OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florida 32096, Telephone 904 397-8101

February 25, 1987

Mr. Bill Thomas
Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-8241

RE: "A" and "B" Sulfuric Acid Plants
"C" and "D" application fees

Dear Mr. Thomas:

We wish to thank you and Larry George for your time on February 13th. I know that your schedule was very tight that day.

As requested, the following figures reflect the operating hours, for "A" and "B" Sulfuric Acid Plants, excerpted from the Annual Fuels and Emissions Report for 1984, 1985 and 1986:

Year	Plant	Operating Hours
1984	A	7841
	B	8434
1985	A	4697
	B	6496
1986	A	8479
	B	8363

As you can see, 1985 was a typical year in that the plants did not operate the normal 8000 + average hours per year.

The reduced operating time for 1985, reflected in the report, was due to very sluggish market conditions.

I have also included the necessary checks for the "C" and "D" application fees. If you or Larry have any questions or need additional information, please contact either John Koogler or me.

We appreciate your expeditious handling of this matter as it will result in benefits to both Occidental and the environment.

Sincerely,

Marvin Miller

W. Marvin Miller
Environmental Coordinator

psb

enclosure

OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS, INC.

A SUBSIDIARY OF OCCIDENTAL CHEMICAL CORPORATION
POST OFFICE BOX 300 WHITE SPRINGS, FLORIDA 32096

CHECK NO. 010034

MESA UNITED BANK
OF GRAND JUNCTION
GRAND JUNCTION, COLORADO 81501

Dep# 1717

82-91/1021

DATE: 2/20/87 PAY PAY TO AND 00 CTS $**100.00**

TO THE ORDER OF Department of Environmental Reg.
2600 Blair Stone Road
Tallahassee, FL

OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS, INC.
NOT VALID AFTER ~~180~~ DAYS
BY _____
AS DISBURSING AGENT(S) FOR THE COMPANY

⑈000010034⑈ ⑆102100918⑆ 001 8550⑈

OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS, INC.

A SUBSIDIARY OF OCCIDENTAL CHEMICAL CORPORATION
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⑈000010035⑈ ⑆102100918⑆ 001 8550⑈

DETACH BEFORE DEPOSITING

DATE	THIS CHECK IS IN PAYMENT OF THE FOLLOWING		AMOUNT
2/20/87	Permit application for "D" Sulfuric Renewal	Co. 020200	$100.00

DER

01031

FEB 27 1987

AQM

OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS, INC. WHITE SPRINGS, FL 32096

CHECK NO. 010035

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No. 76150

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Occidental Chemical Agricultural Prod. Date March 4, 1987

Address P.O. Box 300 White Springs FL 32096 Dollars $ 200.00

Applicant Name & Address Same as above

Source of Revenue

Revenue Code 001031 Application Number AC 24-01270 AC 24-131271

By Patricia G. Adams

AC 24-131271

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803

DER

FEB 27 1987

BAQM

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ALEX SENKEVICH
DISTRICT MANAGER

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Double Absorption Sulfuric Acid [X] New[1] [ ] Existing[1]

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

COMPANY NAME: OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS INC. COUNTY: HAMILTON

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Sulfuric Acid Plant "C"

SOURCE LOCATION: Street SR 137 City

UTM: East (17) 328,320 North 3,368,820

Latitude ___° ___' ___"N Longitude ___° ___' ___"W

APPLICANT NAME AND TITLE: Occidental Chemical Agricultural Products Inc.

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Agricultural Product Inc.

I certify that the statements made in this application for a 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 contro facilities in such a manner as to comply with the provision of Chapter 403, Florid Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferab and I will promptly notify the department upon sale or legal transfer of the permitte establishment.

*Attach letter of authorization

Signed: Hudson Smith

Hudson C. Smith, General Manager
Name and Title (Please Type)

Date: 2/13/87 Telephone No. (904) 397-8101

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 hav been designed/examined by me and found to be in conformity with modern engineerin principles applicable to the treatment and disposal of pollutants characterized in th permit application. There is reasonable assurance, in my professional judgment, tha

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

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 _____

John B. Koogler, Ph.D., PE
Name (Please Type)

KOOGLER & ASSOCIATES
Company Name (Please Type)

1213 N.W. 6th Street
Gainesville, Florida 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 2/11/87 Telephone No. (904) 377-5822

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.

The production rates of the C and D sulfuric acid plants are being increased from 1800 to 2000 tons per day of 100% acid. The increased SO2, acid mist and NOx emissions will be offset by reducing the permitted production capacities of the A and B sulfuric acid plants from 1000 to 900 tons per day (see Attachment 1).

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

Start of Construction March 1987 Completion of Construction April 1987

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.)

Existing control system (double absorption towers and high efficiency mist eliminators) will be adequate to control emissions at the higher rate.

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

A024-34851 issued 12/23/81 and expiring 12/23/86

A024-125595 issued 12/12/86 and expiring 12/23/91

A024-2548 revised 3/1/76 and expiring 1/31/81
AC24-2131 issued 11/6/93 and expiring 6/30/75

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No) Major modification with ofsetting emissions

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. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

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

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

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

See Attachment 1

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		
Sulfur	Ash	App. 0.005%	54,586	

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

1. Total Process Input Rate (lbs/hr): 54,586 (sulfur)

2. Product Weight (lbs/hr): 179.211 or 93% H2SO4

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Sulfur Dioxide	333.3	1460	17-2.600(2)(b)	333.3	333.3	1460	2
H2SO4 mist	12.5	55	17-2.600(2)(b)	12.5	225	985	2
VE	10%		17-2.600(2)(b)	10%			

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Double Absorption	SO2	99.7%	NA	Design & test
Contact H2SO4 Parsons				
Plant				
Brink ES mist	H2SO4 mist	94%	0-10	Tests
eliminators				

E. Fuels NOT APPLICABLE

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--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 _____ Maximum _____

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

NONE

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

Stack Height: 150 ft. Stack Diameter: 9.0 ft.

Gas Flow Rate: 112,750 ACFM 93,750 DSCFM Gas Exit Temperature: 175 °F.

Water Vapor Content: 0 % Velocity: 29.5 FPS

SECTION IV: INCINERATOR INFORMATION

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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

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.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS
(SEE ATTACHMENTS 2-5)

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

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.

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

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, design pressure drop, etc.)

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).

6. An 8 1/2" 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.

7. An 8 1/2" 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).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. 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
(NOT APPLICABLE)

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

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

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

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]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
(NOT APPLICABLE)

A. Company Monitored Data

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.

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

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. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ 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.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

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

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

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.

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 1

The increased emissions of SO2, acid mist and NOx resulting from increasing the capacities of the C and D sulfuric acid plants will be offset by reducing the production rates, and hence emissions, from the A and B sulfuric acid plants.

EMISSION RATE INCREASES

C and D as permitted under federally enforceable permit conditions at 1800 tpd

SO2: Hourly = 1800 tpd/24 hr/day x 4 lb/ton
= 300.0 lb/hr

Annual = 300 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 1314 tpy

MIST: Hourly = 1800 tpd/24 hr/day x 0.15 lb/ton
= 11.2 lb/hr

Annual = 11.2 lb/hr x 8760 hr/yr x 2000 lb/ton
= 49.3 tpy

NOx: at 67500 dscf/ton of acid and 2.1×10^{-6} lb NOx per dscf

Hourly = 1800/24 tph x 67500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 10.6 lb/hr

Annual = 10.6 x 8760/2000
= 46.6 tpy

C and D as proposed at 2000 tpd

SO2: Hourly = 2000 tpd/24 x 4 lb/ton
= 333.3 lb/hr.

Annual = 333.3 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 1460 tpy

MIST: Hourly = 2000 tpd/24 x 0.15 lb/ton
= 12.5 lb/hr.

Annual = 12.5 x 8760/2000
= 54.7 tpy

NOx: Hourly = 2000 tpd/24 x 67500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 11.8 lb/hr

Annual = 11.8 lb/hr x 8760/2000
= 51.7 tpy

Emission Rate Increase for C and D

SO2: = 1460 - 1314
= 146 tpy, each plant

MIST: = 54.7 - 49.3
= 5.4 tpy, each plant

NOx: = 51.7 - 46.6
= 5.1 tpy, each plant

EMISSION RATE DECREASES

A and B as permitted at 1000 tpd

SO2: Hourly = 1000 tpd/24 hr/day x 29.0 lb/ton
= 1208 lb/hr

Annual = 1208 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 5293 tpy

MIST: Hourly = 1000 tpd/24 hr/day x 0.5 lb/ton
= 20.8 lb/hr

Annual = 20.8 x 8760/2000
= 91.3 tpy

NOx: at 97500 dscf/ton of acid and 2.1×10^{-6} lb NOx per dscf

Hourly = 1000/24 tph x 97500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 8.5 lb/hr

Annual = 8.5 x 8760/2000
= 37.2 tpy

A and B as proposed at 950 tpd

SO2: Hourly = 950 tpd/24 x 29 lb/ton
= 1148 lb/hr.

Annual = 1148 x 8760/2000
= 5028 tpy

MIST: Hourly = 950/24 tph x 0.5 lb/ton
= 19.8 lb/hr.

Annual = 19.8 x 8760/2000
= 86.7 tpy

NOx: Hourly = 950/24 tpy x 97000 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 8.1 lb/hr

Annual = 8.1 x 8760/2000
= 35.3 tpy

Emission Rate Reduction for A and B

SO2: = 5028 - 5293
= -265 tpy, each plant

MIST: = 86.7 - 91.3
= -4.6 tpy, each plant

NOx: = 35.3 - 37.2
= 1.9 tpy, each plant

NET EMISSION RATE CHANGES

Pollutant	C and D Increase (tpy)	A and B Decrease (tpy)	Net Change (tpy)	Significant Change (1) (tpy)
SO2	+292	-530	-238	40
MIST	+10.8	-9.2	+1.6	7
NOx	+10.2	-3.8	+6.4	40

(1) 17-2.500(2)(e)2, FAC

ATTACHMENT 2

CALCULATION FOR SECTION III A, B, C, AND D

PRODUCT: Sulfuric Acid as 93% H_2SO_4

PRODUCT RATE: 2,000 Short tons per day (STPD) of 100% H_2SO_4 as 93% H_2SO_4 -or-

179.211 lbs/hr (2,000/0.93 x 2,000/24) of 93% Sulfuric Acid

PROCESS LOSSES: 0.005% equivalent to ash content of sulfur (consider negligible). Recovery is 99.7% equivalent to emission of 4.0 pounds SO_2 per ton of 100% H_2SO_4 produced.

PROCESS INPUT:

SULFUR: 2,000 STPD of 100% H_2SO_4 equivalent to 653 STPD of sulfur (2,000 x 32/98) which at an efficiency of 99.7% requires 655 STPD of sulfur (653/0.997) -or-

54.586 lbs/hr (655 x 2,000/24)

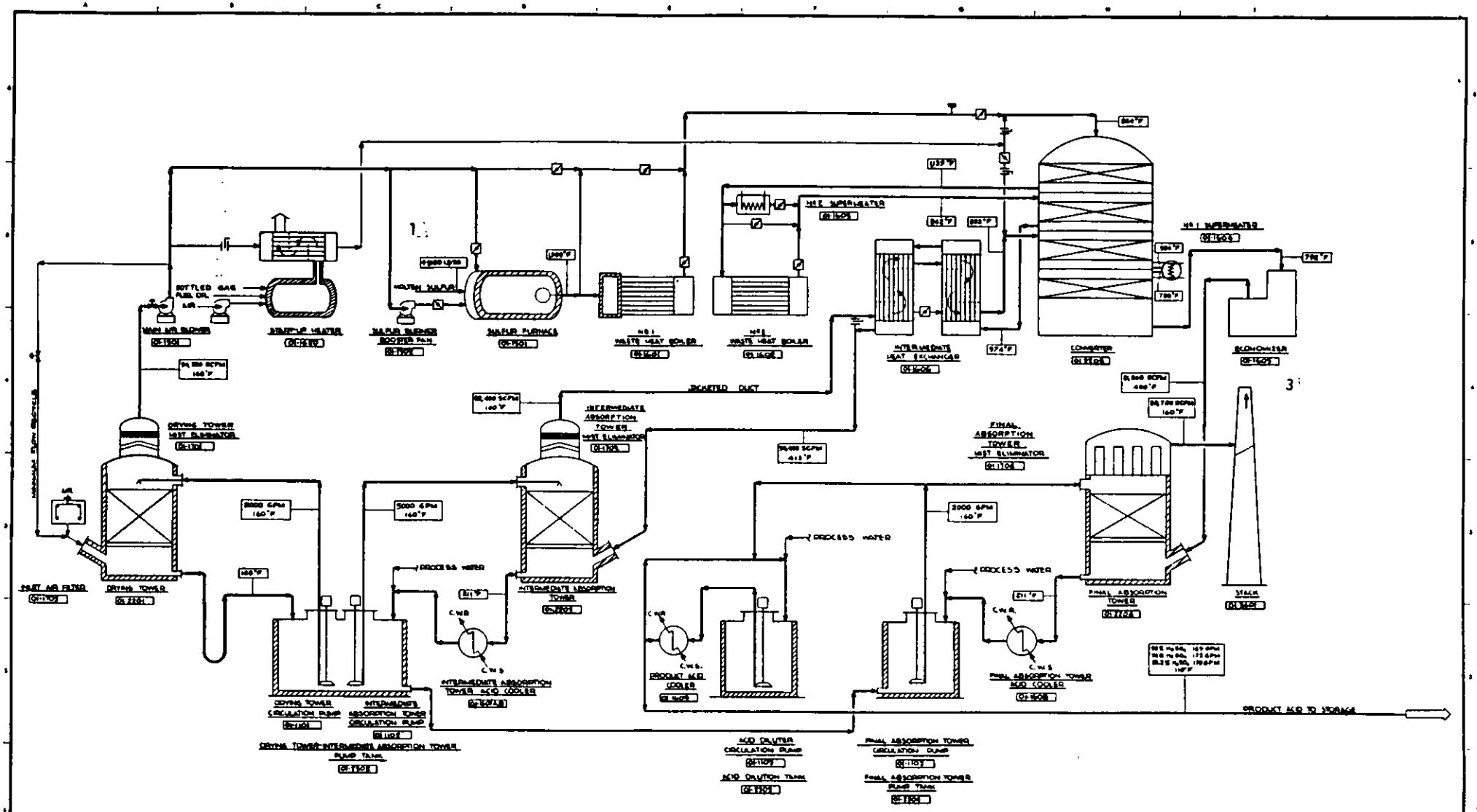
EMISSIONS:

SULFUR DIOXIDE: 333.3 lbs/hr (4 lb SO_2/ton 100% H_2SO_4 produced x 2,000 STPD/24) -or-

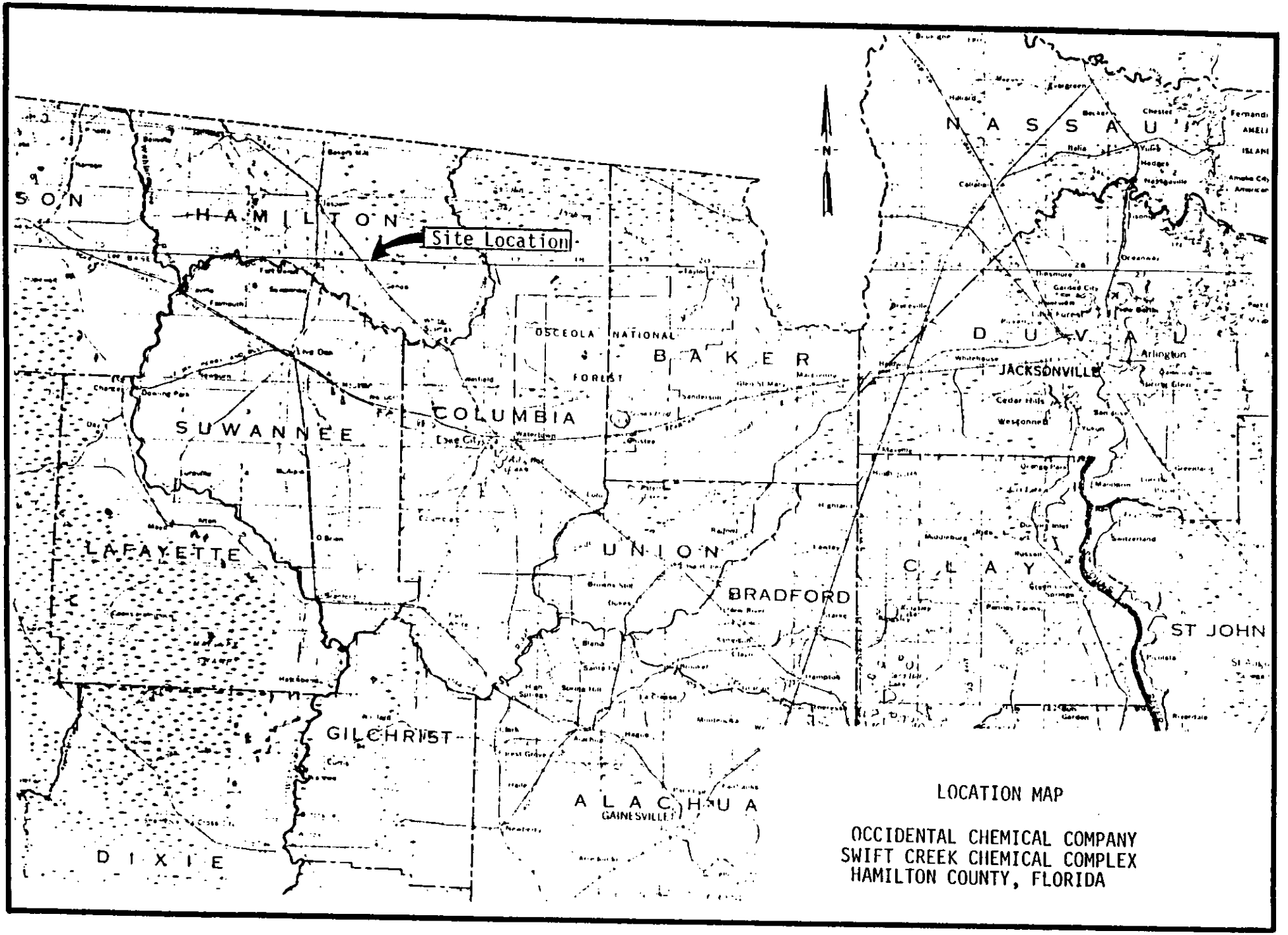
1.460 STPY (333.3 x 8,760/2,000)

H_2SO_4 MIST: 12.5 lbs/hr (0.15 lb H_2SO_4 Mist/ton 100% H_2SO_4 produced x 2,000 STPD/24) -or-

54.7 STPY (12.5 x 8,760/2,000)



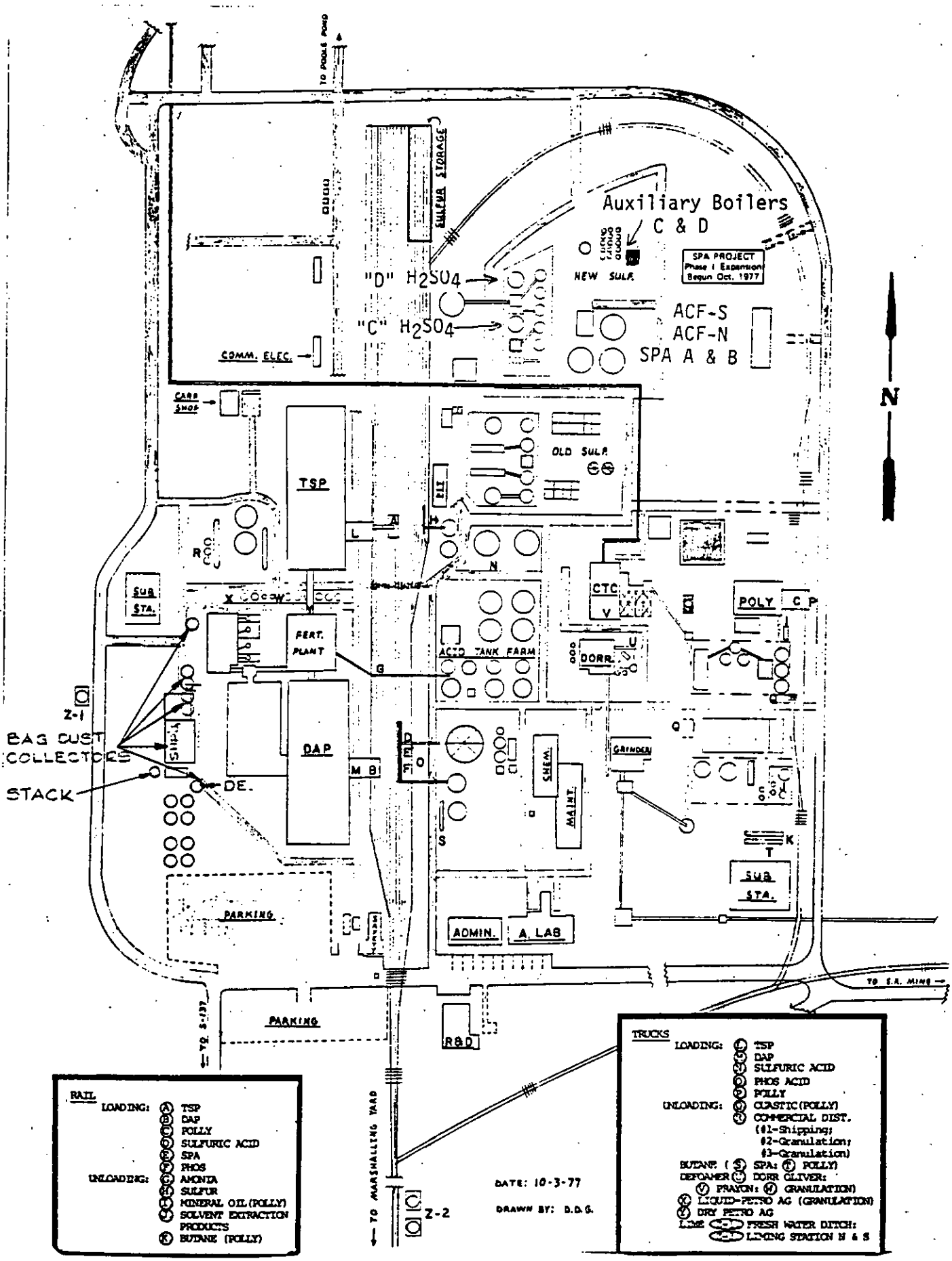
ATTACHMENT 3



LOCATION MAP

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

ATTACHMENT 4


TO POOLE POND
SULFUR STORAGE
Auxiliary Boilers C & D
SPA PROJECT Phase I Expansion Begun Oct. 1977
NEW SULF.
"D" H_2SO_4
"C" H_2SO_4
ACF-S
ACF-N
SPA A & B
COMM. ELEC.
CARB SHOP
OLD SULF.
TSP
ELEC.
SUB STA.
FERT. PLANT
ACID TANK FARM
CTC
DORR.
POLY
C P
Z-1
BAG DUST COLLECTORS
STACK
DE.
DAP
M B
SHEM.
MAINT.
GRINDER
SUB STA.
PARKING
ADMIN.
A. LAB
TO S.R. MINE
TO S-137
PARKING
R&D
TO MARSHALLING YARD
Z-2
N
RAIL
LOADING: TSP, DAP, POLLY, SULFURIC ACID, SPA, PHOS
UNLOADING: AMONIA, SULFUR, MINERAL OIL (POLLY), SOLVENT EXTRACTION PRODUCTS, BUTANE (POLLY)
TRUCKS
LOADING: TSP, DAP, SULFURIC ACID, PHOS ACID, POLLY
UNLOADING: CAUSTIC (POLLY), COMMERCIAL DIST. (#1-Shipping; #2-Granulation; #3-Granulation)
BUTANE (POLLY) SPA: (POLLY)
DEFOAMER DORR OLIVER: PRAYON: GRANULATION)
LIQUID-PETRO AG (GRANULATION)
DRY PETRO AG
LIME FRESH WATER DITCH: LINING STATION N & S
DATE: 10-3-77
DRAWN BY: D.D.G.

AC 24-131270

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803

DER

FEB 27 1987

BAQM

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY
ALEX SENKEVICH
DISTRICT MANAGER

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Double Absorption Sulfuric Acid [X] New[1] [ ] Existing[1]

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

COMPANY NAME: OCCIDENTAL CHEMICAL AGRICULTURAL PRODUCTS INC. COUNTY: HAMILTON

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Sulfuric Acid Plant "D"

SOURCE LOCATION: Street SR 137 City

UTM: East (17) 328,320 North 3,368,820

Latitude ____° ____' ____"N Longitude ____° ____' ____"W

APPLICANT NAME AND TITLE: Occidental Chemical Agricultural Products Inc.

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Agricultural Product Inc.

I certify that the statements made in this application for a 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: Hudson C. Smith

Hudson C. Smith, General Manager
Name and Title (Please Type)

Date: 2/13/87 Telephone No. (904) 397-8101

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

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

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 _____

John B. Koogler, Ph.D., P.E.
Name (Please Type)

KOOGLER & ASSOCIATES
Company Name (Please Type)

1213 N.W. 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 2/11/87 Telephone No. (904) 377-5822

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.

The production rates of the C and D sulfuric acid plants are being increased from 1800 to 2000 tons per day of 100% acid. The increased SO2, acid mist and NOx emissions will be offset by reducing the permitted production capacities of the A and B sulfuric acid plants from 1000 to 900 tons per day (see Attachment1).

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

Start of Construction March 1987 Completion of Construction April 1987

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.)

Existing control system (double absorption towers and high efficiency mist eliminators) will be adequate to control emissions at the higher rate.

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

A024-107480 issued 8/22/85 and expiring 8/26/90

A024-34185 issued 1/15/81 and expiring 9/30/85

A024-2485 issued 10/9/75 and expiring 9/30/80; AC24-2132 issued 11/6/73 and expiring

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No) Major modification with ofsetting emissions

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. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

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

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

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

See Attachment 1

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		
Sulfur	Ash	App. 0.005%	54,586	

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

1. Total Process Input Rate (lbs/hr): 54,586 (sulfur)

2. Product Weight (lbs/hr): 179.211 or 93% H2SO4

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Sulfur Dioxide	333.3	1460	17-2.600(2)(b)	333.3	333.3	1460	2
H2SO4 mist	12.5	55	17-2.600(2)(b)	12.5	225	985	2
VE	10%		17-2.600(2)(b)	10%			

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Double Absorption	SO2	99.7%	NA	Design & test
Contact H2SO4 Parsons				
Plant				
Brink ES mist	H2SO4 mist	94%	0-10	Tests
eliminators				

E. Fuels NOT APPLICABLE

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--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 _____ Maximum _____

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

NONE

_____

_____

_____

_____

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

Stack Height: 150 ft. Stack Diameter: 9.0 ft.

Gas Flow Rate: 112,750 ACFM 93,750 DSCFM Gas Exit Temperature: 175 °F.

Water Vapor Content: 0 % Velocity: 29.5 FPS

SECTION IV: INCINERATOR INFORMATION

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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

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.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS
(SEE ATTACHMENTS 2-5)

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

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.

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

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, design pressure drop, etc.)

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).

6. An 8 1/2" 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.

7. An 8 1/2" 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).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. 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
(NOT APPLICABLE)

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

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F.

e. Velocity: FPS

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

1.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] 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:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]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
(NOT APPLICABLE)

A. Company Monitored Data

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.

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

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. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ 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.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

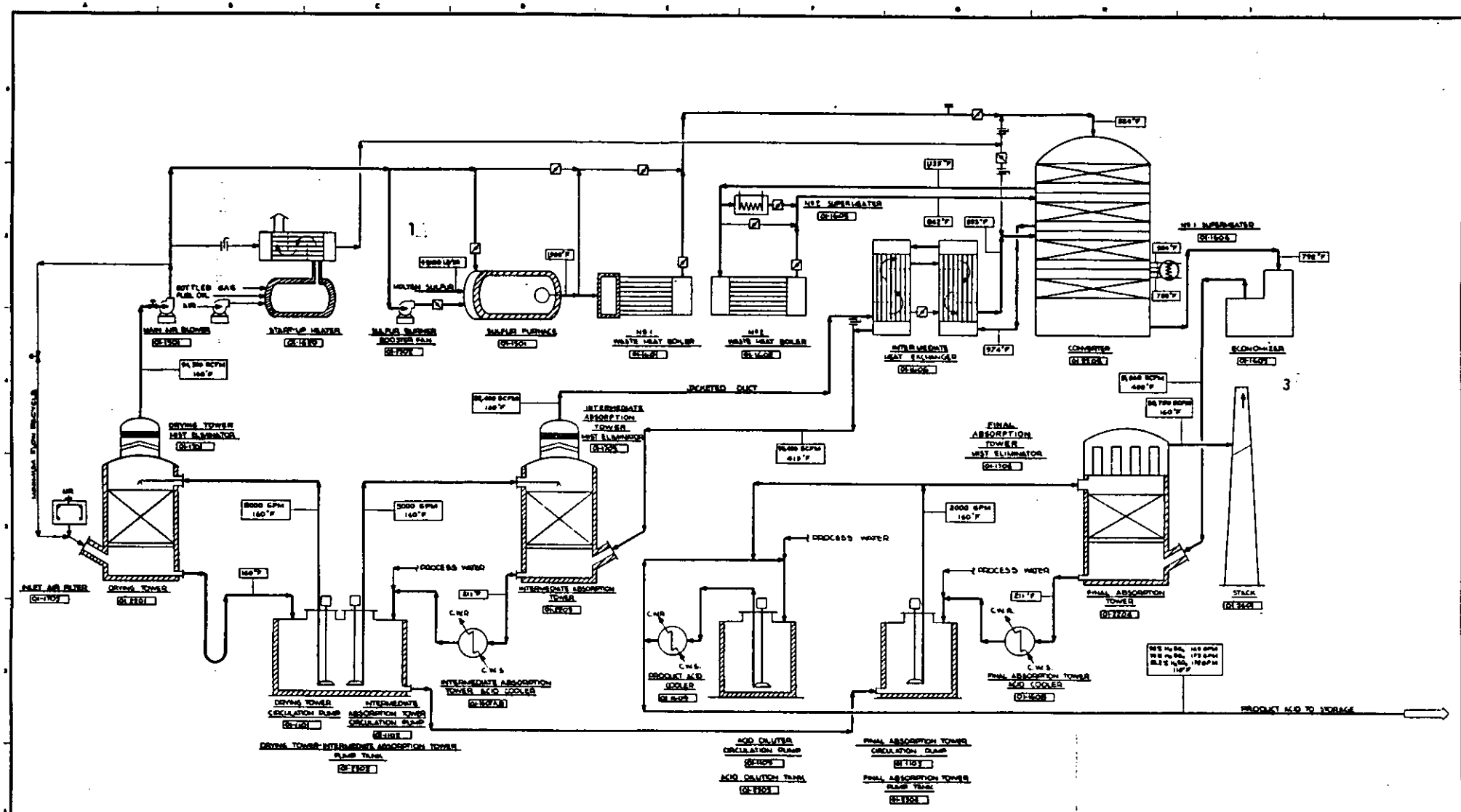
E. Emission Data Used in Modeling

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

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

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.

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.



NOTE

CONFIDENTIAL

Davy Powergas, Inc.

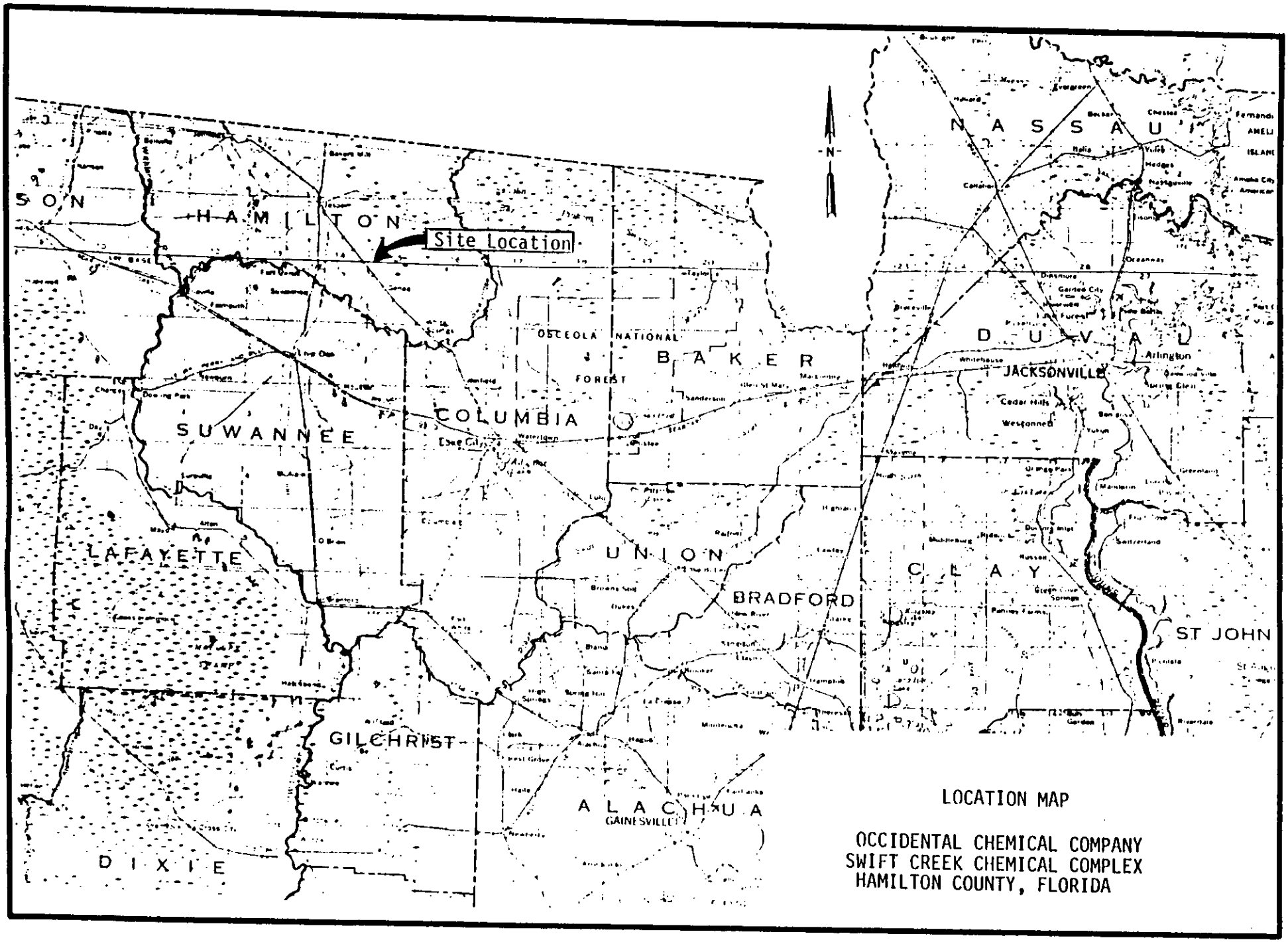
OXY-SPA PROJECT

1800 STPD SULFURIC ACID PLANT Double Train

PROCESS FLOW DIAGRAM

2352 01-F-0001 P0

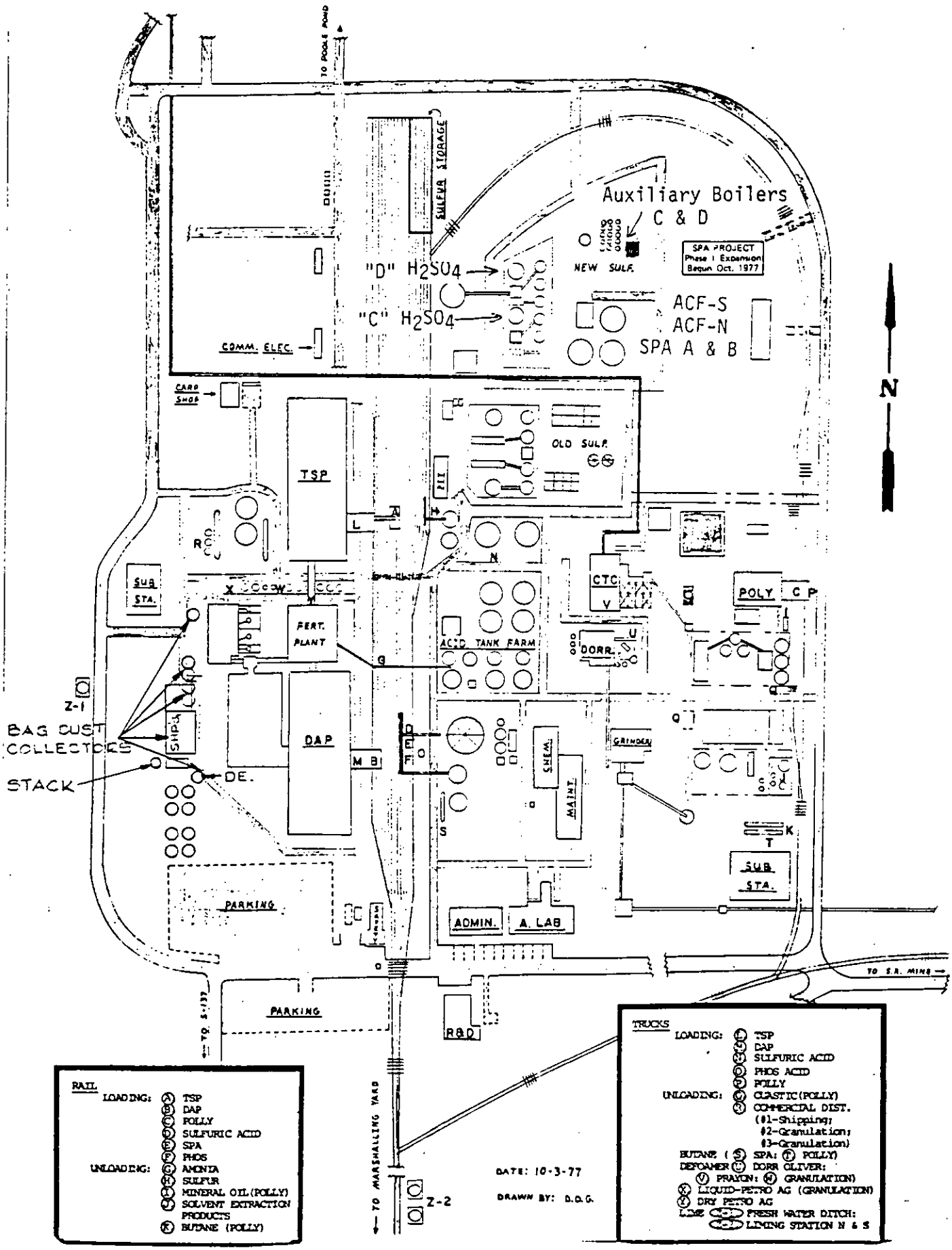
ATTACHMENT 3



LOCATION MAP

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

ATTACHMENT 4


TO POOLE POND
SULFUR STORAGE
Auxiliary Boilers C & D
SPA PROJECT Phase I Expansion Begun Oct. 1977
NEW SULF.
"D" H_2SO_4
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COMM. ELEC.
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OLD SULF.
TSP
SUB STA.
FERT. PLANT
ACID TANK FARM
CTC
DORR.
POLY
C P
DAP
SHIPS
Z-1
BAG DUST COLLECTORS
STACK
DE.
SHEM.
MAINT.
GRINDER
PARKING
ADMIN.
A. LAB
R&D
TO S.A. MINE
TO S-133
TO MARSHALLING YARD
Z-2
N
RAIL
LOADING: TSP, DAP, POLLY, SULFURIC ACID, SPA, PHOS
UNLOADING: AMONIA, SULFUR, MINERAL OIL (POLLY), SOLVENT EXTRACTION PRODUCTS, BUTANE (POLLY)
TRUCKS
LOADING: TSP, DAP, SULFURIC ACID, PHOS ACID, POLLY
UNLOADING: CAUSTIC (POLLY), COMMERCIAL DIST. (#1-Shipping; #2-Granulation; #3-Granulation)
BUTANE (S) SPA: (T) POLLY
DEFOAMER (C) DORR OLIVER: (V) PRAYON: (M) GRANULATION)
LIQUID-PETRO AG (GRANULATION)
DRY PETRO AG
LIME: FRESH WATER DITCH: LIMING STATION N & S
DATE: 10-3-77
DRAWN BY: D.D.G.

ATTACHMENT 1

The increased emissions of SO2, acid mist and NOx resulting from increasing the capacities of the C and D sulfuric acid plants will be offset by reducing the production rates, and hence emissions, from the A and B sulfuric acid plants.

EMISSION RATE INCREASES

C and D as permitted under federally enforceable permit conditions at 1800 tpd

SO2: Hourly = 1800 tpd/24 hr/day x 4 lb/ton
= 300.0 lb/hr

Annual = 300 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 1314 tpy

MIST: Hourly = 1800 tpd/24 hr/day x 0.15 lb/ton
= 11.2 lb/hr

Annual = 11.2 lb/hr x 8760 hr/yr x 2000 lb/ton
= 49.3 tpy

NOx: at 67500 dscf/ton of acid and 2.1×10^{-6} lb NOx per dscf

Hourly = 1800/24 tph x 67500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 10.6 lb/hr

Annual = 10.6 x 8760/2000
= 46.6 tpy

C and D as proposed at 2000 tpd

SO2: Hourly = 2000 tpd/24 x 4 lb/ton
= 333.3 lb/hr.

Annual = 333.3 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 1460 tpy

MIST: Hourly = 2000 tpd/24 x 0.15 lb/ton
= 12.5 lb/hr.

Annual = 12.5 x 8760/2000
= 54.7 tpy

NOx: Hourly = 2000 tpd/24 x 67500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 11.8 lb/hr

Annual = 11.8 lb/hr x 8760/2000
= 51.7 tpy

Emission Rate Increase for C and D

SO2: = 1460 - 1314
= 146 tpy, each plant

MIST: = 54.7 - 49.3
= 5.4 tpy, each plant

NOx: = 51.7 - 46.6
= 5.1 tpy, each plant

EMISSION RATE DECREASES

A and B as permitted at 1000 tpd

SO2: Hourly = 1000 tpd/24 hr/day x 29.0 lb/ton
= 1208 lb/hr

Annual = 1208 lb/hr x 8760 hr/yr x 1/2000 lb/ton
= 5293 tpy

MIST: Hourly = 1000 tpd/24 hr/day x 0.5 lb/ton
= 20.8 lb/hr

Annual = 20.8 x 8760/2000
= 91.3 tpy

NOx: at 97500 dscf/ton of acid and 2.1×10^{-6} lb NOx per dscf

Hourly = 1000/24 tph x 97500 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 8.5 lb/hr

Annual = 8.5 x 8760/2000
= 37.2 tpy

A and B as proposed at 950 tpd

SO2: Hourly = 950 tpd/24 x 29 lb/ton
= 1148 lb/hr.

Annual = 1148 x 8760/2000
= 5028 tpy

MIST: Hourly = 950/24 tph x 0.5 lb/ton
= 19.8 lb/hr.

Annual = 19.8 x 8760/2000
= 86.7 tpy

NOx: Hourly = 950/24 tpy x 97000 ft^3/ton
x (2.1×10^{-6}) lb/ft^3
= 8.1 lb/hr

Annual = 8.1 x 8760/2000
= 35.3 tpy

Emission Rate Reduction for A and B

SO2: = 5028 - 5293
= -265 tpy, each plant

MIST: = 86.7 - 91.3
= -4.6 tpy, each plant

NOx: = 35.3 - 37.2
= 1.9 tpy, each plant

NET EMISSION RATE CHANGES

Pollutant	C and D Increase (tpy)	A and B Decrease (tpy)	Net Change (tpy)	Significant Change (1) (tpy)
SO2	+292	-530	-238	40
MIST	+10.8	-9.2	+1.6	7
NOx	+10.2	-3.8	+6.4	40

(1) 17-2.500(2)(e)2, FAC

ATTACHMENT 2

CALCULATION FOR SECTION III A, B, C, AND D

PRODUCT: Sulfuric Acid as 93% H_2SO_4

PRODUCT RATE: 2,000 Short tons per day (STPD) of 100% H_2SO_4 as 93% H_2SO_4 -or-

179.211 lbs/hr (2,000/0.93 x 2,000/24) of 93% Sulfuric Acid

PROCESS LOSSES: 0.005% equivalent to ash content of sulfur (consider negligible). Recovery is 99.7% equivalent to emission of 4.0 pounds SO_2 per ton of 100% H_2SO_4 produced.

PROCESS INPUT:

SULFUR: 2,000 STPD of 100% H_2SO_4 equivalent to 653 STPD of sulfur (2,000 x 32/98) which at an efficiency of 99.7% requires 655 STPD of sulfur (653/0.997) -or-

54.586 lbs/hr (655 x 2,000/24)

EMISSIONS:

SULFUR DIOXIDE: 333.3 lbs/hr (4 lb SO_2/ton 100% H_2SO_4 produced x 2,000 STPD/24) -or-

1.460 STPY (333.3 x 8,760/2,000)

H_2SO_4 MIST: 12.5 lbs/hr (0.15 lb H_2SO_4 Mist/ton 100% H_2SO_4 produced x 2,000 STPD/24) -or-

54.7 STPY (12.5 x 8,760/2,000)