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REVISED
10/19/79

SUPPLEMENTAL DATA FOR PSD REVIEW

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

PSD FL034

OCTOBER 1979

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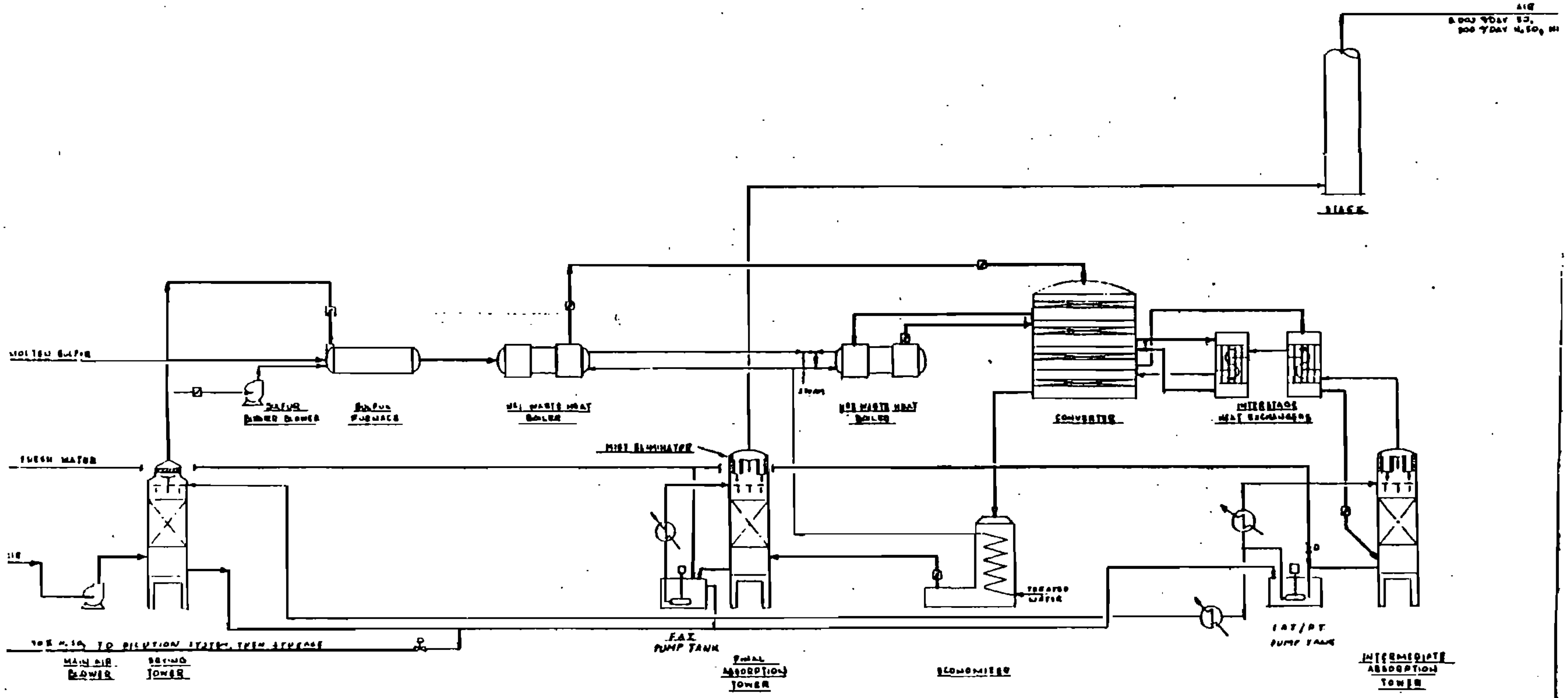
TABLE OF CONTENTS

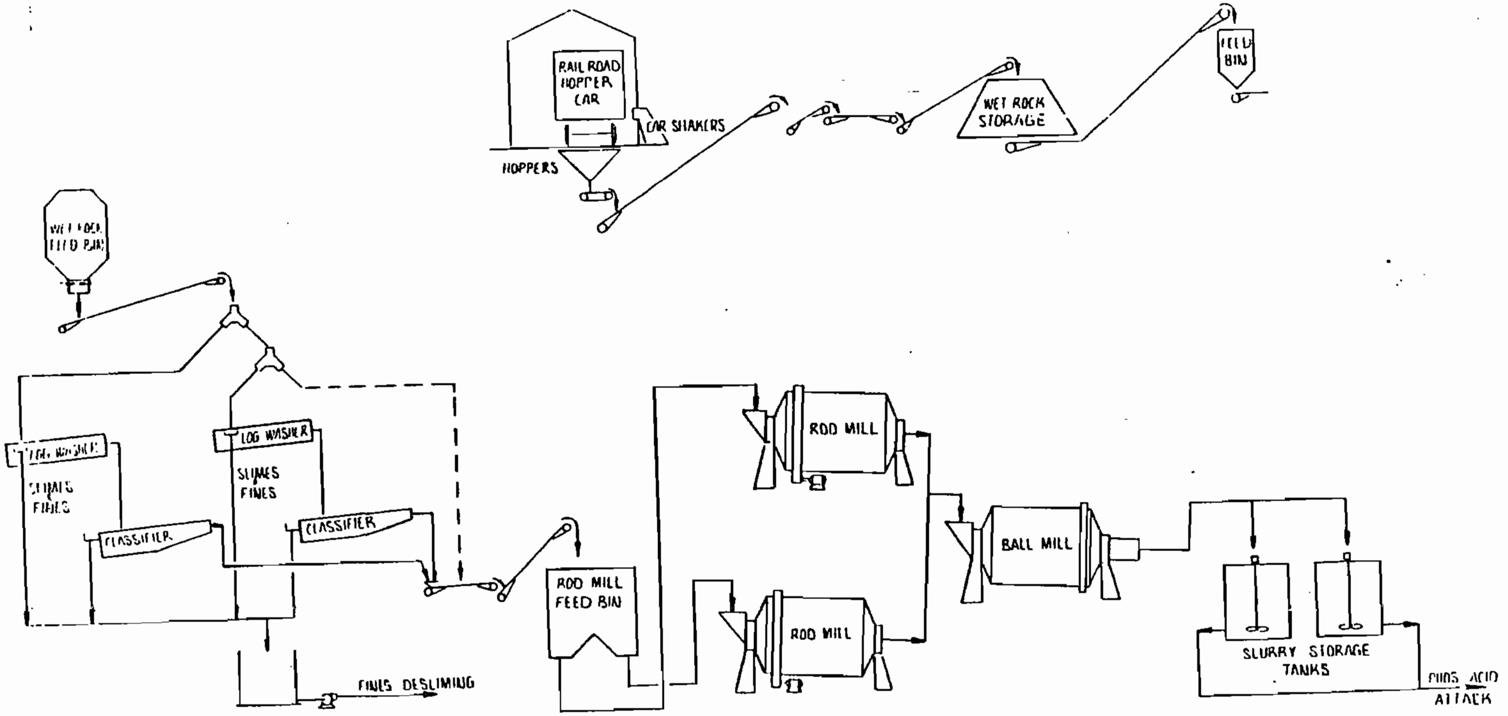
SECTION 1

INTRODUCTION TO NEW WALES

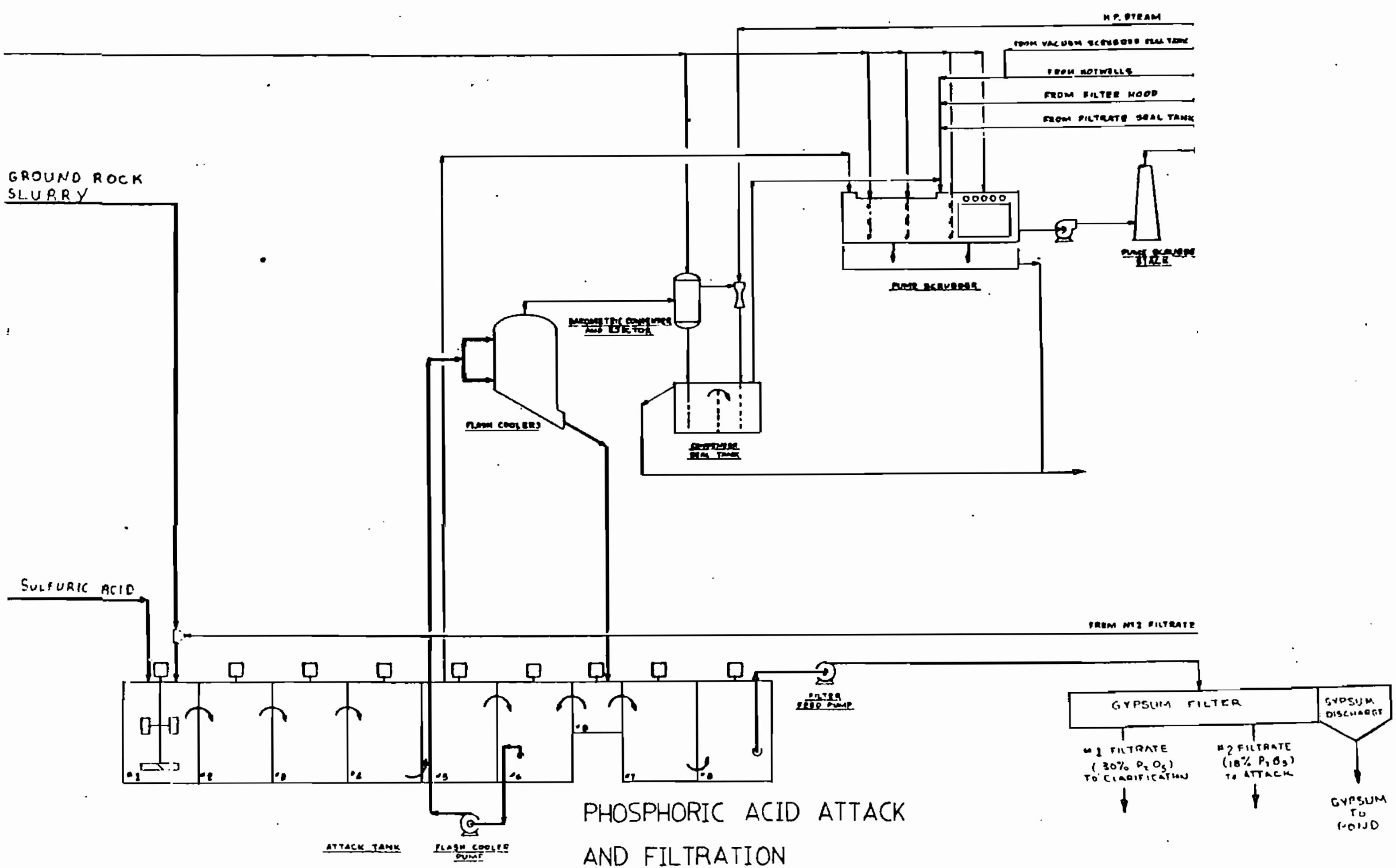
NOTE: The process flow diagrams in this section were omitted from the general information section of the 10/5/79 New Wales document.



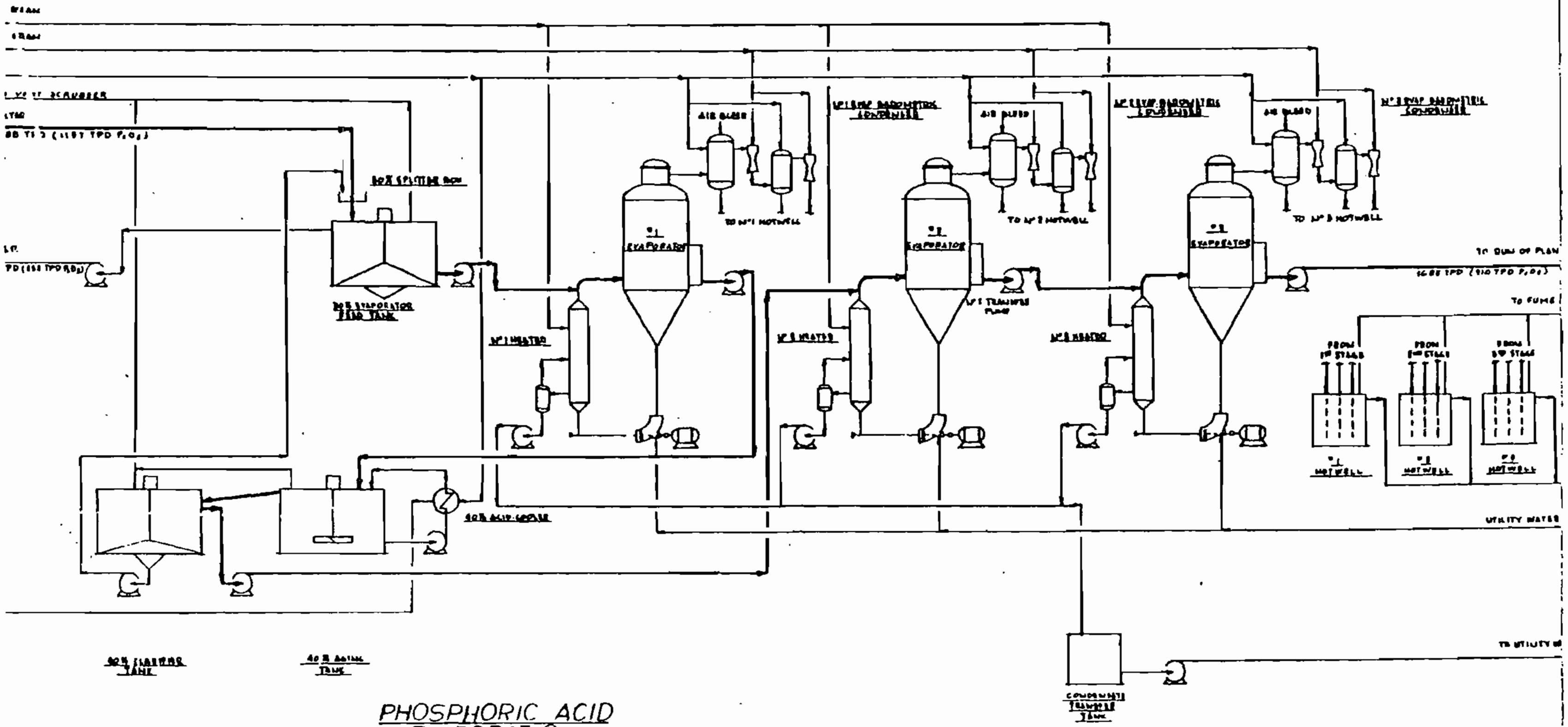
SULFURIC ACID PRODUCTION



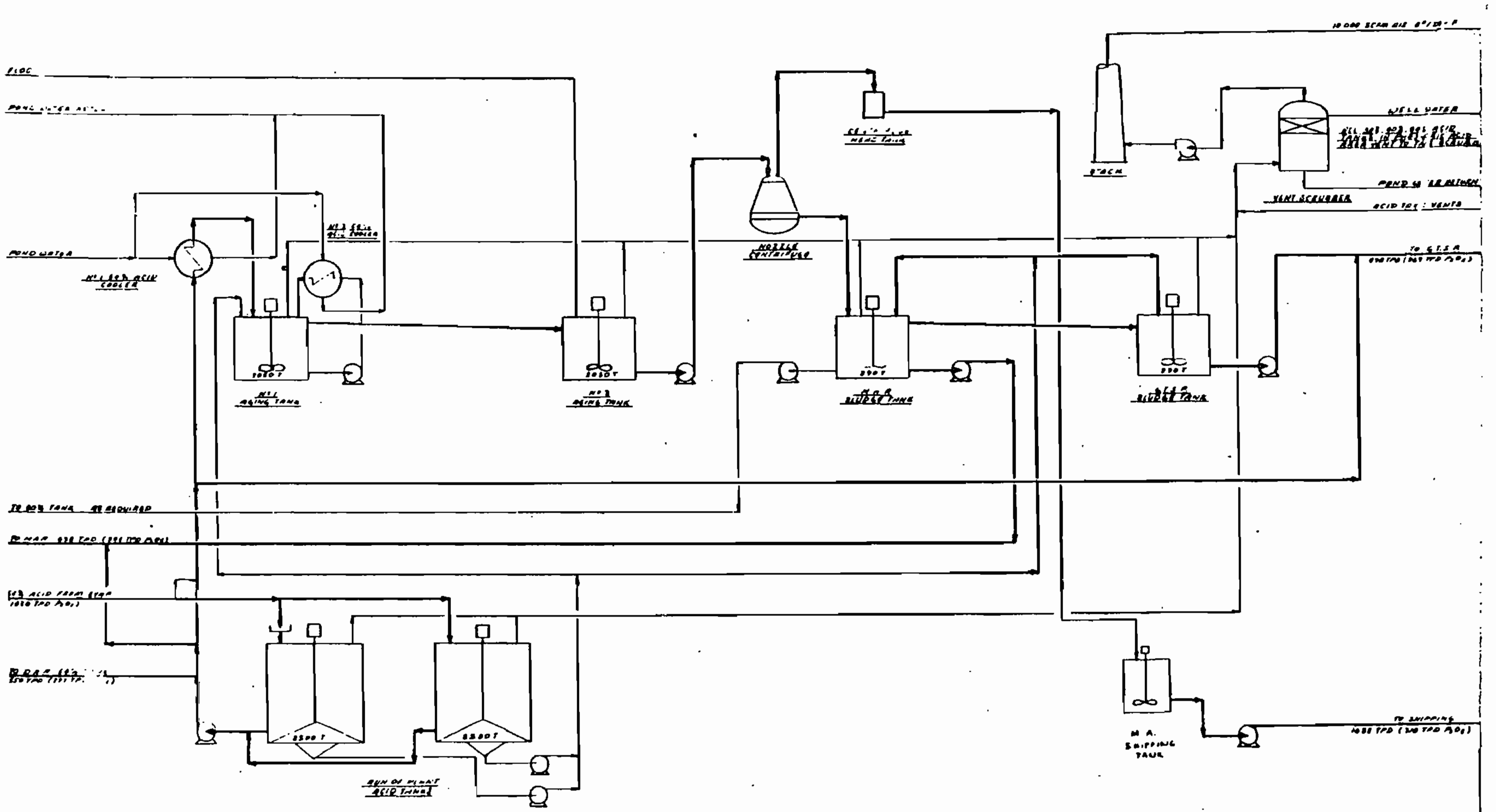
WET ROCK UNLOADING AND GRINDING



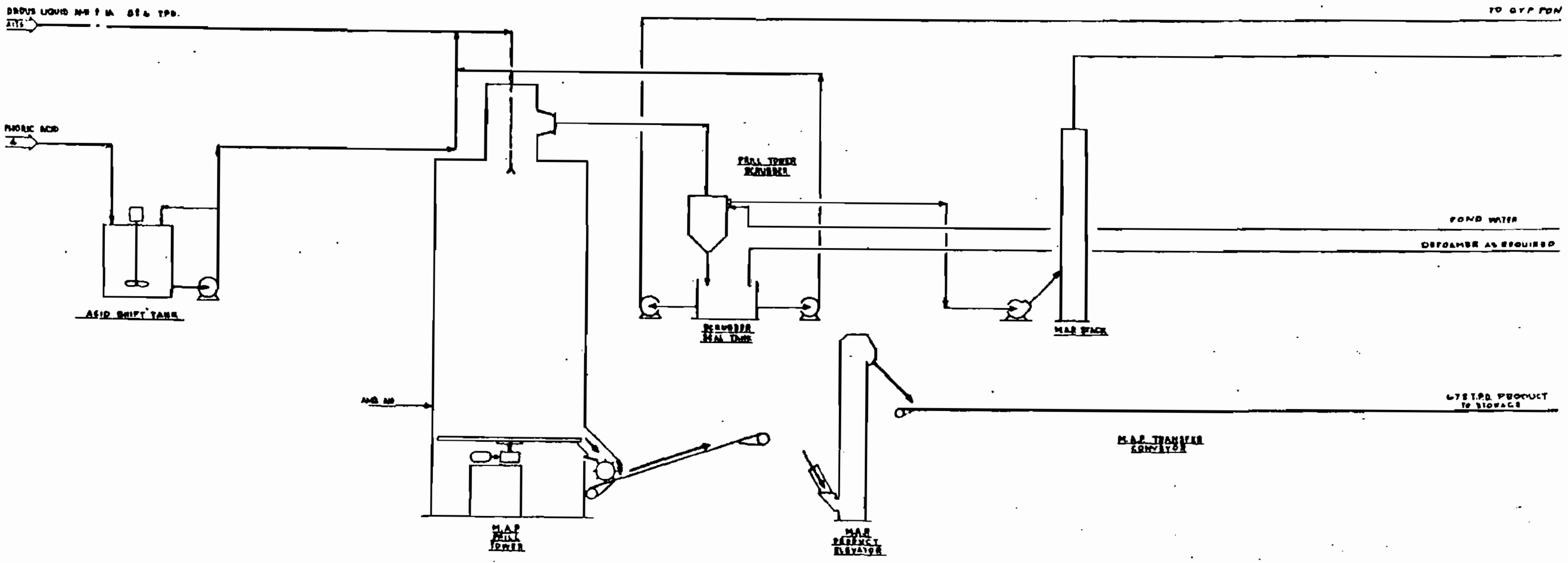
PHOSPHORIC ACID ATTACK AND FILTRATION



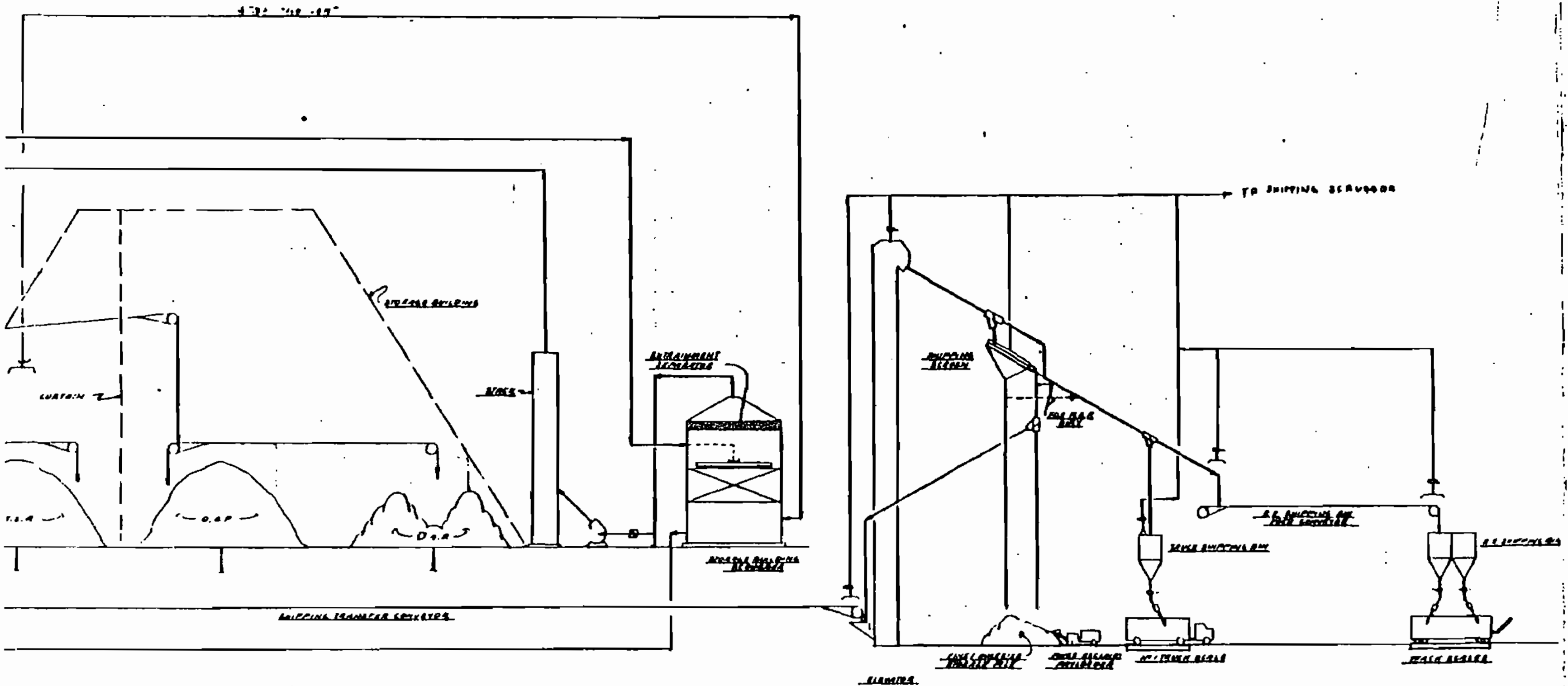
PHOSPHORIC ACID
EVAPORATION



PHOSPHORIC ACID
CLARIFICATION & STORAGE

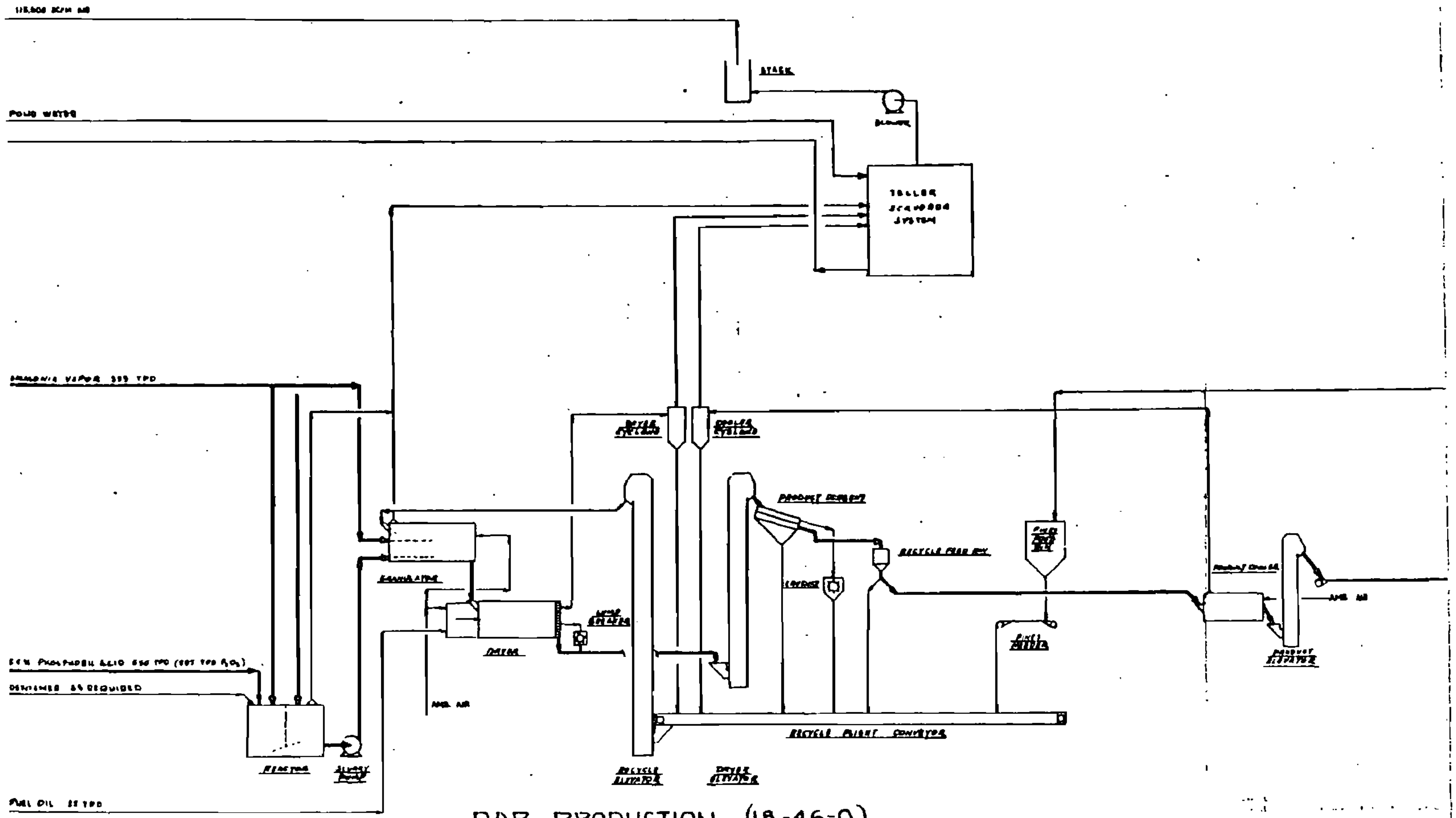


MAP PRODUCTION (10-50-0)

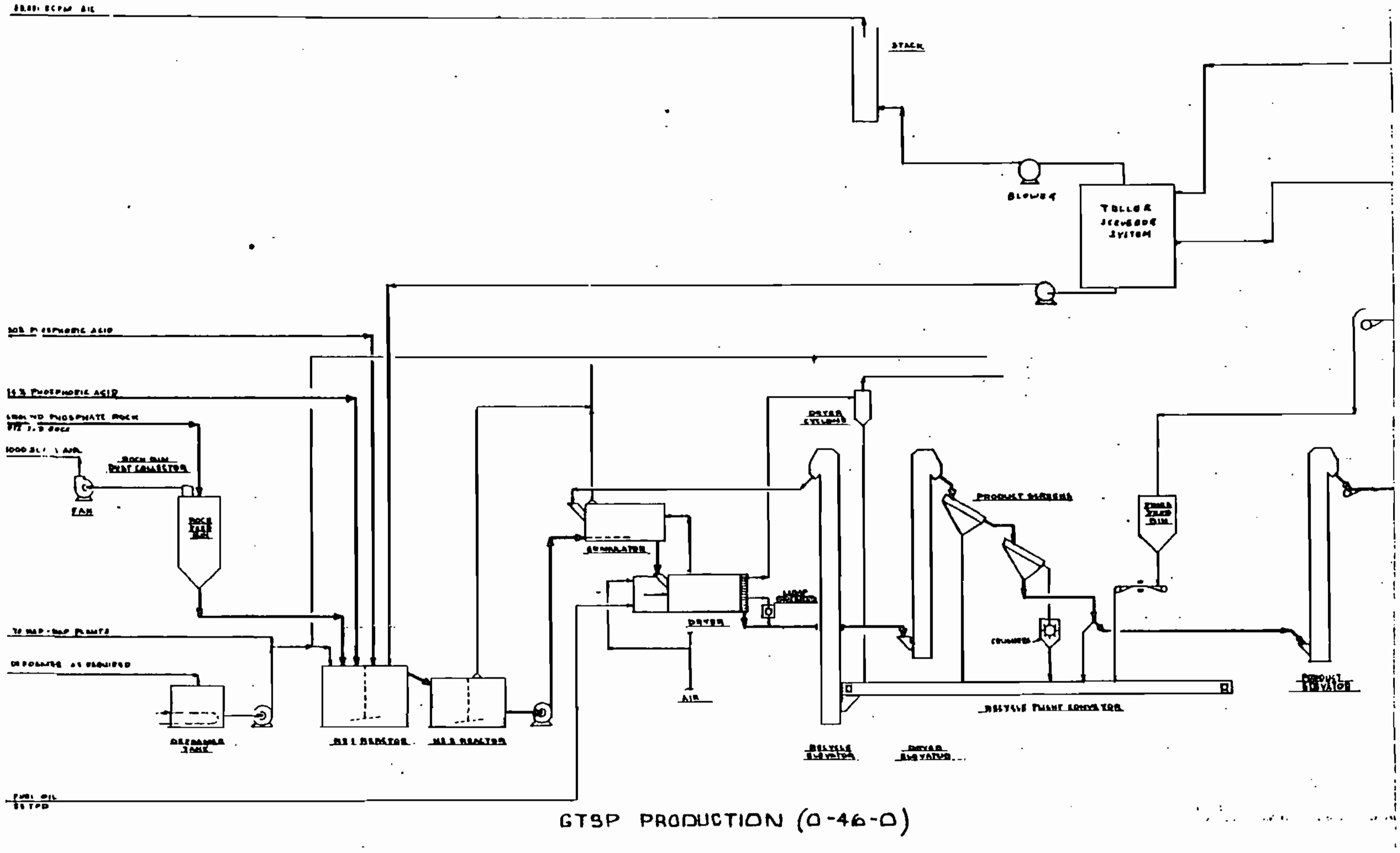


DAP & GTSP
STORAGE & SCRUBBING AREA

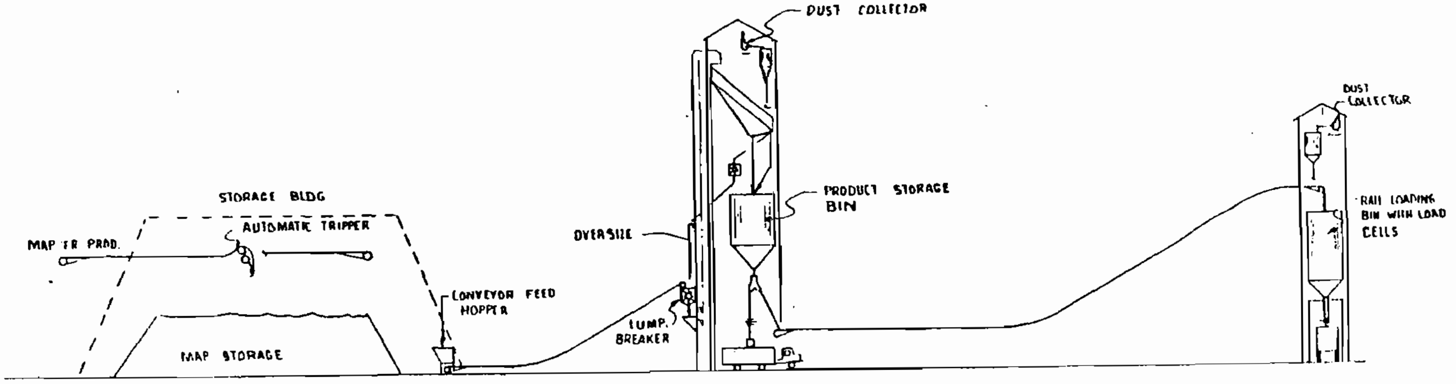
SHIPPING AREA



DAP PRODUCTION (18-46-0)



GTSP PRODUCTION (0-46-0)



2ND. PRODUCT STORAGE AND LOADOUT

SECTION 2

EXPANSION PLANS

NEW WALES CHEMICALS, INC.

THIRD TRAIN EXPANSION

DESCRIPTION OF FACILITIES

New Wales Chemicals, Inc., a wholly-owned subsidiary of International Minerals and Chemical Corporation, proposes to increase the production capacity of its phosphate chemical complex in Mulberry, Florida, by 50% -- from 1,000,000 tons per year P_2O_5 to 1,500,000 tons per year P_2O_5. It proposes to accomplish this by:

1.) Elimination of dry phosphate rock processing facilities.

2.) Doubling wetrock handling facilities -- unloading, storage and reclaim.

3.) Converting the east ball mill from dry to wet grinding.

4.) Construction of a third (duplicate) phosphoric acid plant to produce 1500 tons per day P_2O_5.

5.) Construction of a fourth and fifth (duplicate)_sulfuric acid plant to produce 2000 tons per day H_2SO_4 each.

6.) Addition of sulfur, sulfuric acid, rock slurry and phosphoric acid storage facilities.

7.) Construction of a dual train Di-ammonium phosphate plant, to produce a total of 140 tons per hour DAP.

8.) Addition of anhydrous ammonia and DAP storage facilities.

9.) Construction of a third product loadout system, similar to our second product loadout, to separately handle the GTSP from the existing complex.

New Wales Chemicals will utilize the best available control technology in all areas of air pollution control.

No new deep wells will be required, and we will continue to satisfy the agreement with the Southwest Florida Water Management District (SWFWMD), that all deep well water use at the complex be cancelled by a reduction in the corresponding water use at our adjacent Kingsford Mine complex.

We continue to satisfy previous agreements with SWFWMD, Florida DER, and the EPA, that all excess waters from our complex be diverted to our adjacent Kingsford Mine complex for reuse.

The current schedule calls for construction to begin in January 1980, with completion in January 1982. Startup of facilities will be staged during 1981.

The total cost of the facilities will be $150-200 million, providing on-site construction jobs for a maximum of 1000 people. Permanent employment at the complex will increase by about 300 people.

SECTION 3

NEW SOURCE SUMMARY

NEW SOURCE SUMMARY

The New Wales Chemical Company is a phosphate fertilizer complex located in western Polk County, Florida. At this complex phosphate rock is processed into several different fertilizer products and animal feed ingredients. The complex includes sulfuric acid plants, phosphoric acid plants, granular triple superphosphate production, ammoniated phosphate production, animal feed ingredient production and a uranium recovery unit. Phosphate rock drying, grinding and handling is an integral part of the fertilizer complex.

The original New Wales fertilizer complex was permitted in 1974; prior to PSD regulations.

In 1976 an animal feed ingredient plant was constructed and in 1977 a multiphos plant was constructed. In 1978 a granular products load-out system was permitted and in the same year a uranium recovery unit was permitted.

The present construction plans call for two (2) sulfuric acid plants, a phosphoric acid plant, a diamonium phosphate fertilizer plant, a granular products load-out system, and a liming station for water treatment.

All of the sources existing and proposed for the New Wales Chemical Complex are summarized in the following table. The construction date for each source is also listed. For sources permitted after January 6, 1975 potential and actual annual emission rates are listed. The actual emission rate of the various pollutants was obtained from permits on file with the Florida Department of Environmental Regulation, were estimated using EPA emission factors (AP-42) or are based on field measurements. The potential emissions were arrived at by dividing the actual emissions by the fraction of pollutant escaping through the air pollution control system. In the following sections, each pollutant emitted from the modified source is discussed and the method of estimating actual and potential emissions are delineated.

The calculations for developing potential and actual emissions from the new and proposed sources are included at the end of this section.

Particulate Matter

In all cases the actual particulate matter emission rate has been established by engineering estimate or emission measurements. These data are included in permits on file with the Florida Department of Environmental Regulation. A potential emission rate of particulate matter for each source was obtained by dividing the actual emission rate by the fraction of material escaping through the air pollution control system. ?

Sulfur Dioxide

Sulfur dioxide is emitted from the proposed sulfuric acid plants and from various combustion sources. The potential and actual sulfur dioxide emissions from the double absorption sulfuric acid plants were assumed to be the same since both absorption units are considered an integral part of the plant. The emissions were calculated based on new source performance standards.

Potential sulfur dioxide emissions from combustion sources were calculated on the basis of fuel consumption and sulfur content of the fuel. The actual emissions were assumed to be 15 percent of potential emission on the basis of tests conducted by New Wales and others.

Fluorides

Actual fluoride emissions from the various sources were established by design criteria or field measurements. The potential fluoride emissions were calculated from the actual emissions on the assumption that fluoride scrubbers average 96 percent efficiency.

Nitrogen Oxides

Nitrogen oxides are emitted from the proposed sulfuric acid plants and various combustion sources. The NO_x emissions from the sulfuric acid plants were calculated based on recent field measurements which show a NO_x concentration in the sulfuric acid stack gases of 2.1×10^{-5} pounds per SCFD.

Potential and actual emissions from the combustion sources were assumed to be identical. They were calculated on the basis of fuel consumption and an emission factor of 20 pounds NO_x per 1,000 gallons of fuel. This emission factor is within the range of those presented in AP-42 and has been confirmed by recent field measurements conducted by SKEC.

Hydrocarbons

Hydrocarbons are emitted from the solvent extraction unit in the uranium recovery plant. The potential and actual hydrocarbon emissions were calculated based on pilot studies conducted by New Wales.

Acid Mist

Sulfuric acid mist will be emitted by the proposed sulfuric acid plants. The actual acid mist emissions were based on new source performance standards. Potential acid mist emissions were calculated based on the assumption that mist eliminators are 90 percent efficient. This estimate is based on recent measurements made by SKEC.

The emission summary is the basis for determining what sources will require BACT. Those pollutants with a potential emission rate in excess of 100 TPY and an actual emission rate in excess of 50 TPY must have BACT employed for emission control. The pollutants requiring BACT are particulate matter, SO_2, NO_x and acid mist. Fluorides will be controlled to limits required by New Source Performance Standards (NSPS). Hydrocarbons are emitted at a rate of 34 TPY and require no special control.

SOURCE CONSTRUCTION DATE SUMMARY
AND
NEW AND PROPOSED SOURCE EMISSION SUMMARY

NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

OCTOBER 1979

NEW SOURCE EMISSION SUMMARY (TONS/YEAR)

SOURCE	DATE CONSTRUCTED	DATE REMOVED FROM SERVICE	PART. MATTER		SO_2		FLUORIDES		NO_x		HYDROCARBONS		ACID MIST	
			POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT
1. #1 Sulfuric Acid	Pre 1975	-------												
2. #2 Sulfuric Acid	"	-------												
3. #3 Sulfuric Acid	"	-------												
4. Railcar Unloading	"	-------												
5. Dry Rock Silo	"	-------												
6. West Rock Grinding	"	8/79												
7. East Phos. Acid	"	-------												
8. DAP	"	-------												
9. GTSP	"	-------												
10. MAP	"	-------												
11. GTSP Storage	"	-------												
12. Auxiliary Boiler	"	-------												
13. Dry Rock Load-Out	"	-------												
14. East Rock Grinding	"	-------												
15. Dry Rock Silo; Bottom	"	-------												
16. West Phos. Acid	"	-------												
17. Dryer Product Belt Transfer	"	-------												
18. Wet Rock Dryer	"	12/79												
19. Phos. Acid Rock Bin-West	"	-------												
20. GTSP Rock Bin	"	-------												
21. Phos. Acid Rock Bin-East	"	-------												
22. Phos. Acid Clarification	Pre 1975	-------												
23. AFI Limestone Stg.	1976	-------	105	1.0	0	0	0	0	0	0	0	0	0	0
24. AFI Silica	1976	-------	39	0.4	0	0	0	0	0	0	0	0	0	0
25. AFI Plant	1976	-------	4533	90.7	586	586	1550		30	30	0	0	0	0
26. AFI Stg. Silos	1976	-------	613	6.1	0	0	0	0	0	0	0	0	0	0
27. AFI Limestone Feed Bin	1976	-------	53	0.5	0	0	0	0	0	0	0	0	0	0
28. AFI Truck Shipping	1976	-------	79	0.8	0	0	0	0	0	0	0	0	0	0
29. AFI Rail Shipping	1976	-------	306	3.1	0	0	0	0	0	0	0	0	0	0
30. Multiphos Shipping	7/1977	-------	399	4.0	0	0	0	0	0	0	0	0	0	0
31. Multiphos Plant	"	-------	315	12.6	964	964	79	3.2	49	49	0	0	0	0
32. Multiphos Soda Ash Unload	"	-------	56	0.6	0	0	0	0	0	0	0	0	0	0
33. Multiphos Soda Ash Conv.	"	-------	56	0.6	0	0	0	0	0	0	0	0	0	0
34. Multiphos Coolers	"	-------	2050	20.5	0	0	0	0	0	0	0	0	0	0
35. Multiphos Sizing	"	-------	355	3.6	0	0	0	0	0	0	0	0	0	0
36. Multiphos Classification	"	-------	157	1.6	0	0	0	0	0	0	0	0	0	0
37. Second Product Load-Out	8/1978	-------	36	6.0	0	0	0	0	0	0	0	0	0	0
38. Uranium Recovery Solvent Extract	2/1978	-------	0	0	0	0	1	0.6	0	0	34	34	0	0

NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

Page 2

SOURCE	DATE CONSTRUCTED	DATE REMOVED FROM SERVICE	NEW SOURCE EMISSION SUMMARY (TONS/YEAR)											
			PART. MATTER		SO_2		FLUORIDES		NO_x		HYDROCARBONS		ACID MIST	
			POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT.	POT.	ACT.
39. Uranium Recovery Refining Area	"	-------	48	0.4	13	13	0	0	1	0.3	0	0	0	0
40. Uranium Recovery Acid Clean-Up	"	-------	0	0	0	0	4	2.2	0	0	0	0	0	0
41. Proposed #4 Sulfuric Acid	1980	-------	0	0	1387	1387	0	0	52	52	0	0	520	52
42. Proposed #5 Sulfuric Acid	"	-------	0	0	1387	1387	0	0	52	52	0	0	520	52
43. Proposed Phosphoric Acid #3	"	-------	0	0	0	0	124	5.0	0	0	0	0	0	0
44. Proposed DAP	"	-------	8916	160.9	457	457	Incl 436	17.4	23	23	0	0	0	0
45. Proposed Third Product Load-Out	"	-------	36	6.0	0	0	0	0	0	0	0	0	0	0
46. Proposed Liming Station	"	-------	60	0.6	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW SOURCE" EMISSIONS (TPY)			18,212	319.5	4794	4794	644	28.4	206	206.3	34	34	520	52

1
33.7
14.4
48.1

1/12

CALCULATION OF POTENTIAL AND ACTUAL EMISSIONS

Note: All sources constructed by New Wales since 1/6/75 have been included as part of this modification for PSD review purposes

I. ANIMAL FEED INGREDIENT (AFI) PLANT

A. Truck load-out

#28

Pollutants - Part. Matter (P.M.)

Actual emissions (Calc. at 0.01 gr/SCF.d) = 0.2 lb/hr

Operating factor - 0.9

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{0.2\ \text{lb/hr} \times 8760\ \text{hr/yr} \times 0.9 \times 1/2000\ \text{ton/lb}}{(1-0.99)} = 78.8\ \text{TPY}$$

Actual Emissions = 78.8 x (1-0.99) = 0.8 TPY

B. Limestone feed bin

#27

Pollutants - PM

Actual emissions (Calc. at 0.01 gr/SCF,D) = 0.2 lb/hr

Operating factor = 0.6

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{0.2 \times 8760 \times 0.6 \times 1/2000}{(1-0.99)} = 52.6\ \text{TPY}$$

Actual Emissions = 52.6 x (1-0.99) = 0.5 TPY

C. Rail load-out

29

Pollutants - PM

Actual emissions (Calc at 0.01 gr/SCF,D) = 1.0 lb/hr.

Operating factor - 0.7

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{1.0 \times 8760 \times 0.7 \times 1/2000}{(1 - 0.99)} = 306.6 \text{ TPY}$$

Actual Emissions = 306.6 (1 - 0.99) = 3.1 TPY

D. AFI Storage silos

26

Pollutants - PM

Actual emissions (Calc at 0.01 gr/SCF,D) = 2.0 lb/hr.

Operating factor - 0.7

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{2.0 \times 8760 \times 0.7 \times 1/2000}{(1 - 0.99} = 613.2 \text{ TPY}$$

Actual Emissions = × (1 - 0.99) = 6.1 TPY

E. Limestone storage

23

Pollutants - PM

Actual emissions (Calc. at 0.01 gr/SCF,D) = 0.3 lb/hr

Operating factor = 0.8

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{0.3 \times 8760 \times 0.8 \times 1/2000}{(1 - 0.99)} = 105.1 \text{ TPY}$$

Actual Emissions = × (1 - 0.99) = 1.0 TPY

F. Silica Unloading

24

Pollutants - PM

Actual emissions (Calc at 0.01 gr/SCF,D) = 0.3 lb/hr

Operating factor - 0.3

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{0.3 \times 8760 \times 0.3 \times 1/2000}{(1-0.99)} = 39.4\ \text{TPY}$$

Actual Emissions = x(1-0.99) = 0.4 TPY

G. AFI Plant

Pollutants - PM, SO_2, NO_x

PM

25

Actual emissions (measured) = 23.0 lb/hr

Operating factor = 0.9

Control efficiency (Scrubber) - 98% (assumed)

Potential emissions

$$= \frac{23.0 \times 8760 \times 0.9 \times 1/2000}{(1-0.98)} = 4533.3\ \text{TPY}$$

Actual Emissions = 4533.3 × (1 - 0.98) = 90.7 TPY

SO_2

Oil consumption (actual) - 2,985 × 10^3 gal @ 2.5% Sulfur

Potential (AP-42)

= 2,985 × 157 × 2.5 × 1/2000 = 585.8 TPY

Actual emissions = 585.8 TPY

NO_x

Potential emissions (AP-42)

= 2,985 × 20 × 1/2000 = 29.9 TPY

Actual emissions = 29.9 TPY

II MULTIPHOS PLANT

A. Shipping

Pollutant - PM

30

Actual emissions (Calc at 0.01gr/SCF, D) = 1.3 lb/hr

Operating factor - 0.7

Control efficiency (bag collector) - 99% (assumed)

Potential emissions

$$= \frac{1.3 \times 8760 \times 0.7 \times 1/2000}{(1-0.99)} = 398.6 \text{ TPY}$$

Actual emissions = 398.6 × (1-0.99) = 4.0 TPY

B. Multiphos plant

Pollutants - PM, SO_2, NO_x, F

31

PM

Actual emissions - 3.2 lb/hr (measured)

Operating factor - 0.9

Control efficiency (scrubber) - 96% assumed

Potential emissions

$$= \frac{3.2 \times 8760 \times 0.9 \times 1/2000}{(1-0.96)} = 315.4 \text{TPY}$$

Actual emissions = 315.4 (1-0.96) = 12.6 TPY

SO_2

Oil consumption (actual) - 5460×10^3 gal/yr @ 2.5% S

Potential and Actual emissions (AP-42)

$$= 5460 \times 157 \times 2.5 \times 1/2000 \times 0.9 = 964.4 \text{ TPY}$$

NO_x

Potential and Actual emissions (AP-42)

$$= 5460 \ \frac{1000\text{gal}}{\text{yr}} \times 20 \ \frac{\text{lb } NO_x}{1000\text{gal}} \times 0.9 \times 1/2000 = 49.1 \text{ TPY}$$

B. Multiphos Plant (con't)

Fluoride

Actual emissions (FDER allowable) - 3.17 TPY (measured)

Control efficiency (scrubbers) - 96% (assumed)

Potential emissions = 3.17 / (1 - 0.96) = 79.2 TPY

Actual emissions = 3.17 TPY

C. Soda Ash unloading → Na_2CO_3 anhydrous crude

Pollutant - PM

32

Actual emissions (Calc at 0.01gr/scf, D): 0.4 lb/hr

Operating factor - 0.32

Control efficiency (bag collector) - 99% (assumed)

Potential Emissions

$$= \frac{0.4 \times 8760 \times 0.32 \times 1/2000}{(1-0.99)} = 56.1 \text{ TPY}$$

Actual Emissions = 56.1 × (1 - 0.99) = 0.6 TPY

D. Soda ash conveying

Pollutant - PM

33

Actual emissions (Calc at 0.01gr/scf, D) = 0.4 lb/hr

Operating factor - 0.32

Control efficiency (bag collector) - 99% (assumed)

Potential emissions

$$= \frac{0.4 \times 8760 \times 0.32 \times 1/2000}{(1-0.99)} = 56.1 \text{ TPY}$$

Actual emissions = 56.1 × (1 - 0.99) = 0.6 TPY

E. Coolers

Pollutant - P.M.

(34)

Actual emissions (measured) - 5.2 lb/hr

Operating factor - 0.9

Control efficiency (bag collector) - 99% (assumed)

Potential emissions

$$= \frac{5.2 \times 8760 \times 0.9 \times 1/2000}{(1-0.99)} = 2049.8 \text{ TPY}$$

Actual emissions $= 2049.8 \times (1-0.99) = 20.5$ TPY

F. Sizing

Pollutant - PM

(35)

Actual emissions (Calc at 0.01 gr/scf,D) = 0.9 lb/hr

Operating factor - 0.9

Control efficiency (bag collector) - 99% (assumed)

Potential emissions

$$= \frac{0.9 \times 8760 \times 0.9 \times 1/2000}{(1-0.99)} = 354.8 \text{TPY}$$

Actual emissions $= 354.8 \times (1-0.99) = 3.6$ TPY

G. Classification

Pollutant - PM

(36)

Actual emissions (Calc at 0.01 gr/scf,D) = 0.4 lb/hr

Operating factor - 0.9

Control efficiency (bag collector) - 99% (assumed)

Potential emissions

$$= \frac{0.4 \times 8760 \times 0.9 \times 1/2000}{(1-0.99)} = 157.7 \text{ TPY}$$

Actual emissions $= 157.7 \times (1-0.99) = 1.6$ TPY

III SECOND PRODUCT LOAD-OUT

37

Pollutant - PM

Actual emissions (measured)

Truck	- 0.9 lb/hr
Rail	- 0.8 lb/hr
Total	1.7 lb/hr

Operating factor - 0.8

Potential emissions - 36.5 TPY (see attached correspondence)

Actual emissions

$= 1.7 \times 8760 \times 0.8 \times 1/2000 = 6.0$ TPY

Actual emissions $= 595.7 \times (1-0.99) = 6.0$ TPY

IV THIRD PRODUCT LOAD-OUT (PROPOSED)

45 proposed

Identical to Second Product Load-out

V #4 SULFURIC ACID (2000 TPD) (PROPOSED)

41 proposed

Pollutants - SO_2, Acid mist, NO_x

Operating factor - 0.95

SO_2 Potential and Actual emissions (4.0 lb SO_2/ton acid)

$= 4.0 \times 2000 \frac{ton}{day} \times 365 \frac{day}{yr} \times 0.95 \times 1/2000$

$= 1387.0$ TPY

Acid mist

Actual emissions (0.15 lb mist / ton acid)

$= 0.15 \times 2000 \times 365 \times 0.95 \times 1/2000 = 52.0$ TPY

Control efficiency (high efficiency mist eliminators) - 90% (assumed)

Potential emissions

$= 52.0/(1-0.9) = 520.1$ TPY

NO_x

Potential and Actual emissions (2.1×10^{-6} lb/scf - see attached test results)

$= 2.1 \times 10^{-6} \frac{lb\ NO_x}{SCF} \times 100{,}000 \frac{SCF}{min} \times 60 \frac{min}{hr} \times 8760 \frac{hr}{yr} \times 0.95 \times 1/2000$

$= 52.4$ TPY

VI #5 SULFURIC ACID (2000 TPD) (PROPOSED)

(42) proposed

Identicial to #4 Sulfuric Acid Plant

VII PHOSPHORIC ACID #3 (1500 TPD as P_2O_5) (PROPOSED)

(43) proposed

Pollutant - F^-

Actual emissions (NSPS - 0.02 lbF/ton P_2O_5)

$$= 1500 \frac{\text{ton}}{\text{day}} \times 0.02 \frac{\text{lbF}}{\text{ton}} \times 365 \frac{\text{day}}{\text{yr}} \times 1/2000 \frac{\text{ton}}{\text{lb}}$$

$$= 5.5 \text{ TPY}$$

Operating factor = 0.9

Control efficiency (scrubber) - 96% (assumed based on industry performance record)

Potential emissions

$$= 5.5 \text{ ton/yr} \times 0.9 \times 1/(1-0.96) = 123.8 \text{ TPY}$$

Actual emissions = 123.8 × (1 - 0.96) = 5.0 TPY

VIII LIMING STATION (PROPOSED)

(46) proposed

Pollutant - PM

Actual emission rate - assumed to be 0.01 grains/SCF, dry; 3200 SCFM flow

Operating factor - 0.5

Control efficiency (bag collectors) - 99% (assumed)

Actual Emissions

$$= 0.01 \frac{\text{gr}}{\text{ft}^3} \times 3200 \frac{\text{ft}^3}{\text{min}} \times 60 \frac{\text{min}}{\text{hr}} \times 8760 \frac{\text{hr}}{\text{yr}} \times 1/7000 \text{ lb/gr}$$

$$\times 1/2000 \text{ ton/lb} \times 0.5 = 0.6 \text{ TPY}$$

Potential emissions

$$= 0.6/(1-0.99) = 60.0 \text{ TPY}$$

IX DIAMMONIAUM PHOSPHATE (DAP) PLANT - 140 TPH DAP -(PROPOSED) 2 trains
(70 TPH P_2O_5)

A. Reactor/Granulator and Dryer - West/70 TPH DAP
(35 TPH P_2O_5)

44 proposed

Pollutants - PM, SO_2, NO_x, F^-

PM

Actual emissions - 0.02 grains/SCF, dry @ 100,000 SCFM, dry
based upon scrubber efficiency
for particulate matter control

Operating factor - 0.95

Control efficiency (scrubber) - 98% (assumed)

Actual emissions

$$= 0.02 \times 100{,}000 \times 60 \times 8760 \times 1/7000 \times 1/2000 \times 0.95$$

$$= 71.3 \text{ TPY}$$

Potential emissions = $71.3/(1-0.98)$ = 3566.6 TPY

SO_2

Oil consumption @ 2 gal/ton DAP

$= 2 \times 70 = 140$ gal/hr @ 2.5% Sulfur

Potential and Actual emissions (AP-42)

$$= \left(\frac{140}{1000} \times 157 \times 2.5\right) \frac{\text{lb } SO_2}{\text{hr}} \times 8760 \times 0.95 \times 1/2000$$

$$= 228.6 \text{ TPY}$$

NO_x

Potential and Actual emissions (AP-42)

$$= \left(\frac{140}{1000} \times 20 \frac{\text{lb } NO_x}{1000 \text{ gal}}\right) \frac{\text{lb } NO_x}{\text{hr}} \times 8760 \times 0.95 \times 1/2000$$

$$= 11.6 \text{ TPY}$$

Fluorides

Actual emission rate - NSPS (0.06 lb/ton P_2O_5)

Control efficiency (scrubber) - 96% (assumed based upon industry records)

Potential emissions

$$= \frac{\left(35 \frac{\text{ton } P_2O_5}{\text{hr}}\right) \times 0.06 \text{ lb/ton} \times 8760 \times 0.95 \times 1/2000}{(1-0.96)} = 218.4 \text{ TPY}$$

Actual emissions $= 218.4 \times (1-0.96) = 8.7$ TPY

B. Reactor/Granulator and Dryer - East

proposed (44) Identical to R/G and Dryer - West

C. Cooler

(44) proposed

Pollutant - P.M.

Actual emission rate - 0.01 gr/scf dry @ 50,000 SCFM

Operating factor - 0.95

Control efficiency (bag collector) - 99% assumed

Potential emissions

$$= 0.01 \frac{gr}{ft^3} \times 50{,}000 \frac{ft^3}{min} \times 60 \frac{min}{hr} \times 8760 \frac{hr}{yr} \times 0.95$$

$$\times 1/7000 \; lb/gr \times 1/2000 \times 1/(1-0.99)$$

$$= 1783.3$$

Actual emissions = 1783.3 × (1 - 0.99) = 17.8 TPY

X URANIUM RECOVERY

A. Acid Clean-up

(40)

Pollutant - F^-

Operating factor - 1.0

Actual emission rate (measured) = 0.5 lb/h

Control efficiency - 50% (assumed)

Potential emissions $= \frac{0.5 (8760) \times 1/2000}{(1-0.5)} = 4.4$ TPY

Actual emissions = 4.4 × (1 - 0.5) = 2.2 TPY

11/12

34

B. Solvent extraction

Pollutants - F, Hydrocarbons

Fluorides

Actual emissions (measured) - 0.13 lb/hr

Operating factor - 1.0

Control efficiency - 50% (assumed)

Potential emissions

$$= \frac{0.13 \times 8760 \times 1/2000}{(1 - 0.50)} = 1.1 \text{ TPY}$$

Actual emissions = 1.1 × (1 - 0.5) = 0.6 TPY

Hydrocarbons

Actual emissions (Calculated by design engineering firm for New Wales. Emissions will result from kerosene evaporation from storage tanks and flotation cell. Emission rate based on vapor pressure of kerosene at typical temperatures).

= 7.75 lb/hr (max)

Operating factor - 1.0

Potential and Actual emissions

$$= 7.75 \times 8760 \times 1/2000$$

$$= 34.0 \text{ TPY}$$

C Refinery

Pollutants – PM, SO_2, NO_x

PM

39

Clay unloading

Actual emissions (Calc at 0.01 gr/scf, D) = 0.33 lb/hr

Operating factor – 0.1

Control efficiency (bag collector) – 99% assumed

Potential emissions

$$= \frac{0.33 \times 8760 \times 1/2000 \times 0.10}{(1-0.99)} = 14.4 \text{ TPY}$$

Actual emissions = 14.4 (1 – 0.99) = 0.1 TPY

Dryer

Actual emission rate (Calc at 0.01 gr/scf, D) = 0.08 lb/hr

Operating factor – 1.0

Control efficiency (bag collector) – 99% (assumed)

Potential emissions $= \frac{0.08 \times 8760 \times 1/2000}{(1-0.99)} = 33.7$ TPY

Actual emissions = 33.7 × (1 – 0.99) = 0.3 TPY

Total PM

Potential – 48.1 TPY
Actual – 0.4 TPY

SO_2

Oil consumption = 26 gpm @ 0.8% Sulfur

Potential and Actual emissions (AP-42)

$= 142(0.8) \times 26/1000 \times 8760 \times 1/2000$

= 12.9 TPY

NO_x

Potential and Actual emissions (AP-42)

$= 2.8 \times 26/1000 \times 8760 \times 1/2000$

= 0.3 TPY

United States
Environmental Protection
Agency

Region 4
345 Courtland Street NE
Atlanta GA 30308

Alabama, Georgia, Florida,
Mississippi, North Carolina,
South Carolina, Tennessee,
Kentucky

EPA

JAN 3 0 1979

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:

This is in answer to your letter of January 19, 1979.

Based upon the emission rates included in that letter, the second product loading facility at your Mulberry facility is not a major modification under the PSD regulations, and is not subject to review.

Please be aware that, under the regulation, increases in potential emissions are cumulative with respect to determining applicability. In other words, if further changes or additions to the source cause the increase in potential emissions of all changes and additions, including the new loadout facility, to increase by 100 tons per year, then all of the changes will be subject to PSD review retroactively.

If you have any questions regarding this letter, please contact me or Roger Pfaff at 404/881-2864.

Sincerely yours

Winston A. Smith

Winston A. Smith
Chief, Air Programs Branch

cc: Dr. J. P. Subramani, PE, Chief
Bureau of Air Quality MGT

New Wales Chemicals, Inc.

A Subsidiary of International Minerals & Chemical Corporation

IMC

P.O. Box 1035 • Mulberry, Florida 33860 • Phone: (813) 428-2531

January 19, 1979

Mr. Winston Smith
Air Programs Office
U.S.E.P.A.
345 Courtland Avenue
Atlanta, Georgia

Dear Sir:

Mr. Roger Pfaff of your department spoke with Mr. Craig Pflaum, New Wales Process Engineering Superintendent, and myself today and asked that we supply you with the following information.

We are currently completing construction of a 2nd product loadout system, as permitted by the Florida Department of Environmental Regulation. This system will be starting up within the next two weeks.

As stated in our permit from the F.D.E.R., our control emissions will be approximately 40 lbs/day, equivalent to 7.3 tons/year when operating 100% of the time.

If the pollution control equipment did not operate during this time, uncontrolled fugitive emissions would be approximately 200 lbs/day, equivalent to 36.5 tons/year operating 100% of the time. These uncontrolled emissions would be minimal, because we have enclosed all equipment which is designed to convey, handle or loadout product.

Based on this information, would you please verify that we do not require either an operating permit from your office or a PSD review.

If you have any further questions on this matter, please let us know.

Very Truly yours,

A. L. Girardin III

A. L. Girardin, III　　3-19
Environmental Services Supervisor

NO_x EMISSION MEASUREMENTS
AT NO. 1 SULFURIC ACID PLANT

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

On September 26, 1979 nitrogen oxides concentrations measurements were made in the tail gas stream from the No. 1 sulfuric acid plant at the New Wales Chemical Company. This plant is a 2,000 TPD double absorption contact sulfuric acid plant.

The purpose of the measurements were to obtain nitrogen oxides concentration data which could be used in estimating nitrogen oxides emissions from proposed plants of a similar design.

The emission measurements consisted of measuring the NO_x concentration only using EPA Method 7 (40 CFR 60). These concentration data will be used with design tail gas flow rates from the proposed sulfuric acid plants to estimate NO_x emissions.

The field and laboratory data sheets for the emission measurements follow this page.

The average NO_x concentration (as NO_2) was 2.1×10^{-6} pounds per standard cubic foot.

TABLE

NO_x

EMISSION DATA

PLANT NEW WALES

STACK #1 H_2SO_4

Run No.	1A	1B	1C	1D
Date	9/26/79	9/26/79	9/26/79	9/26/79
Time	1320	1327	1333	1337
Flask No.	29	20	21	7
V_f = Flask + Valve Volume, ml	2070	2101	2084	2084
V_a = Absorbing Soln. Volume, vl	25	25	25	25
T_i = Initial Flask Temp., °F	91 551	90 550	88 548	87 547
T_f = Final Flask Temp., °F	75 (535°F)	75 535	75 535	75 535
P_i = Initial Flask Vacuum, "Hg	27.5 2.25	27.5 2.25	27.6 2.15	27.6 2.15
P_f = Final Flask Vacuum, "Hg	0.0 29.9	0.0 29.9	0.0 29.9	0.0 29.9
V_{stpd} = Gas Sample Volume, ml*	1868.78	1896.84	1887.39	1887.13
m = Mass of NO_2 in Gas Sample, µg	83.75	62.04	64.11	62.04
NO_2 Concentration, lbs/scf	2.80×10^{-6}	2.04×10^{-6}	2.12×10^{-6}	2.05×10^{-6}
NO_2 Concentration, ppm				

*Dry, 70°F, 29.92"Hg

$$V_{stpd} = \overset{17.64}{\cancel{17.71}} \times (V_f - V_a) \times \left(\frac{P_i}{T_i} - \frac{P_f}{T_f}\right)$$

$$NO_2\ (lbs/scf) = 6.2 \times \left(\frac{m}{V_{stpd}}\right) \times 10^{-5}$$

$$NO_2\ (ppm) = 8.406 \times 10^6 \times \frac{lbs}{ft^3}\ NO_2$$

TABLE

NO_x

EMISSION DATA

PLANT New Wales

STACK #1 H_2SO_4

Run No.	2A	2B	2C	2D
Date	9/26/79			
Time	1342	1346	1350	1353
Flask No.	17	16	30	9
V_f = Flask + Valve Volume, ml	2053	2071	2099	2072
V_a = Absorbing Soln. Volume, vl	25	25	25	25
T_i = Initial Flask Temp., °F	87^{547}	86^{546}	88^{548}	84^{544}
T_f = Final Flask Temp., °F	75^{535}	75^{535}	75^{535}	75^{535}
P_i = Initial Flask Vacuum, "Hg	$27.6^{2.15}$	$27.55^{2.20}$	$27.6^{2.15}$	$27.6^{2.15}$
P_f = Final Flask Vacuum, "Hg	$0.6^{29.3}$	$0.45^{29.45}$	$0.1^{29.8}$	$0.1^{29.8}$
V_{stpd} = Gas Sample Volume, ml*	1818.60	1841.29	1894.30	1873.16
m = Mass of NO_2 in Gas Sample, μg	65.14	67.21	66.18	63.07
NO_2 Concentration, lbs/scf	2.24×10^{-6}	2.28×10^{-6}	2.18×10^{-6}	2.10×10^{-6}
NO_2 Concentration, ppm				

*Dry, 70°F, 29.92"Hg

Sulfur Burner Temp
1900°F

$$V_{stpd} = 17.71 \times (V_f - V_a) \times \left(\frac{P_i}{T_i} - \frac{P_f}{T_f}\right)$$

$$NO_2\ (\text{lbs/scf}) = 6.2 \times \left(\frac{m}{V_{stpd}}\right) \times 10^{-5}$$

$$NO_2\ (\text{ppm}) = 8.406 \times 10^6 \times \frac{\text{lbs}}{\text{ft}^3}\ NO_2$$

Barometric pressure
Initial - 29.75" Hg
Final 29.90

TABLE

NO_x

EMISSION DATA

PLANT New Wales

STACK #1 H_2SO_4

Run No.	3A	3B	3C	3D
Date	9/26/79	------	------	------
Time	1357	1400	1402	1405
Flask No.	8	3	14	6
V_f = Flask + Valve Volume, ml	2072	2083	2036	2047
V_a = Absorbing Soln. Volume, vl	25	25	25	25
T_i = Initial Flask Temp., °F	85 545	86 546	84 544	84 544
T_f = Final Flask Temp., °F	75 535	75 535	75 535	75 535
P_i = Initial Flask Vacuum, "Hg	27.6 2.15	27.6 2.15	27.6 2.15	27.6 2.15
P_f = Final Flask Vacuum, "Hg	0.45 29.45	0.0 29.9	0.0 29.9	0.0 29.9
V_{stpd} = Gas Sample Volume, ml*	1845.24	1885.95	1642.37	1852.44
m = Mass of NO_2 in Gas Sample, μg	62.04	62.04	62.04	68.24
NO_2 Concentration, lbs/scf	2.10×10^{-6}	2.05×10^{-6}	2.10×10^{-6}	2.30×10^{-6}
NO_2 Concentration, ppm				

*Dry, 70°F, 29.92"Hg

$$V_{stpd} = 17.71 \times (V_f - V_a) \times \left(\frac{P_i}{T_i} - \frac{P_f}{T_f}\right)$$

$$NO_2\ (\text{lbs/scf}) = \overset{6.243}{\cancel{6.2}} \times \left(\frac{m}{V_{stpd}}\right) \times 10^{-5}$$

$$NO_2\ (\text{ppm}) = 8.406 \times 10^6 \times \frac{\text{lbs}}{\text{ft}^3}\ NO_2$$

SECTION 4

BEST AVAILABLE CONTROL TECHNOLOGY

BEST AVAILABLE CONTROL TECHNOLOGY

Best available control technology is required to control emissions of regulated pollutants from major modifications of air pollution sources. In the case of phosphate fertilizer complexes BACT is to apply to pollutants with a potential emission rate of greater than 100 tons per year and an actual emission rate of greater than 50 tons per year. For the New Wales Chemical Complex, BACT is to apply for particulate matter, sulfur dioxide, nitrogen oxide and sulfuric acid mist.

Preliminary engineering data are included in the attached Florida Department of Environmental Regulation Construction Permit Applications for the control systems proposed for each proposed source.

In general, bag collectors will be employed on all sources emitting particulate matter. The sulfuric acid plants will be double absorption plants incorporating high efficiency Brinks mist eliminators. These two measures are proposed as BACT for sulfur dioxide and acid mist. The major source of nitrogen oxides in the proposed complex are the sulfuric acid plants. There is no known control technology for reducing NO_x emissions from these sources.

Even though actual emission of fluorides from the proposed modifications are less than 50 tons per year, the control technology proposed for the fluoride sources constitutes BACT. The fluoride emissions are controlled with packed scrubbers.

In the following sections the control measures proposed for each proposed source are discussed.

SULFURIC ACID PLANTS

Sulfuric acid plants emit SO_2, acid mist and NO_x. EPA has NSPS regulating the SO_2 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 lb SO_2 and 0.15 lb acid mist per ton of 100 percent acid.

SO_2 - Double absorption is the best demonstrated control technology available. This technology has the advantage of reducing SO_2 emissions, producing no by-products and introducing no unfamiliar operating factors to plant operators. Improvements to this system by reducing catalyst life from 3 to 5 years to two years was considered 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 would not be expected to result in a significant lower SO_2 emission rate. In addition these systems are untested, they will generate by-products, and they will introduce a system that requires a completely different set of operating technology.

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

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

It is concluded that double absorption with catalyst exchange in the 1-3 converters every three to five years represents BACT for SO_2. This will also assure compliance with NSPS.

H_2SO_4 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 would develop in the acid environment.

It has been the experience of the industry that the Brink mist eliminators are the most effective at this time. The Brink HV mist eliminators proposed by New Wales were judged the most efficient mist eliminators available from Brink for this purpose. They are considered BACT for acid mist and will assure that NSPS will be satisfied.

NO_x - Nitrogen oxides, in a contact sulfuric acid plant, result from the fixation of atmospheric nitrogen in the sulfur burner. Tests conducted on an existing New Wales sulfuric acid plant on September 26, 1979 by Sholtes & Koogler Environmental Consultants showed a tail gas NO_x concentration of 18 ppm (See Attached Test Summary). By comparison, NO_x concentrations in flue gases from fossil fuel power boilers average 100-200 ppm.

Methods of controlling NO_x emissions include reducing or eliminating nitrogen in the fuel, reducing the air/fuel ratio, and reducing the peak flame temperature. None of these methods are applicable to sulfur burners.

The sulfur (fuel) fired in the sulfur burner is, for practical purposes, free of nitrogen so the alternative of reducing fuel nitrogen content is eliminated.

The air/fuel ratio is critical in a sulfuric acid plant since it controls the SO_2 concentration in the feed gas to the converter. This concentration in turn controls the temperature through the converter, the efficiency of the absorber and the production rate of the plant. At a reduced air/fuel ratio the converter temperature increases and the absorber efficiency drops off resulting in increased SO_2 emissions. Reduced air/fuel ratios would result from a reduction in combustion air and from gas recirculation.

The combustion air in the sulfur burner is introduced adjacent to the sulfur nozzle; therefore, a control alternative analogous to the low-NO_x burner is not possible. These burners operate on the theory of reducing the air flow through the fuel gun. In the case of the sulfur burner, no air is introduced with the sulfur to begin with.

Water or steam injection to reduce peak flame temperatures not an alternative since water in a sulfuric acid plant will foul the converter catalyst and will cause excessive acid mist emissions. Even the combustion air is dried by contacting it with 98 percent acid prior to injection into the sulfur burner.

It is concluded that there is no feasible method of reducing NO_x emissions from a sulfuric acid plant.

As a point of comparison, a 2,000 TPD sulfuric acid plant will produce 200,000 pounds of steam per hour and emit approximately 13 pounds per hour of NO_x. An oil fired power boiler that will produce 200,000 pounds of steam per hour will emit 80-170 pounds NO_x per hour (See Attached Calculations).

DIAMMONIUM PHOSPHATE (DAP) PLANT

DAP plants have a potential of emitting particulate matter, fluorides, SO_2 and NO_x. The particulate matter and fluorides result from the production and handling of DAP. The SO_2 and NO_x result from fuel oil combustion in the product dryer. EPA has NSPS which limit fluoride emissions to 0.06 pounds fluoride per ton of P_2O_5 input.

Emissions from a DAP plant originate at three sources:

1. the reactor/granulator,
2. the product dryer, and
3. the screens and product cooler.

The primary emissions from the first two sources are ammonia and fluorides. The ammonia losses are controlled by scrubbing in a venturi scrubber with phosphoric acid. Fluorides are controlled by a packed bed scrubber which follows the venturi scrubber.

Particulate matter from the first two sources are also controlled with the venturi and packed bed scrubbers. The SO_2 and NO_x generated in the dryer are controlled to varying degrees by sorption in the dryer. Emissions from the screens and product cooler consist of particulate emissions only.

Fluorides - Actual emissions of fluorides from the proposed sources will be less than 50 tons per year. For this reason BACT is not required. The packed scrubbers following the venturi scrubbers in the reactor/ granulator and the dryer systems have been designed according to proven practice in the industry and will limit fluoride emissions to less than 0.06 pounds of fluoride per ton of P_2O_5. This is NSPS for DAP plants.

Particulate Matter - BACT for particulate matter emissions from the reactor/ granulator and dryer is proposed to be 0.02 grains per standard cubic foot of stack gas. This can be met by the venturi/packed scrubber combination proposed for ammonia and fluoride control. The mass emission rate of particulate matter from these sources in the proposed plant will be 34 pounds per hour. (Proposed particulate matter emissions from all sources in the proposed expansion are 41 pounds per hour. At the same time New Wales plans to phase out sources with actual particulate matter emissions of 36 pounds per hour.)

The particulate matter emissions from the reactor/granulator and dryer, at 0.02 grains per SCF, will be controlled by 98 percent. Much of the time, with the proposed control system, the control efficiency will be greater. The variation in control results from reactions which cause the packed scrubbers to plug over a period of time. Immediately after cleaning the particulate matter control efficiency will be at least 99 percent. As the scrubber is used and the packing plugs, the efficiency will drop until the system is again shut-down and cleaned. Since the packed scrubber is necessary for fluoride removal, particulate matter emission standard of 0.02 grains per SCF with this system will make allowances for the operational characteristics of the system.

BACT for particulate matter in the reactor/granulator and dryer systems; therefore, is proposed to be the combination of the venturi scrubber and packed scrubber which will result in a stack gas particulate matter concentration of 0.02 grains per SCF. In evaluating this system one needs also to consider the fact that the net actual particulate matter emission rate increases for the entire plant modification is five pounds per hour (See summary of proposed sources and phased out sources).

Particulate matter emissions from the DAP cooler will be controlled with a bag collector. The particulate matter concentration in the cooler exhaust gases, after control, will be 0.01 grains per SCF. This is proposed as BACT for this source.

SO_2 and NO_x - SO_2 and NO_x emissions from the DAP plant result from fuel oil burned in the product dryer. In actual practice fuel oil will be used as a stand-by heat source. The primary heat source will be excess steam from the sulfuric acid plants. For permitting purposes it will be assumed that fuel oil will be used 100 percent of the time.

The dryer will consume two gallons of fuel oil per ton of product dried. At 140 tons of DAP per hour, the maximum oil consumption will be 280 gallons per hour. Fuel oil with a maximum 2.5 percent sulfur is proposed. very high

Tests for SO_2 in the DAP tail gas stream have shown SO_2 removals ranging from zero to 80 percent. This removal would have to occur in the dryer (combination with free ammonia) since the venturi scrubber uses phosphoric acid and the packed scrubber uses pond water for scrubber liquors. Both have a low pH and would not be effective for SO_2 scrubbing.

Since the free ammonia in the dryer cannot be controlled, it is assumed for permitting purposes that there is no SO_2 or NO_x removal in the dryer or scrubber.

Other than low sulfur, there is no feasible means of reducing SO_2 emissions from the dryer. NO_x emissions cannot be feasibly controlled either since peak flame temperature is already reduced as low as practical to prevent the burning of the product. For this source no control technology exists for SO_2 or NO_x.

During the review of control technology for this source, the magnitude of NO_x and SO_2 emissions should be considered as well as offsetting emission reductions. The DAP plant will consume a maximum of 280 gallons of oil per hour with a maximum sulfur content of 2.5 percent. The SO_2 and NO_x emissions from oil combustion will be 112 pounds per hour and 5.6 pounds per hour, respectively. These emissions represent 14 percent and 18 percent of the SO_2 and NO_x emission increases respectively, for the total proposed expansion.

At the same time New Wales proposed to eliminate a rock dryer that consumes 1,000 gallons of oil per hour with a 2.5 percent sulfur content. This will result in a reduction of 400 pounds per hour and 20 pounds per hour in SO_2 and NO_x emissions, respectively.

permit condition

The net result of the proposed actions will be a net reduction of 288 pounds per hour SO_2 and 14 pounds per hour of NO_x from combustion source emissions and a net increase of 667 pounds per hour SO_2 and 26 pounds per hour NO_x in process source (sulfuric acid plant) emissions.

PHOSPHORIC ACID

The proposed phosphoric acid plant will emit only fluorides. Particulate matter emissions will not be generated since wet rock will be fed to the phosphoric acid plant. It is stated in the "Central Florida EIS"(2) that the use of wet rock will "eliminate dry-rock dust pollution."

The total actual fluoride emissions from the proposed expansion will be less than 50 TPY. Because of this only NSPS must be satisfied, not BACT.

A packed scrubber, designed to industry standards will be employed to reduce fluoride emissions from the proposed phosphoric acid plant to less than 0.02 pounds of fluoride per ton of P_2O_5 input to the plant.

Scrubbers, identical to that proposed for the proposed phosphoric acid plant, are installed in the New Wales No. 1 and No. 2 phosphoric acid plants. These scrubbers reduce fluoride emissions to less than 0.02 pounds per ton of P_2O_5 input to the plants.

LIMING STATION

A double liming station is proposed to treat contaminated water for internal reuse. The station will consist of a limestone and a lime

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(2) USEPA, Central Florida Phosphate Industry Areawide Impact Assessment Program, Vol. XI, USEPA Region IV, Atlanta, Georgia, December 1977.

feed system. These materials will be trucked to New Wales daily and pneumatically transferred to storage bins, one for limestone and one for lime. The feed from the silos will discharge into mixing vessels where the material will be slurried with water. The only air pollutant discharge will be during the transfer of materials into the silos.

The particulate matter generated during the material transfer will be controlled by a bag collector on each silo. The air flow through the bag collectors will be 1600 Acfm each. The bag collectors will control particulate matter emissions to a concentration of 0.01 grains per SCF, dry or less. This is proposed as BACT for these sources.

THIRD PRODUCT LOAD-OUT

This system will consist of a truck and a rail load-out system for granular triple superphosphate (GTSP). The system will include product recovery from storage, transfer and discharge into hoppers for loading into trucks or into rail cars. The system will be identical to the second product load-out system recently installed at New Wales. The Florida Department of Environmental Regulation construction permit application submitted at an earlier date details this system.

The particulate matter generated by GTSP handling is collected by one of the two negative air systems; one on the product recovery and truck load-out system and one on the rail load-out system. On both systems the air is discharged through a bag collector which will reduce particulate matter concentrations in the gas stream to 0.01 grains per SCF, dry or less. These bag collectors are proposed as BACT for this total system.

SUMMARY OF PROPOSED AND PHASED-OUT SOURCES
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA
OCTOBER 1979

		ALLOWABLE EMISSIONS			
		PARTICULATE MATTER		SO_2	
SOURCE NUMBER	SOURCES PROPOSED	lb/hr	TPY	lb/hr	TPY
	#4 H_2SO_4 (4#/ton SO_2)	0	0	333	1,387
	#5 H_2SO_4 (4#/ton SO_2)	0	0	333	1,387
	Phosphoric Acid	0	0	0	0
	DAP (2 gal oil/ton @ 140 TPH)	38	160.5	112	466
	Third Product Load-Out(0.01 gr/SCF)	2	7.1	0	0
	Lime Station (0.01 gr/SCF)	1	4.4	0	0
	TOTAL	41	172	778	3,240

			ACTUAL EMISSIONS			
			PARTICULATE MATTER		SO_2	
	SOURCES PHASED OUT	DATE	lb/hr	TPY	lb/hr	TPY
6	Dry Rock Silo A053-5963	1980	1.0	3.94	0	0
7	Rock Grinding-West A053-5969	8/9/79	3.1	12.22	0	0
14	Dry Rock Load-Out A053-5979	1980 (never operated)	0.0	0.0	0	0
15	Rock Grinding-East A053-5967	1980	3.1	12.22	0	0
16	Dry Rock Bilo Bottom A053-5980	1980 (never operated)	0.0	0.0	0	0
18	Dryer Prod.Belt.Trans. A053-5981	1980	1.0	3.94	0	0
19	Wet Rock Dryer A053-5982	1980	25.6	100.92	400	1,576.80
20	Phos.Acid Rock Bin-West A053-5970	1980	1.0	3.94	0	0
22	Phos.Acid Rock Bin-East A053-5968	1980	1.0	3.94	0	0
	TOTAL		36.0	141.0	400	1,577

NO_x EMISSION MEASUREMENTS
AT NO. 1 SULFURIC ACID PLANT

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

On September 26, 1979 nitrogen oxides concentrations measurements were made in the tail gas stream from the No. 1 sulfuric acid plant at the New Wales Chemical Company. This plant is a 2,000 TPD double absorption contact sulfuric acid plant.

The purpose of the measurements were to obtain nitrogen oxides concentration data which could be used in estimating nitrogen oxides emissions from proposed plants of a similar design.

The emission measurements consisted of measuring the NO_x concentration only using EPA Method 7 (40 CFR 60). These concentration data will be used with design tail gas flow rates from the proposed sulfuric acid plants to estimate NO_x emissions.

The field and laboratory data sheets for the emission measurements follow this page.

The average NO_x concentration (as NO_2) was 2.1×10^{-6} pounds per standard cubic foot.

(Note: Field and Lab data in preceeding Section)

A COMPARISON OF NOx EMISSIONS FROM A CONTACT SULFURIC ACID PLANT AND A COMPARABLE SIZED OIL FIRED POWER BOILER

SULFURIC ACID PLANT (2000 TPD)

TAIL GAS FLOW RATE (DESIGN) - 102,000 SCFM, dry

NOx CONC. IN TAIL GAS (TEST DATA) - 2.1×10^{-6} lb/SCF

NOx EMISSION RATE

$$= 102{,}000 \times 2.1\times10^{-6} \times 60 \text{ min/hr}$$

$$= \boxed{13 \text{ lb/hour}}$$

(STEAM PRODUCTION RATE FROM A 2000 TPD SULFURIC ACID)
(PLANT IS ≈ 100 lb/hr per ton per day of Acid,)
(OR 2000 x 100 = 200,000 lb/hr steam)

POWER BOILER (200,000 lb/hr steam)

HEAT INPUT @ 1200 BTU / lb of steam

$$= 1200 \times 200{,}000$$

$$= 240 \times 10^{6} \text{ BTU/hr}$$

OIL CONSUMPTION @ 148,000 BTU/gal

$$= 240 \times 10^{6} / 148{,}000$$

$$= 1.62 \times 10^{3} \text{ gal/hr}$$

NOx EMISSIONS @ 50-105 lb NOx / 1000 gal oil (AP-42)

$$= 50 \times 1.62 = \boxed{81 \text{ lb NO}_x\text{/hr}}$$

$$= 105 \times 1.62 = \boxed{170 \text{ lb NO}_x\text{/hr}}$$

NOx FROM SULFURIC ACID PLANT AVERAGE

$$\left[13 \Big/ \left(\frac{170+81}{2}\right) \right] \times 100 = 10\%$$

OF NOx EMISSIONS FROM COMPARABLE POWER BOILER

SECTION 5

AIR QUALITY IMPACT

AIR QUALITY IMPACT ANALYSIS

SUMMARY

Air quality modeling has been conducted to evaluate the impact of sulfur dioxide and particulate matter emissions from the modified New Wales facility. The modeling has established 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). The impact of new or modified sources within 50 km of the New Wales 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).

With sulfur dioxide the annual, the 24-hour and the 3-hour time periods were investigated. With particulate matter the annual period and the 24-hour period were evaluated.

The annual period was evaluated for both pollutants by using the Air Quality Display Model (AQDM). All sources within the sphere of influence of the New Wales Chemical Complex were included in the evaluation. Meteorological data from Tampa for the period 1970-1974 were used.

For the 24- and 3-hour periods, the CRSTER and PTMTPW models were used. The CRSTER was used to establish the meteorological conditions resulting in the highest second-high concentrations at various directions from the fertilizer complex. The meteorological data base used was for the 1970-1974 period from Tampa, Florida. Once the meteorological conditions were established, these data plus emission data from various sources were input into the PTMTPW model and the point of maximum impact was determined. Receptor spacing of 0.1 km were used in determining the point of maximum impact.

The results of the modeling are summarized in Table 5-1 and figures. In reviewing the figures summarizing the short-term impacts it will be noted that in some cases the baseline concentration plus the new source impact do not add to the total calculated pollutant concentration. This is because the various concentrations were not calculated for the same exact receptors; but for different receptors within a small area. This is discussed in detail in the following sections.

The computer print-outs for all of the air quality modeling are bound as a separate document.

SHORT-TERM 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 CRSTR 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 1970-1974 from Tampa, 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.

Air pollutant emissions from all major sources within the area of significant impact of the New Wales sources were included in the impact studies.

The emission inventory for sulfur dioxide and particulate matter 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 pollutant concentrations in several directions from the New Wales Chemical Complex were selected for evaluating particulate matter and sulfur dioxide impacts. Meteorological conditions resulting in the highest second-high 3-hour impacts in several directions from the chemical complex were selected for evaluating sulfur dioxide impacts.

Particulate Matter Impact Analysis

The CRSTER was run twice with particulate matter data from the proposed New Wales sources and meteorological data for the period 1970-1974 from Tampa, Florida. On the first run, the receptors were set to determine the maximum air quality impact of the proposed sources (Model Run No. 1 in the separately bound computer print-out document). From this run it was found that the maximum impact occurred at a direction of 50° from North from the proposed chemical complex at a distance of approximately 1.0 km. The meteorological data resulting in this impact was day 222, 1970. Other directions were also investigated to account for the combined influence of the New Wales sources and other sources which would be made to fall upwind of New Wales depending on the direction selected. The directions evaluated and the meteorological conditions resulting in the highest second-high impact for each are presented in Figure 5-1.

→ this a a short term model + you are addressing annual TSP impact

The second time the CRSTER model was run, the receptors were spaced to determine the area of significant impacts of the proposed sources (Model Run No. 2). The results of this analysis indicated that the average annual impact of the particulate matter emitted from the proposed sources dropped to an insignificant level at 2.0 km from the source and that the 24-hour impact dropped to an insignificant level at 3.4 km. These data are summarized in Figure 5-2.

Also in this figure, the Hillsborough County Particulate Matter Non-Attainment Area is designated and a Class I area nearest the proposed New Wales Chemical Complex is shown. It can be seen from Figure 5-2 that the particulate matter emitted from the proposed sources will not significantly impact either the non-attainment area or the Class I area.

The particulate matter emission inventory used for the air quality impact analysis included all major sources within a 50 km radius of the New Wales plant site. This includes sources well outside the area of influence of the proposed sources.

With critical meteorological conditions established and an emission inventory developed, the air quality model PTMTPW was utilized. Meteorological data were input to the PTMTPW with emission data from the New Wales sources and sources upwind of New Wales. The model was run three times for each of the conditions depicted in Figure 5-1; first to determine the baseline TSP level; second to determine the new source impact; and third to determine the impact of existing, new and proposed sources. The three model runs for each of the five cases investigated are represented by Model Runs 10-24. The results of these runs are summarized in Table 5-3 and Figure 5-3. In Table 5-3 the Model Run corresponding to specific conditions are listed.

In reviewing Table 5-3 it will be noted that for each condition, the baseline concentration, new source impact and the impact of all sources is not necessarily for the same receptor. The reason for this is that the maximum concentration for each specific condition is listed and since source configurations change from condition to condition, the maximum impact will not always occur at the same exact receptor. For each case the receptors are within a very small area, however.

In establishing the point of maximum impact receptor spacing of 0.1 km was used.

Sulfur Dioxide Impact Analysis

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.

As with the particulate matter analysis, the CRSTER model was run multiple times with sulfur dioxide emission data for the proposed New Wales sources and meteorological data for the period 1970-1974 for Tampa, Florida. On the first run the receptors were set to determine the maximum air quality impact of the proposed sources (Model Run No. 3). From this run the meteorological conditions resulting in the highest second-high 24-hour and 3-hour impacts at several directions from the New Wales Chemical Complex were selected. The directions 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 made to fall upwind of New Wales. The direction selected for evaluation and the meteorological conditions resulting in the highest second-high impact for each direction are presented in Figure 5-4 for the 24-hour SO_2 impact analysis and in Figure 5-5 for the 3-hour SO_2 impact analysis.

The second series of runs with the CRSTER model were made to determine the area of significant impact of the proposed sources (Model Runs 4-7). For Model Run No. 4 the receptor distances were set between 44 and 52 km from the source. This run indicated that the maximum annual impact and the maximum 24-hour impact would occur with 1972 data and that the maximum 3-hour impact would occur with 1973 meteorological data at distances other than those at which the receptors were set. ?

The annual area of influence is determined in Model Run No. 5. The distance to the boundary of the area of annual significant impact was determined to be 30 km. Similarly, runs were made to determine the distance to the boundary of the area of significant 24-hour and 3-hour impacts (Model Runs 6 and 7, respectively). It was determined that the distance to the boundary for the 24-hour period was 55 km and for the 3-hour period, 72 km. The areas of significant influence are shown in Figure 5-6 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 or Class I areas.

The sulfur dioxide emission inventory used for the air quality impact analysis included all major sources within a 70 km radius of the New Wales Plant Site.

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. As with the particulate matter modeling, the PTMTPW was run three times for each condition depicted in Figures 5-4 and 5-5. The receptor spacing used for determining the point of maximum impact was 0.1 km.

The model runs for the 24-hour and 3-hour sulfur dioxide impact analyses were Runs 25-52. The results of these runs are summarized in Table 5-3 and Figures 5-7 and 5-8.

In addition to the conditions depicted in Figure 5-4, the impact of the proposed New Wales sources and New Lakeland Utilities sources was investigated northeast of the Lakeland Utilities site (Figure 5-9). This investigation was carried out to assure that the PSD increment was not consumed at this location. Model Run No. 40 was used to analyze this situation. The results indicated that the maximum new source impact on 24-hour sulfur dioxide levels is 26 ug/m^3 compared with an allowable Class II PSD increment of 37 ug/m^3.

[illegible]

Other Pollutant Impact Analysis

None of the other pollutants that will potentially be emitted by the proposed new sources have applicable short-term air quality standards. For this reason, no short-term impact analysis for the other pollutants has been conducted. The other pollutants include nitrogen oxide, fluoride, hydrocarbons and sulfuric acid mist.

LONG-TERM IMPACT ANALYSIS

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 and particulate matter resulting from all sources within 50 km of the New Wales Chemical Complex. This includes sources outside the area of significant impact of the proposed New Wales sources.

The meteorological data input to the AQDM was for the 1970-1974 period from Tampa, Florida. These data were in the STAR format with five stability classes.

Receptor spacing used in the AQDM was 1.0 km except that near the New Wales Chemical Complex, 0.5 km spacings were used.

Particulate Matter Impact Analysis

The AQDM was run once to determine baselin~~g~~e particulate matter levels and a second time to determine the impact of new and proposed sources. These model runs are Nos. 100 and 101, respectively. The impact of existing and new sources was determined by summing the impacts of the existing and new sources (Model Run 100 + Model Run 101).

The annual average particulate matter levels for all sources, baseline sources and new and proposed sources are summarized in Figures 5-10 through 5-12, respectively.

Sulfur Dioxide Impact Analysis

The AQDM runs described for the particulate matter impact analysis also included sulfur dioxide emission data. Additionally; however, the AQDM was run a second series of times with receptors shifted eastwardly to fully cover the major impact area of the proposed New Wales Sources. The AQDM runs with the easterly receptor grid are Model Runs 102 and 103.

The output of these model runs for sulfur dioxide are summarized in Figures 5-13 through 5-15 respectively.

Other Pollutant Impact Analysis

The other major pollutant emitted from the proposed sources for which a long-term ambient air standard exists is nitrogen oxides. The annual average ambient air quality standard for nitrogen oxides is 100 ug/m^3.

The impact of nitrogen oxides emissions from the proposed sources was estimated by proportioning the impact of sulfur dioxide emissions. This was done since sulfur dioxide and nitrogen oxides are emitted from the same sources; the proposed sulfuric acid plants and the proposed DAP plant. The sulfuric acid plant emits 86 percent of the sulfur dioxide emitted from the proposed sources and 82 percent of the nitrogen oxides

The remainder of both pollutants is emitted from the proposed DAP plant. The nitrogen oxides emission rate is less than four percent of the sulfur dioxide emission rate. From Figure 5-15 it can be seen that the maximum annual average sulfur dioxide impact from the proposed sources is only 5 ug/m^3. The nitrogen oxides impact by proportion will be only four percent of the 5 ug/m^3 or less than one ug/m3. This impact is less than one percent of the ambient air quality standard and does not justify modeling specifically for nitrogen oxides.

CONCLUSION

The results of all air quality modeling have been summarized in Table 5-1. These data show that the expansion proposed by New Wales will not threaten particulate matter, sulfur dioxide or nitrogen oxides air quality standards. Neither will the expansion threaten PSD increments significantly impact non-attainment areas for sulfur dioxide or particulate matter nor significantly impact Class I areas.

TABLE 5-1

SUMMARY OF AIR QUALITY ANALYSIS(1)
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

Pollutant/ Time	Air Quality Standards Fla. Std. (ug/m^3)	Baseline (ug/m^3)	With New & Existing Sources (ug/m^3)	PSD Class II Increment (ug/m^3)	Calculated Increment (ug/m^3)	Fraction Increment Consumed	Non-Attainment Impact Area Calculated Impact (ug/m^3)
TSP							
Annual(2)	60	44	[redacted]	19	11	57.9%	< 1
24-Hour(3)	150	95	109	37	24	64.9%	< 1
SO_2							
Annual	60	47	[redacted]	20	5✓	25.0%	< 1
24-Hour	260	129	174	91	47	51.6%	< 1
3-Hour	1300	275	393	512	124	24.2%	< 1

(1) Only the maximum impacts or pollutants levels are summarized in this Table. See Figures and Table following for more detailed information.

(2) Calculated concentrations include 35 ug/m^3 background.

(3) Calculated concentrations include 65 ug/m^3 background.

based on 3 runs of PTMTPW for each case below:

1) det. baseline
2) det. new source impact
3) det. existing, new, + proposed source impacts

15 runs

65
35
20

109
-65
44

TABLE 5-2

DEFINITION OF SIGNIFICANT AIR QUALITY IMPACT

Pollutant/ Time	Significant Impact Level ($\mu g/m^3$)
Particulate Matter	
Annual	1
24-Hour	5
SO_2	
Annual	1
24-Hour	5
3-Hour	25

TABLE 5-3
AIR QUALITY IMPACT ANALYSIS

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

Case	Max.Conc. (ug/m3)	Receptor UTM East (km)	Receptor UTM North (km)	Model Run Number
24-Hr TSP	(Total Concentrations [t] and Baseline Concentrations [bl] include 65 ug/m3 TSP background. New Source [ns] impact is incremental impact only)			
total 1t	107	397.1	3079.9	10
baseline — 1bl	95	397.0	3079.8	11
proposed new source — 1ns	24	397.3	3079.3	12
2t	100	395.4	3078.4	13
2bl	82	395.3	3078.4	14
2ns	23	395.7	3078.3	15
3t	109	395.3	3079.3	16
3bl	94	395.2	3079.1	17
3ns	22	395.2	3079.4	18
4t	97	396.1	3079.7	19
4bl	86	396.1	3079.7	20
4ns	18	396.3	3079.8	21
5t	95	396.0	3078.0	22
5bl	83	396.0	3078.0	23
5ns	15	396.5	3078.0	24
24-Hr SO_2	(Background = 0)			
1t	174	398.7	3078.7	25
1bl	129	398.7	3078.6	26
1ns	46	398.7	3078.7	27
2t	151	395.1	3077.9	28
2bl	104	395.1	3077.9	29
2ns	— 47	394.9	3077.7	30
3t	161	394.3	3079.0	31
3bl	121	394.5	3079.0	32
3ns	42	394.1	3079.0	33
4t	116	398.3	3080.3	34
4bl	79	398.4	3080.4	35
4ns	— 47	398.1	3080.6	36
5t	102	395.0	3076.0	37
5bl	66	395.0	3076.0	38
5ns	36	395.0	3076.0	39
6ns				40
3-Hr SO_2	(Background = 0)			
1t	340	394.3	3080.1	41
1bl	244	394.3	3080.1	42
1ns	107	394.5	3079.8	43
2t	393 —	393.6	3077.3	44
2bl	275	393.5	3077.3	45
2ns	— 124	393.6	3077.2	46
3t	281	399.7	3078.7	47
3bl	212	399.7	3078.8	48
3ns	80	399.7	3078.6	49
4t	249	395.0	3076.0	50
4bl	165	395.0	3076.0	51
4ns	86	395.0	3076.0	52
Annual TSP	(Total and Baseline includes 35 ug/m3 background; new source is incremental impact only)			
1t	55	397.5	3079.5	100+101
1bl	44	397.5	3079.5	100
1ns	11	397.5	3079.5	101
Annual SO_2	(Background = 0)			
1t	50	408.0	3084.0	100-103
1bl	47	408.0	3084.0	100+102
1ns	— 8	408.7	3087.0	103
1New Wales	5	395.5	3078.5	101

107
-65
42

55
-35
20

t = Ground Level Concentration Resulting From Existing, New and Proposed Sources.

bl = Ground Level Concentrations Resulting From Existing Sources (Pre 1/6/75).

ns = Impact of New and Proposed Sources.

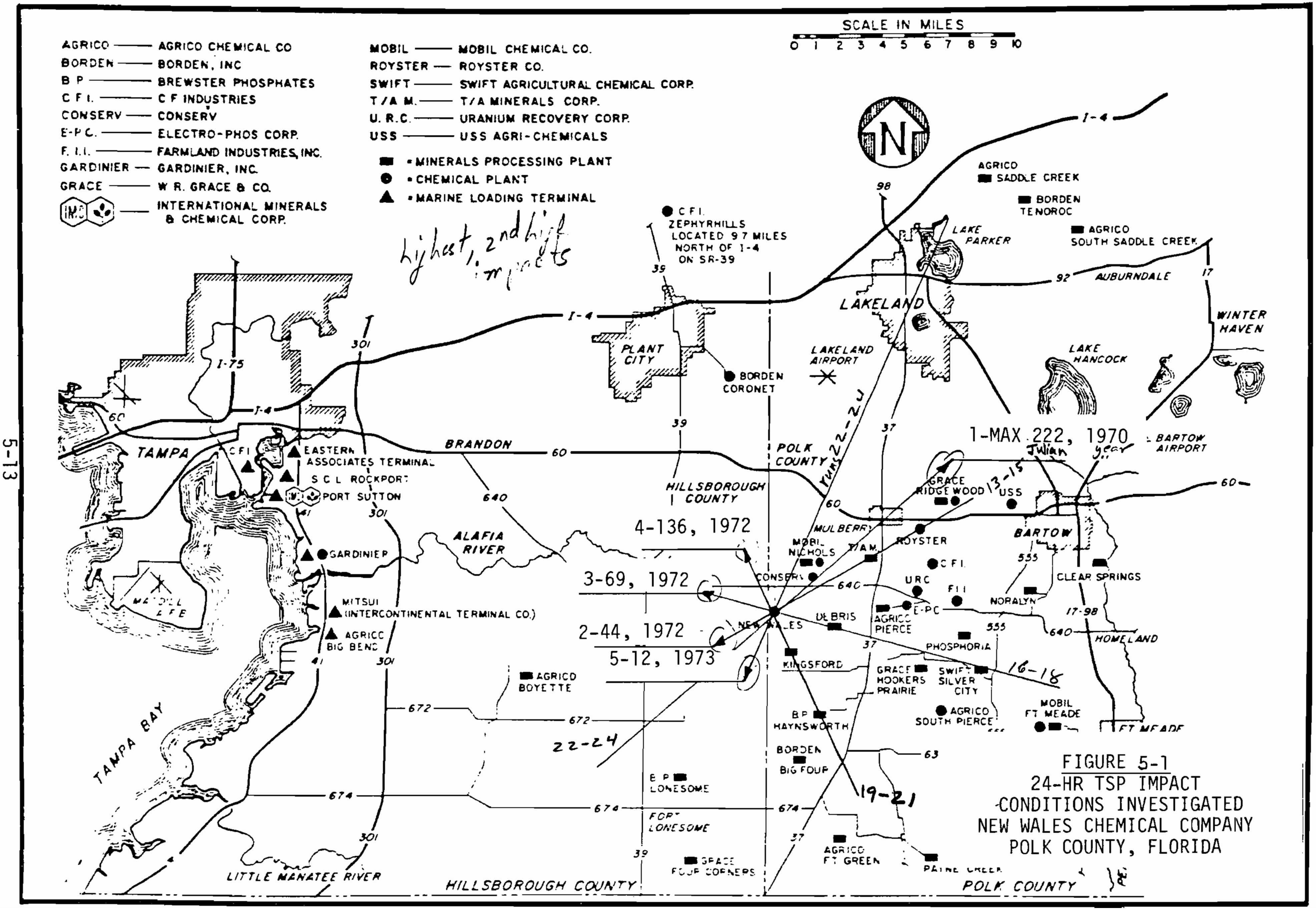


FIGURE 5-1
24-HR TSP IMPACT
CONDITIONS INVESTIGATED
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

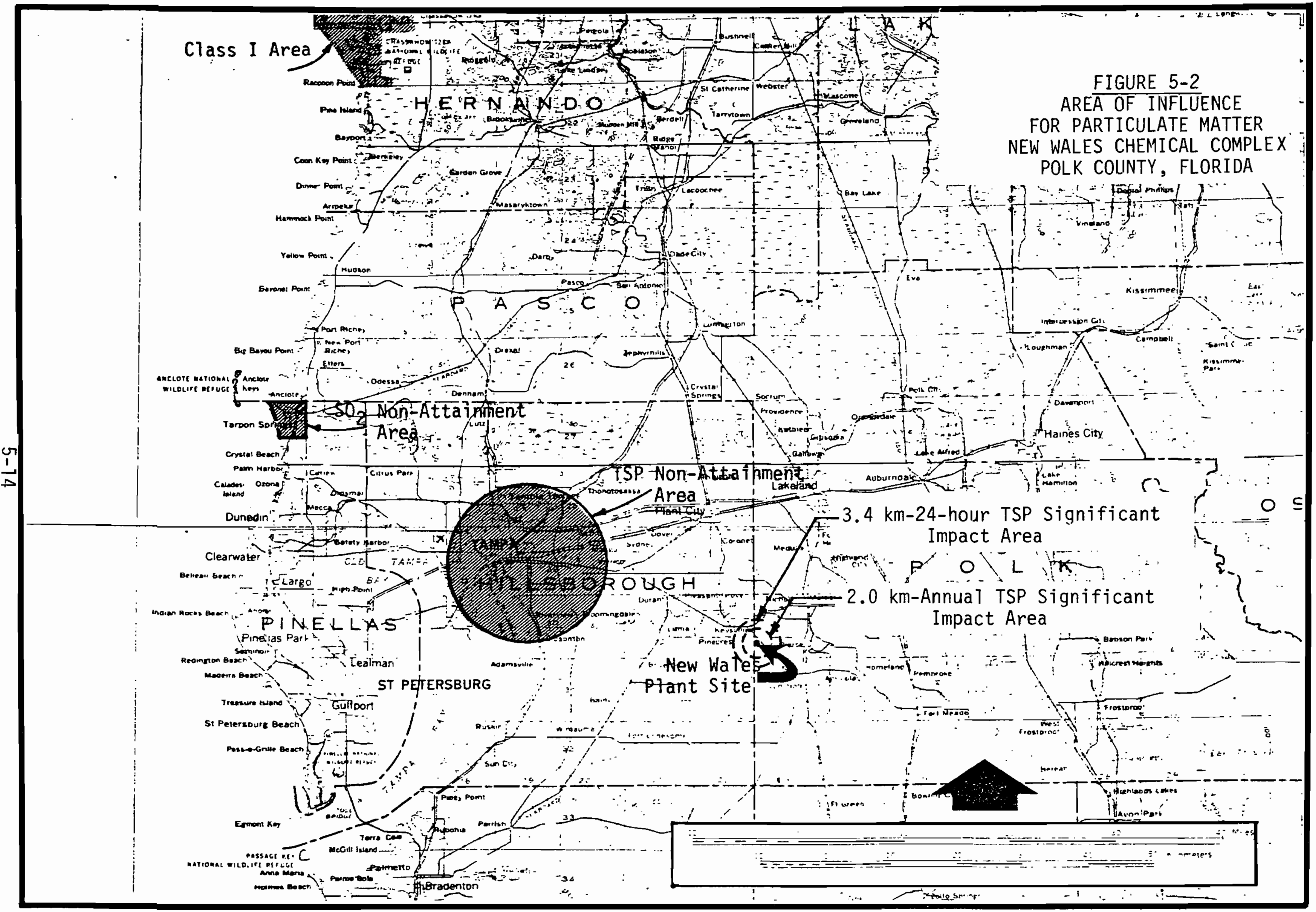
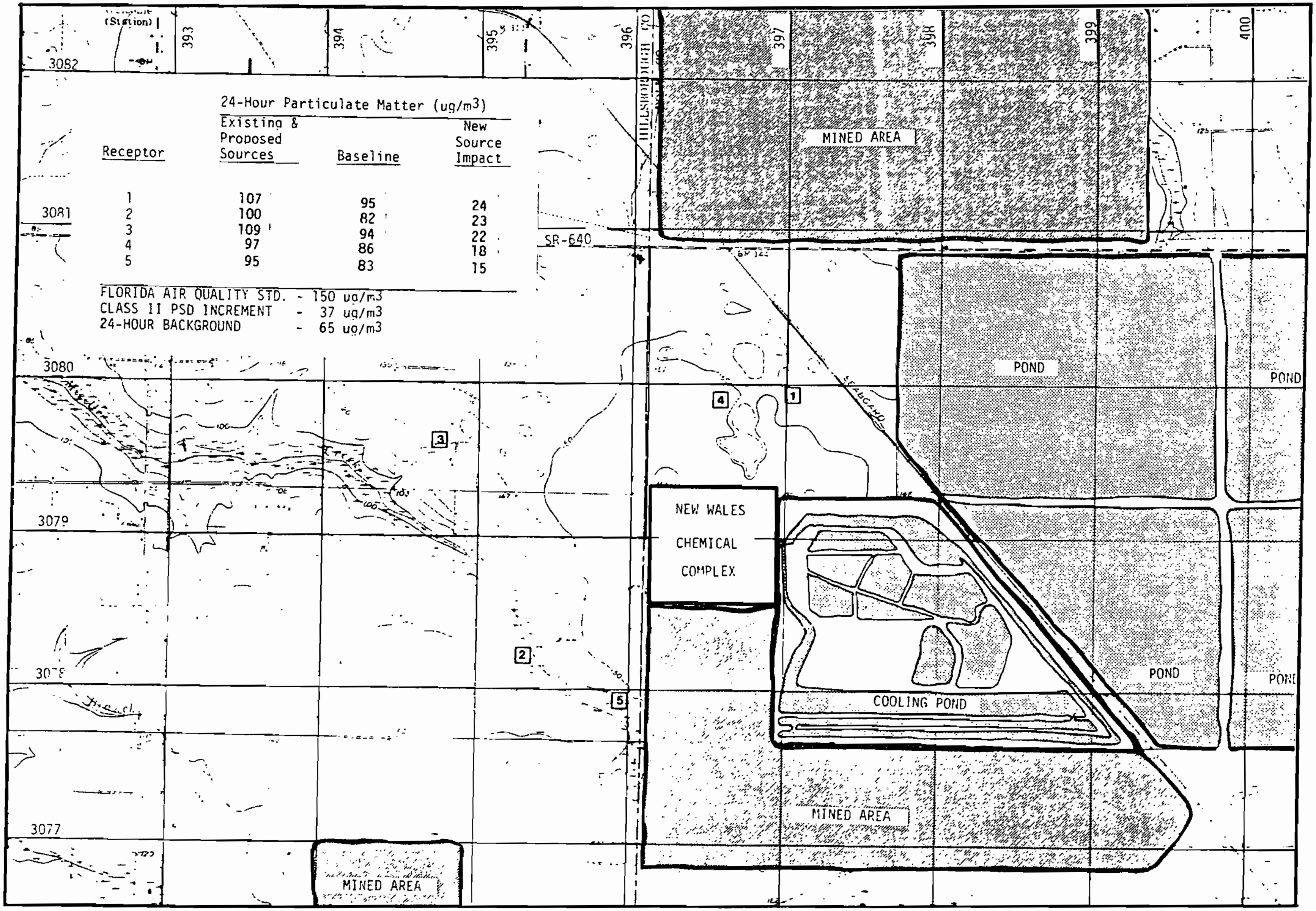


FIGURE 5-2
AREA OF INFLUENCE
FOR PARTICULATE MATTER
NEW WALES CHEMICAL COMPLEX
POLK COUNTY, FLORIDA

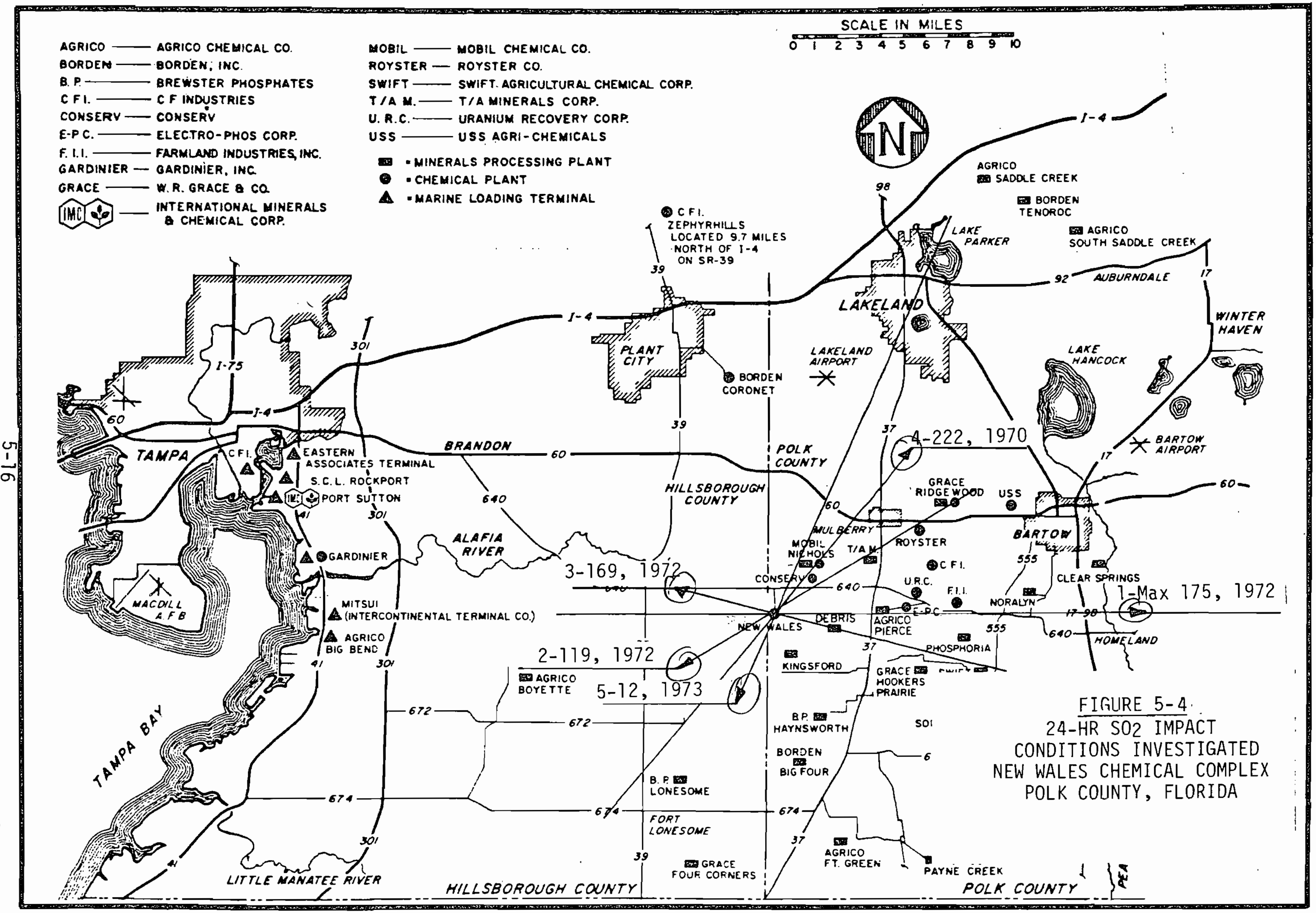


24-Hour Particulate Matter (ug/m3)

Receptor	Existing & Proposed Sources	Baseline	New Source Impact
1	107	95	24
2	100	82	23
3	109	94	22
4	97	86	18
5	95	83	15

FLORIDA AIR QUALITY STD. - 150 ug/m3
CLASS II PSD INCREMENT - 37 ug/m3
24-HOUR BACKGROUND - 65 ug/m3

FIGURE 5-3
SUMMARY OF 24-HOUR PARTICULATE MATTER LEVELS
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA



4-222, 1970

3-169, 1972

1-Max 175, 1972

2-119, 1972

5-12, 1973

FIGURE 5-4
24-HR SO2 IMPACT
CONDITIONS INVESTIGATED
NEW WALES CHEMICAL COMPLEX
POLK COUNTY, FLORIDA

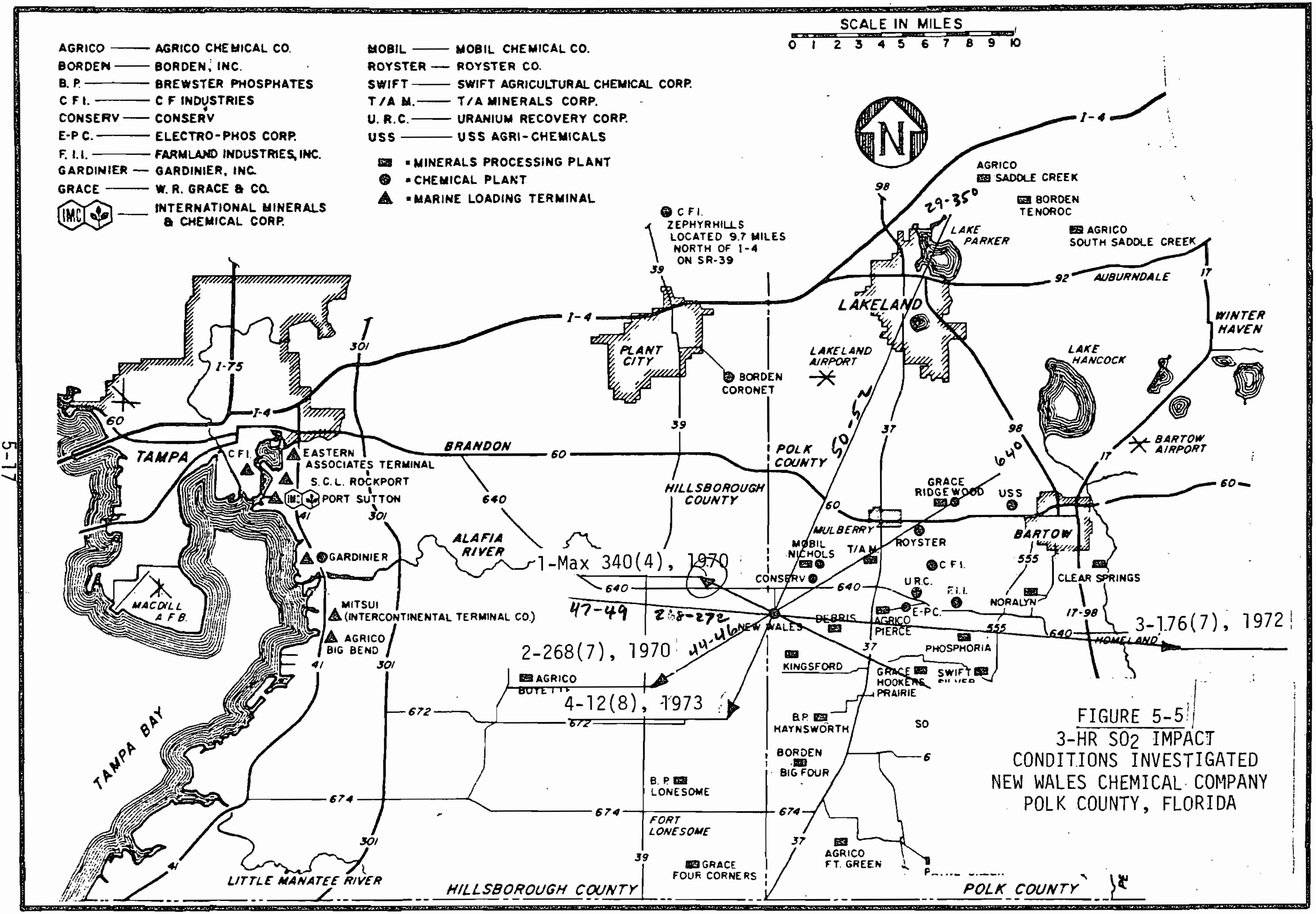


FIGURE 5-5
3-HR SO_2 IMPACT
CONDITIONS INVESTIGATED
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

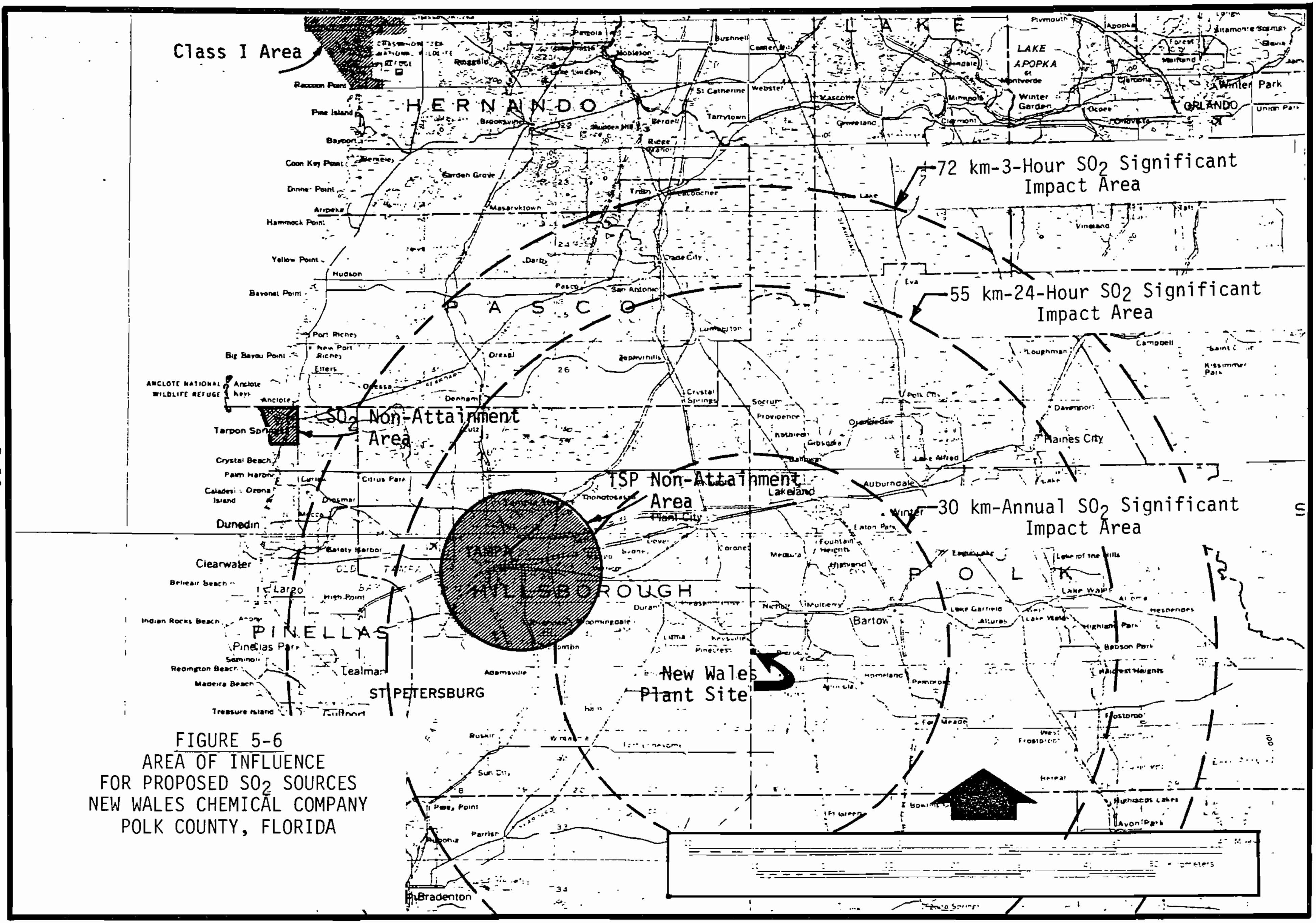
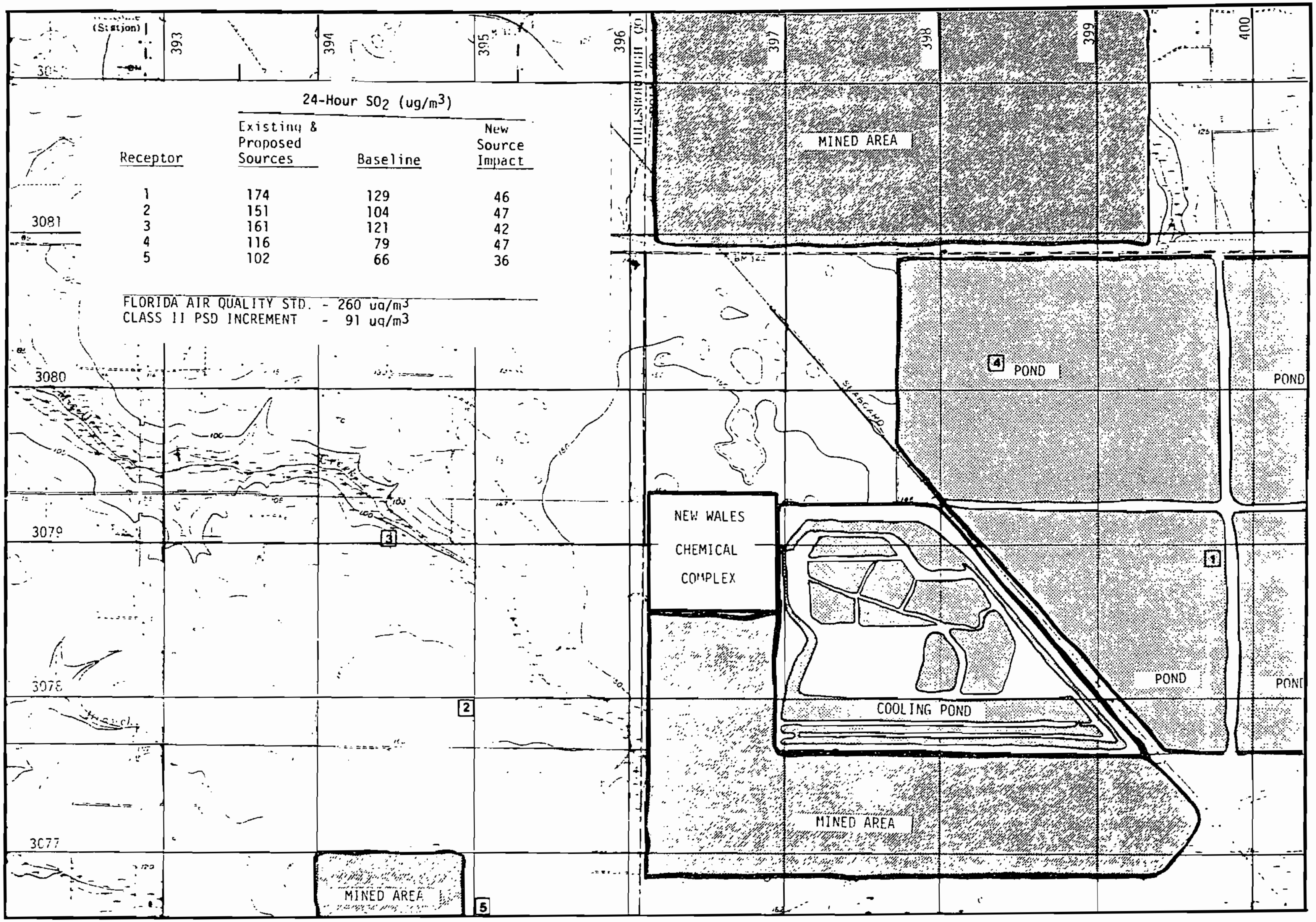


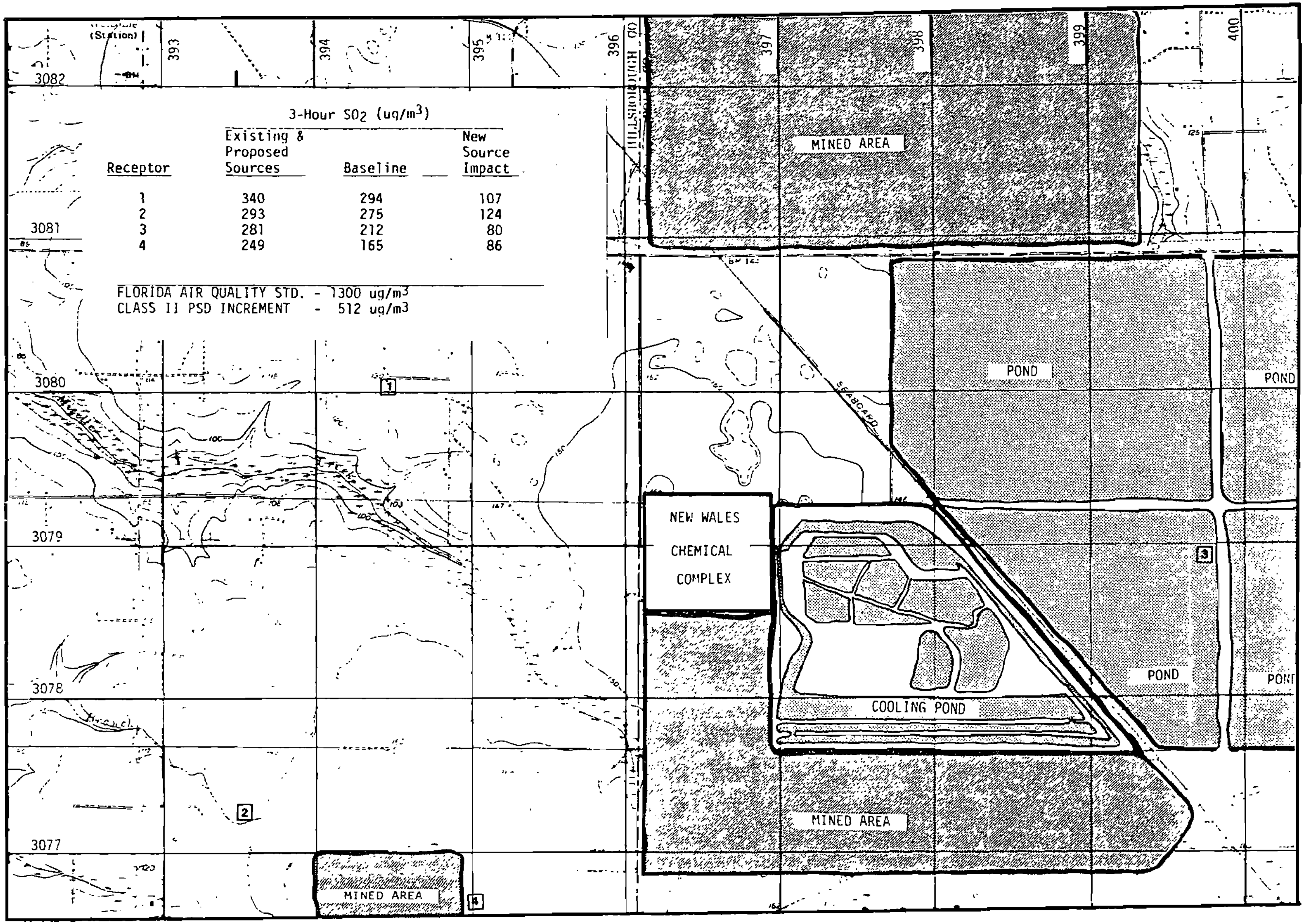
FIGURE 5-6
AREA OF INFLUENCE
FOR PROPOSED SO_2 SOURCES
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA



Receptor	24-Hour SO_2 (ug/m^3) Existing & Proposed Sources	Baseline	New Source Impact
1	174	129	46
2	151	104	47
3	161	121	42
4	116	79	47
5	102	66	36

FLORIDA AIR QUALITY STD. - 260 ug/m^3
CLASS II PSD INCREMENT - 91 ug/m^3

FIGURE 5-7
SUMMARY OF 24-HOUR SO_2 LEVELS
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA



3-Hour SO_2 (ug/m^3)

Receptor	Existing & Proposed Sources	Baseline	New Source Impact
1	340	294	107
2	293	275	124
3	281	212	80
4	249	165	86

FLORIDA AIR QUALITY STD. - 1300 ug/m^3
CLASS II PSD INCREMENT - 512 ug/m^3

FIGURE 5-8
SUMMARY OF 3-HOUR SO_2 LEVELS
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

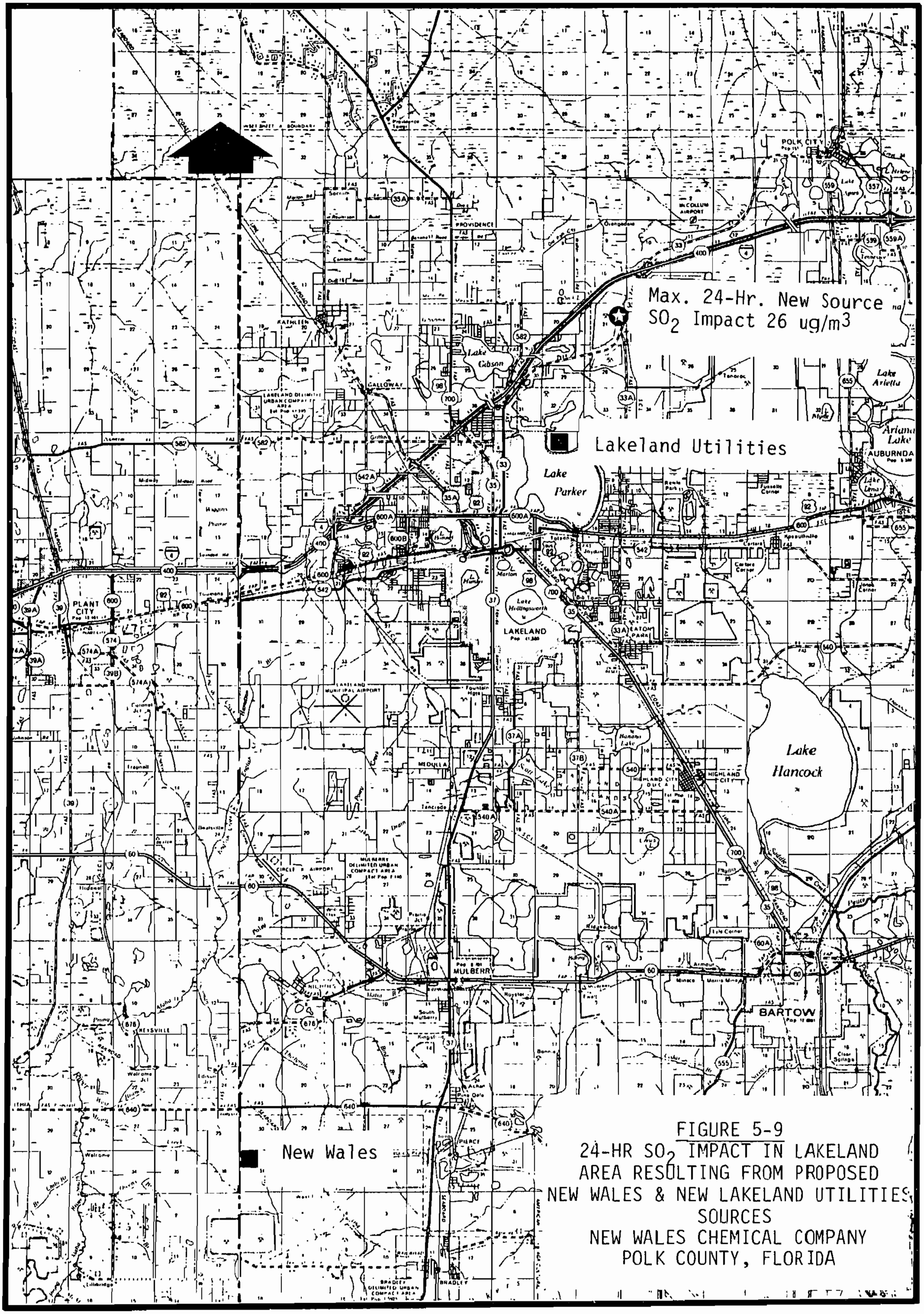


FIGURE 5-9
24-HR SO_2 IMPACT IN LAKELAND AREA RESULTING FROM PROPOSED NEW WALES & NEW LAKELAND UTILITIES SOURCES
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

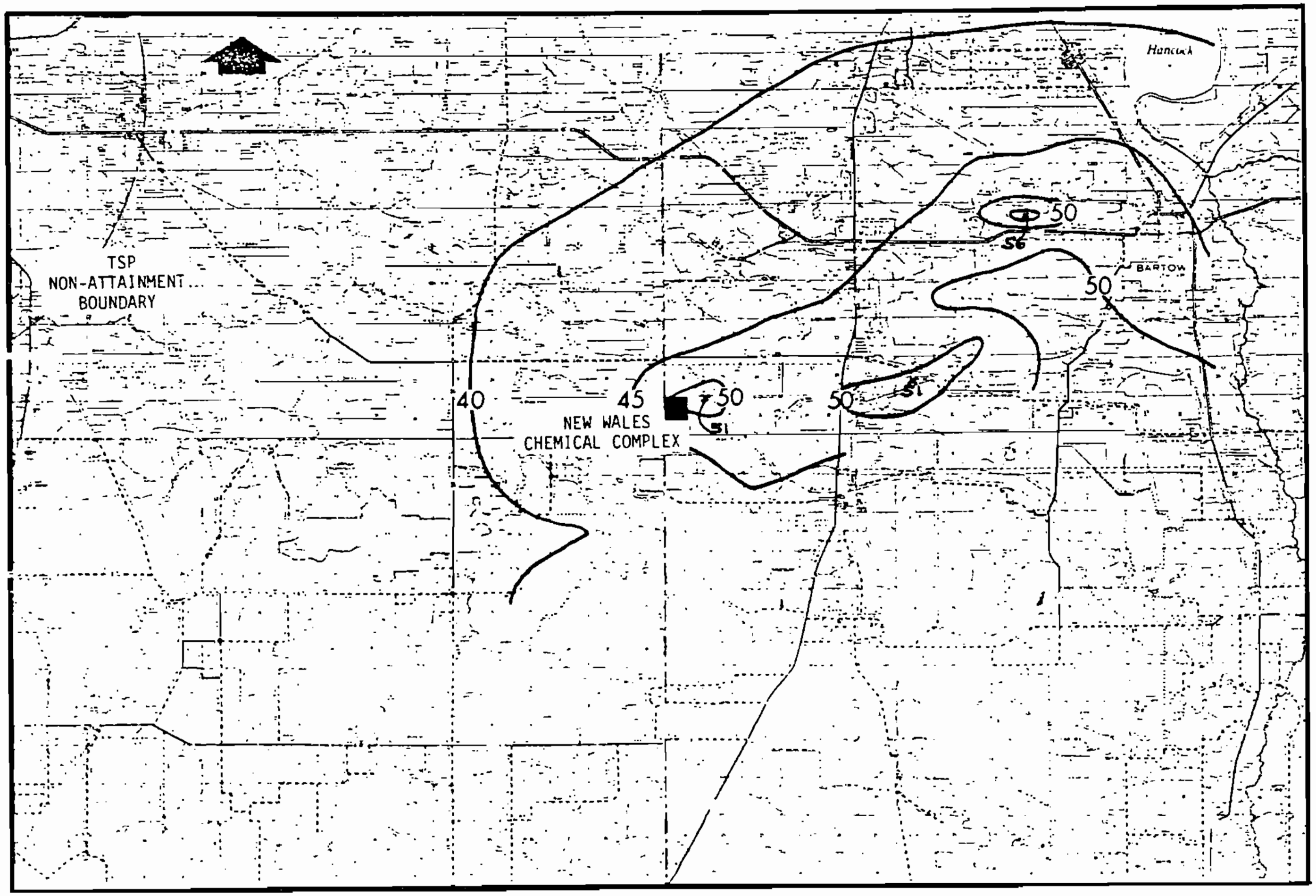


FIGURE 5-10
ANNUAL AVERAGE TSP LEVELS (ug/m^3) WITH EXISTING AND PROPOSED SOURCES;
INCLUDING 35 ug/m^3 BACKGROUND
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

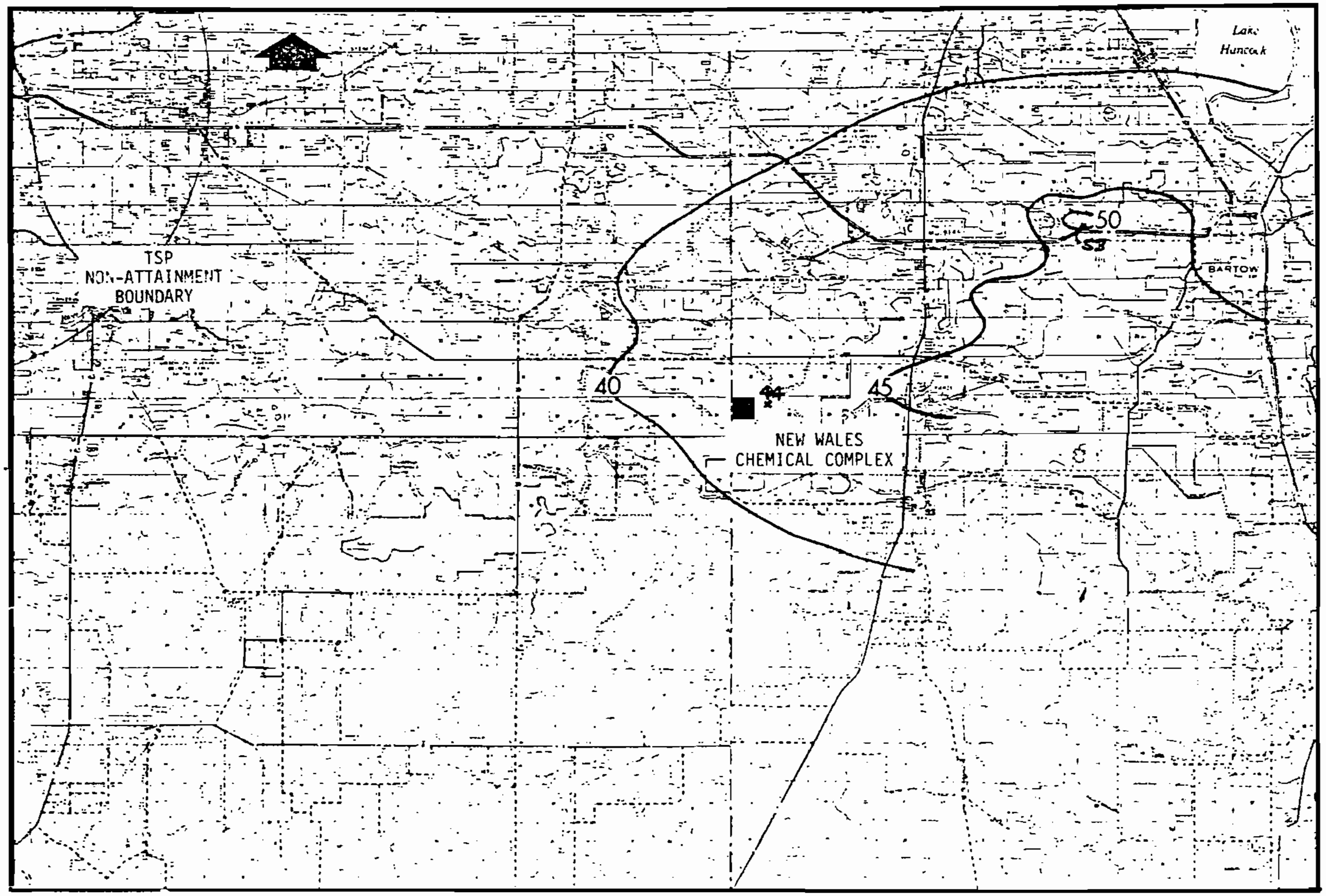


FIGURE 5-11
ANNUAL AVERAGE TSP LEVELS (ug/m^3) FOR BASELINE PERIOD;
INCLUDING 35 ug/m^3 BACKGROUND
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

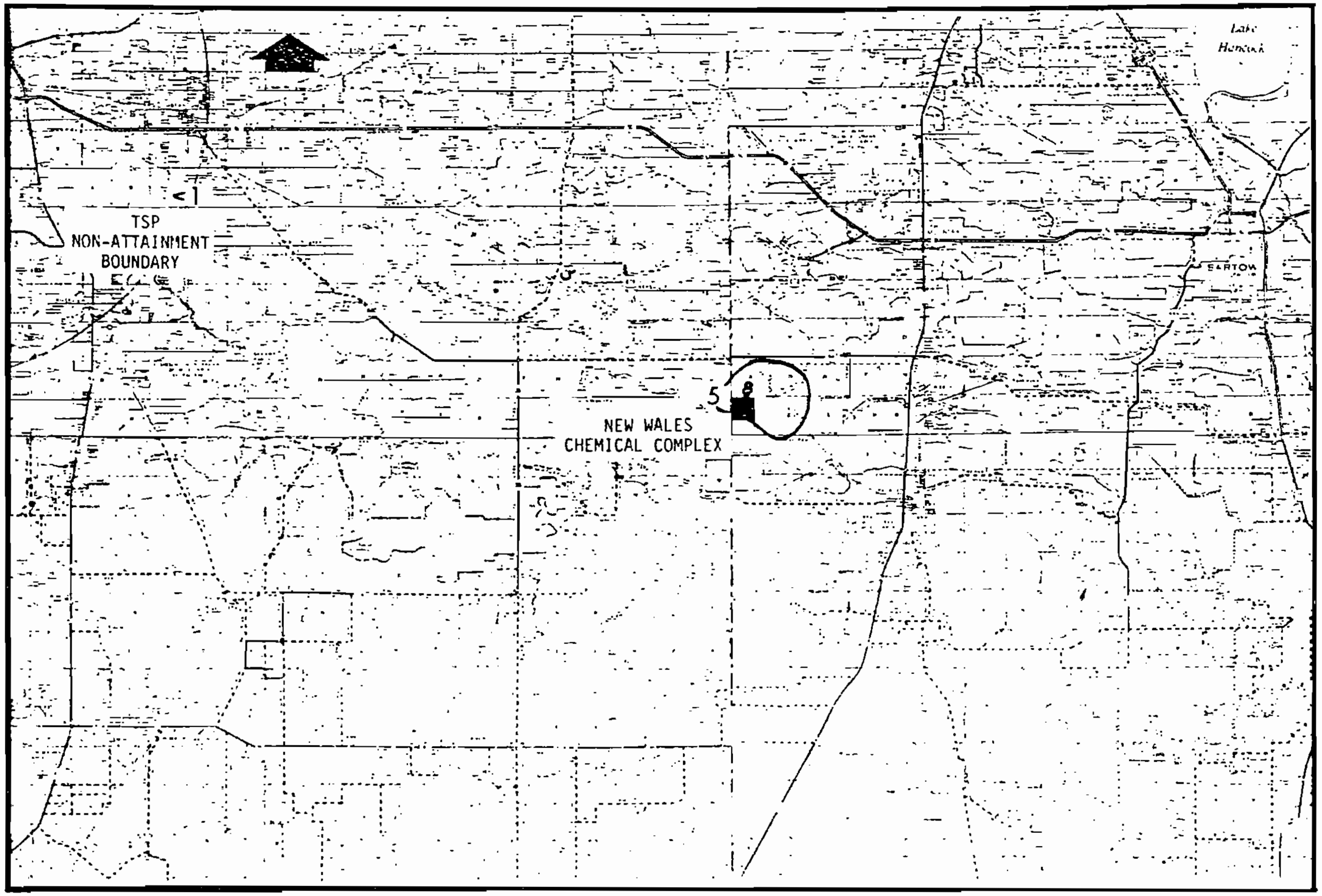


FIGURE 5-12
ANNUAL AVERAGE NEW SOURCE TSP IMPACT (ug/m^3)
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

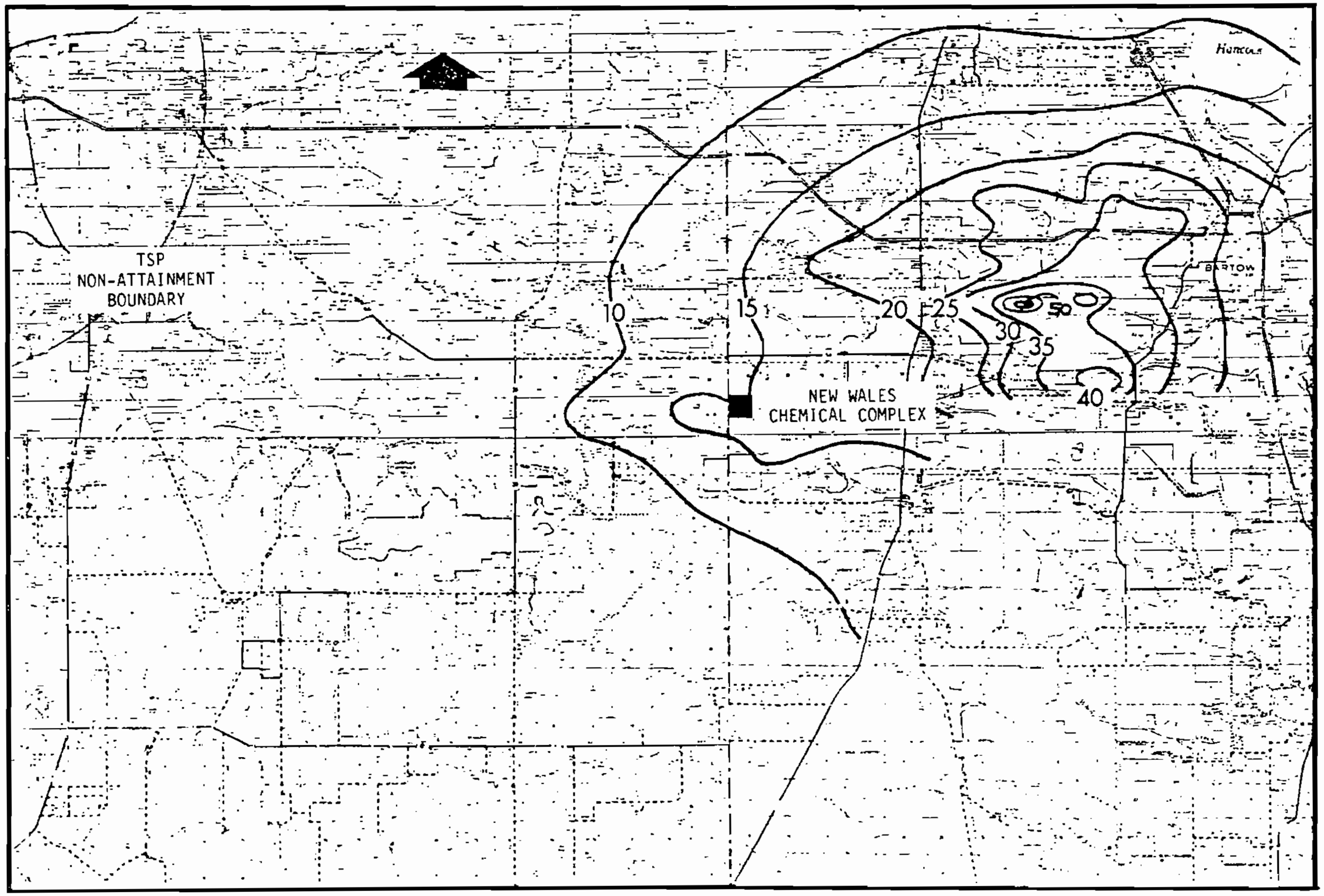


FIGURE 5-13
ANNUAL AVERAGE SO_2 LEVELS (ug/m^3) WITH EXISTING AND PROPOSED SOURCES
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

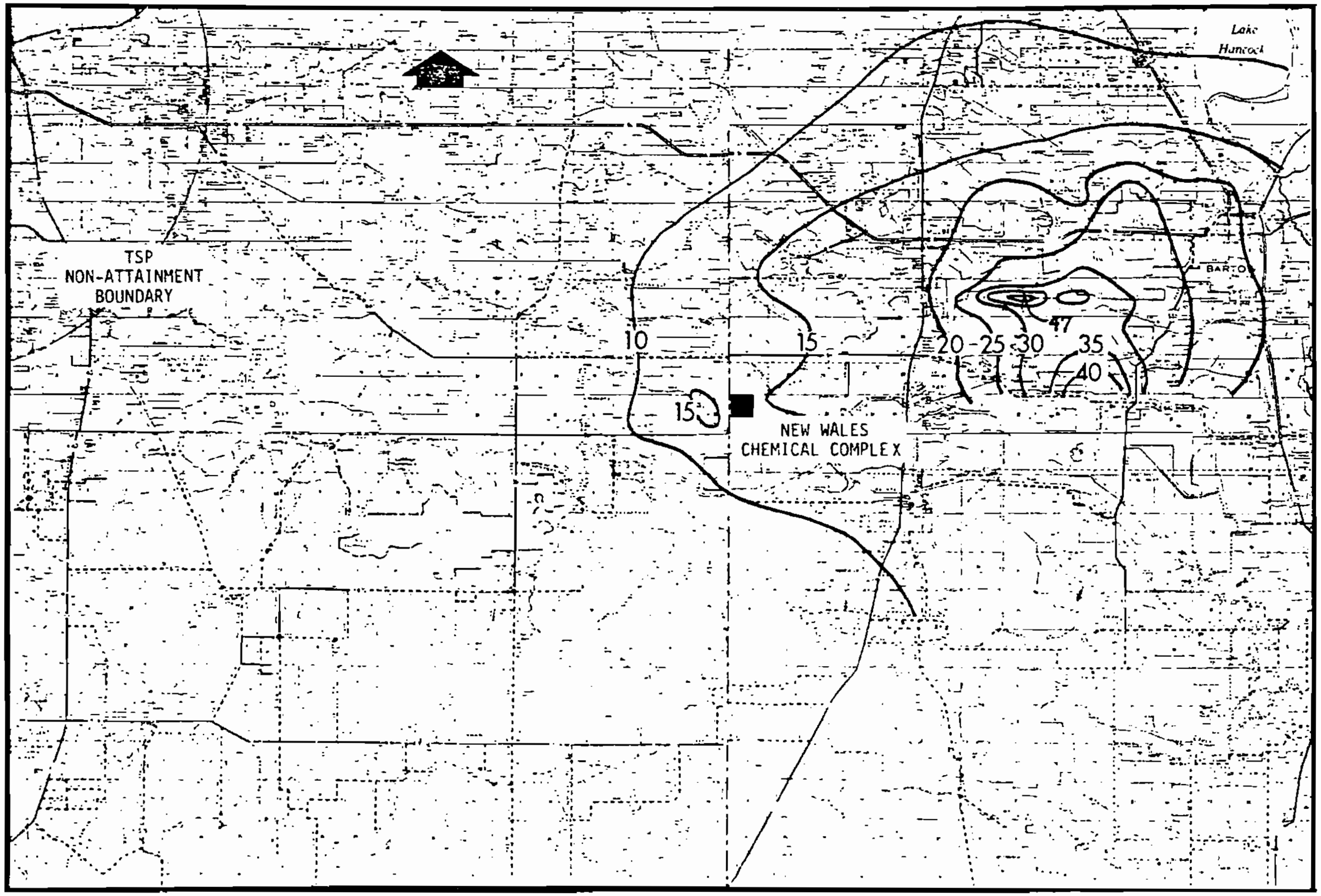


FIGURE 5-14
ANNUAL AVERAGE SO_2 LEVELS (ug/m^3) FOR BASELINE PERIOD
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

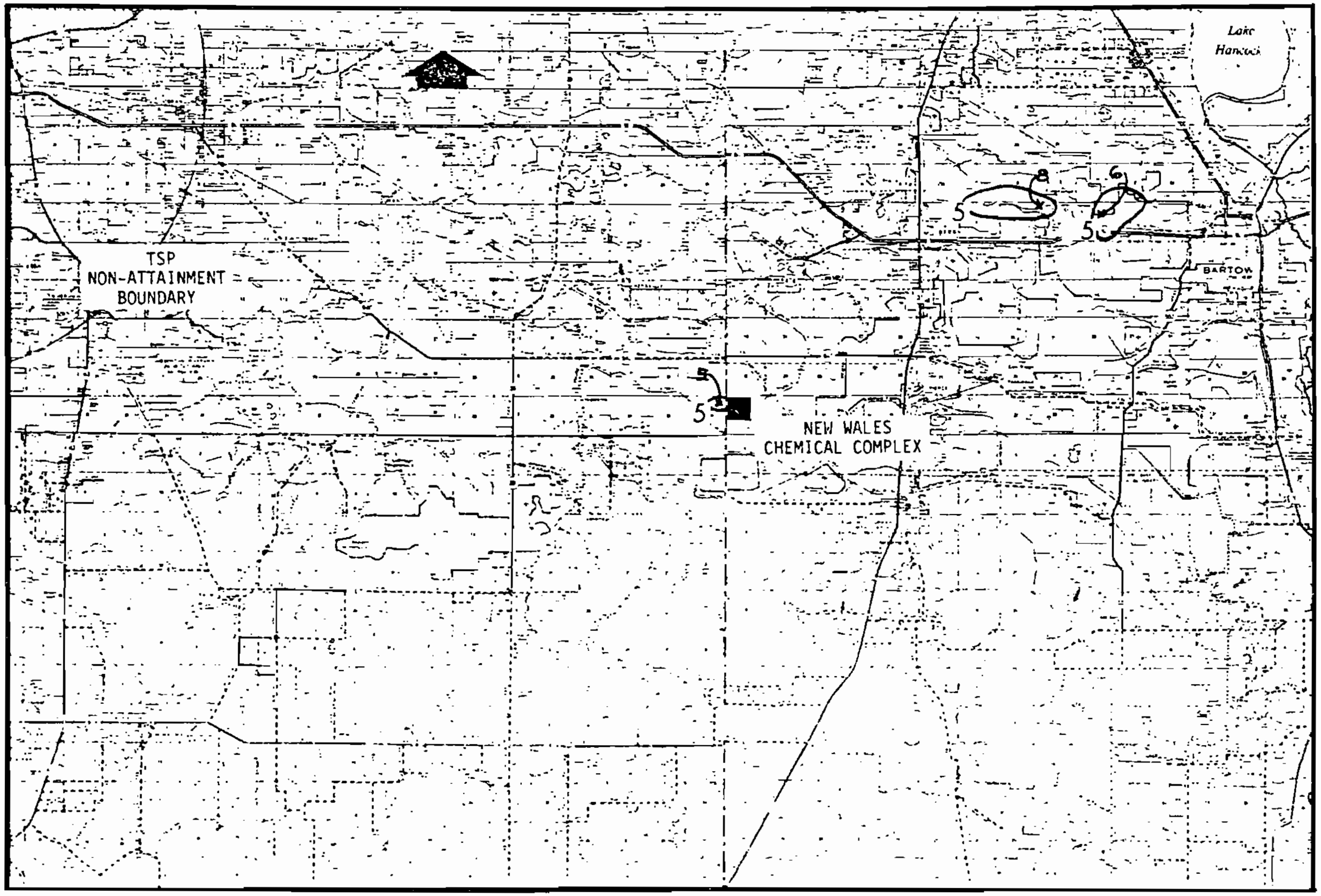


FIGURE 5-15
ANNUAL AVERAGE NEW SOURCE SO_2 IMPACT (ug/m^3)
NEW WALES CHEMICAL COMPANY, POLK COUNTY, FLORIDA

SECTION 6

AMBIENT AIR QUALITY MONITORING DATA

AMBIENT AIR QUALITY MONITORING DATA

Pollutants for which monitoring data might normally be required are sulfur dioxide, particulate matter and nitrogen oxides. Various factors including air quality modeling, existing monitoring data and emission trade-offs have eliminated the necessity for New Wales to enter into an ambient air monitoring program for the proposed expansion.

Particulate Matter

The allowable particulate matter emission rate for sources proposed by New Wales is presented in Table 6-1. The allowable emission rate is 41 pounds per hour or 172 tons per year.

Concurrent with or preceding the expansion, New Wales proposes to phase out their dry rock system. This will involve shutting down rock dryers, grinders and dry rock transfer and storage systems. This will result in a reduction in actual particulate matter emissions of 36 pounds per hour or 141 tons per year (Table 6-1).

Since the net increase in particulate matter emissions will be only five pounds per hour or 31 tons per year; and since air quality modeling (Section 5.0) has shown that neither air quality standards nor PSD increments for particulate matter are threatened in the New Wales impact area, EPA issued the decision that sources specific monitoring for particulate matter was not required.

Sulfur Dioxide

An ambient sulfur dioxide monitoring network was operated a few miles east of the New Wales site during the calendar year 1977. The network was located in the area where the highest annual sulfur dioxide levels would be expected (See Figure 5-13). This monitoring indicated that ambient air quality standards for sulfur dioxide were not threatened.

The results of this monitoring program and a description of the network are described in the document, Polk County Ambient Sulfur Dioxide Monitoring Summary, New Wales Chemical Company, Polk County, Florida, October 1979.

After reviewing the data presented in this document, EPA decided that source specific monitoring data for the proposed New Wales project was not necessary.

Nitrogen Oxides

The ambient air quality standard for nitrogen oxides is 100 ug/m^3 annual average. The impact of nitrogen oxides emitted from the proposed New Wales sources was determined by air quality modeling to be less than 1 ug/m^3, which in turn is less than 1 percent of the annual air quality standard. Since the impact of nitrogen oxides from the proposed sources was not significant, EPA decided that source specific monitoring for nitrogen oxides was not necessary.

Background Concentrations

Background levels for particulate matter, sulfur dioxide and nitrogen oxides have been estimated. For nitrogen oxides and sulfur dioxide the background was assumed to be zero. This assumption was made since all of the sulfur dioxide and nitrogen oxides emitted within several miles of the proposed 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.

The background concentrations of particulate matter for the annual average period and the 24-hour annual average period were derived from two reports: A Comparison of Total Suspended Particulate Matter Levels in the Ambient Air Measured at Two Monitoring Sites in Mulberry, Florida, Sholtes and Koogler Environmental Consultants, April 1977; and Environmental Impact Statement-Draft, Estech General Chemicals Corporation Duette Mine, Manatee County, Florida, US EPA Region IV, October 1979. In the first report an annual average particulate matter background concentration of 35 ug/m^3 is reported. In the second report an annual average background concentration of 25 ug/m^3 is reported. For the New Wales study, an annual average particulate matter background of 35 ug/m^3 was assumed.

For the 24-hour background, the Estech EIS reports a concentration of 55 ug/m^3. A 24-hour background level was not reported in the Sholtes and Koogler report. Since the annual average particulate matter background level assumed was 10 ug/m^3 higher than that reported in the Estech EIS, a 24-hour background level of 65 ug/m^3, which is 10 ug/m^3 higher than the 24-hour background reported in the Estech EIS, was assumed for the New Wales program.

TABLE 6-1

SUMMARY OF PROPOSED AND PHASED-OUT SOURCES
NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA
OCTOBER 1979

		ALLOWABLE EMISSIONS			
		PARTICULATE MATTER		SO_2	
SOURCE NUMBER	SOURCES PROPOSED	lb/hr	TPY	lb/hr	TPY
	#4 H_2SO_4 (4#/ton SO_2)	0	0	333	1,387
	#5 H_2SO_4 (4#/ton SO_2)	0	0	333	1,387
	Phosphoric Acid	0	0	0	0
	DAP (2 gal oil/ton @ 140 TPH)	38	160.5	112	466
	Third Product Load-Out(0.01 gr/SCF)	2	7.1	0	0
	Lime Station (0.01 gr/SCF)	1	4.4	0	0
	TOTAL	41	172	778	3,240

			ACTUAL EMISSIONS			
			PARTICULATE MATTER		SO_2	
	SOURCES PHASED OUT	DATE	lb/hr	TPY	lb/hr	TPY
6	Dry Rock Silo A053-5963	1980	1.0	3.94	0	0
7	Rock Grinding-West A053-5969	8/9/79	3.1	12.22	0	0
14	Dry Rock Load-Out A053-5979	1980 (never operated)	0.0	0.0	0	0
15	Rock Grinding-East A053-5967	1980	3.1	12.22	0	0
16	Dry Rock Bilo Bottom A053-5980	1980 (never operated)	0.0	0.0	0	0
18	Dryer Prod.Belt.Trans. A053-5981	1980	1.0	3.94	0	0
19	Wet Rock Dryer A053-5982	1980	25.6	100.92	400	1,576.80
20	Phos.Acid Rock Bin-West A053-5970	1980	1.0	3.94	0	0
22	Phos.Acid Rock Bin-East A053-5968	1980	1.0	3.94	0	0
	TOTAL		36.0	141.0	400	1,577

SECTION 7

SECONDARY IMPACTS

SECONDARY IMPACTS

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

Air quality modeling has demonstrated that particulate matter and sulfur dioxide levels after the proposed expansion 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.

Since nitrogen oxide emissions from the modified facility are only seven percent of the sulfur dioxide emissions and since the annual average sulfur dioxide impact of the proposed modification is only five micrograms per cubic meter, the ambient nitrogen oxides concentration from emissions from the proposed sources will be so low that no secondary impact is anticipated.

The fluoride emissions from the proposed modification are not expected to create any adverse secondary impacts. An Environmental Impact Statement recently submitted for a phosphate fertilizer complex in north Florida (Environmental Impact Statement, Occidental Chemical Company Swift Creek Chemical Complex, Hamilton County, Florida, US EPA Region IV, Atlanta, Georgia, July 1978) includes a section on the environmental impact of fluoride emissions. In this document it states that no significant impact to cattle, agricultural crops or timber was established.

Property for several miles to the north, east and south of New Wales is owned by IMC or other phsophate companies. To the west and northwest of New Wales beyond one mile of the plant the land is rural residential. Some residents keep limited numbers of livestock and many have home gardens. There is no commercial agriculture in the area or commercial or residential receptors especially sensitive to pollutants potentially emitted from the proposed New Wales sources. Figure 7-1 shows land ownership and use in the area around New Wales.

Regarding the impact of commercial growth in the vicinity, the entire southwest section of Polk County is given to phosphate rock mining and processing. The modification proposed by New Wales will represent only a small fraction of the total industry capacity in the county and will; therefore, not have a significant impact on industrial or commercial growth in the area.

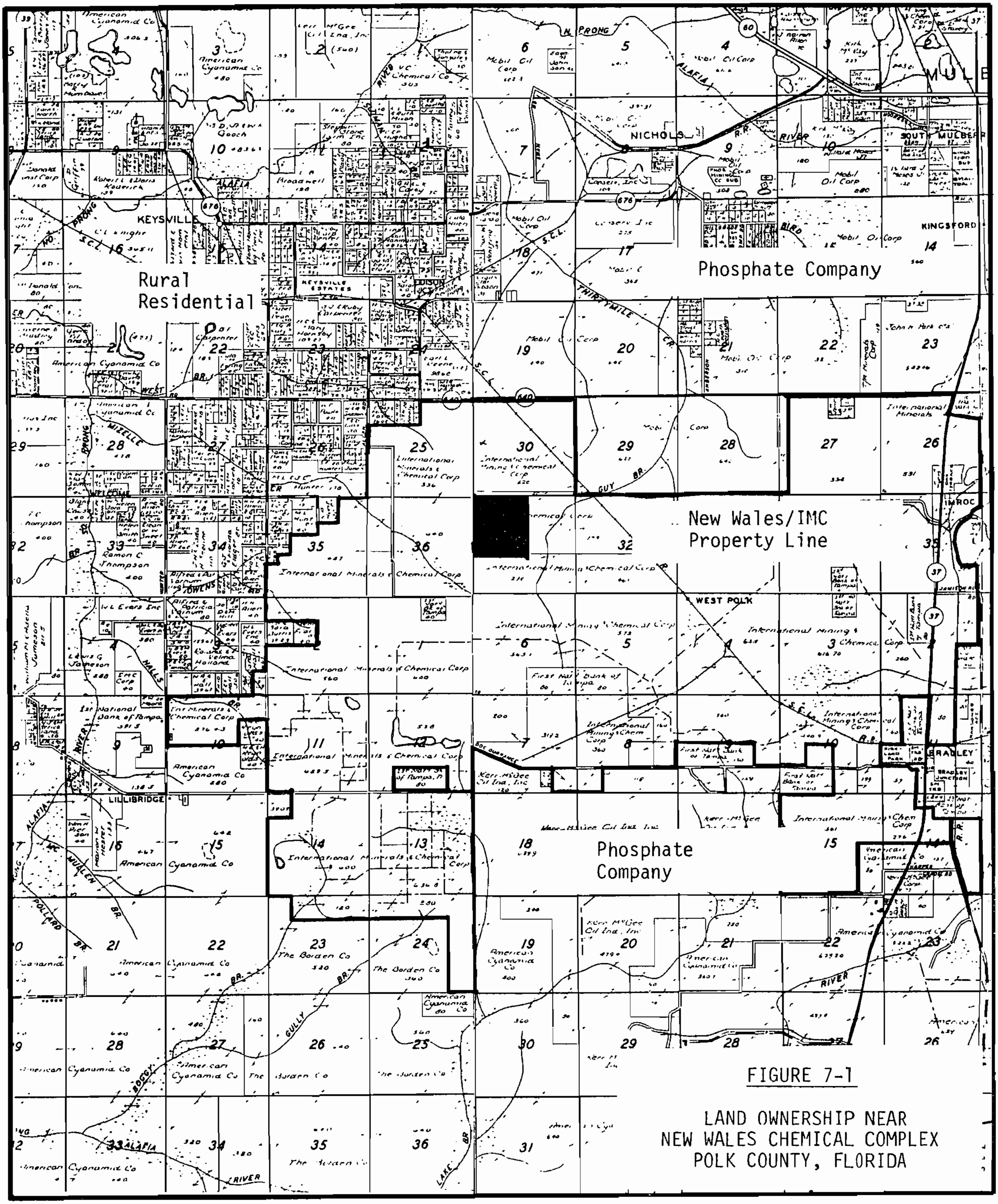


FIGURE 7-1

LAND OWNERSHIP NEAR
NEW WALES CHEMICAL COMPLEX
POLK COUNTY, FLORIDA