PREVENTION OF SIGNIFICANT DETERIORATION REVIEW APPLICATION,

AND

APPLICATION TO CONSTRUCT

PROPOSED SULFURIC ACID PLANT POLK COUNTY, FLORIDA

CONSERV
NICHOLS, FLORIDA

VOLUME I

WH&A Job No. 2777
April 1981

WALK, HAYDEL & ASSOCIATES, INC.
ENGINEERS
NEW ORLEANS - MOBILE - BATON ROUGE

WALK, HAYDEL & ASSOCIATES, INC.

ENGINEERING CONSULTANTS AND DESIGNERS

NEW ORLEANS, LOUISIANA, U. S. A.

DESIGN AND ENGINEERING SUPERVISION OF INDUSTRIAL FACILITIES

COMPLETE PLANTS
ADDITIONS
MODERNIZATIONS

FACILITIES EVALUATIONS
ECONOMIC SURVEYS AND REPORTS

MAIN OFFICES
600 CARONDELET STREET 70130
TELEPHONE 504-586-8111
CABLES "WALHAY"

May 8, 1981

State of Florida
Department of Environmental Regulation
Southwest District
7601 Highway 301N
Tampa, Florida 33610

Attention: Mr. Dan Williams

L-6
Re: PSD Review for Conserv
Our File No. 2777-32

Gentlemen:

On April 14, 1981 copies of an air emission construction permit application for a proposed sulfuric acid plant at Conserv's Nichols, Florida facility were submitted to your office. In order to expedite the application review process, the application documents were submitted prior to receiving the level of review that is standard operating procedure for Walk, Haydel & Associates, Inc. As a consequence, some typographical errors have been found in the document which have since been corrected.

Enclosed for your files are two copies of the revised Volume I of the "Prevention of Significant Deterioration Review Application and Application to Construct". As noted above, this revised Volume I is not substantively different from the previous submittal with the exception of containing fewer typographical errors.

We trust the enclosed will be helpful for your review. If there are any questions, plese do not hesitate to contact us.

Very truly yours,

WALK, HAYDEL & ASSOCIATES, INC.

Ben J. Haney, P.E., Eng. D.

BJH/bh

cc: Mr. T. Rogers (3 copies)
Mr. T. Houston - Conserv (2 copies)

DER PERMIT APPLICATION TRACKING SYSTEM MASTER RECORD

FILE#0000000042397 COE# DER PROCESSOR:THOMAS DER OFFICE:TLH
FILE NAME:CONSERV DATE FIRST REC: 04/23/81 APPLICATION TYPE:AC
APPL NAME:R. E. GRAF APPL PHONE:(813)425-1164 PROJECT COUNTY:53
ADDR:P. O. BOX 314 CITY:NICHOLS ST:FLZIP:33863
AGNT NAME:FORREST E. DRYDEN AGNT PHONE:(504)586-8111
ADDR:600 CARONDELET ST. CITY:NEW ORLEANS ST:LAZIP:70130

ADDITIONAL INFO REQ: / / / / / / REC: / / / / / /
APPL COMPLETE DATE: / / COMMENTS NEC:Y DATE REQ: / / DATE REC: / /
LETTER OF INTENT NEC:Y DATE WHEN INTENT ISSUED: / / WAIVER DATE: / /

HEARING REQUEST DATES: / / / / / /
HEARING WITHDRAWN/DENIED/ORDER -- DATES: / / / / / /
HEARING ORDER OR FINAL ACTION DUE DATE: / / MANUAL TRACKING DESIRED:N
THIS RECORD HAS BEEN SUCESSFULLY ADDED 04/24/81 09:08:39
FEE PD DATE#1:04/23/81 $9020 RECEIPT#00033569 REFUND DATE: / / REFUND $
FEE PD DATE#2: / / $ RECEIPT# REFUND DATE: / / REFUND $
APPL:ACTIVE/INACTIVE/DENIED/WITHDRAWN/TRANSFERRED/EXEMPT/ISSUED:AC DATE:04/23/81
REMARKS: NEW DOUBLE ABSORPTION SULFURIC ACID PLANT (2000 TPD) W/MIST ELIMINATORS TO REPLACE TWO EXISTING PLANTS (1500 TPD COMBINED). ONLY SO2 EMISSIONS TO INCREASE, BY 930 TPY. UTM = 739841GE/3084200N. LAT/LONG = 30.2.0.N/27.55.0.W.

3 copies of PSD Review Application and Appleation to construct. (only one signed). Sent from SW. District. Also includes 8 large volumes of modeling output.

- 1 copy to Review Engineer
- 1 copy to Meteorolgy
- 1 copy to CAPS file (signed copy)

More copies made: 6.

To: E. Palagyi (1)

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

No. 1

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from CONSERVE Date [illegible]

Address [illegible] Dollars $ [illegible]

Applicant Name & Address [illegible]

Source of Revenue [illegible]

Revenue Code [illegible] Application Number [illegible]

By [illegible]

WALK, HAYDEL & ASSOCIATES, INC.

ENGINEERING CONSULTANTS AND DESIGNERS

NEW ORLEANS, LOUISIANA, U. S. A.

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MAIN OFFICES
600 CARONDELET STREET 70130
TELEPHONE 504-586-8111
CABLES "WALHAY"

April 14, 1981

State of Florida
Department of Environmental Regulation
Southwest District
7601 Highway 301 N.
Tampa, Florida 33610

Attention: Mr. Dan Williams

L-4
Re: PSD Review For Conserv
Our File No. 2777-32

Gentlemen:

Conserv is applying for Federal and State of Florida permission to construct a 2,000 ton per day sulfuric acid plant at their present location. This application is submitted in compliance with Federal Prevention of Significant Deterioration of Air Quality (PSD) regulations and State of Florida air rules. A review of this application is requested according to Federal PSD guidelines due to the intent of the State of Florida to amend their current regulations in the near future to reflect Federal PSD rulings. This application was developed in cooperation with Federal and State of Florida authorities and in conjunction with their requirements.

The facility proposed will employ the best available control technology (BACT) as determined by the EPA and will meet or supersede all emissions limitations under Federal and State of Florida regulations. An analysis of increment consumption and ambient air impact were performed by dispersion modeling techniques and these analyses indicate that no standards or limitations will be exceeded. It is concluded that Conserv will be in compliance with all required regulations and air quality rules.

Due to the confidential nature and proprietary content of Figure 2 in Volume I, Monsanto Enviro-Chem Systems, Inc. has requested that this figure be given attention as confidential and placed in the confidential files of the Florida DER.

Conserv is requesting an expeditious review of their application due to compliance of the proposed facility with all regulations and due to their anticipation of construction in the near future. Please find the twenty dollars enclosed for the application fee.

We trust the enclosed document satisfies your needs. If there are any questions, please do not hesitate to contact us.

Very truly yours,

WALK, HAYDEL & ASSOCIATES, INC.

Ben J. Haney, P.E., Eng. D.

Enclosures

BJH/bh

PHIBRO NYK CLG 4 14 81

CONSERV
NICHOLS FLA

ATTENTION: MR. R. E. GRAF

URGENT RUSH RUSH RUSH URGENT

THIS HEREBY AUTHORIZES MR. RONALD E. GRAF, VICE PRESIDENT, GENERAL MANAGHER OF CONSERV DEPARTMENT OF PHILIPP BROTHERS TO SIGN APPLICATION TO CONSTRUCT THE PROPOSED SULFURIC ACID PLANT.

E. S. MACMICHAEL
GROUP VICE PRESIDENT
PHILIPP BROTHERS

PHIBRO NYK

COPRRECTION: 2ND LINE - 2ND WORD SHOULD READ "MANAGER"

ENDS 1 PCS

CONSERV NICH

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PREVENTION OF SIGNIFICANT DETERIORATION REVIEW APPLICATION AND APPLICATION TO CONSTRUCT

PROPOSED SULFURIC ACID PLANT
POLK COUNTY, FLORIDA

CONSERV
Nichols, Florida

STATE OF LOUISIANA
BEN J. HANEY
REG. No. 13289
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

Prepared by: _____
Michael E. Neal

Reviewed and Approved by: _____
Ben J. Haney, P.E., Eng. D.

WH&A Job No. 80-2777
April 10, 1981

WALK, HAYDEL & ASSOCIATES, INC.
ENGINEERS
NEW ORLEANS—MOBILE—BATON ROUGE

CONSERV
NICHOLS, FLORIDA

WH&A Job No. 80-2777

PREVENTION OF SIGNIFICANT DETERIORATION REVIEW APPLICATION AND APPLICATION TO CONSTRUCT

PROPOSED SULFURIC ACID PLANT
POLK COUNTY, FLORIDA

April 10, 1981

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1.0 INTRODUCTION

1.0 INTRODUCTION

Pursuant to compliance with Federal Prevention of Significant Deterioration of Air Quality (PSD) regulations (40 CFR 52.21) and State of Florida air regulations, Conserv is applying for Federal and State permission to construct a 2000 ton per day (TPD) sulfuric acid plant at their present location. This application will address all required items under the newly promulgated amendments to Federal PSD regulations (August 7, 1980) and State of Florida air regulations. Conserv is requesting a Federal PSD rule review by the review authorities due to the intent of the State of Florida to amend their current regulations in several important areas in the near future to reflect Federal PSD guidelines. Conserv will, however, maintain all limits and standards for significance, increment consumption, and ambient air as currently held by the State of Florida regulations. This application will provide the necessary data and information to demonstrate that Conserv will be in compliance with all required regulations at both the State and Federal level.

The modification to Conserv's facilities will be considered major only for the emission of sulfur dioxide (SO_2) from the list of criteria or non-criteria pollutants. Therefore, this application will address only this pollutant in detail and all dispersion model cases will indicate the dispersion of this pollutant.

Conserv is proposing to construct a 2000 ton per day sulfuric acid plant at their existing facility site in Nichols, Florida (Figure 1). The proposed facility will replace two 750 TPD sulfuric acid plants at the same site. It should be noted that no increase in production or operational procedures of other facilities will result from this modification (1500 TPD to 2000 TPD) since Conserv must currently purchase approximately 500 TPD of acid to meet their process requirements. The new plant will incorporate double absorption towers, acid mist eliminators, and cogeneration capabilities (Figure 2).

2.0 LOCATION

2.0 LOCATION

The Conserv facilities complex is located near Nichols, Florida in Polk County at Universal Transverse Mercator (UTM) coordinates 398.41 kilometers east and 3084.2 kilometers north (See Figure 3). The Mobil facilities are closest to Conserv (1 KM) to the northwest and Kaiser is the next plant site at a distance of 4 kilometers to the northeast.

3.0 PROPOSED FACILITY

3.0 PROPOSED FACILITY

Conserv is proposing to construct a 2000 ton per day (100% H_2SO_4 Basis) double absorption sulfuric acid plant (See Figure 2). The newer plant will modify Conserv's facilities by a net increase of 500 TPD of sulfuric acid produced since it will replace two 750 TPD sulfuric acid plants. This additional production will not increase in any form the production or operation of other facilities at this site.

The new plant will be a contact process incorporating three major operations: (1) burning of elemental sulfur, (2) the catalytic oxidation of sulfur dioxide to sulfur trioxide, and (3) absorption of SO_3 by strong acid. Sulfur will first be burned with predried air to form a gas mixture of sulfur dioxide, oxygen, and nitrogen. Sulfur dioxide is then oxidized in the presence of a catalyst in the converter. The convertor will receive a gas stream containing 12% SO_2 and will perform a 99.7% conversion of SO_2 to SO_3. Gas to gas heat exchange cools the gas exiting the converter before the SO_3 is conveyed to the absorption tower where it is absorbed in approximately 96% sulfuric acid.

The plant design calls for maximum efficiency in energy conservation and recovery, economy, and environmental protection. Primary and secondary economizers will be incorporated in the heat recovery section in conjunction with a waste heat boiler, superheater, and cogeneration of electricity facilities. Two Monsanto mist eliminators will reduce the acid mist emissions from the absorption process and one mist eliminator will be installed for the drying tower. Emissions of sulfur dioxide will be maintained at less than 4 LB. SO_2/ton of 100% sulfuric acid produced and acid mist will be controlled to at least 0.15 LB. H_2SO_4/ton of 100% of sulfuric acid produced (per new source performance standards.)

4.0 PSD REGULATIONS

4.0 PSD REGULATIONS

The Environmental Protection Agency (EPA) promulgated amendements to PSD regulations (40 CFR 52.21) on August 7, 1980. These regulations require a proposed major source or major modification to submit an application for a PSD permit and compliance with applicable limitations and rules. All regulated pollutants emitted at greater than de minimis or specified limits must be addressed individually for each requirement under the regulations. These rules apply for Federal regulations as well as the State regulations which are based on federal promulgations. PSD regulations require for each subject pollutant: (1) an analysis of ambient air for the pollutant(s) emitted or increased in significant amounts (including monitoring), (2) an analysis of the impact of the source on national standards for each criteria pollutant, and the extent of degradation in air quality, and (3) analysis of the impact on soil, vegetation, visibility, effect on growth, and the effect of any growth on air quality. Each source emitting a pollutant subject to PSD must comply with all applicable emissions limitations and must also apply the best available control technology (BACT) to that pollutants emissions. These rules apply only to those geographic regions designated as attainment or unclassifiable under Section 107 of the Clean Air Act for any criteria pollutant.

Applicability of PSD to a source is determined by the sources potential to emit pollutants regulated by the Clean Air Act. Potential to emit is defined as the capablity at maximum design capacity to emit a pollutant after air pollution control equipment has been applied, considering all federally enforceable permit restrictions that limit the design capacity utilization, hours of operation, or type or amount of material processed or stored. Currently there are 15 regulated pollutants - of which the new facility will emit nitrogen oxides and sulfur dioxide from the criteria list and sulfuric acid mist from the non-criteria list. The proposed plant will only be considered major or PSD applies only to the emission of sulfur dioxide. In calculating applicability of these pollutants, only those same pollutants and respective actual rates from the old plants to be shut down were included with allowable

emissions from the new plant. No other contemporaneous credits will be taken.

4.1 Sulfur Dioxide

Sulfur dioxide emissions from the proposed facility are based on required standards of performance of 4 pounds SO_2/ton of 100% H_2SO_4 produced. At this rate the new plant will emit 1460 tons per year. The existing plants' average actual emissions over the two year period for 1979-1980 resulted in 529.25 tons/year SO_2. The net increase in SO_2 emitted is 930.75 tons/year at allowable rates for the new plant. (See calculation sheets for further details).

4.2 Acid Mist

Emissions for acid mist from the proposed facility are based on the 0.15 pounds mist/ton 100% sulfuric acid standard. This standard applied to 2000 TPD of H_2SO_4 results in 54.76 tons/year of acid mist. The old plants emitted 60.48 tons/year of acid mist based on average results. The net decrease in acid mist is 5.72 tons/year.

4.3 Nitrous Oxides

Nitrous oxides are usually emitted at concentrations of less than 100 parts per million (ppm) resulting from the decomposition of spent acid containing nitrogen compounds in a furnace operating at about 2000°F (per EPA Standards of Performance). In a process such as Conserv proposes, elemental sulfur is the furance feed and should therefore, produce less NO_x than the decomposition of spent acid feed. It should be noted that NO_x is soluble in the product sulfuric acid and its concentration is consequently decreased even further. To be very conservative, the 100 ppm concentration was utilized for calculating

NO_x emissions for both existing and proposed plants. The existing plants produced 380.1 tons/year NO_x, while the proposed facility at design rates will produce 222.5 tons/year. The net decrease is largely due to the fact that the new plant will operate with 12% SO_2 to the converter versus only 8% SO_2 for the existing facility. Consequently, there is less air required in the new process and, hence, less nitrogen which can be thermodynamically fixed in the furnace. The net decrease is 157.6 tons/year.

5.0 CONTROL TECHNOLOGY

5.0 CONTROL TECHNOLOGY

Any new major stationary source or major modification is required to meet any applicable emissions limitations and to provide the best available control technology to each pollutant emitted in significant amounts. These requirements will be discussed separately below.

5.1 Emissions Limitations

Emissions limitations may be imposed under the State Implementation Plan or applicable emissions standards or standards of performance under 40 CFR Parts 60 and 61. Under the State of Florida Air Pollution Rules a new sulfuric acid plant is limited by a standard of 4 pounds SO_2/ton 100% H_2SO_4 produced and 0.15 pounds acid mist/ton 100% H_2SO_4 produced (Section 17-2.05, Table II).

Standards of performance established under Section III of the Clean Air Act reflect emission limits achievable with the best demonstrated technological system. Standards of Performance for new sulfuric acid plants (EPA-450/3-79-003) are the same standards as listed above for the State of Florida. The proposed facility will meet or supersede these standards.

5.2 Best Available Control Technology (BACT)

Best available control technology means "an emissions limitations (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, economic impacts and other costs, determines is achievable for such source or modification through

application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant." This technology cannot allow emissions above those stated in a standard of performance. BACT must be applied to each pollutant emitted in significant amounts. The EPA has determined that BACT for new sulfuric acid plants is the use of dual absorption process for the control of SO_2, and the use of high efficiency acid mist eliminators for the control of acid mist. These correlate with the standards of performance given above. In the recent past, the Florida Department of Environmental Regulation (DER) designated the above two standards as BACT for new sulfuric acid plants (pursuant to Chapter 17-2.03 FAC) and additionally added the following standard:

Opacity - Not greater than 10 percent
Test Method - As prescribed in EPA NSPS, 40 CFR, Part 60, Subpart H.

Conserv is requesting that these same standards as stated be implemented as BACT for their proposed facility. The proposal facility will be of dual absorption design with high efficiency Monsanto acid mist eliminators.

6.0 MONITORING REQUIREMENTS

6.0 MONITORING REQUIREMENTS

PSD regulations usually require either a period of continuous monitoring for applicable pollutants or dispersion modeling as a means of analysis of air quality. However, if the monitor data would not improve or validate estimates made by modeling or if the concentrations of present air quality are quite small, monitoring may not be required. PSD regulations also include a table of de minimis values for several pollutants, such that "The Administrator may exempt a stationary source or modification from the requirements of paragraph (m) with respect to monitoring for a particular pollutant if: (i) the emissions increase of the pollutant from the new source or the net emissions increase of the pollutant from the modification would cause, in any area, air quality impacts less than the following amounts: Sulfur Dioxide - 13 micrograms/m^3, 24 hour average; " 40 CFR 52.21(I)(8)(i) .

With respect to this upper limit of 13 micrograms/m^3, the change in emissions due to the new sulfuric acid plant (at allowable rates) and the retiring of the old plants (at actual rates) were modeled to determine the net maximum concentration of sulfur dioxide at any point from the proposed modified facility. The CRSTER model was implemented for this task with the worst case meteorology from the year 1972. Days 173 and 174 were excluded from the meteorology (per Florida DER, Talahassee) since these days constituted (along with day 175) a period of influence from a hurricane. The second high for the model was day 178 and resulted in a maximum concentration of 10.66 micrograms/m^3 at 3.1 km from the facility at a direction of 90 degrees from north (see computer printouts in Volume 2 through 10). Due to the above results and the results of the ambient air modeling effort discussed later , Conserv requests exemption from all monitoring requirements.

7.0 GOOD ENGINEERING PRACTICE (GEP) FOR STACK HEIGHT

7.0 GOOD ENGINEERING PRACTICE (GEP) FOR STACK HEIGHT

The EPA has proposed a rule known as GEP which imposes limitations on the use of excessively high stacks. These rules require that dispersion modeling be performed at the GEP determined height unless it can be shown that excessive concentrations will occur due to aerodynamic downwash. The proposed facility at Conserv has several tall structures surrounding the plant stack, however, the most formidable is a rock pile of 60 feet in height and approximately 110 feet square in a direction northwest of the plant stack (Figure 2). In order to avoid excessive downwash from this obstacle and other structures, the plant stack is designed to be 150 feet in height as per GEP requirements: $h_s = h_b + 1.5a$, where h_b is rock pile height and "a" is the lesser of the height or maximum width of the rock pile. Since the rock pile is within 5 "building heights" (rock pile heights) from the stack, then significant downwash could occur if the stack is not at least 150 feet high (Figure 2). All modeling exercises were, therefore, performed using the 150 feet height as per conversations with representatives of Florida DER on March 16, 1981 and based on the results of the above analysis.

8.0 DISPERSION MODELS

8.0 DISPERSION MODELING

8.1 Model Descriptions

Two models which were developed by the EPA were utilized in all modeling efforts - CRSTER and the Industrial Source Complex (ISC) short term dispersion model. The CRSTER model was primarily used in preliminary analyses, however, this model did satisfy some of the final analysis requirements. The ISC short term model was implemented in the complex analyses required for short term averaging times in increment consumption and ambient air determinations.

The CRSTER model was implemented specifically for the following applications:

1) To determine worst case meteorology for the five years of data
2) impact determinations
3) validation of monitoring exemption
4) annual ambient air analysis, and
5) annual increment consumption analysis.

In these cases CRSTER should be considered very conservative since the model calculates all emissions from all sources from a single location instead of their actual geographic locality.

The ISC short term model was utilized for all three hour and twenty-four hour averaging time cases for both increment consumption and ambient air analysis. This model accepts the preprocessed meteorological data from CRSTER since both programs incorporate the same preprocessor. Therefore, the same hourly meteorological data could be input to both programs. The following options were taken in each ISC dispersion case:

1) concentration calculated in micrograms per cubic meter.
2) polar receptor grid system.
3) flat topography - all elevations given as 0.0 feet mean sea level.
4) printing of prgram control parameters, source data, and receptor data.
5) highest and second highest tables
6) maximum 50 tables
7) rural mixing heights
8) final plume rise at all downwind receptor locations
9) concentration calculations for specified groups of sources at all receptors
10) specific meteorological days. ISC model outputs are found in volumes 2 through 10 of this application.

8.2 Meteorology

The same meteorological data was utilized for both CRSTER and the ISC models. Hourly data and mixing height data were obtained for the Tampa, Florida station for the years 1970, 1971, 1972, 1973 and 1974. In choosing the worst case meteorology (for use in the ISC model), all days for a given year were input to the CRSTER model in conjunction with 10 sources from Conserv and Mobil. The CRSTER model prints out the worst day and second high day for each of 36 sectors (every 10 degrees for a total of 360 degrees) at specified distances from the sources emissions. In determining the worst case days for any particular increment or ambient air dispersion case, the procedure listed below was followed:

1) using Figures 4 and 5 in Appendix B, the directional angles for a given case were determined so as to include all sources for that case,

2) these angles were then used to obtain worst case days (high and second high) for major sectors in the desired directions for each year,

3) worst case days for each year for a particular case were then tabulated,

4) the critical direction (chosen by selecting the source complex closest to Conserv with the largest emissions output) in the interval of angles for a case was selected,

5) this critical angle was then used to compare the highest and second high concentrations for each of the five years of data - the higest concentration indicated the worst case meteorology for this direction out of the five years of data. This year of data and its high and second high days for all necessary angles was then selected for input to the ISC program.

8.3 Emissions Inventory

An inventory of emissions for all SO_2 sources (phosphate and non-phosphate) was compiled from records in the Tampa office of the Florida DER. Sources within 50 kilometers of Conserv were included in the inventory, and particularly large sources outside of 50 kilometers were included (e.g., Florida Power, Bartow plant).

The final inventory, Table 2 Appendix A, consists of sources whose emissions approached or exceeded a rate of 5.0 grams/second for sources greater than approximately 15 kilometers in distance from Conserv. For facilities that were close to Conserv (Mobil, Kaiser) all documented sources of SO_2 were included.

8.4 PSD Regulations

For the purpose of modeling (inclusion or exclusion of sources for a particular case), Federal PSD rules were followed per instructions of

Florida DER (Tallahassee). This plan was chosen since amendments to the Florida Air Pollution Rules which encompass PSD rulings are pending. Very little difference (if any for these dispersion cases and sources) would have resulted for either set of regulations. All other State of Florida standards and limits, however, have been adhered to in this application.

8.5 Area of Impact

The area of impact for any given averaging time is that area which the proposed emissions have been determined to significantly impact. The impact area is a circular area whose radius is equal to the greatest distance from the source to which approved dispersion modeling shows the proposed emissions will have a significant impact. Significant levels for SO_2 are given as follows:

Annual - 1 microgram/m^3,
24 Hour Average - 5 micrograms/m^3,
3 Hour Average - 25 micrograms/m^3.

As indicated in the CRSTER printout (see computer printouts in Volume 2), it was necessary to include all sources within 50 km for the short averaging times of 3 hours and 24 hours. Therefore, all ISC dispersion model cases include sources out to 50 km. Further distances were not processed since guidelines for dispersion model implementation (based on dispersion coefficients, wind, variation, and plume tracking) suggest that these two EPA models be limited to a distance of 50 km. Plume dispersion beyond this distance is questionable due to inherent assumptions in the plume dispersion model calculations and other factors as listed above.

For the purpose of impact, no further study was necessary since the Conserv facility does not impact any Class I Areas.

9.0 INCREMENT CONSUMPTION

9.0 INCREMENT CONSUMPTION

9.1 PSD Regulations

Under PSD regulations 40 CFR 52.21(b)(13)(ii) and 40 CFR 52.21(k) and (m) , an analysis of maximum allowable increases over the baseline concentration in any area of impact for a major source must be analyzed for applicable pollutants. At present, increment standards exist only for SO_2 and particulate matter. An analysis of increment consumption includes the following:

1) emissions from major source construction commencing after January 6, 1975 and major modifications
2) emissions changes occurring after the baseline date at sources whose previous emissions are included in the baseline concentration,
3) emissions changes due to SIP revisions approved after the baseline date, and
4) minor and area source growth occurring after the baseline date.

The EPA has concluded that increment consumption and expansion should be based primarily on actual emissions increases and decreases, which can be assumed to be allowable rates for sources subject to limitations. With reference to expansion of increment, the EPA has concluded that "... it is also reasonable to allow these contemporaneous pre-baseline date reductions to expand the increment ..." (Federal Register, Vol. 45, No. 154, Aug. 7, 1980, pg. 52720). This reference is made to the retirement of old equipment and similar actions prior to the baseline date. In the analyses made on increment consumption for Conserv, only retirement of facilities and modifications due to SIP actions were considered for expansion of increment. The baseline date for the purpose of this study was August 7, 1977 since no clear determination had been made at the time of this study (per conversations with the Florida DER, Tallahassee).

9.2 Methodology

In order to analyze increment consumption for the Conserv facility and other sources, the procedure below was followed:

1) choose a facility (which has increment consuming sources) which is near Conserv and take that major direction out to 50 KM,
2) all facilities located near this direction (within reason) will be included in this particular dispersion model (see Figure 4 Appendix B),
3) include the worst case meteorology selected for the case (described in previous section), and,
4) model these sources for 3 and 24 hour averaging times.

Eleven individual cases were analyzed for these two averaging times for increment consumption. Three of these cases (5,6,11) were not completed or included in the final results due to their initial dispersion results indicating a total concentration (for sources other than Conserv and Mobil) of zero. This situation occurred due to retirement or modification of facilities included in these cases. The sources retired (increment expanders) were modeled with negative emission rates and the increment consuming sources with positive emission rates. Therefore, the concentration for these combinations of sources were zero and indicated that no further analysis was necessary.

The analysis of the consumption of increment (or ambient air) may be performed basically by two approaches with respect to meteorology (per conservations with the Florida DER):

1) include both the worst case days and the second high days in the analysis - the result chosen is the highest concentration from the second high day (or the second high table), or

2) include in the analysis only the second high days and select then the maximum concentration listed or the maximum concentration from the "maximum 50" table.

The former case was implemented since dispersion cases were already in progress before the conversations mentioned. Therefore, in selecting the "second high" concentration, the highest concentration resulting from a second high day was selected.

9.3 Results

Results for the cases analyzed are tabulated in Tables 4 and 5. The results indicate that increment standards given below will not be violated:

	Annual	24 Hour	3 Hour
Federal (micrograms /m^3)	20	91	512
Florida (micrograms /m^3)	40	182	700

The annual increment analysis was performed with CRSTER by modeling all of the increment consumers at Conserv and Mobil. The analysis indicated an annual arithmetic average of zero (see computer printouts in Volumes 2 through 10). Modeling all sources at one location is considered very conservative.

10.0 AMBIENT AIR ANALYSIS

10.0 AMBIENT AIR ANALYSIS

The analysis of ambient air is required under the same sections of PSD regulations as listed under increment consumption and under the same authority. The ambient air analyses were conducted in similar manner as the increment cases except that all sources from a given facility in existence now or which has applied for a construction permit are included in the analysis. Sources which were retired and no longer exist were not included in any analysis. Methodologies and interpretations as given under increment analysis were applied in like manner for the ambient dispersion model cases.

Fourteen cases for ambient air analysis were modeled using the ISC dispersion model (see Figure 5 Appendix B). Only three sources were not given major consideration in the ambient air analyses. Macasphalt (near Tampa Bay) and Dolime Minerals were not included in any cases since their respective sources were very small and their distances from Conserv substantial. Kraft (near Plant City) was included in Case 5, however, this source was not given preeminence for a separate case since the rate of its emissions were so small.

The standards for ambient air are as follows:

	Annual	24 Hour	3 Hour
Federal (micrograms/m^3)	80	365	1300
Florida DER (micrograms/m^3)	60	260	1300

The results are tabulated for each run in Tables 6 and 7. The results indicate that there are no violations of ambient air standards. It should be noted that Case 7 (24 hour average) differs from the other cases in that it does not consider emissions from Conserv's standy boilers. The two standby boilers at Conserv were taken out of the analysis because their inclusion resulted in excessive projections not representative of actual operating conditions.

These two boilers will never be used when the new facility is in operation and will be needed to provide steam only on those occasions when the new plant shuts down. These boilers would then replace the steam normally generated by the sulfuric acid plant. The Case 7 dispersion model results reflects normal operating conditions without these boilers and all other cases results are extremely conservative since the emissions from these boilers were included.

The annual ambient analysis was conducted considering emissions from all sources at Conserv and Mobil, year 1971 data, using the CRSTER model (per agreement with the Florida DER). The results indicate an annual arithmetic average of 43.164 micrograms/m^3.

It is concluded, therefore, that no violations of any ambient or increment standards will occur.

11.0 ADDITIONAL IMPACTS

11.0 ADDITIONAL IMPACTS

There are several miscellaneous impact analyses which are required under 40 CFR 52.21(0). These include impairment to visibility, soils, and vegetation that would occur as a result of the construction or modification of a source.

The proposed facility will increase the production of sulfuric acid by 500 TPD, however, the incremental effect of SO_2 produced and growth incurred will be minimal. Since the proposed unit will replace the existing units, there should be little or no increase in the number of employees at this site. No secondary developments or industries are anticipated as a result of this installation, therefore, it can be concluded that little or no residential, commercial, or industrial growth will result from this modification.

According to Air Quality reports published by the EPA, adverse effects on vegetation have been observed when the annual concentrations of SO_2 averaged 85 micrograms/m^3. As indicated in the results, the annual average is approximately half of this level.

Visibility should not be impaired to any extent since Conserv has requested the same opacity listed in other BACT determinations of 10 percent.

It is concluded, therefore, that the proposed sulfuric acid facility will neither directly nor indirectly adversely affect the surrounding area.

APPENDIX A
TABLES

LIST OF TABLES

TABLE I
SUMMARY OF FACILITIES CONSIDERED FOR
DISPERSION MODEL INPUT

(A) PHOSPHATE SOURCES*

AGRICO CHEMICALS
ALCOA
BORDEN
CF CHEMICALS
DOLIME MINERALS
ELECTROPHOS
ESTECH
FARMLAND INDUSTRIES
GARDINIER
W.R. GRACE
IMC
KAISER
MOBIL CHEMICALS
NEW WALES CHEMICALS (IMC)
ROYSTER
SWIFT AGRICHEM
URANIUM RECOVERY
BREWSTER PHOSPHATES
CENTRAL PHOSPHATES
STAUFFER
BEKER PHOSPHATES
USS AGRICHEM

(B) NON PHOSPHATE SOURCES*

AMERICAN ORANGE CORP
FLORIDA FENCE POST, INC.
AMOCO OIL CO.
ANHEUSHER-BUSH, INC.
W.R. BONSAL CO.
CAMDEN GRAIN CO.
BRIMSTONE TERMINALS, INC.
CAST CRETE CORP. OF FLORIDA
CHLORIDE METALS DIVISIONS
CONCRETE PRODUCTS CORP.
CONE BROTHERS CONTRACTING
DELTA ASPHALT PAVING CO.
DELMONTE CORP.
EXXON CO. USA
FLORIDA MINING & MATERIALS CORP.
FLORIDA SIP, INC.
FLORIDA STEEL CORP.
GENERAL PORTLAND CEMENT
GULF COAST LEAD CO.
LYKES FOOD PRODUCTS
MACASPHALT CO.
NITRAM, INC.
JOSEPH SCHLITZ BREWING CO.
SCRAP-ALL, INC.
SPEEDLING, INC.
SWIFT PROCESSED MEATS
TEXASGULF, INC.
VERLITE, CO.
FLORIDA POWER & LIGHT
ADAMS PACKING CO.
ALL SUN JUICES, INC.
THE COCA-COLA CO.
COOK'S PROCESSING

TABLE I
(cont'd)

(A) PHOSPHATE SOURCES*	(B) NON PHOSPHATE SOURCES*
	FLORIDA DISTILLERS
	HOLLY HILL FRUIT PRODUCTS
	ORANGE-CO OF FLORIDA, INC.
	STANDARD SAND SILICA
	SUN-PAC FOODS, INC.
	CITY OF LAKELAND
	TRIANGLE PACIFIC CORP.
	TAMPA ELECTRIC
	KRAFT

*All SO_2 sources at these facilities were recorded and given consideration for inclusion in the dispersion model exercises.

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TABLE 2
SOURCES AND PARAMETERS USED IN DISPERSION MODELING

	Name	I.D.	Emission Rate (g/s)	UTM Coordinates East	UTM Coordinates North	Height (m)	Temp. (°F)	Exit Velocity	Diameter (m)
1)	AGRICO CHEM.								
	a) Sulfuric Acid #10	01010	37.8	407.9	3071.0	45.72	360.	8.71	1.58
	b) SAP #11	01020	37.8	407.9	3071.0	45.72	57.	10.21	1.58
	c) R. Dryer 1	01030	11.09	407.9	3071.0	24.38	339.	12.94	1.52
	d) Dryers 3 & 4	01040	17.47	407.9	3071.0	24.38	339.	17.92	2.9
	e) SAP (New)	01050	42.0	407.6	3071.3	45.72	350.	9.54	2.9
	f) DAP (New)	01060	12.41	407.6	3071.3	38.1	327.	14.55	3.05
2)	BORDEN								
	a) Ph. Rock Dryer	02010	5.29	414.5	3109.0	17.07	333.	8.26	2.34
	b) Ph. Rock Dryer	02020	6.48	394.8	3069.6	30.48	344.	14.79	1.82
3)	C.F. CHEMICALS								
	a) SPA Plt. 1	03010	4.31	408.198	3082.678	9.14	355.	15.78	.433
	b) SAP No. 7	03020	41.99	408.198	3082.678	61.57	350.8	9.77	2.44
	c) SAP No. 2	03030	-110.6	408.198	3082.678	30.48	350.	4.6	1.68
	d) SAP No. 1	03040	114.66	408.198	3082.678	30.48	347.	7.27	1.68
	e) SAP No. 6	03050	25.19	408.198	3082.678	63.4	370.	7.28	2.13
	f) SAP No. 3	03060	42.0	408.198	3082.678	34.31	305.	18.9	1.24
	g) SAP No. 4	03070	55.18	408.198	3082.678	30.48	308.	20.2	1.22

TABLE 2
Continued

	h) SAP No. 5	03080	63.0	408.198	3082.678	63.4	361.	10.88	2.13
4)	DOLIME								
	a) Boiler	04010	4.52	404.813	3069.548	27.43	494.1	7.25	.61
	b) Dryer	04020	5.68	404.813	3069.548	27.43	333.	20.67	1.52
5)	ELECTROPHOS								
	a) Calciner	05010	6.24	405.6	3079.4	25.6	322.	8.01	2.13
6)	FARMLAND INDUSTRIES								
	a) SAP No. 4	06010	57.74	409.5	3079.5	30.48	305.	23.9	1.37
	b) SAP No. 2	06020	41.99	409.5	3079.5	30.48	311.	22.3	1.37
	c) SAP No. 1	06030	41.99	409.5	3079.5	30.48	311.	19.9	1.37
	d) SAP No. 3	06040	63.0	409.5	3079.5	30.48	301.	24.1	1.37
	e) Boiler	06050	4.58	409.5	3079.5	14.17	444.	12.66	1.22
7)	GARDINIER								
	a) R.Dryer	07010	17.6	415.3	3063.3	19.2	344.	8.96	2.89
	b) SAP No. 8	07020	91.87	363.4	3082.4	45.72	355.	8.63	2.44
	c) GTSP	07030	9.6	363.4	3082.4	38.4	328.	11.56	2.44
	d) SAP No. 7	07040	36.75	363.4	3082.4	45.72	355.	9.20	2.29
	e) Dryer	07050	28.89	363.4	3082.4	20.73	310.	13.12	1.07
	f) Boiler	07060	10.08	363.4	3082.4	18.29	589.	6.99	2.54
	g) Ph.A. Conc	07070	7.56	363.4	3082.4	23.77	345.	6.19	1.83
	h) No. 7 PAC	07080	6.56	363.4	3082.4	23.77	343.	6.8	1.83
	i) No. 8 PAC	07090	6.35	363.4	3082.4	23.77	343.	6.8	1.83
	j) SAP No.9	07100	54.6	363.4	3082.4	45.72	344.	12.5	2.74
	k) SAP 4,5,6	07110	-196.3	363.4	3082.4	22.6	322.	19.51	1.52
	l) SAP No. 7	07041	-50.71	363.4	3082.4	45.72	355.	9.2	2.29
	m) DAP P24	07120	4.29	363.4	3082.4	60.39	320	13.38	2.13

TABLE 2
Continued

8)	W.R. GRACE								
	a) SAP No. 1	08010	-108.0	409.77	3086.99	45.72	352.	16.5	1.37
	b) SAP No. 2	08020	-108.0	409.77	3086.99	45.72	352.	16.5	1.37
	c) SAP No. 3	08030	52.5	409.77	3086.99	45.72	311.	16.7	1.52
	d) SAP No. 7,8	08040	35.28	409.77	3086.99	60.96	347.	28.61	1.52
	e) SAP No. 5	08050	35.28	409.77	3086.99	60.96	347.	25.10	1.52
	f) SAP No. 6	08060	35.27	409.77	3086.99	60.96	346.	25.10	1.52
	g) SAP No. 4	08070	35.69	409.77	3086.99	61.57	347.	13.82	2.06
	h) DAP Plt	08080	12.1	409.77	3086.99	40.39	319.	21.34	2.13
	i) R. Dryer	08090	39.41	409.77	3086.99	15.24	327.	17.32	2.04
	j) R. Dryder	08100	39.41	409.77	3086.99	15.24	327.	17.32	2.04
9)	IMC								
	a) Calciner	09010	30.64	414.7	3080.3	13.72	330.	40.4	1.22
	b) King. Dryer	09020	11.6	398.2	3075.7	21.3	344.	12.9	2.13
	c) No. 2 R. Dryer	09030	8.9	414.7	3080.3	16.76	343.	36.7	1.28
	d) Boiler	09040	5.73	396.7	3078.9	9.14	533.	30.3	.46
	e) Ph. R. Dryer	09050	26.7	396.7	3078.9	19.8	339.	12.6	2.29
	f) Multi-FOS	09060	37.14	396.83	3079.43	52.43	311.	13.8	1.37
	g) SAP No. 3	09070	41.99	396.7	3078.9	60.96	341.	11.4	2.59
	h) SAP No. 2	09080	54.59	396.7	3078.9	60.96	345.	14.6	2.59
	i) SAP No. 1	09090	48.3	396.7	3078.9	60.96	350.	14.04	2.59
	j) GTSP	09100	8.6	396.7	3078.9	40.23	319.	18.8	1.83
	k) SAP No. 5	09110	57.75	396.56	3078.64	60.7	350.	13.37	2.6
	l) SAP No. 4	09120	57.75	396.49	3078.64	60.7	350.	13.37	2.6
	m) DAP Plt.	09130	5.54	396.45	3079.15	36.6	319.	19.81	1.8
	n) AFI Plt	09140	3.78	396.75	3079.35	52.4	322.	13.04	2.4
	o) Multi-FOS	09150	5.36	396.83	3079.43	52.4	319.	6.84	2.4
	p) Std. By Boiler	09160	20.36	396.7	3078.9	25.9	564.	8.42	1.69

TABLE 2
Continued

10)	KAISER								
a)	Dryer	10010	1.23	401.5	3086.5	18.29	333.	11.9	.27
b)	Dryer	10020	1.41	401.5	3086.5	21.34	311.	28.4	.46
11)	MOBIL								
a)	Calciner	11010	13.48	398.0	3085.3	30.48	366.	18.0	1.37
b)	No. 3 Dryer	11020	7.35	398.0	3085.3	30.48	355.	7.74	1.46
c)	No. 2 Dryer	11030	19.78	398.0	3085.3	25.9	346.	8.75	2.29
d)	No. 1 Dryer	11040	15.9	398.0	3085.3	25.9	346.	12.86	2.29
e)	No. 4 Dryer	11050	2.44	398.29	3084.29	25.9	339	16.05	2.29
12)	ROYSTER								
a)	SAP 1	12010	63.5	406.7	3085.2	60.96	366.	9.93	2.13
b)	SAP 1	12011	-257.25	406.7	3085.2	60.96	366.	9.93	2.13
c)	DAP Plt	12020	4.01	406.7	3085.2	31.09	316.	10.58	2.68
13)	SWIFT-AGRI CHEM.								
a)	SAP 1	13010	32.2	411.5	3074.2	30.79	358.	3.9	2.13
b)	Dryer	13020	18.1	411.5	3074.2	18.29	339.	8.47	2.95
c)	Dryer	13030	33.4	411.5	3074.2	18.75	340.	5.06	2.95
14)	USS AGRI-CHEM.								
a)	SAP 1	14010	41.9	413.2	3086.3	28.96	305.	7.5	2.12
b)	R. Dryer	14020	3.41	413.2	3086.3	15.8	332.	10.01	1.83
c)	DAP Plt	14030	3.93	413.2	3086.3	40.54	305.	12.69	2.13
d)	R. Dryer	14040	9.20	416.0	3069.0	25.6	332.	16.26	1.52
e)	R. Dryer	14050	9.20	416.0	3069.0	25.6	332.	16.26	1.52
f)	GTSP	14060	28.35	416.0	3069.0	28.35	330.	17.6	1.52
g)	SAP 2	14070	-73.5	416.0	3069.0	60.96	304	6.5	30.5
h)	New SAP	14080	92.40	416.0	3069.0	53.34	355	9.4	2.59

TABLE 2
Continued

	BORDEN								
	c) Kiln	02030	11.45	393.8	3096.3	24.38	315.	13.7	1.8
	d) Kiln	02040	6.59	393.8	3096.3	30.48	339.	9.63	1.37
	e) Kiln	02050	14.48	393.8	3096.3	46.33	309.	19.56	1.76
	f) Kiln	02060	18.23	393.8	3096.3	46.33	309.	21.81	1.76
	g) Kiln	02070	65.97	393.8	3096.3	60.96	311.	28.36	1.76
	k) SAP	02080	41.99	414.5	3109.0	60.96	353.	13.0	2.36
15)	BREWSTER PHOSPHATES								
	a) R. Dryer	15010	20.79	389.55	3067.93	38.1	347.	15.4	2.44
	b) R. Dryer	15020	20.59	389.55	3067.93	38.1	342.	14.18	2.44
16)	CENTRAL PHOSPHATES								
	a) SAP "C"	16010	36.75	388.3	3115.7	60.81	344.	11.66	2.44
	b) SAP "D"	16020	29.46	388.3	3115.7	60.81	349.	10.73	2.44
	c) DAP"A"	16030	3.59	388.3	3115.7	28.5	334.	9.05	3.05
	d) DAP "Z"	16040	4.31	388.3	3115.7	54.86	335.	14.4	2.79
	e) SAP "A"	16050	52.50	388.3	3115.7	23.77	306.	16.64	1.54
	f) ROP Dryer	16060	4.6	388.3	3115.7	30.48	311.	11.67	1.83
	g) MGTSP Dry	16070	4.6	388.3	3115.7	30.48	310.	11.67	1.83
	h) SAP "B"	16080	52.50	388.3	3115.7	23.77	310.	18.14	1.52
17	BEKER PHOSPHATES								
	a) R. Dryer	17010	43.64	387.5	3042.3	43.64	340.	15.15	2.13
18)	ESTECH								
	a) No. 1 Dryer	18010	15.37	388.95	3047.28	38.1	340.	12.	2.44
	b) No. 2 Dryer	18020	15.37	388.95	3047.28	38.1	340.	12.	2.44
19)	AMERICAN ORGNGE								
	a) Peel Dryer	19010	6.17	419.819	3047.346	10.67	355.	4.8	3.05
	b) Peel Dryer	19020	9.48	419.819	3047.346	10.67	358.	1.65	4.05

TABLE 2
Continued

20)	CAMDEN GRAIN								
	a) Furnace	20010	29.8	360.2	3102.5	30.18	344.	18.62	.66
	b) Furance	20020	10.48	360.2	3102.5	30.18	344.	18.1	.66
21)	CHLORIDE METALS								
	a) Furnace	21010	12.98	361.8	3088.3	30.17	397.4	22.86	.61
	b) Furnace	21020	8.04	361.8	3088.3	29.87	354.	17.2	.61
22)	CONCRETE PRODUCTS								
	a) Boiler	22010	5.9	362.8	3097.9	9.14	455.	5.39	.406
23)	DELMONTE	23010	4.22	359.6	3093.05	11.89	494.1	3.0	1.36
24)	GEN. PORT. CEMENT								
	a) Kiln No. 6	24010	100.8	358.0	3090.6	44.35	473.	6.6	4.72
	b) Kiln No. 4	24020	62.99	358.0	3090.6	35.97	505.2	17.61	2.74
	c) Kiln No. 5	24030	69.3	358.0	3090.6	45.42	494.1	5.8	3.81
25)	GULF COAST LEAD								
	a) Furance	25010	22.0	363.9	3093.85	30.48	350.	22.4	.61
26)	MACASPHALT								
	a) Heater	26010	17.83	363.5	3066.8	7.62	408.	15.06	1.52
	b) Plant	26020	11.05	423.13	3101.53	12.19	327.	2.26	3.05
27)	FLORIDA POWER & LIGHT								
	a) Station 1	27010	732.9	367.1	3053.8	152.1	425.	20.67	7.925
	b) Station 2	27020	732.9	367.1	3053.8	152.1	425.	20.67	7.925
28)	ADAMS PACKING								
	a) Dryer	28010	2.89	421.70	3104.2	28.04	347.	22.93	1.43

TABLE 2
Continued

29) COCA-COLA								
a) Dryer	29010	18.8	421.3	3103.6	30.48	345.	15.02	.98
30) HOLLY HILL FRUIT								
a) Dryer	30010	4.64	441.0	3115.4	17.98	344.	18.7	.86
31)) STD. SAND								
a) Dryer	31010	8.06	441.7	3118.2	25.91	315.	12.08	1.22
32) CITY OF LAKELAND								
a) Plt. No. 3	32010	468.71	408.5	3105.8	76.2	350.	24.6	4.88
33) CF INDUST.								
a) Boiler	33010	6.06	388.3	3115.7	7.62	561.	18.67	1.07
34) TAMPA ELEC.								
a) Big Bend No. 4	34010	653.17	361.6	3075.	149.3	404.	34.3	7.3
35) ELECTROPHOS								
a) Calciner	05030	6.24	405.6	3079.4	25.6	322.	8.01	2.13
36) CONSERV								
a) Old SAP	35010	-15.225	398.41	3084.2	30.48	308.	18.89	1.81
b) New SAP	35020	41.99	398.41	3084.2	45.72	352.4	10.349	2.29
c) Boiler SB	35030	11.18	398.41	3084.2	11.89	533.	8.88	.98
d) Boiler SB	35040	6.98	398.41	3084.2	8.23	533.	13.65	.61
e) Dryer	35050	16.16	398.41	3084.2	24.38	327.	4.98	2.32
f) DAP Dryer	35060	1.006	398.41	3084.2	24.38	333.	23.1	1.07
37) FLORIDA POWER CORP.								
a) (Bartow) No. 1	36010	411.51	342.4	3082.7	91.44	427.4	28.50	2.74

TABLE 2
Continued

No. 2	36020	447.92	342.4	3082.7	91.44	427.4	31.12	2.74
No. 3	36030	720.45	342.4	3082.7	91.44	430.2	29.18	3.35
b) Texaco Big Bend								
No. 1	36040	2926.0	361.9	3075.0	149.35	425.8	14.30	7.32
No. 2	36050	2753.3	361.9	3075.0	149.35	404.7	14.36	7.32
No. 3	36060	3069.8	361.9	3075.0	149.35	410.2	13.33	7.62
c) GANNON								
No. 1	36070	164.17	360.0	3087.5	93.27	426.9	24.02	3.05
No. 2	36080	164.17	360.0	3087.5	93.27	426.9	24.02	3.05
No. 3	36090	221.37	360.0	3087.5	93.27	403.	18.72	3.23
No. 4	36100	263.2	360.0	3087.5	93.27	438.	42.43	2.93
No. 5	36100	263.2	360.0	3087.5	93.27	438.	42.43	2.93
No. 5	36110	611.97	360.0	3087.5	93.27	415.2	41.52	3.14
No. 6	36120	991.98	360.0	3087.5	93.27	417.2	23.42	5.36
d) Hookers Pt.								
No. 1	30130	4.56	358.0	3091.0	85.34	402.4	9.19	3.43
No. 2	36140	32.89	358.0	3091.0	85.34	402.4	9.19	3.43
No. 3	36150	48.38	358.0	3091.0	85.34	396.9	11.44	3.66
No. 4	36160	50.90	358.0	3091.0	85.34	396.9	11.44	3.66
No. 5	36170	73.83	358.0	3091.0	85.34	402.4	18.20	3.43
No. 6	36180	107.98	358.0	3091.0	85.34	435.8	17.87	2.87
38) CITY OF LAKELAND								
a) McKintosh								
No. 1	37010	326.3	408.5	3105.8	47.7	399.7	24.01	2.74
No. 2	37020	110.21	408.5	3105.8	47.7	402.4	21.29	3.17
b) Larsen								
No. 4	37030	81.52	409.	3106.2	50.29	433.	5.63	3.05
No. 5	37040	92.48	409.	3106.2	50.29	449.7	11.21	3.05

TABLE 2
Continued

No. 6	37050	93.87	409.	3106.2	50.29	433.	8.81	3.05
No. 7	37060	168.21	409.	3106.2	50.29	449.7	15.33	3.05
39) CITRUS WORLD								
Dryer								
No. 1	38010	9.53	441.0	3087.3	22.86	324.8	16.28	.762
No. 2	38020	19.03	441.0	3087.3	22.86	323.9	13.98	.966
No. 3	38030	19.03	441.0	3087.3	16.76	316.	25.2	.75
Boiler								
No. 1	38040	8.44	441.0	3087.3	12.19	505.	1.43	1.12
No. 2	38050	8.44	441.0	3087.3	12.19	505.	1.43	1.12
No. 3	38060	20.41	441.0	3087.3	12.19	505.	1.43	1.12
No. 4	38070	20.34	441.0	3087.3	12.19	505.	1.43	1.12
No. 5	38080	16.98	441.0	3087.3	12.19	505.	1.43	1.12
40) KRAFT								
a) Peel Dryer	39010	9.13	399.0	3101.8	27.43	333.	11.79	.91

TABLE 3
INCREMENT CONSUMPTION SOURCES

(1) AGRICO CHEMICAL
- New Sulfuric Acid Plant (01050)
- New DAP Plant (01060)

(2) BORDEN
- Phosphate Rock Dryer - Located south of Conserv (02020)

(3) CF CHEMICALS
- No. 2 Sulfuric Acid Plant (03030)

(4) DOLIME MINERALS
- Dryer (04020)

(5) FARM LAND INDUSTRIES
- Boiler (06050)

(6) GARDINIER
- Sulfuric Acid Plant No. 7 (07040 and 07041)
- Sulfuric Acid Plants 4,5, and 6 (07110)

(7) WR GRACE
- Sulfuric Acid Plant No. 1 (08010)
- Sulfuric Acid Plant No. 2 (08020)
- Sulfuric Acid Plants No. 7, 8 (08040)
- Sulfuric Acid Plant No. 5 (08050)
- Sulfuric Acid Plant No. 6 (08060)
- Dap Plant (08080)

(8) IMC (INCLUDING NEW WALES)
- Calciner (09010) - Noralyn
- Boiler (09040)
- Multi-Fos (09060)
- Sulfuric Acid Plant No. 5 (09110)

TABLE 3
(cont'd)

(8) IMC (INCLUDING NEW WALES) (cont'd)
Sulfuric Acid Plant No. 4 (09120)
DAP Plant (09130)
AFI Plant (09140)
Multi-FOS (09150)

(9) MOBIL
No. 4 Dryer (11050)

(10) ROYSTER
Sulfuric Acid Plant No. 1 (12010 and 12011)

(11) USS AGRI-CHEM
Sulfuric Acid Plant No. 2 (14070)
Sulfuric Acid Plant (14080) - Fort Meade

(12) BREWSTER PHOSPHATES
Rock Dryer (15020)

(13) BEKER PHOSPHATES
Rock Dryer (17010)

(14) ESTECH
No. 1 Dryer (18010)
No. 2 Dryer (18020)

(15) AMERICAN ORANGE
Peel Dryer (19010)
Peel Dryer (19020)

(16) CHLORIDE METALS
Furnace (21010)

TABLE 3

(cont'd)

(17) MASCASPHALT
Heater (26010)
Plant (26020)

(18) ADAMS PACKING
Dryer (28010)

(19) COCA-COLA
Dryer (29010)

(20) HOLLY HILL FRUIT
Dryer (30010)

(21) STANDARD SAND & SILICA
Dryer (31010)

(22) CITY OF LAKELAND
Plant No. 3 (32010)

(23) CF INDUSTRIES
Boiler (33010)

(24) TAMPA ELECTRIC
Big Bend No. 4 (34010)

(25) CONSERV
New Sulfuric Acid Plant (35010)
Old Sulfuric Acid Plant (35020)

TABLE 4

INCREMENT CONSUMPTION RESULTS - 3 HOUR AVERAGE

	Case No./Per	CONSERV 2nd High	CONSERV Distance	CONSERV Degrees	MOBIL 2nd High	MOBIL Distance	MOBIL Degrees	ALL OTHERS 2nd High	ALL OTHERS Distance	ALL OTHERS Degrees	TOTAL 2nd High	TOTAL Distance	TOTAL Degrees	High Day	2nd High Day
	1 3	19.68	2800	20	4.28	2700	15	88.78	150	15	88.78	150	15	148/116	97/115/331
	2 3	32.82	1400	80	2.19	1500	70	4.36	4000	70	35.42	1400	80	252/289	71/312
**	3 3	34.85	1100	90	1.97	3200	80	0	4000	90	44.55	1100	90	224	190/137
	4 3	17.69	2600	160	5.92	300	170	2.31	4000	170	20.72	2500	160	133	316
*	7 3	19.07	2500	300	5.85	2500	310	2.00	4000	300	28.86	2800	310	180	32
	8 3	18.29	2800	320	5.79	2500	325	7.91	170	330	25.91	2600	325	67/328	21/32
*	9 3	29.54	1200	205	3.22	300	215	34.18	150	205	47.91	3200	210	274	107
**	10 3	18.58	2600	230	3.22	1300	240	1.83	150	240	24.82	2600	230	295	290

* The 2nd high concentration (maximum concentration from a 2nd worst meteorological day) was hidden by the highest concentration.

** A second worst meteorological day produced the maximum concentration.

TABLE 5

INCREMENT CONSUMPTION RESULTS - 24 HOUR AVERAGE

	Case No./Per	CONSERV 2nd High	CONSERV Distance	CONSERV Degrees	MOBIL 2nd High	MOBIL Distance	MOBIL Degrees	ALL OTHERS 2nd High	ALL OTHERS Distance	ALL OTHERS Degrees	TOTAL 2nd High	TOTAL Distance	TOTAL Degrees	High Day	2nd High Day
	1 24	5.69	3100	20	1.08	3100	15	27.59	150	25	27.57	150	25	318/80/221	87/88/224
	2 24	6.09	1900	80	1.04	3000	70	2.63	2100	80	8.34	1800	80	172/177	99/151
	3 24	7.31	3000	90	1.21	3200	80	0	4000	90	3.37	3200	90	177/178	99/152
	4 24	4.84	3400	165	1.36	150	170	0.14	150	160	5.56	3300	165		1/7/171
*	7 24	5.63	2400	300	1.23	2400	310	.94	150	310	7.72	1700	300	205/293	292/252
	8 24	5.26	3800	325	1.62	2000	330	3.09	150	320	9.93	3500	325	89/90	328/359
	9 24	4.78	2600	205	1.13	2400	215	7.66	150	215	12.07	2900	205	266/279	107/312/330
*	10 24	6.22	3000	225	1.699	2700	240	0.67	150	225	7.78	3700	225	266/267	295/312
**	11 24	4.41	2900	255	1.76	2200	255	0.0	4000	255	.326	4000	255	272/290	181/273

* A second high meteorological day produced the highest concentration.

** For example only - the sources (other than Conserv and Mobil) concentration was zero, and the total concentration was only .326. This case plus cases 5 and 6 were deleted.

TABLE 6

AMBIENT AIR ANALYSIS RESULTS - 3 HOUR AVERAGE

Case No./Per		CONSERV 2nd High	CONSERV Distance	CONSERV Degrees	MOBIL 2nd High	MOBIL Distance	MOBIL Degrees	ALL OTHERS 2nd High	ALL OTHERS Distance	ALL OTHERS Degrees	TOTAL 2nd High	TOTAL Distance	TOTAL Degrees	High Day	2nd High Day
1	3	513.78	500	20	165.21	2200	10	189.09	150	10	664.31	500	20	148	531
2	3	495.01	400	50	221.55	1000	40	57.8	3600	50	505.91	400	50	205	178
3	3	539.83	500	70	66.83	1500	70	99.22	4000	70	633.38	500	70	252	71
* 4	3	596.38	500	80	43.68	500	90	67.77	2600	90	705.55	500	80	178	137
5	3	454.14	500	160	193.57	300	170	35.77	2100	165	643.67	500	160	133	316
** 6	3	613.65	500	260	183.57	1300	265	124.63	150	250	748.72	500	260	109	336
** 7	3	574.36	300	280	216.82	1900	295	244.9	200	295	726.71	600	280	31	105
** 8	3	510.38	600	300	184.3	2300	310	54.62	150	310	585.4	600	300	240/180	292/32
9	3	522.33	500	210	89.10	300	215	125.64	1000	205	596.06	800	210	274	107
** 10	3	488.8	500	230	105.86	1400	240	6.73	150	240	579.2	500	230	295	290
** 11	3	520.72	700	250	145.34	1600	255	102.32	2300	245	721.07	700	250	288	280
* 12	3	661.75	500	100	88.31	1100	95	77.09	150	95	730.4	400	100	195	178
* 13	3	447.2	500	110	77.66	200	115	9.79	300	110	497.84	500	110	193	255
14	3	496.11	500	320	181.94	2300	325	28.40	150	330	516.21	500	320	67	21

* The second high was hidden under the maximum case.

** The second high meteorological day produced the highest concentration.

TABLE 7

AMBIENT AIR ANALYSIS RESULTS - 24 HOUR AVERAGE

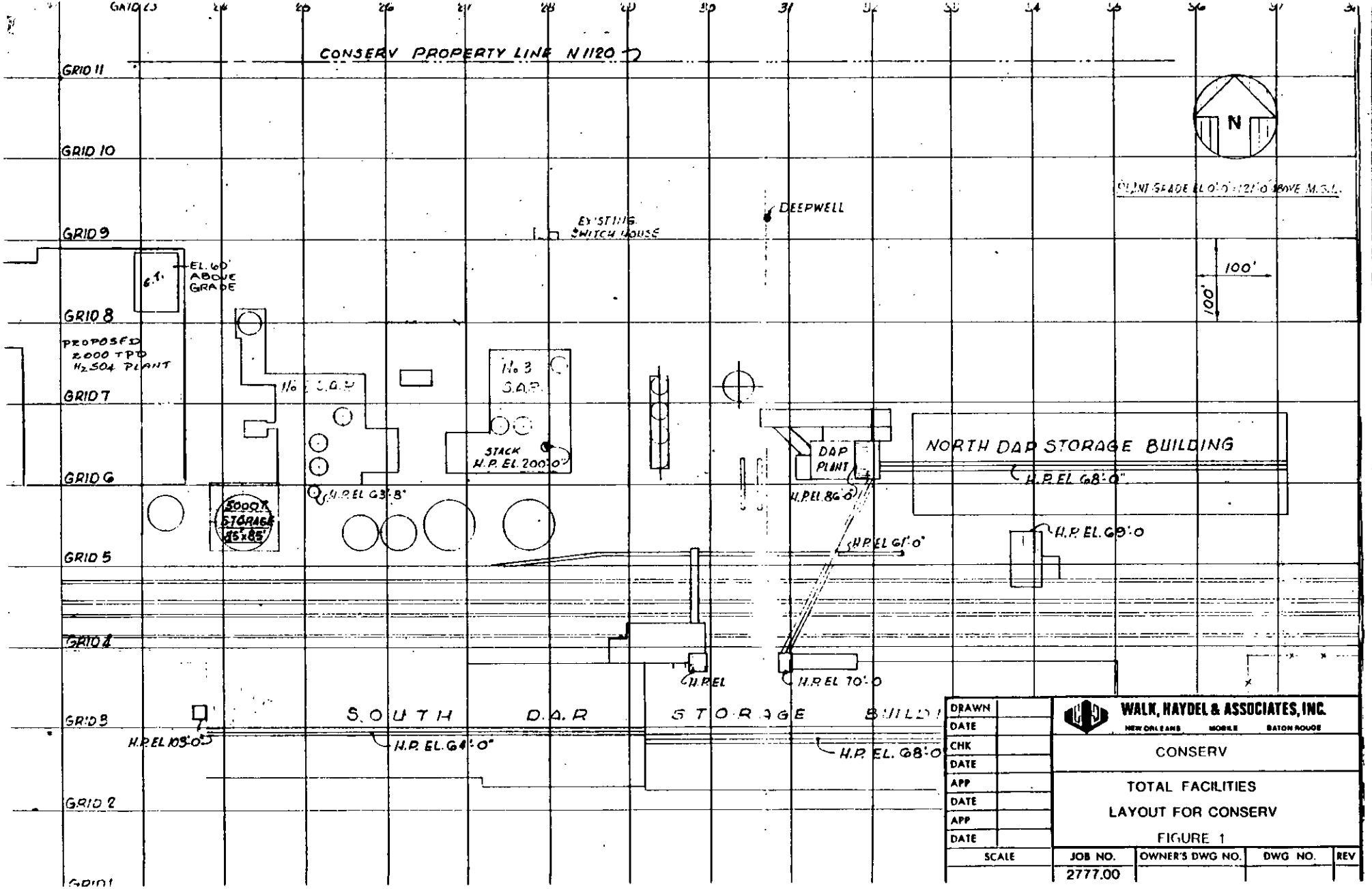
Case No./Per		CONSERV 2nd High	CONSERV Distance	CONSERV Degrees	MOBIL 2nd High	MOBIL Distance	MOBIL Degrees	ALL OTHERS 2nd High	ALL OTHERS Distance	ALL OTHERS Degrees	TOTAL 2nd High	TOTAL Distance	TOTAL Degrees	High Day	2nd High Day
1	24	156.96	600	20	54.43	2400	10	60.83	150	25	213.16	600	20	80	88
2	24	182.76	600	50	27.47	3900	40	28.21	3800	50	186.41	600	50	223/50	222/50
3	24	166.08	400	80	27.49	3000	70	53.41	150	80	202.43	400	80	177	99
4	24	207.11	600	90	32.05	3200	80	19.51	600	90	223.29	600	90	178	152
5	24	118.53	700	165	45.49	150	160	15.19	150	170	152.67	500	160	319	171
6	24	166.91	400	265	67.49	1600	265	38.65	150	250	202.03	500	265	14	140
*7	24	721.65	900	285	64.14	2000	295	73.45	1300	295	155.26	900	285	133/127	121/119
*7	24	208.48	500	285	64.14	2000	295	73.45	1300	295	293.66	500	285	133/127	121/119
8	24	151.75	400	300	33.41	2400	310	20.74	1100	310	189.81	500	300	293	292/252
9	24	137.22	600	205	29.27	2400	215	27.89	150	215	170.27	600	205	279	330/107
10	24	183.06	600	225	48.14	2600	240	2.55	150	225	184.97	600	225	266/267	312/295
11	24	116.99	600	250	50.24	220	255	21.15	600	245	139.24	600	250	290	181
**12	24	203.27	500	95	22.08	1500	95	23.41	150	105	226.4	500	95	230/192	71/145
13	24	135.74	500	110	37.13	1300	110	3.30	2900	110	154.61	500	110	143	44
**14	24	176.05	600	325	66.94	1800	330	12.32	1300	325	189.91	600	325	90/89	359/328

* The first case is without the standby boilers and the second Case 7 is with the standby boilers.
** The second high concentration listed is a high or worst case day and not a second high day. The higest second high concentration is founded on the maximum 50 table by locating the first concentration by a second worst day.

WALK, HAYDEL & ASSOCIATES, INC
ENGINEERS
NEW ORLEANS - MOBILE - BATON ROUGE

APPENDIX B
FIGURES

LIST OF FIGURES



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.		
DATE		NEW ORLEANS MOBILE BATON ROUGE		
CHK		CONSERV		
DATE				
APP		TOTAL FACILITIES		
DATE		LAYOUT FOR CONSERV		
APP				
DATE		FIGURE 1		
SCALE	JOB NO.	OWNER'S DWG NO.	DWG NO.	REV
	2777.00			

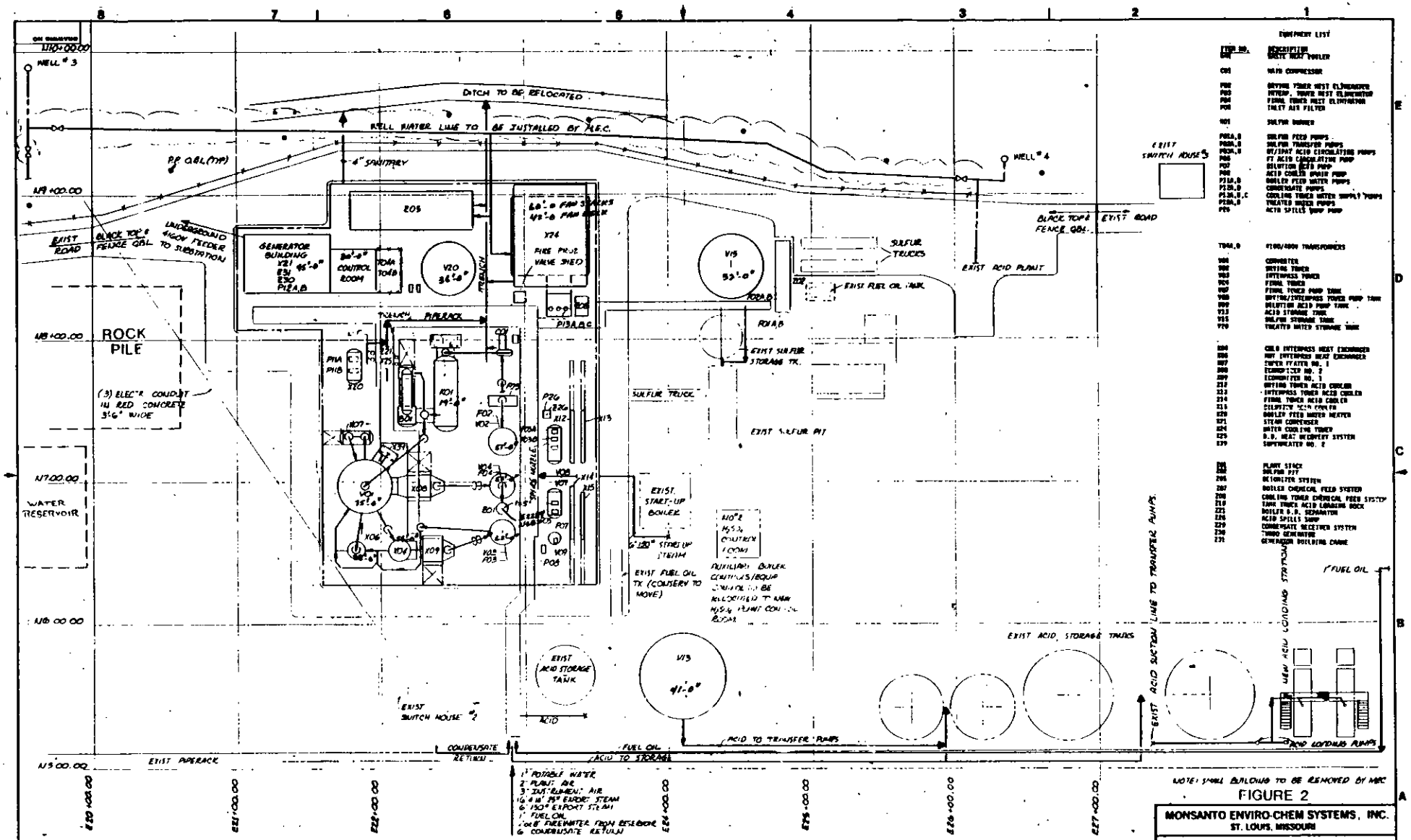


FIGURE 2

MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS, MISSOURI

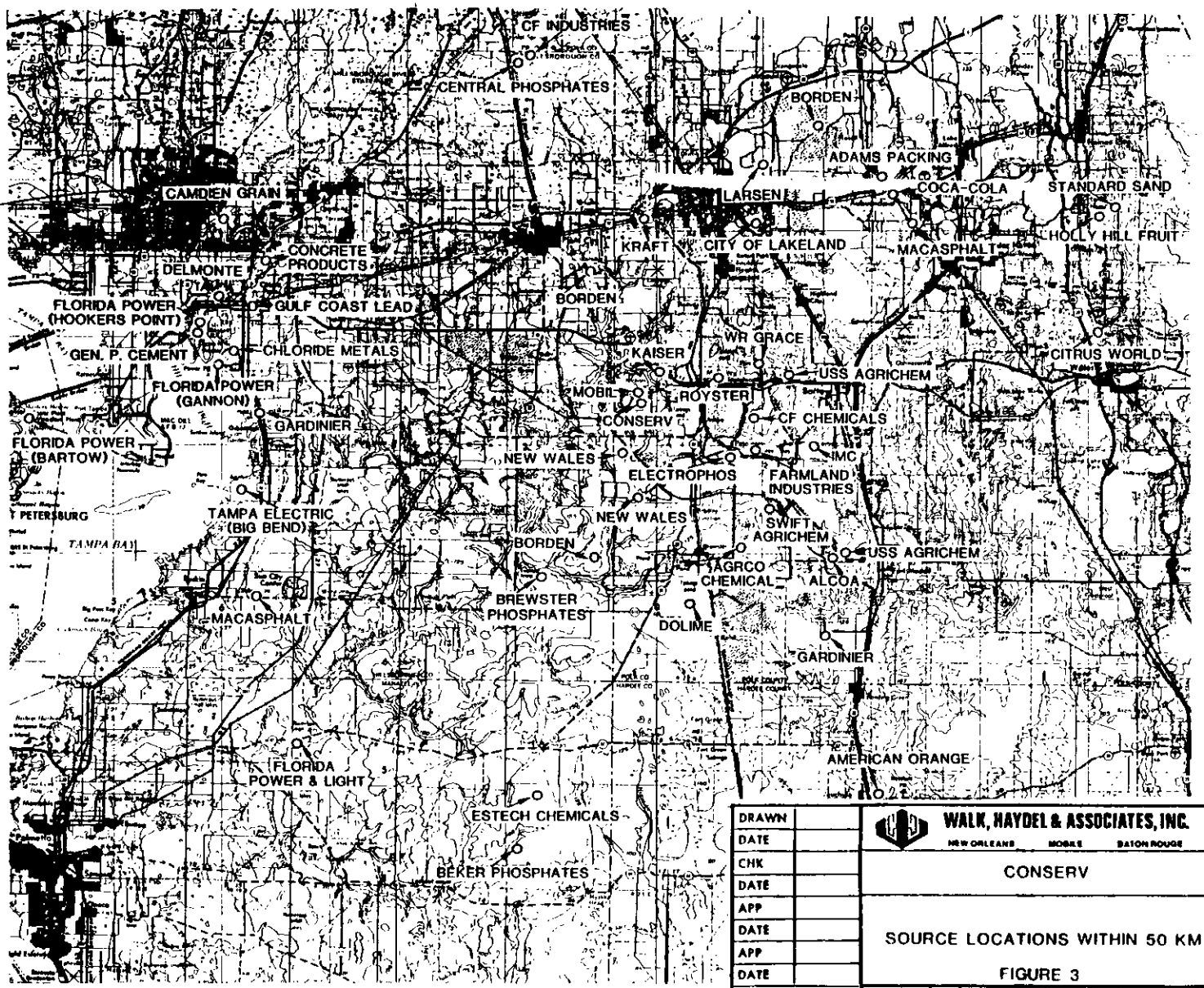
PLOT PLAN
CONSERV
NICHOLS FLA.

	BY	DATE	APP'D	DATE
DRAWN	DCS	4-11-81		
CHECKED				
SCALE	1" = 30'			

JOB NO. 2238
DRAWING NO. 301-102

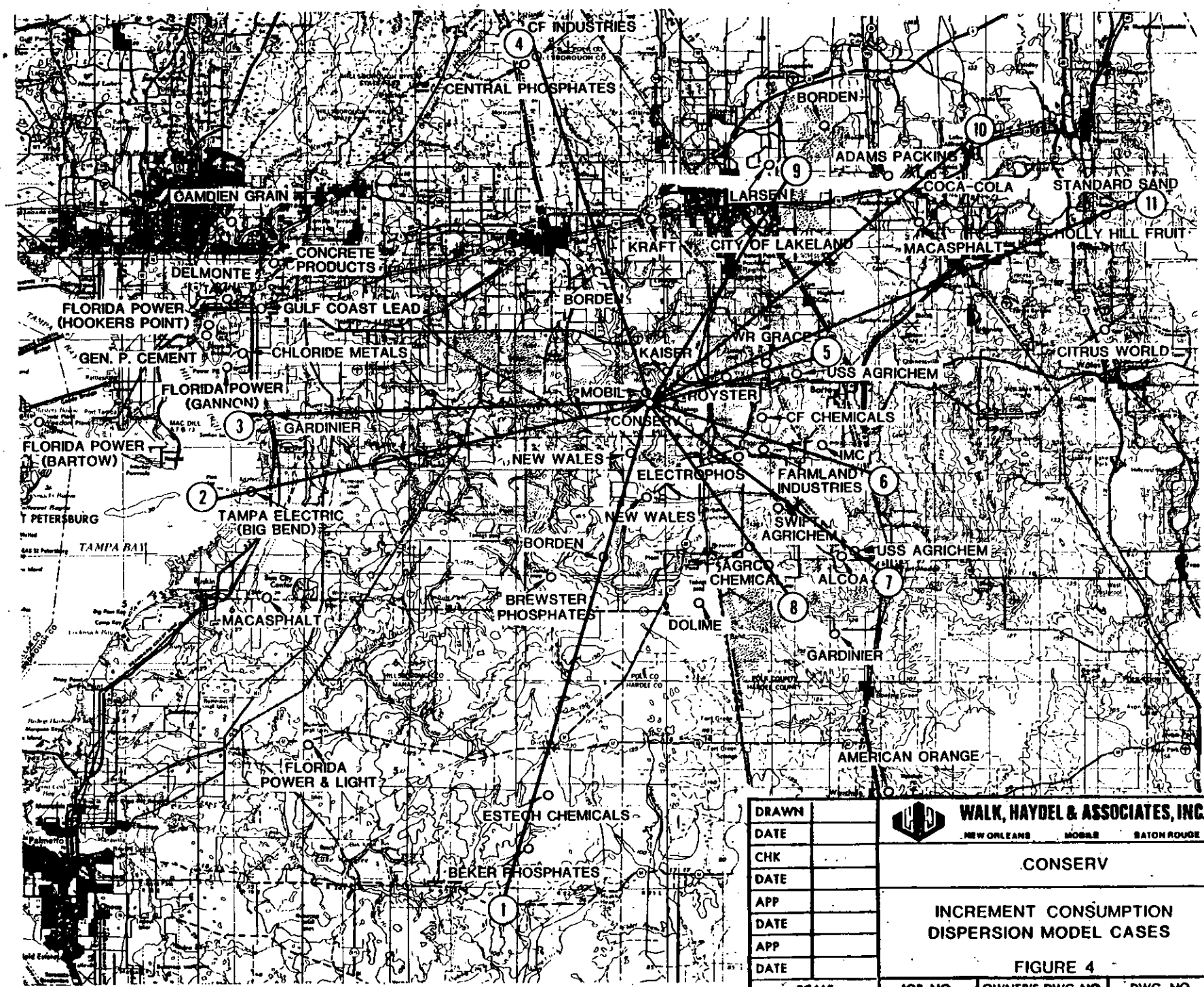
MOSANTO'S PERMISSION FOR USE OF DRAWING FOR PERMIT APPLICATION PURPOSES RECEIVED 4/10/81

CAMDEN



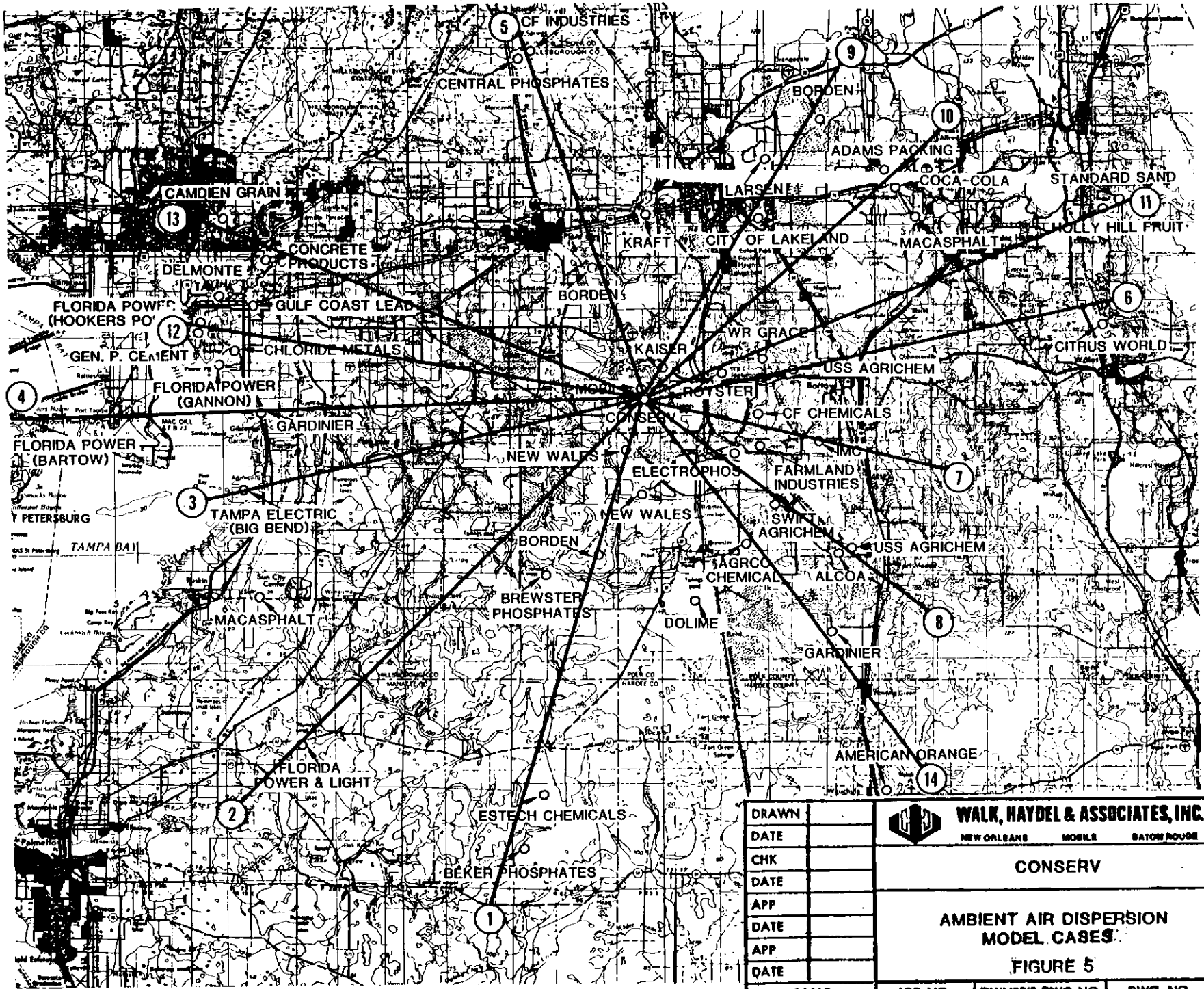
DRAWN		WALK, HAYDEL & ASSOCIATES, INC. NEW ORLEANS MOBILE BATON ROUGE
DATE		
CHK		CONSERV
DATE		
APP		SOURCE LOCATIONS WITHIN 50 KM
DATE		
APP		FIGURE 3
DATE		

SCALE	JOB NO.	OWNER'S DWG NO.	DWG NO.	REV
	2777.00			



CAMDEN

DRAWN		WALK, HAYDEL & ASSOCIATES, INC.	
DATE		NEW ORLEANS MOBILE BATON ROUGE	
CHK		CONSERV	
DATE			
APP		INCREMENT CONSUMPTION DISPERSION MODEL CASES	
DATE			
APP		FIGURE 4	
DATE			
SCALE		JOB NO. 2777.00	OWNER'S DWG NO.
			DWG NO.



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.	
DATE		NEW ORLEANS MOBILE BATON ROUGE	
CHK		CONSERV	
DATE			
APP		AMBIENT AIR DISPERSION MODEL CASES	
DATE		FIGURE 5	
APP			
DATE			
SCALE		JOB NO.	OWNER'S DWG NO.	DWG NO.	RE
		2777.00			

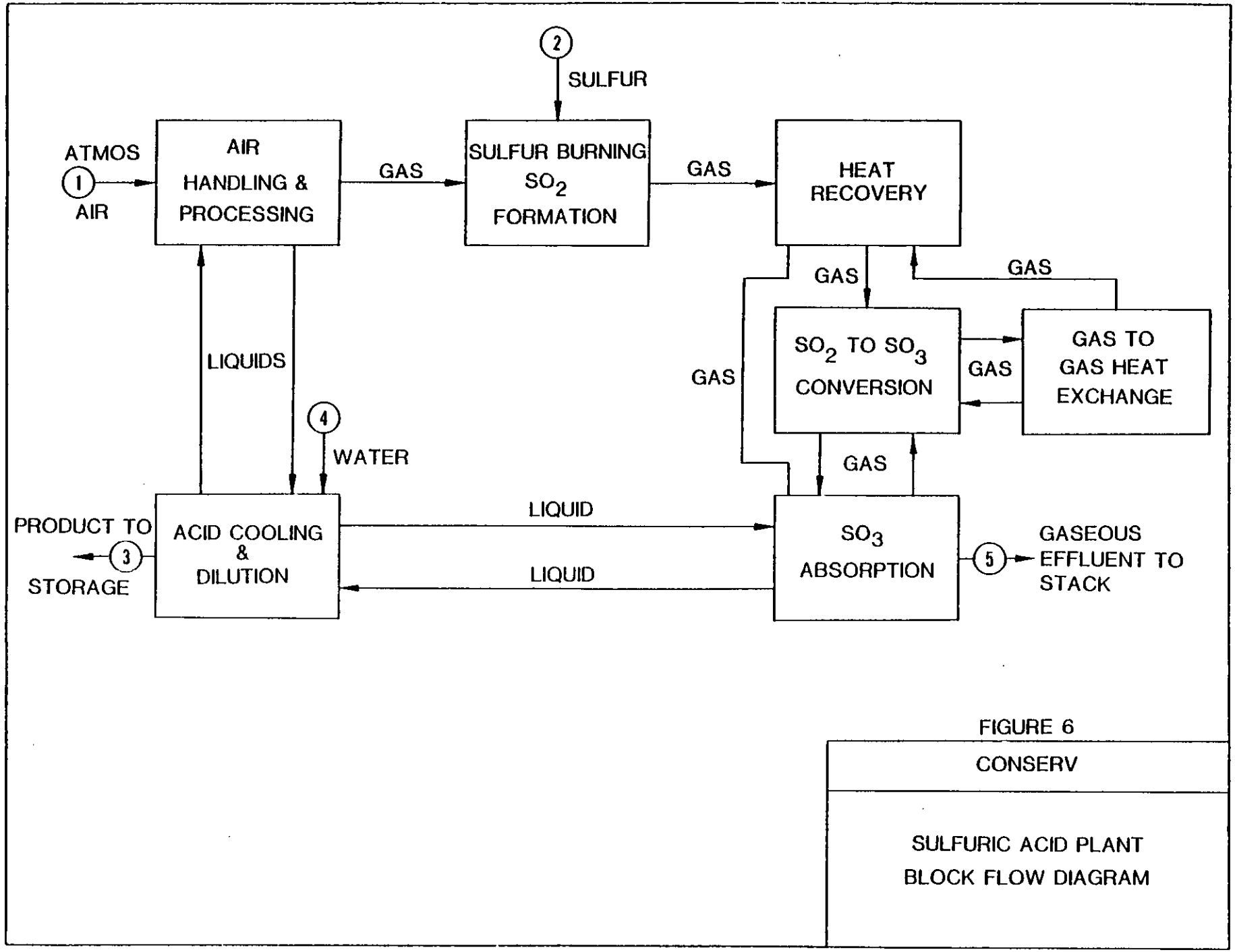


FIGURE 6

CONSERV

SULFURIC ACID PLANT
BLOCK FLOW DIAGRAM

APPENDIX C

APPLICATION TO CONSTRUCT AIR POLLUTION SOURCES

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: _____ [X] New[1] [ ] Existing[1]

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

COMPANY NAME: Conserv COUNTY: Polk

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) Sulfuric Acid Plant - Dual Absorption/Acid Mist Elim.

SOURCE LOCATION: Street P. O. Box 314 City Nichols

UTM: East 7398410 North 3084200

Latitude 82 ° 2 ' 0 "N Longitude 27 ° 55 ' 0 "W

APPLICANT NAME AND TITLE: Mr. R. E. Graf Vice President General Manager

APPLICANT ADDRESS: P. O. Box 314 Nichols, Florida 33863

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Conserv

I certify that the statements made in this application for a 2000 TPD Sulfuric Acid Plant 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: Ronald E Graf

R. E. Graf Vice President General Manager

Name and Title (Please Type)

Date: 4/13/81 Telephone No. 813-425-1164

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: Forrest E Dryden

Forrest E. Dryden

Name (Please Type)

(Affix Seal)

Walk, Haydel & Associates, Inc.

Company Name (Please Type)

600 Carondelet St., New Orleans, La. 70130

Mailing Address (Please Type)

Florida Registration No. 18696 Date: 4/13/81 Telephone No. 504-586-8111

[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.

Conserv is proposing to replace two existing sulfuric acid plants with a new double absorption unit equipped with mist eliminators. The sulfuric acid plant will meet Best Available Control Technology (BACT) and New Source Performance Standards and will comply with all applicable regulations(see attached report).

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

Start of Construction September 1981 Completion of Construction Mid 1982

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.)

Pollution controls are integral parts of the plants' design and individual cost estimates are not possible.

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 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe: ____

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? NA
   b. If yes, has "Lowest Achievable Emission Rate" been applied? NA
   c. If yes, list non-attainment pollutants.
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
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. See attached report

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Elemental Sulfur			54,900	2 in Figure 6
Water			28,680	4 in Figure 6
Air			5,958,360	1 in Figure 6

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

1. Total Process Input Rate (lbs/hr): 601920

2. Product Weight (lbs/hr): 173640 (98%)

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	
SO_2	333.4	1460	4 lbs/Ton Acid	333.4	Same		5
Acid Mist	12.5	54.8	.15 lb/Ton Acid	12.5	141.7*	621	5
NOx	50.8	222.5	N/A	N/A	50.8	222.5	5

*Per AP-42 (1.7 lb/Ton Acid)

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Dual Absorption Towers	SO_2	99.7%		Vendor Info
Monsanto Mist Eliminator	Acid Mist	99 %	< 10	Vendor Info

[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

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Not Applicable - N.A.			

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ 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.

Not Applicable

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

Stack Height: 150 ft. Stack Diameter: 7.5 ft.

Gas Flow Rate: 91531 ACFM Gas Exit Temperature: 182-185 °F.

Water Vapor Content: Not Available % Velocity: 34.53 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (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. See Report

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 Report

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Calculations in Report

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.). Not Applicable

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). Vendor Guarantee

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 Figure 6

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 Figure 3

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 Figures 1 and 2

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?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/Ton - Double Absorption
Acid Mist	0.15 lb/Ton

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

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/Ton - Double Absorption
Acid Mist	0.15 lb/Ton

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

Contaminant	Rate or Concentration
Sulfur Dioxide	4 lb/Ton
Acid Mist	0.15 lb/Ton

D. Describe the existing control and treatment technology (if any). Emission control technology is integral part of system design. Specific control device costs are not available.

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
Sulfur Dioxide	333.4 LB/HR
Acid Mist	12.5 LB/HR
Nitrogen Oxide	50.8 LB/HR

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: 150 ft. b. Diameter: 7.5 ft.

c. Flow Rate: 91531 ACFM d. Temperature: 182-185 °F

e. Velocity: 34.53 FPS

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

1. Same as D

a. Control Device:

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Useful 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:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy**:

h. Maintenance Costs:

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:

*Explain method of determining efficiency.

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

3.

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.

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: Sulfuric Acid System design by Monsanto Enviro-Chem Systems, Inc.

1. Control Device: Double Absorption/Mist Elimination
2. Efficiency*: 99.7 SO_2 to SO_3 Conversion
3. Capital Cost: Definitive costs not available
4. Life: 20 years
5. Operating Cost: Definitive costs not available
6. Energy: Not available
7. Maintenance Cost: Definitive costs not available
8. Manufacturer: Monsanto Enviro-Chem Systems, Inc.
9. Other locations where employed on similar processes: Similar acid plant technology used throughout the industry

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above. Vendor guarantee

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

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:

*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 NOT APPLICABLE - SEE REPORT

1. _____ no sites _____ TSP _____ ( ) SO^2* _____ 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 ____ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 1970 to 12 / 31 / 1974
month day year month day year

2. Surface data obtained from (location) Tampa

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

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

C. Computer Models Used

1. CRSTER NO Modified? If yes, attach description.

2. Industrial Source Complex NO Modified? If yes, attach description.

3. _____ 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. See Report

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	Not Applicable grams/sec
SO^2	41.99 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. See Report

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

*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.

The proposed acid plant will replace two older existing facilities. It will not change current operations at Conserv other than eliminate the need to import 500 tons/day of sulfuric acid. In addition, cogeneration features will reduce Conserv's dependency on outside power sources.

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. See Report

APPENDIX D

CALCULATIONS

BY MEN DATE 1/31/81 SUBJECT CONSERV' SHEET NO. 1 of
CHKD. BY DATE JOB NO. 2777

(DATA PER CONSERV)

[1] OLD H_2SO_4 PLANTS (750 tPD each)

SINGLE ABSORPTION / 8% SO_2 to CONVERTER
AMMONIA SCRUBBER
STACK Height (COMMON STACK) = 100 ft = 30.48 m
Diameter = 5.94 ft = 1.81 m
Temp. = 85 °F (1 plt) = 302 °K
= 100 °F (2 plt) = 311 °K
FLOW RATE = 57,600 ACFM (1 plant)
53.71 m^3/s = 113,800 ACFM (2 plants)

Measured SO_2 Rate = 120.83 lb/hr AVG. (1975-1980)
= 150.0 lb/hr WORST CASE
= 18.9 g/s

SO_2 = 3600.0 lb/DAY
= 657.0 TONS/YEAR } WORST CASE

RATE = 18.90 grams/SEC

FLUE CONCENTRATION for SO_2:

A) AVG.:

$$120.83 \frac{lb}{HR}\left(\frac{min}{113800\ ft^3}\right)\left(\frac{453.59 * 10^6\ \mu g}{lb}\right)\left(\frac{HR}{60\ min}\right)\left(\frac{35.3147\ ft^3}{m^3}\right)$$

SO_2 = .283 $* 10^6\ \mu g/m^3$

$$120.83 \frac{lb}{HR}\left(\frac{mole}{64\ lb}\right)\left(\frac{1\ HR}{60\ min}\right)\left(\frac{379.4\ ft^3}{lb\ mole}\right)\left(\frac{min}{113800\ ft^3}\right)\left(\frac{520}{545}\right)(10^6)$$

SO_2 = 100.1 PPM

(B) WORST CASE

$$150.0 \frac{lb}{HR}\left(\frac{min}{113{,}800\ ft^3}\right) \times 2.0697 \times 10^8 = .35 \times 10^6\ \mu g/m^3$$

$$150.0 \frac{lb}{HR} * \frac{min}{113{,}800\ ft^3} \times 9.427 \times 10^4 = 124.3\ PPM$$

BY MEN DATE 2/3/81 SUBJECT CONSERV SHEET NO. 10 of
CHKD. BY DATE JOB NO. 2777

NOx EMISSIONS

UNDER CONDITIONS STATED PER NSPS for sulfuric acid facilities 100 ppm OR less NOx should be expected. ASSUME WORST CASE.

100 PPM NOx

$$NO_x \frac{lb}{hr} = 100 / \left(\frac{lb\ mole}{46.01\ LB}\right)\left(\frac{hr}{60\ m}\right)\left(\frac{379.4\ ft^3}{lb\ mole}\right)\left(\frac{m.in}{113800}\right)\left(\frac{520}{545}\right)(10^6)$$

$= 86.78\ lb/hr \Rightarrow 10.94\ g/sec$

$= 2082.7\ lb/day$

$= 380.1\ TONS/YR$

CONCENTRATION

$$\mu g/m^3 = 86.78 \frac{lb}{hr}\left(\frac{m.in}{113800}\right)(2.6657 \times 10^8) = .204 \times 10^6$$

PPM = 100 OR LESS

ACID MIST

1979 AVG. = 18.14 LB/HR
1980 AVG. = 10.475 LB/HR
2 YR AVG. = 13.808 LB/HR
= 60.48 TONS/YEAR

BY MEN DATE 2/2/81 SUBJECT CONSEER SHEET NO. 2 of
CHKD. BY DATE JOB NO.

12 BOILER - 32 MM BTU/HR } STANDBY STEAM GENERATION
BABCOCK-WILCOX

STACK Height = 39 ft = 11.89 m (683 HR/YR)
Diameter = 3.2 ft = .98 m
TEMP. = 500°F = 533°K
FLUE VOL. RATE = 14,188 ACFM = 6.70 m³/s

FUEL = NO.2/6 Fuel oil @~2.5% S
1.452 *10⁵ BTU/GAL
ρ = 7.465 LB/GAL } BASED ON AVG. VALUES from AP-42

MAX fuel USAGE = 220 GAL/HR
AVG. " = 106 "

$$\text{MAX } SO_2 = 220 \frac{GAL}{HR} \times \left(7.465 \frac{LB}{GAL}\right)\left(.025 \frac{LB\ S}{LB\ OIL}\right)\left(\frac{2\ SO_2}{1\ S}\right) = 82.12 \frac{LB}{HR}$$
$$= 10.35\ g/s$$

$$\text{AVG. } SO_2 = 106 \frac{GAL}{HR} * (.37325) = 39.56\ LB/HR$$
$$= 4.98\ g/sec$$

MAX = 10.35 g/SEC

AVG = 4.98 g/SEC

A) MAX CONC.

$$82.12\ LB/HR \left(\frac{min}{14188\ ft^3}\right)\left(\frac{453.55 * 10^6\ \mu g}{LB}\right)\left(\frac{HR}{60\ min}\right)\left(\frac{35.3147\ ft^3}{m^3}\right)$$

$$= 1.55 * 10^6\ \mu g/m^3$$

$$PPM = 82.12 \frac{LB}{HR}\left(\frac{LB\ mole}{64\ LB}\right)\left(\frac{HR}{60\ min}\right)\left(\frac{379.4\ ft^3}{LB\ mole}\right)\left(\frac{min}{14188\ ft^3}\right)(10^6)\left(\frac{520}{960}\right)$$

$$= 309.8$$

B) AVG CONC.

$$\mu g/m^3 = 39.56 \frac{LB}{HR} * 1.8817 * 10^4 = .744 * 10^6\ \mu g/m^3$$

$$PPM = 35.56 * 3.772 = 149.2$$

$$\text{VELOCITY} = 14188 \frac{ft^3}{min} * \frac{min}{60\ sec}\left(\frac{4}{\pi(3.2)^2}\right) = 29.4\ ft/sec$$
$$= \underline{8.96\ m/sec}$$

$$14188 \frac{ft^3}{min} * \frac{min}{60\ sec} * \frac{m^3}{35.3147\ ft^3} = 6.7\ m^3/sec$$

[3] BOILER - 21 MM BTU/HR SCOTCH } STANDBY STEAM GENERATOR

STACK Height = 27 ft = 8.23 m (1093 HR/YR)
Diameter = 2.0 ft = .61 m
Temp. = 500°F = 533°K
FLUE RATE = 8463 ACFM = 3.99 m^3/sec

FUEL = NO. 2 & FUEL OIL @ ~2.5 #S
$1.452 * 10^5$ BTU/GAL
ρ = 7.465 LB/GAL

MAX FUEL USAGE = 144.6 GAL/HR
AVG FUEL USAGE = 106 GAL/HR

$$\text{MAX } SO_2 = 144.6 \frac{GAL}{HR}\left(7.465 \frac{LB}{GAL}\right)\left(.025\ \#S\right)\left(2 \frac{SO_2}{S}\right) = 53.97\ LB/HR$$
$$= \underline{6.80\ g/sec}$$

$$\text{AVG } SO_2 = 106 \frac{GAL}{HR} * .37325 = 39.56\ LB/HR$$
$$= \underline{4.98\ g/sec}$$

MAX = 6.80 g/sec
AVG = 4.98 g/sec

(A) MAX CONC.

$$\mu g/m3 = 53.97 \frac{LB}{HR} * 3.1546 \times 10^7 = 1.7 * 10^6\ \mu g/m3$$

$$PPM = 53.97 \frac{LB}{HR} * 6.3237 = 341.3$$

B) AVG CONC

$\mu g/m^3 = 39.56 \frac{lb}{hr}\left(3.1540 * 10^4\right) = 1.25 * 10^6 \mu g/m3$

PPM = $39.56 \frac{lb}{hr} * 6.3237 = 250.2$

VELOCITY: $8463 \frac{ft^3}{min} * \frac{min}{60 sec}\left(\frac{4}{\pi(2)^2}\right) = 44.90 ft/sec$
$= 13.69 m/sec$

$8463 \frac{ft3}{min} * \frac{min}{60 sec} * \frac{m^3}{35.3147 ft^3} = 3.99 m^3/sec$

4 ROCK DRYER - 85 TPH Feed
45 MM BTU/Hr
STACK Height = 80 ft = 24.38 m
Diameter = 7.6 ft = 2.32 m
Temp. = 130°F = 327 °K
FLUE RATE = 44,600 ACFM = 21.05 m^3/sec

FUEL = NO. 2/6 FUEL OIL @ 2.58 #'s

138,400 BTU/GAL.
Q = 7.465

MAX FUEL USAGE = 325 GAL/Hr
AVG fuel USAGE = 257 GAL/Hr

MAX SO_2 = $325 \frac{GAL}{hr}\left(7.465 \frac{lb}{GAL}\right)(.0258)(2) = 125.2 lb/Hr$
$= 15.8 g/sec$

AVG SO_2 = $257 \frac{GAL}{hr}(7.465)(.0258)(2) = 98.99 lb/Hr$
$= 12.47 g/sec$

MAX = 15.77 g/SEC
AVG = 12.47 g/SEC

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A) MAX CONC.

$\mu g/m^3 = 125.2 \frac{lb}{hr}\left(\frac{min}{44{,}600\ ft^3}\right)\left(\frac{453.59 \times 10^6\ \mu g}{lb}\right)\left(\frac{hr}{60\ min}\right)\left(\frac{55.3147\ ft^3}{min}\right)$

$= .749 \times 10^6\ \mu g/m^3$

$PPM = 125.2 \frac{lb}{hr}\left(\frac{lb\text{-mole}}{64\ lb}\right)\left(\frac{1\ hr}{60\ min}\right)\left(\frac{379.4\ ft^3}{lb\text{-mole}}\right)\left(\frac{min}{44600}\right)\left(10^6\right)\left(\frac{520}{550}\right)$

$= 244.5$

(B) AVG. CONC

$\mu g/m^3 = 98.59 \frac{lb}{hr} * (5985.9) = .593 \times 10^6\ \mu g/m^3$

$PPM = 98.99 \frac{lb}{hr}(1.9525) = 193.3$

VELOCITY: $\frac{44600\ ft^3}{min} * \frac{min}{60\ sec} * \left(\frac{4}{\pi(7.6)^2}\right) = 16.39\ ft/sec = 5.0\ m/sec$

$44{,}600 \frac{ft^3}{min} * \frac{min}{60\ sec} * \frac{m^3}{35.3147\ ft^3} = 21.05\ m^3/sec$

15 DAP Plt. Dryer - 20 MM BTU/hr

STACK Height = 80 ft = 24.38 m

Diameter = 3.52 ft = 1.07 m

TEMP. = 140 °F = 333 °K

FLUE RATE = 44,000 ACFM = 20.77 m^3/sec

FUEL = NO.2/6 Fuel Oil @ 0.36 % S

138,000 BTU/GAL ρ = 7.46

MAX Fuel USAGE = 145 GAL/hr

AVG Fuel USAGE = 35.4 GAL/hr

MAX SO_2 = $145 \frac{GAL}{hr}(7.46)(.0036)(2) = 7.79$ lb/hr = .98 g/sec

AVG. SO_2 = $35.4 \frac{GAL}{hr}(7.46)(.0036)(2) = 1.90$ lb/hr = .24 g/sec

(A) MAX CONC.:

$\mu g/m^3 = 7.79 \frac{lb}{hr}\left(\frac{min}{44{,}000\ ft^3}\right)(2.6657 \times 10^8) = .047 \times 10^6\ \mu g/m^3$

$PPM = 7.79 \frac{lb}{hr}\left(\frac{min}{44000\ ft^3}\right)(8.5628 \times 10^4) = 15.2$

B) AUG. CONC.

$\mu g/m^3 = 1.9 \frac{lb}{hr}\left(\frac{min}{44000 ft^3}\right)(2.6697 * 10^8) = .012 \times 10^6$

$PPM = 1.9 \frac{lb}{hr}\left(\frac{min}{44000 ft^3}\right)(8.5628 * 10^4) = 3.70$

VELOCITY = 75.35 ft/sec
22.97 m/sec } 20.77 m^3/sec

[6] NEW H_2SO_4 PLANT

(DATA per MONSANTO ENVIRO-CHEM)

DUAL ABSORPTION / ACID MIST ELIMINATOR
120 % SO_2 to the converter / 99.7 % CONVERSION
STACK Height : 150 ft = 45.72 m
DIAMETER : 7.5 ft = 2.286 m
FLUE RATE : 91531 ACFM = 43.198 m^3/SEC
69,819 SCFM
VELOCITY : 10.525 m/SEC
TEMP : 182 - 185 °F = 358° K (185°F)
SO_2 = 4 LB / TON 100 % H_2SO_4 produced
ACID MIST = 0.15 LBS / TON 100 % H_2SO_4 produced
2000 STPD AS 96 % ACID (100 % H_2SO_4 BASIS)

SO_2 EMISSIONS :

A) MAX RATE (PER NSPS)

$4 \frac{LB}{TON\ Acid}\left(\frac{173640\ LB\ Hr\ Acid}{2000\ LB/TON}\right)(.96) = 333.39$ LB/Hr
= 41.99 g/SEC
= 1460 TONS/YR
(365 DAYS)

B) CONCENTRATION @ max Rates

$\mu g/m^3 = 333.39 \frac{LB}{hr}\left(\frac{min}{91531}\right)\left(\frac{453.59 * 10^6 \mu g}{LB}\right)\left(\frac{hr}{60\ min}\right)\left(\frac{35.3147 ft^3}{m^3}\right)$

$= .97 \times 10^6 \mu g/m^3$

PPM : $333.39 \frac{LB}{Hr}\left(\frac{Lb\ mole}{64\ LB}\right)\left(\frac{Hr}{60\ m}\right)\left(\frac{379.4\ ft^3}{LB\ mole}\right)\left(\frac{min}{69819\ SCF}\right)(10^6)$

$= 471.8$

ACID MIST EMISSIONS :

A) MAX RATE (Per NSPS)

$\frac{.015\ LB}{TON\ ACID} \times 173640 \frac{LB}{HR}\left(.96\right)\left(\frac{1}{2000}\right) = 12.50 \frac{LB}{HR}$

$= 54.76$ TONS/YR

NO_x EMISSIONS

Per NSPS for sulfuric ACID plants, conditions of Lower Furnace temperatures (Less than 2000°F) And Low excess Air, NO_x emissions Are usually Less than 100 ppm.

$NO_x \frac{LB}{Hr} = 100 \Big/ \left(\frac{LB\ mole}{46.01\ LB}\right)\left(\frac{Hr}{60\ m}\right)\left(\frac{379.4\ ft^3}{LB\ mole}\right)\left(\frac{min}{69819}\right)(10^6)$

$= 50.80 \frac{LB}{HR}$

$= 222.5$ TONS/YR

} MAX EXPECTED

CONCENTRATION

$\mu g/m^3 = 50.80 \frac{Lb}{Hr}\left(\frac{min}{91531\ ft^3}\right)(2.6697 \times 10^8)$

$= .148 \times 10^6\ \mu g/m^3$

PPM = 100 or Less

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(1) SO_2 EMISSIONS OFFSET (@ EMISSIONS LIMIT)

EXISTING 1500 TPD SO_2 RATE = 2900.0 LB/DAY
= 529.25 TON/YEAR

PROPOSED 2000 TPD SO_2 RATE = 8000 LB/DAY
= 1460 TONS/YEAR

NET SO_2 = 1460 - 529.25
= 930.75 TON/YEAR @ LIMIT

(2) NOx EMISSIONS OFFSET (WORST CASE)

EXISTING 1500 TPD NOx RATE = 2082.7 LB/DAY
= 380.1 TONS/YR

PROPROSED 2000 TPD NOx RATE = 1219.2 LB/DAY
= 222.5 TONS/YEAR

NET NOx :

222.5 - 380.1 = -157.60 TONS/YEAR Decrease

when the proposed facility is operated vs. the existing plant emissions. The ACTUAL decrease occurs due to less AIR being required IN the proposed plant (therefore less N_2 which can be fixed).

(3) ACID MIST

EXISTING 1500 TPD ACID mist RATE = 60.48 TPY

PROPOSED 2000 TPD ACID mist RATE = 54.76 TPY

NET ACID MIST = 54.76 - 60.48
= -5.72 TPY

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MOBIL CHEMICAL CO.
NICHOLS, FLA.

UTM: 598.0 E
3085.3 N

PER LARRY GEORGE (METEOROLOGIST) @ DER FLORIDA - MOBIL SOURCES must be modeled with CONSERV IN SOME of the model EXERCISES.

II DRYER NO.1 - 97.5 MM BTU/HR

STACK HEIGHT = 85 ft = 25.91 m
DIAMETER = 7.5 ft = 2.29 m
TEMP = 160°F = 344°K
FLUE RATE = 112,000 ACFM = 52.86 m^3/sec
= 93935 SCFM

V = 42.2 ft/sec = 12.86 m/sec

FUEL = NO.6 OIL @ ~2.5% S
AVG. FUEL USAGE = 585 GPH
MAX FUEL USAGE = 650 GPH

SO_2 EMISSIONS:

A) MAX:

$650 \frac{GAL}{HR} \times 7.88 \frac{LB}{GAL} \times .025 \times 2 =$ 256.1 LB/HR
= 32.27 g/sec

B) AVG

$585 \times 7.88 \times .025 \times 2 =$ 230.5 LB/HR
= 29.04 g/sec

[2] DRYER NO. 2 - 87. MM BTU/HR

STACK Height : 85 ft = 25.91 m
Diameter : 7.5 ft = 2.29 m
Temp. : 163 °F = 346 °K
FLUE RATE : 76,677 ACFM = 36.19 m³/sec
: 64,000 SCFM

Fuel = NO. 6 @ ~2.5 % S

AVG. Fuel RATE = 510 GAL/HR
MAX " " = 580

SO_2 - EMISSION RATES

A) MAX

580 GAL/HR X .394 = 228.52 LB/HR = 28.79 g/sec

B) AVG

510 GAL/HR X .394 = 200.9 LB/HR = 25.31 g/sec

[3] DRYER - NO. 3 - 64 MM BTU/HR

STACK Height = 100 ft = 30.48 m
Diameter = 4.8 ft = 1.46 m
Temp = 192 °F = 362 °K
FLUE RATE = 27460 ACFM = 12.96 m³/sec
= 21,500 SCFM

Fuel = NO. 6 @ 2.5 % S
AVG. Fuel RATE = 148 GAL/HR
MAX FUEL RATE = 427 GAL/HR

SO_2 Emission RATES

A) MAX = 427 GAL/HR X .394 = 168 LB/HR = 21.17 g/sec

B) AVG = 148 GAL/HR X .394 = 58.31 LB/HR = 7.35 g/sec

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[4] DRYER NO. 4 (NEW SOURCE)
AC 2/12/80
93.75 MM BTU/HR

STACK Height = 85 ft = 25.91 m
Diameter = 7.5 ft = 2.29 m
Temp. = 150 °F = 339 °K
V = 50 ft/sec = 15.24 m/sec
FLUE RATE = 140,000 ACFM = 66.07 m³/sec
= 119,344 SCFM

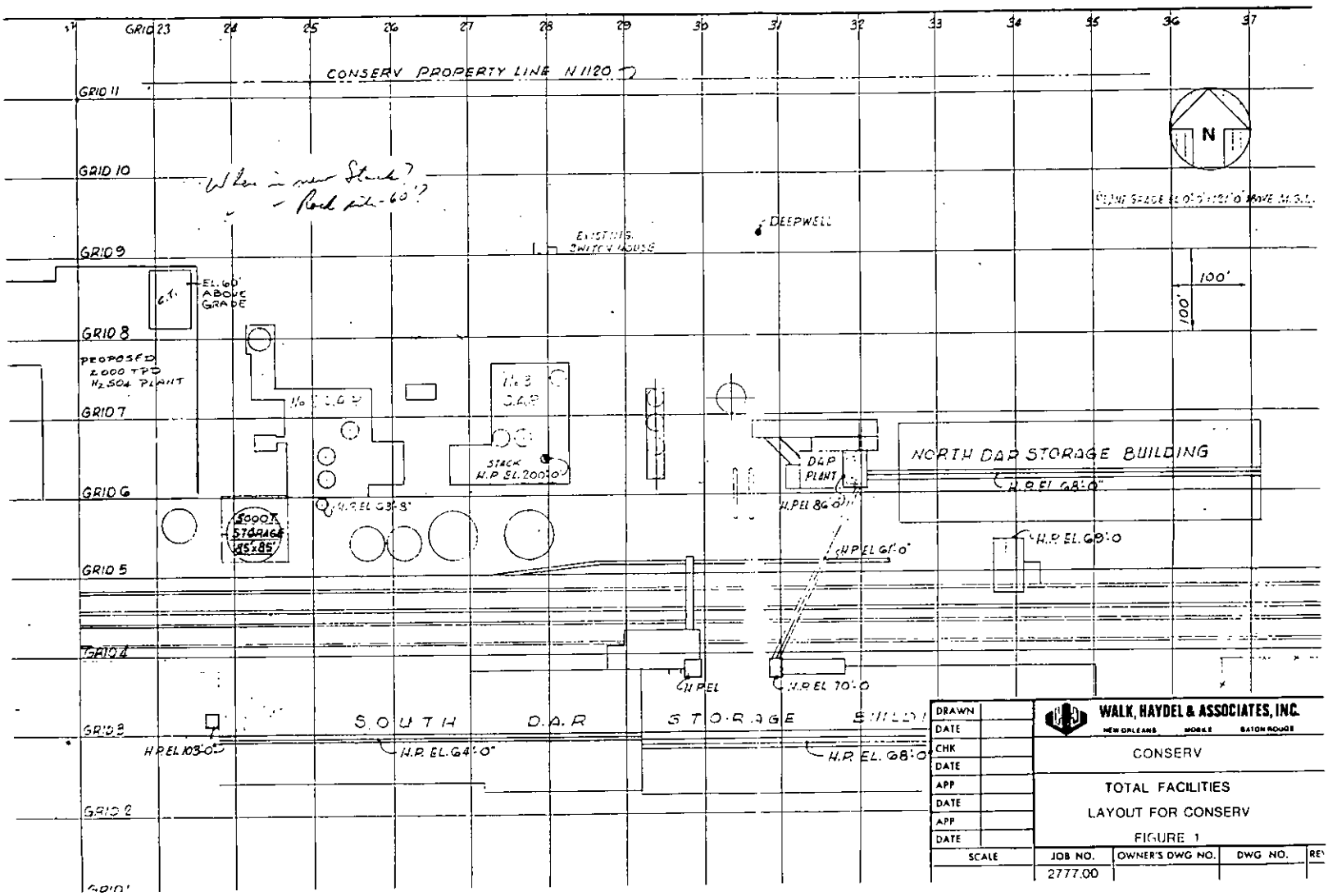
MAX SO_2 = 260 #S/HR
ACTUAL = 19.4 #S/HR 2.44 g/SEC

NO. 6 Fuel oil @ 2.5 % S

[5] CALCINER /W SCRUBBER

STACK Height = 100 ft = 30.48 m
Diameter = 4.48 ft = 1.37 m
Temp = 150 °F = 339 °K
ACFM = 38119 = 17.99 m³/sec

SO_2 = 107 #S/HR = 13.48 g/sec
After scrubber



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.	
DATE		NEW ORLEANS MOBILE BATON ROUGE	
CHK		CONSERV	
DATE			
APP		TOTAL FACILITIES	
DATE		LAYOUT FOR CONSERV	
APP		FIGURE 1	
DATE			
SCALE	JOB NO. 2777.00	OWNER'S DWG NO.	DWG NO.

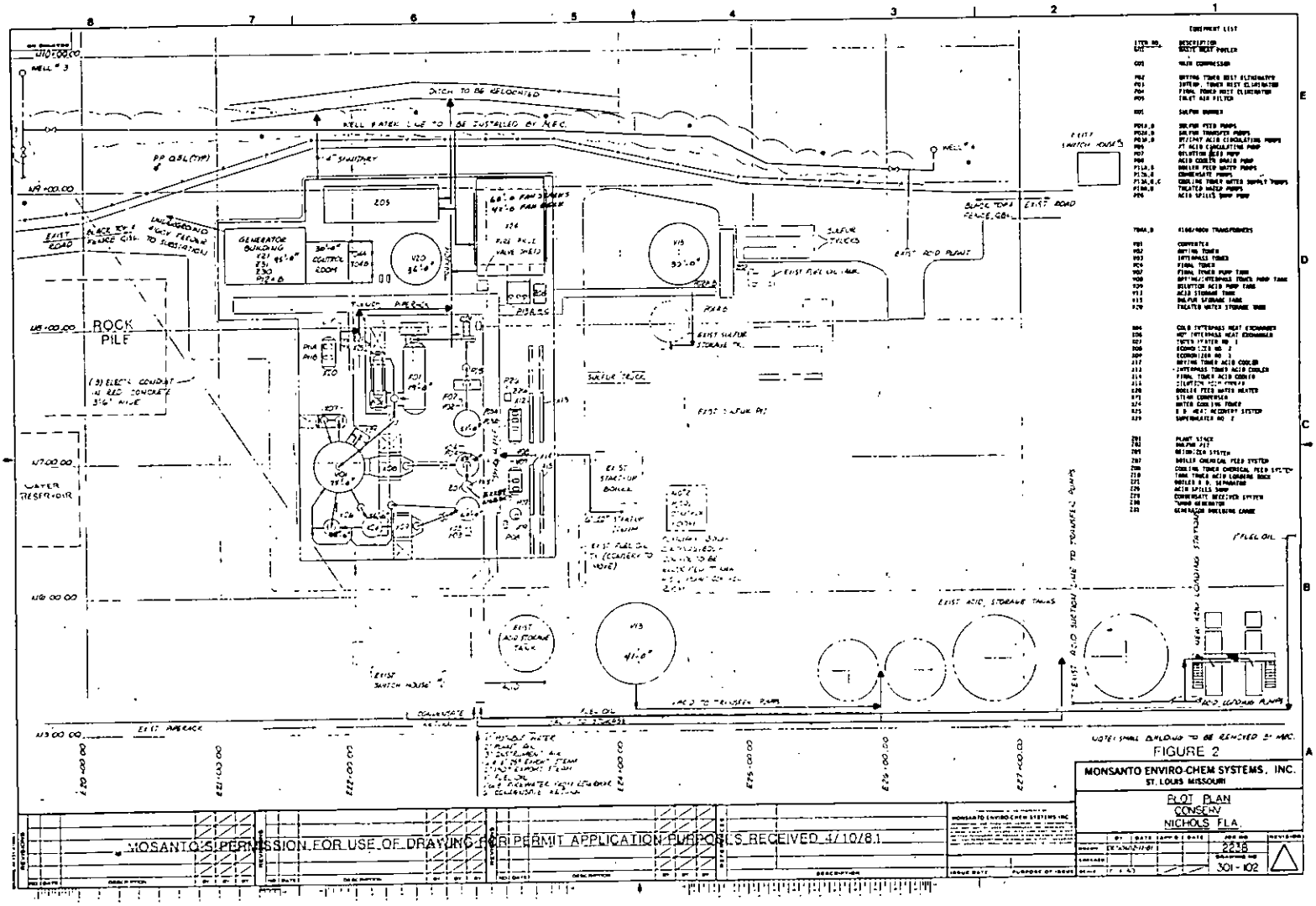


FIGURE 2

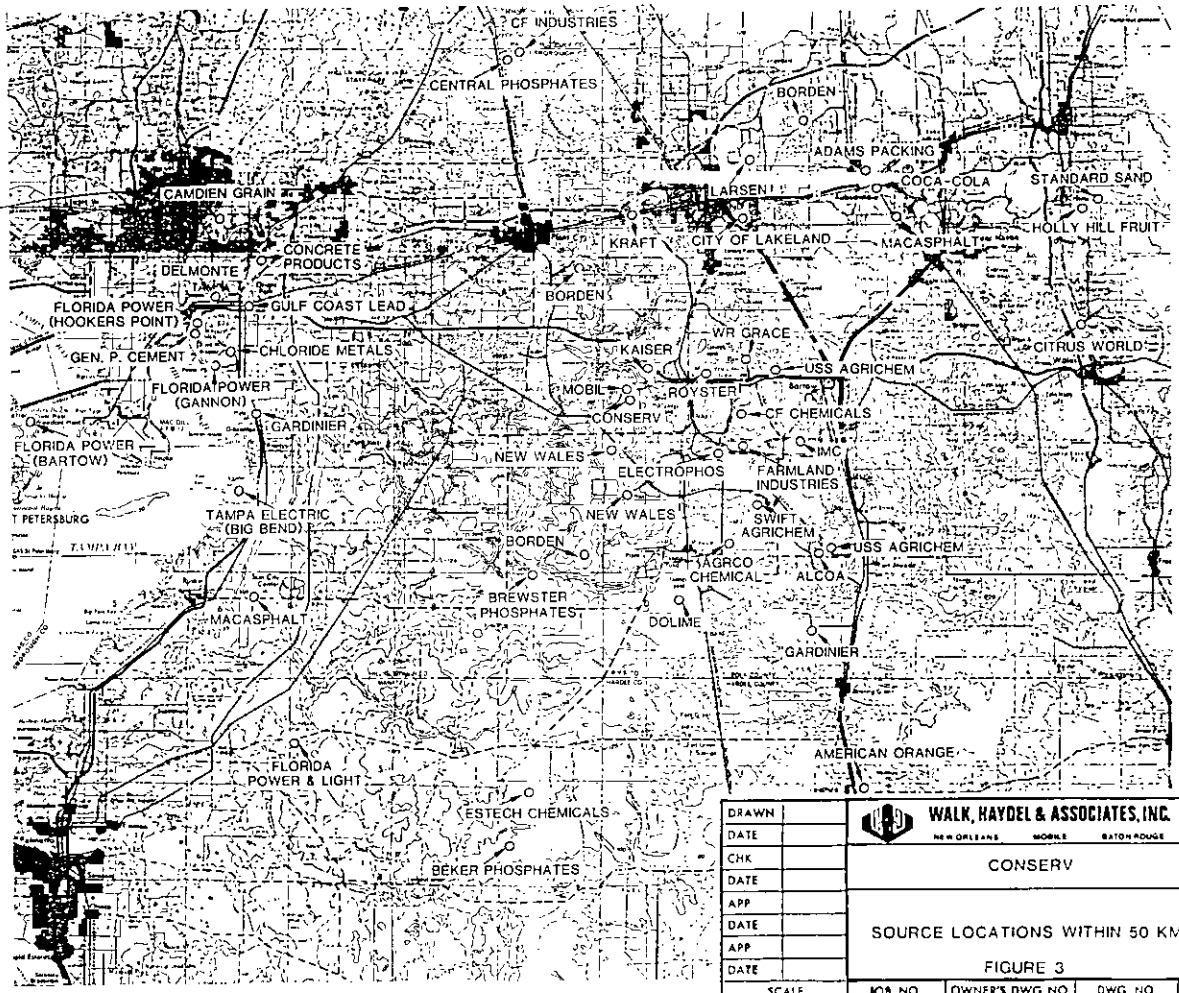
MONSANTO ENVIRO-CHEM SYSTEMS, INC.
ST. LOUIS MISSOURI

PLOT PLAN
CONSERV
NICHOLS, FLA.

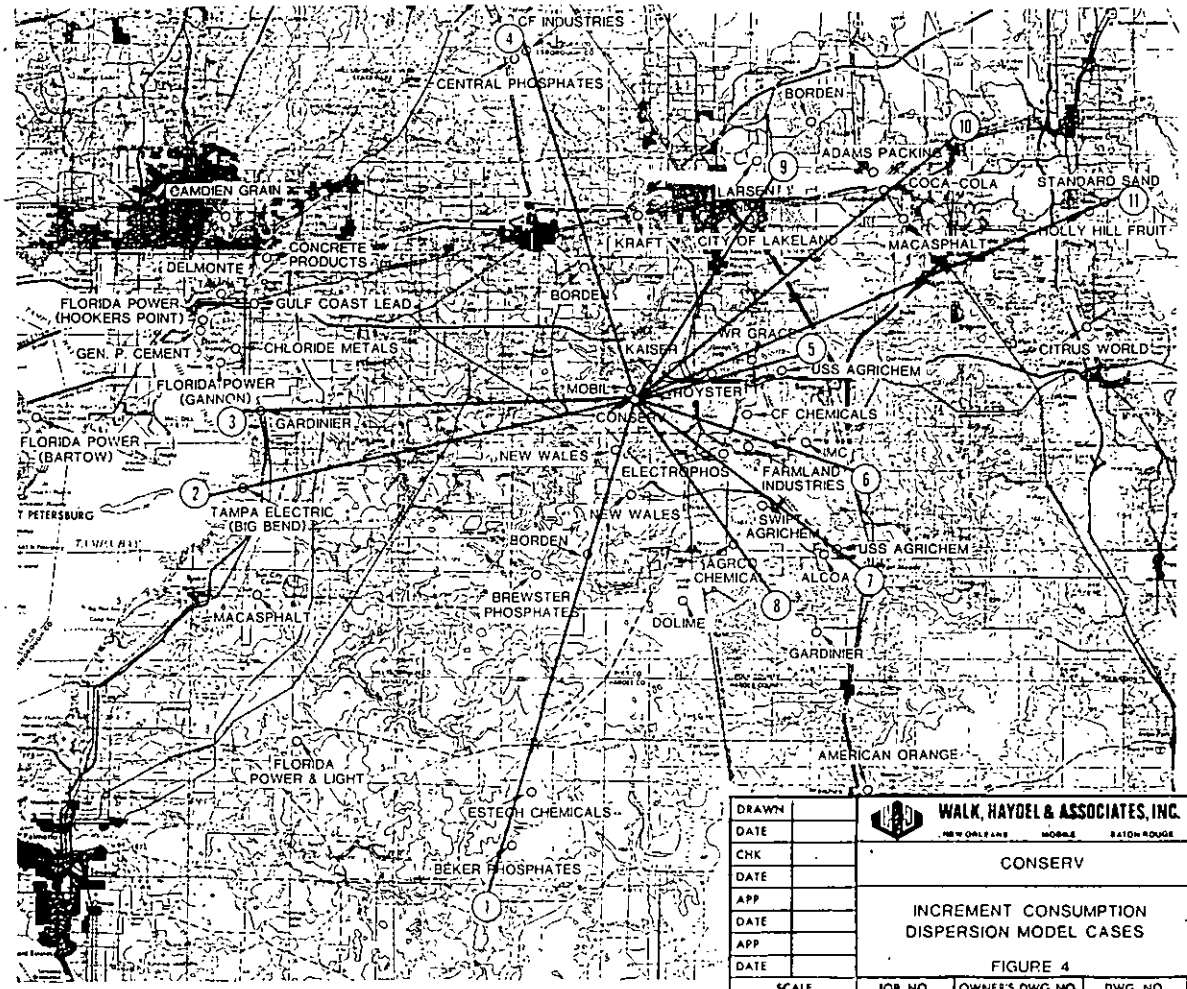
2238

301 - 102

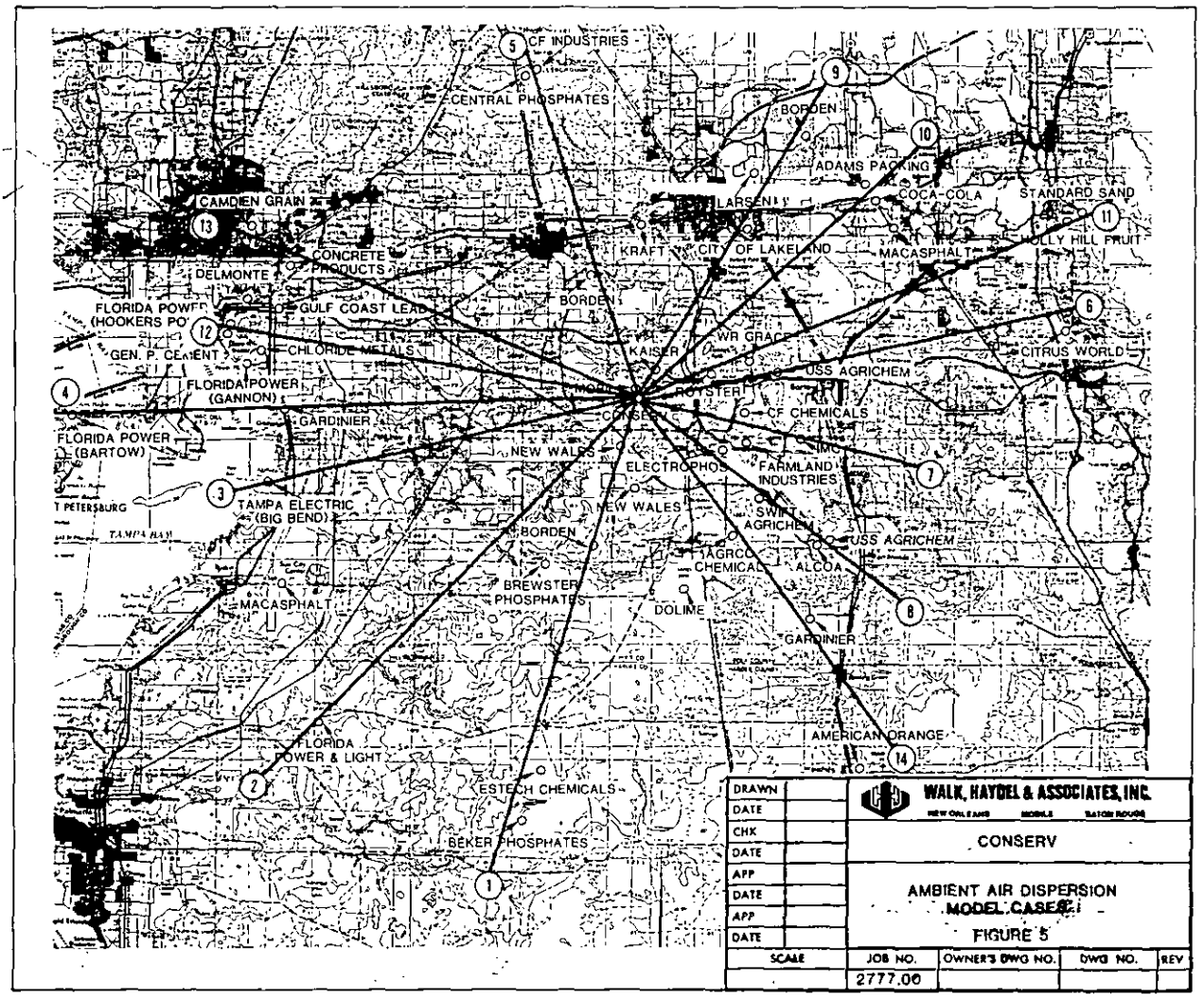
CAMDEN



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.	
DATE		NEW ORLEANS MOBILE BATON ROUGE	
CHK		CONSERV	
DATE			
APP		SOURCE LOCATIONS WITHIN 50 KM	
DATE			
APP		FIGURE 3	
DATE			
SCALE		JOB NO. 2777.00	OWNER'S DWG NO. / DWG NO. / REV



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.		
DATE		NEW ORLEANS MOBILE BATON ROUGE		
CHK		CONSERV		
DATE				
APP		INCREMENT CONSUMPTION DISPERSION MODEL CASES		
DATE				
APP				
DATE		FIGURE 4		
SCALE	JOB NO.	OWNER'S DWG NO.	DWG NO.	REV
	2777.00			



DRAWN		WALK, HAYDEL & ASSOCIATES, INC.		
DATE		NEW ORLEANS MOBILE BATON ROUGE		
CHK		CONSERV		
DATE				
APP		AMBIENT AIR DISPERSION MODEL CASE C		
DATE				
APP		FIGURE 5		
DATE				
SCALE	JOB NO.	OWNER'S DWG NO.	DWG NO.	REV
	2777.00			