 1-3

 STACK     MONTH       EMISSION RATE          HEIGHT   DIAMETER  EXIT VELOCITY   TEMP       VOLUMETRIC FLOW
                         (GMS/SEC)           (METERS)  (METERS)     (M/SEC)     (DEG.K)       (M**3/SEC)

   1        ALL           92.4000              45.72      2.19        26.30      422.00          99.07
```

```
                         COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                         ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
            RANGE    0.2 KM         0.4 KM         0.6 KM         0.8 KM         1.0 KM
       DIR
        1             0.             0.             0.             1.             1.
        2             0.             0.             0.             1.             1.
        3             0.             0.             0.             0.             1.
        4             0.             0.             0.             1.             1.
        5             0.             0.             0.             1.             1.
        6             0.             0.             0.             1.             1.
        7             0.             0.             0.             1.             1.
        8             0.             0.             0.             0.             1.
        9             0.             0.             0.             0.             1.
       10             0.             0.             0.             0.             1.
       11             0.             0.             0.             0.             1.
       12             0.             0.             0.             1.             1.
       13             0.             0.             0.             1.             1.
       14             0.             0.             0.             1.             1.
       15             0.             0.             0.             0.             1.
       16             0.             0.             0.             0.             1.
       17             0.             0.             0.             0.             1.
       18             0.             0.             0.             0.             1.
       19             0.             0.             0.             0.             1.
       20             0.             0.             0.             0.             1.
       21             0.             0.             0.             1.             1.
       22             0.             0.             0.             1.             1.
       23             0.             0.             0.             1.             1.
       24             0.             0.             0.             1.             1.
       25             0.             0.             0.             1.             1.
       26             0.             0.             0.             1.             2.
       27             0.             0.             0.             1.             2.
       28             0.             0.             0.             1.             1.
       29             0.             0.             0.             1.             1.
       30             0.             0.             0.             1.             1.
       31             0.             0.             0.             1.             1.
       32             0.             0.             0.             1.             1.
       33             0.             0.             0.             1.             1.
       34             0.             0.             0.             1.             1.
       35             0.             0.             0.             1.             1.
       36             0.             0.             0.             1.             1.
```

18

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          COMPOSITE HIGHEST.SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE.UG/CU.M

                 SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE      0.2 KM  0.4.KM  0.6 KM  0.8 KM  1.0 KM
   DIR
      1             0.       1.      8.     13.     17.
      2             0.       0.      7.     12.     14.
      3             0.       0.      6.      9.     13.
      4             0.       0.      7.     10.     13.
      5             0.       0.      9.     12.     14.
      6             0.       0.      8.      9.     12.
      7             0.       0.      7.     12.     15.
      8             0.       1.      8.     11.     11.
      9             0.       0.      6.      9.     11.
     10             0.       0.      7.      8.      9.
     11             0.       0.      7.     11.     12.
     12             0.       0.     11.     14.     16.
     13             0.       1.      9.     13.     17.
     14             0.       1.      7.     12.     15.
     15             0.       0.      6.     10.     12.
     16             0.       0.      7.     10.     12.
     17             0.       0.      6.     11.     14.
     18             0.       0.      7.     12.     15.
     19             0.       0.      9.     11.     11.
     20             0.       1.      8.     12.     15.
     21             0.       0.      7.     12.     14.   →
     22             0.       1.      7.     14.     18.
     23             0.       1.      7.     12.     15.
     24             0.       0.      7.     10.     14.
     25             0.       0.      7.     12.     14.
     26             0.       0.      7.     12.     17.
     27             0.       0.      8.     11.     15.
     28             0.       0.      9.     14.     15.
     29             0.       0.      7.     11.     13.
     30             0.       0.      6.     12.     17.
     31             0.       1.      6.     13.     16.
     32             0.       1.      7.     11.     16.
     33             0.       1.      9.     15.     16.
     34             0.       0.      9.     15.     16.
     35             0.       1.     14.     16.     16.
     36             0.       1.     11.     14.     18.
```

2

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        COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

                   SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE       0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
  DIR
     1            0.         3.        53.        67.        80.
     2            0.         3.        52.        64.        75.
     3            0.         3.        48.        72.        81.
     4            0.         3.        53.        62.        72.
     5            0.         3.        47.        62.        70.
     6            0.         3.        53.        62.        71.
     7            0.         3.        52.        80.        89.
     8            0.         3.        55.        89.        84.
     9            0.         3.        50.        58.        75.
    10            0.         3.        55.        55.        57.
    11            0.         3.        52.        57.        71.
    12            0.         4.        64.        80.        76.
    13            0.         4.        72.        70.        90.
    14            0.         3.        55.        62.        74.
    15            0.         3.        47.        67.        74.
    16            0.         3.        51.        61.        67.
    17            0.         3.        46.        70.        89.
    18            0.         3.        56.        79.       103.
    19            0.         3.        68.        85.        74.
    20            0.         3.        54.        67.        70.
    21            0.         4.        53.        78.        72.
    22            0.         4.        53.        77.        79.
    23            0.         5.        51.        67.        77.
    24            0.         3.        57.        64.        75.
    25            0.         3.        51.        64.        76.
    26            0.         3.        53.        74.        94.
    27            0.         3.        51.        70.        77.
    28            0.         3.        49.        76.        75.
    29            0.         3.        47.        65.        70.
    30            0.         3.        51.        61.        79.
    31            0.         6.        41.        55.        73.
    32            0.         5.        52.        67.        79.
    33            0.         5.        57.        77.        83.
    34            0.         3.        68.        93.        95.
    35            0.         3.        59.        70.        81.
    36            0.         4.        51.        69.        82.
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        COMPOSITE HIGHEST.SECOND-HIGHEST. 8-HOUR CONCENTRATION TABLE.UG/CU.M

                  SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE      0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
  DIR
     1           0.         2.        24.        38.        50.
     2           0.         1.        20.        34.        42.
     3           0.         1.        18.        28.        38.
     4           0.         1.        20.        29.        39.
     5           0.         1.        26.        35.        38.
     6           0.         1.        24.        28.        35.
     7           0.         1.        21.        35.        45.
     8           0.         2.        24.        33.        33.
     9           0.         1.        19.        27.        33.
    10           0.         1.        21.        24.        26.
    11           0.         1.        21.        33.        36.
    12           0.         1.        33.        43.        49.
    13           0.         2.        28.        38.        52.
    14           0.         2.        22.        35.        44.
    15           0.         1.        18.        29.        35.
    16           0.         1.        20.        31.        37.
    17           0.         1.        18.        34.        42.
    18           0.         1.        21.        35.        42.
    19           0.         1.        26.        32.        32.
    20           0.         2.        24.        36.        44.
    21           0.         1.        21.        36.        41.
    22           0.         2.        22.        41.        53.
    23           0.         2.        22.        37.        43.
    24           0.         1.        22.        31.        42.
    25           0.         1.        22.        35.        42.
    26           0.         1.        22.        36.        50.
    27           0.         1.        20.        34.        45.
    28           0.         1.        27.        41.        45.
    29           0.         1.        22.        33.        36.
    30           0.         1.        19.        35.        51.
    31           0.         2.        18.        38.        47.
    32           0.         2.        20.        31.        42.
    33           0.         2.        28.        44.        46.
    34           0.         1.        28.        46.        47.
    35           0.         2.        41.        47.        44.
    36           0.         3.        32.        42.        53.
```

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COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

              SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE        0.2 KM      0.4 KM      0.6 KM      0.8 KM      1.0 KM
 DIR
    1             0.         10.        159.        141.        128.
    2             0.         10.        155.        154.        128.
    3             0.          8.        139.        145.        125.
    4             0.          9.        158.        147.        124.
    5             0.          8.        138.        152.        128.
    6             0.         10.        157.        155.        127.
    7             0.          9.        147.        147.        126.
    8             0.          9.        150.        152.        129.
    9             0.          8.        151.        147.        122.
   10             0.          9.        130.        134.        116.
   11             0.          9.        151.        139.        125.
   12             0.         10.        156.        142.        121.
   13             0.          9.        151.        148.        123.
   14             0.          9.        155.        141.        120.
   15             0.          9.        116.        146.        126.
   16             0.          8.        152.        141.        127.
   17             0.          8.        131.        127.        131.
   18             0.          9.        148.        153.        134.
   19             0.          9.        157.        141.        118.
   20             0.          9.        139.        153.        119.
   21             0.         10.        153.        153.        125.
   22             0.         10.        158.        153.        125.
   23             0.          9.        152.        138.        123.
   24             0.          9.        156.        150.        128.
   25             0.          8.        125.        149.        126.
   26             0.         10.        153.        153.        129.
   27             0.          9.        151.        150.        127.
   28             0.          9.        147.        152.        128.
   29             0.          9.        123.        147.        127.
   30             0.         10.        148.        147.        135.
   31             0.         18.        122.        149.        128.
   32             0.         14.        135.        150.        129.
   33             0.          9.        150.        150.        127.
   34             0.          9.        151.        152.        125.
   35             0.          9.        148.        144.        127.
   36             0.         10.        148.        151.        129.
```

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PLANT NAME: SEBRING UNITS 1-3          POLLUTANT:            AIR QUALITY UNITS: GM/M**3
SO2
FOR MAX IMPTACT & 75%

                MET FILE      REQUESTED
              STN NO. YR    STN NO. YR
 SURFACE       12815  74     12815  74
 UPPER AIR     12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * *

          ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

          ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
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```
  RING DISTANCES(KM)=   1.20   1.40   1.60   1.80   2.00

 STACK #  1--UNITS 1-3

  STACK     MONTH      EMISSION RATE        HEIGHT    DIAMETER  EXIT VELOCITY   TEMP     VOLUMETRIC FLOW
                         (GMS/SEC)         (METERS)   (METERS)     (M/SEC)     (DEG.K)      (M**3/SEC)

     1       ALL          92.4000            45.72      2.19        26.30       422.00         99.07
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                COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
        RANGE    1.2 KM        1.4 KM        1.6 KM        1.8 KM        2.0 KM
   DIR
     1             1.            1.            1.            1.            1.
     2             1.            1.            1.            1.            1.
     3             1.            1.            1.            1.            1.
     4             1.            1.            1.            1.            1.
     5             1.            1.            1.            1.            1.
     6             1.            1.            1.            1.            1.
     7             1.            1.            1.            1.            1.
     8             1.            1.            1.            1.            1.
     9             1.            1.            1.            1.            1.
    10             1.            1.            1.            1.            1.
    11             1.            1.            1.            1.            1.
    12             1.            1.            1.            1.            1.
    13             1.            1.            1.            1.            1.
    14             1.            1.            1.            1.            1.
    15             1.            1.            1.            1.            1.
    16             1.            1.            1.            1.            1.
    17             1.            1.            1.            1.            1.
    18             1.            1.            1.            2.            2.
    19             1.            1.            1.            1.            1.
    20             1.            1.            1.            1.            1.
    21             1.            1.            1.            1.            1.
    22             1.            1.            1.            1.            1.
    23             1.            1.            2.            2.            2.
    24             1.            2.            2.            2.            2.
    25             1.            1.            1.            1.            1.
    26             2.            2.            2.            2.            2.
    27             2.            2.            2.            2.            2.
    28             2.            2.            2.            2.            2.
    29             1.            1.            1.            1.            1.
    30             1.            1.            2.            2.            1.
    31             1.            1.            1.            1.            1.
    32             1.            1.            1.            1.            1.
    33             1.            1.            1.            1.            1.
    34             1.            1.            1.            1.            1.
    35             1.            1.            1.            1.            1.
    36             2.            2.            2.            2.            2.
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          COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M

                 SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE       1.2 KM  1.4 KM  1.6 KM  1.8 KM  2.0 KM
 DIR
   1            20.     19.     18.     16.     15.
   2            14.     15.     15.     15.     14.
   3            14.     14.     14.     13.     13.
   4            14.     15.     14.     14.     12.
   5            16.     17.     17.     16.     15.
   6            12.     13.     13.     12.     13.
   7            15.     14.     15.     14.     12.
   8            14.     14.     14.     13.     12.
   9            13.     16.     18.     19.     19.
  10            10.     11.     12.     12.     11.
  11            13.     13.     12.     12.     13.
  12            16.     16.     15.     15.     15.
  13            17.     17.     16.     15.     14.
  14            15.     16.     17.     17.     16.
  15            13.     14.     14.     14.     13.
  16            13.     13.     13.     12.     12.
  17            14.     13.     14.     15.     14.
  18            16.     16.     18.     20.     22.
  19            12.     11.     13.     15.     16.
  20            15.     15.     14.     13.     13.
  21            14.     14.     15.     13.     14.
  22            17.     16.     15.     14.     14.
  23            18.     20.     20.     18.     17.
  24            17.     18.     19.     18.     19.
  25            15.     16.     16.     15.     15.
  26            21.     23.     23.     22.     20.
  27            18.     19.     20.     21.     21.
  28            17.     17.     16.     15.     16.
  29            16.     14.     14.     14.     13.
  30            19.     20.     19.     19.     18.
  31            16.     17.     17.     17.     16.
  32            16.     15.     15.     13.     12.
  33            17.     17.     16.     14.     14.
  34            17.     16.     17.     17.     18.
  35            16.     17.     17.     16.     16.
  36            19.     19.     18.     17.     17.
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        COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

                  SECOND HIGHEST     3-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE     1.2 KM    1.4 KM    1.6 KM    1.8 KM    2.0 KM
   DIR
     1          83.       76.       72.       70.       67.
     2          72.       69.       66.       64.       64.
     3          79.       74.       78.       77.       75.
     4          73.       82.       82.       70.       62.
     5          70.       69.       70.       69.       66.
     6          73.       69.       68.       65.       59.
     7          82.       71.       69.       65.       62.
     8          84.       78.       74.       71.       61.
     9          77.       71.       69.       68.       65.
    10          74.       74.       67.       68.       65.
    11          72.       72.       73.       68.       62.
    12          79.       74.       68.       64.       62.
    13          92.       81.       73.       69.       66.
    14          71.       70.       71.       70.       66.
    15          72.       76.       66.       60.       58.
    16          63.       70.       72.       71.       68.
    17          85.       80.       69.       62.       58.
    18          93.       97.      100.       90.       82.
    19          69.       72.       71.       67.       62.
    20          70.       70.       64.       64.       61.
    21          78.       80.       76.       71.       66.
    22          80.       79.       72.       64.       60.
    23          82.       85.       81.       75.       68.
    24          76.       84.       86.       85.       83.
    25          92.       91.       85.       78.       70.
    26         102.       95.       85.       82.       79.
    27          84.       86.       83.       87.       89.
    28          74.       73.       70.       67.       64.
    29          68.       71.       74.       71.       65.
    30          94.       96.       93.       86.       79.
    31          79.       78.       72.       66.       61.
    32          84.       86.       84.       74.       65.
    33          81.       77.       71.       65.       64.
    34          87.       90.       88.       85.       79.
    35          82.       81.       77.       76.       76.
    36          87.       90.       88.       86.       79.
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        COMPOSITE HIGHEST,SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE,UG/CU.M

                   SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
      RANGE      1.2 KM     1.4 KM     1.6 KM     1.8 KM     2.0 KM
    DIR
       1          54.        53.        50.        46.        41.
       2          40.        40.        39.        37.        34.
       3          41.        40.        38.        36.        35.
       4          43.        44.        41.        37.        35.
       5          45.        46.        45.        42.        38.
       6          37.        36.        33.        32.        30.
       7          46.        43.        38.        34.        33.
       8          41.        43.        42.        40.        36.
       9          35.        37.        37.        36.        35.
      10          28.        27.        25.        26.        27.
      11          37.        38.        36.        34.        31.
      12          49.        49.        46.        43.        42.
      13          51.        47.        44.        40.        37.
      14          44.        42.        39.        37.        36.
      15          37.        41.        42.        40.        39.
      16          39.        39.        36.        35.        33.
      17          42.        39.        36.        33.        32.
      18          49.        47.        46.        47.        48.
      19          31.        33.        34.        34.        33.
      20          45.        44.        42.        39.        40.
      21          43.        43.        40.        39.        37.
      22          51.        48.        46.        43.        40.
      23          50.        55.        55.        53.        50.
      24          47.        51.        51.        49.        46.
      25          44.        45.        41.        37.        37.
      26          59.        61.        60.        57.        53.
      27          53.        55.        51.        49.        47.
      28          52.        50.        48.        46.        44.
      29          40.        41.        40.        39.        37.
      30          56.        56.        54.        51.        48.
      31          49.        47.        46.        44.        40.
      32          45.        44.        41.        37.        35.
      33          50.        49.        45.        39.        36.
      34          49.        48.        44.        43.        41.
      35          48.        49.        47.        44.        40.
      36          57.        56.        53.        49.        45.
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 COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

              SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE       1.2 KM     1.4 KM     1.6 KM     1.8 KM     2.0 KM
  DIR
    1          122.       119.       114.       109.       105.
    2          121.       117.       116.       111.       105.
    3          121.       119.       114.       107.       104.
    4          120.       117.       114.       109.       104.
    5          121.       118.       115.       109.       103.
    6          121.       118.       112.       110.       105.
    7          121.       115.       111.       110.       106.
    8          119.       117.       115.       110.       104.
    9          120.       117.       115.       111.       105.
   10          117.       114.       113.       107.       103.
   11          120.       117.       114.       109.       104.
   12          120.       120.       115.       111.       105.
   13          121.       114.       114.       109.       103.
   14          119.       120.       114.       109.       104.
   15          117.       110.       108.       106.       102.
   16          120.       117.       115.       110.       104.
   17          119.       111.       113.       108.       103.
   18          122.       116.       113.       108.       104.
   19          119.       109.       106.       103.       100.
   20          115.       114.       112.       107.       104.
   21          119.       119.       115.       107.       102.
   22          120.       118.       115.       112.       112.
   23          121.       136.       137.       129.       125.
   24          122.       119.       115.       110.       103.
   25          120.       118.       116.       111.       106.
   26          121.       118.       115.       109.       105.
   27          121.       119.       116.       112.       107.
   28          121.       117.       115.       109.       103.
   29          121.       119.       116.       112.       107.
   30          123.       119.       116.       110.       104.
   31          122.       121.       114.       109.       104.
   32          121.       118.       116.       109.       104.
   33          122.       119.       113.       108.       103.
   34          121.       119.       115.       111.       107.
   35          120.       118.       115.       111.       106.
   36          123.       121.       140.       150.       153.
```

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```
PLANT NAME: SEBRING UNITS 1-3          POLLUTANT:            AIR QUALITY UNITS: GM/M**3
SO2
FOR MAX IMPACT @ 50%

           MET FILE       REQUESTED
          STN NO. YR    STN NO. YR
 SURFACE     12815  74     12815  74
 UPPER AIR   12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  N O T E  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

          ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

          ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

```
  RING DISTANCES(KM)=   0.20   0.40   0.60   0.80   1.00

 STACK #  1--UNITS 1-3

  STACK     MONTH      EMISSION RATE           HEIGHT    DIAMETER  EXIT VELOCITY   TEMP      VOLUMETRIC FLOW
                         (GMS/SEC)            (METERS)   (METERS)     (M/SEC)     (DEG.K)       (M**3/SEC)

    1        ALL          63.0000               45.72      2.19        17.50       422.00          65.92
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66

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                    COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                    ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
        RANGE    0.2 KM          0.4 KM          0.6 KM          0.8 KM          1.0 KM
   DIR
     1             0.              0.              0.              1.              1.
     2             0.              0.              0.              1.              1.
     3             0.              0.              0.              1.              1.
     4             0.              0.              0.              1.              1.
     5             0.              0.              0.              1.              1.
     6             0.              0.              0.              1.              1.
     7             0.              0.              0.              1.              1.
     8             0.              0.              0.              1.              1.
     9             0.              0.              0.              1.              1.
    10             0.              0.              0.              1.              1.
    11             0.              0.              0.              1.              1.
    12             0.              0.              0.              1.              1.
    13             0.              0.              0.              1.              1.
    14             0.              0.              0.              1.              1.
    15             0.              0.              0.              1.              1.
    16             0.              0.              0.              1.              1.
    17             0.              0.              0.              1.              1.
    18             0.              0.              0.              1.              1.
    19             0.              0.              0.              1.              1.
    20             0.              0.              0.              1.              1.
    21             0.              0.              0.              1.              1.
    22             0.              0.              1.              1.              1.
    23             0.              0.              1.              1.              1.
    24             0.              0.              1.              1.              1.
    25             0.              0.              1.              1.              1.
    26             0.              0.              1.              1.              2.
    27             0.              0.              1.              1.              2.
    28             0.              0.              1.              1.              1.
    29             0.              0.              0.              1.              1.
    30             0.              0.              1.              1.              1.
    31             0.              0.              0.              1.              1.
    32             0.              0.              0.              1.              1.
    33             0.              0.              0.              1.              1.
    34             0.              0.              0.              1.              1.
    35             0.              0.              1.              1.              1.
    36             0.              0.              1.              1.              2.
```

ar

```
        COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M

                  SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE        0.2 KM   0.4 KM   0.6 KM   0.8 KM   1.0 KM
DIR
   1             0.       2.      10.      15.      18.
   2             0.       1.       8.      13.      13.
   3             0.       1.       6.      11.      13.
   4             0.       1.       8.      11.      13.
   5             0.       2.      10.      11.      15.
   6             0.       2.       9.      10.      12.
   7             0.       1.       8.      13.      14.
   8             0.       2.       9.      10.      13.
   9             0.       1.       7.      10.      12.
  10             0.       1.       8.       8.       9.
  11             0.       1.       8.      12.      12.
  12             0.       2.      12.      15.      15.
  13             0.       2.       9.      14.      16.
  14             0.       2.       9.      13.      14.
  15             0.       1.       7.      11.      12.
  16             0.       1.       8.      11.      12.
  17             0.       1.       8.      13.      14.
  18             0.       1.       8.      12.      15.
  19             0.       1.      10.      10.      11.
  20             0.       2.      10.      12.      13.
  21             0.       2.       8.      12.      13.
  22             0.       1.       9.      16.      17.
  23             0.       2.       8.      13.      16.
  24             0.       1.       9.      11.      15.
  25             0.       1.      10.      14.      14.
  26             0.       1.       8.      15.      19.
  27             0.       1.       9.      14.      19.
  28             0.       1.       9.      15.      15.
  29             0.       1.       8.      13.      15.
  30             0.       1.       7.      14.      17.
  31             0.       1.       9.      14.      15.
  32             0.       2.       7.      12.      14.
  33             0.       2.      12.      14.      16.
  34             0.       2.      12.      15.      16.
  35             0.       3.      15.      13.      15.
  36             0.       2.      11.      15.      17.
```

a7

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          COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

                   SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE      0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
   DIR
     1            0.        11.        53.        73.        76.
     2            0.        11.        50.        68.        68.
     3            0.         9.        52.        73.        74.
     4            0.        10.        59.        65.        66.
     5            0.         9.        47.        66.        64.
     6            0.        11.        51.        64.        71.
     7            0.        10.        57.        82.        78.
     8            0.        12.        68.        75.        78.
     9            0.         9.        51.        61.        67.
    10            0.         9.        55.        60.        68.
    11            0.        10.        52.        62.        65.
    12            0.        12.        64.        68.        70.
    13            0.        12.        71.        72.        89.
    14            0.        10.        58.        68.        67.
    15            0.         8.        49.        68.        68.
    16            0.        10.        49.        62.        59.
    17            0.         9.        52.        74.        78.
    18            0.        10.        64.        91.        96.
    19            0.        11.        78.        73.        61.
    20            0.        10.        61.        58.        64.
    21            0.        13.        52.        64.        71.
    22            0.        11.        58.        70.        72.
    23            0.        15.        54.        66.        77.
    24            0.        10.        60.        65.        73.
    25            0.        10.        51.        73.        87.
    26            0.        11.        56.        85.        91.
    27            0.        10.        49.        69.        76.
    28            0.         9.        55.        72.        68.
    29            0.         8.        58.        63.        66.
    30            0.        10.        49.        66.        84.
    31            0.        10.        45.        65.        72.
    32            0.        12.        50.        70.        79.
    33            0.        12.        60.        75.        77.
    34            0.        11.        78.        89.        80.
    35            0.        11.        62.        73.        82.
    36            0.        11.        54.        82.        78.
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a4

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          COMPOSITE HIGHEST.SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE.UG/CU.M

                 SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE      0.2 KM    0.4 KM    0.6 KM    0.8 KM    1.0 KM
  DIR
     1           0.        5.       29.       43.       49.
     2           0.        4.       23.       39.       38.
     3           0.        3.       19.       34.       39.
     4           0.        4.       23.       33.       40.
     5           0.        5.       30.       33.       41.
     6           0.        5.       26.       31.       35.
     7           0.        4.       23.       40.       43.
     8           0.        7.       27.       30.       39.
     9           0.        4.       20.       30.       33.
    10           0.        4.       22.       23.       26.
    11           0.        4.       23.       36.       34.
    12           0.        5.       36.       45.       46.
    13           0.        5.       28.       42.       49.
    14           0.        5.       28.       39.       43.
    15           0.        3.       21.       31.       35.
    16           0.        4.       24.       32.       37.
    17           0.        3.       24.       38.       41.
    18           0.        4.       25.       36.       44.
    19           0.        4.       30.       30.       31.
    20           0.        5.       30.       36.       40.
    21           0.        5.       23.       37.       40.
    22           0.        4.       28.       47.       51.
    23           0.        6.       25.       39.       46.
    24           0.        4.       28.       34.       43.
    25           0.        4.       30.       40.       42.
    26           0.        4.       23.       44.       55.
    27           0.        4.       26.       38.       49.
    28           0.        4.       28.       41.       46.
    29           0.        4.       23.       34.       39.
    30           0.        4.       21.       42.       50.
    31           0.        4.       26.       41.       46.
    32           0.        5.       22.       35.       42.
    33           0.        5.       35.       42.       47.
    34           0.        5.       36.       44.       46.
    35           0.        8.       45.       38.       44.
    36           0.        6.       32.       44.       51.
```

a5

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                         COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

              SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE      0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
  DIR
     1           0.        33.       151.       116.       112.
     2           0.        33.       149.       131.       112.
     3           0.        27.       137.       124.       111.
     4           0.        31.       151.       127.       111.
     5           0.        28.       136.       122.       110.
     6           0.        32.       150.       122.       111.
     7           0.        27.       143.       129.       113.
     8           0.        30.       144.       121.       111.
     9           0.        28.       146.       120.       109.
    10           0.        26.       126.       109.       109.
    11           0.        30.       144.       118.       110.
    12           0.        33.       149.       117.       110.
    13           0.        31.       145.       122.       111.
    14           0.        30.       150.       122.       111.
    15           0.        23.       132.       117.       110.
    16           0.        29.       146.       116.       112.
    17           0.        26.       127.       118.       113.
    18           0.        27.       144.       122.       114.
    19           0.        31.       150.       117.       112.
    20           0.        28.       138.       122.       110.
    21           0.        33.       147.       122.       111.
    22           0.        33.       151.       129.       111.
    23           0.        30.       146.       116.       112.
    24           0.        31.       149.       119.       111.
    25           0.        26.       122.       132.       111.
    26           0.        31.       147.       132.       112.
    27           0.        30.       144.       121.       112.
    28           0.        28.       142.       127.       112.
    29           0.        24.       139.       129.       113.
    30           0.        30.       142.       119.       113.
    31           0.        31.       134.       119.       112.
    32           0.        27.       136.       119.       112.
    33           0.        28.       145.       119.       112.
    34           0.        29.       145.       128.       112.
    35           0.        30.       141.       119.       110.
    36           0.        32.       141.       120.       112.
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a6

a1

```
PLANT NAME: SEBRING UNITS 1-3          POLLUTANT:            AIR QUALITY UNITS: GM/M**3
SO2
FOR MAX IMPACT @ 50%

                MET FILE      REQUESTED
              STN NO. YR    STN NO. YR
 SURFACE       12815  74     12815  74
 UPPER AIR     12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * *

          ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

          ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

```
  RING DISTANCES(KM)=   1.20   1.40   1.60   1.80   2.00

 STACK #  1--UNITS 1-3

  STACK    MONTH       EMISSION RATE           HEIGHT   DIAMETER  EXIT VELOCITY  TEMP       VOLUMETRIC FLOW
                        (GMS/SEC)             (METERS)  (METERS)    (M/SEC)     (DEG.K)      (M**3/SEC)

    1       ALL        63.0000                 45.72     2.19        17.50      422.00         65.92
```

a8

```
                    COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                    ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
         RANGE    1.2 KM        1.4 KM        1.6 KM        1.8 KM        2.0 KM
 DIR
   1                1.            1.            1.            1.            1.
   2                1.            1.            1.            1.            1.
   3                1.            1.            1.            1.            1.
   4                1.            1.            1.            1.            1.
   5                1.            1.            1.            1.            1.
   6                1.            1.            1.            1.            1.
   7                1.            1.            1.            1.            1.
   8                1.            1.            1.            1.            1.
   9                1.            1.            1.            1.            1.
  10                1.            1.            1.            1.            1.
  11                1.            1.            1.            1.            1.
  12                1.            1.            1.            1.            1.
  13                1.            1.            1.            1.            1.
  14                1.            1.            1.            1.            1.
  15                1.            1.            1.            1.            1.
  16                1.            1.            1.            1.            1.
  17                1.            1.            1.            1.            1.
  18                1.            2.            2.            2.            2.
  19                1.            1.            1.            1.            1.
  20                1.            1.            1.            1.            1.
  21                1.            1.            1.            1.            1.
  22                1.            1.            1.            1.            1.
  23                1.            2.            2.            2.            1.
  24                1.            1.            1.            1.            1.
  25                1.            1.            1.            1.            1.
  26                2.            2.            2.            2.            2.
  27                2.            2.            2.            2.            2.
  28                2.            2.            2.            2.            2.
  29                1.            1.            1.            1.            1.
  30                1.            1.            1.            1.            1.
  31                1.            1.            1.            1.            1.
  32                1.            1.            1.            1.            1.
  33                1.            1.            1.            1.            1.
  34                1.            1.            1.            1.            1.
  35                1.            1.            1.            1.            1.
  36                2.            2.            2.            2.            2.
```

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        COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M.

              SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE      1.2 KM  1.4 KM  1.6 KM  1.8 KM  2.0 KM
 DIR
   1          18.     17.     15.     13.     13.
   2          14.     14.     14.     13.     14.
   3          13.     14.     12.     11.     10.
   4          14.     13.     13.     12.     12.
   5          16.     15.     15.     14.     13.
   6          12.     12.     12.     12.     12.
   7          13.     15.     13.     12.     11.
   8          14.     13.     12.     11.     11.
   9          16.     18.     17.     17.     16.
  10          10.     11.     11.     10.     10.
  11          12.     12.     11.     12.     12.
  12          15.     15.     14.     13.     13.
  13          16.     15.     14.     13.     14.
  14          15.     16.     15.     14.     13.
  15          13.     13.     13.     12.     12.
  16          13.     12.     11.     11.     11.
  17          13.     14.     14.     13.     13.
  18          16.     17.     20.     21.     22.
  19          11.     13.     14.     15.     16.
  20          13.     12.     12.     13.     14.
  21          14.     14.     12.     13.     12.
  22          15.     14.     13.     14.     13.
  23          19.     18.     17.     15.     14.
  24          17.     17.     17.     18.     17.
  25          15.     15.     14.     13.     13.
  26          21.     22.     20.     17.     16.
  27          19.     21.     21.     20.     19.
  28          15.     15.     15.     16.     16.
  29          14.     13.     13.     13.     13.
  30          18.     18.     17.     17.     17.
  31          16.     16.     16.     15.     14.
  32          14.     13.     12.     11.     11.
  33          16.     14.     14.     13.     14.
  34          15.     15.     16.     15.     14.
  35          16.     16.     15.     14.     14.
  36          17.     16.     15.     17.     18.
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        COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M .

                  SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE      1.2 KM    1.4 KM    1.6 KM    1.8 KM    2.0 KM
   DIR
     1           69.       66.       64.       60.       54.
     2           63.       61.       62.       65.       61.
     3           71.       74.       72.       68.       62.
     4           76.       74.       62.       58.       55.
     5           64.       65.       63.       59.       54.
     6           67.       66.       60.       54.       52.
     7           66.       64.       59.       58.       57.
     8           72.       69.       62.       58.       54.
     9           62.       64.       68.       74.       74.
    10           65.       64.       62.       59.       60.
    11           66.       67.       61.       55.       52.
    12           69.       63.       61.       60.       57.
    13           76.       67.       63.       60.       56.
    14           66.       66.       63.       58.       54.
    15           73.       60.       56.       53.       50.
    16           62.       65.       65.       60.       55.
    17           75.       64.       57.       53.       52.
    18           91.       77.       74.       72.       69.
    19           66.       64.       59.       54.       54.
    20           64.       58.       58.       54.       52.
    21           73.       69.       63.       59.       53.
    22           73.       66.       58.       58.       58.
    23           80.       76.       68.       61.       55.
    24           78.       80.       78.       73.       65.
    25           86.       79.       70.       63.       58.
    26           88.       79.       77.       69.       62.
    27           85.       88.       86.       81.       76.
    28           66.       64.       62.       56.       52.
    29           67.       68.       62.       56.       50.
    30           87.       83.       76.       69.       61.
    31           69.       65.       60.       54.       51.
    32           81.       77.       65.       58.       55.
    33           70.       64.       60.       62.       57.
    34           84.       82.       76.       70.       63.
    35           77.       73.       75.       73.       69.
    36           83.       81.       77.       68.       62.
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        COMPOSITE HIGHEST.SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE.UG/CU.M.

                    SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE      1.2 KM      1.4 KM      1.6 KM      1.8 KM      2.0 KM
 DIR
    1          48.         45.         41.         37.         34.
    2          38.         37.         34.         30.         27.
    3          39.         35.         34.         32.         30.
    4          42.         38.         33.         33.         30.
    5          43.         41.         37.         33.         29.
    6          34.         31.         30.         27.         25.
    7          40.         35.         33.         28.         27.
    8          41.         40.         36.         32.         29.
    9          34.         35.         34.         32.         30.
   10          25.         25.         26.         26.         26.
   11          35.         33.         30.         28.         27.
   12          45.         42.         40.         38.         34.
   13          44.         41.         36.         33.         32.
   14          39.         35.         34.         33.         31.
   15          39.         39.         37.         36.         34.
   16          36.         34.         32.         30.         28.
   17          37.         33.         31.         30.         29.
   18          40.         43.         43.         43.         44.
   19          31.         30.         29.         27.         26.
   20          39.         37.         35.         36.         35.
   21          40.         38.         36.         33.         30.
   22          46.         43.         40.         36.         32.
   23          52.         52.         49.         45.         41.
   24          47.         47.         44.         41.         37.
   25          43.         37.         36.         33.         32.
   26          58.         56.         52.         46.         40.
   27          52.         48.         44.         41.         38.
   28          44.         45.         42.         41.         41.
   29          40.         37.         35.         32.         29.
   30          52.         49.         45.         41.         38.
   31          43.         42.         39.         35.         31.
   32          41.         37.         34.         32.         30.
   33          46.         40.         35.         33.         31.
   34          45.         41.         40.         37.         34.
   35          46.         44.         40.         36.         32.
   36          50.         48.         43.         39.         37.
```

```
                     COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

           SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE      1.2 KM     1.4 KM     1.6 KM     1.8 KM     2.0 KM
 DIR
    1        106.       103.       100.        95.        88.
    2        106.       105.       100.        93.        89.
    3        107.       102.        99.        96.        90.
    4        105.       103.        99.        92.        87.
    5        107.       103.        98.        93.        89.
    6        106.       103.       100.        95.        89.
    7        103.       103.       101.        95.        89.
    8        106.       104.        99.        93.        88.
    9        107.       104.       102.       110.       115.
   10        105.       102.        98.        95.        90.
   11        106.       104.        99.        91.        85.
   12        109.       105.       100.        94.        87.
   13        105.       104.        98.        95.        90.
   14        107.       103.       100.        94.        91.
   15        103.        99.        98.        94.        89.
   16        104.       104.       102.        96.        93.
   17        103.       102.        98.        93.        88.
   18        105.       103.       100.        95.        90.
   19        101.        97.        94.        92.        87.
   20        104.       101.        99.        95.        91.
   21        107.       102.        97.        94.        92.
   22        106.       104.       100.        94.        90.
   23        104.       104.       101.        95.        92.
   24        108.       104.        98.        94.        90.
   25        107.       106.       101.        95.        90.
   26        107.       104.       100.        94.        90.
   27        107.       104.       101.        96.        92.
   28        106.       104.        98.        93.        90.
   29        106.       105.       102.        96.        91.
   30        107.       105.        99.        94.        90.
   31        108.       103.        99.        96.        91.
   32        107.       104.        99.        94.        91.
   33        106.       103.       102.        96.        90.
   34        108.       105.       101.        98.        92.
   35        106.       104.       100.        96.        91.
   36        107.       105.       105.       107.       106.
```

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Out 1

```
PLANT NAME: SEBRING UNITS 1-3 CRSTER  POLLUTANT:  SO2 ~~RUNS 8~~  AIR QUALITY UNITS: GM/M**3
FOR MAXIMUM SO2 IMPACT

                MET FILE     REQUESTED
               STN NO. YR   STN NO. YR
 SURFACE        12815  74    12815  74
 UPPER AIR      12842  74    12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * *

          ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

          ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

2

```
  RING DISTANCES(KM)=   0.20   0.40   0.60   0.80   1.00

 STACK #  1--UNITS 1-3

  STACK      MONTH        EMISSION RATE       HEIGHT    DIAMETER  EXIT VELOCITY   TEMP      VOLUMETRIC FLOW
                            (GMS/SEC)        (METERS)   (METERS)     (M/SEC)    (DEG.K)       (M**3/SEC)

    1         ALL          124.3000           45.72      2.19         35.00      422.00         131.84
```

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                 COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                             ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
         RANGE     0.2 KM           0.4 KM           0.6 KM           0.8 KM           1.0 KM
   DIR
     1                0.               0.               0.               1.               1.
     2                0.               0.               0.               0.               1.
     3                0.               0.               0.               0.               1.
     4                0.               0.               0.               0.               1.
     5                0.               0.               0.               0.               1.
     6                0.               0.               0.               1.               1.
     7                0.               0.               0.               0.               1.
     8                0.               0.               0.               0.               1.
     9                0.               0.               0.               0.               1.
    10                0.               0.               0.               0.               1.
    11                0.               0.               0.               0.               1.
    12                0.               0.               0.               0.               1.
    13                0.               0.               0.               0.               1.
    14                0.               0.               0.               0.               1.
    15                0.               0.               0.               0.               1.
    16                0.               0.               0.               0.               1.
    17                0.               0.               0.               0.               1.
    18                0.               0.               0.               0.               1.
    19                0.               0.               0.               0.               1.
    20                0.               0.               0.               0.               1.
    21                0.               0.               0.               1.               1.
    22                0.               0.               0.               1.               1.
    23                0.               0.               0.               1.               1.
    24                0.               0.               0.               1.               1.
    25                0.               0.               0.               1.               1.
    26                0.               0.               0.               1.               1.
    27                0.               0.               0.               1.               1.
    28                0.               0.               0.               1.               1.
    29                0.               0.               0.               1.               1.
    30                0.               0.               0.               1.               1.
    31                0.               0.               0.               1.               1.
    32                0.               0.               0.               1.               1.
    33                0.               0.               0.               1.               1.
    34                0.               0.               0.               1.               1.
    35                0.               0.               0.               1.               1.
    36                0.               0.               0.               1.               1.
```

7a

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      COMPOSITE HIGHEST.SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M.

                 SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE      0.2 KM  0.4 KM  0.6 KM  0.8 KM  1.0 KM
   DIR
     1          0.      0.      7.     11.     16.
     2          0.      0.      6.     10.     15.
     3          0.      0.      5.      9.     12.
     4          0.      0.      6.      9.     13.
     5          0.      0.      7.     12.     12.
     6          0.      0.      7.     10.     11.
     7          0.      0.      6.      9.     15.
     8          0.      0.      7.     12.     11.
     9          0.      0.      6.     10.     12.
    10          0.      0.      6.      9.      8.
    11          0.      0.      6.      9.     13.
    12          0.      0.      9.     15.     16.
    13          0.      0.      9.     12.     16.
    14          0.      0.      6.     13.     14.
    15          0.      0.      5.      9.     12.
    16          0.      0.      6.     10.     12.
    17          0.      0.      5.     10.     14.
    18          0.      0.      6.     11.     13.
    19          0.      0.      7.     13.     11.
    20          0.      0.      6.     12.     15.
    21          0.      0.      6.     11.     13.
    22          0.      0.      6.     11.     17.
    23          0.      0.      7.     11.     14.
    24          0.      0.      7.     12.     12.
    25          0.      0.      6.     13.     15.
    26          0.      0.      6.     10.     16.
    27          0.      0.      7.     10.     13.
    28          0.      0.      7.     13.     15.
    29          0.      0.      7.     11.     12.
    30          0.      0.      6.     10.     16.
    31          0.      0.      5.     12.     14.
    32          0.      0.      6.      9.     15.
    33          0.      0.      7.     15.     16.
    34          0.      0.      7.     15.     16.
    35          0.      0.     12.     17.     14.
    36          0.      0.     10.     14.     18.
```

```
      COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

               SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE       0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
DIR
   1            0.         1.        51.        60.        81.
   2            0.         1.        49.        59.        77.
   3            0.         1.        43.        73.        82.
   4            0.         1.        50.        70.        76.
   5            0.         1.        44.        59.        74.
   6            0.         1.        50.        60.        73.
   7            0.         1.        50.        70.        93.
   8            0.         1.        49.        97.        88.
   9            0.         1.        47.        58.        76.
  10            0.         1.        50.        64.        62.
  11            0.         1.        48.        60.        71.
  12            0.         1.        61.        76.        78.
  13            0.         1.        61.        79.        81.
  14            0.         1.        50.        66.        76.
  15            0.         1.        37.        63.        76.
  16            0.         1.        48.        59.        71.
  17            0.         1.        43.        71.        96.
  18            0.         1.        50.        80.       104.
  19            0.         1.        55.        98.        83.
  20            0.         2.        49.        77.        72.
  21            0.         1.        49.        65.        75.
  22            0.         2.        51.        73.        81.
  23            0.         2.        48.        71.        70.
  24            0.         1.        51.        74.        77.
  25            0.         1.        47.        62.        77.
  26            0.         1.        50.        63.        92.
  27            0.         1.        49.        65.        76.
  28            0.         1.        46.        76.        78.
  29            0.         1.        44.        73.        71.
  30            0.         1.        48.        62.        79.
  31            0.         4.        39.        57.        71.
  32            0.         3.        43.        65.        80.
  33            0.         2.        54.        80.        84.
  34            0.         1.        57.       103.        97.
  35            0.         1.        52.        71.        79.
  36            0.         2.        48.        63.        90.
```

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          COMPOSITE HIGHEST,SECOND-HIGHEST 8-HOUR CONCENTRATION TABLE,UG/CU.M

                    SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE       0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
   DIR
     1             0.         0.        21.        34.        48.
     2             0.         0.        18.        28.        44.
     3             0.         0.        16.        27.        35.
     4             0.         0.        19.        28.        38.
     5             0.         0.        21.        36.        36.
     6             0.         0.        22.        30.        33.
     7             0.         1.        19.        28.        44.
     8             0.         1.        22.        37.        33.
     9             0.         1.        18.        29.        32.
    10             0.         0.        19.        26.        24.
    11             0.         0.        19.        26.        40.
    12             0.         0.        28.        44.        48.
    13             0.         1.        26.        35.        46.
    14             0.         0.        19.        38.        43.
    15             0.         0.        15.        26.        35.
    16             0.         0.        18.        29.        35.
    17             0.         0.        16.        30.        41.
    18             0.         0.        19.        34.        39.
    19             0.         0.        21.        38.        33.
    20             0.         1.        18.        37.        44.
    21             0.         0.        19.        32.        40.
    22             0.         1.        19.        34.        52.
    23             0.         1.        20.        32.        42.
    24             0.         0.        20.        35.        36.
    25             0.         0.        18.        39.        43.
    26             0.         0.        19.        30.        47.
    27             0.         0.        19.        31.        40.
    28             0.         0.        21.        39.        41.
    29             0.         0.        20.        32.        36.
    30             0.         0.        18.        30.        49.
    31             0.         1.        15.        35.        41.
    32             0.         1.        19.        28.        45.
    33             0.         1.        21.        44.        47.
    34             0.         0.        22.        45.        48.
    35             0.         1.        37.        51.        41.
    36             0.         1.        30.        41.        53.
```

```
                COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

          SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE      0.2 KM     0.4 KM     0.6 KM     0.8 KM     1.0 KM
 DIR
   1           0.         3.       152.       171.       134.
   2           0.         3.       146.       177.       146.
   3           0.         3.       129.       167.       138.
   4           0.         3.       150.       173.       142.
   5           0.         2.       130.       175.       140.
   6           0.         3.       150.       178.       142.
   7           0.         2.       138.       165.       143.
   8           0.         3.       143.       172.       140.
   9           0.         4.       142.       168.       137.
  10           0.         2.       124.       152.       125.
  11           0.         2.       144.       164.       141.
  12           0.         3.       148.       173.       134.
  13           0.         2.       145.       164.       146.
  14           0.         2.       147.       171.       132.
  15           0.         3.       108.       168.       143.
  16           0.         2.       145.       167.       139.
  17           0.         2.       123.       145.       143.
  18           0.         2.       139.       176.       142.
  19           0.         2.       149.       171.       132.
  20           0.         5.       133.       176.       136.
  21           0.         3.       145.       174.       138.
  22           0.         3.       151.       177.       143.
  23           0.         3.       145.       167.       138.
  24           0.         3.       148.       170.       140.
  25           0.         2.       120.       160.       148.
  26           0.         3.       146.       173.       148.
  27           0.         2.       144.       170.       141.
  28           0.         3.       139.       175.       143.
  29           0.         4.       115.       167.       143.
  30           0.         4.       140.       171.       146.
  31           0.        11.       117.       172.       136.
  32           0.         8.       129.       173.       140.
  33           0.         3.       142.       172.       138.
  34           0.         3.       143.       175.       143.
  35           0.         3.       141.       164.       146.
  36           0.         4.       141.       174.       140.
```

out 2

33

```
PLANT NAME: SEBRING UNITS 1-3 CRSTER  POLLUTANT:  RUNS @   AIR QUALITY UNITS: GM/M**3
FOR MAXIMUM SO2 IMPACT

                MET FILE      REQUESTED
               STN NO. YR   STN NO. YR
 SURFACE        12815  74     12815  74
 UPPER AIR      12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


  * * * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * *

           ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

           ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

```
  RING DISTANCES(KM)=   1.20   1.40   1.60   1.80   2.00

STACK #  1--UNITS 1-3

 STACK     MONTH       EMISSION RATE        HEIGHT    DIAMETER  EXIT VELOCITY    TEMP       VOLUMETRIC FLOW
                         (GMS/SEC)          (METERS)  (METERS)     (M/SEC)      (DEG.K)       (M**3/SEC)

   1        ALL         124.3000             45.72     2.19         35.00       422.00          131.84
```

```
                COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
       RANGE    1.2 KM          1.4 KM          1.6 KM          1.8 KM          2.0 KM
   DIR
     1            1.              1.              1.              1.              1.
     2            1.              1.              1.              1.              1.
     3            1.              1.              1.              1.              1.
     4            1.              1.              1.              1.              1.
     5            1.              1.              1.              1.              1.
     6            1.              1.              1.              1.              1.
     7            1.              1.              1.              1.              1.
     8            1.              1.              1.              1.              1.
     9            1.              1.              1.              1.              1.
    10            1.              1.              1.              1.              1.
    11            1.              1.              1.              1.              1.
    12            1.              1.              1.              1.              1.
    13            1.              1.              1.              1.              1.
    14            1.              1.              1.              1.              1.
    15            1.              1.              1.              1.              1.
    16            1.              1.              1.              1.              1.
    17            1.              1.              1.              1.              1.
    18            1.              1.              1.              2.              2.
    19            1.              1.              1.              1.              1.
    20            1.              1.              1.              1.              1.
    21            1.              1.              1.              1.              1.
    22            1.              1.              1.              1.              1.
    23            1.              1.              2.              2.              2.
    24            1.              1.              2.              2.              2.
    25            1.              1.              2.              2.              2.
    26            2.              2.              2.              2.              2.
    27            2.              2.              2.              2.              2.
    28            1.              2.              2.              2.              2.
    29            1.              1.              1.              1.              1.
    30            1.              1.              2.              2.              2.
    31            1.              1.              1.              1.              1.
    32            1.              1.              1.              1.              1.
    33            1.              1.              1.              1.              1.
    34            1.              1.              1.              2.              2.
    35            1.              1.              2.              2.              2.
    36            1.              2.              2.              2.              2.
```

6^0

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COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M

       SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE     1.2 KM  1.4 KM  1.6 KM  1.8 KM  2.0 KM
 DIR
   1         19.      21.      20.      19.      18.
   2         15.      15.      16.      16.      16.
   3         14.      15.      14.      14.      14.
   4         15.      16.      16.      15.      14.
   5         16.      17.      18.      18.      17.
   6         13.      13.      13.      13.      13.
   7         16.      16.      15.      15.      15.
   8         13.      15.      15.      15.      14.
   9         13.      14.      17.      19.      20.
  10         10.      11.      12.      12.      12.
  11         13.      14.      14.      13.      13.
  12         17.      17.      17.      16.      16.
  13         18.      18.      18.      17.      16.
  14         16.      15.      17.      18.      18.
  15         13.      13.      15.      15.      14.
  16         13.      14.      14.      14.      13.
  17         15.      15.      14.      15.      15.
  18         18.      20.      18.      18.      21.
  19         11.      12.      12.      14.      16.
  20         17.      17.      16.      15.      14.
  21         15.      15.      15.      15.      15.
  22         19.      17.      17.      16.      15.
  23         16.      19.      21.      21.      20.
  24         16.      18.      20.      20.      20.
  25         14.      16.      17.      17.      17.
  26         19.      23.      24.      24.      23.
  27         17.      20.      20.      21.      22.
  28         16.      18.      18.      17.      17.
  29         15.      17.      15.      15.      14.
  30         19.      21.      21.      20.      20.
  31         18.      18.      18.      18.      18.
  32         18.      18.      16.      15.      14.
  33         17.      18.      17.      16.      14.
  34         17.      18.      17.      16.      17.
  35         16.      17.      18.      18.      17.
  36         20.      21.      20.      19.      18.
```

Particulate emission rate predicted @ 36.9 lb/hr = 4.6 g/s

TSP Impact = $24 \times 4.6/124.3 = 0.9$ μg/m³

6'

1978 DAY 149

```
        COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

                 SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
    RANGE      1.2 KM     1.4 KM     1.6 KM     1.8 KM     2.0 KM
 DIR
   1            86.        88.        81.        78.        75.
   2            81.        75.        73.        71.        66.
   3            88.        83.        78.        81.        82.
   4            78.        81.        88.        87.        76.
   5            75.        77.        74.        75.        74.
   6            78.        79.        73.        71.        68.
   7            93.        85.        74.        73.        70.
   8            91.        88.        82.        78.        76.
   9            85.        85.        77.        73.        73.
  10            64.        81.        80.        73.        71.
  11            78.        79.        78.        78.        73.
  12            82.        87.        78.        72.        68.
  13           103.        95.        85.        77.        73.
  14            79.        75.        74.        75.        75.
  15            79.        78.        79.        70.        65.
  16            71.        67.        70.        74.        74.
  17           108.        95.        85.        78.        71.
  18           105.        93.       103.       107.       105.
  19            71.        76.        78.        77.        73.
  20            78.        75.        75.        70.        69.
  21            77.        85.        85.        82.        77.
  22            83.        87.        83.        76.        69.
  23            84.        87.        89.        86.        80.
  24            83.        83.        90.        92.        91.
  25            90.        98.        96.        90.        83.
  26           107.       109.       101.        91.        87.
  27            87.        92.        93.        89.        90.
  28            83.        80.        78.        76.        73.
  29            74.        70.        76.        79.        77.
  30            91.       104.       104.       100.        94.
  31            85.        85.        85.        79.        72.
  32            87.        90.        91.        89.        79.
  33            89.        84.        79.        75.        70.
  34            93.        94.        94.        93.        91.
  35            87.        87.        86.        82.        79.
  36            86.        96.        97.        95.        91.
```

6^2

1974 DAY 51 Period 5

1978 DAY 143 period 5

```
            COMPOSITE HIGHEST,SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE,UG/CU.M

                    SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
     RANGE       1.2 KM      1.4 KM      1.6 KM      1.8 KM      2.0 KM
  DIR
     1            56.         58.         56.         53.         49.
     2            44.         42.         42.         41.         39.
     3            43.         43.         42.         40.         38.
     4            44.         47.         47.         43.         39.
     5            43.         48.         49.         48.         45.
     6            38.         40.         38.         36.         34.
     7            49.         49.         45.         40.         36.
     8            38.         44.         46.         45.         42.
     9            36.         38.         39.         38.         38.
    10            29.         30.         29.         27.         26.
    11            36.         40.         40.         39.         36.
    12            51.         52.         51.         49.         47.
    13            54.         52.         50.         47.         43.
    14            47.         46.         45.         42.         39.
    15            36.         39.         44.         44.         42.
    16            40.         41.         40.         38.         37.
    17            46.         44.         41.         39.         36.
    18            50.         59.         55.         53.         53.
    19            32.         32.         34.         33.         32.
    20            50.         50.         48.         45.         43.
    21            45.         46.         45.         43.         42.
    22            56.         52.         50.         49.         46.
    23            47.         55.         59.         59.         57.
    24            49.         51.         54.         54.         53.
    25            43.         47.         48.         44.         39.
    26            57.         63.         65.         64.         61.
    27            52.         58.         59.         56.         55.
    28            49.         54.         55.         51.         50.
    29            39.         42.         43.         43.         42.
    30            58.         61.         61.         59.         56.
    31            52.         53.         51.         50.         47.
    32            51.         48.         47.         44.         40.
    33            51.         52.         51.         49.         43.
    34            50.         52.         50.         47.         46.
    35            49.         52.         52.         50.         47.
    36            60.         62.         60.         57.         54.
```

The only 8-hr standard is for CO

Std = 10,000 $\mu g/m^3$

6^3

The *de minimis* level is 500 $\mu g/m^3$

The projected CO emission = 212.1 lb/hr

= 26.7 g/s

The highest, second-highest CO

impact = $^{26.7}/_{124.3} \times 65 = 14.0\ \mu g/m^3$

```
                    COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M


             SECOND HIGHEST 1-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE       1.2 KM      1.4 KM      1.6 KM      1.8 KM      2.0 KM
  DIR
    1          137.        134.        129.        124.        118.
    2          135.        127.        126.        125.        120.
    3          132.        134.        130.        125.        117.
    4          132.        129.        127.        123.        118.
    5          136.        131.        129.        125.        118.
    6          134.        130.        128.        122.        118.
    7          136.        127.        125.        119.        117.
    8          138.        129.        128.        126.        120.
    9          136.        132.        128.        125.        119.
   10          129.        129.        124.        122.        117.
   11          133.        126.        126.        123.        119.
   12          134.        132.        131.        125.        121.
   13          132.        133.        124.        123.        119.
   14          134.        130.        130.        124.        118.
   15          134.        124.        119.        116.        113.
   16          136.        125.        127.        122.        119.
   17          135.        126.        121.        121.        117.
   18          154.        145.        131.        123.        118.
   19          135.        126.        117.        115.        110.
   20          133.        121.        123.        121.        116.
   21          133.        128.        129.        125.        117.
   22          132.        135.        144.        148.        149.
   23          136.        167.        181.        172.        160.
   24          136.        134.        128.        125.        129.
   25          134.        132.        127.        125.        121.
   26          136.        133.        129.        124.        118.
   27          135.        133.        131.        127.        125.
   28          135.        133.        126.        124.        119.
   29          136.        131.        129.        125.        122.
   30          152.        141.        130.        125.        120.
   31          137.        134.        132.        126.        120.
   32          136.        133.        129.        125.        120.
   33          138.        135.        130.        123.        118.
   34          136.        131.        130.        125.        119.
   35          136.        129.        128.        124.        119.
   36          139.        136.        131.        126.        120.
```

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The only standard for 1hr aves. is for CO

Std = 40,000 μg/m³

The CO emission rate is predicted @ 212.1 #/hr

= 26.7 g/s

The highest, second-highest

1hr impact is predicted

at 26.7/124.3 × 181 = 38.9 μg/m³

```
PLANT NAME: SEBRING UNITS 1-3 CRSTER  POLLUTANT:  RUNS @   AIR QUALITY UNITS: GM/M**3
FOR SPACIAL SO2 INCREMENT CONSUMPTION

               MET FILE      REQUESTED
              STN NO. YR   STN NO. YR
 SURFACE       12815  74    12815  74
 UPPER AIR     12842  74    12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * * * * *

           ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

           ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

OUT 3

65

```
    RING DISTANCES(KM)=   1.00   2.00   3.00   4.00   5.00

   STACK #  1--UNITS 1-3

    STACK      MONTH       EMISSION RATE          HEIGHT   DIAMETER  EXIT VELOCITY   TEMP      VOLUMETRIC FLOW
                             (GMS/SEC)           (METERS)  (METERS)     (M/SEC)    (DEG.K)        (M**3/SEC)

      1         ALL        124.3000              45.72      2.19        35.00      422.00          131.84
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                   COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                   ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
          RANGE   1.0 KM         2.0 KM         3.0 KM         4.0 KM         5.0 KM
      DIR
        1           1.             1.             1.             1.             1.
        2           1.             1.             1.             1.             1.
        3           1.             1.             1.             1.             1.
        4           1.             1.             1.             1.             1.
        5           1.             1.             1.             1.             1.
        6           1.             1.             1.             1.             1.
        7           1.             1.             1.             1.             1.
        8           1.             1.             1.             1.             1.
        9           1.             1.             1.             1.             1.
       10           1.             1.             1.             1.             1.
       11           1.             1.             1.             1.             1.
       12           1.             1.             1.             1.             1.
       13           1.             1.             1.             1.             1.
       14           1.             1.             1.             1.             1.
       15           1.             1.             1.             1.             1.
       16           1.             1.             1.             1.             1.
       17           1.             1.             1.             1.             1.
       18           1.             2.             2.             2.             2.
       19           1.             1.             1.             1.             1.
       20           1.             1.             1.             1.             1.
       21           1.             1.             1.             1.             1.
       22           1.             1.             1.             1.             1.
       23           1.             2.             2.             1.             1.
       24           1.             2.             1.             1.             1.
       25           1.             2.             1.             1.             1.
       26           1.             2.             2.             2.             1.
       27           1.             2.             2.             2.             2.
       28           1.             2.             2.             1.             1.
       29           1.             1.             1.             1.             1.
       30           1.             2.             1.             1.             1.
       31           1.             1.             1.             1.             1.
       32           1.             1.             1.             1.             1.
       33           1.             1.             1.             1.             1.
       34           1.             2.             1.             1.             1.
       35           1.             2.             1.             1.             1.
       36           1.             2.             2.             2.             2.
```

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        COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M

              SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE      1.0 KM  2.0 KM  3.0 KM  4.0 KM  5.0 KM
 DIR
   1          16.     18.     14.     11.     10.
   2          15.     16.     14.     12.     11.
   3          12.     14.     10.      9.      9.
   4          13.     14.     13.     12.     11.
   5          12.     17.     13.     12.     11.
   6          11.     13.     12.     10.     10.
   7          15.     15.     12.     10.     10.
   8          11.     14.     12.     10.     10.
   9          12.     20.     18.     15.     13.
  10           8.     12.     11.     10.     10.
  11          13.     13.     14.     13.     11.
  12          16.     16.     14.     14.     13.
  13          16.     16.     16.     14.     12.
  14          14.     18.     13.     12.     11.
  15          12.     14.     13.     13.     12.
  16          12.     13.     13.     14.     13.
  17          14.     15.     14.     14.     14.
  18          13.     21.     26.     24.     22.
  19          11.     16.     18.     18.     17.
  20          15.     14.     17.     17.     16.
  21          13.     15.     14.     14.     12.
  22          17.     15.     14.     13.     12.
  23          14.     20.     17.     15.     14.
  24          12.     20.     19.     15.     14.
  25          15.     17.     15.     14.     13.
  26          16.     23.     19.     15.     14.
  27          13.     22.     21.     19.     17.
  28          15.     17.     18.     17.     14.
  29          12.     14.     13.     11.     11.
  30          16.     20.     18.     16.     15.
  31          14.     18.     14.     12.     11.
  32          15.     14.     11.     11.     10.
  33          16.     14.     15.     16.     15.
  34          16.     17.     14.     13.     12.
  35          14.     17.     14.     11.     10.
  36          18.     18.     19.     19.     20.
```

DAY 279 1974

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          COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

                     SECOND HIGHEST        3-HOUR CONCENTRATION AT EACH RECEPTOR
      RANGE      1.0 KM      2.0 KM      3.0 KM      4.0 KM      5.0 KM
    DIR
      1           81.         75.         54.         47.         42.
      2           77.         66.         62.         50.         46.
      3           82.         82.         64.         47.         39.
      4           76.         76.         56.         52.         54.
      5           74.         74.         55.         48.         46.
      6           73.         68.         53.         48.         42.
      7           93.         70.         61.         56.         50.
      8           88.         76.         58.         50.         45.
      9           76.         73.         60.         50.         45.
     10           62.         71.         65.         64.         58.
     11           71.         73.         63.         53.         46.
     12           78.         68.         59.         49.         46.
     13           81.         73.         58.         49.         44.
     14           76.         75.         60.         47.         46.
     15           76.         65.         51.         44.         40.
     16           71.         74.         57.         47.         43.
     17           96.         71.         58.         56.         47.
     18          104.        105.         77.         61.         56.
     19           83.         73.         60.         55.         49.
     20           72.         69.         58.         56.         52.
     21           75.         77.         59.         47.         39.
     22           81.         69.         59.         48.         43.
     23           70.         80.         56.         55.         54.
     24           77.         91.         70.         54.         45.
     25           77.         83.         65.         47.         42.
     26           92.         87.         66.         57.         47.
     27           76.         90.         72.         66.         58.
     28           78.         73.         58.         49.         42.
     29           71.         77.         51.         48.         44.
     30           79.         94.         63.         57.         51.
     31           71.         72.         53.         52.         44.
     32           80.         79.         55.         47.         41.
     33           84.         70.         68.         56.         44.
     34           97.         91.         63.         55.         47.
     35           79.         79.         73.         52.         41.
     36           90.         91.         69.         58.         53.
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          COMPOSITE HIGHEST,SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE,UG/CU.M

                   SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE      1.0 KM     2.0 KM     3.0 KM     4.0 KM     5.0 KM
  DIR
    1          48.        49.        34.        26.        23.
    2          44.        39.        28.        25.        21.
    3          35.        38.        30.        22.        19.
    4          38.        39.        33.        32.        28.
    5          36.        45.        29.        27.        23.
    6          33.        34.        25.        20.        21.
    7          44.        36.        33.        30.        26.
    8          33.        42.        28.        22.        19.
    9          32.        38.        32.        30.        28.
   10          24.        26.        27.        27.        25.
   11          40.        36.        28.        25.        23.
   12          48.        47.        38.        28.        28.
   13          46.        43.        36.        31.        29.
   14          43.        39.        34.        32.        28.
   15          35.        42.        40.        32.        25.
   16          35.        37.        32.        30.        29.
   17          41.        36.        31.        27.        26.
   18          39.        53.        56.        53.        47.
   19          33.        32.        29.        30.        28.
   20          44.        43.        36.        37.        32.
   21          40.        42.        32.        26.        23.
   22          52.        46.        33.        29.        26.
   23          42.        57.        44.        34.        29.
   24          36.        53.        43.        39.        32.
   25          43.        39.        33.        26.        25.
   26          47.        61.        40.        31.        24.
   27          40.        55.        42.        37.        31.
   28          41.        50.        44.        33.        30.
   29          36.        42.        29.        23.        21.
   30          49.        56.        42.        36.        31.
   31          41.        47.        30.        25.        26.
   32          45.        40.        31.        27.        25.
   33          47.        43.        33.        30.        26.
   34          48.        46.        38.        33.        31.
   35          41.        47.        32.        28.        25.
   36          53.        54.        44.        42.        37.
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                              COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

                SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE      1.0 KM    2.0 KM    3.0 KM    4.0 KM.   5.0 KM
 DIR
   1          134.      118.       93.       74.       67.
   2          146.      120.       94.       77.       67.
   3          138.      117.       95.       82.       73.
   4          142.      118.       91.       80.       74.
   5          140.      118.       99.       88.       75.
   6          142.      118.       93.       78.       69.
   7          143.      117.       93.       78.       66.
   8          140.      120.       92.       79.       69.
   9          137.      119.       93.       79.       71.
  10          125.      117.      104.      109.      104.
  11          141.      119.       88.       75.       69.
  12          134.      121.       93.       78.       67.
  13          146.      119.       94.       76.       72.
  14          132.      118.       95.       81.       69.
  15          143.      113.       93.       74.       73.
  16          139.      119.       97.       77.       78.
  17          143.      117.      117.      107.       91.
  18          142.      118.       94.       83.       77.
  19          132.      110.       92.       79.       67.
  20          136.      116.       96.       76.       83.
  21          138.      117.       96.       78.       70.
  22          143.      149.      117.      125.      116.
  23          138.      160.      112.       92.       87.
  24          140.      129.       95.       76.       68.
  25          148.      121.      105.       95.       90.
  26          148.      118.      101.       84.       71.
  27          141.      125.      106.       91.       75.
  28          143.      119.       94.       82.       73.
  29          143.      122.       93.       78.       69.
  30          146.      120.       94.       87.       77.
  31          136.      120.       95.       77.       67.
  32          140.      120.       95.       75.       68.
  33          138.      118.       93.       75.       67.
  34          143.      119.       92.       75.       68.
  35          146.      119.       95.       86.       84.
  36          140.      120.      120.      101.       93.
```

OUT 4

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```
PLANT NAME: SEBRING UNITS 1-3 CRSTER  POLLUTANT:  RUNS @   AIR QUALITY UNITS: GM/M**3
FOR SPACIAL SO2 INCREMENT CONSUMPTION

              MET FILE      REQUESTED
             STN NO. YR    STN NO. YR
 SURFACE      12815  74     12815  74
 UPPER AIR    12842  74     12842  74
PLANT LOCATION: RURAL
ANEMOMETER HEIGHT IS  7.0 METERS
WIND PROFILE EXPONENTS ARE:   0.100,  0.150,  0.200,  0.250,  0.300,  0.300,
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

DAY-- 1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1


 * * * * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * *

           ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED

           ONLY ON THOSE DAYS MARKED BY A "1" IN THE ABOVE TABLE
```

```
  RING DISTANCES(KM)=   6.00   7.00   8.00   9.00  10.00

STACK #  1--UNITS 1-3

 STACK    MONTH      EMISSION RATE          HEIGHT   DIAMETER  EXIT VELOCITY   TEMP      VOLUMETRIC FLOW
                      (GMS/SEC)            (METERS)  (METERS)    (M/SEC)     (DEG.K)       (M**3/SEC)

   1       ALL        124.3000               45.72     2.19       35.00       422.00         131.84
```

```
                        COMPOSITE ANNUAL CONCENTRATION TABLE,UG/CU.M

                        ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR
           RANGE     6.0 KM          7.0 KM          8.0 KM          9.0 KM          10.0 KM
      DIR
        1              1.              1.              1.              1.              1.
        2              1.              1.              1.              1.              0.
        3              1.              0.              0.              0.              0.
        4              1.              1.              1.              1.              1.
        5              1.              1.              1.              1.              1.
        6              1.              1.              1.              1.              1.
        7              1.              1.              1.              0.              0.
        8              1.              0.              0.              0.              0.
        9              1.              1.              1.              1.              1.
       10              1.              1.              1.              0.              0.
       11              1.              1.              1.              1.              1.
       12              1.              1.              1.              1.              1.
       13              1.              1.              1.              1.              1.
       14              1.              1.              1.              1.              0.
       15              1.              1.              1.              0.              0.
       16              1.              1.              1.              1.              1.
       17              1.              1.              1.              1.              1.
       18              2.              2.              2.              2.              1.
       19              1.              1.              1.              1.              1.
       20              1.              1.              1.              1.              1.
       21              1.              1.              1.              1.              1.
       22              1.              1.              1.              1.              1.
       23              1.              1.              1.              1.              1.
       24              1.              1.              1.              1.              1.
       25              1.              1.              1.              1.              1.
       26              1.              1.              1.              1.              1.
       27              2.              1.              1.              1.              1.
       28              1.              1.              1.              1.              1.
       29              1.              1.              1.              1.              1.
       30              1.              1.              1.              1.              1.
       31              1.              1.              1.              1.              1.
       32              1.              1.              1.              1.              1.
       33              1.              1.              1.              1.              1.
       34              1.              1.              1.              1.              1.
       35              1.              1.              1.              1.              1.
       36              2.              1.              1.              1.              1.
```

```
          COMPOSITE HIGHEST,SECOND-HIGHEST 24-HOUR CONCENTRATION TABLE,UG/CU.M

                SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE      6.0 KM   7.0 KM   8.0 KM   9.0 KM  10.0 KM
DIR
   1          9.       8.       7.       7.       6.
   2         10.       9.       9.       9.       9.
   3          9.       8.       8.       7.       6.
   4         10.       9.       8.       8.       7.
   5         10.      10.       9.       8.       8.
   6         10.       9.       9.       8.       8.
   7          9.       8.       8.       7.       7.
   8          8.       8.       7.       7.       7.
   9         12.      11.      10.      10.       9.
  10         10.      10.       9.       9.       9.
  11         10.      10.       9.       8.       8.
  12         12.      11.      10.       9.       8.
  13         12.      11.       9.       8.       7.
  14          9.       9.       9.       8.       8.
  15         10.       9.       8.       7.       7.
  16         13.      12.      11.      10.       9.
  17         13.      12.      11.      10.       9.
  18         20.      18.      16.      14.      13.
  19         16.      14.      13.      12.      11.
  20         14.      13.      11.      10.       9.
  21         11.      10.      10.       9.       8.
  22         11.      10.       9.       9.       8.
  23         13.      12.      11.      10.       9.
  24         13.      11.      10.       9.       8.
  25         11.      10.       9.       8.       8.
  26         13.      12.      11.      11.      10.
  27         16.      14.      13.      12.      11.
  28         12.      11.       9.       8.       7.
  29         11.      11.      10.       9.       8.
  30         13.      12.      11.      10.       9.
  31         10.      10.       9.       8.       8.
  32         10.       9.       9.       9.       9.
  33         13.      12.      11.      10.       9.
  34         12.      12.      11.      11.      11.
  35          9.      10.      10.       9.       9.
  36         20.      20.      19.      18.      17.
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          COMPOSITE HIGHEST, SECOND-HIGHEST 3-HOUR CONCENTRATION TABLE,UG/CU.M

              SECOND HIGHEST      3-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE      6.0 KM    7.0 KM    8.0 KM    9.0 KM   10.0 KM
 DIR
   1           40.       37.       36.       35.       33.
   2           44.       46.       47.       45.       43.
   3           35.       35.       34.       33.       32.
   4           53.       50.       45.       41.       37.
   5           46.       43.       40.       36.       33.
   6           37.       33.       34.       35.       35.
   7           44.       38.       34.       32.       31.
   8           40.       35.       36.       38.       38.
   9           40.       37.       38.       36.       34.
  10           51.       45.       41.       39.       38.
  11           38.       34.       33.       33.       34.
  12           42.       43.       38.       34.       32.
  13           39.       34.       31.       33.       35.
  14           42.       40.       37.       34.       32.
  15           37.       35.       34.       32.       30.
  16           42.       40.       36.       34.       32.
  17           40.       38.       37.       36.       34.
  18           50.       46.       43.       43.       42.
  19           43.       39.       36.       35.       33.
  20           44.       41.       42.       38.       36.
  21           36.       36.       35.       36.       37.
  22           39.       36.       37.       39.       41.
  23           48.       46.       44.       44.       43.
  24           43.       37.       33.       32.       32.
  25           38.       35.       35.       32.       32.
  26           42.       39.       36.       36.       36.
  27           52.       46.       42.       42.       45.
  28           38.       34.       31.       29.       27.
  29           39.       34.       33.       29.       27.
  30           45.       39.       35.       34.       33.
  31           39.       37.       35.       35.       33.
  32           36.       35.       36.       36.       35.
  33           43.       41.       41.       43.       43.
  34           40.       40.       42.       44.       44.
  35           38.       33.       33.       34.       34.
  36           47.       44.       43.       43.       41.
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        COMPOSITE HIGHEST,SECOND-HIGHEST  8-HOUR CONCENTRATION TABLE,UG/CU.M

                SECOND HIGHEST  8-HOUR CONCENTRATION AT EACH RECEPTOR
   RANGE      6.0 KM    7.0 KM    8.0 KM    9.0 KM   10.0 KM
 DIR
    1          21.       20.       19.       18.       17.
    2          22.       23.       22.       19.       17.
    3          18.       17.       16.       15.       14.
    4          25.       23.       21.       19.       18.
    5          22.       20.       19.       17.       16.
    6          22.       19.       18.       18.       17.
    7          23.       20.       18.       17.       16.
    8          17.       17.       16.       16.       15.
    9          25.       23.       21.       20.       19.
   10          22.       21.       21.       20.       19.
   11          23.       22.       21.       20.       19.
   12          26.       22.       19.       19.       18.
   13          26.       23.       20.       17.       15.
   14          25.       21.       21.       20.       19.
   15          23.       21.       19.       17.       16.
   16          25.       22.       22.       21.       21.
   17          27.       26.       25.       24.       22.
   18          40.       34.       29.       25.       24.
   19          25.       22.       20.       18.       17.
   20          27.       24.       23.       22.       21.
   21          23.       21.       22.       22.       20.
   22          26.       23.       20.       20.       19.
   23          27.       24.       23.       22.       20.
   24          26.       21.       21.       20.       20.
   25          23.       20.       18.       17.       17.
   26          21.       21.       20.       19.       18.
   27          27.       25.       25.       23.       23.
   28          27.       24.       21.       19.       17.
   29          19.       18.       19.       18.       18.
   30          27.       23.       20.       19.       20.
   31          25.       23.       21.       19.       18.
   32          23.       22.       22.       22.       22.
   33          23.       24.       22.       20.       16.
   34          26.       22.       20.       19.       19.
   35          21.       20.       19.       18.       17.
   36          32.       29.       28.       27.       24.
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                         COMPOSITE HIGHEST, SECOND-HIGHEST 1-HOUR CONCENTRATION TABLE,UG/CU.M

            SECOND HIGHEST  1-HOUR CONCENTRATION AT EACH RECEPTOR
  RANGE     6.0 KM     7.0 KM     8.0 KM     9.0 KM    10.0 KM
DIR
   1         60.        55.        60.        62.        63.
   2         60.        61.        62.        62.        64.
   3         64.        56.        61.        65.        63.
   4         65.        57.        62.        66.        68.
   5         70.        65.        59.        62.        66.
   6         61.        57.        61.        61.        62.
   7         60.        55.        58.        61.        62.
   8         60.        55.        57.        59.        61.
   9         67.        63.        60.        65.        67.
  10         93.        82.        73.        66.        62.
  11         65.        61.        59.        62.        63.
  12         61.        56.        61.        65.        67.
  13         67.        62.        59.        62.        63.
  14         62.        57.        62.        65.        66.
  15         64.        57.        59.        59.        61.
  16         71.        67.        69.        67.        67.
  17         78.        71.        74.        72.        67.
  18         67.        67.        67.        67.        70.
  19         60.        55.        59.        62.        66.
  20         76.        66.        61.        66.        71.
  21         64.        57.        61.        64.        71.
  22         98.        86.        76.        69.        72.
  23         79.        73.        72.        71.        71.
  24         62.        61.        63.        65.        67.
  25         80.        70.        62.        66.        72.
  26         74.        75.        68.        67.        71.
  27         69.        65.        62.        66.        68.
  28         64.        56.        61.        65.        65.
  29         63.        60.        61.        65.        68.
  30         65.        57.        61.        65.        71.
  31         62.        60.        61.        66.        70.
  32         61.        56.        62.        66.        70.
  33         61.        56.        62.        65.        68.
  34         62.        62.        63.        66.        72.
  35         76.        68.        61.        65.        68.
  36         81.        86.        86.        81.        74.
```

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USER: A028

PTOUT2

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 MMM   MMM   MMM   MMM
M   M M   M M   M M   M
M   M M   M     M M   M
MMMMM M M M    M   MMM
M   M M   M   M   M   M
M   M M   M  M    M   M
M   M  MMM  MMMMM  MMM



MMMM  MMMMM  MMM  M   M MMMMM  MMM
M   M   M   M   M M   M   M   M   M
M   M   M   M   M M   M   M       M
MMMM    M   M   M M   M   M      M
M       M   M   M M   M   M     M
M       M   M   M M   M   M    M
M       M    MMM   MMM    M   MMMMM


****************************************************************************************************
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LABEL:  PRT014  -FORM         -COPIES   1

SPOOLED:  12/09/80 16:46
STARTED:  12/09/80 16:46, ON: PRO   BY: PRO

PARTIAL BACKUP MONDAY & WEDNESDAY. FULL BACKUP ON FRIDAY AT 4:00

SEBRING DAY 124/1974 SO2 HOURS 10-12

        OPTIONS:
PARTIAL CONCENTRATIONS ARE PRINTED
RECEPTOR GRID IS CREATED INTERNALLY
MET DATA IS INPUT FROM PREPROCESSED FILE

* * * S O U R C E S * * *
NO     Q (G/SEC)  HP (M) TS (DEG-K)  VS (M/SEC) D(M)  R(KM)      S(KM)
 1.     124.30      45.7     422.0       35.0       2.19   464.300  3035.400        UNITS 1-3

* * * R E C E P T O R S * * *
       NO.     RREC(KM)  SREC(KM)     Z (M)
         1.    464.300  3033.800       0.0
         2.    464.300  3033.899       0.0
         3.    464.300  3034.000       0.0
         4.    464.300  3034.100       0.0
         5.    464.300  3034.200       0.0
         6.    464.300  3034.299       0.0
         7.    464.300  3034.399       0.0
         8.    464.300  3034.500       0.0
         9.    464.300  3034.600       0.0
        10.    464.300  3034.700       0.0
```

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6000

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 11.    464.400   3033.800         0.0
 12.    464.400   3033.899         0.0
 13.    464.400   3034.000         0.0
 14.    464.400   3034.100         0.0
 15.    464.400   3034.200         0.0
 16.    464.400   3034.299         0.0
 17.    464.400   3034.399         0.0
 18.    464.400   3034.500         0.0
 19.    464.400   3034.600         0.0
 20.    464.400   3034.700         0.0
 21.    464.500   3033.800         0.0
 22.    464.500   3033.899         0.0
 23.    464.500   3034.000         0.0
 24.    464.500   3034.100         0.0
 25.    464.500   3034.200         0.0
 26.    464.500   3034.299         0.0
 27.    464.500   3034.399         0.0
 28.    464.500   3034.500         0.0
 29.    464.500   3034.600         0.0
 30.    464.500   3034.700         0.0
 31.    464.600   3033.800         0.0
 32.    464.600   3033.899         0.0
 33.    464.600   3034.000         0.0
 34.    464.600   3034.100         0.0
 35.    464.600   3034.200         0.0
 36.    464.600   3034.299         0.0
 37.    464.600   3034.399         0.0
 38.    464.600   3034.500         0.0
 39.    464.600   3034.600         0.0
 40.    464.600   3034.700         0.0
 41.    464.700   3033.800         0.0
 42.    464.700   3033.899         0.0
 43.    464.700   3034.000         0.0
 44.    464.700   3034.100         0.0
 45.    464.700   3034.200         0.0
 46.    464.700   3034.299         0.0
 47.    464.700   3034.399         0.0
 48.    464.700   3034.500         0.0
 49.    464.700   3034.600         0.0
 50.    464.700   3034.700         0.0

DAY= 124  YEAR= 74  HOURS= 10-12  WD SHIFT ANGLE=  0
10.        354.        2.6         2      1164.       301.        0.
11.        354.        1.0         1      1440.       303.        0.
12.        356.        1.0         1      1716.       305.        0.
```

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 AVERAGE CONCENTRATIONS FOR   3 HOURS.
* * * R E C E P T O R   N U M B E R * * *

                1.       2.       3.       4.       5.       6.       7.       8.       9.       10.

SOURCE          PARTIAL CONCENTRATIONS (UG/M**3)
    1.          80.30    85.36    91.46    98.30    104.71   107.95   103.28   84.45    49.56    14.03

                TOTAL CONCENTRATION (UG/M**3)

                80.30    85.36    91.46    98.30    104.71   107.95   103.28   84.45    49.56    14.03
* * * R E C E P T O R   N U M B E R * * *

                11.      12.      13.      14.      15.      16.      17.      18.      19.      20.

SOURCE          PARTIAL CONCENTRATIONS (UG/M**3)
    1.          91.69    97.34    104.00   111.33   118.08   121.35   116.08   95.59    57.49    17.40

                TOTAL CONCENTRATION (UG/M**3)

                91.69    97.34    104.00   111.33   118.08   121.35   116.08   95.59    57.49    17.40
* * * R E C E P T O R   N U M B E R * * *

                21.      22.      23.      24.      25.      26.      27.      28.      29.      30.

SOURCE          PARTIAL CONCENTRATIONS (UG/M**3)
    1.          92.00    96.25    101.00   105.82   109.48   109.36   101.23   80.35    46.52    13.66

                TOTAL CONCENTRATION (UG/M**3)

                92.00    96.25    101.00   105.82   109.48   105.36   101.23   80.35    46.52    13.66
* * * R E C E P T O R   N U M B E R * * *

                31.      32.      33.      34.      35.      36.      37.      38.      39.      40.

SOURCE          PARTIAL CONCENTRATIONS (UG/M**3)
    1.          81.22    82.68    83.99    84.75    83.94    79.67    69.36    51.09    26.99    7.11

                TOTAL CONCENTRATION (UG/M**3)

                81.22    82.68    83.99    84.75    83.94    79.67    69.36    51.09    26.99    7.11
* * * R E C E P T O R   N U M B E R * * *

                41.      42.      43.      44.      45.      46.      47.      48.      49.      50.

SOURCE          PARTIAL CONCENTRATIONS (UG/M**3)
    1.          63.47    62.16    60.39    57.89    54.02    47.82    38.22    25.28    11.65    2.59

                TOTAL CONCENTRATION (UG/M**3)

                63.47    62.16    60.39    57.89    54.02    47.82    38.22    25.28    11.65    2.59
```

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USER: A028

PTOUT1

**************************************************************************************************************
**************************************************************************************************************


 MMM    MMM    MMM    MMM
M   M  M   M  M   M  M   M
M   M  M   M      M  M   M
MMMMM  M M M     M    MMM
M   M  M   M    M    M   M
M   M  M   M   M     M   M
M   M   MMM   MMMMM   MMM



MMMM   MMMMM   MMM   M   M  MMMMM    M
M   M    M    M   M  M   M    M     MM
M   M    M    M   M  M   M    M      M
MMMM     M    M   M  M   M    M      M
M        M    M   M  M   M    M      M
M        M    M   M  M   M    M      M
M        M     MMM    MMM     M     MMM



**************************************************************************************************************
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LABEL:  PRT015  -FORM          -COPIES   1

SPOOLED:  12/09/80 10:41
STARTED:  12/09/80 10:41, ON: PRO   BY: PRO

PARTIAL BACKUP MONDAY & WEDNESDAY. FULL BACKUP ON FRIDAY AT 4:00

SEBRING DAY 149/1978 S02

      OPTIONS:
PARTIAL CONCENTRATIONS ARE PRINTED
RECEPTOR GRID IS CREATED INTERNALLY
MET DATA IS INPUT FROM PREPROCESSED FILE

* * * S O U R C E S * * *
NO     Q (G/SEC)  HP (M) TS (DEG-K)  VS (M/SEC) D(M)  R(KM)       S(KM)
 1.    124.30       45.7      422.0       35.0      2.19  464.300  3035.400       UNITS 1-3

* * * R E C E P T O R S * * *
     NO.     RREC(KM)  SREC(KM)     Z (M)
       1.    462.300   3034.900      0.0
       2.    462.300   3035.000      0.0
       3.    462.300   3035.100      0.0
       4.    462.300   3035.200      0.0
       5.    462.300   3035.300      0.0
       6.    462.300   3035.399      0.0
       7.    462.300   3035.500      0.0
       8.    462.300   3035.600      0.0
       9.    462.300   3035.700      0.0
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 11.    462.300   3035.899          0.0
 12.    462.300   3036.000          0.0
 13.    462.300   3036.100          0.0
 14.    462.300   3036.200          0.0
 15.    462.300   3036.300          0.0
 16.    462.400   3034.900          0.0
 17.    462.400   3035.000          0.0
 18.    462.400   3035.100          0.0
 19.    462.400   3035.200          0.0
 20.    462.400   3035.300          0.0
 21.    462.400   3035.399          0.0
 22.    462.400   3035.500          0.0
 23.    462.400   3035.600          0.0
 24.    462.400   3035.700          0.0
 25.    462.400   3035.800          0.0
 26.    462.400   3035.899          0.0
 27.    462.400   3036.000          0.0
 28.    462.400   3036.100          0.0
 29.    462.400   3036.200          0.0
 30.    462.400   3036.300          0.0
 31.    462.500   3034.900          0.0
 32.    462.500   3035.000          0.0
 33.    462.500   3035.100          0.0
 34.    462.500   3035.200          0.0
 35.    462.500   3035.300          0.0
 36.    462.500   3035.399          0.0
 37.    462.500   3035.500          0.0
 38.    462.500   3035.600          0.0
 39.    462.500   3035.700          0.0
 40.    462.500   3035.800          0.0
 41.    462.500   3035.899          0.0
 42.    462.500   3036.000          0.0
 43.    462.500   3036.100          0.0
 44.    462.500   3036.200          0.0
 45.    462.500   3036.300          0.0
 46.    462.600   3034.900          0.0
 47.    462.600   3035.000          0.0
 48.    462.600   3035.100          0.0
 49.    462.600   3035.200          0.0
 50.    462.600   3035.300          0.0
 51.    462.600   3035.399          0.0
 52.    462.600   3035.500          0.0
 53.    462.600   3035.600          0.0
 54.    462.600   3035.700          0.0
 55.    462.600   3035.800          0.0
 56.    462.600   3035.899          0.0
 57.    462.600   3036.000          0.0
 58.    462.600   3036.100          0.0
 59.    462.600   3036.200          0.0
 60.    462.600   3036.300          0.0
 61.    462.700   3034.900          0.0
 62.    462.700   3035.000          0.0
 63.    462.700   3035.100          0.0
 64.    462.700   3035.200          0.0
 65.    462.700   3035.300          0.0
 66.    462.700   3035.399          0.0
 67.    462.700   3035.500          0.0
 68.    462.700   3035.600          0.0
 69.    462.700   3035.700          0.0
 70.    462.700   3035.800          0.0
 71.    462.700   3035.899          0.0
 72.    462.700   3036.000          0.0
 73.    462.700   3036.100          0.0
 74.    462.700   3036.200          0.0
 75.    462.700   3036.300          0.0
 76.    462.800   3034.900          0.0
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  77.    462.800   3035.000        0.0
  78.    462.800   3035.100        0.0
  79.    462.800   3035.200        0.0
  80.    462.800   3035.300        0.0
  81.    462.800   3035.399        0.0
  82.    462.800   3035.500        0.0
  83.    462.800   3035.600        0.0
  84.    462.800   3035.700        0.0
  85.    462.800   3035.800        0.0
  86.    462.800   3035.899        0.0
  87.    462.800   3036.000        0.0
  88.    462.800   3036.100        0.0
  89.    462.800   3036.200        0.0
  90.    462.800   3036.300        0.0
  91.    462.900   3034.900        0.0
  92.    462.900   3035.000        0.0
  93.    462.900   3035.100        0.0
  94.    462.900   3035.200        0.0
  95.    462.900   3035.300        0.0
  96.    462.900   3035.399        0.0
  97.    462.900   3035.500        0.0
  98.    462.900   3035.600        0.0
  99.    462.900   3035.700        0.0
 100.    462.900   3035.800        0.0
 101.    462.900   3035.899        0.0
 102.    462.900   3036.000        0.0
 103.    462.900   3036.100        0.0
 104.    462.900   3036.200        0.0
 105.    462.900   3036.300        0.0
 106.    463.000   3034.900        0.0
 107.    463.000   3035.000        0.0
 108.    463.000   3035.100        0.0
 109.    463.000   3035.200        0.0
 110.    463.000   3035.300        0.0
 111.    463.000   3035.399        0.0
 112.    463.000   3035.500        0.0
 113.    463.000   3035.600        0.0
 114.    463.000   3035.700        0.0
 115.    463.000   3035.800        0.0
 116.    463.000   3035.899        0.0
 117.    463.000   3036.000        0.0
 118.    463.000   3036.100        0.0
 119.    463.000   3036.200        0.0
 120.    463.000   3036.300        0.0
 121.    463.100   3034.900        0.0
 122.    463.100   3035.000        0.0
 123.    463.100   3035.100        0.0
 124.    463.100   3035.200        0.0
 125.    463.100   3035.300        0.0
 126.    463.100   3035.399        0.0
 127.    463.100   3035.500        0.0
 128.    463.100   3035.600        0.0
 129.    463.100   3035.700        0.0
 130.    463.100   3035.800        0.0
 131.    463.100   3035.899        0.0
 132.    463.100   3036.000        0.0
 133.    463.100   3036.100        0.0
 134.    463.100   3036.200        0.0
 135.    463.100   3036.300        0.0
 136.    463.200   3034.900        0.0
 137.    463.200   3035.000        0.0
 138.    463.200   3035.100        0.0
 139.    463.200   3035.200        0.0
 140.    463.200   3035.300        0.0
 141.    463.200   3035.399        0.0
 142.    463.200   3035.500        0.0
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 143.    463.200  3035.600          0.0
 144.    463.200  3035.700          0.0
 145.    463.200  3035.800          0.0
 146.    463.200  3035.899          0.0
 147.    463.200  3036.000          0.0
 148.    463.200  3036.100          0.0
 149.    463.200  3036.200          0.0
 150.    463.200  3036.300          0.0

  DAY= 149   YEAR= 78   HOURS= ALL    WD SHIFT ANGLE=  0
    1.          56.        2.6          5     1932.        297.          0.
    2.          60.        3.1          5     1949.        297.          0.
    3.          70.        2.6          5     1966.        296.          0.
    4.          66.        3.1          5     1983.        295.          0.
    5.          64.        3.1          5     2000.        294.          0.
    6.          60.        3.1          4      114.        294.          0.
    7.          75.        3.1          3      369.        296.          0.
    8.          70.        4.6          3      624.        300.          0.
    9.          84.        4.1          3      879.        303.          0.
   10.          57.        4.6          3     1134.        304.          0.
   11.          94.        2.1          2     1388.        304.          0.
   12.          56.        5.7          3     1643.        305.          0.
   13.          79.        5.7          3     1898.        306.          0.
   14.          84.        7.2          3     2153.        306.          0.
   15.          84.        5.7          3     2153.        305.          0.
   16.          72.        4.6          3     2153.        304.          0.
   17.          83.        5.7          4     2153.        304.          0.
   18.          91.        5.1          4     2153.        303.          0.
   19.          78.        4.6          4     2153.        301.          0.
   20.          86.        3.1          5     2136.        299.          0.
   21.          86.        2.6          6     2114.        298.          0.
   22.          89.        2.1          6     2092.        297.          0.
   23.          85.        2.1          6     2071.        296.          0.
   24.          87.        1.5          7     2049.        295.          0.
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 AVERAGE CONCENTRATIONS FOR  24 HOURS.

* * * R E C E P T O R   N U M B E R * * *

            1.         2.         3.         4.         5.         6.         7.         8.         9.        10.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.       20.58      22.91      24.17      22.91      18.94      13.95       9.44       6.15       4.15       2.89

              TOTAL CONCENTRATION (UG/M**3)

             20.58      22.91      24.17      22.91      18.94      13.95       9.44       6.15       4.15       2.89

* * * R E C E P T O R   N U M B E R * * *

            11.        12.        13.        14.        15.        16.        17.        18.        19.        20.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        1.95       1.20       0.66       0.33       0.15      20.13      22.70      24.39      23.50      19.46

              TOTAL CONCENTRATION (UG/M**3)

              1.95       1.20       0.66       0.33       0.15      20.13      22.70      24.39      23.50      19.46

* * * R E C E P T O R   N U M B E R * * *

            21.        22.        23.        24.        25.        26.        27.        28.        29.        30.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.       14.10       9.30       5.94       3.97       2.73       1.78       1.04       0.54       0.25       0.10

              TOTAL CONCENTRATION (UG/M**3)

             14.10       9.30       5.94       3.97       2.73       1.78       1.04       0.54       0.25       0.10

* * * R E C E P T O R   N U M B E R * * *

            31.        32.        33.        34.        35.        36.        37.        38.        39.        40.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.       19.47      22.27      24.40      23.96      19.91      14.18       9.08       5.67       3.75       2.52

              TOTAL CONCENTRATION (UG/M**3)

             19.47      22.27      24.40      23.96      19.91      14.18       9.08       5.67       3.75       2.52

* * * R E C E P T O R   N U M B E R * * *

            41.        42.        43.        44.        45.        46.        47.        48.        49.        50.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        1.57       0.87       0.42       0.18       0.07      18.55      21.57      24.14      24.24      20.26

              TOTAL CONCENTRATION (UG/M**3)

              1.57       0.87       0.42       0.18       0.07      18.55      21.57      24.14      24.24      20.26

* * * R E C E P T O R   N U M B E R * * *

            51.        52.        53.        54.        55.        56.        57.        58.        59.        60.

SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
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    1.        14.15      8.75      5.33      3.48      2.27      1.34      0.69      0.31      0.12      0.04

          TOTAL CONCENTRATION (UG/M**3)

              14.15      8.75      5.33      3.48      2.27      1.34      0.69      0.31      0.12      0.04

 * * * R E C E P T O R   N U M B E R * * *

              61.       62.       63.       64.       65.       66.       67.       68.       69.       70.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
    1.        17.33     20.57     23.53     24.26     20.46     13.98      8.30      4.91      3.14      1.97

          TOTAL CONCENTRATION (UG/M**3)

              17.33     20.57     23.53     24.26     20.46     13.98      8.30      4.91      3.14      1.97

 * * * R E C E P T O R   N U M B E R * * *

              71.       72.       73.       74.       75.       76.       77.       78.       79.       80.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
    1.         1.09      0.52      0.21      0.07      0.02     15.78     19.20     22.51     23.93     20.45

          TOTAL CONCENTRATION (UG/M**3)

               1.09      0.52      0.21      0.07      0.02     15.78     19.20     22.51     23.93     20.45

 * * * R E C E P T O R   N U M B E R * * *

              81.       82.       83.       84.       85.       86.       87.       88.       89.       90.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
    1.        13.63      7.70      4.39      2.74      1.64      0.84      0.36      0.13      0.04      0.01

          TOTAL CONCENTRATION (UG/M**3)

              13.63      7.70      4.39      2.74      1.64      0.84      0.36      0.13      0.04      0.01

 * * * R E C E P T O R   N U M B E R * * *

              91.       92.       93.       94.       95.       96.       97.       98.       99.      100.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
    1.        13.90     17.43     21.01     23.15     20.13     13.05      6.93      3.78      2.28      1.28

          TOTAL CONCENTRATION (UG/M**3)

              13.90     17.43     21.01     23.15     20.13     13.05      6.93      3.78      2.28      1.28

 * * * R E C E P T O R   N U M B E R * * *

             101.      102.      103.      104.      105.      106.      107.      108.      109.      110.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
    1.         0.60      0.23      0.07      0.02      0.00     11.77     15.25     18.97     21.81     19.43

          TOTAL CONCENTRATION (UG/M**3)

               0.60      0.23      0.07      0.02      0.00     11.77     15.25     18.97     21.81     19.43

 * * * R E C E P T O R   N U M B E R * * *

             111.      112.      113.      114.      115.      116.      117.      118.      119.      120.

 SOURCE   PARTIAL CONCENTRATIONS (UG/M**3)
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      1.        12.20      5.99      3.08      1.78      0.92      0.38      0.13      0.03      0.01      0.00

               TOTAL CONCENTRATION (UG/M**3)

                12.20      5.99      3.08      1.78      0.92      0.38      0.13      0.03      0.01      0.00

 * * * R E C E P T O R   N U M B E R * * *

               121.      122.      123.      124.      125.      126.      127.      128.      129.      130.

 SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
      1.         9.61     12.68     16.38     19.80     18.25     11.04      4.90      2.33      1.26      0.59

               TOTAL CONCENTRATION (UG/M**3)

                 9.61     12.68     16.38     19.80     18.25     11.04      4.90      2.33      1.26      0.59

 * * * R E C E P T O R   N U M B E R * * *

               131.      132.      133.      134.      135.      136.      137.      138.      139.      140.

 SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
      1.         0.21      0.06      0.01      0.00      0.00      7.76      9.87     13.29     17.08     16.49

               TOTAL CONCENTRATION (UG/M**3)

                 0.21      0.06      0.01      0.00      0.00      7.76      9.87     13.29     17.08     16.49

 * * * R E C E P T O R   N U M B E R * * *

               141.      142.      143.      144.      145.      146.      147.      148.      149.      150.

 SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
      1.         9.57      3.70      1.58      0.79      0.32      0.10      0.02      0.00      0.00      0.00

               TOTAL CONCENTRATION (UG/M**3)

                 9.57      3.70      1.58      0.79      0.32      0.10      0.02      0.00      0.00      0.00
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USER: A028

PTOUT1

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 MMM   MMM   MMM   MMM
M   M M   M M   M M   M
M   M M   M     M M   M
MMMMM M M M    M   MMM
M   M M   M   M   M   M
M   M M   M  M    M   M
M   M  MMM  MMMMM  MMM


MMMM  MMMMM  MMM  M   M MMMMM   M
M   M   M   M   M M   M   M    MM
M   M   M   M   M M   M   M     M
MMMM    M   M   M M   M   M     M
M       M   M   M M   M   M     M
M       M   M   M M   M   M     M
M       M    MMM   MMM    M    MMM


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LABEL:  PRT014  -FORM         -COPIES   1

SPOOLED:  12/10/80 13:17
STARTED:  12/10/80 13:17, ON: PR0   BY: PR0

PARTIAL BACKUP MONDAY & WEDNESDAY. FULL BACKUP ON FRIDAY AT 4:00

SEBRING DAY 279/1974 S02

        OPTIONS:
PARTIAL CONCENTRATIONS ARE PRINTED
RECEPTOR GRID IS CREATED INTERNALLY
MET DATA IS INPUT FROM PREPROCESSED FILE

* * * S O U R C E S * * *
NO      Q (G/SEC)  HP (M) TS (DEG-K)  VS (M/SEC) D(M)  R(KM)       S(KM)
 1.     124.30       45.7      422.0       35.0       2.19  464.300  3035.400       UNITS 1-3

* * * R E C E P T O R S * * *
      NO.     RREC(KM)  SREC(KM)     Z (M)
        1.    464.100  3031.900       0.0
        2.    464.100  3032.000       0.0
        3.    464.100  3032.100       0.0
        4.    464.100  3032.200       0.0
        5.    464.100  3032.300       0.0
        6.    464.100  3032.400       0.0
        7.    464.100  3032.500       0.0
        8.    464.100  3032.600       0.0
        9.    464.100  3032.700       0.0
       10.    464.100  3032.800       0.0
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good

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  11.    464.200   3031.900          0.0
  12.    464.200   3032.000          0.0
  13.    464.200   3032.100          0.0
  14.    464.200   3032.200          0.0
  15.    464.200   3032.300          0.0
  16.    464.200   3032.399          0.0
  17.    464.200   3032.500          0.0
  18.    464.200   3032.600          0.0
  19.    464.200   3032.700          0.0
  20.    464.200   3032.800          0.0
  21.    464.300   3031.900          0.0
  22.    464.300   3032.000          0.0
  23.    464.300   3032.100          0.0
  24.    464.300   3032.200          0.0
  25.    464.300   3032.300          0.0
  26.    464.300   3032.399          0.0
  27.    464.300   3032.500          0.0
  28.    464.300   3032.600          0.0
  29.    464.300   3032.700          0.0
  30.    464.300   3032.800          0.0
  31.    464.400   3031.900          0.0
  32.    464.400   3032.000          0.0
  33.    464.400   3032.100          0.0
  34.    464.400   3032.200          0.0
  35.    464.400   3032.300          0.0
  36.    464.400   3032.399          0.0
  37.    464.400   3032.500          0.0
  38.    464.400   3032.600          0.0
  39.    464.400   3032.700          0.0
  40.    464.400   3032.800          0.0
  41.    464.500   3031.900          0.0
  42.    464.500   3032.000          0.0
  43.    464.500   3032.100          0.0
  44.    464.500   3032.200          0.0
  45.    464.500   3032.300          0.0
  46.    464.500   3032.399          0.0
  47.    464.500   3032.500          0.0
  48.    464.500   3032.600          0.0
  49.    464.500   3032.700          0.0
  50.    464.500   3032.800          0.0

DAY= 275  YEAR= 74  HOURS= ALL   WD SHIFT ANGLE=  0
  1.        20.       5.1        5     1799.      295.        0.
  2.         1.       6.2        4     1722.      294.        0.
  3.         5.       6.2        4     1644.      295.        0.
  4.         1.       5.7        4     1567.      294.        0.
  5.        10.       5.1        5     1490.      294.        0.
  6.        12.       7.2        4     1413.      295.        0.
  7.        11.       6.2        4     1335.      294.        0.
  8.        15.       7.2        4     1258.      295.        0.
  9.        21.       7.7        4     1181.      296.        0.
 10.        34.       7.7        4     1104.      298.        0.
 11.        16.       9.8        4     1027.      298.        0.
 12.        13.       9.3        4      949.      298.        0.
 13.        14.       8.3        4      872.      296.        0.
 14.         2.       8.7        4      795.      296.        0.
 15.         2.       9.3        4      795.      296.        0.
 16.         3.       8.3        4      795.      296.        0.
 17.       358.       8.7        4      795.      296.        0.
 18.       359.       7.7        4      795.      296.        0.
 19.         5.       7.7        4      790.      295.        0.
 20.       357.       7.2        4      784.      296.        0.
 21.         3.       7.2        4      779.      296.        0.
 22.       349.       6.7        4      773.      296.        0.
 23.       336.       6.7        4      768.      296.        0.
 24.       342.       7.2        4      762.      296.        0.
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  AVERAGE CONCENTRATIONS FOR  24 HOURS.
* * * R E C E P T O R   N U M B E R * * *

               1.       2.       3.       4.       5.       6.       7.       8.       9.      10.
SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        25.81    25.82    25.77    25.67    25.51    25.28    24.91    24.45    23.89    23.22
              TOTAL CONCENTRATION (UG/M**3)

              25.81    25.82    25.77    25.67    25.51    25.28    24.91    24.45    23.89    23.22
* * * R E C E P T O R   N U M B E R * * *

              11.      12.      13.      14.      15.      16.      17.      18.      19.      20.
SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        27.21    27.40    27.56    27.68    27.75    27.77    27.67    27.49    27.22    26.85
              TOTAL CONCENTRATION (UG/M**3)

              27.21    27.40    27.56    27.68    27.75    27.77    27.67    27.49    27.22    26.85
* * * R E C E P T O R   N U M B E R * * *

              21.      22.      23.      24.      25.      26.      27.      28.      29.      30.
SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        25.30    25.47    25.63    25.75    25.83    25.87    25.80    25.66    25.45    25.15
              TOTAL CONCENTRATION (UG/M**3)

              25.30    25.47    25.63    25.75    25.83    25.87    25.80    25.66    25.45    25.15
* * * R E C E P T O R   N U M B E R * * *

              31.      32.      33.      34.      35.      36.      37.      38.      39.      40.
SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        20.76    20.76    20.74    20.67    20.56    20.40    20.15    19.83    19.43    18.96
              TOTAL CONCENTRATION (UG/M**3)

              20.76    20.76    20.74    20.67    20.56    20.40    20.15    19.83    19.43    18.96
* * * R E C E P T O R   N U M B E R * * *

              41.      42.      43.      44.      45.      46.      47.      48.      49.      50.
SOURCE        PARTIAL CONCENTRATIONS (UG/M**3)
    1.        15.15    14.96    14.73    14.46    14.16    13.81    13.38    12.90    12.36    11.77
              TOTAL CONCENTRATION (UG/M**3)

              15.15    14.96    14.73    14.46    14.16    13.81    13.38    12.90    12.36    11.77
```

141

142

GOOD

```
USER: A028

PTOUT2

********************************************************************************
********************************************************************************

 MMM   MMM   MMM   MMM
M   M M   M M   M M   M
M   M M   M     M M   M
MMMMM M M M    M   MMM
M   M M   M   M   M   M
M   M M   M  M    M   M
M   M  MMM  MMMMM  MMM


MMMM  MMMMM  MMM  M   M MMMMM  MMM
M   M   M   M   M M   M   M   M   M
M   M   M   M   M M   M   M       M
MMMM    M   M   M M   M   M      M
M       M   M   M M   M   M     M
M       M   M   M M   M   M    M
M       M    MMM   MMM    M   MMMMM


********************************************************************************
********************************************************************************

LABEL:  PRT014  -FORM          -COPIES   1

SPOOLED:  12/09/80 16:21
STARTED:  12/09/80 16:22, ON: PR0   BY: PR0

PARTIAL BACKUP MONDAY & WEDNESDAY. FULL BACKUP ON FRIDAY AT 4:00

SEBRING DAY 143/1978 S02 HOURS 13-15

         OPTIONS:
PARTIAL CONCENTRATIONS ARE PRINTED
RECEPTOR GRID IS CREATED INTERNALLY
MET DATA IS INPUT FROM PREPROCESSED FILE

* * * S O U R C E S * * *
NO      Q (G/SEC)  HP (M) TS (DEG-K)  VS (M/SEC) D(M)  R(KM)       S(KM)
 1.     124.30       45.7      422.0       35.0       2.19   464.300  3035.400        UNITS 1-3

* * * R E C E P T O R S * * *
       NO.     RREC(KM)  SREC(KM)     Z (M)
         1.    462.300  3034.900       0.0
         2.    462.300  3035.000       0.0
         3.    462.300  3035.100       0.0
         4.    462.300  3035.200       0.0
         5.    462.300  3035.300       0.0
         6.    462.400  3034.900       0.0
         7.    462.400  3035.000       0.0
         8.    462.400  3035.100       0.0
         9.    462.400  3035.200       0.0
        10.    462.400  3035.300       0.0
```

```
 11.    462.500  3034.900          0.0
 12.    462.500  3035.000          0.0
 13.    462.500  3035.100          0.0
 14.    462.500  3035.200          0.0
 15.    462.500  3035.300          0.0
 16.    462.600  3034.900          0.0
 17.    462.600  3035.000          0.0
 18.    462.600  3035.100          0.0
 19.    462.600  3035.200          0.0
 20.    462.600  3035.300          0.0
 21.    462.700  3034.900          0.0
 22.    462.700  3035.000          0.0
 23.    462.700  3035.100          0.0
 24.    462.700  3035.200          0.0
 25.    462.700  3035.300          0.0
 26.    462.800  3034.900          0.0
 27.    462.800  3035.000          0.0
 28.    462.800  3035.100          0.0
 29.    462.800  3035.200          0.0
 30.    462.800  3035.300          0.0
 31.    462.900  3034.900          0.0
 32.    462.900  3035.000          0.0
 33.    462.900  3035.100          0.0
 34.    462.900  3035.200          0.0
 35.    462.900  3035.300          0.0
 36.    463.000  3034.900          0.0
 37.    463.000  3035.000          0.0
 38.    463.000  3035.100          0.0
 39.    463.000  3035.200          0.0
 40.    463.000  3035.300          0.0
 41.    463.100  3034.900          0.0
 42.    463.100  3035.000          0.0
 43.    463.100  3035.100          0.0
 44.    463.100  3035.200          0.0
 45.    463.100  3035.300          0.0
 46.    463.200  3034.900          0.0
 47.    463.200  3035.000          0.0
 48.    463.200  3035.100          0.0
 49.    463.200  3035.200          0.0
 50.    463.200  3035.300          0.0

DAY= 143  YEAR= 78  HOURS= 13-15  WD SHIFT ANGLE=  0
13.        83.        3.6          2      1871.       304.          0.
14.        85.        6.2          3      2123.       305.          0.
15.        76.        3.6          2      2123.       306.          0.
```

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```
AVERAGE CONCENTRATIONS FOR   3 HOURS.
* * * R E C E P T O R   N U M B E R * * *

            1.       2.       3.       4.       5.       6.       7.       8.       9.      10.

SOURCE      PARTIAL CONCENTRATIONS (UG/M**3)
   1.        59.06    73.45    84.41    85.86    74.42    59.11    75.10    88.18    91.25    79.60

            TOTAL CONCENTRATION (UG/M**3)

             59.06    73.45    84.41    85.86    74.42    59.11    75.10    88.18    91.25    79.60
* * * R E C E P T O R   N U M B E R * * *

            11.      12.      13.      14.      15.      16.      17.      18.      19.      20.

SOURCE      PARTIAL CONCENTRATIONS (UG/M**3)
   1.        58.60    76.23    91.64    96.70    85.03    57.37    76.64    94.54   102.03    90.60

            TOTAL CONCENTRATION (UG/M**3)

             58.60    76.23    91.64    96.70    85.03    57.37    76.64    94.54   102.03    90.60
* * * R E C E P T O R   N U M B E R * * *

            21.      22.      23.      24.      25.      26.      27.      28.      29.      30.

SOURCE      PARTIAL CONCENTRATIONS (UG/M**3)
   1.        55.26    76.12    96.62   106.96    96.12    52.07    74.40    97.49   111.09   101.33

            TOTAL CONCENTRATION (UG/M**3)

             55.26    76.12    96.62   106.96    96.12    52.07    74.40    97.49   111.09   101.33
* * * R E C E P T O R   N U M B E R * * *

            31.      32.      33.      34.      35.      36.      37.      38.      39.      40.

SOURCE      PARTIAL CONCENTRATIONS (UG/M**3)
   1.        47.61    71.18    96.70   113.88   105.78    41.75    66.12    93.69   114.57   108.82

            TOTAL CONCENTRATION (UG/M**3)

             47.61    71.18    96.70   113.88   105.78    41.75    66.12    93.69   114.57   108.82
* * * R E C E P T O R   N U M B E R * * *

            41.      42.      43.      44.      45.      46.      47.      48.      49.      50.

SOURCE      PARTIAL CONCENTRATIONS (UG/M**3)
   1.        34.50    58.92    87.87   112.18   109.51    26.20    49.44    78.71   105.60   106.62

            TOTAL CONCENTRATION (UG/M**3)

             34.50    58.92    87.87   112.18   109.51    26.20    49.44    78.71   105.60   106.62
```

SEBRING BASELINE

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS) HORIZONTAL	VERTICAL	SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY) SO2	PART	STACK DATA HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG.K)	
1	419.8	3047.0	0.00	0.227	0.000	14.6	1.8	0.6	355.	1-01,HAR/ALLSON
2	419.8	3047.0	0.00	0.227	0.000	19.8	3.0	2.3	392.	1-02,HAR/ALLSON
3	419.8	3087.5	0.00	0.015	0.068	10.7	0.5	27.3	672.	9-1-5,HA/ACHULA
4	441.0	3087.3	0.00	0.156	0.368	18.3	1.5	7.4	389.	2-01,POL/CITRUS W
5	441.0	3087.3	0.00	0.581	0.044	24.4	1.7	3.4	389.	2-06,POL/CITRUS W
6	418.7	3083.6	0.00	0.178	0.025	15.2	0.9	7.9	333.	45-01,PO/ORANG CO
7	445.3	3083.0	0.00	0.020	0.001	4.6	0.3	13.9	422.	29-01,PO/HUNT BRO
8	451.8	3085.5	0.00	0.107	0.008	10.7	0.5	11.9	436.	1-02,POL/ALCOMA
9	415.5	3063.5	0.00	2.000	0.491	19.2	2.9	8.7	333.	44-01,PO/ARD FTM
10	451.4	3050.6	0.00	6.220	0.240	59.1	1.7	2.4	427.	03-#1,HI/AVON PK
11	451.4	3050.6	0.00	15.800	0.580	59.7	1.5	4.7	433.	03-#2,HI/AVON PK
12	451.4	3050.6	0.00	1.180	0.240	16.7	4.6	5.7	727.	03-3&4,H/AVON PK
13	456.7	3042.6	0.00	5.120	0.370	22.9	1.8	5.8	394.	4-1,HIGH/SEBRING
14	456.2	3043.7	0.00	0.140	0.030	6.1	0.9	42.2	588.	4-2,HIGH/EBRING
15	387.1	3043.0	0.00	0.750	0.430	9.1	1.8	4.5	326.	14-1,HIG/I PAVE
16	403.8	3070.5	0.00	0.912	0.447	21.3	3.4	13.6	394.	5-1,POLK/REWSTER

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                    SEBRING BASELINE

                 METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

   MIXING DEPTH = 1430. METERS
   AMBIENT TEMPERATURE =  296. DEGREES,KELVIN
   AMBIENT PRESSURE = 1017. MILLIBARS
   STABILITY CLASS  1
                                             WINDSPEED CLASS

     WIND DIRECTION         1         2         3         4         5         6
          N              0.0003    0.0005    0.0000    0.0000    0.0000    0.0000

          NNE            0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

          NE             0.0002    0.0006    0.0000    0.0000    0.0000    0.0000

          ENE            0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

          E              0.0004    0.0007    0.0000    0.0000    0.0000    0.0000

          ESE            0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

          SE             0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

          SSE            0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

          S              0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

          SSW            0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

          SW             0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

          WSW            0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

          W              0.0003    0.0003    0.0000    0.0000    0.0000    0.0000

          WNW            0.0001    0.0005    0.0000    0.0000    0.0000    0.0000

          NW             0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

          NNW            0.0001    0.0002    0.0000    0.0000    0.0000    0.0000
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                         SEBRING BASELINE

               METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  2
                                                    WINDSPEED CLASS

 WIND DIRECTION       1        2        3        4        5        6
       N           0.0011   0.0022   0.0015   0.0000   0.0000   0.0000

       NNE         0.0009   0.0013   0.0008   0.0000   0.0000   0.0000

       NE          0.0008   0.0019   0.0015   0.0000   0.0000   0.0000

       ENE         0.0010   0.0014   0.0014   0.0000   0.0000   0.0000

       E           0.0011   0.0026   0.0025   0.0000   0.0000   0.0000

       ESE         0.0008   0.0021   0.0013   0.0000   0.0000   0.0000

       SE          0.0008   0.0023   0.0017   0.0000   0.0000   0.0000

       SSE         0.0009   0.0015   0.0018   0.0000   0.0000   0.0000

       S           0.0009   0.0030   0.0026   0.0000   0.0000   0.0000

       SSW         0.0006   0.0016   0.0013   0.0000   0.0000   0.0000

       SW          0.0007   0.0017   0.0012   0.0000   0.0000   0.0000

       WSW         0.0006   0.0015   0.0014   0.0000   0.0000   0.0000

       W           0.0007   0.0015   0.0012   0.0000   0.0000   0.0000

       WNW         0.0007   0.0015   0.0011   0.0000   0.0000   0.0000

       NW          0.0008   0.0018   0.0014   0.0000   0.0000   0.0000

       NNW         0.0005   0.0016   0.0010   0.0000   0.0000   0.0000
```

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                              SEBRING BASELINE

                 METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  3
                                              WINDSPEED CLASS

  WIND DIRECTION         1         2         3         4         5         6
         N            0.0004    0.0027    0.0062    0.0006    0.0000    0.0000

         NNE          0.0005    0.0023    0.0043    0.0005    0.0001    0.0000

         NE           0.0006    0.0032    0.0057    0.0010    0.0000    0.0000

         ENE          0.0004    0.0029    0.0059    0.0012    0.0000    0.0000

         E            0.0006    0.0035    0.0093    0.0023    0.0000    0.0000

         ESE          0.0003    0.0020    0.0046    0.0013    0.0000    0.0000

         SE           0.0005    0.0023    0.0047    0.0009    0.0000    0.0000

         SSE          0.0003    0.0022    0.0049    0.0009    0.0000    0.0000

         S            0.0004    0.0029    0.0088    0.0018    0.0002    0.0000

         SSW          0.0003    0.0016    0.0038    0.0007    0.0000    0.0000

         SW           0.0003    0.0017    0.0032    0.0008    0.0000    0.0000

         WSW          0.0002    0.0014    0.0029    0.0006    0.0000    0.0000

         W            0.0002    0.0016    0.0037    0.0008    0.0001    0.0000

         WNW          0.0002    0.0012    0.0032    0.0006    0.0000    0.0000

         NW           0.0002    0.0015    0.0044    0.0010    0.0000    0.0000

         NNW          0.0002    0.0016    0.0038    0.0002    0.0000    0.0000
```

SEBRING BASELINE

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 4

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	0.0009	0.0042	0.0187	0.0170	0.0016	0.0000
NNE	0.0007	0.0042	0.0095	0.0098	0.0013	0.0002
NE	0.0010	0.0053	0.0111	0.0097	0.0006	0.0000
ENE	0.0010	0.0047	0.0099	0.0078	0.0003	0.0000
E	0.0010	0.0057	0.0157	0.0127	0.0004	0.0000
ESE	0.0007	0.0032	0.0094	0.0083	0.0002	0.0000
SE	0.0005	0.0032	0.0087	0.0057	0.0003	0.0000
SSE	0.0005	0.0033	0.0085	0.0084	0.0010	0.0000
S	0.0009	0.0047	0.0144	0.0138	0.0024	0.0001
SSW	0.0003	0.0020	0.0054	0.0049	0.0009	0.0001
SW	0.0007	0.0024	0.0071	0.0065	0.0010	0.0002
WSW	0.0004	0.0027	0.0058	0.0045	0.0010	0.0002
W	0.0006	0.0029	0.0078	0.0093	0.0018	0.0003
WNW	0.0005	0.0023	0.0057	0.0075	0.0015	0.0002
NW	0.0005	0.0021	0.0051	0.0083	0.0011	0.0000
NNW	0.0005	0.0021	0.0059	0.0062	0.0003	0.0001

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                    SEBRING BASELINE

            METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  5
                                              WINDSPEED CLASS

 WIND DIRECTION         1        2        3        4        5        6
      N              0.0123   0.0252   0.0118   0.0000   0.0000   0.0000

      NNE            0.0113   0.0208   0.0042   0.0000   0.0000   0.0000

      NE             0.0124   0.0260   0.0039   0.0000   0.0000   0.0000

      ENE            0.0114   0.0215   0.0039   0.0000   0.0000   0.0000

      E              0.0134   0.0262   0.0056   0.0000   0.0000   0.0000

      ESE            0.0085   0.0133   0.0039   0.0000   0.0000   0.0000

      SE             0.0077   0.0120   0.0031   0.0000   0.0000   0.0000

      SSE            0.0071   0.0133   0.0018   0.0000   0.0000   0.0000

      S              0.0103   0.0207   0.0033   0.0000   0.0000   0.0000

      SSW            0.0033   0.0063   0.0012   0.0000   0.0000   0.0000

      SW             0.0037   0.0082   0.0021   0.0000   0.0000   0.0000

      WSW            0.0045   0.0082   0.0021   0.0000   0.0000   0.0000

      W              0.0054   0.0108   0.0057   0.0000   0.0000   0.0000

      WNW            0.0045   0.0085   0.0044   0.0000   0.0000   0.0000

      NW             0.0019   0.0034   0.0029   0.0000   0.0000   0.0000

      NNW            0.0033   0.0068   0.0044   0.0000   0.0000   0.0000
```

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                                   SEBRING BASELINE
INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT__     ______Y-INTERCEPT_______    __SLOPE_
   SO2
                              0.0                  1.0000
   PARTICULATES               0.0                  1.0000
```

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SEBRING BASELINE

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
1	459.3	3030.4	2.	0.
2	459.3	3031.4	2.	0.
3	459.3	3032.4	2.	0.
4	459.3	3033.4	3.	0.
5	459.3	3034.4	3.	0.
6	459.3	3035.4	3.	0.
7	459.3	3036.4	3.	0.
8	459.3	3037.4	3.	0.
9	459.3	3038.4	3.	0.
10	459.3	3039.4	4.	0.
11	459.3	3040.4	4.	0.
12	460.3	3030.4	2.	0.
13	460.3	3031.4	2.	0.
14	460.3	3032.4	2.	0.
15	460.3	3033.4	2.	0.
16	460.3	3034.4	2.	0.
17	460.3	3035.4	2.	0.
18	460.3	3036.4	2.	0.
19	460.3	3037.4	3.	0.
20	460.3	3038.4	3.	0.
21	460.3	3039.4	3.	0.
22	460.3	3040.4	4.	0.
23	461.3	3030.4	2.	0.
24	461.3	3031.4	2.	0.
25	461.3	3032.4	2.	0.
26	461.3	3033.4	2.	0.
27	461.3	3034.4	2.	0.
28	461.3	3035.4	2.	0.
29	461.3	3036.4	2.	0.
30	461.3	3037.4	2.	0.
31	461.3	3038.4	2.	0.
32	461.3	3039.4	3.	0.
33	461.3	3040.4	3.	0.
34	462.3	3030.4	1.	0.
35	462.3	3031.4	2.	0.
36	462.3	3032.4	2.	0.
37	462.3	3033.4	2.	0.
38	462.3	3034.4	2.	0.
39	462.3	3035.4	2.	0.
40	462.3	3036.4	2.	0.

SEBRING BASELINE

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS)		EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
41	462.3	3037.4	2.	0.
42	462.3	3038.4	2.	0.
43	462.3	3039.4	3.	0.
44	462.3	3040.4	3.	0.
45	463.3	3030.4	1.	0.
46	463.3	3031.4	1.	0.
47	463.3	3032.4	2.	0.
48	463.3	3033.4	2.	0.
49	463.3	3034.4	2.	0.
50	463.3	3035.4	2.	0.
51	463.3	3036.4	2.	0.
52	463.3	3037.4	2.	0.
53	463.3	3038.4	2.	0.
54	463.3	3039.4	2.	0.
55	463.3	3040.4	3.	0.
56	464.3	3030.4	1.	0.
57	464.3	3031.4	1.	0.
58	464.3	3032.4	1.	0.
59	464.3	3033.4	1.	0.
60	464.3	3034.4	1.	0.
61	464.3	3035.4	2.	0.
62	464.3	3036.4	2.	0.
63	464.3	3037.4	2.	0.
64	464.3	3038.4	2.	0.
65	464.3	3039.4	2.	0.
66	464.3	3040.4	3.	0.
67	465.3	3030.4	1.	0.
68	465.3	3031.4	1.	0.
69	465.3	3032.4	1.	0.
70	465.3	3033.4	1.	0.
71	465.3	3034.4	1.	0.
72	465.3	3035.4	1.	0.
73	465.3	3036.4	2.	0.
74	465.3	3037.4	2.	0.
75	465.3	3038.4	2.	0.
76	465.3	3039.4	2.	0.
77	465.3	3040.4	2.	0.
78	466.3	3030.4	1.	0.
79	466.3	3031.4	1.	0.
80	466.3	3032.4	1.	0.

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SEBRING BASELINE

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
81	466.3	3033.4	1.	0.
82	466.3	3034.4	1.	0.
83	466.3	3035.4	1.	0.
84	466.3	3036.4	2.	0.
85	466.3	3037.4	2.	0.
86	466.3	3038.4	2.	0.
87	466.3	3039.4	2.	0.
88	466.3	3040.4	2.	0.
89	467.3	3030.4	1.	0.
90	467.3	3031.4	1.	0.
91	467.3	3032.4	1.	0.
92	467.3	3033.4	1.	0.
93	467.3	3034.4	1.	0.
94	467.3	3035.4	1.	0.
95	467.3	3036.4	2.	0.
96	467.3	3037.4	2.	0.
97	467.3	3038.4	2.	0.
98	467.3	3039.4	2.	0.
99	467.3	3040.4	2.	0.
100	468.3	3030.4	1.	0.
101	468.3	3031.4	1.	0.
102	468.3	3032.4	1.	0.
103	468.3	3033.4	1.	0.
104	468.3	3034.4	1.	0.
105	468.3	3035.4	1.	0.
106	468.3	3036.4	2.	0.
107	468.3	3037.4	2.	0.
108	468.3	3038.4	2.	0.
109	468.3	3039.4	2.	0.
110	468.3	3040.4	2.	0.
111	469.3	3030.4	1.	0.
112	469.3	3031.4	1.	0.
113	469.3	3032.4	1.	0.
114	469.3	3033.4	1.	0.
115	469.3	3034.4	1.	0.
116	469.3	3035.4	1.	0.
117	469.3	3036.4	1.	0.
118	469.3	3037.4	2.	0.
119	469.3	3038.4	2.	0.
120	469.3	3039.4	2.	0.

```
SEBRING BASELINE
-----------------------------------------------------------------------
!                                                                     !
!____________________RECEPTOR CONCENTRATION DATA______________________!
!           !                          !                              !
! RECEPTOR  !    RECEPTOR LOCATION     !    EXPECTED ARITHMETIC MEAN  !
!  NUMBER   !                          !------------------------------!
!           !       (KILOMETERS)       !    (MICROGRAMS/CU. METER)    !
!___________!____HORIZ_______VERT_____!______SO2_______PARTICULATES__!
!           !            !             !                !             !
!___121_____!____469.3___!__3040.4____!______2.________!_____0.______!
```

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SEPRING BASELINE

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO2

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 11	RECEPTOR 22	RECEPTOR 10	RECEPTOR 33	RECEPTOR 9
1	0.52 % 0.0217	0.56 % 0.0212	0.60 % 0.0214	0.63 % 0.0207	0.65 % 0.0210
2	0.25 % 0.0103	0.27 % 0.0100	0.28 % 0.0101	0.30 % 0.0098	0.31 % 0.0099
3	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002
4	0.09 % 0.0040	0.11 % 0.0040	0.12 % 0.0041	0.12 % 0.0039	0.13 % 0.0042
5	0.35 % 0.0148	0.40 % 0.0151	0.43 % 0.0153	0.44 % 0.0144	0.49 % 0.0158
6	0.12 % 0.0049	0.12 % 0.0047	0.14 % 0.0049	0.14 % 0.0047	0.15 % 0.0050
7	0.04 % 0.0017	0.04 % 0.0015	0.05 % 0.0017	0.04 % 0.0013	0.05 % 0.0017
8	0.36 % 0.0152	0.38 % 0.0143	0.42 % 0.0150	0.41 % 0.0134	0.46 % 0.0148
9	0.55 % 0.0231	0.60 % 0.0226	0.64 % 0.0228	0.67 % 0.0222	0.70 % 0.0225
10	14.25 % 0.5959	13.79 % 0.5218	16.40 % 0.5821	13.87 % 0.4565	17.44 % 0.5630
11	21.14 % 0.8837	21.33 % 0.8070	23.47 % 0.8331	22.39 % 0.7368	24.20 % 0.7813
12	0.61 % 0.0253	0.64 % 0.0243	0.67 % 0.0236	0.71 % 0.0233	0.68 % 0.0220
13	60.05 % 2.5104	60.03 % 2.2713	54.91 % 1.9490	58.39 % 1.9213	52.82 % 1.7053
14	0.61 % 0.0256	0.60 % 0.0226	0.63 % 0.0223	0.60 % 0.0197	0.58 % 0.0187
15	0.96 % 0.0400	1.04 % 0.0394	1.12 % 0.0399	1.18 % 0.0389	1.23 % 0.0398
16	0.09 % 0.0037	0.10 % 0.0037	0.10 % 0.0037	0.11 % 0.0036	0.11 % 0.0037
BACK-GROUND	0.00 % 0.	0.00 % 0.	0.00 % 0.	0.00 % 0.	0.00 % 0.
TOTAL	100.0 % 4.1806	100.0 % 3.7836	100.0 % 3.5494	100.0 % 3.2908	100.0 % 3.2289

SEBRING BASELINE

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 11	RECEPTOR 22	RECEPTOR 10	RECEPTOR 33	RECEPTOR 9
1	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.36 %	0.38 %	0.43 %	0.42 %	0.47 %
	0.0011	0.0010	0.0011	0.0010	0.0011
4	3.21 %	3.56 %	3.91 %	3.88 %	4.40 %
	0.0093	0.0095	0.0097	0.0091	0.0100
5	0.38 %	0.43 %	0.47 %	0.46 %	0.53 %
	0.0011	0.0011	0.0012	0.0011	0.0012
6	0.24 %	0.25 %	0.28 %	0.28 %	0.31 %
	0.0007	0.0007	0.0007	0.0007	0.0007
7	0.03 %	0.03 %	0.03 %	0.03 %	0.04 %
	0.0001	0.0001	0.0001	0.0001	0.0001
8	0.39 %	0.40 %	0.45 %	0.43 %	0.49 %
	0.0011	0.0011	0.0011	0.0010	0.0011
9	1.95 %	2.08 %	2.26 %	2.32 %	2.44 %
	0.0057	0.0056	0.0056	0.0054	0.0055
10	7.89 %	7.54 %	9.07 %	7.50 %	9.60 %
	0.0230	0.0201	0.0225	0.0176	0.0217
11	11.14 %	11.09 %	12.35 %	11.52 %	12.67 %
	0.0324	0.0296	0.0306	0.0270	0.0287
12	1.77 %	1.85 %	1.94 %	2.02 %	1.98 %
	0.0052	0.0050	0.0048	0.0047	0.0045
13	62.27 %	61.45 %	56.89 %	59.11 %	54.44 %
	0.1814	0.1641	0.1408	0.1388	0.1232
14	1.88 %	1.81 %	1.93 %	1.80 %	1.77 %
	0.0055	0.0048	0.0048	0.0042	0.0040
15	7.86 %	8.46 %	9.24 %	9.48 %	10.09 %
	0.0229	0.0226	0.0229	0.0223	0.0228
16	0.63 %	0.67 %	0.74 %	0.75 %	0.80 %
	0.0018	0.0018	0.0018	0.0018	0.0018
BACK-GROUND	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	0.	0.	0.	0.	0.
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
	0.2913	0.2671	0.2476	0.2349	0.2264

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                              SEBRING AQDM

 SOURCE DATA
-------------------------------------------------------------------------------------------------------------
!         !                                !                 !      ANNUAL SOURCE         !          STACK DATA                 !
! SOURCE  !      SOURCE LOCATION           ! SOURCE AREA !      EMISSION RATE          !                                     !
! NUMBER  !       (KILOMETERS)             !   SQUARE      !     (TONS/DAY)             !   HT   DIAM    VEL      TEMP        !
!_________! HORIZONTAL !    VERTICAL       ! KILOMETERS  !     SO2          PART       !  (M)   (M)   (M/SEC)  (DEG.K)      !
!    1    !   451.4    !    3050.6         !     0.00    !   19.292        0.000       !  59.7   1.5    13.7     433.  ! AVON PRK#2 PRO
!    2    !   451.4    !    3050.6         !     0.00    !    0.132        0.000       !  16.8   4.6    61.0     727.  ! AVON PRK1&2 PRO
!____3____!___451.4____!____3050.6_________!_____0.00____!___18.700________0.000_______!___6.7___3.9____49.1_____658.__! AVON PRK3-6 PRO
!    4    !   452.4    !    3085.5         !     0.00    !    0.016        0.000       !  19.8   0.6    12.3     477.  ! ALCOMA  1-1 POL
!    5    !   452.4    !    3085.5         !     0.00    !    0.030        0.000       !  10.7   0.5    11.1     436.  ! ALCOMA  1-2 POL
!____6____!___441.0____!____3087.3_________!_____0.00____!____0.330________0.000_______!__22.9___1.0____13.8_____325.__! CITRUS   WOR 2-1
!    7    !   441.0    !    3087.3         !     0.00    !    0.150        0.000       !  22.9   0.8    14.2     320.  ! CITRUS WORLD 2-7
!    8    !   441.0    !    3087.3         !     0.00    !    0.330        0.000       !  24.4   0.8    22.1     313.  ! CITRUS WORLD2-13
!____9____!___403.8____!____3070.5_________!_____0.00____!____1.300________0.000_______!__21.3___4.8_____6.4_____390.__! BREWER  PHOS 5-1
!   10    !   445.3    !    3083.0         !     0.00    !    0.020        0.000       !   4.6   0.3    13.9     422.  ! HUNT BROS 29-1
!   11    !   415.3    !    3063.0         !     0.00    !    2.340        0.000       !  19.2   2.9     7.1     318.  ! GARDINIER 44-1
!___12____!___418.7____!____3083.6_________!_____0.00____!____1.830________0.000_______!__27.1___1.0____20.2_____333.__! ORANGE  E 45-1
!   13    !   413.2    !    3086.3         !     0.00    !    3.540        0.000       !  29.0   2.1     8.4     305.  ! USSAGRI 50-3
!   14    !   418.3    !    3079.3         !     0.00    !    0.260        0.000       !   4.3   0.4     7.7     422.  ! KAPLAN  65-2 POL
!___15____!___465.6____!____3083.4_________!_____0.00____!____0.300________0.000_______!___9.1___0.5_____2.4_____574.__! URANIUM 71-3 POL
!   16    !   464.6    !    3059.4         !     0.00    !    0.575        0.000       !   5.8   0.4    10.6     505.  ! AVPARKCORR84-1&2
!   17    !   448.3    !    3057.7         !     0.00    !    0.180        0.000       !  15.2   1.2     6.0     477.  ! FLAJUICE2-1 HI
!___18____!___456.2____!____3043.7_________!_____0.00____!____0.950________0.000_______!__22.9___1.8_____5.8_____394.__! SEBRING 4-1 HI
!   19    !   456.2    !    3043.7         !     0.00    !    0.050        0.000       !   6.1   0.9    42.2     588.  ! SEBRING 4-2 HI
!   20    !   466.5    !    3009.4         !     0.00    !    0.200        0.000       !   8.5   0.7     5.7     491.  ! ST REGIS1&2 HI
!___21____!___419.8____!____3046.5_________!_____0.00____!____0.493________0.000_______!__10.7___0.4____35.5_____671.__! WACHULA 9-1-5 HR
!___22____!___464.3____!____3035.4_________!_____0.00____!____3.158________0.118_______!__45.7___2.2____10.7_____422.__! SEBRING NEW UNIT
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                              SEBRING AQDM

                METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

MIXING DEPTH = 1430. METERS
AMBIENT TEMPERATURE =  296. DEGREES,KELVIN
AMBIENT PRESSURE = 1017. MILLIBARS
STABILITY CLASS  1
                                              WINDSPEED CLASS

  WIND DIRECTION         1         2         3         4         5         6
        N             0.0003    0.0005    0.0000    0.0000    0.0000    0.0000

        NNE           0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        NE            0.0002    0.0006    0.0000    0.0000    0.0000    0.0000

        ENE           0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

        E             0.0004    0.0007    0.0000    0.0000    0.0000    0.0000

        ESE           0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        SE            0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

        SSE           0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

        S             0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

        SSW           0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        SW            0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        WSW           0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        W             0.0003    0.0003    0.0000    0.0000    0.0000    0.0000

        WNW           0.0001    0.0005    0.0000    0.0000    0.0000    0.0000

        NW            0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        NNW           0.0001    0.0002    0.0000    0.0000    0.0000    0.0000
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                    SEBRING AQDM

           METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  2
                                         WINDSPEED CLASS

 WIND DIRECTION          1         2         3         4         5         6
     N                0.0011    0.0022    0.0015    0.0000    0.0000    0.0000

     NNE              0.0009    0.0013    0.0008    0.0000    0.0000    0.0000

     NE               0.0008    0.0019    0.0015    0.0000    0.0000    0.0000

     ENE              0.0010    0.0014    0.0014    0.0000    0.0000    0.0000

     E                0.0011    0.0026    0.0025    0.0000    0.0000    0.0000

     ESE              0.0008    0.0021    0.0013    0.0000    0.0000    0.0000

     SE               0.0008    0.0023    0.0017    0.0000    0.0000    0.0000

     SSE              0.0009    0.0015    0.0018    0.0000    0.0000    0.0000

     S                0.0009    0.0030    0.0026    0.0000    0.0000    0.0000

     SSW              0.0006    0.0016    0.0013    0.0000    0.0000    0.0000

     SW               0.0007    0.0017    0.0012    0.0000    0.0000    0.0000

     WSW              0.0006    0.0015    0.0014    0.0000    0.0000    0.0000

     W                0.0007    0.0015    0.0012    0.0000    0.0000    0.0000

     WNW              0.0007    0.0015    0.0011    0.0000    0.0000    0.0000

     NW               0.0008    0.0018    0.0014    0.0000    0.0000    0.0000

     NNW              0.0005    0.0016    0.0010    0.0000    0.0000    0.0000
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                    SEBRING AQDM

                 METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  3
                                           WINDSPEED CLASS

  WIND DIRECTION        1         2         3         4         5         6
        N            0.0004    0.0027    0.0062    0.0006    0.0000    0.0000

        NNE          0.0005    0.0023    0.0043    0.0005    0.0001    0.0000

        NE           0.0006    0.0032    0.0057    0.0010    0.0000    0.0000

        ENE          0.0004    0.0029    0.0059    0.0012    0.0000    0.0000

        E            0.0006    0.0035    0.0093    0.0023    0.0000    0.0000

        ESE          0.0003    0.0020    0.0046    0.0013    0.0000    0.0000

        SE           0.0005    0.0023    0.0047    0.0009    0.0000    0.0000

        SSE          0.0003    0.0022    0.0049    0.0009    0.0000    0.0000

        S            0.0004    0.0029    0.0088    0.0018    0.0002    0.0000

        SSW          0.0003    0.0016    0.0038    0.0007    0.0000    0.0000

        SW           0.0003    0.0017    0.0032    0.0008    0.0000    0.0000

        WSW          0.0002    0.0014    0.0029    0.0006    0.0000    0.0000

        W            0.0002    0.0016    0.0037    0.0008    0.0001    0.0000

        WNW          0.0002    0.0012    0.0032    0.0006    0.0000    0.0000

        NW           0.0002    0.0015    0.0044    0.0010    0.0000    0.0000

        NNW          0.0002    0.0016    0.0038    0.0002    0.0000    0.0000
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                    SEBRING AQDM

               METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON


      STABILITY CLASS  4
                                               WINDSPEED CLASS

       WIND DIRECTION         1        2        3        4        5        6
              N            0.0009   0.0042   0.0187   0.0170   0.0016   0.0000

              NNE          0.0007   0.0042   0.0095   0.0098   0.0013   0.0002

              NE           0.0010   0.0053   0.0111   0.0097   0.0006   0.0000

              ENE          0.0010   0.0047   0.0099   0.0078   0.0003   0.0000

              E            0.0010   0.0057   0.0157   0.0127   0.0004   0.0000

              ESE          0.0007   0.0032   0.0094   0.0083   0.0002   0.0000

              SE           0.0005   0.0032   0.0087   0.0057   0.0003   0.0000

              SSE          0.0005   0.0033   0.0085   0.0084   0.0010   0.0000

              S            0.0009   0.0047   0.0144   0.0138   0.0024   0.0001

              SSW          0.0003   0.0020   0.0054   0.0049   0.0009   0.0001

              SW           0.0007   0.0024   0.0071   0.0065   0.0010   0.0002

              WSW          0.0004   0.0027   0.0058   0.0045   0.0010   0.0002

              W            0.0006   0.0029   0.0078   0.0093   0.0018   0.0003

              WNW          0.0005   0.0023   0.0057   0.0075   0.0015   0.0002

              NW           0.0005   0.0021   0.0051   0.0083   0.0011   0.0000

              NNW          0.0005   0.0021   0.0059   0.0062   0.0003   0.0001
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                    SEBRING AQDM

              METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  5
                                         WINDSPEED CLASS

 WIND DIRECTION      1         2         3         4         5         6
      N           0.0123    0.0252    0.0118    0.0000    0.0000    0.0000

      NNE         0.0113    0.0208    0.0042    0.0000    0.0000    0.0000

      NE          0.0124    0.0260    0.0039    0.0000    0.0000    0.0000

      ENE         0.0114    0.0215    0.0039    0.0000    0.0000    0.0000

      E           0.0134    0.0262    0.0056    0.0000    0.0000    0.0000

      ESE         0.0085    0.0133    0.0039    0.0000    0.0000    0.0000

      SE          0.0077    0.0120    0.0031    0.0000    0.0000    0.0000

      SSE         0.0071    0.0133    0.0018    0.0000    0.0000    0.0000

      S           0.0103    0.0207    0.0033    0.0000    0.0000    0.0000

      SSW         0.0033    0.0063    0.0012    0.0000    0.0000    0.0000

      SW          0.0037    0.0082    0.0021    0.0000    0.0000    0.0000

      WSW         0.0045    0.0082    0.0021    0.0000    0.0000    0.0000

      W           0.0054    0.0108    0.0057    0.0000    0.0000    0.0000

      WNW         0.0045    0.0085    0.0044    0.0000    0.0000    0.0000

      NW          0.0019    0.0034    0.0025    0.0000    0.0000    0.0000

      NNW         0.0033    0.0068    0.0044    0.0000    0.0000    0.0000
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                              SEBRING AQDM
INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT__    ______Y-INTERCEPT______   __SLOPE_

    SO2                       0.0             1.0000

    PARTICULATES              0.0             1.0000
```

SLOPING ROCK

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
1	459.3	3030.4	1.	0.
2	459.3	3031.4	2.	0.
3	459.3	3032.4	2.	0.
4	459.3	3033.4	2.	0.
5	459.3	3034.4	2.	0.
6	459.3	3035.4	2.	0.
7	459.3	3036.4	2.	0.
8	459.3	3037.4	2.	0.
9	459.3	3038.4	2.	0.
10	459.3	3039.4	2.	0.
11	459.3	3040.4	2.	0.
12	460.3	3030.4	1.	0.
13	460.3	3031.4	2.	0.
14	460.3	3032.4	2.	0.
15	460.3	3033.4	2.	0.
16	460.3	3034.4	2.	0.
17	460.3	3035.4	2.	0.
18	460.3	3036.4	2.	0.
19	460.3	3037.4	2.	0.
20	460.3	3038.4	2.	0.
21	460.3	3039.4	2.	0.
22	460.3	3040.4	2.	0.
23	461.3	3030.4	1.	0.
24	461.3	3031.4	2.	0.
25	461.3	3032.4	2.	0.
26	461.3	3033.4	2.	0.
27	461.3	3034.4	2.	0.
28	461.3	3035.4	2.	0.
29	461.3	3036.4	2.	0.
30	461.3	3037.4	2.	0.
31	461.3	3038.4	2.	0.
32	461.3	3039.4	2.	0.
33	461.3	3040.4	2.	0.
34	462.3	3030.4	1.	0.
35	462.3	3031.4	1.	0.
36	462.3	3032.4	2.	0.
37	462.3	3033.4	2.	0.
38	462.3	3034.4	2.	0.
39	462.3	3035.4	2.	0.
40	462.3	3036.4	2.	0.

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SEBRING AQDM

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
41	462.3	3037.4	2.	0.
42	462.3	3038.4	2.	0.
43	462.3	3039.4	2.	0.
44	462.3	3040.4	2.	0.
45	463.3	3030.4	2.	0.
46	463.3	3031.4	2.	0.
47	463.3	3032.4	2.	0.
48	463.3	3033.4	2.	0.
49	463.3	3034.4	2.	0.
50	463.3	3035.4	2.	0.
51	463.3	3036.4	2.	0.
52	463.3	3037.4	2.	0.
53	463.3	3038.4	2.	0.
54	463.3	3039.4	2.	0.
55	463.3	3040.4	2.	0.
56	464.3	3030.4	2.	0.
57	464.3	3031.4	2.	0.
58	464.3	3032.4	2.	0.
59	464.3	3033.4	2.	0.
60	464.3	3034.4	2.	0.
61	464.3	3035.4	1.	0.
62	464.3	3036.4	2.	0.
63	464.3	3037.4	2.	0.
64	464.3	3038.4	2.	0.
65	464.3	3039.4	2.	0.
66	464.3	3040.4	2.	0.
67	465.3	3030.4	1.	0.
68	465.3	3031.4	1.	0.
69	465.3	3032.4	1.	0.
70	465.3	3033.4	2.	0.
71	465.3	3034.4	2.	0.
72	465.3	3035.4	2.	0.
73	465.3	3036.4	2.	0.
74	465.3	3037.4	2.	0.
75	465.3	3038.4	2.	0.
76	465.3	3039.4	2.	0.
77	465.3	3040.4	2.	0.
78	466.3	3030.4	1.	0.
79	466.3	3031.4	1.	0.
80	466.3	3032.4	1.	0.

SEBRING AQDM

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	RECEPTOR LOCATION (KILOMETERS) VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) PARTICULATES
81	466.3	3033.4	2.	0.
82	466.3	3034.4	2.	0.
83	466.3	3035.4	2.	0.
84	466.3	3036.4	2.	0.
85	466.3	3037.4	2.	0.
86	466.3	3038.4	2.	0.
87	466.3	3039.4	2.	0.
88	466.3	3040.4	2.	0.
89	467.3	3030.4	1.	0.
90	467.3	3031.4	1.	0.
91	467.3	3032.4	1.	0.
92	467.3	3033.4	1.	0.
93	467.3	3034.4	1.	0.
94	467.3	3035.4	2.	0.
95	467.3	3036.4	1.	0.
96	467.3	3037.4	2.	0.
97	467.3	3038.4	2.	0.
98	467.3	3039.4	1.	0.
99	467.3	3040.4	1.	0.
100	468.3	3030.4	1.	0.
101	468.3	3031.4	1.	0.
102	468.3	3032.4	1.	0.
103	468.3	3033.4	1.	0.
104	468.3	3034.4	1.	0.
105	468.3	3035.4	1.	0.
106	468.3	3036.4	1.	0.
107	468.3	3037.4	1.	0.
108	468.3	3038.4	1.	0.
109	468.3	3039.4	1.	0.
110	468.3	3040.4	1.	0.
111	469.3	3030.4	1.	0.
112	469.3	3031.4	1.	0.
113	469.3	3032.4	1.	0.
114	469.3	3033.4	1.	0.
115	469.3	3034.4	1.	0.
116	469.3	3035.4	1.	0.
117	469.3	3036.4	1.	0.
118	469.3	3037.4	1.	0.
119	469.3	3038.4	1.	0.
120	469.3	3039.4	1.	0.

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SEBRING AQDM

 ------------------------------------------------------------------------
!                                                                        !
!___________________RECEPTOR_CONCENTRATION_DATA__________________________!
!            !                           !                               !
! RECEPTOR   !   RECEPTOR LOCATION       !     EXPECTED ARITHMETIC MEAN  !
!__NUMBER____!___________________________!_______________________________!
!            !      (KILOMETERS)         !     (MICROGRAMS/CU. METER)    !
!____________!____HORIZ________VERT______!______SO2__________PARTICULATES_!
!            !             !             !                 !             !
!____121_____!____469.3____!___3040.4____!_______1.________!______0.______!
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SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO2

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 63	RECEPTOR 59	RECEPTOR 64	RECEPTOR 28	RECEPTOR 50
1	16.69 % 0.4146	16.79 % 0.4084	18.66 % 0.4309	18.79 % 0.4212	17.52 % 0.3928
2	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002
3	3.36 % 0.0833	3.19 % 0.0776	3.63 % 0.0838	3.44 % 0.0770	3.46 % 0.0777
4	0.03 % 0.0008	0.04 % 0.0009	0.03 % 0.0008	0.04 % 0.0009	0.04 % 0.0008
5	0.13 % 0.0031	0.14 % 0.0035	0.14 % 0.0031	0.17 % 0.0037	0.15 % 0.0033
6	0.60 % 0.0148	0.63 % 0.0153	0.65 % 0.0150	0.67 % 0.0150	0.66 % 0.0148
7	0.27 % 0.0067	0.29 % 0.0070	0.30 % 0.0068	0.30 % 0.0068	0.30 % 0.0067
8	0.60 % 0.0148	0.63 % 0.0153	0.65 % 0.0150	0.67 % 0.0150	0.66 % 0.0148
9	0.19 % 0.0048	0.20 % 0.0050	0.21 % 0.0049	0.22 % 0.0050	0.22 % 0.0049
10	0.04 % 0.0011	0.05 % 0.0013	0.05 % 0.0011	0.06 % 0.0014	0.05 % 0.0011
11	2.34 % 0.0581	2.30 % 0.0561	2.58 % 0.0595	2.52 % 0.0564	2.48 % 0.0557
12	0.97 % 0.0240	1.02 % 0.0249	1.06 % 0.0244	1.15 % 0.0257	1.07 % 0.0240
13	3.18 % 0.0789	3.20 % 0.0779	3.59 % 0.0829	3.60 % 0.0806	3.53 % 0.0791
14	0.29 % 0.0073	0.28 % 0.0069	0.33 % 0.0076	0.30 % 0.0068	0.29 % 0.0066
15	2.30 % 0.0572	2.24 % 0.0546	2.53 % 0.0585	2.42 % 0.0543	2.44 % 0.0547
16	9.66 % 0.2399	8.80 % 0.2140	10.89 % 0.2516	9.40 % 0.2108	9.63 % 0.2158
17	0.31 % 0.0077	0.35 % 0.0084	0.34 % 0.0077	0.39 % 0.0089	0.36 % 0.0080
18	5.10 % 0.1266	5.03 % 0.1224	6.52 % 0.1507	6.23 % 0.1396	4.67 % 0.1047
19	0.14 % 0.0035	0.14 % 0.0035	0.17 % 0.0039	0.17 % 0.0038	0.14 % 0.0031
20	1.98 % 0.0493	2.04 % 0.0495	2.06 % 0.0476	2.12 % 0.0474	2.29 % 0.0514
21	0.77 % 0.0192	0.79 % 0.0192	0.85 % 0.0195	0.87 % 0.0195	0.84 % 0.0188

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SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM  RECEPTORS

ANNUAL    SO2

MICROGRAMS PER CUBIC METER

! SOURCE    !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !
!___________!____63______!____39______!____64______!____28______!____50______!
!    22     !  51.05 %   !  51.84 %   !  44.78 %   !  46.47 %   !  49.19 %   !
!___________!___1.2679___!___1.2612___!___1.0341___!___1.0417___!___1.1027___!
!   BACK-   !   0.00 %   !   0.00 %   !   0.00 %   !   0.00 %   !   0.00 %   !
!__GROUND___!___0._______!___0._______!___0._______!___0._______!___0._______!
!   TOTAL   !  100.0 %   !  100.0 %   !  100.0 %   !  100.0 %   !  100.0 %   !
!___________!___2.4839___!___2.4330___!___2.3097___!___2.2418___!___2.2418___!
```

SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 63	RECEPTOR 39	RECEPTOR 59	RECEPTOR 50	RECEPTOR 62
1	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
2	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
3	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
4	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
5	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
6	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
7	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
8	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
9	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
10	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
11	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
12	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
13	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
14	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
15	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
16	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
17	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
18	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
19	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
20	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000
21	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000	0.00 % 0.0000

(7)

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SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM  RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER

! SOURCE   !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !
!__________!_____63_____!_____39_____!_____59_____!_____50_____!_____62_____!
!    22    !  100.00 %  !  100.00 %  !  100.00 %  !  100.00 %  !  100.00 %  !
!__________!____0.0474__!____0.0471__!____0.0433__!____0.0412__!____0.0405__!
!   BACK-  !    0.00 %  !    0.00 %  !    0.00 %  !    0.00 %  !    0.00 %  !
!__GROUND__!____0.______!____0.______!____0.______!____0.______!____0.______!
!   TOTAL  !    100.0 % !    100.0 % !    100.0 % !    100.0 % !    100.0 % !
!__________!____0.0474__!____0.0471__!____0.0433__!____0.0412__!____0.0405__!
```

SEBAOUT

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                                SEBRING AQDM

 SOURCE DATA
!        !                                 !
! SOURCE !       SOURCE LOCATION           ! SOURCE AREA !       ANNUAL SOURCE         !          STACK DATA           !
! NUMBER !        (KILOMETERS)             !   SQUARE    !      EMISSION RATE        !                               !
!        !                                 !             !       (TONS/DAY)          !   HT   DIAM    VEL     TEMP   !
!________!_HORIZONTAL_!___VERTICAL_________!_KILOMETERS__!___SO2__________PART_______!__(M)___(M)__(M/SEC)_(DEG.K)!
!____1___!____464.3___!____3035.4__________!_______0.00__!___3.158________0.118______!__45.7__2.2___10.7_____422._! SEBRING  NEWUNIT
```

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                    SEBRING AQDM

        METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

MIXING DEPTH = 1430. METERS
AMBIENT TEMPERATURE =  296. DEGREES,KELVIN
AMBIENT PRESSURE = 1017. MILLIBARS
STABILITY CLASS  1
                                        WINDSPEED CLASS

  WIND DIRECTION         1         2         3         4         5         6
        N             0.0003    0.0005    0.0000    0.0000    0.0000    0.0000

        NNE           0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        NE            0.0002    0.0006    0.0000    0.0000    0.0000    0.0000

        ENE           0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

        E             0.0004    0.0007    0.0000    0.0000    0.0000    0.0000

        ESE           0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        SE            0.0001    0.0003    0.0000    0.0000    0.0000    0.0000

        SSE           0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

        S             0.0002    0.0005    0.0000    0.0000    0.0000    0.0000

        SSW           0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        SW            0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        WSW           0.0002    0.0004    0.0000    0.0000    0.0000    0.0000

        W             0.0003    0.0003    0.0000    0.0000    0.0000    0.0000

        WNW           0.0001    0.0005    0.0000    0.0000    0.0000    0.0000

        NW            0.0002    0.0003    0.0000    0.0000    0.0000    0.0000

        NNW           0.0001    0.0002    0.0000    0.0000    0.0000    0.0000
```

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                    SEBRING AUDM

          METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  2
                                          WINDSPEED CLASS

 WIND DIRECTION        1         2         3         4         5         6
       N            0.0011    0.0022    0.0015    0.0000    0.0000    0.0000

       NNE          0.0009    0.0013    0.0008    0.0000    0.0000    0.0000

       NE           0.0008    0.0019    0.0015    0.0000    0.0000    0.0000

       ENE          0.0010    0.0014    0.0014    0.0000    0.0000    0.0000

       E            0.0011    0.0026    0.0025    0.0000    0.0000    0.0000

       ESE          0.0008    0.0021    0.0013    0.0000    0.0000    0.0000

       SE           0.0008    0.0023    0.0017    0.0000    0.0000    0.0000

       SSE          0.0009    0.0015    0.0018    0.0000    0.0000    0.0000

       S            0.0009    0.0030    0.0026    0.0000    0.0000    0.0000

       SSW          0.0006    0.0016    0.0013    0.0000    0.0000    0.0000

       SW           0.0007    0.0017    0.0012    0.0000    0.0000    0.0000

       WSW          0.0006    0.0015    0.0014    0.0000    0.0000    0.0000

       W            0.0007    0.0015    0.0012    0.0000    0.0000    0.0000

       WNW          0.0007    0.0015    0.0011    0.0000    0.0000    0.0000

       NW           0.0008    0.0018    0.0014    0.0000    0.0000    0.0000

       NNW          0.0005    0.0016    0.0010    0.0000    0.0000    0.0000
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                    SEBRING AQDM

           METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS  3
                                           WINDSPEED CLASS

 WIND DIRECTION         1        2        3        4        5        6
       N             0.0004   0.0027   0.0062   0.0006   0.0000   0.0000

       NNE           0.0005   0.0023   0.0043   0.0005   0.0001   0.0000

       NE            0.0006   0.0032   0.0057   0.0010   0.0000   0.0000

       ENE           0.0004   0.0029   0.0059   0.0012   0.0000   0.0000

       E             0.0006   0.0035   0.0093   0.0023   0.0000   0.0000

       ESE           0.0003   0.0020   0.0046   0.0013   0.0000   0.0000

       SE            0.0005   0.0023   0.0047   0.0009   0.0000   0.0000

       SSE           0.0003   0.0022   0.0049   0.0009   0.0000   0.0000

       S             0.0004   0.0029   0.0088   0.0018   0.0002   0.0000

       SSW           0.0003   0.0016   0.0038   0.0007   0.0000   0.0000

       SW            0.0003   0.0017   0.0032   0.0008   0.0000   0.0000

       WSW           0.0002   0.0014   0.0029   0.0006   0.0000   0.0000

       W             0.0002   0.0016   0.0037   0.0008   0.0001   0.0000

       WNW           0.0002   0.0012   0.0032   0.0006   0.0000   0.0000

       NW            0.0002   0.0015   0.0044   0.0010   0.0000   0.0000

       NNW           0.0002   0.0016   0.0038   0.0002   0.0000   0.0000
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                    SEBRING AQDM

            METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

 STABILITY CLASS  4
                                           WINDSPEED CLASS

  WIND DIRECTION         1        2        3        4        5        6
         N            0.0009   0.0042   0.0187   0.0170   0.0016   0.0000

         NNE          0.0007   0.0042   0.0095   0.0098   0.0013   0.0002

         NE           0.0010   0.0053   0.0111   0.0097   0.0006   0.0000

         ENE          0.0010   0.0047   0.0099   0.0078   0.0003   0.0000

         E            0.0010   0.0057   0.0157   0.0127   0.0004   0.0000

         ESE          0.0007   0.0032   0.0094   0.0083   0.0002   0.0000

         SE           0.0005   0.0032   0.0087   0.0057   0.0003   0.0000

         SSE          0.0005   0.0033   0.0085   0.0084   0.0010   0.0000

         S            0.0009   0.0047   0.0144   0.0138   0.0024   0.0001

         SSW          0.0003   0.0020   0.0054   0.0049   0.0009   0.0001

         SW           0.0007   0.0024   0.0071   0.0065   0.0010   0.0002

         WSW          0.0004   0.0027   0.0058   0.0045   0.0010   0.0002

         W            0.0006   0.0029   0.0078   0.0093   0.0018   0.0003

         WNW          0.0005   0.0023   0.0057   0.0075   0.0015   0.0002

         NW           0.0005   0.0021   0.0051   0.0083   0.0011   0.0000

         NNW          0.0005   0.0021   0.0059   0.0062   0.0003   0.0001
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SEBRING AQDM

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 5

	WINDSPEED CLASS					
WIND DIRECTION	1	2	3	4	5	6
N	0.0123	0.0252	0.0118	0.0000	0.0000	0.0000
NNE	0.0113	0.0208	0.0042	0.0000	0.0000	0.0000
NE	0.0124	0.0260	0.0039	0.0000	0.0000	0.0000
ENE	0.0114	0.0215	0.0039	0.0000	0.0000	0.0000
E	0.0134	0.0262	0.0056	0.0000	0.0000	0.0000
ESE	0.0085	0.0133	0.0039	0.0000	0.0000	0.0000
SE	0.0077	0.0120	0.0031	0.0000	0.0000	0.0000
SSE	0.0071	0.0133	0.0018	0.0000	0.0000	0.0000
S	0.0103	0.0207	0.0033	0.0000	0.0000	0.0000
SSW	0.0033	0.0063	0.0012	0.0000	0.0000	0.0000
SW	0.0037	0.0082	0.0021	0.0000	0.0000	0.0000
WSW	0.0045	0.0082	0.0021	0.0000	0.0000	0.0000
W	0.0054	0.0108	0.0057	0.0000	0.0000	0.0000
WNW	0.0045	0.0085	0.0044	0.0000	0.0000	0.0000
NW	0.0019	0.0034	0.0029	0.0000	0.0000	0.0000
NNW	0.0033	0.0068	0.0044	0.0000	0.0000	0.0000

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                              SEBRING AQDM

INPUT REGRESSION PARAMETERS ARE:

    POLLUTANT__    ______Y-INTERCEPT_______    __SLOPE_

   SO2                        0.0               1.0000

   PARTICULATES               0.0               1.0000
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SEBRING AQDM

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
1	459.3	3030.4	0.	0.
2	459.3	3031.4	0.	0.
3	459.3	3032.4	0.	0.
4	459.3	3033.4	0.	0.
5	459.3	3034.4	1.	0.
6	459.3	3035.4	1.	0.
7	459.3	3036.4	1.	0.
8	459.3	3037.4	0.	0.
9	459.3	3038.4	0.	0.
10	459.3	3039.4	0.	0.
11	459.3	3040.4	0.	0.
12	460.3	3030.4	0.	0.
13	460.3	3031.4	0.	0.
14	460.3	3032.4	0.	0.
15	460.3	3033.4	0.	0.
16	460.3	3034.4	1.	0.
17	460.3	3035.4	1.	0.
18	460.3	3036.4	1.	0.
19	460.3	3037.4	0.	0.
20	460.3	3038.4	0.	0.
21	460.3	3039.4	0.	0.
22	460.3	3040.4	0.	0.
23	461.3	3030.4	0.	0.
24	461.3	3031.4	0.	0.
25	461.3	3032.4	1.	0.
26	461.3	3033.4	1.	0.
27	461.3	3034.4	1.	0.
28	461.3	3035.4	1.	0.
29	461.3	3036.4	1.	0.
30	461.3	3037.4	1.	0.
31	461.3	3038.4	0.	0.
32	461.3	3039.4	0.	0.
33	461.3	3040.4	0.	0.
34	462.3	3030.4	0.	0.
35	462.3	3031.4	0.	0.
36	462.3	3032.4	1.	0.
37	462.3	3033.4	1.	0.
38	462.3	3034.4	1.	0.
39	462.3	3035.4	1.	0.
40	462.3	3036.4	1.	0.

SEBRING AQDM

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-----------------------------------------------------------------------------------
!                                                                                 !
!                         RECEPTOR CONCENTRATION DATA                             !
!---------------------------------------------------------------------------------!
!             !                           !                                       !
! RECEPTOR    !    RECEPTOR LOCATION      !        EXPECTED ARITHMETIC MEAN       !
!  NUMBER     !                           !                                       !
!-------------!---------------------------!---------------------------------------!
!             !      (KILOMETERS)         !     (MICROGRAMS/CU. METER)            !
!             !    HORIZ         VERT     !       SO2            PARTICULATES     !
!-------------!---------------------------!---------------------------------------!
!             !             !             !                  !                    !
!      41     !    462.3    !   3037.4    !       1.         !         0.         !
!      42     !    462.3    !   3038.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      43     !    462.3    !   3039.4    !       0.         !         0.         !
!      44     !    462.3    !   3040.4    !       0.         !         0.         !
!      45     !    463.3    !   3030.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      46     !    463.3    !   3031.4    !       1.         !         0.         !
!      47     !    463.3    !   3032.4    !       1.         !         0.         !
!      48     !    463.3    !   3033.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      49     !    463.3    !   3034.4    !       1.         !         0.         !
!      50     !    463.3    !   3035.4    !       1.         !         0.         !
!      51     !    463.3    !   3036.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      52     !    463.3    !   3037.4    !       1.         !         0.         !
!      53     !    463.3    !   3038.4    !       1.         !         0.         !
!      54     !    463.3    !   3039.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      55     !    463.3    !   3040.4    !       1.         !         0.         !
!      56     !    464.3    !   3030.4    !       1.         !         0.         !
!      57     !    464.3    !   3031.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      58     !    464.3    !   3032.4    !       1.         !         0.         !
!      59     !    464.3    !   3033.4    !       1.         !         0.         !
!      60     !    464.3    !   3034.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      61     !    464.3    !   3035.4    !       0.         !         0.         !
!      62     !    464.3    !   3036.4    !       1.         !         0.         !
!      63     !    464.3    !   3037.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      64     !    464.3    !   3038.4    !       1.         !         0.         !
!      65     !    464.3    !   3039.4    !       1.         !         0.         !
!      66     !    464.3    !   3040.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      67     !    465.3    !   3030.4    !       0.         !         0.         !
!      68     !    465.3    !   3031.4    !       1.         !         0.         !
!      69     !    465.3    !   3032.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      70     !    465.3    !   3033.4    !       1.         !         0.         !
!      71     !    465.3    !   3034.4    !       1.         !         0.         !
!      72     !    465.3    !   3035.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      73     !    465.3    !   3036.4    !       1.         !         0.         !
!      74     !    465.3    !   3037.4    !       1.         !         0.         !
!      75     !    465.3    !   3038.4    !       1.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      76     !    465.3    !   3039.4    !       1.         !         0.         !
!      77     !    465.3    !   3040.4    !       0.         !         0.         !
!      78     !    466.3    !   3030.4    !       0.         !         0.         !
!-------------!-------------!-------------!------------------!--------------------!
!      79     !    466.3    !   3031.4    !       0.         !         0.         !
!      80     !    466.3    !   3032.4    !       0.         !         0.         !
-----------------------------------------------------------------------------------
```

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SEBRING AQDM

RECEPTOR CONCENTRATION DATA

RECEPTOR NUMBER	RECEPTOR LOCATION (KILOMETERS) HORIZ	VERT	EXPECTED ARITHMETIC MEAN (MICROGRAMS/CU. METER) SO2	PARTICULATES
81	466.3	3033.4	1.	0.
82	466.3	3034.4	1.	0.
83	466.3	3035.4	1.	0.
84	466.3	3036.4	0.	0.
85	466.3	3037.4	1.	0.
86	466.3	3038.4	0.	0.
87	466.3	3039.4	0.	0.
88	466.3	3040.4	0.	0.
89	467.3	3030.4	0.	0.
90	467.3	3031.4	0.	0.
91	467.3	3032.4	0.	0.
92	467.3	3033.4	0.	0.
93	467.3	3034.4	0.	0.
94	467.3	3035.4	1.	0.
95	467.3	3036.4	0.	0.
96	467.3	3037.4	0.	0.
97	467.3	3038.4	0.	0.
98	467.3	3039.4	0.	0.
99	467.3	3040.4	0.	0.
100	468.3	3030.4	0.	0.
101	468.3	3031.4	0.	0.
102	468.3	3032.4	0.	0.
103	468.3	3033.4	0.	0.
104	468.3	3034.4	0.	0.
105	468.3	3035.4	0.	0.
106	468.3	3036.4	0.	0.
107	468.3	3037.4	0.	0.
108	468.3	3038.4	0.	0.
109	468.3	3039.4	0.	0.
110	468.3	3040.4	0.	0.
111	469.3	3030.4	0.	0.
112	469.3	3031.4	0.	0.
113	469.3	3032.4	0.	0.
114	469.3	3033.4	0.	0.
115	469.3	3034.4	0.	0.
116	469.3	3035.4	0.	0.
117	469.3	3036.4	0.	0.
118	469.3	3037.4	0.	0.
119	469.3	3038.4	0.	0.
120	469.3	3039.4	0.	0.

```
SEBRING AGDM

---------------------------------------------------------------------------------
!                                                                               !
!_______________!_____RECEPTOR CONCENTRATION DATA_______________________________!
!               !                           !                                   !
! RECEPTOR      !  RECEPTOR LOCATION        !     EXPECTED ARITHMETIC MEAN      !
!__NUMBER_______!___________________________!___________________________________!
!               !     (KILOMETERS)          !     (MICROGRAMS/CU. METER)        !
!_______________!____HORIZ_______VERT______!______SO2__________PARTICULATES____!
!               !             !             !                 !                 !
!___121_________!___469.3_____!__3040.4_____!______0._________!_______0.________!
```

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SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM  RECEPTORS

ANNUAL   SO2

MICROGRAMS PER CUBIC METER


-------------------------------------------------------------------------------------
! SOURCE    !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !
!___________!____63______!____39______!____59______!____50______!____62______!
!     1     ! 100.00 %   ! 100.00 %   ! 100.00 %   ! 100.00 %   ! 100.00 %   !
!___________!____1.2679__!____1.2612__!____1.1600__!____1.1027__!____1.0846__!
!   BACK-   !   0.00 %   !   0.00 %   !   0.00 %   !   0.00 %   !   0.00 %   !
!__GROUND___!__0.________!__0.________!__0.________!__0.________!__0.________!
!   TOTAL   !  100.0 %   !  100.0 %   !  100.0 %   !  100.0 %   !  100.0 %   !
!___________!____1.2679__!____1.2612__!____1.1600__!____1.1027__!____1.0846__!
```

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SEBRING AQDM

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL   PARTICULATES

MICROGRAMS PER CUBIC METER


-----------------------------------------------------------------------------------------
! SOURCE    !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !  RECEPTOR  !
!___________!____63______!____39______!____59______!____50______!____62______!
!     1     !  100.00 %  !  100.00 %  !  100.00 %  !  100.00 %  !  100.00 %  !
!___________!____0.0474__!____0.0471__!____0.0433__!____0.0412__!____0.0405__!
!   BACK-   !    0.00 %  !    0.00 %  !    0.00 %  !    0.00 %  !    0.00 %  !
!__GROUND___!____0.______!____0.______!____0.______!____0.______!____0.______!
!   TOTAL   !   100.0 %  !   100.0 %  !   100.0 %  !   100.0 %  !   100.0 %  !
!___________!____0.0474__!____0.0471__!____0.0433__!____0.0412__!____0.0405__!
```

Final Determination

Sebring Utilities Commission
Highlands County, Florida

Federal Permit Number:
PSD-FL-071

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting
April 2, 1981

Final Determination
Sebring Utilities Commission
PSD-FL-071

I. Applicant

Sebring Utilities Commission

Post Office Box 971

Sebring, Florida 33970

II. Source Location

The proposed source is located east of State Road 623, near the town of Sebring, in Highlands County, Florida. The UTM coordinates are: Zone 17, 464.3 km East and 3035.4 km North.

III. Project Description

The applicant proposes to install and operate two 19.5 MW output capacity, slow-speed, two-cycle diesel generating units equipped with a heat recovery system for auxiliary electric power production. The heat recovery system is expected to generate an additional 3.34 MW of electricity. The proposed diesel engine generators will be used as base load units supplying a majority of the Sebring Utilities Commission generating capacity. The engines will be operated at full load utilizing residual (No. 6) fuel oil having a maximum sulfur content of 2.5%. The maximum fuel oil consumption for each 19.5 MW unit will be 9,199.5 pounds per hour. This is equivalent to a heat input of 172 million Btu per hour (HHV of oil).

The proposed engines will operate in the range of 90-150 revolutions per minute. Units of this type, while popular in Europe, have not been widely used in America.

This will be the first such installation in Florida.

Construction of the new units is scheduled to begin in April 1981 with completion by June 1983. The units will be operated at an annual capacity factor of 80 percent.

IV. Source Impact Analysis

The proposed diesel engines have the potential to emit greater than 250 tons per year of sulfur dioxide, nitrogen oxides, carbon monoxide and volatile organic compounds, all criteria pollutants regulated under the Clean Air Act as amended on August 7, 1977. Thus, in accordance with Title 40, Code of Federal Regulations, Part 52.21 (40 CFR 52.21) as revised August 7, 1980 (45 FR 52676), the proposed construction is a major stationary source and is subject to review under federal Prevention of Significant Deterioration (PSD) regulations.

PSD review is required for each pollutant for which a significant emissions increase will occur. Tables I and II summarize the potential to emit of all pollutants regulated under the Act which are associated with the proposed construction. As these tables show, the proposed emissions increases of particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOC) exceed the significance levels set in the PSD regulations. The emissions increases of the non-criteria pollutants and lead will not be significant and therefore these pollutants are not subject to PSD review.

The PSD review consists of an analysis of the following:

A. Best Available Control Technology (BACT);

B. National Ambient Air Quality Standard (NAAQS) Impacts;

C. PSD Increment Impacts;

D. Class I Area Impacts;

E. Growth Impacts; and

F. Soils, Visibility, and Vegetation Impacts.

Table I

Summary of Potential Emissions
Criteria Pollutants
(tons/year)*

Emission Unit	SO_2	NO_x	PM	CO	VOC
Diesel Engines (2)[a]	3,864	4,804	142	832	378
PSD Significance[b] Level	40	40	25	100	40

*Based on 8,400 hours/year operating time.

(a) As estimated by the applicant (supplemental information, dated January 30, 1980).

(b) Extracted from 40 CFR 52.21(b)(23)(i), promulgated August 7, 1980.

Table II

Summary of Potential Emissions-
Noncriteria Pollutants and Lead
(tons/year)*

Emission Unit	Lead	Beryllium	Mercury	Fluorides
Diesel Engines (2)[(a)]	0.03	6×10^{-6}	0.03	8×10^{-5}
PSD Significance[(b)] Level	0.05	0.0004	0.1	3

*Based on 8,400 hours/year operating time.

(a) As estimated by the applicant (PSD application, dated December 19, 1980).

(b) Extracted from 40 CFR 52.21(b)(23)(i), promulgated August 7, 1980.

A. Best Available Control Technology Analysis (BACT)

The applicant is required, under the provisions of 40 CFR 52.21 as revised August 7, 1980 (45 FR 52676), to apply BACT to all criteria and noncriteria pollutants emitted in significant quantities. BACT is determined for each pollutant on a case-by-case review, taking into account energy, environmental and economic impacts.

The applicant has proposed BACT for each applicable pollutant and has presented justification for the standards selected. The Department of Environmental Regulation (DER) has reviewed and accepted the technology and emission limits proposed as BACT. The federal PSD permit shall be conditioned to include these limits or any more stringent emission standards that are imposed by the State of Florida under its SIP for these proposed sources. These limits are summarized in Table III. A discussion of the BACT for each pollutant follows.

1. Nitrogen Oxide Control

The primary pollutant emitted by a stationary internal combustion (IC) engine is nitrogen oxides (NO_x). IC engines account for over 6 percent (or 16 percent of the stationary source component) of the total U.S. inventory of NO_x emissions.

The proposed New Source Performance Standard (NSPS) published July 23, 1979, for Stationary Internal Combustion Engines is 600 ppm corrected for shaft efficiency and to 15 percent oxygen on a dry basis. This standard was selected as the best technological system of emission reduction of NO_x from stationary IC engines. Because of basic differences in the fuel and type of diesel engines selected by the applicant, the proposed NSPS is not considered applicable for this situation. However, the technological systems which are applicable to these IC engines are discussed at length in the preamble to the proposed standard.

Four emission control techniques or combinations of these techniques have been identified as demonstrated NO_x emission reduction systems for stationary large-bore IC engines. These techniques are:

(1). Retarded ignition or fuel injection.

(2). Air-to-fuel ratio changes.

(3). Manifold air cooling.

(4). Derating power output.

Fuel injection retard is the most effective NO_x control technique for diesel engines.

Due to inherent differences in the uncontrolled NO_x emission characteristics among various engines, the selection of the best system of emission reduction was analyzed in terms of the degree of reduction in NO_x emissions as a function of the degree of application of each emission control technique. Based on this criteria, the proposed NSPS for internal combustion engines showed that a 40 percent reduction for NO_x emissions would be achievable.

The applicant proposes to alter the compression ratio and to retard the fuel injection as BACT for the control of

NO_x emissions. This will result in a reduction of NO_x emissions of approximately 37 percent from that of an uncontrolled engine. This level of control is consistent with the proposed NSPS.

The applicant proposes a BACT emission level of 650 ppm with corrections for engine shaft and bottoming cycle efficiency and oxygen content in the stack gas. An emissions increase of 50 ppm NO_x above the proposed NSPS base level (600 ppm) is proposed because of the nitrogen content in the residual oil.

There is a NSPS (subpart GG) for Gas Turbines. This NSPS allows, as an upper limit, a 50 ppm NO_x emissions increase for the fuel-bound nitrogen content of residual oil. The proposed diesel engines will use No. 6 oil, a high-viscosity residual oil. The effect of the conversion of fuel-bound nitrogen in heavy fuel to NO_x was recognized in the NSPS (subpart GG) for Gas Turbines.

The proposed NSPS (subpart FF) for Stationary Internal Combustion Engines limits NO_x emissions to 600 ppm corrected to 15% oxygen on a dry basis. The fuel considered is No. 2 diesel oil from which the potential contribution of fuel-bound nitrogen to NO_x emissions is likely to be small. No allowance has been included for the fuel-bound nitrogen content of the fuel in determining compliance with the proposed NSPS for a diesel engine.

Highly efficient engines generally operate at higher temperature and pressure and as a result discharge gases with higher NO_x concentrations than less efficient engines, although the brake-specific mass emissions from both engines could be the same. Since the fuel consumption of IC engines varies linearly with efficiency, an efficiency adjustment factor is included in the proposed NSPS to permit increased NO_x emissions for the lower fuel consumption IC engines.

An IC engine with waste heat recovery will have a higher overall efficiency than an IC engine alone. The application of the efficiency adjustment factor to the entire system would permit greater NO_x emissions. The efficiency adjustment factor in the proposed NSPS applies only to the IC engine itself and not the entire system of which the engine may be a part.

The applicant proposes to capture waste heat from the diesel engine exhaust gases and use it for supplementary electric generation. Utilization of this waste heat will allow a considerable saving in the amount of oil required to generate a given amount of power. The waste heat boiler steam will eliminate the requirement for an auxiliary boiler to heat the No. 6 oil. As pollutant emissions are directly proportional to fuel use, this system will reduce by approximately 7 percent the emissions of SO_2, NO_x, PM, CO and VOC. If this system were not installed, generation of additional power from the proposed facility (or another facility) would be required, resulting in increased pollutant emissions. The applicant proposes that the benefit of this increased efficiency be included in the determination of the allowable NO_x emission standard.

Based on the above comparisons and the BACT analysis presented by the applicant, DER determines that the proposed NO_x emission limit of 819 ppm corrected to 15% oxygen on a dry basis is reasonable as BACT.

2. Carbon Monoxide and Hydrocarbons Control

The applicant proposes emissions levels for carbon monoxide (CO) and volatile organic compounds (VOC) based on emission estimates from Sulzer Brother Limited who will manufacture the diesel engines. These emission levels are consistent with those found in AP-42.

CO and VOC emissions are a function of combustion efficiency. However, combustion conditions which minimize NO_x emissions increase uncontrolled CO and VOC emissions from stationary IC engines. NO_x emission control techniques are essentially design modifications, not add-on equipment. Therefore, NO_x emission reductions are much harder to achieve than CO or VOC emission reductions and there exists a trade-off between NO_x emission reduction and CO and VOC emissions increases.

Based on these facts, DER agrees that the proposed emission limits of 0.575 lb/million Btu for CO and 0.26

lb/million Btu for VOC constitute BACT for the proposed source.

3. Particulate Matter Control

The BACT limitation proposed for particulate matter (PM), 0.1 lb/million Btu, is based upon particulate tests performed on the Freeport, New York diesel generating plant. The engines at this plant are similar to the ones proposed by the applicant.

Particulate emissions from stationary IC engines are virtually invisible when the engine is operating at a steady state, although excessive retard will cause the diesel unit to emit smoke. The NO_x emission control systems used in the development of the proposed NSPS for IC engines were considered only if the plume did not exceed ten percent opacity. Therefore, DER feels that the NO_x control techniques used to meet the proposed standards for large stationary IC engines will not cause excessive visible or particulate emissions.

DER concurs that the applicant's proposed 0.1 lb/million Btu emission limit for PM is reasonable as BACT.

4. Sulfur Dioxide Control

The applicant proposes an emission limit of 2.67 lb/million Btu (equivalent to 2.5% sulfur content in the oil) as BACT. The basis for the BACT emission limit is analysis of available control technology, environmental impacts, energy impacts and economic impacts.

Sulfur dioxide (SO_2) emissions from an IC engine depend on the sulfur content of the fuel and the fuel consumption of the engine. Scrubbing of IC engine exhausts to control SO_2 emissions does not appear to be reasonable from an economic viewpoint. Therefore, the only viable means of controlling SO_2 emissions is the combustion of low sulfur fuels.

The supply of low sulfur fuel oil on a long term basis is questionable. Recent actions by the OPEC countries to limit the export of lighter, lower sulfur crude oil will reduce the availability of these fuels.

Table IV summarizes the increase in fuel cost associated with the use of fuel oil containing less than 2.5 percent sulfur. It shows a cost of approximately $1200/ton SO_2 removed, i.e. not emitted. Sebring Utilities Commission estimates that the cost of 1000 kw/hr of electricity would increase by $8.30 to the customer if the use of low sulfur fuel is required. This is equivalent to a 10.6% increase over the March, 1981 cost of $78.05 for 1000 kw/hr of electricity from the City. Since no PSD increment or NAAQS for SO_2 is threatened by the use of 2.5% sulfur fuel oil for these diesel engines, DER feels that this increased cost to the customer is not justified.

Since no NSPS for sulfur dioxide emissions from an internal combustion engine have been proposed, DER feels that the SO_2 emission limit should be as stringent as that allowed for existing utilities using the same fuel. Therefore, DER concurs that the proposed maximum of 2.5% sulfur in the fuel oil constitutes BACT for SO_2 emissions for these diesel engines. This limit is consistent with a previous BACT determination made by the State of Florida for the same type engines.

Table III

BACT for Each Slow-Speed Diesel Engine

Pollutant	Proposed NSPS Limit	Applicant Proposed Limit	State Permit Limit	PSD BACT Limit
NO_2	600 ppm corrected for engine efficiency and to 15% oxygen on a dry basis.	650 ppm corrected for efficiency (shaft plus heat recovery) and oxygen	819 ppm(a) corrected to 15% oxygen on a dry basis	819 ppm(a) corrected to 15% oxygen on a dry basis
CO	--	0.575 lb/MMBTU	0.575 lb/MMBTU	0.575 lb/MMBTU
VOC	--	0.26 lb/MMBTU	0.26 lb/MMBTU	0.26 lb/MMBTU
PM	--	0.1 lb/MMBTU	0.1 lb/MMBTU	0.1 lb/MMBTU
SO_2	--	2.67 lb/MMBTU or 2.5% S in fuel oil	2.67 lb/MMBTU or 2.5% S in fuel oil	2.67 lb/MMBTU or 2.5% S in fuel oil

(a) Based on diesel engine operating at 100% capacity (162 MMBTU/hr heat input, 21,120 MW rate output). The allowable NO_x emissions rate was determined by the following formula:

$$STD = (650)\left(\frac{10.2}{Y}\right)$$

where:

STD = Allowable NO_x emission (parts-per-million volume corrected to 15 percent oxygen on a dry basis).

Y = The ratio of fuel input heat rate, based on the lower heating value of the fuel, to the energy output of the generating system (diesel engine plus waste heat boiler), expressed as KJ/w-hr.

Table IV

Economic Analysis for Sulfur Dioxide BACT Determination

Percent S in Oil	Oil Cost(1) $/Barrel	Fuel Cost(2) Per Unit $/yr	Increased Cost Per Unit $/yr	Percent Increased Cost	Potential SO_2 Emissions TPY/Unit	Net SO_2 Reduction TPY/Unit	Cost SO_2 Reduction Unit $/ton
2.5	26	5,949,926	0 (Base)	0 (Base)	1931.9	0 (Base)	0 (Base)
2.0	28	6,407,612	457, 687	7.7	1545.5	386.4	1184
1.5	30	6,865,299	915,373	15.4	1159.1	772.8	1184
1.0	32	7,322,986	1,373,060	23.1	772.8	1159.1	1184
0.7	34	7,780,672	1,830,746	30.8	540.9	1391.0	1316

(1) As estimated by the applicant in December, 1980. Due to the volatility of fuel prices, this cost will fluctuate.

(2) Based on each unit using 228,843.3 barrels of oil per year.

B. National Ambient Air Quality Standards (NAAQS) Analysis

An air quality analysis was performed to demonstrate that emissions from the proposed new source (consisting of the two diesel engines) in addition to existing ambient concentrations, will not cause or contribute to ambient concentrations in excess of any NAAQS. The analysis considered emissions of sulfur dioxide (SO_2), particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC).

The analysis was performed using EPA-approved air quality dispersion models with five years of meteorological data. Orlando surface and Tampa upper air data were used in the modeling, with the Orlando surface data set chosen over Tampa's because of its better representation of an inland site. Annual average concentrations were estimated with AQDM-Briggs. Short-term concentrations (24-hours and less) were estimated by first running the CRSTER model for five years to identify periods and areas of maximum impact. Further more refined modling using PTMTPW with a finer receptor grid spacing (0.1 km) gave the final maximum short-term concentrations.

Background PM concentrations were obtained from two air quality monitoring stations in Highlands County operated by the Florida Department of Environmental Regulation. The pollutants monitored were PM (two sites) and SO_2 (one site). The monitoring sites were established as being representative of the proposed location.

The SO_2 monitor, located near Sebring, had a maximum second-highest 24-hour observation over the five year record at the site of 50.0 ug/m^3. This occurred in 1979, the last year of the record. The maximum annual average, 10.9 ug/m^3, also occurred for the year 1979. These values were used for the respective 24-hour and annual background levels.

Information on the 3-hour background was not available from this monitor. However, a representative 3-hour background concentration was determined by multiplying the 24-hour background value by a factor derived from the Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10 (Revised). This document suggests a range of factors to relate the maximum concentration for a 1-hour averaging period to that of a 3 and 24 hour period. The maximum ratio of the 3-hour factor to the 24-hour factor, taking into account the error limits, is 5.0. Therefore, a 3-hour background concentration of 250 ug/m^3 was obtained.

The annual average background level for PM was based on the highest annual average of the last three years at the Sebring site. This value was 32.0 ug/m^3. The 24-hour PM background level was based on the maximum second-highest 24-hour concentration at the Sebring site. The 24-hour PM background level obtained was 75 ug/m^3.

The background levels for CO and NO_x were not addressed because the maximum impact of the proposed source is less than the significance levels for monitoring evaluation given in 40 CFR 52.21(c), as revised. Also, the Sebring area in Highlands County is a rural area over 100 kilometers from Tampa, the nearest urban center. Since high levels of pollution derived CO, NO_x, and ozone are associated with heavily urbanized areas, background values of these pollutants will be low.

Table V summarizes the results of the NAAQS analysis. It shows that emissions from the proposed new source will not cause or contribute to ambient concentrations in excess of any NAAQS.

Table V

NAAQS Analysis Results

Pollutant	Averaging Period	Monitoring Significance Value (ug/m^3)	Maximum Impact Proposed Source (ug/m^3)	Background Air Quality (ug/m^3)	Total Projected Air Quality (ug/m^3)	NAAQS (ug/m^3)
SO_2	Annual	-	2.6	11.	13.6	80.
	24-hour	13.	28.[1]	50.	78.	365.
	3-hour	-	114.[1]	250.	364.	1300.
PM	Annual	-	1	32.	33.	75.
	24-hour	10.	1[1]	75.	76.	260.
CO	8-hour	575.	13.	-	Negl.	10,000
	1-hour	-	37.	-	Negl.	40,000
NO_x[2]	Annual	14.	2.5	-	Negl.	100.

1. Highest second-high concentration for five-year period.

2. Assuming all NO_x is converted to NO_2.

C. PSD Increment Analysis

Maximum allowable increases in ambient air pollutant concentrations (increments) are set by the PSD regulations for SO_2 and PM. The proposed new source is subject to both SO_2 and PM increment analysis for Class II areas. In assessing the impact of the new source for increment consumption, all other sources which consume increment and which significantly interact with the proposed new source must be included. In the area surrounding the proposed site, no other increment consuming sources were identified which would interact significantly with the new source. Thus, the analysis was accomplished by modeling the new source alone and no determination of baseline concentrations was necessary.

The stack height of the source used in the modeling (150 ft.) does not exceed the Good Engineering Practice (GEP) stack height. The GEP stack height was calculated as follows:

$H_s = H_b + 1.5A$ where: H_s = GEP stack height (ft)

Hb = Building height (84 ft)

A = Lesser of building height (34 ft) or building width (134 ft)

$$H_s = 84+1.5(84)$$
$$= 210 \text{ ft.}$$

The proposed source is in the proximity of a Federal Aviation Administration (FAA) regulated airport and is limited by FAA regulations to a maximum stack height of 150 feet. The possibility of a downwash situation has been effectively avoided by increasing the stack exit velocity to 35 m/s, thus allowing the plume to escape the entraining cavity of the nearby building.

The results of the modeling using CRSTER for short-term averages and AQDM for long-term averages are compiled in Table VI. The maximum increment consumption for both pollutants and all averaging periods is 31% for the 24-hour SO_2 impact of 28 ug/m^3. The maximum annual SO_2 increment impact is 2.6 ug/m^3 or 13% of the increment. The 3-hour impact is 114 ug/m^3 or 22% of the increment. For PM the maximum annual impact is less than 1 ug/m^3 or less than 5% of the increment. The 24-hour maximum increment consumption is 1 ug/m^3 or approximately 2% of the allowed increase.

It should be noted that, in accordance with EPA modeling guidelines, maximum value impacts are based on the highest, second-high concentrations for each year for averaging times of 24-hours or less when five years of meteorology are used. Also, the model was run for loads of 100,75, and 50 percent capacity with the 100 percent condition found to be the limiting condition.

It is clear from these results that no increment violation will occur due to operation of the proposed new source.

Table VI

Increment Analysis Results

Pollutant	Averaging Period	Distance from Source (km)	Maximum Impact (ug/m^3)	Class II Increment (ug/m^3)	Percent of Increment Consumed (%)
SO_2	Annual	2.0	2.6	20.	13.
	24-hour	3.1	28.[1]	91.	31.
	3-hour	1.3	114.[1]	512.	22.
PM	Annual	2.0	1.	19.	5.
	24-hour	3.1	1.	37.	2.

[1] Highest second-high concentration for five year period.

D. Class I Impacts

The Class I area nearest to the site is the Chassahowitzka Wilderness Area, located 169 kilometers to the northwest. This distance is beyond the distance at which impacts can be reasonably estimated and no impact analysis was performed. However, considering the maximum impacts predicted in the vicinity of the source and the dilution which will be experienced over a 169 kilometer distance, it is concluded that the proposed source will have no impact on any Class I area.

E. Growth Impacts

The proposed source is not expected to significantly impact the industrial, commercial, or residential growth in the area. The local work force currently in the Sebring area will for the most part be sufficient to operate the new source. Further, the new source consumes less than 31 percent of the allowable PSD increments in the area and thus will not substantially limit future industrial growth in the area. Therefore, the overall impact on growth is small and no adverse effects are anticipated.

F. Soils Vegetation, and Visibility

No significant adverse impacts on soils, vegetation, and visibility are expected from the proposed new source. All pollutants have maximum impacts below the secondary standards designed to protect the public welfare. Public welfare includes damage to crops, buildings, vegetation, etc. In addition, scientific studies designed to quantify the sensitivity of many plant species have shown threshold levels much higher than those predicted to occur in the vicinity of the proposed site. For example, alfalfa, which is commonly thought to be one of the most sensitive species to SO_2, has a 2-hour threshold of about 2,600 ug/m^3 and an 8-hour threshold of 655 ug/m^3, far above any of the predicted impact levels.

The proposed source is expected to cause no significant impairment of visibility, either in the immediate area or at greater distances, except for some small transient effects locally during the construction phase of the source. No long-term effects are expected. In general no significant impacts are expected due to the relatively low emission rates of the source pollutants.

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To Tom Davis		From Teresa Heron	
Co./Dept. ECT		Co. DEP	
Phone # 352/332-0444		Phone # 921/9529	
Fax #		Fax #	

V. Conclusions

DER proposes a final determination of approval with conditions for the construction of the two 20 MW diesel engine generators with a waste heat recovery boiler proposed by Sebring Utilities Commission in its application (PSD-FL-071) submitted on January 9, 1981 (application determined complete as of February 2, 1981). This determination is based on the information contained in the application including supplementary information dated February 2, 1981. The conditions set forth in the permit are as follows:

1. The new source shall be constructed in accordance with the capacities and specifications stated in the application.
2. The allowable emissions limits for each slow-speed diesel engine shall be as follows:

Pollutant	Maximum Emissions
Nitrogen Oxides (NO_x)	819 ppm @ 15% O_2 and 572 lb/hr
Carbon Monoxide (CO)	0.575 lb/MMBTU and 99 lb/hr
Volatile Organic Compounds (VOC)	0.26 lb/MMBTU and 45 lb/hr
Particulate Matter (PM)	0.10 lb/MMBTU and 17 lb/hr
Sulfur Dioxide (SO_2)	2.67 lb/MMBTU and 460 lb/hr

or any other more stringent emission standard imposed by the State of Florida.

3. Performance tests to demonstrate compliance with the allowable emission limits for nitrogen oxides shall be conducted using EPA reference method 20 modified as per proposed NSPS, subpart FF, Section 60.324. Compliance with the sulfur dioxide emission limits will be determined by reference method 6 or by calculations based on fuel analysis for sulfur content. Compliance with carbon monoxide emission limits will be determined by reference method 10. Compliance with volatile organic compound emission limits will be assumed provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required. Compliance with the PM emission rate will be assumed if the visible emissions, by reference method 9, are below 10% opacity. If visible emissions exceed 10% opacity, EPA reference method 5 must be used to determine the compliance status of the units with respect to the PM standard.
4. The following operation parameters shall be monitored on a daily basis. Daily monitoring requirements shall be accurate to within five percent.
    (1). Intake manifold temperature
    (2). Intake manifold pressure
    (3). Engine speed
    (4). Diesel rack position (full flow)
    (5). Injector timing
    (6). Gross heat of combustion value and percent

sulfur content by weight for each fresh supply of fuel added to the fuel storage facility.

The operating monitoring parameters shall be recorded daily for each engine. The operating ranges for each parameter over which the engine complies with the NO_x emission limit shall be determined during the compliance test. Once established these parameters will be monitored to ensure proper operation and maintenance of the emission control techniques employed to meet the emission limit.

Records of the analysis and monitored engine parameters shall be recorded and kept for public inspection for a minimum of two years after the data are recorded.

5. Operation of each engine shall be limited to 8,400 hours per year.
6. Maximum fuel oil consumption shall be 9,199.5 pounds per hour for each engine.
7. The source shall comply with the provisions and requirements of the attached general conditions.

GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.

2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.

3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.

4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:

   (a) description of noncomplying emission(s),

   (b) cause of noncompliance,

   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,

   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

   and

   (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.

7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.

8. The permittee shall allow representatives of the State environmental control agency and/or representatives of the Environmental Protection Agency, upon the the presentation of credentials:

   (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;

   (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;

   (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

   (d) to sample at reasonable times any emission of pollutants;

   and

   (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

   Chief, Air Facilities Branch
   Air and Hazardous Materials Division
   U.S. Environmental Protection Agency
   Region IV
   345 Courtland Street
   Atlanta, Georgia 30308

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

VI. References

1. Code of Federal Regulations, 40 CFR, Appendix A.
2. Federal Register, Vol. 44, No. 142, July 23, 1979- Proposed Standards of Performance for Stationary Internal Combustion Engines.
3. Federal Register, Vol. 44, No. 176, September 10, 1979 - Standards of Performance for Stationary Gas Turbines.
4. Federal Register, Vol. 45, No. 154, August 7, 1980 - Requirements for Preparation, Adoption, and Submittal of Implemtnation Plans; Approval and Promulgation of Implementation Plans.
5. Guideline for Air Quality Maintenance Planning and Analysis, Volume 10 (Revised), U.S. Environmental Protection Agency, Research Triangle Park, N.C., October 1977.