

KOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 102-93-05

April 14, 1994

RECEIVED

APR 25 1994

Bureau of
Air Regulation

Mr. Preston Lewis
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Hamilton County - AP
Occidental Chemical Corporation
Permit Modification Request
For Pollyphos Plant
Suwannee River Chemical Complex
DEP Permit No. A024-226519

Dear Mr. Lewis:

This is a follow up to your communication with Mr. Charlie Pults, of Occidental, regarding a modification of the sulfur dioxide (SO₂) emission limitations for the above referenced plant.

As documented in Mr. Pults' letter to Mr. Robert Leetch (see Attachment 1), recent source testing indicated higher than expected SO₂ emission rates from the pollyphos reactors. In accordance with the FDEP recommendation, an application for the modification of the permitted pollyphos reactor SO₂ emission rates is enclosed. No other pollutant emission/material utilization rates in the current pollyphos permit are affected by this request. As with similar modification requests in the past, only the information pertinent to the modification is included.

Historical Sulfur Dioxide Emission Rates

In the permit application review for PSD-FL-083, SO₂ emission rates of 104 pounds per hour were used for the "A" and "B" pollyphos reactors. These emission rates were based on earlier emission measurement. Occidental questioned this emission rate because of the low sulfur content of the fuel used in the reactors (natural gas) and, in 1981, conducted further emission measurements. Based on these emission measurements, the SO₂ emission limit in the operation permit was amended to 5.0 pounds per hour. It is now apparent, based on several emission measurements in 1993, that the original 104 pound per hour emission rate was appropriate. Accordingly, the current permit should be corrected.

Mr. Preston Lewis
Florida Department of
Environmental Protection

April 14, 1994
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While the emission rate of 104 pounds per hour is considered representative when using a 50-50 mix of Oxy and IMC rocks (existing), the results of the emission measurements conducted in 1993 indicate that an allowable SO₂ emission rate of 220 pounds per hour would be realistic when using a 50-50 mix of Oxy and Texas Gulf (TG) rocks as proposed.

Occidental is requesting a modification of the SO₂ emission limit in the permit from 5.0 pounds per hour (to be corrected to 104) to 220 pounds per hour for each pollyphos reactor (A and B). This will allow for the use of any combination of rock without exceeding the permit limit. As part of this modification request, Occidental will commit not to operate the "A" sulfuric acid plant while the pollyphos plant is operating, and vice versa.

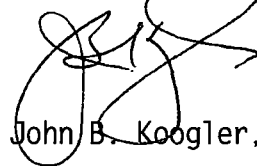
As a result of the proposed project, there will be a decrease in the facility-wide SO₂ emissions of between 3537 tons per year (corresponding to the operation of the pollyphos plant only with the "A" sulfuric acid plant down) and 911 tons per year (corresponding to the operation of the "A" sulfuric acid plant only with the pollyphos plant down). Calculations supporting these emission rate reductions are attached. It should be noted that with federally enforceable permit conditions to reflect Occidental's commitment, PSD review requirements will not be triggered.

A check in the amount of \$250 (permit modification fee) is enclosed.

If you have any questions, please do not hesitate to call me.

Very truly yours,

KOOGLER & ASSOCIATES



John B. Koogler, Ph.D., P.E.

JBK:par
Enc.

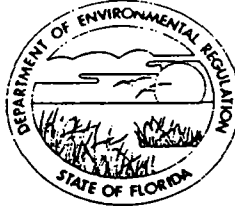
c: V. Lloyd, Occidental
C. Pults, Occidental



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

#250 pd.
4-25-94
Rept. # 2211224

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794



AC 24-249665

BOB MARTINEZ
GOVERNOR
DALE TWACHTMANN
SECRETARY
ROBERT V. KRIEDEL
DISTRICT MANAGER

SOURCE TYPE: Animal Feed Plant New¹ Existing¹
APPLICATION TYPE: Construction Operation Modification
COMPANY NAME: Occidental Chemical Corporation 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) Pollyphos Reactors A & B

SOURCE LOCATION: Street _____ County Road 137 City White Springs
UTM: East (17) 328.3 km North 3368.8 km
Latitude 30° 26' 27" N Longitude 82° 47' 17" W

APPLICANT NAME AND TITLE: Vernon J. Lloyd, V.P. Manufacturing & Technology
APPLICANT ADDRESS: P.O. 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 Corp.

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: *Vernon J. Lloyd*
Vernon J. Lloyd, V.P. Mfg. & Technology
Name and Title (Please Type)

Date: 4/20/94 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, Environmental Services

Company Name (Please Type)

4014 N.W. 13th Street, Gainesville, FL 32609

Mailing Address (Please Type)

Florida Registration No. 12925 Date: 4/14/94 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.

For an increase in the allowable sulfur dioxide emissions of the existing pollyphos
"A" and "B" reactors; and the operation of either "A" sulfuric acid plant or the
pollyphos plant at a given time; at Occidental's existing Suwannee River Chemical
Complex. The proposed project will result in full compliance with all applicable
air regulations.

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

Start of Construction NA Completion of Construction NA

- 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.)

NA - Existing plant

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

A024-226519 : Issued 6-14-93 ; Expires 5-24-98.

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)

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. _____ NA
2. Does best available control technology (BACT) apply to this source?
If yes, see Section VI. NO
3. Does the State "Prevention of Significant Deterioration" (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? NO
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? _____ NA
 - 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 justifi-
cation for any answer of "No" that might be considered questionable.

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

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

Input to Feed Prep.

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Phosphoric Acid	F	1 - 3	6640	
Phosphate Rock	F, PM	3.5	32,000	
Caustic	-	-	3500	
(See also Attachment 3)				

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

1. Total Process Input Rate (lbs/hr): 18,577 (to each reactor)
2. Product Weight (lbs/hr): 15,000 (from each reactor)

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

See also Attachments 2 & 3, for each reactor:

Name of Contaminant	Emission ¹		Allowed Emission Rate per Rule 17-2	Allowable Emission lbs/hr	Potential ⁴ Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	220	963.6	-	-	220	963.6	

¹See Section V, Item 2.

²Reference 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)

³Calculated from operating rate and applicable standard.

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

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Cross-flow packed scrubber	F, PM	99 %	-	Mfr.

E. Fuels See also Attachment 3, for each reactor:

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
"A" Natural Gas	0.075	0.075	75
"B" Natural Gas	0.075	0.075	75

*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: _____ 1000 BTU/lb ft³ _____ 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.

Scrubber effluent is recirculated through pollyphos pond. Dust from cyclones and
dust collectors is returned to the process.

Reactors A & B, each stack:

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

Stack Height: 100 ft. Stack Diameter: 4 ft.
 Gas Flow Rate: 25,000 ACFM 21,000 DSCFM Gas Exit Temperature: 120 °F.
 Water Vapor Content: 7 % Velocity: 33 FPS

SECTION IV: INCINERATOR INFORMATION

NA

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

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)]
See Attachment 3.
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 Attachments 1 & 2.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
See Attachments 1 & 2.
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.) See Attachment 4.
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachments 1 & 4.
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. See Attachment 4.
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).
See Attachment 5.
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.
See Attachment 6.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation. \$250
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

NA

- 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

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

Contaminant	Rate or Concentration

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

Contaminant

Rate or Concentration

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

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:

¹Explain method of determining efficiency.

²Energy 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:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant

Rate or Concentration

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

Contaminant	Rate or Concentration

(8) Process Rate:¹

10. Reason for selection and description of systems:

¹Applicant 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

NA

1. _____ no. sites _____ TSP _____ () SO₂+ _____ Wind spd/dir

Period of Monitoring _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*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
OCCIDENTAL'S LETTER TO FDEP
DATED 8-3-93



OxyChem®

August 30, 1993

Robert Leetch, P.E.
Department of Environmental Protection
7825 Baymeadows Way
Suite B-200
Jacksonville, FL 32256-7577

Re: Pollyphos SO₂ Information

Dear Mr. Leetch:

In accordance with your letter of July 8, 1993, I am supplying the information we have concerning the SO₂ emissions from the pollyphos operation.

Johnny Cole, Mort Benjamin, and I have spoken concerning this plant during the last several weeks. This was to keep the Department apprised of our progress and work schedule.

When the pollyphos plant was originally permitted, Oxy operated with 100 percent Oxy rock as feed material. It was later found that a 50-50 mix of Oxy and IMC rocks formed a better product. This mix was used for several years until earlier this year. At that time, following research and testing, it was determined that a 50-50 mix of Oxy and Texas Gulf (TG) rock would be an improvement over the Oxy-IMC material.

It was during this latter period that a review of the rock specifications by the technical staff noted a higher sulfur content in the TG rock over that of the Oxy or IMC rock. They brought this information to the attention of the Environmental Department and asked if the emissions were covered by the existing permit. This, in turn, prompted our discussions with your office. The following summarizes the percent sulfur (as sulfur) of each rock:

Oxy	0.3 - 0.4%
IMC	0.3 - 0.4%
TG	1.2%



Occidental Chemical Corporation

Basic Chemicals Group

County Road 137, P.O. Box 300, White Springs, Florida 32091
904/397-8101

OxyChem®

The sulfur in the rock accounts for virtually 100 percent of the SO₂ emissions. Although the process is permitted to burn both oil and gas, it is fired exclusively on gas. The SO₂ content for the gas is considered to be negligible.

I asked Dr. John Koogler to review his files concerning the original permitting and subsequent testing of the pollyphos plant. A copy of his letter and materials from his files are enclosed. This material contains an explanation of the original permitted SO₂ value of approximately 104 lb/hr and the subsequent reduction to five pounds per hour.

Oxy conducted in-plant tests of the SO₂ emissions on June 2, July 15, and August 23. The July 15 test was performed simultaneously with testing performed by Koogler & Associates test team. Oxy's testing was performed in accordance with Method 8 for all tests. Koogler's testing was performed in accordance with Method 6C. A copy of the Koogler test results is enclosed.

All tests were performed at a standard production rate of approximately 9.0 tons per hour and 70 gpm of fresh water and 2200 gpm of pond water to the scrubber. There was one test (6/2) on "B" pollyphos, which has not had a scrubber modification, with 140 gpm of fresh water and 1500 gpm of pond water to the scrubber. The results are summarized below:

Date	Test Team	Plant	Results SO ₂ (lb/hr)
6/2	Oxy	A Polly	132.5/132.6
6/2	Oxy	B Polly	128.3/125.2
7/15	Oxy	A Polly	106.1/104.0/98.4
7/15	Koogler	A Polly	206/167.5/171.1
8/23	Oxy	A Polly	181.2/190.0

These test results have been reviewed by Dr. Koogler, our technical personnel, and by the Environmental Department. Although there is a disparity in the results, they all appear to be valid tests. We are continuing to review the information. However, I am not sure we will be able to determine exactly why the results show such a wide variation. If the Department has any thoughts on this, we would be happy to discuss them.

OxyChem®

As Dr. Koogler points out in his letter, the original estimate of 104 pounds per hour of SO₂ emissions was probably accurate based on the sulfur content of the Oxy rock. Based on this premise, and the sulfur content of the rock currently being used, the results of the recent testing appear to be a valid indication of SO₂ emissions from the pollyphos process.

Thank you for your patience in this matter. There was a great deal of historical data to research and testing to be done and evaluated.

I will await your review of the enclosed information and guidance from your office as to how to proceed to correct the existing permit. If I may be of further assistance, please call me at 904-397-8442.

Sincerely,



C. B. Pults, P.E.
Senior Environmental Engineer

CBP/ssb

cc: W. M. Miller
R. E. McNeill
B. Bandyopadhyay
Dr. John Koogler

ATTACHMENT 2
SULFUR DIOXIDE EMISSION CALCULATIONS



ATTACHMENT 2
EMISSION CALCULATIONS

Existing SO₂ Emission Rates

A. Pollyphos "A" Reactor:

Based on emission rate documented in PSD-FL-083,

$$\begin{aligned} \text{SO}_2 &= 104 \text{ lbs/hr} \\ & \times 8760 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 455.5 \text{ tpy} \end{aligned}$$

B. Pollyphos "B" Reactor:

Based on emission rate documented in PSD-FL-083,

$$\begin{aligned} \text{SO}_2 &= 104 \text{ lbs/hr} \\ & \times 8760 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 455.5 \text{ tpy} \end{aligned}$$

C. Sulfuric Acid "A" Plant:

Based on emission rate documented in AC24-146400 and A024-232535, and actual hours of operation from 1988-1993.

Year	Annual Operating Hours
1988	7812
1989	7762
1990	7012
1991	0
1992	0
1993	0
Representative Average 7529	

Based on federally enforceable actual emission rate,

$$\begin{aligned} \text{SO}_2 &= 1208 \text{ lbs/hr} \\ & \times 7529 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 4547.5 \text{ tpy} \end{aligned}$$



Proposed SO₂ Emission Rates

Based on 1993 source test data.

DATE	POLLYPHOS REACTOR	TEST RESULTS SO ₂ (lbs/hr)
6/02/93	A	132.5, 132.6
6/02/93	B	128.3, 125.2
7/15/93	A	106.1, 104.0, 98.4
7/15/93	A	206.0, 167.5, 171.1
8/23/93	A	181.2, 190.0
MAXIMUM PROJECTED		220.0

A. Pollyphos "A" Reactor:

$$\begin{aligned} \text{SO}_2 &= 220 \text{ lbs/hr} \\ &\quad \times 8760 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 963.6 \text{ tpy} \end{aligned}$$

B. Pollyphos "B" Reactor:

$$\begin{aligned} \text{SO}_2 &= 220 \text{ lbs/hr} \\ &\quad \times 8760 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 963.6 \text{ tpy} \end{aligned}$$

C. Sulfuric Acid "A" Plant:

$$\begin{aligned} \text{SO}_2 &= 1208 \text{ lbs/hr} \\ &\quad \times 7529 \text{ hrs/yr} \times 1/2000 \text{ ton/lb} \\ &= 4547.5 \text{ tpy} \end{aligned}$$

Net Change in SO₂ Emissions

SCENARIO 1 - Pollyphos plant operating and "A" sulfuric acid plant shut down:

$$\begin{aligned} \text{Net SO}_2 &= \text{Proposed} - \text{Existing} \\ &= (963.6 + 963.6 + 0) - (455.5 + 455.5 + 4547.5) \text{ tpy} \\ &= (1927.2 - 5458.5) \text{ tpy} \\ &= -3537.3 \text{ tpy (Emission Reduction)} \end{aligned}$$



SCENARIO 2 - Pollyphos plant shut down and "A" sulfuric acid plant operating:

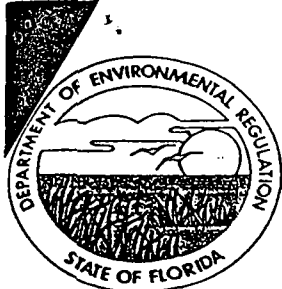
Net SO₂ = Proposed - Existing
= (0 + 0 + 4547.5) - (455.5 + 455.5 + 4547.5) tpy
= (4547.5 - 5458.5) tpy
= -911.0 tpy (Emission Reduction)

Therefore, the net reduction in SO₂ emissions, as a result of the proposed project, will be between 911 and 3537 tons per year depending on the operating hours of the pollyphos plant and the "A" sulfuric acid plant.



ATTACHMENT 3
CURRENT POLLYPHOS PLANT PERMIT
&
SULFURIC ACID "A" PLANT PERMIT





Florida Department of Environmental Regulation

Northeast District • Suite B200, 7825 Baymeadows Way • Jacksonville, Florida 32256-7577

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

PERMITTEE:

Occidental Chemical Corporation
Post Office Box 300
White Springs, Florida 32096

I.D. Number: 31JAX24000203, 38, 42, 44, 45, 53, 60
Permit/Cert. Number: AO24-226519
Date of Issue: 06-14-93
Expiration Date: May 24, 1998
County: Hamilton
Latitude/Longitude: 30°26'27"N 82°47'17"W
Project: Pollyphos Plant at SR
UTM: E-(17)328.3; N-3368.8

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-210, 17-212, 17-272, 17-296, 17-297 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

- | <u>Pt. #</u> | |
|--------------|---|
| 03 | For the operation of the Pollyphos Plant consisting of sources specified below:
"A" Reactor with particulate matter (PM) and fluoride emissions controlled by a cross-flow packed scrubber (EP 13A). |
| 38 | "B" Reactor with PM and fluoride emissions controlled by a cross-flow packed scrubber (EP 13B). |
| 42 | Feed Prep with PM emissions controlled by a wet scrubber (EP 11) and two dust collectors (EP 9 and EP 10). |
| 44 | "A" Cooler with PM emissions controlled by a cyclonic scrubber (EP 12) followed by product prep and storage silos with PM emissions controlled by a baghouse (EP 14) and shipping PM emissions controlled by a baghouse (EP 16). |
| 45 | "B" Cooler with PM emissions controlled by a cyclonic scrubber (EP 12). |
| 53 | A 330 ton soda ash silo with PM emissions controlled by a baghouse and an in-line filter (EP SA1), a 20 ton soda ash ready bin with PM emissions controlled by a baghouse (EP SA2), and the railcar unloading and pneumatic transfer equipment. |
| 60 | Feed Prep Limestone System with a 50 ton storage silo (EP L1) and a 3 ton surge bin (EP L2) with PM emissions from each controlled by a dust collector. |

Located east of U.S. 41, east of C.R. 137, north of White Springs, Hamilton County, FL.

In accordance with:

- Application received 06-11-80
- Additional information received 12-11-81
- Additional information received 11-24-82
- Additional information received 01-11-83
- Additional information received 05-06-83
- Renewal application received 02-22-88
- Construction permit's amendment dated 06-28-88
- Construction application for (L1 & L2) received 01-16-91
- Certificate of Completion of Construction received 03-18-92
- Additional information received 04-29-92
- Renewal application received 02-23-93
- Request (to add soda ash system to this renewed permit) received 02-23-93
- Additional information received 03-19-93 and
 - Soda ash CP #AC24-165588 issued 09-19-89
 - Soda ash Certificate of Completion of Construction received 09-25-91

PERMITTEE:
 Occidental Chemical Corporation
 Post Office Box 300
 White Springs, Florida 32096

I.D. Number: 31JAX24000203,38,42,44,45,60
 Permit/Cert. Number: A024-226519
 Date of Issue:
 Expiration Date: May 24, 1998

SPECIFIC CONDITIONS:

1. The ID No. and Project Name for this source shall be used on all correspondence.
2. The maximum input rate (operating rate) is shown below and shall not be exceeded without prior approval.

<u>Pt. #</u>	<u>EP¹</u>	<u>Rate</u>	<u>Material</u>	<u>To</u>
03	13A	9.03 TPH	From Feed Prep	"A" Reactor
38	13B	9.03 TPH	From Feed Prep	"B" Reactor
42	11	48.94 TPH	---2	Feed Prep
44	12	7.5 TPH	Product	"A" Cooler
45	12	7.5 TPH	Product	"B" Cooler
53	SA1	15 TPH	Soda Ash	Silo
53	SA2	8 TPH	Soda Ash	Bin
60	L1	25 TPH	Limestone	Silo
60	L2	5 TPH	Limestone	Bin
03	13A	0.075 ³	Gas	"A" Reactor
38	13B	0.075 ³	Gas	"B" Reactor
42	11	0.015 ³	Gas	Feed Prep
42	11	2.4 bbls ⁴	Oil	Feed Prep

¹EP - Emission Point

²Input to feed prep

16.00 TPH*	Phosphate Rock
3.32 TPH	54% Phos. Acid as 100% P ₂ O ₅
1.75 TPH**	Caustic
0.53 TPH***	Limestone
2.34 TPH**	Soda Ash
25.00 TPH	Recycle

*Depends upon rock quality

**Use is one or the other but not both together

***Use is determined by rock characteristics

³Units = MMCF/hr

⁴Sulfur content of oil shall not exceed 1.5% by wt. Also, bbls = barrels

3. Testing of emissions must be performed at an operating rate of at least 90% of the rate in Specific Condition (SC) No. 2, or SC No. 4 will become effective.
4. The operating rate shall not exceed 110% of the operating rate during the most recently accepted test, except for additional testing purposes, and shall not exceed that rate in SC No. 2. After testing at a higher rate, the operating rate continue to not exceed the aforementioned rate until the test report at the higher rate is reviewed and accepted by the Department.

PERMITTEE:
 Occidental Chemical Corporation
 Post Office Box 300
 White Springs, Florida 32096

I.D. Number: 31JAX24000203,38,42,44,45,60
 Permit/Cert. Number: AO24-226519
 Date of Issue:
 Expiration Date: May 24, 1998

SPECIFIC CONDITIONS:

5. The permitted maximum allowable emission rate for each pollutant is as follows:

Pt.#1	EP1	Pollutant	FAC Rule	Emissions Rate	
				lbs/hr	TPY
03	13A	PM ²	17-296.310(1)(b)	14.05 ³	59.00 ⁴
		FL ⁵	17-296.403(2)	2.5 ⁶	10.5 ⁴
		SO ₂ ⁷	---	5.0 ⁸	21.0 ⁸
		VE ⁹	17-296.310(2)(a)	40% opacity ¹⁰	
38	13B	PM	17-296.310(1)(b)	14.05 ³	59.00 ⁴
		FL	17-296.403(2)	2.5 ⁶	10.5 ⁴
		SO ₂	---	5.0 ⁸	21.0 ⁴
		VE	17-296.310(2)(a)	40% opacity ¹⁰	
42	11	PM	17-296.310(1)(b)	31.99 ¹¹	134.35 ⁴
		SO ₂	---	4.90 ⁸	20.58 ⁴
		VE	17-296.310(2)(a)	<20% opacity	
44 & 45	12	PM	17-296.310(1)(b)	25.04 ¹²	105.17 ⁴
		FL	17-296.403(2)	1.42 ^{6,13}	5.96 ⁴
		VE	17-296.310(2)(a)	<20% opacity	
42	9	PM	---	2.82 ¹⁴	11.84
		VE	17-297.620(4)	5% opacity	
42	10	PM	---	1.57 ¹⁴	6.59
		VE	17-297.620(4)	5% opacity	
44	14	PM	---	1.08 ¹⁴	4.54
		VE	17-297.620(4)	5% opacity	
44	16	PM	---	0.28 ¹⁴	1.18
		VE	17-297.620(4)	5% opacity	
53	SA1	PM	---	0.18 ¹⁵	0.08 ¹⁶
		VE	17-297.620(4)	5% opacity	
53	SA2	PM	---	0.27 ¹⁵	0.40 ¹⁷
		VE	17-297.620(4)	5% opacity	
60	L1	PM	---	0.10 ¹⁸	0.44 ⁴
		VE	17-297.620(4)	5% opacity	
60	L2	PM	---	0.10 ¹⁸	0.44 ⁴
		VE	17-297.620(4)	5% opacity	

PERMITTEE:
Occidental Chemical Corporation
Post Office Box 300
White Springs, Florida 32096

I.D. Number: 31JAX24000203,38,42,44,45,60
Permit/Cert. Number: AO24-226519
Date of Issue:
Expiration Date: May 24, 1998

SPECIFIC CONDITIONS:

SC No. 5 Cont'd.

<u>1</u> Pt.#	<u>EP</u>	<u>Unit</u>	<u>Pt.#</u>	<u>EP</u>	<u>Unit</u>
03	13A	"A" Reactor	42	10	Feed Prep Screen/Crush
38	13B	"B" Reactor	44	14	Product prep & storage
42	11	Feed Prep	44	16	Shipping
44	12	"A" Cooler	53	SA1	Soda Ash Silo
45	12	"B" Cooler	53	SA2	Soda Ash Bin
42	9	Feed Prep Rock Bin	60	L1	Limestone Silo
			60	L2	Limestone Bin

²PM - particulate matter

³Basis: P = 9.03 TPH

⁴Basis: Hours of operation shall be limited to 24 H/D, 7 D/W, 52 W/Y (8760 H/Y) and shall be recorded.

⁵FL- fluoride

⁶Basis: 0.4 Rule allocation which shall be the limit for the duration of this permit.

⁷SO₂: Sulfur Dioxide

⁸Basis: Used in SO₂ model.

⁹VE - Visible emissions

¹⁰Changed to 40% per 06-28-88 amendment to CP No. AC24-15083 and CP No. AC24-15084

¹¹ Basis: P = 48.94 TPH

¹²Basis: P = 7.5 TPH input to each cooler;

Max E = 12.52 lbs/hr from each cooler, so

Max E from both is 25.04.

¹³Basis: Allocation from both coolers; max E from each is 0.71

¹⁴Basis: From attachments to application received 06-11-80

¹⁵From 09-12-91 operation application attachment 2

¹⁶Silo loading hours shall be limited to 900 H/Y and shall be recorded

¹⁷Bin loading hours shall be limited to 3000 H/Y and shall be recorded

¹⁸From application dated 01-09-91

6. Unconfined particulate matter emissions shall be controlled by application of dust suppressants, unless an alternative method is requested and approved, to all areas necessary to reasonably control such emissions per Florida Administrative Code Rule 17-296.310(3).

7. The soda ash storage equipment may operate continuously, 8,760 hours/year. The silo vacuum pump operating hours shall not exceed 1800 hours/year. The ready bin blower/exhaust fan operating hours shall not exceed 3000 hours/year.

PERMITTEE:
Occidental Chemical Corporation
Post Office Box 300
White Springs, Florida 32096

I.D. Number: 31JAX24000203,38,42,44,45,60
Permit/Cert. Number: AO24-226519
Date of Issue:
Expiration Date: May 24, 1998

SPECIFIC CONDITIONS:

8. Test the emission for the following pollutant(s) at the interval(s) indicated, notify the Department 15 days prior to testing pursuant to FAC Rule 17-297.340(1)(i), and submit the test report documentation to the Department within 45 days after completion of the testing pursuant to FAC Rule 17-297.570(2):

<u>Pt.#</u>	<u>EP</u>	<u>Pollutant</u>	<u>Interval</u>	<u>Test Method</u>
03	13A	PM	12 months from 01-19-92	EPA 5
		FL	12 months from 01-19-92	EPA 13A or 13B
		VE ¹	12 months from 01-19-92	EPA 9
38	13B	PM	12 months from 01-19-92	EPA 5
		FL	12 months from 01-19-92	EPA 13A or 13B
		VE ¹	12 months from 01-19-92	EPA 9
42	11	PM	12 months from 10-05-92	EPA 5
		VE ¹	12 months from 10-05-92	EPA 9
44 & 45	12 ²	PM ³	12 months from 11-29-92	EPA 5
		FL ³	12 months from 11-29-92	EPA 13A or 13B
		VE ^{1,3}	12 months from 11-29-92	EPA 9
42	9	VE	12 months from 12-02-92	EPA 9
42	10	VE	12 months from 12-02-92	EPA 9
44	14	VE	12 months from 12-02-92	EPA 9
44	16	VE	12 months from 12-02-92	EPA 9
53	SA1	VE	5 years from 09-05-92 ⁴	EPA 9 ⁵
53	SA2	VE	5 years from 09-05-92 ⁴	EPA 9 ⁵
60	L1	VE ⁶	12 months from 12-02-92	EPA 9
60	L2	VE ⁷	12 months from 12-02-92	EPA 9

¹VE shall be observed during one PM test run

²12 is a common stack

³Specific Conditions #3 and #4 apply to each cooler

⁴Per CP No. AC24-165588, SC #6, "Annual test will be required only if deemed necessary by the Department".

⁵From CP No. AC24-165588, SC #6.

⁶From silo while loading

⁷From bin while loading



Florida Department of Environmental Protection

Lawton Chiles
Governor

Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7577

Virginia B. Wetherell
Secretary

PERMITTEE:

Occidental Chemical Corporation
Post Office Box 300
White Springs, Florida 32096

I.D. Number:

31JAX24000207

Permit/Cert Number:

AO24-232535

Date of Issue:

02-24-93

Expiration Date:

November 30, 1995

County:

Hamilton

Latitude/Longitude:

30°26'27"N; 82°47'16"W

UTM:

E-(17)328.3; N-3368.8

Project:

"A" Sulfuric Acid Plant
at SR

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-210, 17-212, 17-272, 17-296, 17-297 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the operation of "A" Sulfuric Acid Plant, a single absorption process with a York mist eliminator.

Located east of S.R. 137, east of U.S. 41, north of White Springs, Hamilton County, Florida.

In accordance with:

Occidental letter dated 02-19-88

DER letter dated 03-01-88

Construction permit application dated 03-04-88

Preliminary Determination dated 04-21-88

Occidental letter dated 04-26-88

Certificate of completion of Construction form dated 07-06-88

Additional information received 09-08-88

Renewal application received 06-08-93

Additional information received 07-12-93

DER Form 17-1.201(5) Effective November 30, 1982

Page 1 of 7

Administration 448-4300
Air 448-4310
Waste Management 448-4320

Recycled Paper
Printed with Soy Based Inks

Water Facilities 448-4330
Water Management 448-4340
FAX 448-4366

PERMITTEE:
 Occidental Chemical Corporation
 Post Office Box 300
 White Springs, Florida 32096

I.D. Number: 31JAX24000207
 Permit/Cert Number: A024-232535
 Date of Issue:
 Expiration Date: November 30, 1995

SPECIFIC CONDITIONS:

1. The ID No. and Project Name for this source shall be used on all correspondence.
2. Prior to reactivation of this plant, a reconstruction determination shall be made in accordance with 40 CFR 60.15 which includes an applicable standards (NSPS) determination.
3. The maximum operating rate is SEE BELOW and shall not be exceeded without prior approval.

RATE	MATERIAL	TO/FROM UNIT
27,823 lbs/hr	Sulfur	Input
83,333 lbs/hr ¹	Sulfuric acid	Product

¹Basis: 1000 TPD as 100% sulfuric acid.

4. Testing of emissions must be performed at an operating rate of at least 90% of the rate in Specific Condition No. 3, or Specific Condition No. 5 will become effective.
5. The operating rate shall not exceed 110% of the most recently accepted test, except for additional testing purposes, and shall not exceed the rate in Specific Condition No. 3. After testing at a higher rate, the operating rate shall continue to not exceed the aforementioned rate until the test report at the higher rate is reviewed and accepted by the Department.
6. The permitted maximum allowable emission rate for each pollutant is as follows:

POLLUTANT	EMISSIONS LIMIT			FAC RULE
	BELOW	LBS/HR	TPY	
SO ₂ ¹	---	1208 ²	5292 ³	17-296.402(1)(a)2.
SAM ⁴	---	21 ⁵	91 ³	17-296.402(1)(a)3.
VE ⁶	10% opacity	---	---	17-296.402(1)(a)1.

¹SO₂ - sulfur dioxide

²Basis: From AC24-146400; 41.67 TPH of 100% H₂SO₄ produced; 29 lbs SO₂/ton of 100% H₂SO₄ produced.

³Hours of operation are limited to 8760 hrs/yr and shall be recorded.

⁴SAM - sulfuric acid mist

PERMITTEE:
Occidental Chemical Corporation
Post Office Box 300
White Springs, Florida 32096

I.D. Number: 31JAX24000207
Permit/Cert Number: AO24-232535
Date of Issue:
Expiration Date: November 30, 1995

SPECIFIC CONDITIONS:

SC No. 6 Cont'd.

⁵Basis: From AC24-146400; 41.67 TPH of 100% H₂SO₄ produced; 0.5 lb mist/ton of 100% H₂SO₄ produced.

⁶VE - visible emissions

7. Nitrogen oxides (NO_x) emissions are estimated to be 26 TPY for inventory and PDS tracking purposes.
8. Test the emission for the following pollutant(s) at the interval(s) indicated, notify the Department 15 days prior to testing [FAC Rule 17-297.340(1)(i)], and submit the test report documentation to the Department within 45 days after completion of the testing [FAC Rule 17-297.570(2)]:

POLLUTANT	INTERVAL*	TEST METHOD ¹
SO ₂		EPA 8
SAM		EPA 8
VE		EPA 9

*Test within 45 days of reactivation and annually thereafter.

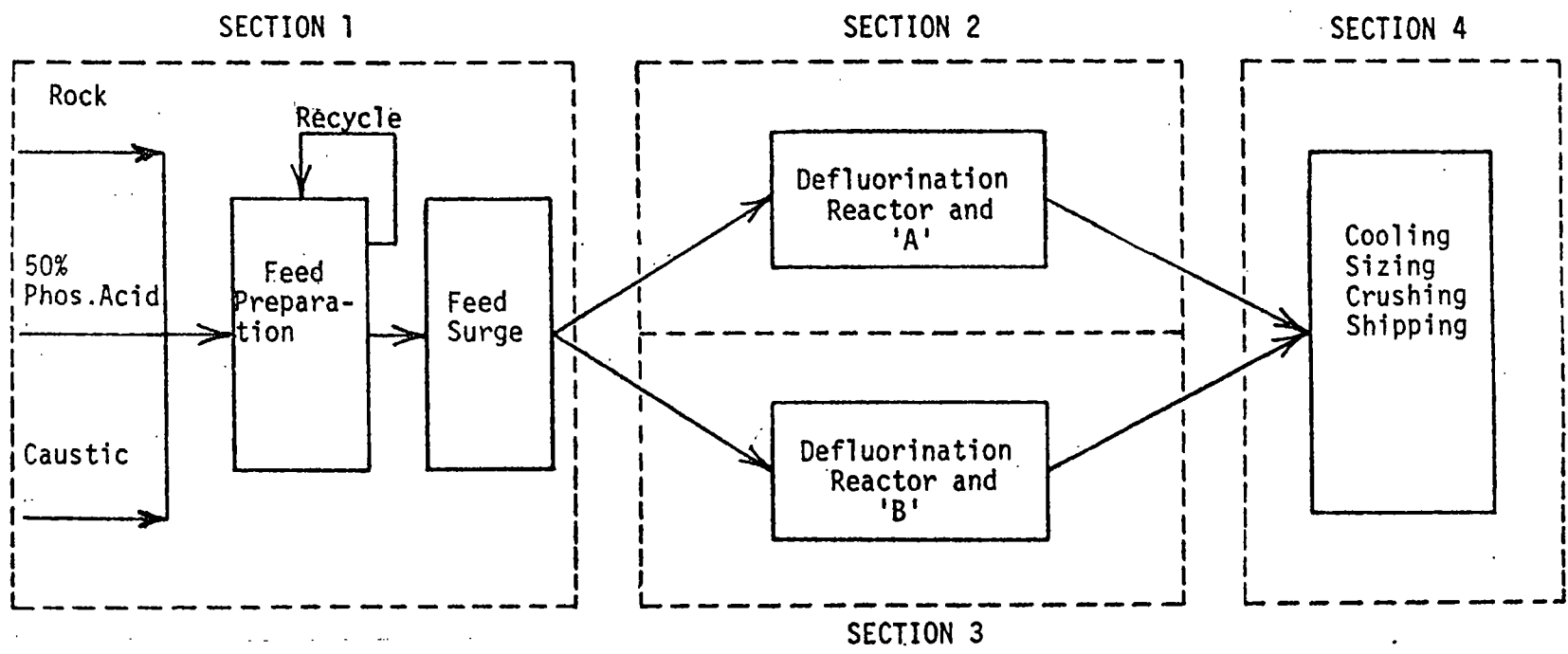
¹From FAC Rule 17-297.330, in Table 297.330-1

Tests and test reports shall comply with the requirements of FAC Rules 17-297.330 and 17-297.570, respectively.

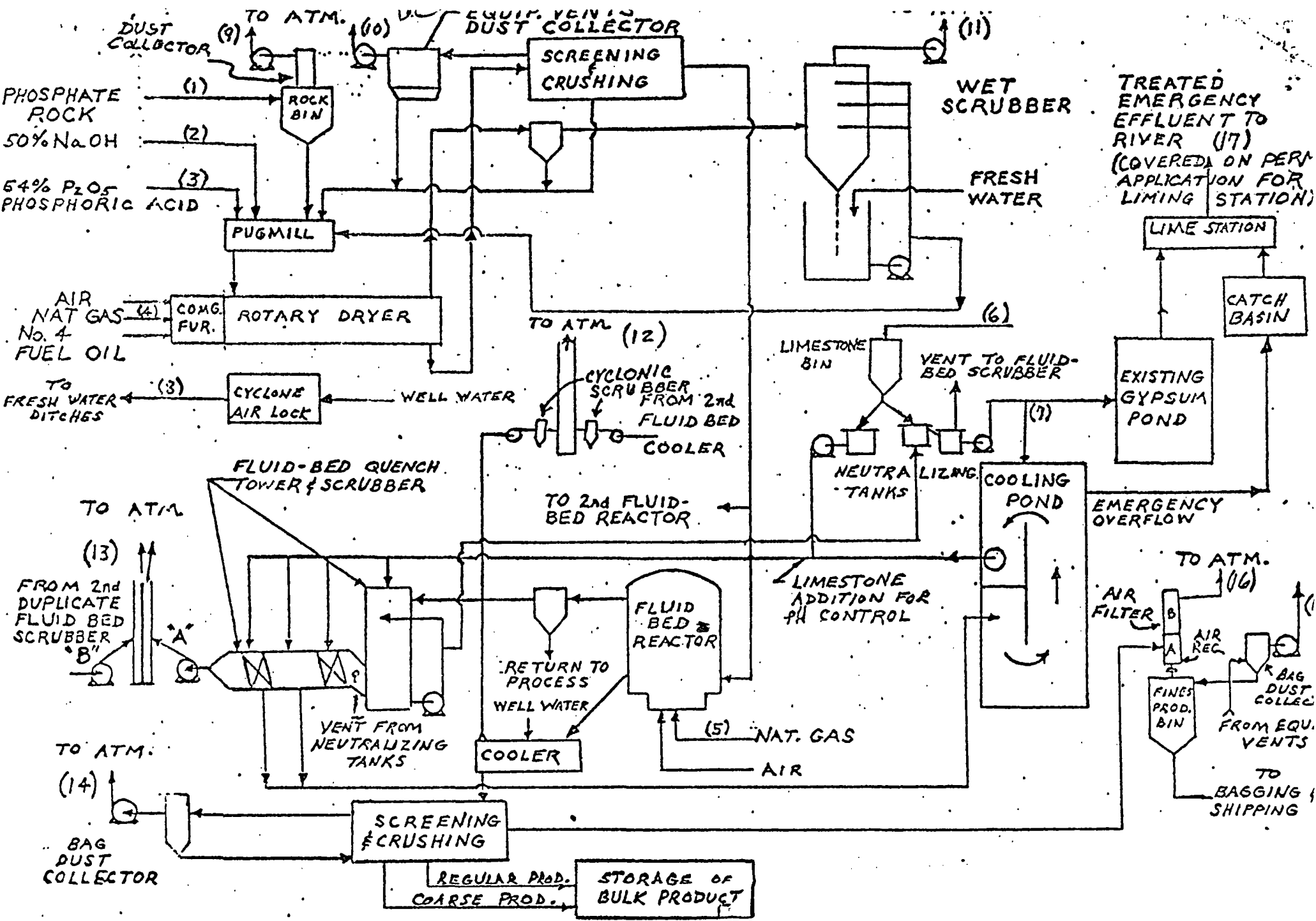
9. In each test report, submit the maximum input/production rate at which this source was operated since the most recent test.
10. Submit an annual operation report for this source on the form supplied by the Department for each calendar year on or before March 1.
11. Any revision(s) to a permit (and application) must be submitted and approved prior to implementing.

ATTACHMENT 4
PROCESS FLOW DIAGRAM





POLLYPHOS "A" & "B"
 RAW MATERIAL & PRODUCT FLOW CHART



CONTROL DEVICES

Flow Diagram	Control Device	Brand Name	Inlet* Loading	Outlet Loading	Efficiency
9	Dust Bag Collector	Micro-Pulsaire	21.00*** (Dust)	0.059*** (Dust)	99.7 (NVE)
10	Dust Bag Collector	Micro Pulsaire	5.500*** (Dust)	0.020*** (Dust)	99.6 (NVE)
11	Cyclonic Wet Scrubber	Special Design by Hooker Company	11.6*** (Rock)	0.058** (Rock)	99.5
12	Two (2) Cyclonic Scrubbers	Dracco Mk VI DC60	8.000** (Dust)	0.024** (Dust)	99.7 (NVE)
13	Two vertical Quench tower & cross-flow packed scrubber	Special Design by Dr. A.J. Teller	5.40*** (F)	0.0054** (F)	99.9
14	Dust Bag Collector	Micro-Pulsiare	5.50*** (Dust)	0.0265*** (Dust)	99.5 (NVE)
15	Dust Bag Collector	Micro-Pulsaire	5.50*** (Dust)	0.022*** (Dust)	99.6 (NVE)
16	Filter Pad	Fuller Company	21.200*** (Dust)	0.0942*** (Dust)	99.6 (NVE)

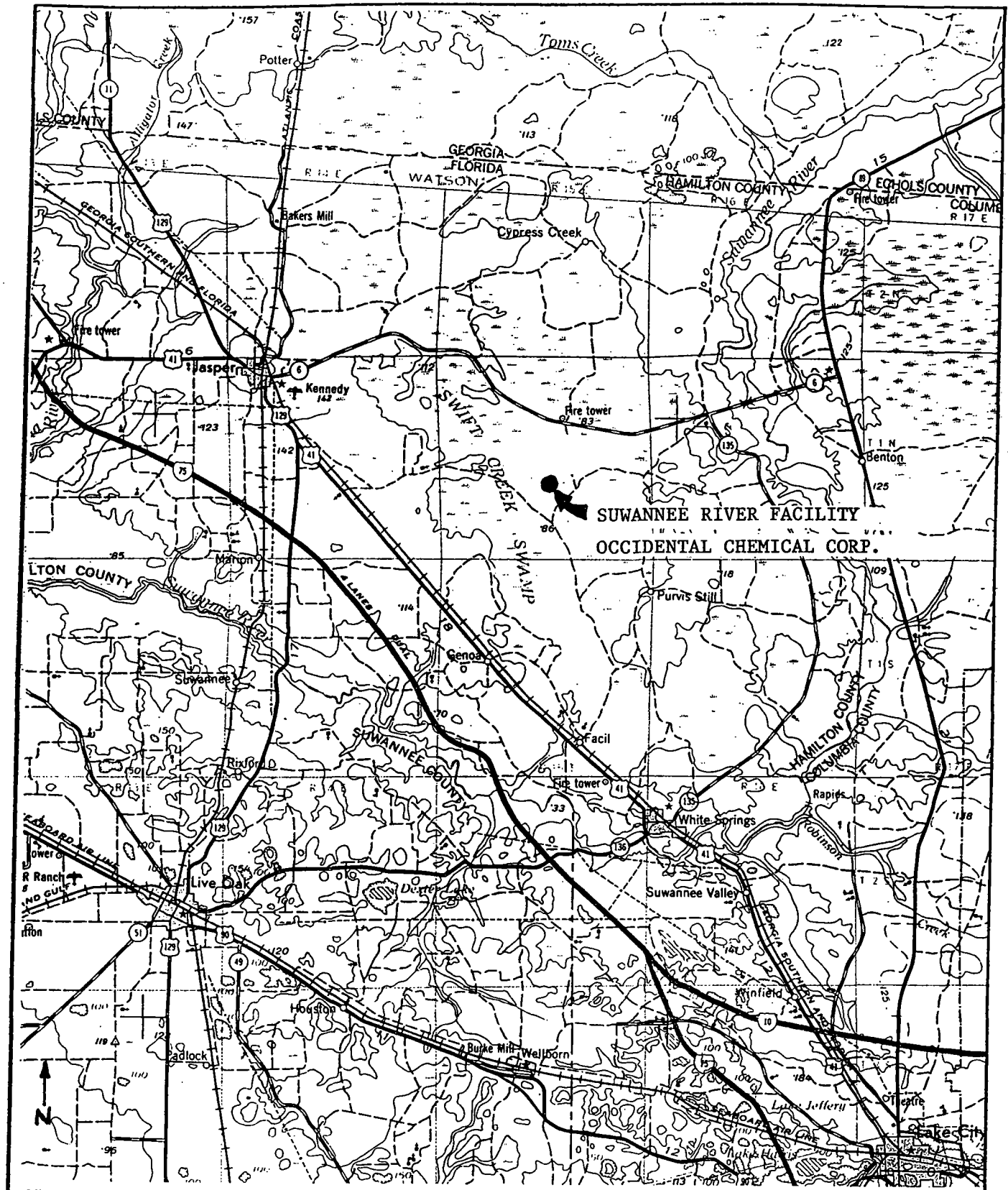
* Grains/SCF

** Measured

*** Calculated from manufacturer's guarantee and design.

ATTACHMENT 5
SITE LOCATION MAP





ATTACHMENT 5

SITE LOCATION MAP

SUWANNEE RIVER CHEMICAL COMPLEX
 OCCIDENTAL CHEMICAL CORPORATION



ATTACHMENT 6

PLOT PLAN



ATTACHMENT 6

PLOT PLAN

POLLYPHOS PLANT AREA
OCCIDENTAL CHEMICAL CORP.

