APPLICATION FOR FEDERAL PSD APPROVAL

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

DECEMBER, 1980

SHOLTES & KOOGLER
Environmental Consultants
1213 NW 6TH ST ■ GAINESVILLE, FL 32601 ■ 904-377-5822

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

1.0 INTRODUCTION

New Wales Chemicals, Inc. is a phosphate fertilizer manufacturing facility wholly owned by the International Minerals and Chemical Corporation. The complex is located in western Polk County, Florida (Figure 1-1). At the complex phosphate rock is processed into several different fertilizer products and animal feed ingredients. This is accomplished by reacting the phosphate rock with sulfuric acid to produce phosphoric acid and then converting the phosphoric acid to a fertilizer product or animal feed supplement. The complex includes sulfuric acid plants, phosphoric acid plants, granular triple superphosphate production facilities, ammoniated phosphate production facilities, animal feed ingredient production facilities, and a uranium recovery unit. Phosphate rock handling, storage and grinding are an intregral part of the fertilizer complex.

The original New Wales fertlizier complex was permitted in 1974. Several modifications have been made to the complex since that time; the most recent of which is currently underway. The expansion currently underway is referred to as the "Third Train Expansion." This expansion will increase the production capacity of the fertilizer complex by 500,000 tons per year of P_2O_5 - from one million tons per year of P_2O_5 to 1.5 millions tons per year of P_2O_5. The Third Train project received federal PSD approval on May 23, 1980 (File PSD-FL-034).

Included in the Third Train Expansion is the construction of two 2,000 tons per day sulfuric acid plants. New Wales is now proposing to increase the production capacity of the two Third Train sulfuric acid plants to 2,750 tons per day each of 100 percent sulfuric acid. This increase in production rate will result from the utilization of excess capacity designed into the plants. There will be no physical changes made to either plant to attain the proposed production rate increase.

New Wales is submitting the information in this document to EPA as an application for Federal PSD approval for the proposed sulfuric acid plant rate increase. The proposed project has been reviewed in terms of PSD regulations adopted on August 7, 1980 and codified as 40 CFR 52.21. Under the definitions incorporated in these regulations, the project proposed by New Wales is categorized as a major modification, since the proposed emission increases of both sulfur dioxide and sulfuric acid mist exceed de minimus levels established in 40 CFR 52.21. The production rate increases will also result in increases in the emission rates of nitrogen oxides and carbon monoxide. The emission rate increases of these two pollutants however, will be less than the de minimus levels defined in 40 CFR 52.21 and, hence, these pollutants will not be subject to Federal PSD review.

Consistent with the requirements of 40 CFR 52.21, the following sections of this application include a description of the existing facilities and a description of the proposed project; a review of Best Available Control Technology (BACT) for sulfur dioxide and sulfuric acid mist; an air quality review for sulfur dioxide and sulfuric acid mist and a review of the secondary impacts of the proposed project.

2.0 PLANT DESCRIPTION

New Wales Chemicals, Inc., is a phosphate fertilizer manufacturing facility, located in western Polk County, Florida. The plant is located approximately 10.5 kilometers southwest of the town of Mulberry, and immediately east of Polk-Hillborough County line (Figures 2-1 and 2-2). The plant was originally permitted in 1974, but has undergone several modifications since that time.

2.1 History of the New Wales Chemical Complex

The chemical complex was originally permitted in 1973, and constructed immediately thereafter. All of the original permits were obtained prior to the initial effective date of PSD regulations; January 6, 1975.

As originally constructed, the fertilizer complex included three double absorption sulfuric acid plants; two phosphoric acid plants; granular fertilizer production facilities capable of producing ammoniated fertilizer products and granular triple superphosphate; storage and shipping facilities for the granular fertilizer products; phosphate rock receiving, storage, drying, and grinding capabilities; ancillary equipment and plant facilities; a gypsum disposal area and a cooling water recirculation system.

In 1976, an animal feed ingredients (AFI) plant was constructed and in 1977 a multiphos plant was constructed. In 1978 a second granular products load-out system was permitted and constructed and in the same year the uranium recovery plant was permitted. At this point in time, the fertilizer complex had a production capacity of one million tons per year of P_2O_5.

In late 1979, permitting activities were undertaken to obtain state and Federal approval to increase the P_2O_5 production capacity of the chemical complex by 50 percent; from one million tons of P_2O_5 per year to 1.5 million tons of P_2O_5 per year. Final approval for this expansion was obtained on May 23, 1980 (File PSD-FL-034) and construction commenced immediately thereafter. This expansion was referred to as the "Third Train Expansion."

The Third Train Expansion includes two double absorption sulfuric acid plants, each rated at 2,000 tons of 100 percent acid per day; a 1,500 ton per day (P_2O_5) phosphoric acid plant; an ammoniated fertilizer production facility with a production capacity of 140 tons per hour; a granular product load-out system; and the necessary support facilities. A significant plant-wide modification which occurred concurrent with the Third Train Expansion, was the elimination of the use of dry rock. This resulted in the elimination of nine particulate matter sources with an annual particulate matter emission rate of 141 tons per year and the elimination of one sulfur dioxide source with an annual sulfur dioxide emission rate of 1,577 tons per year.

2.2 Description of Existing Facilities

The present New Wales Chemical Complex consists of manufacturing facilities to produce sulfuric acid, phosphoric acid, granular ammoniated and granular triple superphosphate fertilizer products and animal feed supplements. A separate facility located on-site is designed to recover uranium present in the phosphate rock.

Raw materials for the chemical complex, include phosphate rock, molten sulfur, water, ammonia and limestone. The rock is shipped into the New Wales Chemical Complex, from International Minerals and Chemical Corporation (IMC) mining facilities located in Polk County. Sulfur is transported to the chemical complex by truck and rail. Ammonia and limestone are shipped to the chemical complex by train.

Concurrent with the Third Train Expansion, New Wales converted entirely to wet rock processing. This modification resulted in the elimination of nine sources resulting in a particulate matter emission reduction of 141 tons per year and a sulfur dioxide emission reduction of 1,577 tons per year.

Wet, unground phosphate rock is now received by rail cars from the various IMC mines in Polk County. These mines are Kingsford, Noralyn, Clear Springs, and Phosphoria. At the completion of the Third Train Expansion, there will be approximately 240 rail cars, containing up to 100 tons of rock each, unloaded each day. The rock is unloaded into underground loading pits from where it is transferred by belt conveyor to a 400,000 ton storage pile. This pile provides approximately a five week storage capacity for the plant. Wet, unground rock from the storage pile is conveyed to the washing facility to remove clays from the rock prior to grinding. After grinding, the rock is stored in agitated tanks, prior to being pumped to the phosphoric acid plant.

Dry, ground phosphate rock used for producing granular triple superphosphate (GTSP) is received by rail from the IMC Noralyn mine. This rock is transferred to dry rock silos and from there, directly to the GTSP plant.

Sulfuric acid is manufactured by the conventional contact sulfuric acid process. In this operation, elemental sulfur is burned in a furnace to form sulfur dioxide. The sulfur dioxide is then passed through a series of converters where it reacts with oxygen to form sulfur trioxide. This gas passes on to an absorption tower where is reacts with water and strong sulfuric acid to form a product sulfuric acid. There are three existing sulfuric acid plants at the New Wales Chemicals complex and two plants, each rated at 2,000 tons per day, presently under construction. The existing plants are Monsanto double absorption sulfuric acid plants rated at approximately 2,700 tons per day of sulfuric acid each.

New Wales is presently proposing to increase the production capacity of the two new sulfuric acid plants (Plant No. 4 and Plant No. 5) to 2,750 tons per day each of sulfuric acid. With this rate increase, the maximum sulfuric acid production capacity of the chemical complex will be approximately 13,600 tons per day. This sulfuric acid production capacity will require approximately 4,500 tons per day of sulfur; molten sulfur which is received by truck and rail. The sulfur will be stored in heated insulated storage tanks prior to use.

Phosphoric acid is produced by reacting the wet ground phosphate rock with sulfuric acid in concrete attack tanks. Three separate phosphoric acid trains, each capable of producing up to 1,500 tons per day of P_2O_5 are located at the chemical complex. Two of the plants are existing and one is under construction as part of the Third Train Expansion. The weak phosphoric acid produced in the attack tanks is separated from the gypsum in filtering systems and the gypsum is transported to a gypsum disposal area immediately to the east of the chemical complex.

The 30 percent phosphoric acid recovered from the filtering step is pumped to storage tanks and from the storage tanks to evaporators where the acid is concentrated step-wise up to 54 percent P_2O_5. Excess steam from the sulfuric acid plants is used in the phosphoric acid evaporators.

Approximately 25 percent of the phosphoric acid produced at the New Wales Chemical Complex is further clarified for direct sales. The remainder of the acid is pumped to other facilities in the chemical complex, such as the granular ammoniated fertilizier production facility, the granular triple superphosphate production facility, or the animal feed supplement plants.

Ammoniated fertilizer products, diammonium phosphate and monoammonium phosphate, are produced in two facilities at the New Wales Chemical Complex; one existing and one under construction as part of the Third Train Expansion. At each of the facilities, the two products are produced by reacting 54 percent P_2O_5 phosphoric acid and ammonia to produce a granular fertilizer product. The ratio of phosphoric acid to ammonia determines the product. The original facility, constructed in 1974, has a production capacity of 101 tons per hour of DAP. As part of the Third Train Expansion a dual train facility, with a total production capacity of 140 tons per day of DAP is being constructed.

Granular triple superphosphate is produced by reacting 40 percent phosphoric acid with dry, ground phosphate rock received from the IMC Noralyn mine in a reaction and granulation circuit. The wet granular product which is produced is then dried, screened and transferred to storage. The production capacity for granular triple superphosphate at the New Wales Chemical Complex is 60 tons per hour.

The MAP, DAP, and GTSP products produced at the chemical complex are conveyed from the bulk storage buildings to shipping facilities and from there they are loaded either into rail cars or trucks at rates approaching 7,000 tons per day.

Up to 2,000 tons per day of calcium and ammonium phosphate Animal Feed Ingredients can be produced at the New Wales Chemical Complex. These products are produced by reacting defluorinated phosphoric acid with ammonia or limestone to produce the desired product. A second animal feed product, referred to as Multiphos, is produced at a rate of 360 tons per day by reacting phosphate rock, soda ash and phosphoric acid in a high temperature kiln. The calcining of the material results in the defluorination of the phosphate rock which is necessary in the production of animal feed supplements.

The Animal Feed Ingredients and Multiphos are stored and shipped from areas within the chemical complex isolated from normal fertilizer products. This is done to minimize the chance of contaminating the feed products with normal fertilizer products containing nominal levels of fluoride.

A uranium recovery facility is also located at the New Wales Chemical Complex. At this facility uranium is recovered from phosphoric acid and is processed to a product referred to as yellow cake. This is a U_3O_8 product which is shipped off-site for further refining.

A process flow diagram of the New Wales Chemical Complex is shown in Figure 2-3.

All of the existing facilities at the New Wales Chemicals Complex meet applicable State and Federal Air Pollution emission standards and all have been or are being constructed under conditions set forth in applicable State and/or Federal air pollution construction permits.

2.3 Description of Proposed Projects

In February, 1980 New Wales received State of Florida Air Pollution Construction Permits for the two 2,000 tons per day sulfuric acid plants proposed for the Third Train Expansion. On May 23, 1980 Federal PSD approval was granted for the Third Train Expansion, including the two 2,000 ton per day sulfuric acid plants, pursuant to the 1978 PSD regulations. These were the regulations in effect at the time New Wales submitted a complete application for Federal PSD approval in December,1979.

The construction of the Third Train Expansion is currently underway. At this time, New Wales is proposing to increase the production capacity of the two Third Train Sulfuric Acid Plants from 2,000 tons per day to 2,750 tons per day each of 100 percent sulfuric acid. This production rate increase will be accomplished by taking advantage of excess capacity designed into the sulfuric acid plants. No physical changes or modifications to the plants, as originally proposed, will be required to achieve the increases in production rate.

In the following paragraphs the sulfuric acid plants are described. Information used in establishing control system performance is further discussed in Section 3.0; Best Available Control Technology.

2.3.1 Sulfuric Acid Plants

The proposed project calls for increasing the production capacity of the two Third Train sulfuric acid plants from 2,000 tons per day each, to 2,750 tons per day each of 100 percent sulfuric acid. Construction approval for the two plants was granted by the Florida Department of Environmental Regulation in February 1980 and by EPA on May 23, 1980. Both construction approvals were based on a production rate of 2,000 tons per day of 100 percent sulfuric acid by each plant.

The proposed production rate increase will be accomplished by taking advantage of excess capacity built into the two plants. No physical modifications will be required to the plants as they were proposed in State and Federal Construction Permit applications.

With the increased production rate, each plant will have a rated hourly production capacity of 114.6 tons per hour of 100 percent sulfuric acid. The plants will be scheduled to operate at 8400 hours per year or approximately 96 percent of the time. The annual production rate of the two plants will be in excess of 1.9 million tons per year of 100 percent sulfuric acid. This compares with a currently permitted production rate for the two plants of approximately 1.4 million tons per year of 100 percent sulfuric acid.

Air pollutants emitted from the sulfuric acid plants will be sulfur dioxide, sulfuric acid mist, nitrogen oxides, and carbon monoxide. The nitrogen oxides, and carbon monoxide emitted from the plants are formed

during the combustion of sulfur in the sulfur furnance. (The carbon monoxide results from the combustion of the 0.25 percent carbon contained in the sulfur.) In both cases, the emission rates of these pollutants is less than the de minius levels defined in 40 CFR 52.21. Hence, these pollutants are not subject to current Federal PSD regulations.

The sulfur dioxide and sulfuric acid mist emitted from the plant will exceed the de minimus levels established by 40 CFR 52.21. Because of this, these two pollutants will be subject to Best Available Control Technology (BACT) and to an air quality review. The two sulfuric acid plants were subject to an FDER BACT determination dated August 20, 1979 and to a federal BACT determination incorporated in the Final PSD Determination for the Third Train Expansion dated May 23, 1980. Both determinations require that sulfur dioxide emissions be limited to 4.0 pounds per ton of 100 percent acid and that acid mist emissions be limited to 0.15 pounds per ton of acid; both equivalent to New Source Performance Standards (NSPS). There were no requirements for nitrogen oxides or carbon monoxide emissions in either the State or Federal BACT determinations.

It is again proposed that BACT for sulfur dioxide be the use of two absorption towers and that BACT for sulfuric acid mist be the use of Brink HV mist elinimators. These control technologies will result in compliance with NSPS for sulfuric acid plants and the two previous BACT determinations. These standards limit sulfur dioxide emissions to not more than four pounds 4.0 sulfur dioxide and not more than 0.15 pounds of sulfuric acid mist per ton of 100 percent sulfuric acid produced.

Cooling water for the proposed sulfuric acid plants will be handled in the existing cooling water system. The proposed production rate increase will not result in a change in the cooling water system, which will in turn effect ambient air quality or air pollutant emissions into the ambient air.

Preliminary design and engineering information for the proposed sulfuric acid plant rate increases is presented in Appendix 2-1.

The rate increases proposed for the two Third Train sulfuric acid plants, will not result in point source pollutant emission rate increases except as described above. The production rate increase will however, require an additional 500 tons per day of molten sulfur at the chemical complex. This in turn, will increase either truck or rail traffic to the facility by approximately 23 equivalent truck round-trips per day. The sulfuric acid production rate will also increase the amount of product the complex is capable of producing (within existing permit limitations) which will, in turn, increase product shipments from the facility. This increase in production capacity will result in an additional 25 equivalent truck round-trips from the chemical complex per day.

The air pollutant emission rate increases resulting from the proposed sulfuric acid plant production rate increases are summarized in Table 2-1. Also presented in this table are the de minimus levels defined in 40 CFR 52.21; emission level increases below which pollutants are not subject to Federal PSD requirements.

TABLE 2-1

NEW SOURCE EMISSION SUMMARY

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

Source	Annual Pollutant Emission Rate Increase[1] (tons/year) SO_2	Mist	NO_x	CO
No. 4 H_2SO_4	525	19.7	18.6	0.1
No. 5 H_2SO_4	525	19.7	18.6	0.1
Fugitive Emissions[2]	0	0	0.2	2.8
Total	1,050	39.4	37.4	3.0
De minimus Rates[3]	40	7.0	40.0	100

(1) These emission rate increases will result from increasing the production capacity of the No. 4 and No. 5 sulfuric acid plants from 2,000 TPD to 2,750 TPD each.

(2) Vehicle Traffic.

(3) 40 CFR 52.21.

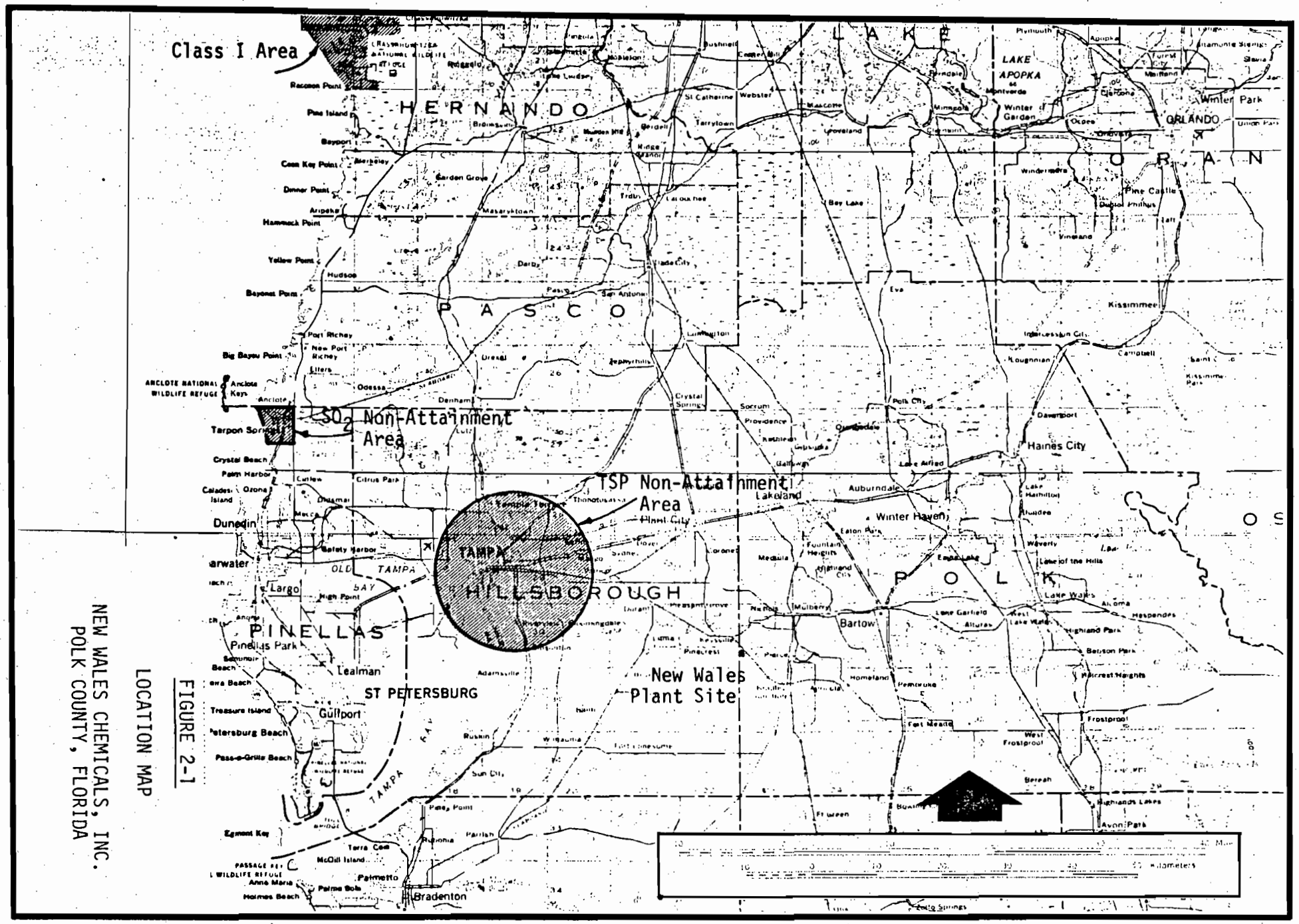

FIGURE 2-1

LOCATION MAP

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

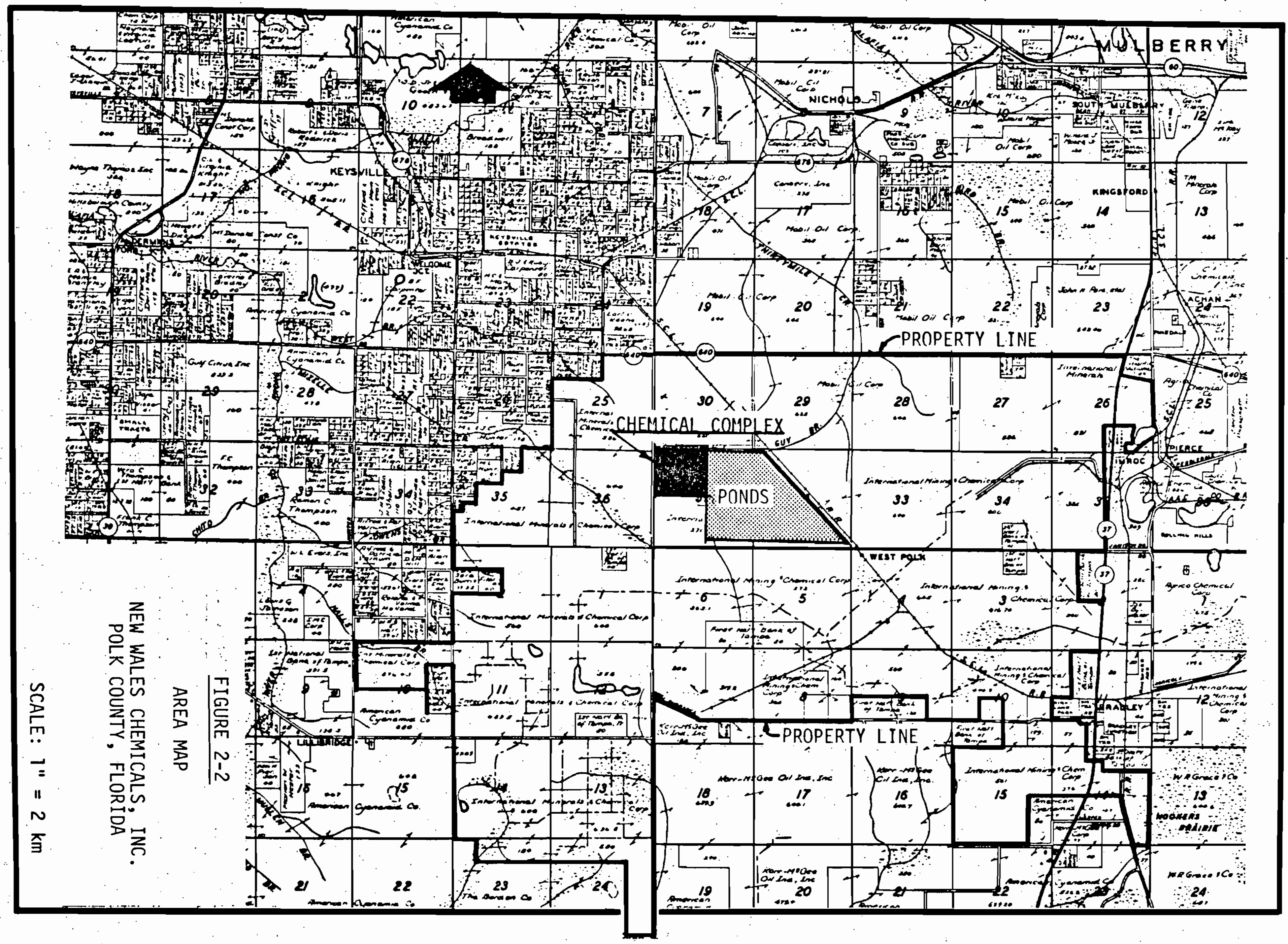

FIGURE 2-2
AREA MAP
NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA
SCALE: 1" = 2 km

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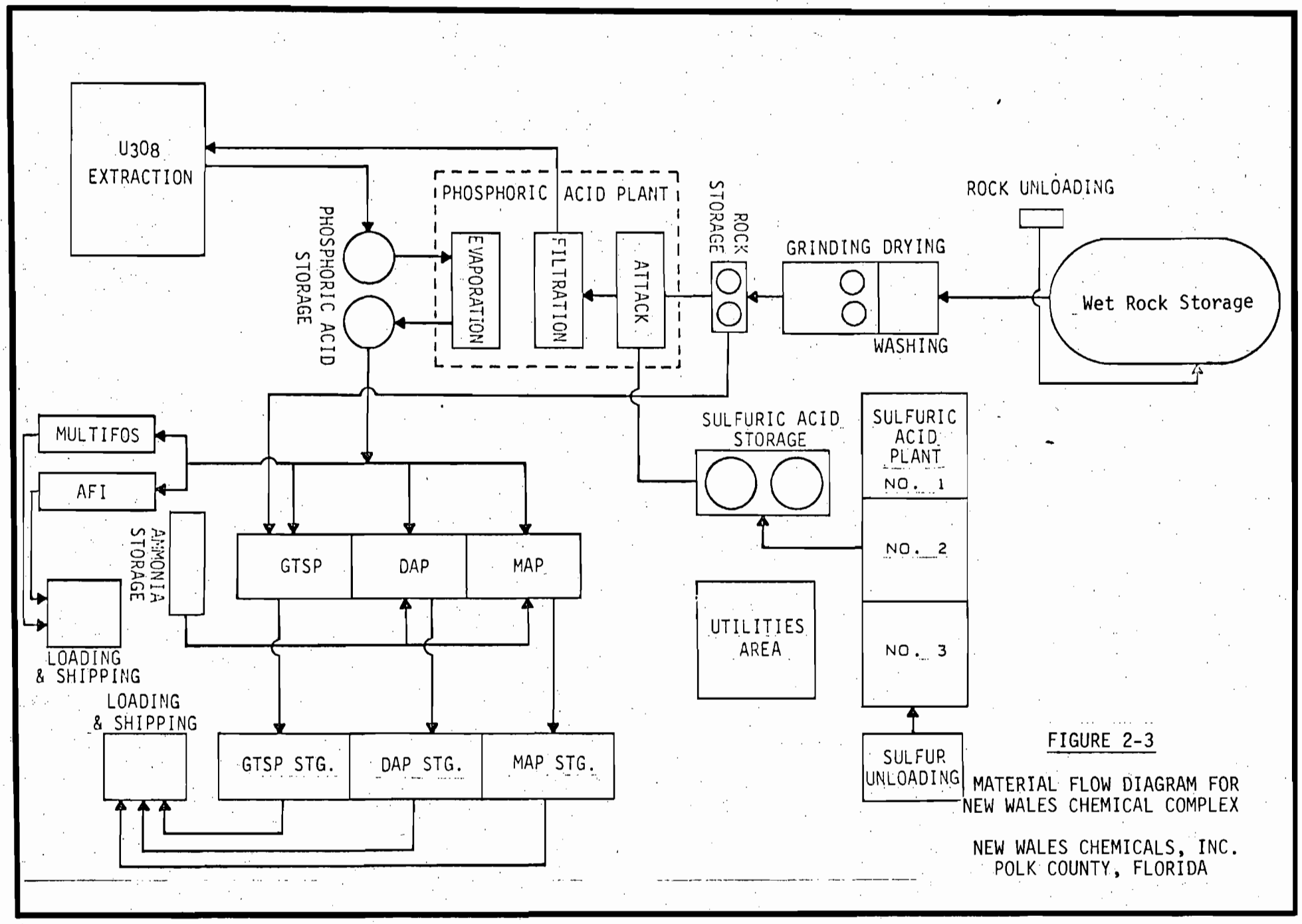


FIGURE 2-3

MATERIAL FLOW DIAGRAM FOR
NEW WALES CHEMICAL COMPLEX

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

APPENDIX 2-1

FOR INFORMATION ONLY

APPLICATIONS WILL BE IDENTICAL FOR BOTH PLANTS.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Plant [ ] New[1] [X] Existing[1] (under construction)

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

COMPANY NAME: New Wales Chemicals, Inc. COUNTY: Polk

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

SOURCE LOCATION: Street SR 640 & County Line Road City Polk County

UTM: East 396.6 km E North 3078.9 km N

Latitude _____ ° _____ ' _____ "N Longitude _____ ° _____ ' _____ "W

APPLICANT NAME AND TITLE: R. E. Jones, Jr., Vice President

APPLICANT ADDRESS: Post Office Box 1035, Mulberry, FL 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of _____

I certify that the statements made in this application for a _____ 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: _____

_____
Name and Title (Please Type)

Date: _____ Telephone No. _____

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

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

Signed: _____

_____
Name (Please Type)

(Affix Seal)

_____
Company Name (Please Type)

_____
Mailing Address (Please Type)

Florida Registration No. _____ Date: _____ Telephone No. _____

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

SECTION II: GENERAL PROJECT INFORMATION

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

A double absorption contact sulfuric acid plant with a permitted production rate of 2,000 tons per day of 100% sulfuric acid will increase production rate to 2,750 tons per day by utilizing excess capacity built into the plant. There will be no physical changes made to the plant. The plant will meet NSPS for SO_2 and acid mist.

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

Start of Construction 5/23/80 Completion of Construction Sept. 1981*

*Rate increase will be effective when plant construction is completed.

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.)

Estimated cost of double vs. single absorption, plus installation of high efficiency mist eliminators, water recirculating facilities and required monitors is $5,000,000.00.

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

AC53-19049 issued 2/7/80 and expiring on 9/30/83

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

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50 ; if power plant, hrs/yr ____ ; if seasonal, describe: (8,400 hours per year)

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

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

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

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	Carbon	0.25	77,000	1

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

1. Total Process Input Rate (lbs/hr): 77,000 lbs/hr sulfur

2. Product Weight (lbs/hr): 230,000 lbs/hr 100% H_2SO_4

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
SO_2*	458.3	1925	NSPS	458.3	458.3	1925	2
H_2SO_4 Mist	17.2	72	NSPS	17.2	172.0	722	2
NO_x	16.2	68	N/A	16.2	16.2	68	2
CO	0.1	0.5	N/A	0.1	0.1	0.5	2
*See page 3a for increase in pollutant emission rates over current permitted rate.							

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Brink HB Mist				
Eliminators	Mist	90% (overall)	Design Data	
Double Absorption	SO_2	99.7%	Design Data	

[1] See Section V, Item 2.

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

[3] Calculated from operating rate and applicable standard

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

[5] If Applicable

SECTION III, C

Contaminant	Emission Rate					
	Permitted		Proposed		Increase	
	(lbs/hr)	(tons/year)	(lbs/hr)	(tons/year)	(lbs/hr)	(tons/year)
SO_2	333	1400	458	1925	125	525
Mist	12	52	17	72	5	20
NO_x	12	50	16	68	4	18
CO	<1	<1	<1	<1	<1	<1

E. Fuels N/A

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

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

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

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

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

Stack Height: 199 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 153,920 * ACFM Gas Exit Temperature: 170 °F.

Water Vapor Content: 0 % Velocity: 45.2 FPS

*129,000 scfm, dry

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

SECTION V, 1 Process Input and Product Weight Rates

Input

Molten sulfur = 77,000 lbs/hr

Output

Sulfuric Acid

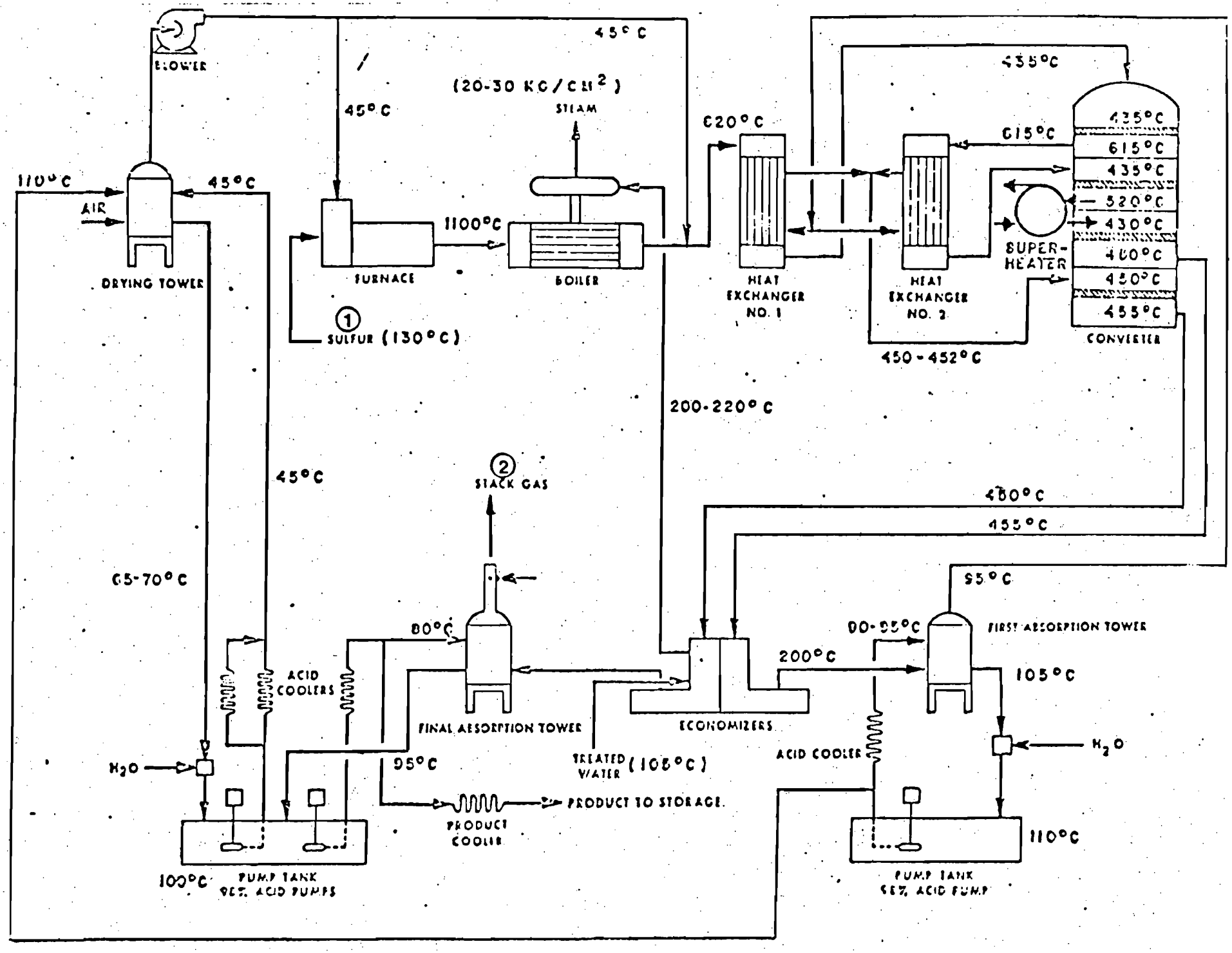
Assume 2.46% sulfur losses

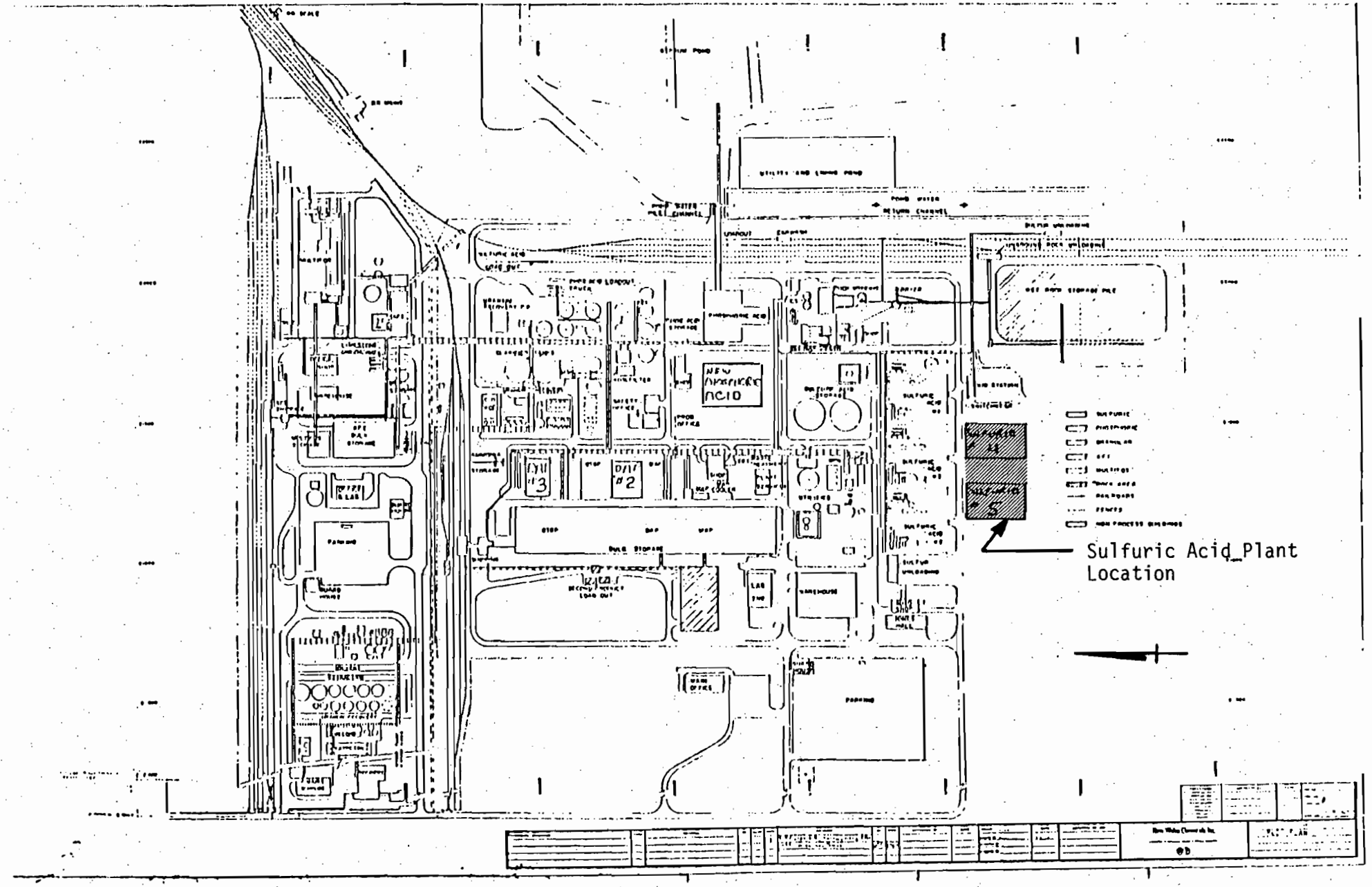
= 77,000 x 98/32 x (1 - 0.0246)

= 230,000 lbs/hr

= 115 tons/hr

= 2,750 tons/day 100% H_2SO_4


BLOWER
45°C
(20-30 KG/CM²)
STEAM
45°C
435°C
110°C
AIR
45°C
620°C
615°C
435°C
520°C
430°C
460°C
450°C
455°C
1100°C
DRYING TOWER
FURNACE
BOILER
HEAT EXCHANGER NO. 1
HEAT EXCHANGER NO. 2
SUPER-HEATER
CONVERTER
1 SULFUR (130°C)
450-452°C
200-220°C
2 STACK GAS
460°C
455°C
65-70°C
45°C
95°C
80°C
ACID COOLERS
FINAL ABSORPTION TOWER
ECONOMIZERS
FIRST ABSORPTION TOWER
90-95°C
200°C
105°C
H₂O
H₂O
95°C
TREATED WATER (105°C)
ACID COOLER
PRODUCT TO STORAGE
PRODUCT COOLER
100°C
PUMP TANK 98% ACID PUMPS
110°C
PUMP TANK 98% ACID PUMP



Pollutant Emission Rate Calculations

Pollutants - SO_2, mist, NO_x, CO

Operating Factor - 8400 hr/yr

Production Rate: Proposed - 2750 TPD 100% H_2SO_4
Permitted - 2000 TPD
Increase - 750 TPD

SO_2

Emission Factor - 4.0 lb/ton acid

Hourly: Proposed = 4.0 x 2750/24
= 458.3 lb/hr

Permitted = 4.0 x 2000/24
= 333.3 lb/hr

Increase = 125.0 lb/hr

Annual: Proposed = 458.3 x 8400/2000
= 1924.9 tpy

Permitted = 333.3 x 8400/2000
= 1400.0 tpy

Increase = 525 tpy

Mist

Emission Factor - 0.15 lb/ton acid

Hourly: Proposed = 0.15 x 2750/24
= 17.2 lb/hr

Permitted = 0.15 x 2000/24
= 12.5 lb/hr

Increase = 4.7 lb/hr

Annual: Proposed = 17.2 x 8400/2000
= 72.2 tpy

Permitted = 12.5 x 8400/2000
= 52.5 tpy

Increase = 19.7 tpy

NO_x

Emission Factor – 2.1×10^{-6} lb/scf (test results on existing New Wales Plants)

Typical Stack Gas Characteristics

SO_2 – 230 ppm

O_2 – 7.0%

Gas Flow Rate (See attached)

$$S = \frac{11800}{0.263 - 0.0126 \times \%O_2}$$

$$= \frac{11800}{0.263 - 0.0126(7.0)}$$

$$\simeq 67,500 \text{ scf/ton of acid}$$

Emission Rate

Hourly: Proposed = $2750/24 \times 67,500 \times 2.1 \times 10^{-6}$
= 16.2 lb/hr

Permitted = $2000/24 \times 67,500 \times 2.1 \times 10^{-6}$
= 11.8

Increase = 4.4 lb/hr

Annual: Proposed = $16.2 \times 8400/2000$
= 68.2 tpy

Permitted = $11.8 \times 8400/2000$
= 49.6 tpy

Increase = 18.6 tpy

CO

Sulfur consumption - 0.33 tons / ton H_2SO_4

Carbon content of sulfur ≃ 0.25% (assume to be "petroleum")

"Petroleum" content of Sulfur

Proposed = 2750/24 x 0.33 x 0.0025 x 2000 lb/ton
= 187.1 lb/hr
÷ 8 lb/gal
= 23.4 gal/hr

Permitted = 2000/24 x 0.33 x 0.0025 x 2000 x 1/8
= 17.0 gal/hr

Emission Rate @ 5 lb CO / 1000 gal (AP-42/7)

Hourly: Proposed = 23.4/1000 x 5
= 0.12 lb/hr

Permitted = 17.0/1000 x 5
= 0.08 lb/hr

Increase = 0.03 lb/hr

Annual: Proposed = 0.12 x 8400/2000
= 0.5 tpy

Permitted = 0.08 x 8400/2000
= 0.4 tpy

Increase = 0.1 tpy

STACK SAMPLING NEWS

THE PUBLICATION FOR SOURCE TESTING INFORMATION

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VOL. 4 ■ NUMBER 7

JANUARY 1977

PRODUCTION RATE MEASUREMENT IN SULFURIC ACID PLANTS — A NEW APPROACH

by D. James Grove and Walter S. Smith
Entropy Environmentalists, Inc.

Since the promulgation of the NSPS methods and standards in the December 23, 1971 Federal Register, the attention has been increasingly focused on accurate determination of the process parameters which enter into the compliance determination. For utility boilers, the standard is in units of pounds of particulate per million BTU's of heat input; for sulfuric acid plants, the units are pounds of pollution (sulfur dioxide or acid mist, per ton of sulfuric acid produced. The intent of this paper is to present a new approach to the measurement of the acid production rate in sulfuric acid plants (similar to the "F-factor" developed for boilers) which is based solely on flue gas measurements.

The traditional approach in compliance determinations for NSPS sulfuric acid plants involves the measurement of three parameters: pollutant concentration (either SO_2 or H_2SO_4), in pounds per standard cubic feet (lbs/scf); volumetric flow rate, in standard cubic feet per hour (scfh); and acid production rate, in tons per hour (tph). The emission rate is calculated as follows:

$$E = \frac{cQ}{P} \qquad (1)$$

where:

E = emission rate of SO_2 (or H_2SO_4), lbs/ton
c = concentration of SO_2 (or H_2SO_4), lbs/scf
Q = flow rate, scfh
P = acid production rate, tph

The disadvantage of this approach, from an enforcement standpoint, is that it relies on the acid production rate data provided by the plant owner. The production rate figures could be collected by the tester or the agency observer from the process instruments, but there is no guarantee that they are in calibration and functioning properly.

The basis of this paper is the development of an empirical means of determining the cubic feet of exhaust gas per ton of sulfuric acid, which can be combined with the pollutant concentration to yield the emission rate in pounds per ton of acid.

$$E = cS \tag{2}$$

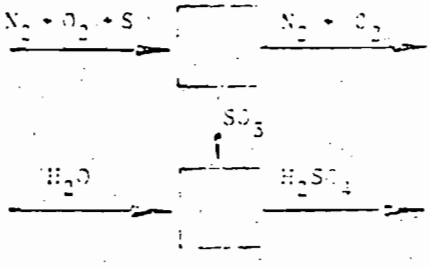
where:

S = empirical factor, scf/ton

Not only can NSPS compliance tests be performed without relying on source-supplied process data, but continuous monitoring can be done to yield pounds per ton of acid without measuring the volumetric flow rate (Q).*

In the production of sulfuric acid, sulfur is reacted with oxygen to produce sulfur trioxide, which is then combined with water to make the acid.

$$N_2 + \tfrac{3}{2} O_2 + S + H_2O \longrightarrow H_2SO_4 + N_2 \text{ (balanced)} \tag{3}$$



Using the above equation and flow diagram, the following can be computed:

$$\text{flow rate of } N_2 = Q\left(\frac{100 - \%O_2}{100}\right) \tag{4}$$

$$\text{flow rate of } O_2 \text{ @ inlet} = Q\left(\frac{.208 \text{ cf } O_2}{.792 \text{ cf } N_2}\right)\left(\frac{100 - \%O_2}{100}\right) \tag{5}$$

*An alternative approach for continuous monitors is presented in the October 6, 1975 Federal Register which also does not require measurement of Q, but it does require measurement of the SO_2 concentration at the inlet to the absorber, and it does not work if there is air injection (or air leakage) into the absorber.

$$\text{flow rate of } O_2 \text{ @ outlet} = Q\left(\frac{\%O_2}{100}\right) \tag{6}$$

$$\text{flow rate of } O_2 \text{ reacted} = Q\left[\left(\frac{.208}{.792}\right)\left(\frac{100 - \%O_2}{100}\right) - \left(\frac{\%O_2}{100}\right)\right] \tag{7}$$

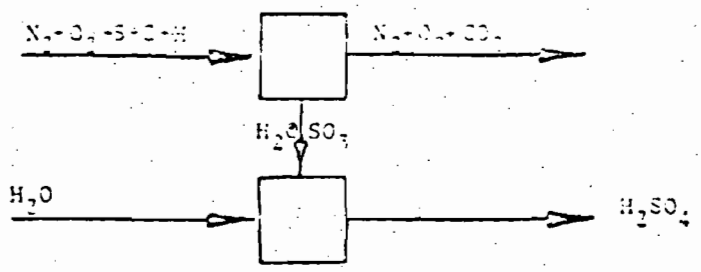
$$P = Q\left[\left(\frac{.208}{.792}\right)\left(\frac{100 - \%O_2}{100}\right) - \left(\frac{\%O_2}{100}\right)\right]\left(\frac{1 \text{ lbmol}}{385 \text{ scf}}\right)\left(\frac{1 \text{ mol } SO_3}{1 \text{ mol } O_2}\right)\left(\frac{98 \text{ lbs}}{1 \text{ lb mol}}\right)\left(\frac{\text{ton}}{2000 \text{ lbs}}\right) \tag{8}$$

$$S = \frac{Q}{P} = \frac{11800}{0.263 - 0.0126\ \%O_2} \quad \frac{\text{scf}}{\text{ton}} \tag{9}$$

The empirical factor 8 is therefore a function only of the oxygen content in the stack, and the tester needs only to measure the pollutant concentration (SO_2 or H_2SO_4) and the oxygen concentration to compute the emission rate in pounds per ton of acid.

In some sulfuric acid plants, an auxiliary fuel is burned in producing the acid. If this is the case, the fuel (containing carbon and hydrogen) will react with some of the oxygen, and a correction will have to be applied to equation (9).

$$N_2 + O_2 + S + C + H + H_2O \longrightarrow H_2SO_4 + N_2 + CO_2 \text{ (unbalanced)} \tag{10}$$



$$S' = \frac{11800}{0.263 - 0.0126\ \%O_2 - A\ \%CO_2} \tag{11}$$

where:

A	Type of Fuel	Approximate Ratio, C/H
0.0226	methane	0.25
0.0217	natural gas	0.27
0.0196	propane	0.37
0.0172	#2 oil	0.54
0.0161	#6 oil	0.71
0.0148	bituminous coal	1.14
0.0126	coke	1/0

The above equation (11) will also apply where the raw materials have some carbon-hydrogen impurities. In this case, compute the value of "A" as follows:

$$A = \frac{(C/H) + 0.25}{100\,(C/H)} + 0.00263$$

The equations presented in this paper apply only when the raw materials are elemental sulfur or ores containing elemental sulfur. They will not apply when the sulfur is derived from spent acid or gas streams containing hydrogen sulfide.

3.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control pollutants emitted from major modifications to air pollution sources if the increases in the emission rate exceed de minimus levels (40 CFR 52.21). The de minimus levels for pollutants potentially emitted from sulfuric acid plants are defined in 40 CFR 52.21 (See Table 2-1). For the New Wales Chemical Complex, BACT is to apply for sulfur dioxide and sulfuric acid mist.

Preliminary engineering data are included in the Appendix of Section 2.0 for the control systems proposed for the two sulfuric acid plants. The sulfur dioxide will be controlled by double absorption and the acid mist will be controlled with high efficiency mist eliminators. These measures were determined by FDER and EPA to constitute BACT when the plants were originally permitted and are again proposed as BACT for sulfur dioxide and acid mist (Appendix 3-1).

The actual emission rate increases for nitrogen oxides and carbon monoxide from the proposed modifications are less than the de minimus levels. These pollutants are, therefore, not subject to BACT or other requirements of 40 CFR 52.21.

In the following sections the control technology proposed for each pollutant is discussed.

3.1 Sulfuric Acid Plants

Sulfuric acid plants emit sulfur dioxide, acid mist, nitrogen oxides and possibly carbon monoxide. EPA has NSPS regulating the sulfur dioxide and acid mist emission rates.

EPA has recently completed a review of NSPS for sulfuric acid plants(1). In this document it is concluded that NSPS for sulfuric acid plants should not be made more stringent than the existing 4.0 pounds sulfur dioxide and 0.15 pound acid mist per ton of 100 percent acid produced.

3.1.1 Sulfur Dioxide

Double absorption is the best demonstrated control technology available for sulfur dioxide control. This technology has the advantage of reducing sulfur dioxide emissions, producing no by-products and introducing no unfamiliar operating factors to plant operators. Improvements to this system by reducing catalyst life from three to five years to two years were considered(1) but rejected since it reduced pre-tax profit by approximately 20 percent.

Scrubbing systems; bisulfite and ammonia, were evaluated and described as feasible. These systems; however, would not be expected to result in significantly lower sulfur dioxide emission rates. In addition these systems are untested, they will generate by-products, and they will introduce a system that requires completely different operating technology(1).

Molecular sieves have been tried and found unacceptable because of operating difficulties.

It is concluded that double absorption with catalyst screening and make-up every one to five years represents BACT for sulfur dioxide. This will also assure compliance with NSPS.

3.1.2 Sulfuric Acid Mist

Acid mist and the resulting opacity can be controlled by high efficiency mist eliminators and theoretically by electrostatic precipitators. Practically, precipitators are not considered an alternative because of operating problems that will develop in the acid environment.

It has been the experience of the industry that the high efficiency mist eliminators are the most effective at this time. High efficiency mist eliminators are proposed by New Wales. They are considered BACT for acid mist and will assure that NSPS will be satisfied.

3.1.3 Nitrogen Oxides and Carbon Monoxide

Neither nitrogen oxide nor carbon monoxide emission rates exceed the annual de minimus levels established by 40 CFR 52.21. The annual emission rate increase of nitrogen oxides as a result of the proposed project will be 37 tons per year compared with the de minimus level of 40 tons per year. The increase in the annual emission rate of carbon monoxide is less than one ton per year compared with a de minimus level of 100 tons per year. Since the de minimus levels are not exceeded, neither of these pollutants are subject to the requirements of 40 CFR 52.21.

REFERENCES
SECTION 3

1. Drabkin, M. and Brooks, K.J., A review of Standards of Performance for New Stationary Sources - Sulfuric Acid Plants, US EPA, EPA-450/3-79-003, January 1979.

APPENDIX 3-1

FDER AND EPA BACT DETERMINATIONS FOR NEW WALES THIRD TRAIN EXPANSION SULFURIC ACID PLANTS

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

August 24, 1979

RECEIVED BY
NEW WALES CHEMICALS, INC.
T. L. CRAIG

AUG 30 1979

Noted.....File.....

Referred To.....

Mr. Thomas L. Craig,
Vice President & General
Manager
New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

Subject: Best Available Control Technology (BACT) for New Wales Chemicals, Inc. Sulfuric Acid Plants No. 4 & No. 5, to be located in Polk County

Dear Mr. Craig:

The Department of Environmental Regulation has reviewed the BACT Application submitted by you, and determined Best Available Control Technology (BACT) for the above referenced soruce as follows:

SO_2:	Emission not to exceed 4.0 #/ton of 100% H_2SO_4/attainable with a double absorption system.
Sulfuric Acid Mist:	Emissions not to exceed 0.15 #/ton of 100% H_2SO_4/attainable with a high efficiency demister.
Opacity:	Not greater than 10 percent.
Test Method:	As prescribed in EPA NSPS, 40 CFR, Part 60, Subpart H.

The complete BACT determination document is attached.

Sincerely,

Victoria Martinez
for WC

Victoria Martinez,
BACT Coordinator

VM/es

Attachment

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee

To: _____ Loctn.: _____

To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

TO: Jacob D. Varn
Secretary

FROM: J. P. Subramani, Chief
Bureau of Air Quality Management

DATE: August 20, 1979

SUBJECT: BACT Determination - New Wales Chemicals, Inc. Sulfuric Acid Plants No. 4 and No. 5, to be located in Polk County

Facility: Two identical double absorption sulfuric acid plants with a combined process input rate of 1320 tons/day of sulfur.

BACT Determination Requested by the Applicant:

Pollutant

SO_2: 4 lbs/ton 100% H_2SO_4 acid produced

Sulfuric Acid Mist: 0.15 lbs/ton 100% H_2SO_4 acid produced

Date of Receipt of a Complete BACT Application:

June 5, 1979

Date of Publication in the Florida Administrative Weekly:

August 6, 1979

Date of Publication in a Newspaper of General Circulation:

August 8, 1979, The Ledger, Lakeland, Florida

Study Group Members:

A BACT determination on a sulfuric acid plant was completed April 16, 1979. There has been no significant technological improvement since that date. Thus the same BACT applies and a study group is not needed.

EPA's New Source Performance Standards (NSPS) for Sulfuric Acid Plants:

Pollutant	Rate of Concentration
SO_2:	4 #/ton of 100 H_2SO_4
Sulfuric Acid Mist:	0.15 #/ton of 100% H_2SO_4

BACT Determination by the Florida Department of Environmental Regulation:

SO_2:	Emission not to exceed 4.0 #/ton of 100% H_2SO_4/attainable with a double absorption system.
Sulfuric Acid Mist:	Emissions not to exceed 0.15 #/ton of 100% H_2SO_4/attainable with a high efficiency demister.
Opacity:	Not greater than 10 percent.
Test Method:	As precribed in EPA NSPS, 40 CFR, Part 60, Subpart H.

Justification of DER Determination:

There has been no significant technological improvements since December 1978 when EPA reviewed its NSPS for this type of source. Although lower emissions than NSPS are attainable the selection of NSPS as BACT allows for the normal decrease in efficiency with the passage of time.

Details of the Analysis May be Obtained by Contacting:

Victoria Martinez, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

Recommendation from: Bureau of Air Quality Management

by: J. P. Subramani

Date: AUGUST 20 1979

Approved by: Jacob D. Varn

Date: 21 ST AUGUST 1979

JDV/es

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30308

MAY 23 1980

REF: 4AH-AP

Mr. A. L. Girardin III
Environmental Services, Supervisor
New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

Dear Mr. Girardin:

Review of your September 26, 1979 application to modify a phosphate fertilizer complex, near Mulberry and Bartow, Florida has been completed. The construction is subject to rules for the Prevention of Significant Air Quality Deterioration (PSD), contained in 40 CFR 52.21.

We have determined that the construction, as described in the application, meets all applicable requirements of the PSD regulations, subject to the conditions in the conclusions section to the final determination (enclosed). EPA has performed the preliminary determination concerning the proposed construction, and published a request for public comment on April 21, 1980. No comments were received. Authority to Construct a Stationary Source is hereby issued for the facility described above, subject to the conditions in the conclusions section to the final determination. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at (404) 881-3476. Additionally, construction covered by this Authority to Construct must be initiated within 18 months from the receipt of this letter.

United States Court of Appeals for the D. C. Circuit issued a ruling (December 4, 1979) in the case of Alabama Power Co. vs. Douglas M. Costle (78-1006 and consolidated cases) which has significant impact on the EPA prevention of significant deterioration (PSD) program and permits issued thereunder. The ruling will require modification of the PSD regulations and could affect permits issued under the existing program. You are hereby advised that this permit may be subject to reevaluation.

Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Kent Williams, Chief, New Source Review Section (404/881-4552).

Sincerely yours,

Thomas W. Devine
Director
Air & Hazardous Materials Division

Enclosure

cc: S. Smallwood
Florida Department of Environmental Regulation

TWD:JLS:jt

FINAL DETERMINATION

I. Applicant

New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

II. Project Location

The plant site is in western Polk County, Florida, at Highway 640 and County Line Road. UTM coordinates are 396.6km east and 3078.9km north.

III. Project Description

The existing New Wales plant manufactures several fertilizer products using both wet and dry phosphoric acid processes. The dry process, with its existing facilities, is to be eliminated.+ Production of phosphoric acid (P_2O_5) will be increased by 50% or 500,000 tons/year (as 54% concentrate) using the wet process exclusively. Sulfuric acid for the wet process will be provided from two new sulfuric acid plants producing 2000 tons/day H_2SO_4 each. A dual train diammonium phosphate (DAP) plant will produce 140 tons/hour of DAP by reacting anhydrous ammonia with the P_2O_5 produced at the plant.* A third product loadout system will separately handle granular triple super phosphate (GTSP) from the existing complex.

Phosphate rock, as a raw material, is mined and shipped by truck and rail to the New Wales plant from mines within Polk County. These include Kingsford, Phosphoria, Noralyn, and Clear Springs.

Plans are to begin construction in early 1980 with completion by January, 1982. Startups will be phased throughout the interim as construction is completed.

+(The trend towards the increasing use of the wet process is not because of improved technology, but is, instead, because the increasingly expensive fuel costs and air emission regulations are forcing the industry to abandon the dry process)(7).

*A liming station will be built for water treatment.

F. Source Impact on Class I Areas

PSD regulations require source impact on Class I areas be assessed, 40 CFR 52.21(q)(1).

The nearest Class I area to the New Wales site is the Chassahowitzka National Wildlife Refuge 62 miles northwest. The largest area of significant impact of proposed emissions is 72 km or 45 miles, and this is for the SO_2 3-hr average. This means there is no significant impact of emissions on the Class I area. New Wales' proposed emissions will not impact the Chassahowitzka National Wildlife Refuge.

V. Conclusions

EPA Region IV proposes a final determination of approval with conditions for New Wales to construct the proposed expansion projects described in the PSD permit application, PSD-FL-034. This approval recommendation is based on information submitted to EPA by the applicant in the following correspondence:

1.	June 5, 1979	PSD permit application submittal
2.	September 5, 1979	DAP plant proposal
3.	October 19, 1979	additional information submittal
4.	December 20, 1979	more additional information
5.	February 14, 1980	applicant's response to FDER's comments on air quality modeling

This approval recommendation requires the following conditions be a part of the PSD permit to be issued:

1. In the P_2O_5 plant all potential sources of total fluoride emissions including (but not limited to) the hotwell, Prayon filter, seal tank, vents from sumps, clarifiers and acid tanks, will either be unexposed to ambient air or will be ducted to this facility's wet scrubber system.
2. There will be no visible emissions from the phosphate rock receiving, unloading, and conveying operations at the source. There will also be no visible emissions from the rock storage pile.
3. Fugitive PM emissions during construction phases of the proposed project are limited to 20% opacity. Control will be achieved through use of water suppression, wind breaks, and road paving as needed to meet the opacity limitation.

4. The following existing source facilities scheduled to be phased out will have zero emissions after any facility of this permit begins operating:

Facility	Designation Code
Dry Rock Silo	A053-5963
Rock Grinding-west	A053-5969
Dry Rock load-out	A053-5979
Rock Grinding-east	A053-5967
Dry Rock Silo Bottom	A053-5980
Dry Prod. Belt. Trans.	A053-5981
Wet Rock Dryer	A053-5982
Phos. Acid Rock Bin-west	A053-4970
Phos. Acid Rock Bin-east	A053-5968

5. Unless otherwise specified, each emission point associated with this permit is subject to a 20 percent visible emission standard using Method 9.

6. H_2SO_4 plant SO_2 continuous emissions monitoring is required in accordance with 40 CFR 60.84.

7. The mass flow of phosphorus-bearing feed will be monitored at the DAP plant and the P_2O_5 plant in accordance with 40 CFR 60.223 and 40 CFR 60.203, respectively.

8. The total pressure drop across process scrubbing systems in the DAP plant and the P_2O_5 plant will be monitored in accordance with 40 CFR 60.223 and 40 CFR 60.204, respectively.

9. The emissions from the constructed facilities will not exceed the allowable emission limits outlined in the attached allowable emissions tables for fluorides, particulate matter, sulfur dioxide, and acid mist (H_2SO_4).

10. In accordance with 40 CFR 60.8 performance tests using EPA approved methods will be conducted to ensure that each allowable emissions of this permit is complied with. The gypsum ponds are exempted from this requirement on the basis that no accepted method exists for testing fugitive emissions of fluoride from gypsum ponds.

11. Post construction continuous monitoring for particulate matter and sulfur dioxide will be performed for a period of at least one year. Such monitoring will be in accrodance with the EPA

quality assurance procedures and the requirements outlined in Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA-450/2-78-019).

12. The applicant will comply with the requirements and procedures of the attached general conditions.

Sulfur dioxide allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant (2000 TPD capacity each)	4 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4, and 333 lb/hr each	double adsorption process; catalyst changeover as required to keep SO_2 emissions within compliance
DAP reactor, granulator, and dryer (dual train)	22 lb/hr from each of two dryers, and 1.1 lb/10^6 Btu input	2.5% S maximum No. 6 fuel oil; free ammonia present in the dryer vapors naturally supresses SO_2 emissions, 60% control is estimated based on firing 140 gal/hr total.

NO_x allowable emissions:

No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.6 lb/hr each, and 2.1×10^{-6} lb/dscf	good engineering practices; no scrubber technology known. Allowabl emissions are based on actual measu ments of existing identical units
DAP reactor, granulator, and dryer	4.3 lb/hr each train, and 0.21 lb/10^6 Btu input	low NO_x type burners for the dryer; free ammonia present in the dryer vapors naturally supresses some NO_x species. Air/fuel control for oil firing in dryers is achieved by fix orifices in both oil and air lines using variable pressure on the oil pump; high excess air is required f proper process flow; steam atomizat of fuel oil.

Acid mist (H_2SO_4) allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.5 lb/hr each, and 0.15 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4	HE or HV mist eliminators, 90% control of potential emissions; opacity must not exceed 10% by Method 9

4.0 EXISTING AIR QUALITY DATA

4.1 Existing Data

The only pollutant for which monitoring data might be required is sulfur dioxide. Various factors, including air quality modeling and existing monitoring data justify the elimination of the requirement for New Wales to enter into a preconstruction ambient air monitoring program.

The existing PSD regulations state that applications submitted, and determined to be complete, prior to June 8, 1981 must meet the monitoring requirements of the 1978 PSD regulations. These regulations state [40 CFR 52.21(n)] "As necessary(underlining added for emphasis) to determine whether emissions from the proposed source or modification would cause or contribute to a violation of a national ambient air quality standard, any permit applications submitted after August 7, 1978, shall include an analysis of continuous air quality monitoring data . . ." This requirement was discussed with EPA staff personnel prior to submitting the Third Train Expansion PSD application in late 1979. Based upon monitoring data and preliminary modeling data available at that time, it was agreed that preconstruction monitoring for sulfur dioxide would not be required.

The existing sulfur dioxide monitoring data available for Polk County were submitted with the Third Train Expansion PSD application. These data were collected at monitors located 10-12 km northeast of the New Wales site in an area with a much heavier sulfur dioxide emission burden. Since the monitoring data indicated that there was no threat to sulfur dioxide ambient air quality standards in this area, it followed that there would be even less of a threat to the standards near the New Wales

plant site. The detailed modeling of sulfur dioxide emissions included in the Third Train Expansion PSD application and in Section 5.0 of this application confirms the fact that air quality standards for sulfur dioxide will not be threatened. Because of this it is proposed that pre-project ambient monitoring not be a requirement for approving the production rate increases sought for the two Third Train sulfuric acid plants.

4.2 Background Concentrations

Background levels for sulfur dioxide have been assumed to be zero. This assumption was made since all of the sulfur dioxide emitted within several miles of the New Wales Chemical Complex is emitted from permitted air pollution sources. Emission data for these sources are on file with the Florida Department of Environmental Regulation office in Tampa, Florida and were taken into consideration in developing emission inventories which were used for air quality modeling.

5.0 AIR QUALITY IMPACT ANALYSIS

5.1 Introduction

Air quality modeling has been conducted to evaluate the impact of the increased sulfur dioxide and acid mist emissions from the two Third Train sulfuric acid plants. The baseline concentration for these pollutants and the impact of new or modified sources (all major sources constructed since January 6, 1975 and all sources since August 7, 1977) have been established by air quality modeling. The impact of new or modified sources within the area of the New Wales chemical complex have been included in the air quality impact analysis.

The air quality modeling for both long-term and short-term impacts was conducted in accordance with guidelines established by EPA (Guideline for Air Quality Models, March 1978). For sulfur dioxide the annual, the 24-hour and the 3-hour time periods were investigated. For acid mist the impacts for the same time periods were investigated.

The annual impacts were evaluated by using the Air Quality Display Model (AQDM). Meteorological data from Orlando for the period 1974-1978 were used with this model.

For the 24-hour and 3-hour periods, the CRSTER and PTMTPW models were used. The CRSTER was used to establish the area of significant impact and the meteorological conditions resulting in the highest second-high impacts in various directions from the fertilizer complex. Once the

meteorological conditions were established, these data plus emission data from New Wales sources and sources up-wind of New Wales were input into the PTMTPW model and the maximum impacts were determined. Receptor spacing of 0.1 km were used in determining the maximum impacts.

The results of the modeling are summarized in Table 5-1 and various Figures. The computer print-outs for all of the air quality modeling are bound as a separate document.

5.2 Impact Analysis

The short-term impact is defined as the 3-hour and 24-hour impact of pollutants emitted from sources in the study area. The short-term impact analysis was conducted with the CRSTER and PTMTPW air quality models.

The CRSTER model was run first using as input the emission data from the proposed sources and meteorological data for the period 1974-1978 from Orlando, Florida. The receptor distances in the CRSTER model were set to predict the point of maximum impact and also the boundary of the area of significant impact of the proposed sources. Significant, as it is used in this context, is defined in Table 5-2. The areas of significant impact for sulfur dioxide are shown in Figure 5-1.

Air pollutant emissions from all major sources within 50 kilometers of New Wales were included in the impact studies. This includes sources well beyond the area of significant impact of the proposed action.

The emission inventory for sulfur dioxide in the area of influence was developed from data on file at the Florida Department of Environmental Regulation District Office in Tampa, Florida. These files were reviewed source by source to develop an emission inventory which is as realistic as possible.

Meteorological data for evaluating the 3-hour and 24-hour pollutant levels in the ambient air were selected from the CRSTER model output. Meteorological data resulting in the highest second-high 24-hour and 3-hour sulfur dioxide concentrations in several directions from New Wales were selected for evaluating sulfur dioxide impacts. Only the directions at which the maximum impacts were predicted were selected for evaluating the 24-hour and 3-hour acid mist impacts.

The long-term impact is defined as the annual average impact of pollutants emitted from sources within the study area. The long-term impact analysis was conducted with the AQDM. The input data to the AQDM included emission data for sulfur dioxide resulting from all sources within approximately 50 km of New Wales. This includes sources outside the area of significant impact of the proposed sources.

The meteorological data input to the AQDM were for the 1974-1978 period from Orlando, Florida. These data were in the STAR format with five stability classes. Receptor spacing used in the AQDM was 1.0 km.

5.2.1 Sulfur Dioxide Impact Analysis

5.2.1.1 Short-Term Sulfur Dioxide Impact

The short-term impact analysis for sulfur dioxide involved a 24-hour impact analysis and a 3-hour impact analysis. These time periods correspond to applicable ambient air quality standards.

The CRSTER model was run multiple times with sulfur dioxide emission data for the new and proposed New Wales sources and meteorological data for the period 1974-1978 for Orlando, Florida. On the first set of runs the receptors were set to determine the maximum air quality impact of the new and proposed sources. From this run the meteorological conditions resulting in the highest second-high 24-hour and 3-hour impacts at several locations were selected. The locations selected represented the direction to the maximum highest second-high concentration for both the 24-hour and 3-hour periods and directions that would allow investigation of the combined impacts of New Wales sources and other sources which would be aligned with New Wales during the occurance of various wind directions. The direction selected for evaluation and the meteorological conditions resulting in the highest second-high impact for each direction are presented in Figure 5-2 for the 24-hour sulfur dioxide impact analysis and in Figure 5-3 for the 3-hour sulfur dioxide impact analysis.

The second series of runs with the CRSTER model were made to determine the area of significant impact of the proposed sources. The distance to the boundary of the area of annual significant impact was determined to be 3.0 km; distance to the boundary for the 24-hour period was 10.3 km and for the 3-hour period 5.6 km. The areas of significant influence are shown in Figure 5-1 along with the Pinellas County sulfur dioxide

non-attainment area and the Class I PSD area nearest the New Wales plant site. It can be seen that the proposed sources do not impact significantly on either the non-attainment area or the Class I area.

The sulfur dioxide emission inventory used for the air quality impact analysis included all major sources within approximately 50 km of the New Wales site. All sources at the New Wales Chemical Complex, including the auxiliary boiler, were assumed to be operating a maximum permitted rate.

The critical meteorological conditions established with the CRSTER model and the emission inventory were input to the PTMTPW model to determine the maximum impact for each condition investigated. The receptor spacing used for determining the point of maximum impact was 0.1 km. The results of these runs are summarized in Table 5-1 and Figures 5-5 and 5-6.

5.2.1.2 Long-Term Sulfur Dioxide Impact

The AQDM was run once to determine the impact of sulfur dioxide emissions resulting from the proposed production rate increase, a second time to determine the impact of new and proposed sources, and a third time to determine the impact of all sources; the latter with the two Third Train sulfuric acid plants at 2,750 tons per day each and the New Wales auxiliary boiler operating at 100 percent capacity.

The annual average sulfur dioxide levels for all sources, new and proposed sources and proposed action are summarized in Figures 5-7 through 5-9 respectively.

5.2.2 Acid Mist Impact Analysis

A summary Air Quality Review was conducted to determine the impact of acid mist emitted from sulfuric acid plants in the vicinity of the New Wales Chemical Complex. This review was conducted because of the requirements of 40 CFR 52.21. It should be recognized that there are no ambient air quality standards or PSD increments against which to evaluate the predicted ambient levels of acid mist.

The annual average acid mist impact analysis was determined with the AQDM and the short-term impact analyses were conducted with the PTMTPW.

The AQDM was run with sulfuric acid mist emissions from the two Third Train Expansion sulfuric acid plants only and again with acid mist emissions from these two plants plus all other sulfuric acid plants in the vicinity of the New Wales Chemical Complex.

To determine the maximum 3-hour and 24-hour impacts of acid mist emissions in the vicinity of the New Wales Chemical Complex the PTMTPW was run with emissions from the New Wales sulfuric acid plants. The PTMTPW was run twice for both the 3-hour and 24-hour periods; once with emissions only from the two Third Train sulfuric acid plants and the second time with sulfuric acid mist emissions from all five New Wales sulfuric acid plants. The meteorological data used with the PTMTPW for these runs were the data determined to give the maximum impacts from the sulfuric acid plants.

The air quality review for sulfuric acid mist is summarized in Figures 5-10 through 5-12 and in Table 5-3.

5.3 Downwash Analysis

When pollutants are emitted from a stack or vent at a velocity less than two times the prevailing wind speed or at a height less than approximately 2.5 times the height of the nearby structures, there is a possibility that the pollutant will be entrapped in the turbulent wake generated by the structure or stack and be mixed immediately to ground level. Such an event is referred to as a downwash.

The sulfuric acid plants being constructed by New Wales will have 199 foot high stacks. The highest structure with any applicable width associated with the sulfuric acid plants or near these plants will be approximately 80 feet high. The 199 foot stack is 2.5 times higher than this structure. In addition, the gas velocity leaving the stack will be approximately 13.3 meters per second; approximately 4.0 times the average wind speed at the New Wales site. Considering the height of the sulfuric acid plant stack relative to surrounding structures and the gas velocity leaving the stack, it is very unlikely that downwash from this source will occur.

5.4 Air Quality Review Summary

The air quality review for the proposed sulfuric acid plant production rate increase was conducted in accordance with modeling guidelines established by the U.S. Environmental Protection Agency. The long-term impact analyses were conducted with the AQDM and the short-term analyses with the CRSTER and PTMTPW. Meteorological data from Orlando for the period 1974-1978 were used in the air quality review.

The emission data utilized in conducting the air quality review were obtained from the FDER office in Tampa. With the New Wales sources it was assumed that all sources would be operating at maximum permitted rates for short-term and annual periods. Under this assumption the five sulfuric acid plants at New Wales, the auxiliary boiler, and all other sources were assumed to be operating at maximum rated capacity. It is extremely improbable that the auxiliary boiler would ever operate at 100 percent capacity with the five sulfuric acid plants operating. By assuming this to be the case, the air quality review presented herein represents the extreme worst case conditions.

The air quality review indicates that the production rate of the two Third Train sulfuric acid plants can be increased to 2,750 tons per day each with no threat to ambient air quality standards or PSD increments. The impact of sulfuric acid mist resulting from the proposed production rate increase likewise is not considered to be significant.

TABLE 5-1

SUMMARY OF AIR QUALITY REVIEW FOR SULFUR DIOXIDE

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

Pollutant	Max. New Source Impact (ug/m^3)	Max. Impact of all Sources (ug/m^3)	Max. Increase From Proposed Rate Increase (ug/m^3)
Annual	6.5	26	0.7
24-Hour	64.0	228	12.9
3-Hour	264.0	941	90.4

TABLE 5-2

AIR QUALITY STANDARDS AND
CLASS II PSD INCREMENTS FOR SULFUR DIOXIDE

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

Time Period	Air Quality Standard (ug/m^3)	Class II PSD Increment (ug/m^3)
Annual	60	20
24-Hour	260	91
3-Hour	1300	512

TABLE 5-3

SUMMARY OF AIR QUALITY REVIEW FOR ACID MIST

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

Pollutant	Max. New Source Impact (ug/m^3)	Max. Impact of all Sources (ug/m^3)	Max. Increase From Proposed Rate Increase (ug/m^3)
Annual	0.13	1	0.03
24-Hour	2.2	5.3(1)	0.61
3-Hour	13.1	32.2(1)	3.6

(1) Max. impact of New Wales sources only

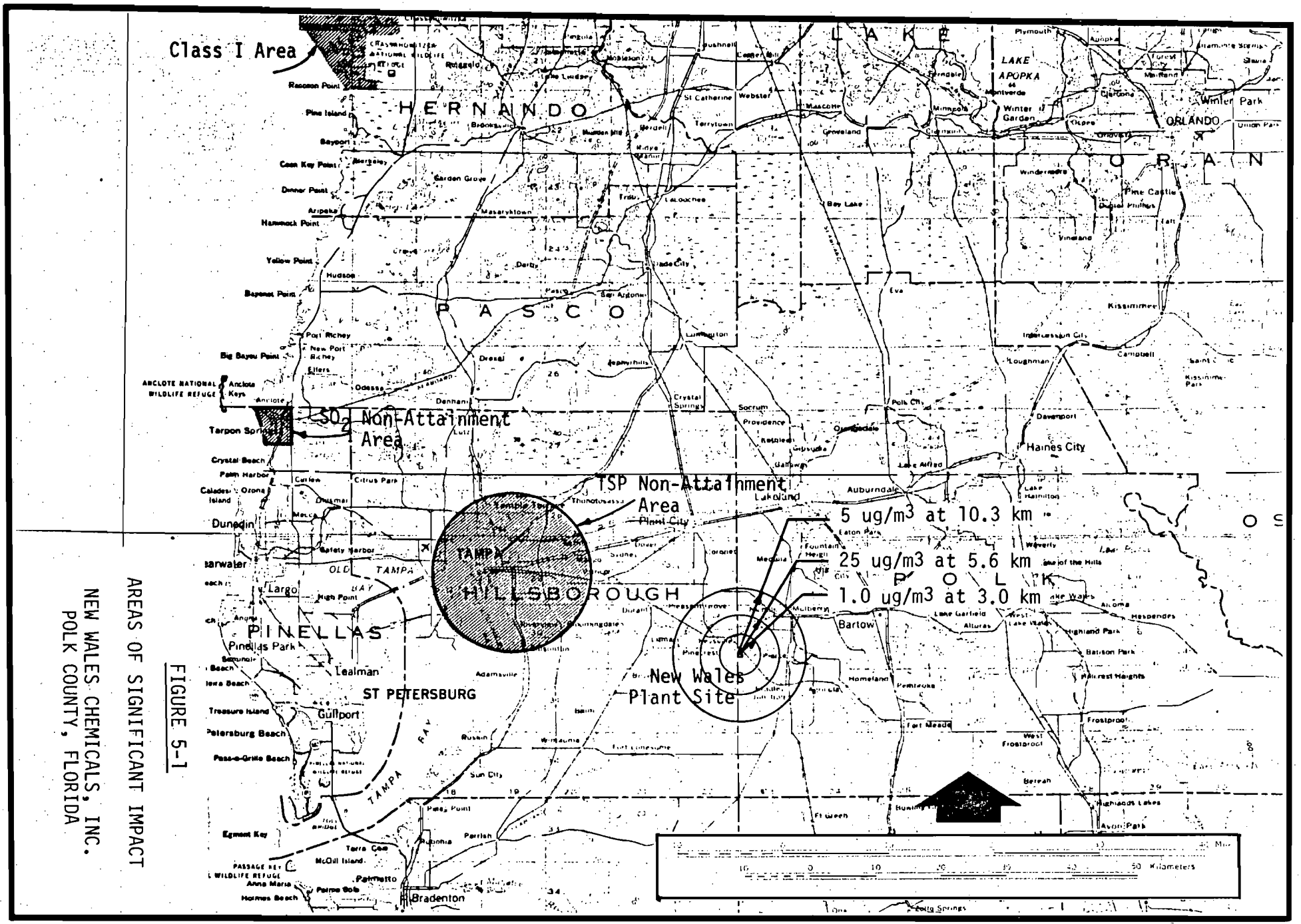


FIGURE 5-1

AREAS OF SIGNIFICANT IMPACT

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

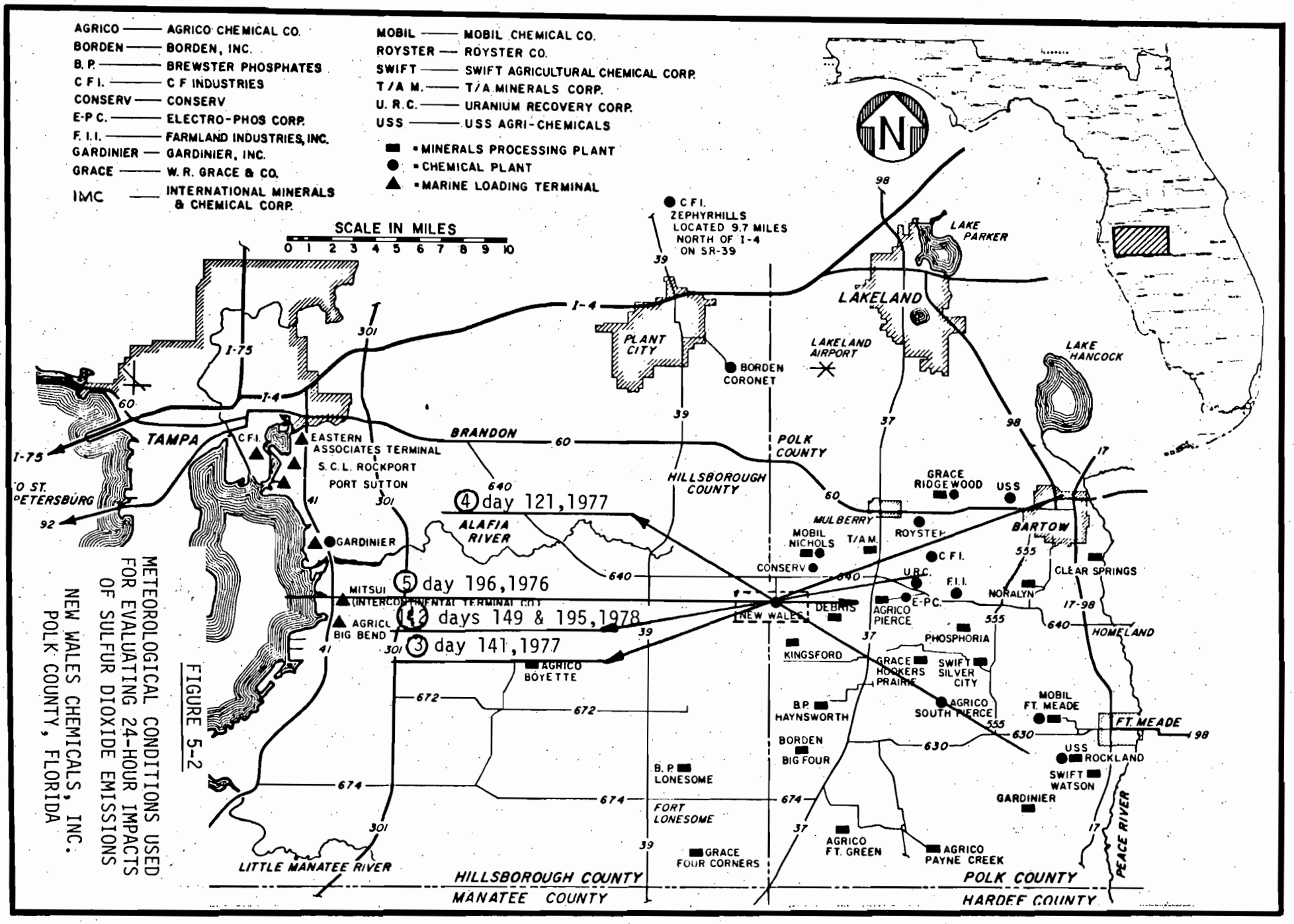


FIGURE 5-2

METEOROLOGICAL CONDITIONS USED FOR EVALUATING 24-HOUR IMPACTS OF SULFUR DIOXIDE EMISSIONS

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

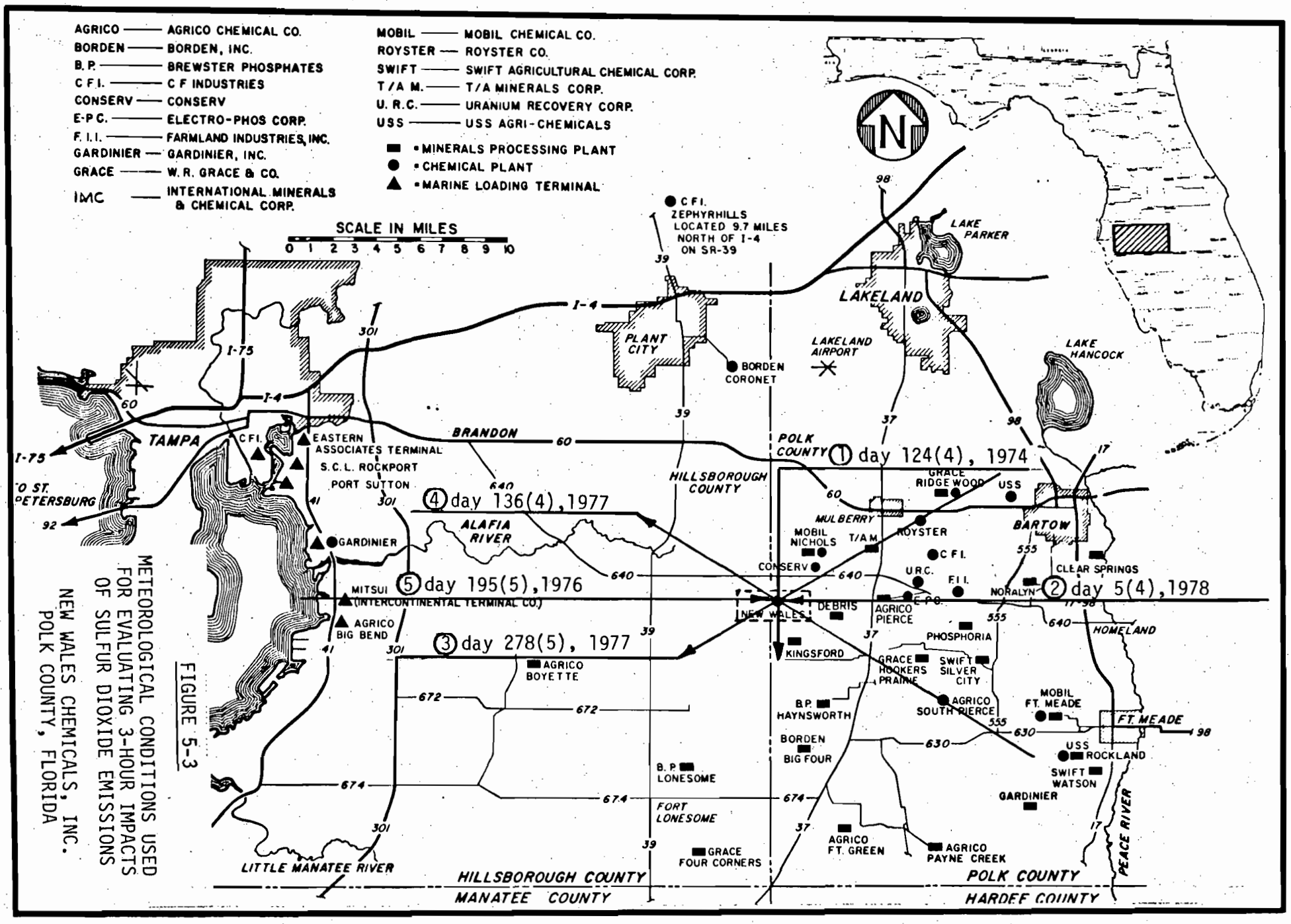


FIGURE 5-3

METEOROLOGICAL CONDITIONS USED FOR EVALUATING 3-HOUR IMPACTS OF SULFUR DIOXIDE EMISSIONS NEW WALES CHEMICALS, INC. POLK COUNTY, FLORIDA

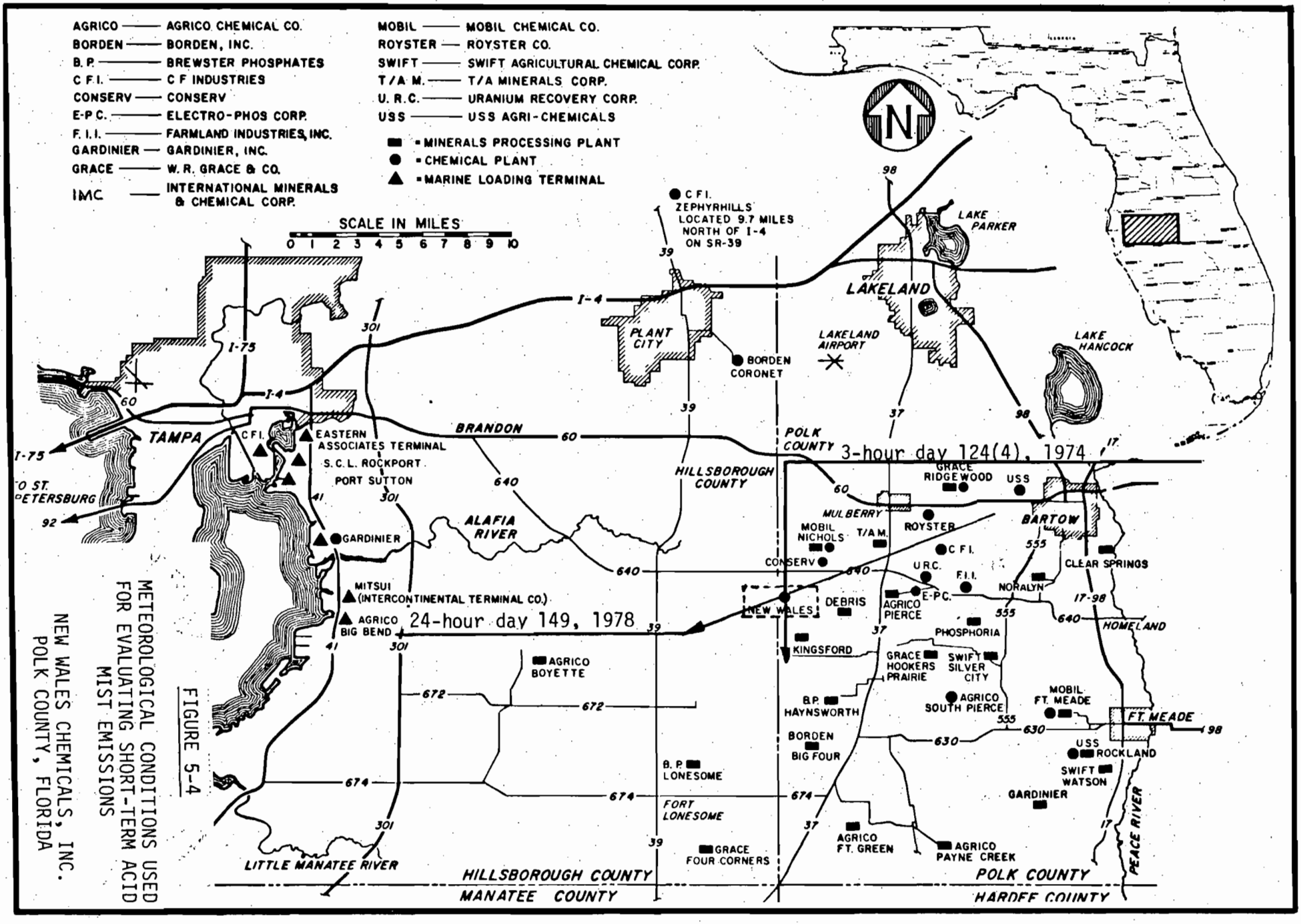
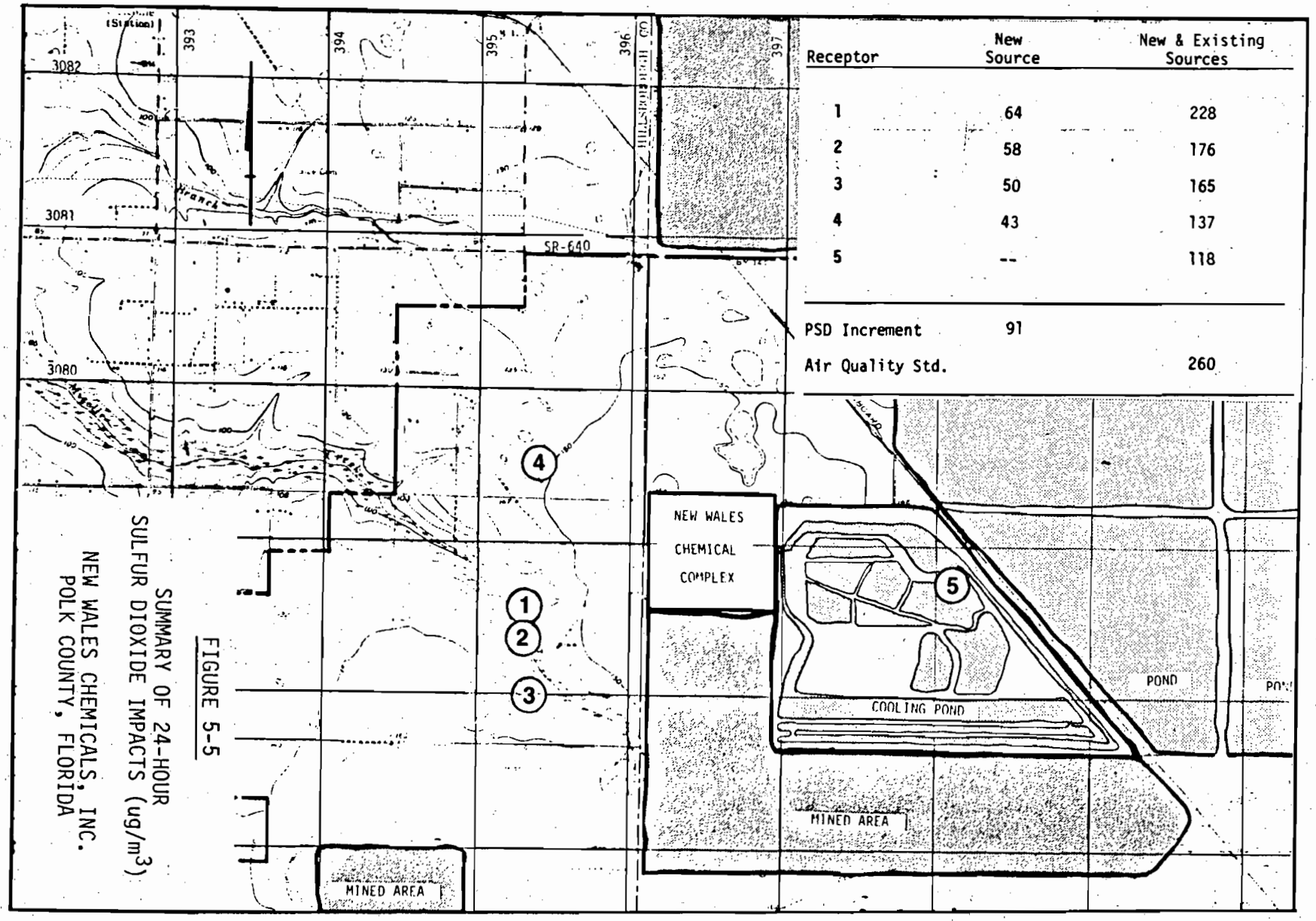


FIGURE 5-4

METEOROLOGICAL CONDITIONS USED FOR EVALUATING SHORT-TERM ACID MIST EMISSIONS

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

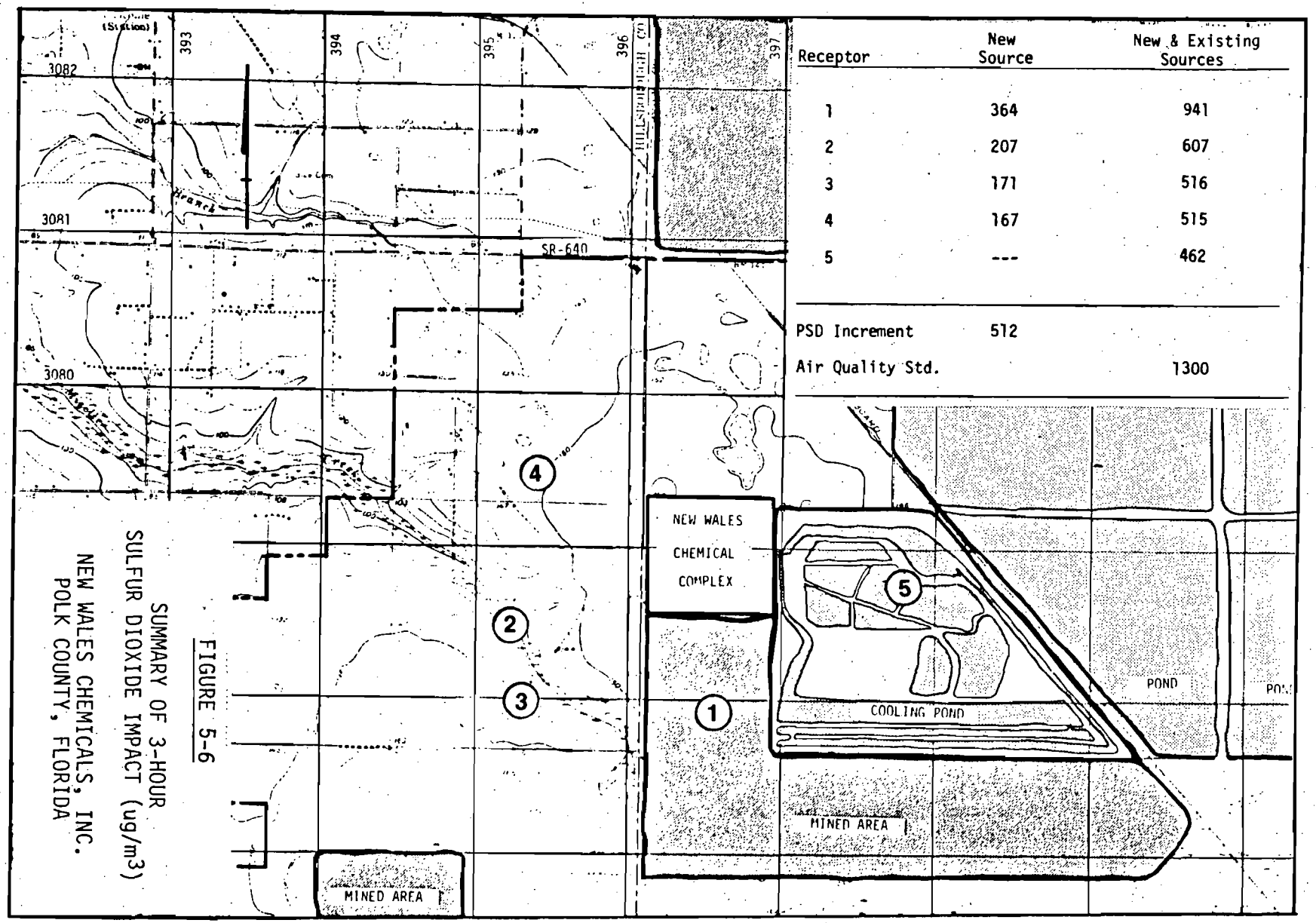


Receptor	New Source	New & Existing Sources
1	64	228
2	58	176
3	50	165
4	43	137
5	--	118
PSD Increment	91	
Air Quality Std.		260

FIGURE 5-5

SUMMARY OF 24-HOUR SULFUR DIOXIDE IMPACTS (ug/m^3)

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA



Receptor	New Source	New & Existing Sources
1	364	941
2	207	607
3	171	516
4	167	515
5	---	462
PSD Increment	512	
Air Quality Std.		1300

FIGURE 5-6

SUMMARY OF 3-HOUR
SULFUR DIOXIDE IMPACT (ug/m3)

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

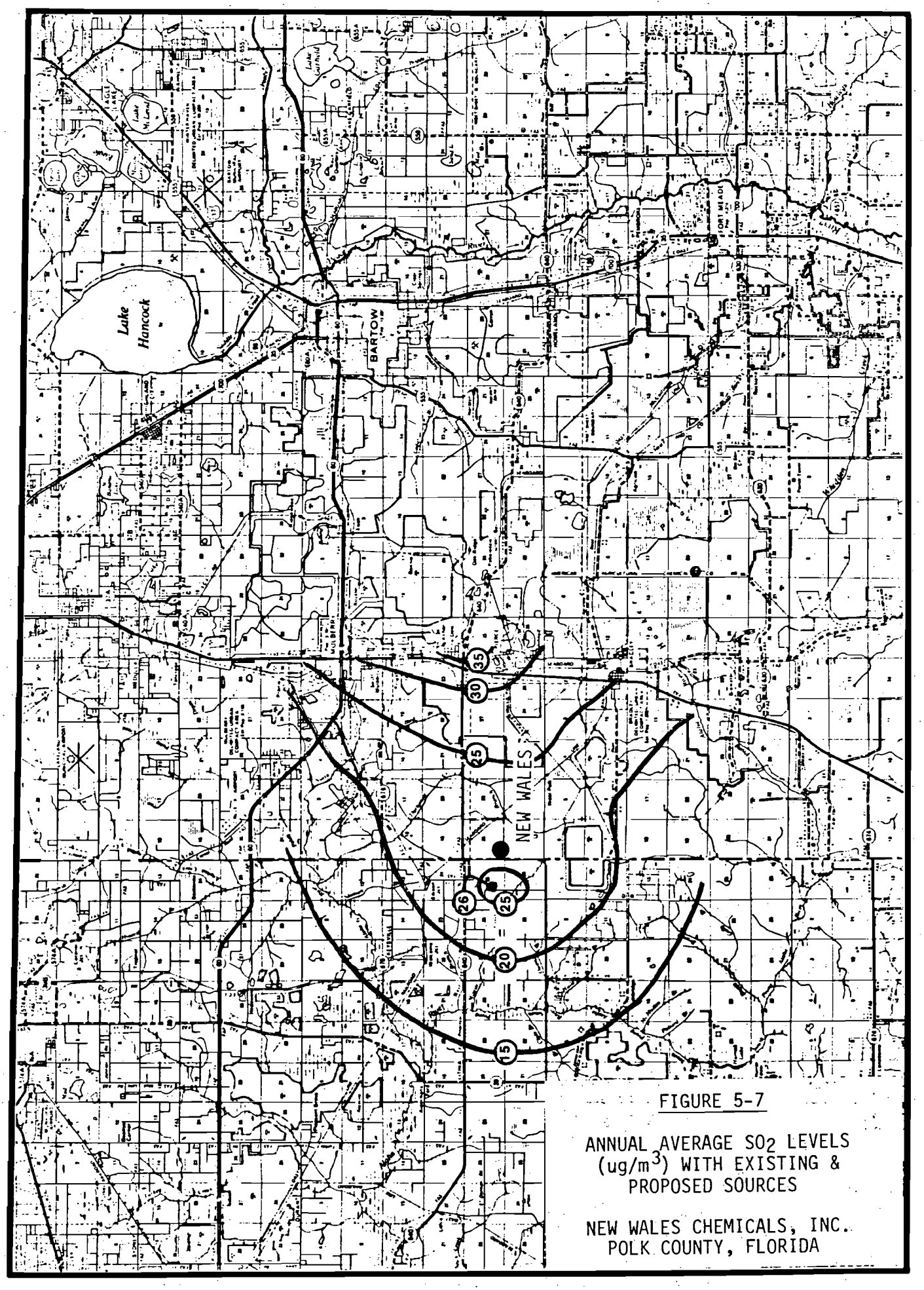


FIGURE 5-7

ANNUAL AVERAGE SO_2 LEVELS (ug/m^3) WITH EXISTING & PROPOSED SOURCES

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

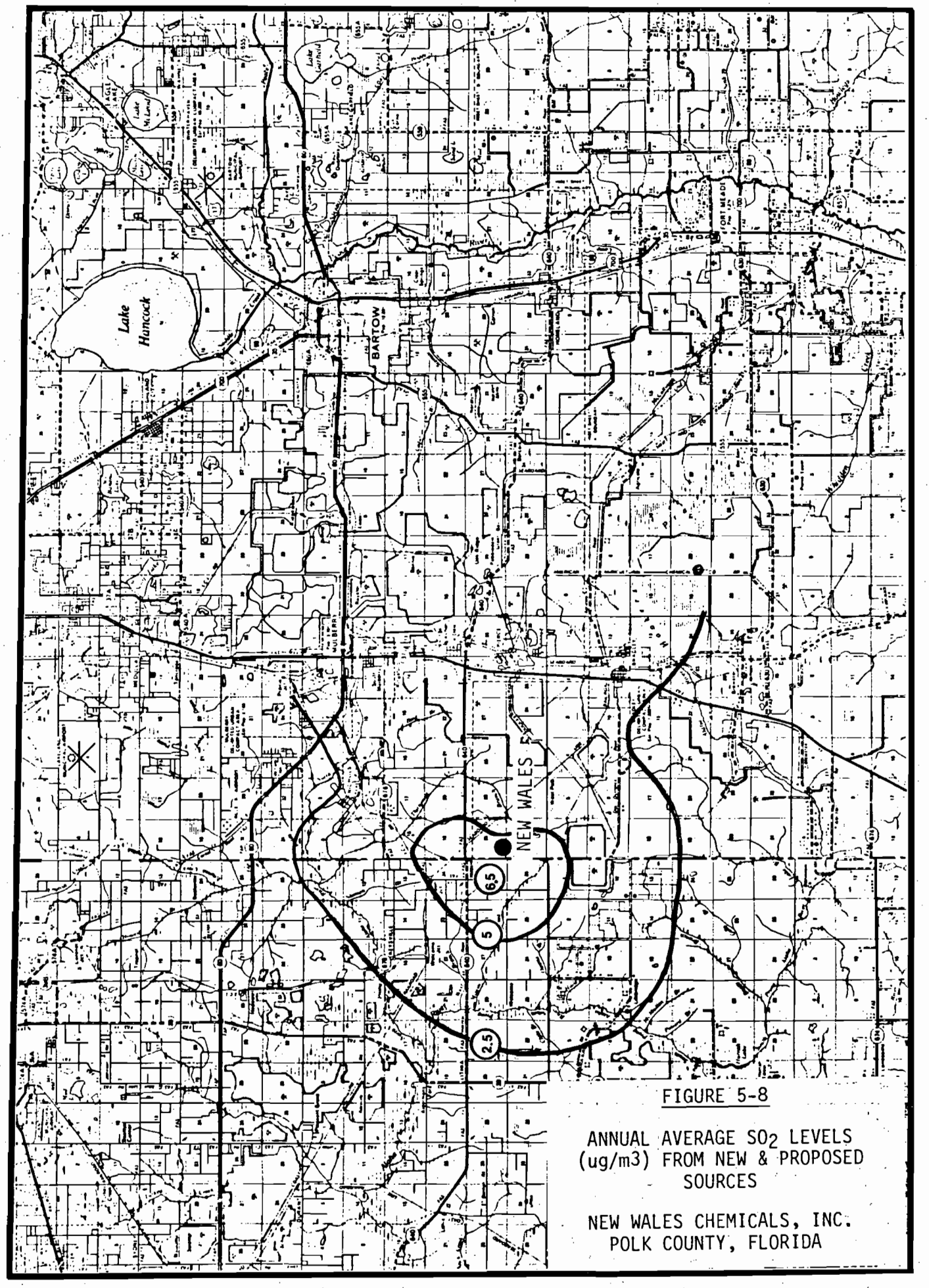


FIGURE 5-8

ANNUAL AVERAGE SO_2 LEVELS (ug/m3) FROM NEW & PROPOSED SOURCES

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

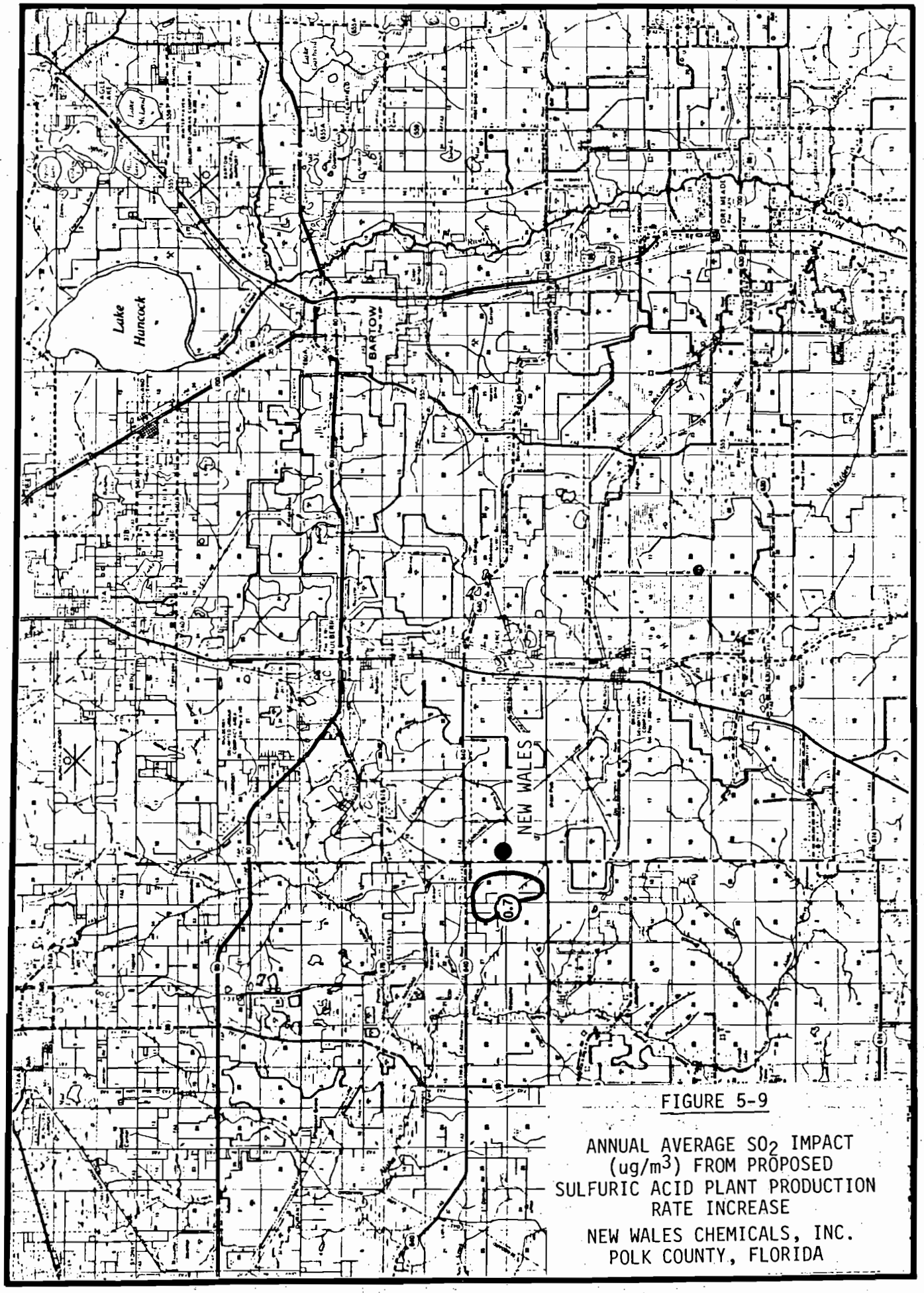


FIGURE 5-9

ANNUAL AVERAGE SO_2 IMPACT (ug/m^3) FROM PROPOSED SULFURIC ACID PLANT PRODUCTION RATE INCREASE

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

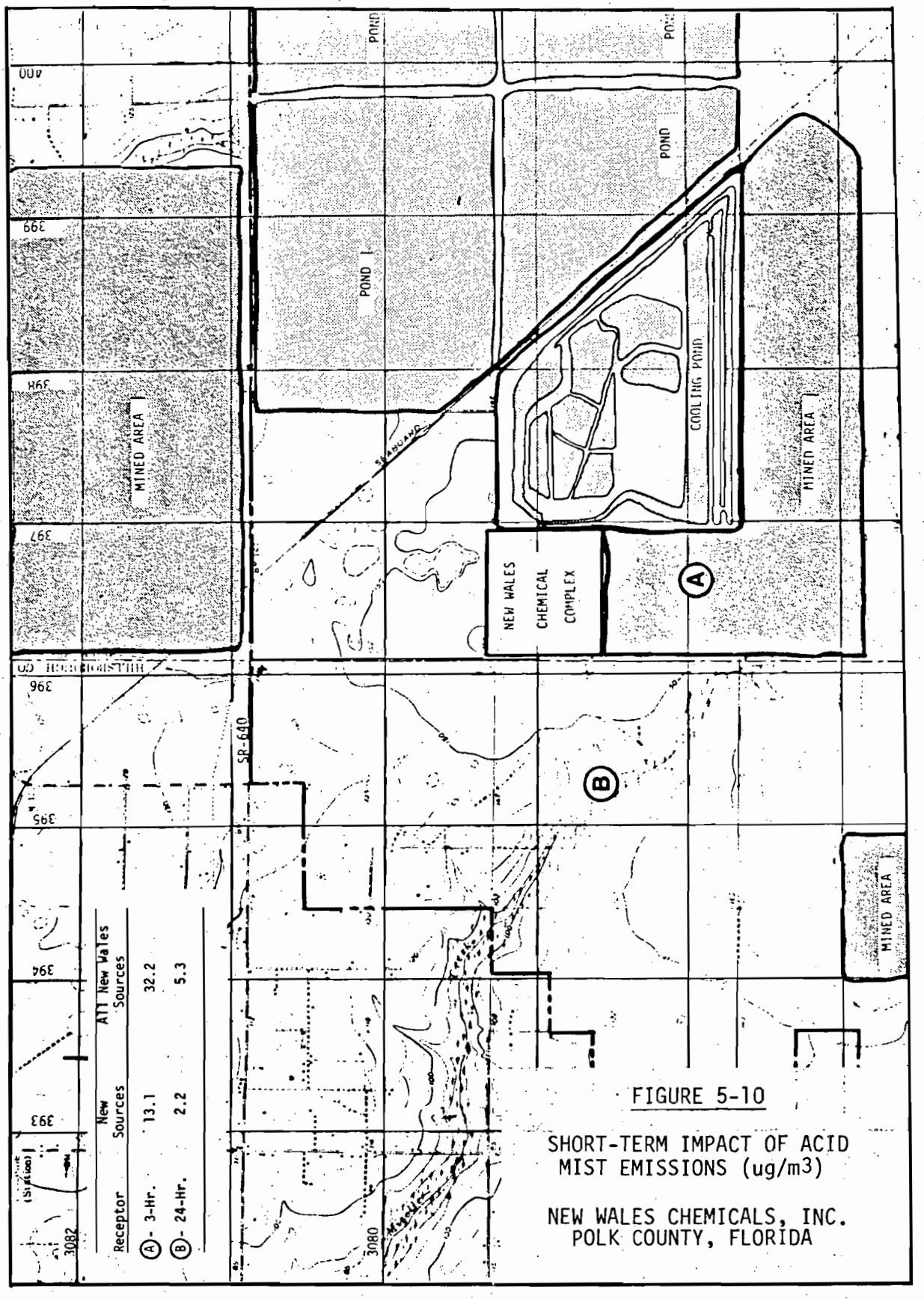


FIGURE 5-10

SHORT-TERM IMPACT OF ACID MIST EMISSIONS (ug/m3)

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

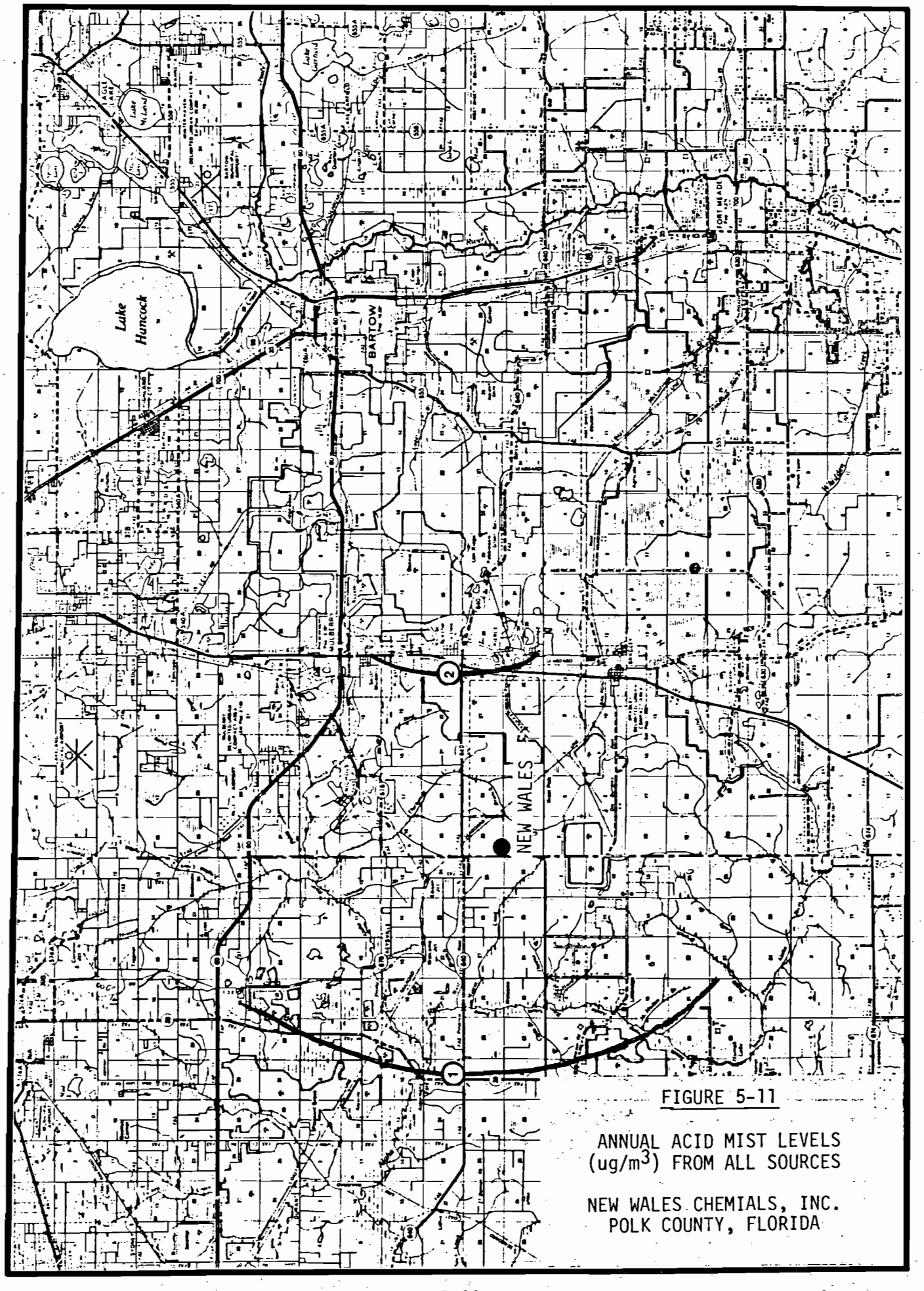


FIGURE 5-11

ANNUAL ACID MIST LEVELS
(ug/m^3) FROM ALL SOURCES

NEW WALES CHEMIALS, INC.
POLK COUNTY, FLORIDA

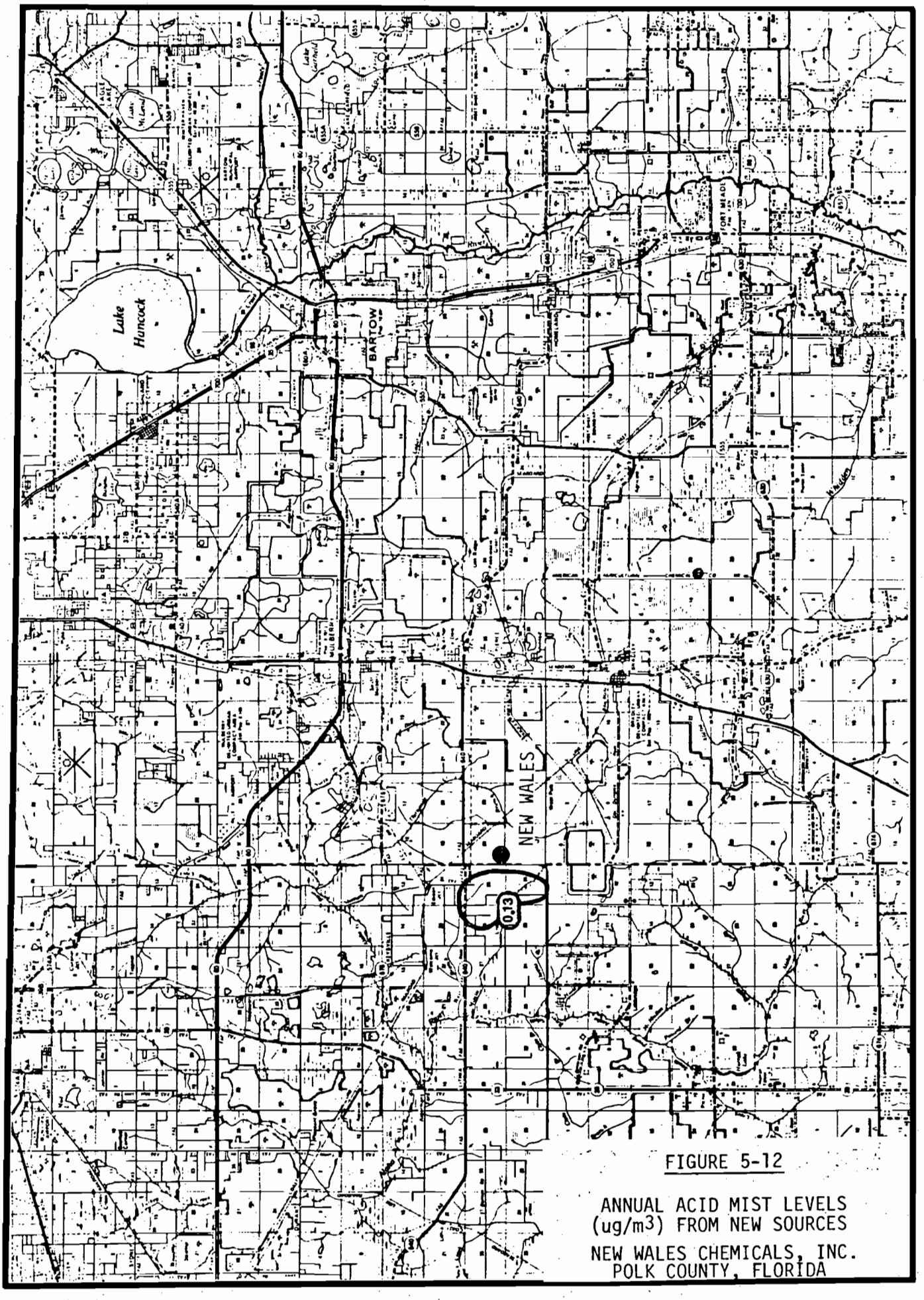


FIGURE 5-12

ANNUAL ACID MIST LEVELS
(ug/m3) FROM NEW SOURCES

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

6.0 SECONDARY IMPACTS FROM MOBILE SOURCES

In this section the secondary impacts of mobile sources on ambient air quality are addressed.

Under permitted operating conditions (with the Third Train Expansion on-line), New Wales will employ approximately 1,150 persons. Automobile traffic generated by these employees will result in approximately 600 automobile trips to and from the plant each day. In addition to this traffic, there will be approximately 450 truck trips and 300 rail car trips to and from the plant on a typical day.

The sulfuric acid plant production rate increase proposed by New Wales will result in no new employees and will require an additional 48 trucks per day.

The additional truck traffic will result in approximately 33,500 vehicle miles traveled per year on New Wales property. This distance was calculated by considering vehicle travel from SR 640 approximately one mile north of the plant to the plant site and returning to SR 640.

Using EPA emission factors from AP-42 it was calculated that the additional traffic will generate the following pollutant burdens:

Carbon monoxide	-	2.8 tons per year
Nitrogen oxides	-	0.2 tons per year
Hydrocargons	-	0.4 tons per year
Particulate matter	-	0.2 tons per year.

Considering the fact that these pollutants will be emitted as a line source approximately one mile long, the impact on air quality will not be significant.

7.0 IMPACT ON SOILS, VISIBILITY AND VEGETATION

7.1 Introduction

A qualitative evaluation of the proposed expansion on soils, visibility, vegetation and commercial growth in the area has been prepared.

7.2 Sulfur Dioxide

Air quality modeling has demonstrated that sulfur dioxide levels after the proposed sulfuric acid plant production rate increase will be well below the national secondary air quality standards. Since these standards were promulgated to protect welfare related values, it is projected that the proposed expansion will not adversely impact soils, vegetation and visibility in the surrounding area.

7.3 Sulfuric Acid Mist

Sulfuric acid mist, as a result of the proposed production rate increase in the two Third Train sulfuric acid plants, will result in ambient levels for annual, 24-hour and 3-hour periods of 0.03, 0.61 and 3.6 micrograms per cubic meter, respectively. These maximum increases will occur on New Wales property, over one kilometer from the property line. It is not anticipated that these small incremental increases will result in significant adverse impacts on soils, vegetation or visibility.

7.4 Commercial Growth

The proposed production rate increase will result in no new jobs and, hence, no impact on population growth or automotive traffic in the area. The rate increase will increase the sulfuric acid production capacity of New Wales by

about 10 percent. Compared with the magnitude of other phosphate related acitivities in the area this is not considered to have a significant impact on the growth of the Polk County area.

APPLICATION FOR FEDERAL PSD APPROVAL

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

DECEMBER, 1980
REVISED JANUARY 22, 1981

SHOLTES & KOOGLER
Environmental Consultants
1213 NW 6TH ST ■ GAINESVILLE, FL 32601 ■ 904-377-5822

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: [X] Air Pollution [ ] Incinerator

Application Type: [X] Construction [ ] Operation [ ] Modification [ ] Renewal of DER Permit No. _____

Company Name: NEW WALES CHEMICALS, INC. County: POLK

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): CONTACT SULFURIC ACID PLANT WITH DOUBLE ABSORPTION (05)

Source Location: Street: HWY. 640 & COUNTY LINE RD. City: MULBERRY

UTM: East 396.6 North 3078.9

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

Appl. Name and Title: THOMAS L. CRAIG, VICE PRESIDENT AND GENERAL MANAGER

Appl. Address: P. O. BOX 1035 MULBERRY, FL. 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative of* NEW WALES CHEMICALS, 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 provisions 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 nontransferable and I will promptly notify the Department upon sale or legal transfer of the permitted establishment.

THOMAS L. CRAIG — Thomas L Craig VICE PRES. & GEN. MGR.

Name of Person Signing (please Type or Print) — Signature of the Owner or Authorized Representative and Title

Date: 4-6-79 Telephone No.: 813-428-2531

*Attach a letter of authorization.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 judgement, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: _____

Name: CRAIG A. PFLAUM (Please Type)

Company Name: NEW WALES CHEMICALS, INC.

Florida Registration Number: 18595

(Affix Seal)

Mailing Address: P. O. BOX 1035 MULBERRY, FL. 33860

Telephone No.: 813-428-2531

Date: 4-6-79

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.

NEW SOURCE 2000 TPD DESIGN MONSANTO ENVIROCHEM DOUBLE ABSORPTION SULFURIC ACID PLANT. PLANT DESIGN WILL ACHIEVE NEW SOURCE PERFORMANCE STANDARDS FOR SULFURIC ACID PLANTS.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction: JUNE 30, 1980 Completion of Construction: JUNE 30, 1983

C. Costs of Construction. (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.)

ESTIMATED COST OF DOUBLE VS. SINGLE ABSORPTION PLUS INSTALLATION OF BRINKS DEMISTERS, WATER REUSE FACILITIES. CONTINUOUS MONITOR FOR SO2 AND ACCESS COMPLIANCE MONITORING IS $5,000,000.00

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

NONE

E. Is the emission point considered to be a New* or Existing* source, as defined in Chapter 17-2.02(5) & (6), Florida Administrative Code?

X New ____ Existing

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

G. Normal Equipment Operating Time: hrs/day: 24 ; days/wk: 7 ; wks/yr: 50 ; if seasonal, describe: ____

*Note

New Source: any source which came into existence, began operation or construction, or received a permit for the latter on or after January 18, 1972.

Existing Source: any source in existence, operating or under construction (or with a permit to construct) prior to January 18, 1972.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (other than incinerators)

BEST AVAILABLE COPY

A. Raw Materials and Chemicals Used in Your Process:

Description	Utilization Rate lbs./hr.	Relate to Flow Diagram
MOLTEN SULFUR	660 TPD	SULFUR BURNER

B. Process Rate:

1) Total Process Input Rate (lbs./hr.): 660 TPD SULFUR

2) Product Weight (lbs/hr): 2000 TPD H_2SO_4

C. Airborne Contaminants Discharged:

Name of Contaminant	Actual Discharge* lbs./hr.	Actual Discharge* T/yr.	Allowed Discharge Rate Per Ch. 17-2, F.A.C.**	Allowable Discharge*** (lbs./hr.)	Relate to Flow Diagram
SO_2	$\leq$ 4 TPD		4# SO_2/TON H_2SO_4	-	STACK
H_2SO_4 MIST	$\leq$ 0.15	TPD	0.15# MIST/TON H_2SO_4		STACK

D. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency†	Range of Particle Size Collected (in microns)	Basis for Efficiency††
DOUBLE ABSORPTION	SO_2	99.7	NA	DESIGN
TOWERS WITH BRINKS	H_2SO_4 MIST	100%	>3 MICRONS	"
HV MIST ELIMINATORS		85-97%	1-3 MICRONS	"
		50-85%	<1/2 MICRON	"

*Estimate only if this is an application to construct.

**Specify units in accordance with emission standards prescribed within Section 17-2.04, F.A.C. (e.g. Section 17-2.04(5)(e)1.a. specifies that new fossil fuel steam generators are allowed to emit particulate matter at a rate of 0.1 lbs. per million BTU heat input computed as a maximum 2-hour average.)

***Using above example for a source with 260 million BTU per hour heat input: $\frac{0.1 \text{ lbs}}{\text{MMBTU}} \times \frac{260 \text{ MMBTU}}{\text{hr.}} = 26 \text{ lbs./hr.}$

†See Supplemental Requirements, page 5, number 2.

††Indicate whether the efficiency value is based upon performance testing of the device or design data.

E. Fuels: NA

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

*Units: Natural Gas - MMCF/hr.; Fuel Oils, Coal - lbs./hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lb./gal.

Heat Capacity: _____ BTU/lb. _____ BTU/gal.

Other Fuel Contaminants: _____

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:

ALL BLOWDOWN REUSED IN KINGSFORD OPERATION

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

Stack Height: 199 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 120,000 ACFM Gas Exit Temperature: 160 °F

Water Vapor Content: 0 %

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs./Hr. Incinerated							

Description of Wastes: _____

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

Approximate Number of Hours of Operation per Day: _____, days/week: _____

Manufacturer: _____

Date Constructed: _____ Model No.: _____

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

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Gas Flow Rate: _____ ACFM _____ DSCFM*

*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): _____

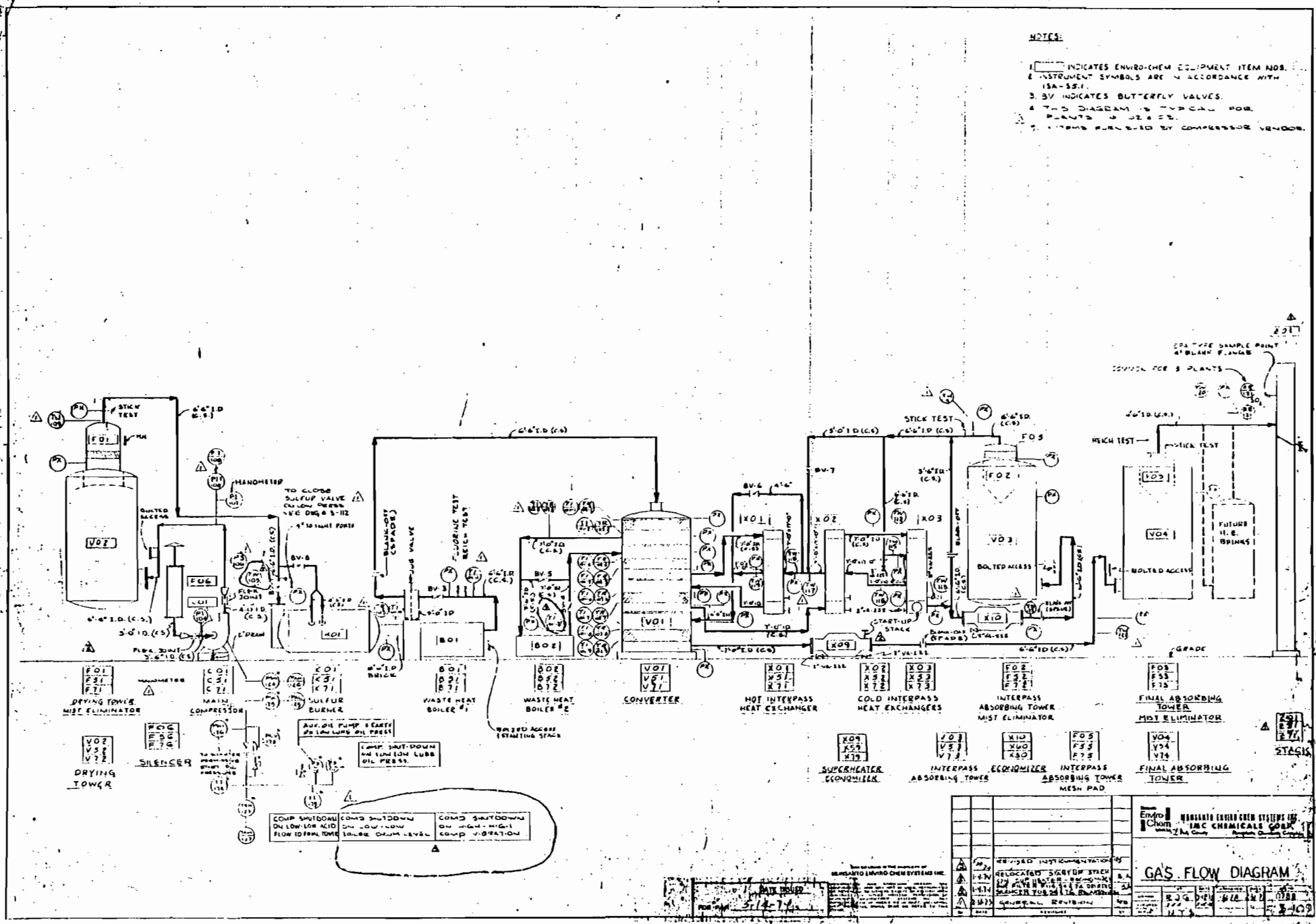
Brief Description of Operating Characteristics of Control Device: _____

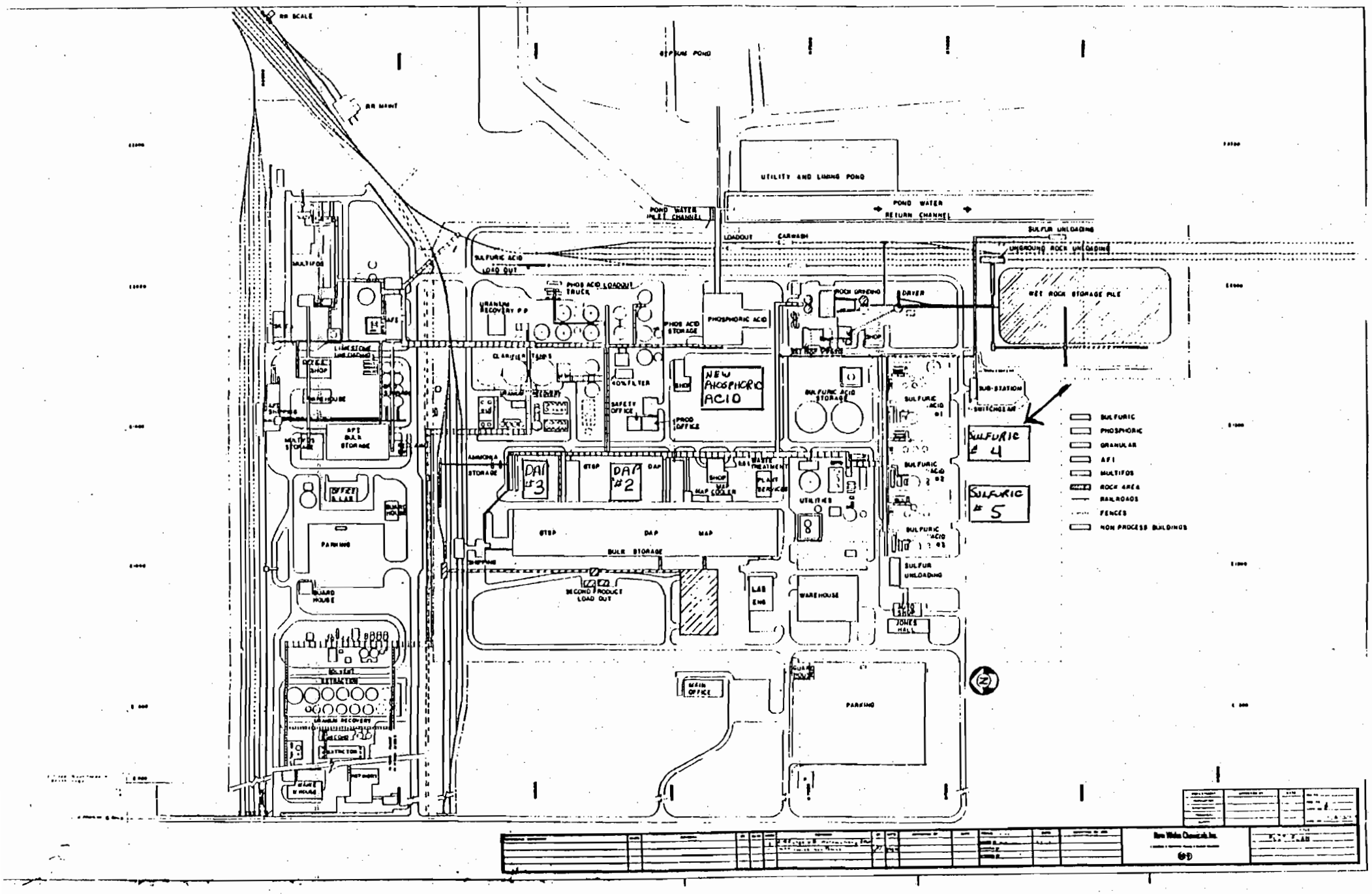
Ultimate Disposal of Any Effluent Other Than That Emitted From the Stack (scrubber water, ash, etc.): _____

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please Provide the Following Supplements Required For All Pollution Sources:

1. Total process input rate and product weight - show derivation.
2. Efficiency estimation of control device(s) - show derivation. Include pertinent test and/or design data.
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
4. An 8½" x 11" plot plan of facility showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
5. An 8½" x 11" plot plan showing the exact 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 USGS topographic map.)
6. Description and sketch of storm water control measures taken both during and after construction.
7. An application fee of $20.00, unless exempted by Chapter 17-4.05(3), F.A.C., made payable to the Department of Environmental Regulation.
8. With construction permit application, include design details for control device(s). Example: for baghouse, include cloth to air ratio; for scrubber, include cross-sectional sketch; etc.
9. Certification by the P.E. with the operation permit application that the source was constructed as shown in the construction permit application.





HARRY L. CARROLL
Vice President
Florida

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

November 22, 1978

Mr. T. L. Craig
Vice President & General Manager
New Wales Chemicals, Inc.
Post Office Box 1035
Mulberry, Florida 33860

Dear Tom:

This letter is your authorization to sign on behalf of New Wales Chemicals, Inc. the various applications for permits, specifically the applications for operating permits from the Florida Department of Environmental Regulation.

Very truly yours,

Harry L. Carroll

t

Post Office Box 3607 • Lakeland, Florida 33802 • (813) 646-5061

STATE OF FLORIDA

DEPARTMENT OF STATE • DIVISION OF CORPORATIONS

I certify from the records of this office that IMC CHEMICALS CORP., changed its name to; NEW WALES CHEMICALS, INC., is a corporation organized under the Laws of the State of Delaware, authorized to transact business within the State of Florida, qualified on the 1st day of June, 1977, under the new name.

I further certify that said corporation has paid all fees due this office through December 31, 1977 and its status is active.

GIVEN under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 1st day of June 1977.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

( ) Yes ( ) No

Contaminant	Rate or Concentration
SO2	≦ 4 LBS./TON H_2SO_4 ACID PRODUCED
H_2SO_4 ACID MIST	≦ 0.15 LBS./TON H_2SO_4 ACID PRODUCED

B. Has EPA declared the best available control technology for this class of sources? (If yes, attach copy)

( ) Yes (X) No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
SO2	≦ 4 LBS./TON 100% H_2SO_4 ACID PRODUCED
H_2SO_4 ACID MIST	≦ 0.15 LBS./TON 100% H_2SO_4 ACID PRODUCED

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

1. Control Device/System: DOUBLE ABSORPTION
2. Operating Principles: SEE PG. 4-11 THROUGH 4-13 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)
3. Efficiency:* 99.7%
4. Capital Costs: EST. TOTAL PLANT COST @ $14 MILLION
5. Useful Life: LIFE OF PLANT
6. Operating Costs: NA
7. Energy: NA
8. Maintenance Cost: NA
9. Emissions:

Contaminant	Rate or Concentration
SO2	≦ 4 LBS./TON 100% ACID PRODUCED
H_2SO_4 ACID MIST	≦ 0.15 LBS./TON 100% H_2SO_4 ACID PRODUCED

*Explain method of determining D 3 above.

670 TONS S YIELD 2000 TPD 100 H_2SO_4 ACID PRODUCED WITH 4 TPD SO2 MAXIMUM EMITTED VIA STACK. 4 TPD SO2 EMITTED YIELDS 2 TPD S LOST. THEREFORE, $\frac{2.0 \text{ TPD S} \times 100\%}{670 \text{ TPD S BURNED}}$ = 0.3% LOSS OR 99.7% RECOVERY.

10. Stack Parameters

a. Height: 199 ft. b. Diameter: 8.5 ft.

c. Flow Rate: 140,000 ACFM d. Temperature: 160 °F

e. Velocity: 38-40 FPS

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

1. SEE PG. 7-1 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)

a. Control Device: CONTACT ACID PLANT WITH DOUBLE ABSORPTION

b. Operating Principles: SEE PAGES 4-11 THROUGH 4-13 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)

c. Efficiency*: 99.7% d. Capital Cost: NA

e. Useful Life: LIFE OF PLANT f. Operating Cost: NA

g. Energy*: NA h. Maintenance Cost: NA

i. Availability of construction materials and process chemicals: GOOD

j. Applicability to manufacturing processes: INTEGRAL PART OF PROCESS.

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals.

j. Applicability to manufacturing processes:

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

*Explain method of determining efficiency.
**Energy to be reported in units of electrical power - KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected:

1. Control Device: DOUBLE ABSORPTION

2. Efficiency*: 99.7%

3. Capital Cost: EST. COST $14 MILLION

4. Life: LIFE OF PLANT

5. Operating Cost: NA

6. Energy: NA

7. Maintenance Cost: NA

8. Manufacturer: MONSANTO ENVIROCHEM

9. Other locations where employed on similar processes:

a.

(1) Company: AGRICO

(2) Mailing Address: SOUTH PIERCE

(3) City: SOUTH PIERCE

(4) State: FLORIDA

(5) Environmental Manager: HAROLD LONG

(6) Telephone No. 428-1423

*Explain method of determining efficiency above.

(7) Emissions:*

CONTAMINANT	RATE OR CONCENTRATION
SO_2	$\leq$ 4.0 LBS./TON ACID
ACID MIST	$\leq$ 0.15 LBS./TON ACID

(8) Process Rate:* ≃ 2,000 TPD

b.

(1) Company: C.F. CHEMICALS, INC.

(2) Mailing Address:

(3) City: BARTOW (4) State: FLORIDA

(5) Environmental Manager: W. A. SCHIMMING

(6) Telephone No: 533-3181

(7) Emissions:*

CONTAMINANT	RATE OR CONCENTRATION
SO_2	$\leq$ 4.0 LBS./TON ACID
ACID MIST	$\leq$ 0.15 LBS./TON ACID

(8) Process Rate:* 2,000 TPD

10. Reason for selection and description of systems:

THIS IS THE MOST EFFICIENT PROCESS CURRENTLY AVAILABLE FROM BOTH AN EMISSION STANDPOINT AND A RECOVERY STANDPOINT.

SEE ATTACHED DOCUMENT.
(NSPS REVIEW FOR SULFURIC ACID PLANTS)

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

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.

BY CURRENT EMISSION LIMITING STANDARDS, THIS TECHNOLOGY MEETS OR EXCEEDS ALL APPLICABLE STANDARDS. THEREFORE, THE ONLY POSSIBLE IMPACT WOULD BE TO CONSTRUCT A PLANT WHICH WOULD HAVE MINIMAL IMPACT ON THE ENVIRONMENT AND WOULD ALSO PROVIDE INCREASED EMPLOYMENT FOR THE CONSTRUCTION TRADES ON A SHORT TERM BASIS AND LONG TERM EMPLOYMENT FOR PEOPLE TO OPERATE AND MAINTAIN THE NEW PLANTS.

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.

(NSPS REVIEW FOR SULFURIC ACID PLANTS)

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

SKEC 124-79-01

February 14, 1980

Mr. Tommy Gibbs
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30308

Subject: New Wales Chemicals, Inc.
PSD Application
Federal File No. PSD-FL014

Dear Tom:

Attached are comments and information related to the New Wales PSD application which respond to concerns raised by the Florida Department of Environmental Regulation (FDER) in a letter dated January 18, 1980 (copy attached). The information herein responds to general comments made in the letter and clarifies discrepancies in the initial particulate matter impact analysis. For your information I would like to report that all concerns addressed in the FDER letter have been resolved to the satisfaction of FDER.

The two major concerns raised by FDER were a calculated sulfur dioxide impact and discrepancies and/or ambiguities in our initial particulate matter modeling. The sulfur dioxide impact in question was a calculated violation of the 24-hour air quality standard (260 micrograms per cubic meter) at a receptor approximately one kilometer east of the Chemical Complex. This calculated violation resulted from rather unusual meteorological conditions which followed Hurricane Agnes in June of 1972. Furthermore, the calculated violation occurred in the gypsum stack/cooling pond area and slimes pond area. It is my understanding that EPA does not consider receptors which fall on applicant property if the area is either physically inaccessible to the general public or if the applicant can reasonably restrict access of the general public to the area. In the particular case in point, the area where the calculated air quality standard violation occurred is physically inaccessible since it falls in pond areas and further, the area can be restricted by New Wales security personnel.

I have attached the air quality modeling conducted by FDER showing their calculated violation and a figure showing that all areas effected by the calculated violation occur on New Wales property in areas physically inaccessible to the general public. Our modeling (attached) shows no violation of air quality standards.

Another matter which should be considered in evaluating the calculated violation is that 57 micrograms per cubic meter of the 267 micrograms per cubic meter total impact resulted from emissions from sources in Tampa approximately 35 kilometers to the west. The meteorology resulting in the 267 microgram per cubic meter impact was from day 173, 1972, Tampa meteorology. These data showed a very persistent wind from 270°. Meteorological data for the same day from Orlando, Florida showed a wind not quite as persistent, and with an average direction of 240°. Since the New Wales Chemical Complex is approximately mid-way between Tampa and Orlando, one could question whether or not a 270° wind would have existed at the site and, in reality, transported the pollutants from Tampa to the receptor which the air quality standard violation was calculated.

Regarding the resolution of the calculated violation, New Wales satisfied the FDER concern by modifying the stack height of an existing boiler. The stack height was increased from 35 feet to 85 feet; the latter still being less than good engineering practice stack height. I feel the attached Figure A showing that receptors exceeding 260 micrograms per cubic meter are in areas inaccessible to the general public, will satisfy the Federal concern.

LEIGH: CAN THIS BE DONE? DOESN'T THE ANSWER DEPEND ON THE DATE OF CONSTRUCTION?

My letter dated February 13, 1980 to the Florida Department of Environmental Regulation addressing particulate matter air quality analyses is attached hereto. As stated previously, all information in this letter has been discussed with FDER and the information satisfies the concerns raised by FDER. In addition to the information required by FDER, I have included for Federal review, the impact of particulate matter emissions resulting from the meteorological data of day 173, 1972 (FDER excluded these data in their particulate matter impact analysis).

As with the sulfur dioxide impact resulting from day 173, 1972 meteorology, the particulate matter impact resulting from these data occurs at receptors falling in areas inaccessible to the general public. This is illustrated in Figures B and C.

Regarding the general comments made by FDER in the January 18, 1980 letter, I would like to provide the following comments for your consideration.

1. Regarding the misnumbering of our meteorological data, it is true that our initial preprocesser run did add one day to each year of meteorological data we used. This in no way however, effected the results of our modeling. For example, day 173, 1972 was identified by our preprocesser as day 175, 1972. When our CRSTER run indicated a highest second-high impact occurring with day 175 meteorology, we utilized the data identified by the preprocesser as day 175 for the modeling; data which in actuality were for day 173. Our use of the data was consistent even though our identification was in error.

2. The comment regarding receptor locations on the edge of a receptor grid is correct. Additional receptors were not investigated if those receptors would fall in areas restricted to the general public or if an evaluation of adjacent receptors indicated that the receptor on the edge of the grid was probably the receptor at which maximum impact occurred.

I hope that the attached information will resolve any questions your office or your contractor may have had as a result of questions raised by the Florida Department of Environmental Regulation. If you have any additional questions, please contact me at your earliest convenience.

Very truly yours,

SHOLTES & KOOGLER
ENVIRONMENTAL CONSULTANTS

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

JBK:sc
Attachments

cc: Mr. Jeff Shumaker, TRW, Inc.
Mr. George Clark, TRW, Inc.
Mr. Larry George, FDER
Mr. A. L. Girardin, New Wales

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: [X] Air Pollution [ ] Incinerator

Application Type: [X] Construction [ ] Operation [ ] Modification [ ] Renewal of DER Permit No. _____

Company Name: NEW WALES CHEMICALS, INC. County: POLK

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): PHOSPHORIC ACID PLANT WITH CROSSFLOW SCRUBBER (#3)

Source Location: Street: HWY. 640 & COUNTY LINE RD. City: MULBERRY

UTM: East _____ North _____

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

Appl. Name and Title: THOMAS L. CRAIG, VICE PRESIDENT & GENERAL MANAGER

Appl. Address: P. O. BOX 1035 MULBERRY, FL. 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative of* NEW WALES CHEMICALS, 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 provisions 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 nontransferable and I will promptly notify the Department upon sale or legal transfer of the permitted establishment.

THOMAS L. CRAIG — Name of Person Signing (please Type or Print)

Thomas L Craig VICE PRES. & GEN. MGR. — Signature of the Owner or Authorized Representative and Title

Date: 4-6-79 Telephone No.: 813-428-2531

*Attach a letter of authorization.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 judgement, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: Craig A Pflaum

Name: CRAIG A. PFLAUM (Please Type)

Company Name: NEW WALES CHEMICALS, INC

Florida Registration Number: 18595

(Affix Seal)

Mailing Address: P. O. BOX 1035
MULBERRY, FL. 33860

Telephone No.: 813-428-2531

Date: 4-6-79

already
I carried

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.

NEW WALES CHEMICALS, INC. PROPOSES TO CONSTRUCT A 1500 TPD WET PROCESS PHOSPHORIC ACID PLANT. UNIT WILL BE DESIGNED AND BUILT BY DAVY POWERGAS, INC. OF LAKELAND, FL.

WITH THE UNIT WILL BE A FLUORINE FUME SCRUBBER TO BE ALSO DESIGNED AND INSTALLED BY DAVY POWERGAS, INC.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction: JUNE 30, 1980 Completion of Construction: JUNE 30, 1983

C. Costs of Construction. (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.)

ESTIMATED COST $750,000.00

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

NA

E. Is the emission point considered to be a New* or Existing* source, as defined in Chapter 17-2.02(5) & (6), Florida Administrative Code?

X New ____ Existing

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

G. Normal Equipment Operating Time: hrs/day: 24 ; days/wk: 6.6 ; wks/yr: 50 ; if seasonal, describe: ____

*Note

New Source: any source which came into existence, began operation or construction, or received a permit for the latter on or after January 18, 1972.

Existing Source: any source in existence, operating or under construction (or with a permit to construct) prior to January 18, 1972.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES

BEST AVAILABLE COPY

(other than incinerators)

A. Raw Materials and Chemicals Used in Your Process:

Description	Utilization Rate lbs./hr.	Relate to Flow Diagram
SULFURIC ACID	4110 TPD	ATTACK TANK
PHOSPHATE ROCK	5520 TPD	ATTACK TANK

B. Process Rate:

1) Total Process Input Rate (lbs./hr.): 9630 TPD

2) Product Weight (lbs/hr): 1500 TPD P2O5

C. Airborne Contaminants Discharged:

Name of Contaminant	Actual Discharge* lbs./hr.	Actual Discharge* T/yr.	Allowed Discharge Rate Per Ch. 17-2, F.A.C.**	Allowable Discharge*** (lbs./hr.)	Relate to Flow Diagram
FLUORIDES	≤ 1.4	≤ 5.6	0.02 LBS F/TON P2O5	≤ 1.4	STACK
POTENTIAL ESTIMATE	AP 42		39 lb/ton F⁻ × 1500 T/DAY × TON/2000 lb × Di × 7920 hr/yr =		9652 T/Y EJ

D. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency†	Range of Particles Size Collected (in microns)	Basis for Efficiency††
DAVY POWERGAS, INC.	F	TO MEET REQUIREMENTS OF FL. AIR CODE		
DESIGNED CROSSFLOW				
SCRUBBER				

*Estimate only if this is an application to construct.

**Specify units in accordance with emission standards prescribed within Section 17-2.04, F.A.C. (e.g. Section 17-2.04(6)(a)1.a. specifies that new fossil fuel steam generators are allowed to emit particulate matter at a rate of 0.1 lbs. per million BTU heat input computed as a maximum 2-hour average.)

***Using above example for a source with 260 million BTU per hour heat input: $\frac{0.1 \text{ lbs}}{\text{MMBTU}} \times \frac{260 \text{ MMBTU}}{\text{hr.}} = 26 \text{ lbs./hr.}$

†See Supplemental Requirements, page 5, number 2.

††Indicate whether the efficiency value is based upon performance testing of the device or design data.

E. Fuels: NA

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

*Units: Natural Gas - MMCF/hr.; Fuel Oils, Coal - lbs./hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lb./gal.

Heat Capacity: _____ BTU/lb. _____ BTU/gal.

Other Fuel Contaminants: _____

F. If applicable, indicate the percent of fuel used for space heating: Annual Average: _____ Maximum: _____

NA

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

ALL LIQUID AND SOLID WASTE TO GYPSUM POND

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

Stack Height: 105 ft. Stack Diameter: 4.5 ft.

Gas Flow Rate: 35000 ACFM Gas Exit Temperature: 90 °F

Water Vapor Content: 2.0 - 4.0 %

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs./Hr. Incinerated							

Description of Waste: _____

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

Approximate Number of Hours of Operation per Day: _____, days/week: _____

Manufacturer: _____

Date Constructed: _____ Model No.: _____

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

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Gas Flow Rate: _____ ACFM _____ DSCFM*

*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): _____

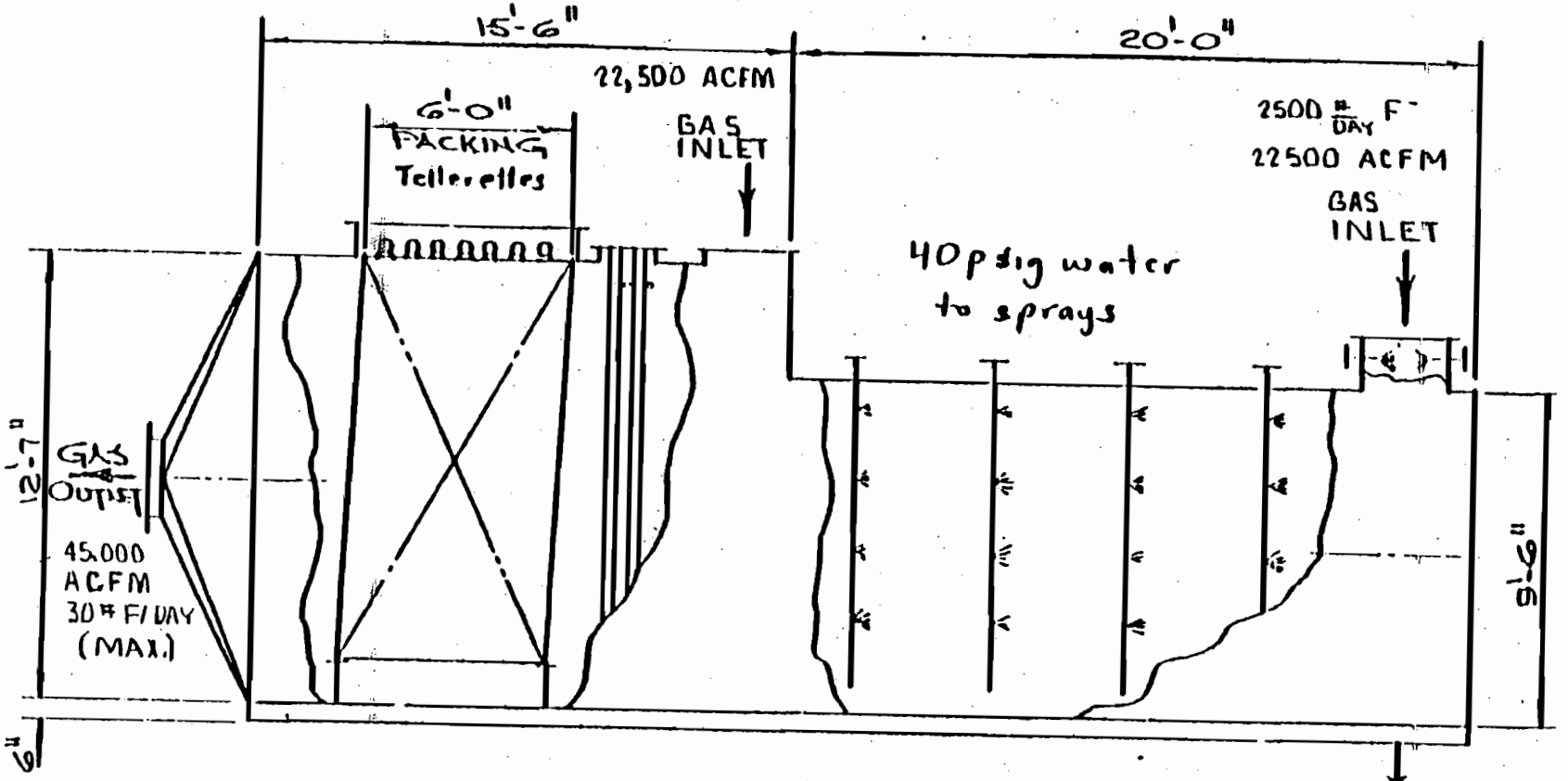
Brief Description of Operating Characteristics of Control Device: _____

Ultimate Disposal of Any Effluent Other Than That Emitted From the Stack (scrubber water, ash, etc.): _____

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please Provide the Following Supplements Required For All Pollution Sources:

1. Total process input rate and product weight - show derivation.
2. Efficiency estimation of control device(s) - show derivation. Include pertinent test and/or design data.
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
4. An 8½" x 11" plot plan of facility showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
5. An 8½" x 11" plot plan showing the exact 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 USGS topographic map.)
6. Description and sketch of storm water control measures taken both during and after construction.
7. An application fee of $20.00, unless exempted by Chapter 17-4.05(3), FAC, made payable to the Department of Environmental Regulation.
8. With construction permit application, include design details for control device(s). Example: for baghouse, include cloth to air ratio; for scrubber, include cross-sectional sketch; etc.
9. Certification by the P.E. with the operation permit application that the source was constructed as shown in the construction permit application.



ELEVATION
CROSS FLOW FUME SCRUBBER

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

FOR _____ AT _____ SKETCH NO. _____

DESCRIPTION _____ DATE _____ PROJECT _____

BY _____

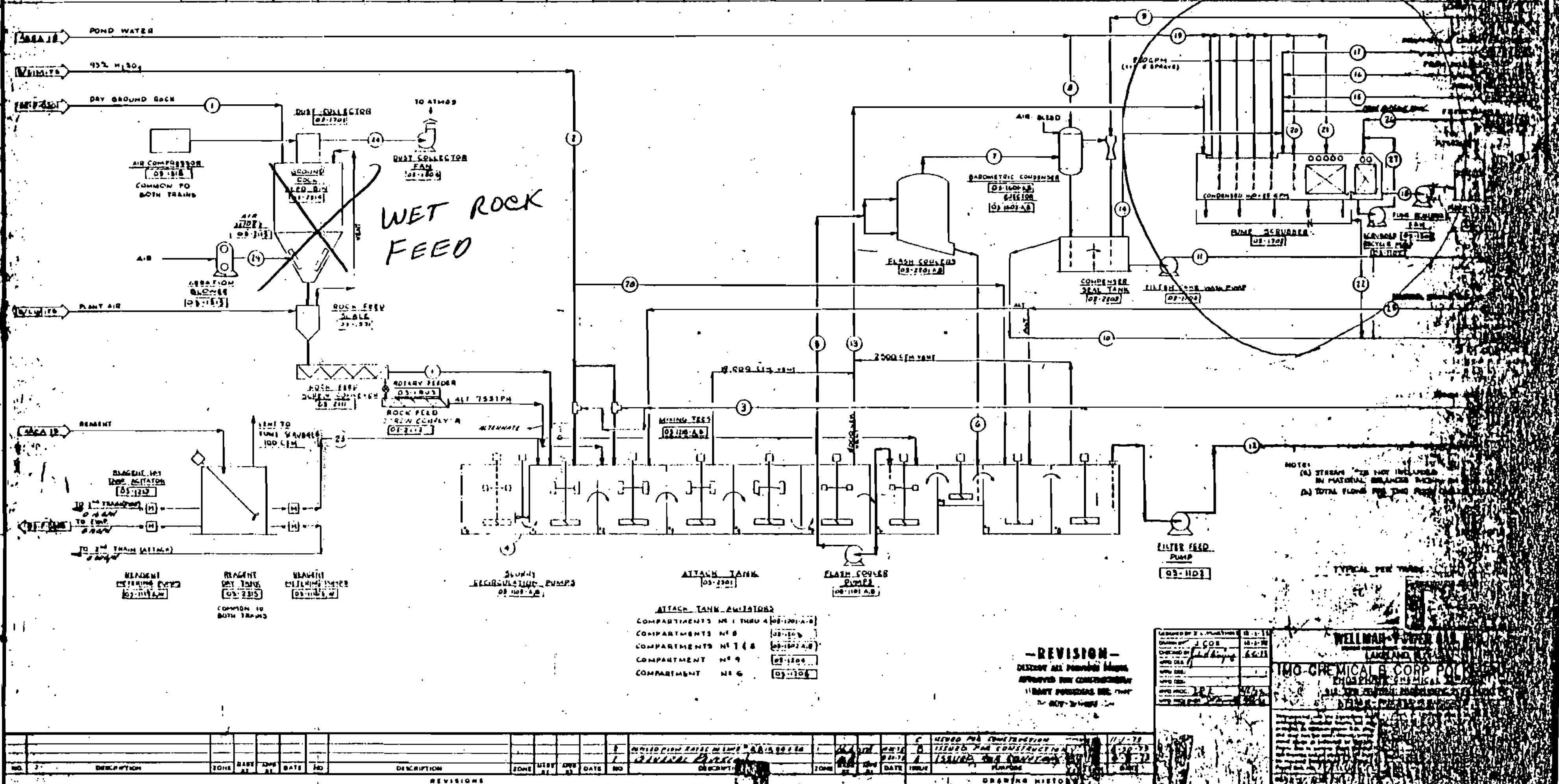
Form 0-136 Rev. 10-58
PRINTED IN U.S.A.

BEST AVAILABLE COPY

STREAM NO.	1	2	3	4	5	6	7	8	9
STREAM	DRY ROCK	93% H_2SO_4	17% P_2O_5 RECYCLE ACID	RECIRCULATING SLURRY	SLURRY TO FLASH COOLERS	SLURRY FROM FLASH COOLERS	VAPORS FROM FLASH COOLERS	POND WATER TO F.CS	H.P. STEAM TO EJECTORS
FLOW STPD AVG	3416	2688	8348	379,789	255,960	255,060	900	26,800	168.8
FLOW STPH (LBS/HR) AVG	142.3	111.8	3478	15,822	10,655	10,627.5	(75,000)	1116	(13,800)
FLOW GPM or (ACFM) AVG		244.7	1182	40,000	27,000	26,850	(150,000)	4,460	
DESIGN FLOW GPM or (ACFM)	130 TPH	300	1400	40,000	27,000	37,000	15,000 [illegible]	6,000	1400 [illegible]
SP. GR. or (DENSITY LBS/FT³)	(88)	1.81	1.175	1.50	1.58	1.58	(0.00035)	1.0	(0.365)
TEMP. °F (MAX)	100 (160)	100	140	160 (176)	160 (176)	155.5 (167)	155.5 (167)	(90)	366
PRESS. PSIA or ("H_2O)	ATM	40	45		30		6" Hg ABS.	55	165
VISCOSITY C.P.		15	1.5	240	240	240	0.01	1.0	0.02
PERCENT SOLIDS				~38	~38	~38			
FLUORINE FLOW LBS/DAY									
$CaSO_4 \cdot 2H_2O$ + IMPURITIES STPD									
P_2O_5 FLOW STPD	965								
					←	—	— SEE NOTE (b)	—	→

STREAM NO.	10	11	12	13	14	15	16	17	18
STREAM	CONDENSER SEAL TANK O'FLOW	FILTER WATER	FILTER FEED	ATTACK TANK VAPORS	CONDENSER SEAL TANK VAPORS	FILTRATE SEAL TANK VAPORS	FILTER HOOD VAPORS	EVAP. CONDENSER SEAL TANK VAPORS	FUME SCRUBBER OUTLET GAS
FLOW STPD AVG	26689	7,619	13,210						
FLOW STPH (LBS/HR) AVG	908.7	317.5	550						
FLOW GPM or (ACFM) AVG	3610	1,369	1,391	(86,500)	(1,000)	(6,000)	(11,500)	(3,000)	(45,000)
DESIGN FLOW GPM or (ACFM)	6,000	1,500	1,700	(95,500)	(1,000)	(6,000)	(11,500)	(3,000)	(45,000)
SP. GR. or (DENSITY LBS/FT³)		1.0	1.58	(0.061)	(0.066)	(0.061)	(0.061)	(0.065)	(0.066)
TEMP. °F (MAX)	126	140	155.5 (167)	140	120	140	140	120	100
PRESS. PSIA or ("H_2O)	ATM	60	80	(-1)	(-1)	(-1)	(-1)	(-1)	(-12)
VISCOSITY C.P.	1.0	1.0	240	0.02	0.02	0.02	0.02	0.02	0.02
PERCENT SOLIDS			~38						
FLUORINE FLOW LBS/DAY									
$CaSO_4 \cdot 2H_2O$ + IMPURITIES STPD									
P_2O_5 FLOW STPD									

STREAM NO.	19	20	21	22	23	24	25	26	27
STREAM	POND WATER TO FUME SCRUBBER	POND WATER TO BAFFLES	POND WATER TO SCRUBBER PACKING	FUME SCRUBBER WATER DISCHARGE	DEFOAMER REAGENT	DUST COLLECTOR VENT GAS	[illegible] SLURRY TO ATTACK TANK	FRESH WATER TO FUME SCRUBBER PACKED BED	FUME SCRUBBER RECYCLE
FLOW STPD AVG					AS REQ'D		80	44	1100
FLOW STPH (LBS/HR) AVG								(500#)	50
FLOW GPM or (ACFM) AVG	1500	10	380	1635		5,000	9	10	300
DESIGN FLOW GPM or (ACFM)	1600	10	380	1635	0-30 GPH	(6,000)	[illegible]	[illegible]	300
SP. GR. or (DENSITY LBS/FT³)	1.0	1.0	1.0	1.0	0.98	(0.07)	1.46	1.0	1.0
TEMP. °F (MAX)	90	90	90	100	100	120	155	80	100
PRESS. PSIA or ("H_2O)	55	55	30	ATM	35	(-8)	45	60	40
VISCOSITY C.P.	1	1	1	1		0.02	300	1.0	1.0
PERCENT SOLIDS							28	[illegible]	
FLUORINE FLOW LBS/DAY									
$CaSO_4 \cdot 2H_2O$ + IMPURITIES STPD							10		
P_2O_5 FLOW STPD									



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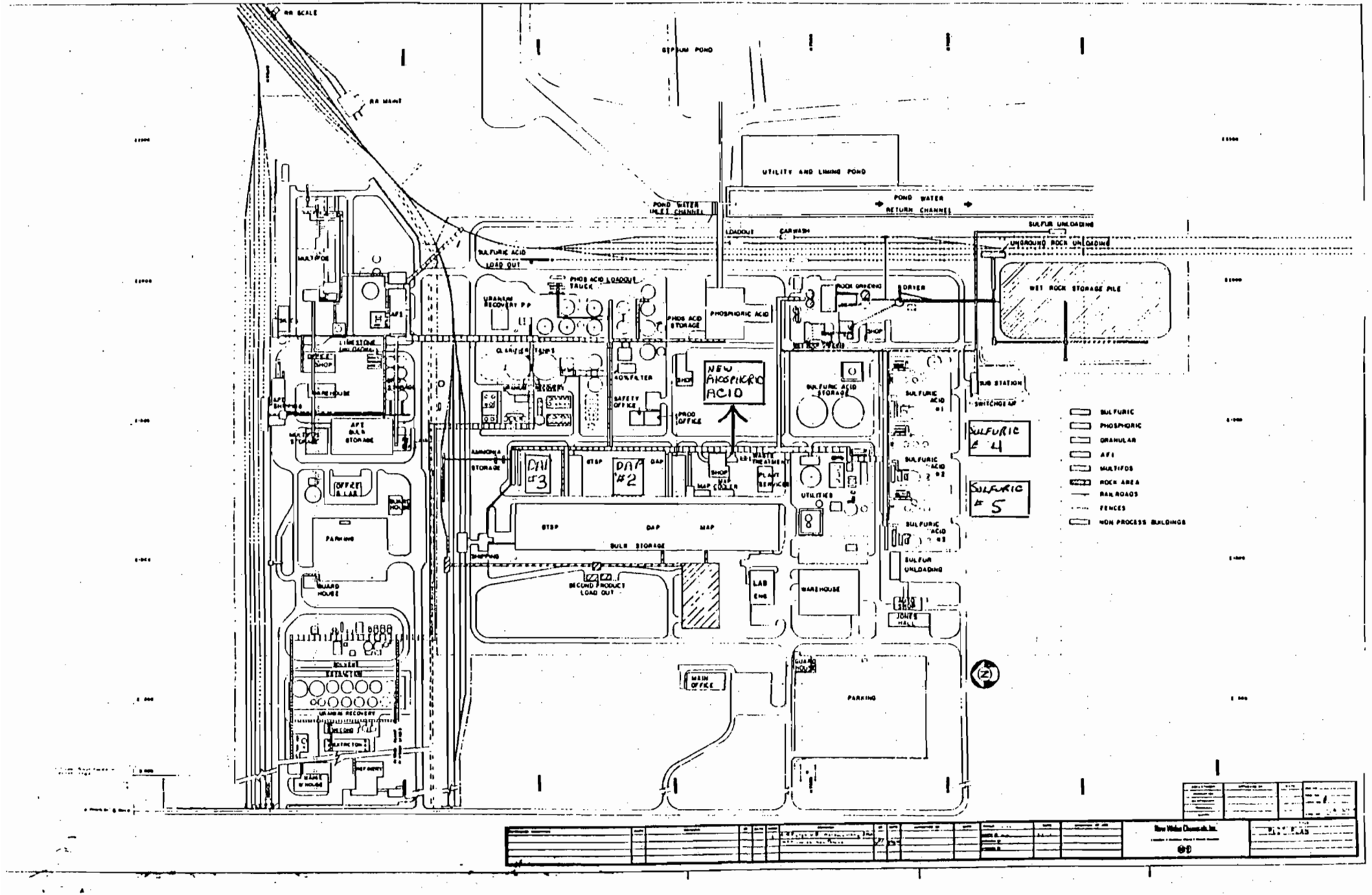

HARRY L. CARROLL
Vice President
Florida

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

November 22, 1978

Mr. T. L. Craig
Vice President & General Manager
New Wales Chemicals, Inc.
Post Office Box 1035
Mulberry, Florida 33860

Dear Tom:

This letter is your authorization to sign on behalf of New Wales Chemicals, Inc. the various applications for permits, specifically the applications for operating permits from the Florida Department of Environmental Regulation.

Very truly yours,

Harry L. Carroll

t

Post Office Box 3807 • Lakeland, Florida 33802 • (813) 646-5081

STATE OF FLORIDA

DEPARTMENT OF STATE • DIVISION OF CORPORATIONS

I certify from the records of this office that IMC CHEMICALS CORP., changed its name to; NEW WALES CHEMICALS, INC., is a corporation organized under the Laws of the State of Delaware, authorized to transact business within the State of Florida, qualified on the 1st day of June, 1977, under the new name.

I further certify that said corporation has paid all fees due this office through December 31, 1977 and its status is active.

GIVEN under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capitol, this the 1st day of June 1977.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: [X] Air Pollution [ ] Incinerator

Application Type: [X] Construction [ ] Operation [ ] Modification [ ] Renewal of DER Permit No. _____

Company Name: NEW WALES CHEMICALS, INC. County: POLK

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): CONTACT SULFURIC ACID PLANT WITH DOUBLE ABSORPTION (04)

Source Location: Street: HWY. 640 & COUNTY LINE RD. City: MULBERRY

UTM: East 396.6 North 3078.9

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

Appl. Name and Title: THOMAS L. CRAIG, VICE PRESIDENT AND GENERAL MANAGER

Appl. Address: P. O. BOX 1035 MULBERRY, FL. 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative of* NEW WALES CHEMICALS, 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 provisions 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 nontransferable and I will promptly notify the Department upon sale or legal transfer of the permitted establishment.

THOMAS L. CRAIG — Name of Person Signing (Please Type or Print)

Thomas L Craig VICE PRES. & GEN. MGR. — Signature of the Owner or Authorized Representative and Title

Date: 4-6-79 Telephone No.: 813-428-2531

*Attach a letter of authorization.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 judgement, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: _____

Name: CRAIG A. PFLAUM (Please Type)

Company Name: NEW WALES CHEMICALS, INC.

Florida Registration Number: 18595

(Affix Seal)

Mailing Address: P. O. BOX 1035
MULBERRY, FL. 33860

Telephone No.: 813-428-2531

Date: 4-6-79

already scanned

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.

NEW SOURCE 2000 TPD DESIGN MONSANTO ENVIROCHEM DOUBLE ABSORPTION SULFURIC ACID PLANT. PLANT DESIGN WILL ACHIEVE NEW SOURCE PERFORMANCE STANDARDS FOR SULFURIC ACID PLANTS.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction: JUNE 30, 1980 Completion of Construction: JUNE 30, 1983

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

ESTIMATED COST OF DOUBLE VS. SINGLE ABSORPTION PLUS INSTALLATION OF BRINKS DEMISTERS, WATER REUSE FACILITIES. CONTINUOUS MONITOR FOR SO_2 AND ACCESS COMPLIANCE MONITORING IS $5,000,000.00

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

NONE

E. Is the emission point considered to be a New* or Existing* source, as defined in Chapter 17-2.02(5) & (6), Florida Administrative Code?

X New ___ Existing

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

G. Normal Equipment Operating Time: hr/day: 24 ; day/wk: 7 ; wk/yr: 50 ; if seasonal, describe: ___

*Note

New Source: any source which came into existence, began operation or construction, or received a permit for the latter on or after January 18, 1972.

Existing Source: any source in existence, operating or under construction (or with a permit to construct) prior to January 18, 1972.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES

(other than incinerators)

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A. Raw Materials and Chemicals Used in Your Process:

Description	Utilization Rate lbs./hr.	Relate to Flow Diagram
MOLTEN SULFUR	660 TPD	SULFUR BURNER

B. Process Rate:

1) Total Process Input Rate (lbs./hr.): 660 TPD SULFUR

2) Product Weight (lbs/hr): 2000 TPD H_2SO_4

C. Airborne Contaminants Discharged:

Name of Contaminant	Actual Discharge* lbs./hr.	Actual Discharge* T/yr.	Allowed Discharge Rate Per Ch. 17-2, F.A.C.**	Allowable Discharge*** (lbs./hr.)	Relate to Flow Diagram
SO_2	≦ 4 TPD		4# SO_2/TON H_2SO_4	–	STACK
H_2SO_4 MIST	≦ 0.15	TPD	0.15# MIST/TON H_2SO_4		STACK
			7 100%/4 ACTUAL & POTENTIAL		

D. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency†	Range of Particles Size Collected (in microns)	Basis for Efficiency††
DOUBLE ABSORPTION	SO_2	99.7	NA	DESIGN
TOWERS WITH BRINKS	H_2SO_4 MIST	100%	>3 MICRONS	"
HV MIST ELIMINATORS		85-97%	1-3 MICRONS	"
		50-85%	<1/2 MICRON	"

*Estimate only if this is an application to construct.

**Specify units in accordance with emission standards prescribed within Section 17-2.04, F.A.C. (e.g. Section 17-2.04(6)(e)1.a. specifies that new fossil fuel steam generators are allowed to emit particulate matter at a rate of 0.1 lbs. per million BTU heat input computed as a maximum 2-hour average.)

***Using above example for a source with 260 million BTU per hour heat input: $\frac{0.1 \text{ lbs}}{\text{MMBTU}} \times \frac{260 \text{ MMBTU}}{\text{hr.}} = 26 \text{ lbs./hr.}$

†See Supplemental Requirements, page 5, number 2.

††Indicate whether the efficiency value is based upon performance testing of the device or design data.

E. Fuels: NA

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

*Units: Natural Gas - MMCF/hr.; Fuel Oils, Coal - lbs./hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lb./gal.

Heat Capacity: _____ BTU/lb. _____ BTU/gal.

Other Fuel Contaminants: _____

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:

ALL BLOWDOWN REUSED IN KINGSFORD OPERATION

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

Stack Height: 199 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 120,000 ACFM Gas Exit Temperature: 160 °F

Water Vapor Content: 0 %

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs./Hr. Incinerated							

Description of Waste: _____

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

Approximate Number of Hours of Operation per Day: _____, days/week: _____

Manufacturer: _____

Date Constructed: _____ Model No.: _____

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

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Gas Flow Rate: _____ ACFM _____ DSCFM*

*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 Device: _____

Ultimate Disposal of Any Effluent Other Than That Emitted From the Stack (scrubber water, ash, etc.): _____

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please Provide the Following Supplements Required For All Pollution Sources:

1. Total process input rate and product weight - show derivation.
2. Efficiency estimation of control device(s) - show derivation. Include pertinent test and/or design data.
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
4. An 8½" x 11" plot plan of facility showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
5. An 8½" x 11" plot plan showing the exact 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 USGS topographic map.)
6. Description and sketch of storm water control measures taken both during and after construction.
7. An application fee of $20.00, unless exempted by Chapter 17-4.05(3), FAC, made payable to the Department of Environmental Regulation.
8. With construction permit application, include design details for control device(s). Example: for baghouse, include cloth to air ratio; for scrubber, include cross-sectional sketch; etc.
9. Certification by the P.E. with the operation permit application that the source was constructed as shown in the construction permit application.

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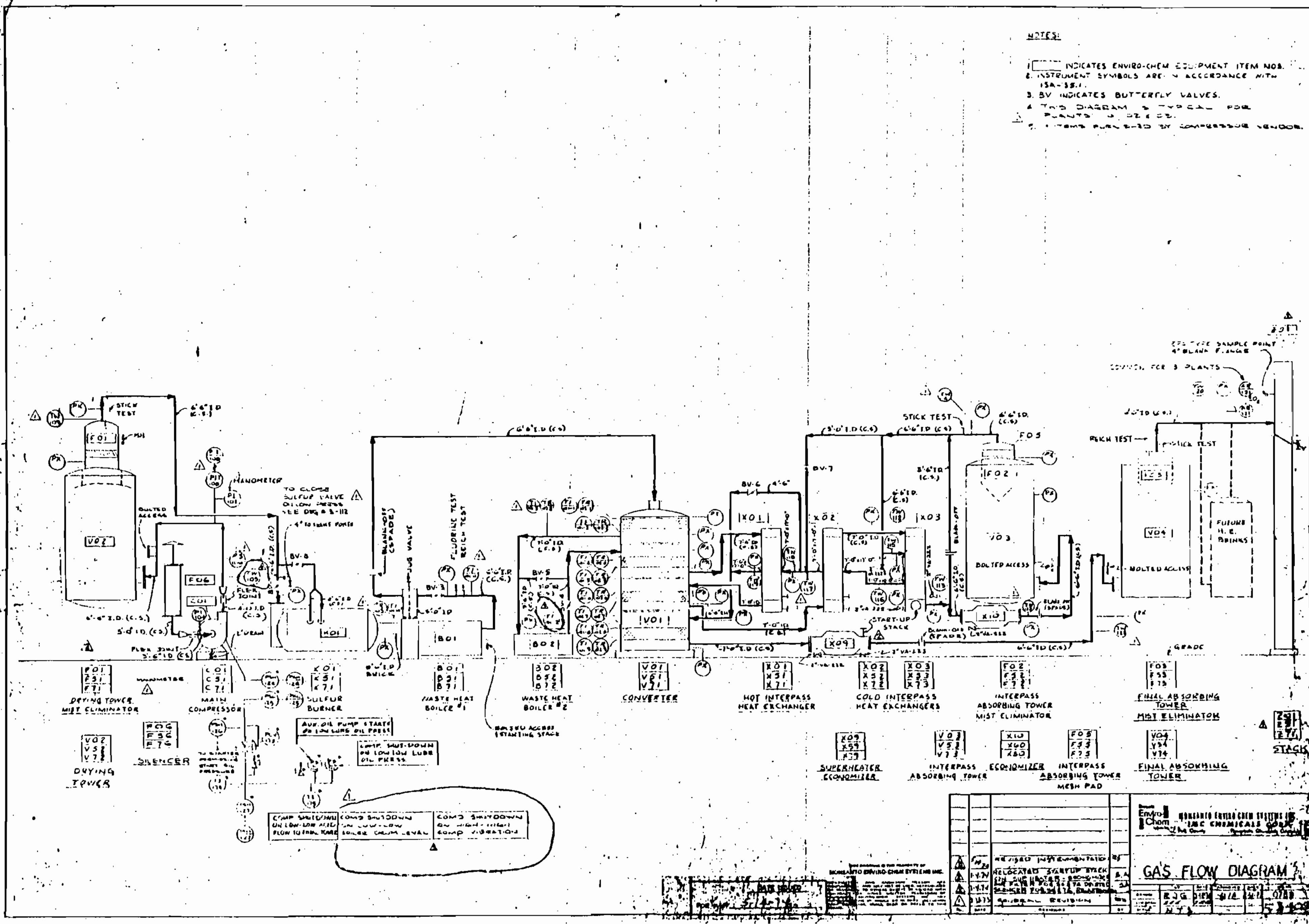

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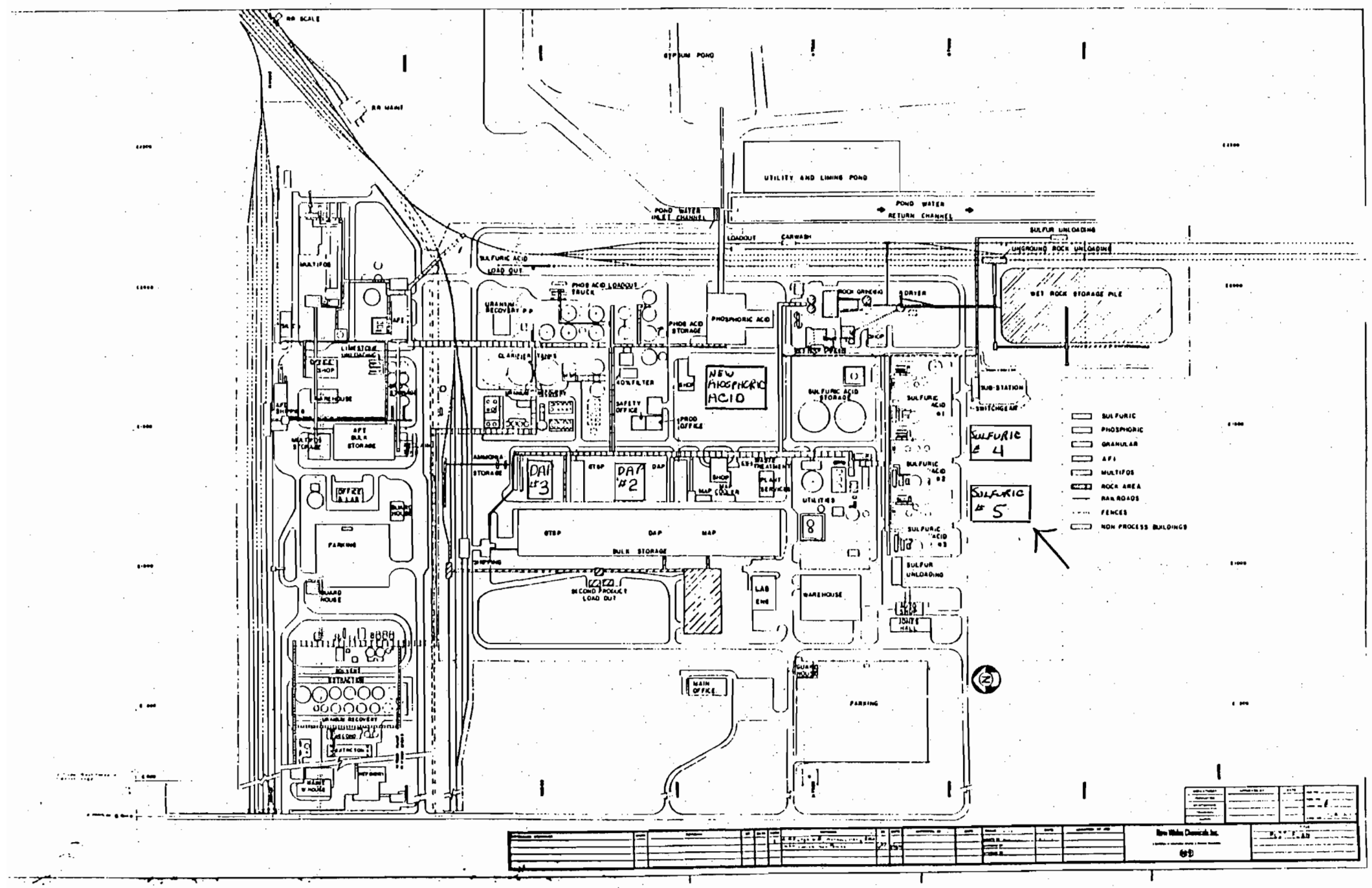

HARRY L. CARROLL
Vice President
Florida

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

November 22, 1978

Mr. T. L. Craig
Vice President & General Manager
New Wales Chemicals, Inc.
Post Office Box 1035
Mulberry, Florida 33860

Dear Tom:

This letter is your authorization to sign on behalf of New Wales Chemicals, Inc. the various applications for permits, specifically the applications for operating permits from the Florida Department of Environmental Regulation.

Very truly yours,

Harry L. Carroll

t

Post Office Box 3807 • Lakeland, Florida 33802 • (813) 646-5081

STATE OF FLORIDA

DEPARTMENT OF STATE • DIVISION OF CORPORATIONS

I certify from the records of this office that IMC CHEMICALS CORP., changed its name to; NEW WALES CHEMICALS, INC., is a corporation organized under the Laws of the State of Delaware, authorized to transact business within the State of Florida, qualified on the 1st day of June, 1977, under the new name.

I further certify that said corporation has paid all fees due this office through December 31, 1977 and its status is active.

GIVEN under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capitol, this the 1st day of June 1977.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

( ) Yes ( ) No

Contaminant	Rate or Concentration
SO_2	$\leq$ 4 LBS./TON H_2SO_4 ACID PRODUCED
H_2SO_4 ACID MIST	$\leq$ 0.15 LBS./TON H_2SO_4 ACID PRODUCED

B. Has EPA declared the best available control technology for this class of sources? (If yes, attach copy)

( ) Yes (X) No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
SO_2	$\leq$ 4 LBS./TON 100% H_2SO_4 ACID PRODUCED
H_2SO_4 ACID MIST	$\leq$ 0.15 LBS./TON 100% H_2SO_4 ACID PRODUCED

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

1. Control Device/System: DOUBLE ABSORPTION
2. Operating Principles: SEE PG. 4-11 THROUGH 4-13 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)
3. Efficiency:* 99.7%
4. Capital Costs: EST. TOTAL PLANT COST @ $14 MILLION
5. Useful Life: LIFE OF PLANT
6. Operating Costs: NA
7. Energy: NA
8. Maintenance Cost: NA
9. Emissions:

Contaminant	Rate or Concentration
SO_2	$\leq$ 4 LBS./TON 100% ACID PRODUCED
H_2SO_4 ACID MIST	$\leq$ 0.15 LBS./TON 100% H_2SO_4 ACID PRODUCED

*Explain method of determining D 3 above.

670 TONS S YIELD 2000 TPD 100 H_2SO_4 ACID PRODUCED WITH 4 TPD SO_2 MAXIMUM EMITTED VIA STACK. 4 TPD SO_2 EMITTED YIELDS 2 TPD S LOST. THEREFORE, $\frac{2.0 \text{ TPD S} \times 100\%}{670 \text{ TPD S BURNED}}$ = 0.3% LOSS OR 99.7% RECOVERY.

10. Stack Parameters

a. Height: 199 ft. b. Diameter: 8.5 ft.

c. Flow Rate: 140,000 ACFM d. Temperature: 160 °F

e. Velocity: 38-40 FPS

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

1. SEE PG. 7-1 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)

a. Control Device: CONTACT ACID PLANT WITH DOUBLE ABSORPTION

b. Operating Principles: SEE PAGES 4-11 THROUGH 4-13 OF ATTACHED DOCUMENT. (NSPS REVIEW FOR SULFURIC ACID PLANTS)

c. Efficiency*: 99.7% d. Capital Cost: NA

e. Useful Life: LIFE OF PLANT f. Operating Cost: NA

g. Energy*: NA h. Maintenance Cost: NA

i. Availability of construction materials and process chemicals: GOOD

j. Applicability to manufacturing processes: INTEGRAL PART OF PROCESS.

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals.

j. Applicability to manufacturing processes:

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

*Explain method of determining efficiency.
**Energy to be reported in units of electrical power - KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected:

1. Control Device: DOUBLE ABSORPTION

2. Efficiency*: 99.7%

3. Capital Cost: EST. COST $14 MILLION

4. Life: LIFE OF PLANT

5. Operating Cost: NA

6. Energy: NA

7. Maintenance Cost: NA

8. Manufacturer: MONSANTO ENVIROCHEM

9. Other locations where employed on similar processes:

a.

(1) Company: AGRICO

(2) Mailing Address: SOUTH PIERCE

(3) City: SOUTH PIERCE

(4) State: FLORIDA

(5) Environmental Manager: HAROLD LONG

(6) Telephone No. 428-1423

*Explain method of determining efficiency above.

(7) **Emissions:***

CONTAMINANT	RATE OR CONCENTRATION
SO_2	$\leq$ 4.0 LBS./TON ACID
ACID MIST	$\leq$ 0.15 LBS./TON ACID

(8) **Process Rate:*** ≃ 2,000 TPD

b.

(1) **Company:** C.F. CHEMICALS, INC.

(2) **Mailing Address:**

(3) **City:** BARTOW (4) **State:** FLORIDA

(5) **Environmental Manager:** W. A. SCHIMMING

(6) **Telephone No:** 533-3181

(7) **Emissions:***

CONTAMINANT	RATE OR CONCENTRATION
SO_2	$\leq$ 4.0 LBS./TON ACID
ACID MIST	$\leq$ 0.15 LBS./TON ACID

(8) **Process Rate:*** 2,000 TPD

10. **Reason for selection and description of systems:**

THIS IS THE MOST EFFICIENT PROCESS CURRENTLY AVAILABLE FROM BOTH AN EMISSION STANDPOINT AND A RECOVERY STANDPOINT.

SEE ATTACHED DOCUMENT.
(NSPS REVIEW FOR SULFURIC ACID PLANTS)

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

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.

BY CURRENT EMISSION LIMITING STANDARDS, THIS TECHNOLOGY MEETS OR EXCEEDS ALL APPLICABLE STANDARDS. THEREFORE, THE ONLY POSSIBLE IMPACT WOULD BE TO CONSTRUCT A PLANT WHICH WOULD HAVE MINIMAL IMPACT ON THE ENVIRONMENT AND WOULD ALSO PROVIDE INCREASED EMPLOYMENT FOR THE CONSTRUCTION TRADES ON A SHORT TERM BASIS AND LONG TERM EMPLOYMENT FOR PEOPLE TO OPERATE AND MAINTAIN THE NEW PLANTS.

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.

(NSPS REVIEW FOR SULFURIC ACID PLANTS)