Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

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BUREAU OF
AIR REGULATION

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

This section of the Application for Air Permit form identifies the facility and provides general information on the scope and purpose of this application. This section also includes information on the owner or authorized representative of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department using ELSA, this section of the Application for Air Permit must also be submitted in hard-copy.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility site name, if any; and the facility's physical location. If known, also enter the facility identification number.

1. Facility Owner/Company Name: **IMC-Agrico Company**	
2. Site Name: **IMC-Agrico (South Pierce)**	
3. Facility Identification Number: **1050055**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **7450 Highway 630,** City: **MULBERRY** County: **POLK**	Zip Code: **33860**
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	11/20/96
2. Permit Number:	1050055-010-AC
3. PSD Number (if applicable):	PSD-FL-235
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   E.M. Newberg, Vice President, Chemicals-Florida

2. Owner/Authorized Representative or Responsible Official Mailing Address:

   Organization/Firm: **IMC-Agrico Company**
   Street Address: **P.O. Box 2000**
   City: MULBERRY State: **FL** Zip Code: **33860**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(941) 428-2500** Fax: ( ) -

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

E. M. Newberg
Signature

11/13/96
Date

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility. An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID	Description of Emissions Unit	Permit Type
004	SULFURIC ACID PLANT #10	
005	SULFURIC ACID PLANT # 11	
030	MOLTEN SULFUR SYSTEM	

Purpose of Application and Category

Check one (except as otherwise indicated):

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit to be revised: _____

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: _____

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category II: All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s):

_____

[ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g., to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category III: All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain:

[X] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: AO53-220555, -221844, -221846

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): _____

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one:

[X] Attached - Amount: $ 7500 [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Request for increase in production rates of existing Sulfuric Acid Plants 10 and 11 at IMC-Agrico's South Pierce Plant from 2700 tpd to 3000 tpd, each. This represents about an 11 percent increase in production rate. There will be a corresponding increase in the molten sulfur handling.

2. Projected or Actual Date of Commencement of Construction:
March 1, 1997

3. Projected Date of Completion of Construction:
December 1, 1997

Professional Engineer Certification

1. Professional Engineer Name: : **John B. Koogler, Ph.D., P.E.**
Registration Number: **12925**

2. Professional Engineer Mailing Address:

Organization/Firm: **Koogler & Associates**
Street Address: **4014 NW 13th Street**
City: **Gainesville** State: **FL** Zip Code: **32609**

3. Professional Engineer Telephone Numbers:
Telephone: **(352) 377 - 5822** Fax: **(352) 377 - 7158**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

11/11/96
Date

(seal)

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:

   Pradeep Raval

2. Application Contact Mailing Address:

   Organization/Firm: **Koogler & Associates**
   Street Address: **4014 NW 13th Street**
   City: **Gainesville** State: **FL** Zip Code: **32609**

3. Application Contact Telephone Numbers:
   Telephone: **(352) 377 - 5822** Fax: **(352) 377 - 7158**

Application Comment

This application is submitted in the format suggested by FDEP. Only information pertaining to the modification is presented herein.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **407.5** North (km): **3071.4**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): Longitude (DD/MM/SS):			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **28**	6. Facility SIC(s): **2874**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **C.D. Turley**
2. Facility Contact Mailing Address: Organization/Firm: **IMC-Agrico Company** Street Address: **P.O. Box 2000** City: **MULBERRY** State: **FL** Zip Code: **33860**
3. Facility Contact Telephone Numbers: Telephone: **(941) 428 - 2500** Fax: ( ) -

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [X] No [ ] Unknown
2. Title V Source? [X] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes [X] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [X] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [X] No
6. Major Source of Hazardous Air Pollutants (HAPs)? [ ] Yes [X] No
7. Synthetic Minor Source of HAPs? [ ] Yes [X] No
8. One or More Emissions Units Subject to NSPS? [X] Yes [ ] No
9. One or More Emission Units Subject to NESHAP? [ ] Yes [X] No
10. Title V Source by EPA Designation? [ ] Yes [X] No
11. Facility Regulatory Classifications Comment (limit to 200 characters):

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

N/A

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

SEE ATTACHED REPORT.	

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
PM/PM10	**A**
SO2	**A**
NOX	**A**
SAM	**A**
FL	**B**

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Detail Information: Pollutant _____ of _____

1. Pollutant Emitted: **NA**		
2. Requested Emissions Cap:	(lb/hour)	(tons/year)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

Facility Pollutant Detail Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Requested Emissions Cap:	(lb/hour)	(tons/year)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

E. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location: [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [X] Attached, Document ID: **Report** [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only **N/A**

7. List of Proposed Exempt Activities: [ ] Attached, Document ID:_____ [ ] Not Applicable
8. List of Equipment/Activities Regulated under Title VI: [ ] Attached, Document ID:_____ [ ] Equipment/Activities On site but Not Required to be Individually Listed [ ] Not Applicable
9. Alternative Methods of Operation: [ ] Attached, Document ID:_____ [ ] Not Applicable
10. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID:_____ [ ] Not Applicable

11. Identification of Additional Applicable Requirements: [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Compliance Assurance Monitoring Plan: [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Risk Management Plan Verification: [ ] Plan Submitted to Implementing Agency - Verification Attached, Document ID:_____ [ ] Plan to be Submitted to Implementing Agency by Required Date [ ] Not Applicable
14. Compliance Report and Plan: [ ] Attached, Document ID:_____ [ ] Not Applicable
15. Compliance Certification (Hard-copy Required): [ ] Attached, Document ID:_____ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one:

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **SULFURIC ACID PLANT #10**		
2. Emissions Unit Identification Number: **004** [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [**X**] No	5. Emissions Unit Major Group SIC Code: **28**
6. Emissions Unit Comment (limit to 500 characters):		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **DOUBLE CONTACT/ABSORPT ION**
2. Control Device or Method Code: **044**

B.

1. Description (limit to 200 characters):

DEMISTER

2. Control Device or Method Code: **014**

C.

1. Description (limit to 200 characters):

2. Control Device or Method Code:

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date: **N/A**		
2. Long-term Reserve Shutdown Date: **N/A**		
3. Package Unit: **N/A** Manufacturer:	Model Number:	
4. Generator Nameplate Rating: **N/A**	MW	
5. Incinerator Information: **N/A** Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:		°F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **N/A**		mmBtu/hr
2. Maximum Incineration Rate: **N/A**	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3000 tpd 100% H2SO4**		
5. Operating Capacity Comment (limit to 200 characters): **Request increase from 2700 tpd to 3000 tpd 100% H2SO4**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8760** hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

N/A

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

SEE ATTACHED REPORT.

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Point 10**
2. Emission Point Type Code: [**X**] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [**X**] V [ ] W
6. Stack Height: **145** feet
7. Exit Diameter: **9** feet
8. Exit Temperature: **170** °F

9. Actual Volumetric Flow Rate:	**185,000** acfm
10. Percent Water Vapor :	**NA** %
11. Maximum Dry Standard Flow Rate:	**NA** dscfm
12. Nonstack Emission Point Height:	**NA** feet
13. Emission Point UTM Coordinates: **NA** Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment __1__ of __1__

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Chemical Manufacturing - Sulfuric Acid - Contact Process - Absorber/@ 99.9% Conversion**	
2. Source Classification Code (SCC): **3-01-023-01**	
3. SCC Units: **Tons 100% H_2SO_4**	
4. Maximum Hourly Rate: **125**	5. Maximum Annual Rate: **1,095,000**
6. Estimated Annual Activity Factor: **NA**	
7. Maximum Percent Sulfur: **NA**	8. Maximum Percent Ash: **NA**
9. Million Btu per SCC Unit: **NA**	
10. Segment Comment (limit to 200 characters): **Plant rate at 3000 TPD**	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO2	**044**	**000**	**EL**
SAM	**044**	**014**	**EL**
NOX	**000**	**000**	**EL**

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: **99.7** **%**

3. Potential Emissions: **500** lb/hour **2190** tons/year

4. Synthetically Limited?
   [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions: **N/A**
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **500 lb/hr**
   Reference: **40 CFR 60, Subpart H**

7. Emissions Method Code:
   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

SO2 = 125 tph x 4 lb/ton = 500 lb/hr
x 8760hrs/yr x ton/2000 lbs = 2190 tpy

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **500 lb/hr**		
4. Equivalent Allowable Emissions:	**500** lb/hour	**2190** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60, Subpart H.**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SAM**

2. Total Percent Efficiency of Control: **99.9** **%**

3. Potential Emissions: **18.8** lb/hour **82.1** tons/year

4. Synthetically Limited?
   [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions: **N/A**
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **18.8 lb/hr**
   Reference: **40 CFR 60, Subpart H**

7. Emissions Method Code:
   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

SAM = 125 tph x 0.15 lb/ton = 18.8 lb/hr
x 8760hrs/yr x ton/2000 lbs = 82.1 tpy

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **18.8 lb/hr**		
4. Equivalent Allowable Emissions:	**18.8** lb/hour	**82.1** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60, Subpart H**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**

2. Total Percent Efficiency of Control: **NA** %

3. Potential Emissions: **15** lb/hour **65.7** tons/year

4. Synthetically Limited?
   [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions: **N/A**
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **15 lb/hr**
   Reference: **Tests**

7. Emissions Method Code:
   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

NOx = 125 tph x 0.12 lb/ton = 15 lb/hr
x 8760hrs/yr x ton/2000 lbs = 65.7 tpy

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **15 lb/hr**		
4. Equivalent Allowable Emissions:	**15** lb/hour	**65.7** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **BACT**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation ___1___ of ___1___

1. Visible Emissions Subtype: **VE10**
2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance: **EPA Method 9**
5. Visible Emissions Comment (limit to 200 characters): **40 CFR 60, Subpart H**

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor ___1__ of __1___

1. Parameter Code: **EM**	2. Pollutant(s): **SO2**
3. CMS Requirement:	[**X**] Rule [ ] Other
4. Monitor Information: Manufacturer: **DuPont** Model Number: **400**	Serial Number: **7121**
5. Installation Date: **1989**	
6. Performance Specification Test Date: **11/09/89**	
7. Continuous Monitor Comment (limit to 200 characters): **This analyzer can serve either plant 10 or 11 or both. It can also be on stand-by.** **40 C.F.R. 60, Subpart H**	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [X] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[ ] E	[ ] Unknown
SO2	[X] C	[ ] E	[ ] Unknown
NO2	[X] C	[ ] E	[ ] Unknown

4. Baseline Emissions:		
PM	lb/hour	tons/year
SO2	lb/hour	tons/year
NO2		tons/year

5. PSD Comment (limit to 200 characters):

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested **IN FDEP FILES**
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested **IN FDEP FILES**
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: **Report** [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: **Report** [ ] Not Applicable
9. Other Information Required by Rule or Statute [X] Attached, Document ID: **Report** [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only N/A

10. Alternative Methods of Operation [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
14. Acid Rain Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:_____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:_____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:_____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:_____ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one:

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **SULFURIC ACID PLANT #11**		
2. Emissions Unit Identification Number: **005** [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [**X**] No	5. Emissions Unit Major Group SIC Code: **28**
6. Emissions Unit Comment (limit to 500 characters):		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **DOUBLE CONTACT/ABSORPT ION**
2. Control Device or Method Code: **044**

B.

1. Description (limit to 200 characters): **DEMISTER**
2. Control Device or Method Code: **014**

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date: **N/A**		
2. Long-term Reserve Shutdown Date: **N/A**		
3. Package Unit: **N/A** Manufacturer:	Model Number:	
4. Generator Nameplate Rating: **N/A**	MW	
5. Incinerator Information: **N/A** Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:		°F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **N/A**		mmBtu/hr
2. Maximum Incineration Rate: **N/A**	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3000 tpd 100% H2SO4**		
5. Operating Capacity Comment (limit to 200 characters): **Request increase from 2700 tpd to 3000 tpd 100% H2SO4**		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	**8760** hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

N/A

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

SEE ATTACHED REPORT.	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Point 11**
2. Emission Point Type Code: [**X**] 1 [ ] 2 [ ] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [**X**] V [ ] W
6. Stack Height: **145** feet
7. Exit Diameter: **9** feet
8. Exit Temperature: **170** °F

9. Actual Volumetric Flow Rate:	**185,000** acfm
10. Percent Water Vapor :	**NA** %
11. Maximum Dry Standard Flow Rate:	**NA** dscfm
12. Nonstack Emission Point Height:	**NA** feet
13. Emission Point UTM Coordinates: **NA** Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment __1__ of __1__

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Chemical Manufacturing - Sulfuric Acid - Contact Process - Absorber/@ 99.9% Conversion**
2. Source Classification Code (SCC): **3-01-023-01**
3. SCC Units: **Tons 100% H_2SO_4**

4. Maximum Hourly Rate: **125**	5. Maximum Annual Rate: **1,095,000**
6. Estimated Annual Activity Factor: **NA**	
7. Maximum Percent Sulfur: **NA**	8. Maximum Percent Ash: **NA**
9. Million Btu per SCC Unit: **NA**	

10. Segment Comment (limit to 200 characters): **Plant rate at 3000 TPD.**

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO2	**044**	**000**	**EL**
SAM	**044**	**014**	**EL**
NOX	**000**	**000**	**EL**

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**
2. Total Percent Efficiency of Control: **99.7** **%**
3. Potential Emissions: **500** lb/hour **2190** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: **500 lb/hr** Reference: **40 CFR 60, Subpart H**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **SO2 = 125 tph x 4 lb/ton = 500 lb/hr** **x 8760hrs/yr x ton/2000 lbs = 2190 tpy**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **500 lb/hr**		
4. Equivalent Allowable Emissions:	**500** lb/hour	**2190** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60, Subpart H.**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SAM**
2. Total Percent Efficiency of Control: **99.9** %
3. Potential Emissions: **18.8** lb/hour **82.1** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year
6. Emission Factor: **18.8 lb/hr** Reference: **40 CFR 60, Subpart H**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **SAM = 125 tph x 0.15 lb/ton = 18.8 lb/hr** **x 8760hrs/yr x ton/2000 lbs = 82.1 tpy**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **18.8 lb/hr**		
4. Equivalent Allowable Emissions:	**18.8** lb/hour	**82.1** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **40 CFR 60, Subpart H**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**

2. Total Percent Efficiency of Control: **NA** %

3. Potential Emissions: **15** lb/hour **65.7** tons/year

4. Synthetically Limited?
   [ ] Yes [**X**] No

5. Range of Estimated Fugitive/Other Emissions: **N/A**
   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year

6. Emission Factor: **15 lb/hr**
   Reference: **Tests**

7. Emissions Method Code:
   [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8. Calculation of Emissions (limit to 600 characters):

NOx = 125 tph x 0.12 lb/ton = 15 lb/hr
x 8760hrs/yr x ton/2000 lbs = 65.7 tpy

9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **NA**

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **15 lb/hr**		
4. Equivalent Allowable Emissions:	**15** lb/hour	**65.7** Tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **BACT**		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lb/hr	tons/year
5. Method of Compliance (limit to 60 characters):		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation ___1___ of ___1___

1. Visible Emissions Subtype: **VE10**
2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance: **EPA Method 9**
5. Visible Emissions Comment (limit to 200 characters): **40 CFR 60, Subpart H**

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor ___1__ of __1___

1. Parameter Code: **EM**	2. Pollutant(s): **SO2**
3. CMS Requirement:	[**X**] Rule [ ] Other
4. Monitor Information: Manufacturer: **DuPont** Model Number: **460**	Serial Number: **5332**
5. Installation Date: **1979**	
6. Performance Specification Test Date: **8/79**	
7. Continuous Monitor Comment (limit to 200 characters): **This analyzer can serve either plant 10 or 11 or both. It can also be on stand-by.** **40 C.F.R. 60, Subpart H**	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

[X] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code:			
PM	[ ] C	[ ] E	[ ] Unknown
SO2	[X] C	[ ] E	[ ] Unknown
NO2	[X] C	[ ] E	[ ] Unknown

4. Baseline Emissions:		
PM	lb/hour	tons/year
SO2	lb/hour	tons/year
NO2		tons/year

5. PSD Comment (limit to 200 characters):

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested **IN FDEP FILES**
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested **IN FDEP FILES**
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [X] Attached, Document ID: **Report** [ ] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: **Report** [ ] Not Applicable
9. Other Information Required by Rule or Statute [X] Attached, Document ID: **Report** [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only N/A

10. Alternative Methods of Operation [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
14. Acid Rain Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:_____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:_____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:_____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:_____ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one:

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one:

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **MOLTEN SULFUR SYSTEM**		
2. Emissions Unit Identification Number: **030** [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [ ] Yes [**X**] No	5. Emissions Unit Major Group SIC Code: **28**
6. Emissions Unit Comment (limit to 500 characters): **Includes the entire Molten Sulfur System, Items 030 -045.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **None**
2. Control Device or Method Code: **000**

B.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):
2. Control Device or Method Code:

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date: **N/A**		
2. Long-term Reserve Shutdown Date: **N/A**		
3. Package Unit: **N/A** Manufacturer:	Model Number:	
4. Generator Nameplate Rating: **N/A**	MW	
5. Incinerator Information: **N/A** Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:		°F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate: **N/A**		mmBtu/hr
2. Maximum Incineration Rate: **N/A**	lb/hr	tons/day
3. Maximum Process or Throughput Rate: **2200 TPD**		
4. Maximum Production Rate:		
5. Operating Capacity Comment (limit to 200 characters):		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8760** hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

N/A

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

SEE ATTACHED REPORT.	

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:
2. Emission Point Type Code: [ ] 1 [ ] 2 [X] 3 [ ] 4
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **EMISSION POINTS 030 - 045.**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [ ] V [X] W
6. Stack Height: **NA** feet
7. Exit Diameter: **NA** feet
8. Exit Temperature: **200** °F

9. Actual Volumetric Flow Rate:	**NA** acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate:	dscfm
12. Nonstack Emission Point Height:	**10** feet
13. Emission Point UTM Coordinates: Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment __1__ of __2__

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Bulk Materials Storage Bins - Sulfur**	
2. Source Classification Code (SCC): **3-05-102-08**	
3. SCC Units: **Tons Sulfur**	
4. Maximum Hourly Rate: **100**	5. Maximum Annual Rate : **725,000**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash: **N/A**
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters):	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment __2__ of __2__

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Bulk Materials Unloading Operation - Sulfur**	
2. Source Classification Code (SCC): **3-05-104-08**	
3. SCC Units: **Tons Sulfur**	
4. Maximum Hourly Rate: **100**	5. Maximum Annual Rate : **725,000**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash: **N/A**
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
N/A			

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitation: Visible Emissions Limitation ___1___ of ___1___

1. Visible Emissions Subtype: **VE**
2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance: **EPA METHOD 9**
5. Visible Emissions Comment (limit to 200 characters): **MOLTEN SULFUR RULE 62-296.411, FAC.**

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:
2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour
4. Method of Compliance:
5. Visible Emissions Comment (limit to 200 characters):

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters):	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [X] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide? **N/A**

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code:			
PM	[X] C	[ ] E	[ ] Unknown
SO2	[X] C	[ ] E	[ ] Unknown
NO2	[ ] C	[ ] E	[ ] Unknown
4. Baseline Emissions:			
PM		lb/hour	tons/year
SO2		lb/hour	tons/year
NO2			tons/year
5. PSD Comment (limit to 200 characters):			

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements for All Applications

1. Process Flow Diagram [X] Attached, Document ID: **Report** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [X] Not Applicable
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: **Report** [ ] Not Applicable
9. Other Information Required by Rule or Statute [X] Attached, Document ID: **Report** [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only N/A

10. Alternative Methods of Operation [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
14. Acid Rain Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:_____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:_____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:_____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:_____ [ ] Not Applicable

REPORT IN SUPPORT OF A PSD PERMIT APPLICATION

PREPARED FOR:

IMC-AGRICO COMPANY
SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

NOVEMBER 1996

PREPARED BY:

KOOGLER & ASSOCIATES
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GAINESVILLE, FLORIDA 32609
(352) 377-5822

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1.0 SYNOPSIS OF APPLICATION

1.1 APPLICANT

IMC-Agrico Company
South Pierce Plant
7450 Highway 630
Mulberry, Polk County, Florida

1.2 FACILITY LOCATION

IMC-Agrico Company, South Pierce Plant, consists of a phosphate chemical fertilizer manufacturing facility approximately eight miles west of Ft. Meade and twelve miles southwest of Bartow, on State Road 630 in Polk County, Florida. The UTM coordinates of the South Pierce facility are Zone 17, 407.5 km east and 3071.4 km north.

1.3 PROJECT OVERVIEW

IMC-Agrico proposes to increase the sulfuric acid production rate of the two existing double absorption sulfuric acid plants at South Pierce from 2700 to 3000 tons per day (TPD) of 100% H2SO4, each. This represents about an 11 percent increase in the sulfuric acid production rate from the current 5,400 TPD to 6,000 TPD 100% H2SO4. The molten sulfur throughput rate will proportionately increase from 650,000 TPY to 725,000 TPY. The allowable air emissions will also increase proportionately. The proposed project will also result in an increase in waste heat recovery.

The additional sulfuric acid produced will be used for distribution to other IMC-Agrico facilities which would otherwise have to purchase the acid. As a result, the proposed sulfuric acid production increase will not affect the operation of any other plant in the chemical complex except the molten sulfur storage and handling system.

The proposed project will result in a significant net increase (in accordance with Rule 62-212, Florida Administrative Code), in the emission rates of sulfur dioxide (SO_2), nitrogen oxides (NOx) and sulfuric acid mist (SAM).

IMC-Agrico is submitting this report in support of the application to the Florida Department of Environmental Protection (FDEP) for increasing the sulfuric acid production rates of the two existing sulfuric acid plants; and, a corresponding increase in the molten sulfur throughput rate. The report includes a description of the existing chemical complex and the sulfuric acid plants, a review of Best Available Control Technology, an ambient air quality analysis and an evaluation of the impact of the proposed modifications on soils, vegetation and visibility.

2.0 FACILITY DESCRIPTION

IMC-Agrico's existing phosphate fertilizer manufacturing facility at South Pierce processes phosphate rock into several different fertilizer products. This is accomplished by reacting the phosphate rock with sulfuric acid to produce phosphoric acid and then converting the phosphoric acid to fertilizer products.

The chemical complex includes sulfuric acid plants, phosphoric acid plants, plants to produce purified monoammonium phosphate (MAP) and purified diammonium phosphate (DAP), a granular triple superphosphate (GTSP) plant, and storage, handling, grinding and shipping facilities for phosphate rock, ammonia, sulfur, and fertilizer products. The site location is shown in Figure 2-1. The layout of the existing facility is shown in Figure 2-2, Plot Plan.

2.1 PROCESS DESCRIPTION

There are two, almost identical, sulfuric acid plants (SAP) at South Pierce. SAP 10 and 11 were originally permitted in 1974 and are presently permitted at 2700 tons per day (TPD) of 100 percent H_2SO_4 each. Both plants are subject to Federal New Source Performance Standards as set forth in 40 CFR 60, Subpart H.

Molten sulfur is received by truck and rail, unloaded into molten sulfur pits, and stored in the molten sulfur storage tanks. Both sulfuric acid plants utilize the double absorption process which produces sulfuric acid by burning sulfur to produce sulfur dioxide, converting the sulfur dioxide to sulfur trioxide using a catalyst, and then contacting the sulfur trioxide with sulfuric acid in primary and secondary absorption towers. A process flow diagram is presented in Figure 2-3.

The current FDEP air permit numbers for the two sulfuric acid plants and the molten sulfur system are as follows:

UNIT	Air Permit No.	Expiration Date
SAP 10	A053-221846	12-23-97
SAP 11	A053-220555	11-20-97
Molten Sulfur	A053-221844	12-18-97

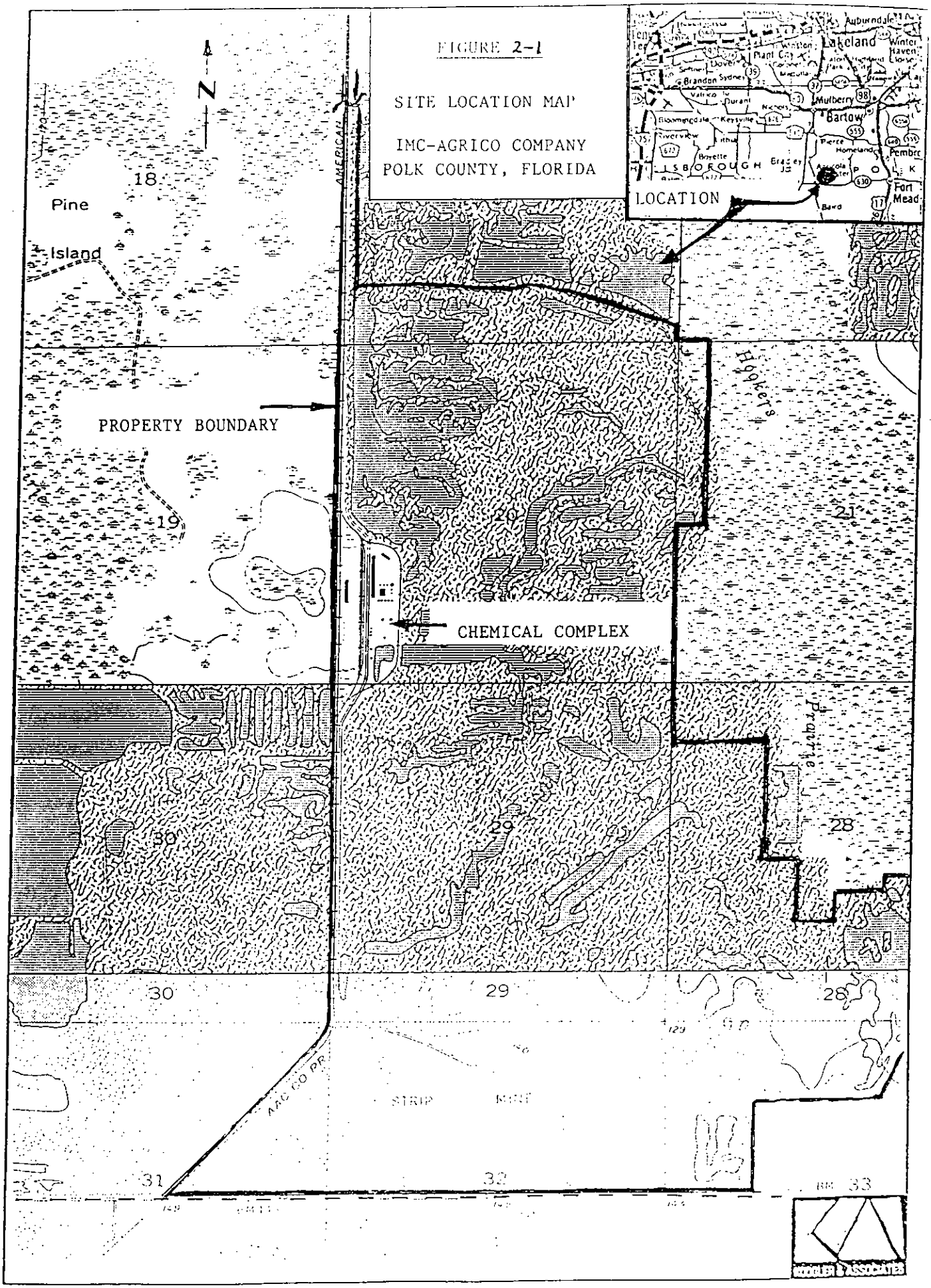


FIGURE 2-1
SITE LOCATION MAP
IMC-AGRICO COMPANY
POLK COUNTY, FLORIDA
LOCATION
Lakeland
Bartow
Mulberry
Fort Mead
N
Pine
Island
18
19
20
21
28
29
30
31
32
33
PROPERTY BOUNDARY
CHEMICAL COMPLEX
AMERICUS
Hooker's
Prairie
AAC CO PR
STRIP
MINE

FIGURE 2-2

PLOT PLAN

IMC-AGRICO COMPANY

POLK COUNTY, FLORIDA

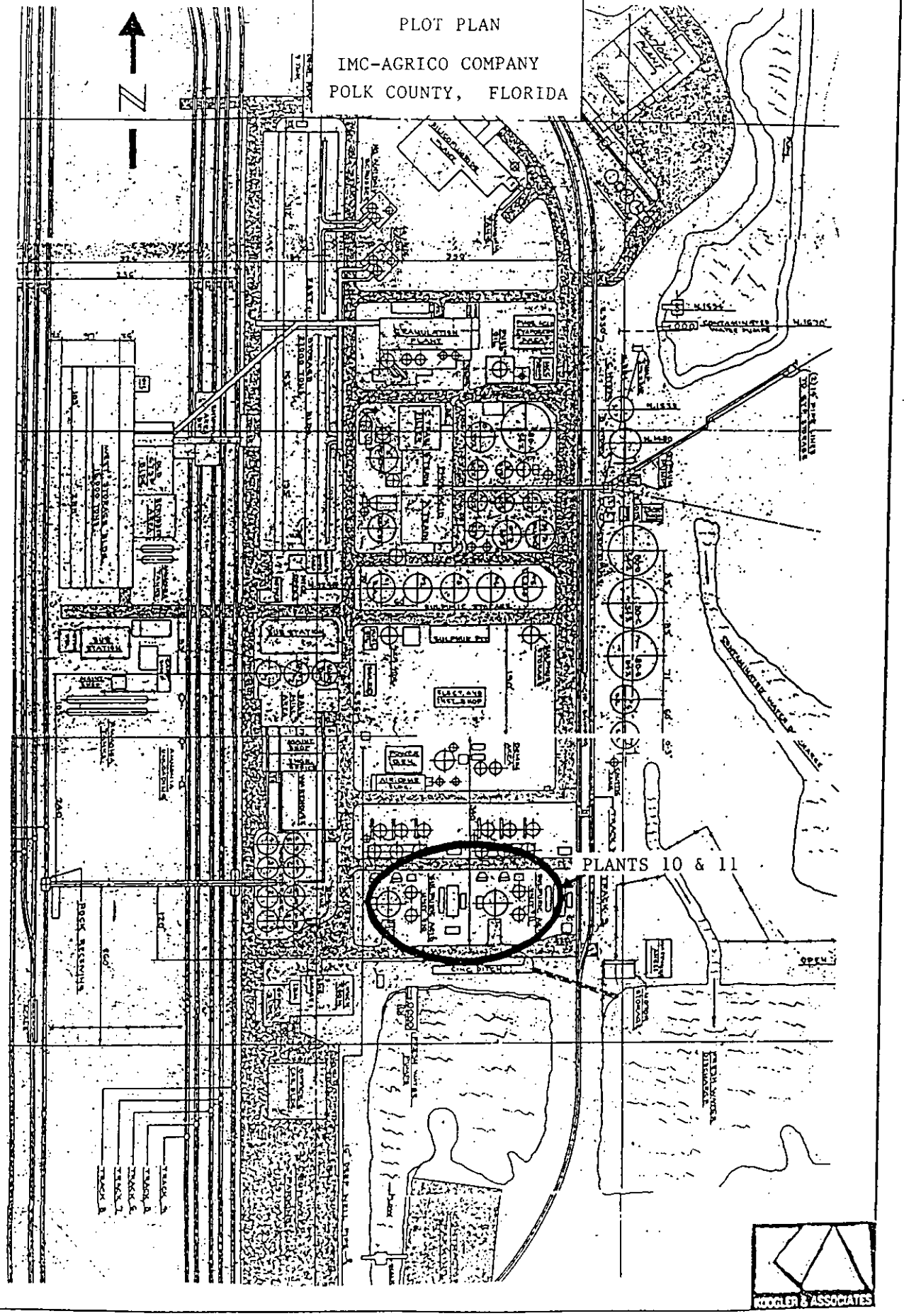
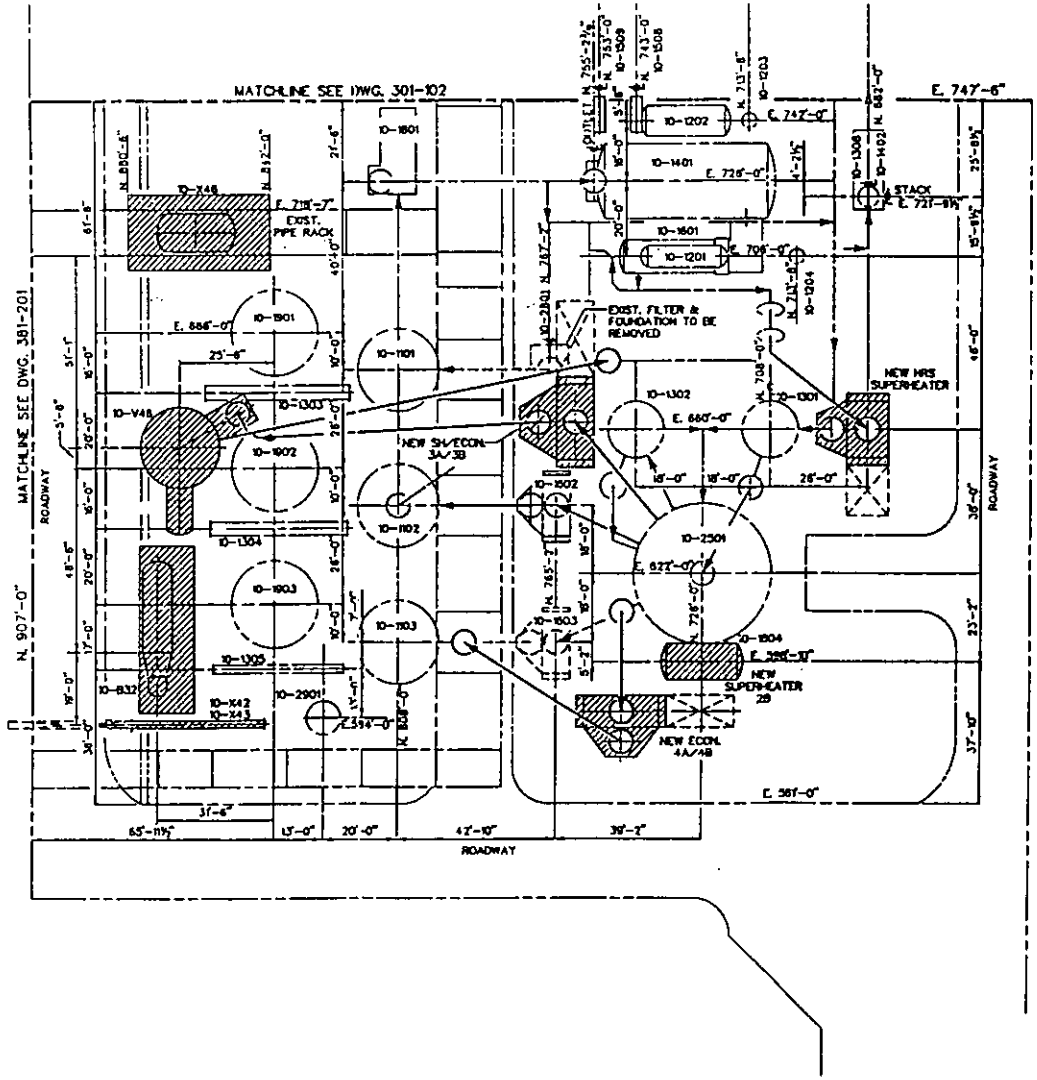


FIGURE 2-3 : PROCESS FLOW DIAGRAM

IMC-AGRICO COMPANY
SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA



EQUIPMENT LIST
(MAJOR EQUIPMENT ONLY)

NUMBER	DESCRIPTION	REMARKS
10-1101	DRYING TOWER	(EXISTING)
10-1102	NO. 1 ABSORPTION TOWER	(REMOVE)
10-1103	NO. 2 ABSORPTION TOWER	(EXISTING)
10-1301	HEAT EXCHANGER	(EXISTING)
10-1302	HEAT EXCHANGER	(EXISTING)
10-1303	DRYING TOWER ACID COOLER	(EXISTING)
10-1304	NO. 1 ABSORPTION TOWER ACID COOLER	(REMOVE)
10-1305	NO. 2 ABSORPTION TOWER ACID COOLER	(EXISTING)
10-1602	HEAT EXCHANGER	(REMOVE)
10-1603	HEAT EXCHANGER	(REMOVE)
10-1604	SUPER HEATER	(REMOVE)
10-1901	DRYING TOWER ACID PUMP TANK	(EXISTING)
10-1902	NO. 1 ABSORPTION TOWER ACID PUMP TANK	(REMOVE)
10-1903	NO. 2 ABSORPTION TOWER ACID PUMP TANK	(EXISTING)
10-2501	CONVERTER	(EXISTING)
10-2601	AIR FILTER	(REMOVE)
	SUPERHEATER/ECONOMIZER 3A/3B	NEW
	ECONOMIZER 4A/4B	NEW
	SUPERHEATER 2B	NEW
	HRS SUPERHEATER	NEW
10-832	HRS BOILER	NEW
10-P11A/B	HP BOILER FEED WATER PUMPS	NEW - NOT SHOWN
10-P3B	HRS CIRC. PUMP	NEW - NOT SHOWN
10-P40A/B	HRS DRAIN PUMPS	NEW - NOT SHOWN
10-P41A/B	HRS BOILER FEED WATER PUMPS	NEW - NOT SHOWN
10-V48	HRS TOWER/PUMP BOOT	NEW
10-X42	HRS HEATER	NEW
10-X43	HRS PREHEATER	NEW
10-X48	HRS DEAERATOR	NEW
10-Z48	HRS BLUTER	NEW - NOT SHOWN

NOTE:
NEW EQUIPMENT IS HIGHLIGHTED WITH CROSSHATCHING

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

SULFURIC ACID UNIT #10
AGRICO CHEMICAL CO. SOUTH PIERCE, FL.

BY	DATE	APP'D.	DATE	JOB NO.	REVISION

3.0 PROPOSED PROJECT

IMC-Agrico proposes to increase the sulfuric acid production rate of the South Pierce facility from 5,400 TPD to 6,000 TPD 100% acid, about an 11 percent increase. The production rate of each plants will increase from 2700 TPD to 3000 TPD 100% acid. The South Pierce molten sulfur throughput rate will proportionately increase from 650,000 TPY to 725,000 TPY.

The proposed sulfuric acid production increase will also result in an increase in waste heat recovery. Additional steam will be made available from the Heat Recovery Systems to the turbogenerator which produces electrical power.

The energy efficiency enhancements implemented under the previous PSD permit will accommodate the proposed increase in acid production and corresponding increase in steam generation. Some changes may be required to piping/pumps/ducting/fans to handle larger process flow rates.

3.1 AIR EMISSIONS

The emission limits for the sulfuric acid plants will be in accordance with the Federal New Source Performance Standards under 40 CFR 60, Subpart H, and the corresponding state rule, which limit SO_2 and SAM emissions to 4.0 and 0.15 pounds per ton of 100 percent sulfuric acid, respectively. Visible emissions are limited to 10 percent opacity.

Visible emissions from the molten sulfur system are limited under the state rule to 20 percent opacity. There are no mass emission standards for the molten sulfur system.

A summary of the permitted, actual and proposed operating characteristics of the two sulfuric acid plants and the molten sulfur system is presented in Table 3-1. The emission changes as a result of the proposed project are presented in Table 3-2. As indicated in Table 3-2, there will be a significant net increase, as defined in Rule 62-212, FAC, in the emissions of SO_2, NOx and SAM.

There are fugitive emissions from process operations and vehicular traffic on paved roads at the facility, as acknowledged by existing FDEP permits. Changes in fugitive emissions as a result of the proposed 11 percent increase in sulfuric acid production rate are expected to be negligible and do not affect the rule applicability for the project.

Contemporaneous emission changes associated with this project consist of those documented and submitted to FDEP for NOx from the previous plant modification in 1991 (+25.7 TPY). At that time PSD review was triggered for only SO_2 and SAM.

Emission calculations are presented in Appendix A.

3.2 RULE REVIEW

The following are the state and federal air regulatory requirements that apply to new or modified sources subject to a Prevention of Significant Deterioration (PSD) review.

In accordance with EPA and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) are subject to preconstruction review. Florida's State Implementation Plan (SIP), approved by the EPA, authorizes the Florida Department of Environmental Protection (FDEP) to manage the air pollution program in Florida.

The PSD review determines whether or not significant air quality deterioration will result from a new or modified facility. Federal PSD regulations are contained in 40CFR52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted PSD regulations which are essentially identical to the federal regulations and are contained in Chapter 62-212 of the Florida Administration Code (FAC).

All new major facilities and major modifications to existing facilities are subject to control technology review, source impact analysis, air quality analysis and additional impact analyses for each pollutant subject to a PSD review. A facility must also comply with the Good Engineering Practice (GEP) stack height rule.

A major facility is defined in the PSD rules as any one of the 28 specific source categories (see Table 3-3) which has the potential to emit 100 tons per year (tpy) or more, or any other stationary facility which has the potential to emit 250 tpy or more, of any pollutant regulated under the Clean Air Act. A major modification is defined in the PSD rules as a change at an existing major facility which increases the actual emissions by greater than significant amounts (see Table 3-4).

3.2.1 Ambient Air Quality Standards

The EPA and the state of Florida have developed/adopted ambient air quality standards, AAQS (see Table 3-5). Primary AAQS protect the public health while the secondary AAQS protect the public welfare from adverse effects of air pollution. Areas of the country have been designated as attainment or nonattainment for specific pollutants. Areas not meeting the AAQS for a given pollutant are designated as nonattainment areas for that pollutant. Any new source or expansion of existing sources in or near these nonattainment areas are usually subject to more stringent air permitting requirements. Projects proposed in attainment areas are subject to air permit requirements which would ensure continued attainment status.

3.2.2 PSD Increments

In promulgating the CAA Amendments, Congress quantified concentration increases above an air quality baseline concentration levels for sulfur dioxide (SO_2) and particulate matter less than 10 microns (PM10) which would constitute significant deterioration. The size of the allowable increment depends on the classification of the area in which the source

would be located or have an impact. Class I areas include specific national parks, wilderness areas and memorial parks. Class II areas are all areas not designated as Class I areas and Class III areas are industrial areas in which greater deterioration than Class II areas would be allowed. There are no designated Class III areas in Florida.

In 1988, EPA promulgated PSD regulations for nitrogen oxides (NOx) and PSD increments for nitrogen dioxide (NO_2) concentrations. FDEP adopted the NO_2 increments in July 1990 (see Table 3-6 for PSD increments).

In the PSD regulations, baseline concentration is defined as the ambient concentration level for a given pollutant which exists in the baseline area at the time of the applicable baseline date and includes the actual emissions representative of facilities in existence on the applicable baseline date, and the allowable emissions of major stationary facilities which commenced construction before January 6, 1975, but were not in operation by the applicable baseline date.

The emissions not included in the baseline concentration and, therefore, affecting PSD increment consumption are the actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM10, and February 8, 1988, for NO_2, and the actual emission increases and decreases at any stationary facility occurring after the baseline date.

3.2.3 Control Technology Evaluation

The PSD control technology review requires that all applicable federal and state emission limiting standards be met and that Best Available Control Technology (BACT) be applied to the source. The BACT requirements are applicable to all regulated pollutants subject to a PSD review.

BACT is defined in Chapter 62-210, FAC as an emission limitation, including a visible emission standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead, to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation. Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

The reason for evaluating the BACT is to minimize as much as possible the consumption of PSD increments and to allow future growth without significantly degrading air quality. The BACT review also analyzes if the most current control systems are incorporated in the design of a proposed

facility. The BACT, as a minimum, has to comply with the applicable New Source Performance Standard for the source. The BACT analysis requires the evaluation of the available air pollution control methods including a cost-benefit analysis of the alternatives. The cost-benefit analysis includes consideration of materials, energy, and economic penalties associated with the control systems, as well as environmental benefits derived from the alternatives.

EPA recently determined that the bottom-up approach (starting at NSPS and working up to BACT) was not providing the level of BACT originally intended. As a result, in December 1987, EPA strongly suggested changes in the implementation of the PSD program including the "top-down" approach to BACT. The top-down approach requires an application to start with the most stringent control alternative, often Lowest Achievable Emission Rate (LAER), and justify its rejection or acceptance as BACT. Rejection of control alternatives may be based on technical or economical infeasibility, physical differences, locational differences, and environmental or energy impact differences when comparing a proposed project with a project previously subject to that BACT.

3.2.4 Air Quality Monitoring

An application for a PSD permit requires an analysis of ambient air quality in the area affected by the proposed facility or major modification. For a new major facility, the affected pollutants are those that the facility would potentially emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate.

Ambient air monitoring for a period of up to one year, but no less than four months, is required. Existing ambient air data for a location in the vicinity of the proposed project is acceptable if the data meet FDEP quality assurance requirements. If not, additional data would need to be gathered. There are guidelines available for designing a PSD air monitoring network in EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration."

FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause air quality impacts less than the de minimis levels (see Table 3-4).

3.2.5 Ambient Impact Analysis

A source impact analysis is required for a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rate. Specific atmospheric dispersion models are required in performing the impact analysis. The analysis should demonstrate the project's compliance with AAQS and allowable PSD increments. The impact analysis for criteria pollutants may be limited to only the new or modified source if the net increase in impacts due to the new or modified source is below significant impact levels.

Typically, a five-year period is used for the evaluation of the highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" refers to the highest of the second-highest concentrations at all receptors. The second-highest concentration is considered because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than five years of meteorological data are used in the modeling analysis, the highest concentration at each receptor is normally used.

3.2.6 Additional Impact Analysis

The PSD rules also require analyses of the impairment to visibility and the impact on soils and vegetation that would occur as a result of the project. A visibility impairment analysis must be conducted for PSD Class I areas along with an air quality related values (AQRV) analysis. Impacts due to commercial, residential, industrial, and other growth associated with the source must be addressed.

3.2.7 Good Engineering Practice Stack Height

In accordance with Rule 62-210, FAC, the degree of emission limitation required for control of any pollutant should not be affected by a stack height that exceeds GEP, or any other dispersion technique. GEP stack height is defined as the highest of:

1. 65 meters (m), or
2. A height established by applying the formula:
   $Hg = H + 1.5\ L$
   where:
   Hg - GEP stack height,
   H - Height of the structure or nearby structure, and
   L - Lesser dimension, height or projected width of nearby structure(s)
3. A height demonstrated by a model or field study.

The GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height. The actual stack height may be higher or lower.

3.3 RULE APPLICABILITY

The sulfuric acid production increase at South Pierce is classified as a major modification to a major facility subject to both state and federal regulations as set forth in Chapter 62-212, FAC.

The facility is located in an area classified as attainment for each of the regulated air pollutants.

The proposed modification to the Nos. 10 and 11 sulfuric acid plants and the molten sulfur system will result in significant increases in SO_2, NOx and SAM emissions as defined by Rule 62-212, FAC, and will therefore be subject to PSD preconstruction review requirements. This will include a determination of Best Available Control Technology (BACT), an air quality review, Good Engineering Practice stack height analysis and an evaluation of impacts on soils, vegetation and visibility.

TABLE 3-1

CHANGES IN PRODUCTION AND EMISSION RATES

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

	Sulfuric Acid Plant 10	Sulfuric Acid Plant 11	Molten Sulfur System
Permit Allowable Conditions : Based on permits			
Rate (TPD)	2700	2700	2050
SO_2 (lb/hr)	450	450	2.77
(TPY)	1971	1971	8.9
Mist (lb/hr)	16.9	16.9	NA
(TPY)	73.9	73.9	NA
Annual Operating Hours	8760	8760	8760
Actual Conditions : Based on most recent 2-year data (FDEP files)			
Rate (TPD)	2700	2700	2050
SO_2 (lb/hr)	399	370	2.77
(TPY)	1695	1499	8.9
Mist (lb/hr)	4.4	2.4	NA
(TPY)	18.7	9.7	NA
NOx (lb/hr)	10.0	8.6	NA
(TPY)	42.5	34.8	NA
Annual Operating Hours	8498	8104	8760
Proposed Conditions			
Rate (TPD)	3000	3000	2300
SO_2 (lb/hr)	500	500	3.1
(TPY)	2190	2190	9.9
Mist (lb/hr)	18.8	18.8	NA
(TPY)	82.1	82.1	NA
NOx (lb/hr)	15	15	NA
(TPY)	65.7	65.7	NA
Annual Operating Hours	8760	8760	8760

NOTE:

1. See Appendix for calculations of emission rates.
2. Actual operation data based on the most recent 2-year compliance test data and annual operating hours information submitted to FDEP and currently in FDEP files.

TABLE 3-2

NET EMISSION INCREASES(1)

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Pollutant	Emissions (tons/yr)		
	Sulfuric Acid Plants		Molten Sulfur System
	10	11	
SO_2			
Present (actual)	1695	1499	8.9
Proposed	2190	2190	9.9
Change	495	691	1
Contemporaneous Changes		0	
Total Increase		1187	
Significant Increase (3)		40	
PSD Review ?		YES	
MIST			
Present (actual)	18.7	9.7	
Proposed	82.1	82.1	
Change	63.4	72.4	
Contemporaneous Changes		0	
Total Increase		135.8	
Significant Increase (3)		7	
PSD Review ?		YES	
NOx			
Present (actual)(2)	42.5	34.8	
Proposed(2)	65.7	65.7	
Change	23.2	30.9	
Contemporaneous Changes (2)		25.7	
Total Increase		79.8	
Significant Increase (3)		40	
PSD Review ?		YES	

(1) See Appendix for emission calculations.
(2) NOx contemporaneous changes are from the previous PSD project (1991).
(3) Significant levels are listed in Rule 62-212, FAC.

TABLE 3-3

MAJOR FACILITY CATEGORIES

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Fossil fuel fired steam electric plants, more than 250 MMBTU/hr heat input
Coal cleaning plants (with thermal dryers)
Kraft pulp mills
Portland cement plants
Primary zinc smelters
Iron and steel mill plants
Primary aluminum ore reduction plants
Primary copper smelters
Municipal incinerators capable of charging more than 250 tons of refuse per day
Hydrofluoric acid plants
Sulfuric acid plants
Nitric acid plants
Petroleum refineries
Lime plants
Phosphate rock processing plants
Coke oven batteries
Sulfur recovery plants
Carbon black plants (furnace process)
Primary lead smelters
Fuel conversion plants
Sintering plants
Secondary metal production plants
Chemical process plants
Fossil fuel boilers (or combinations thereof) totaling more than 250 million
BTU/hr heat input
Petroleum storage and transfer units with total storage capacity exceeding 300,000 barrels
Taconite ore processing plants
Glass fiber processing plants
Charcoal production plants

TABLE 3-4

REGULATED AIR POLLUTANTS - SIGNIFICANT EMISSION RATES

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Pollutant	Significant Emission Rate tons/yr	De Minimis Ambient Impacts ug/m3
CO	100	575 (8-hour)
NOx	40	14 (NO2, Annual)
SO_2	40	13 (24-hour)
Ozone	40 (VOC)	-
PM	25	10 (24-hour)
PM10	15	10 (24-hour)
TRS (including H2S)	10	0.2 (1-hour)
H2SO4 mist	7	-
Fluorides	3	0.25 (24-hour)
Vinyl Chloride	1	15 (24-hour)
	pounds/yr	
Lead	1200	0.1 (Quarterly avg)
Mercury	200	0.25 (24-hour)
Asbestos	14	-
Beryllium	0.8	0.001 (24-hour)

TABLE 3-5

AMBIENT AIR QUALITY STANDARDS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Pollutant	FDEP (State)		USEPA (National)			
			Primary		Secondary	
	ug/m3	PPM	ug/m3	PPM	ug/m3	PPM
SO_2, 3-hour	1,300	0.5	-	-	1300	0.5
24-hour	260	0.1	365	0.14	-	-
Annual	60	0.02	80	0.03	-	-
PM10, 24-hour	150	-	150	-	150	-
Annual	50	-	50	-	50	-
CO, 1-hour	40,000	35	40,000	35	-	-
8-hour	10,000	9	10,000	9	-	-
Ozone, 1-hour	235	0.12	235	0.12	235	0.12
NO_2, Annual	100	0.053	100	-	100	-
Lead, Quarterly	1.5	-	1.5	-	1.5	-

TABLE 3-6

PSD INCREMENTS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Pollutant	Allowable PSD Increments (State/National) Class I ug/m3	Class II ug/m3	Class III ug/m3
PM10, Annual	4	17	34
24-hour	8	30	60
SO_2, Annual	2	20	40
24-hour	5	91	182
3-hour	25	512	700
NO2, Annual	2.5	25	50

4.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control air pollutants emitted from newly constructed major sources or from modification to the major emitting facilities if the modification results in significant increase in the emission rate of regulated pollutants (see Table 3-4 for significant emission levels).

The emission rate increases proposed by IMC-Agrico have been summarized in Table 3-2. The SO_2, SAM and NOx emissions increase from the proposed project will represent a significant increase.

The SO_2, SAM and NOx are present in the tail gas from all contact process sulfuric acid plants. In a typical plant with a single absorption system, the sulfur dioxide in the tail gas is approximately 30 pounds per ton of acid produced and the acid mist is approximately 4 pounds per ton of acid produced. The nitrogen oxides that are present in the tail gas are formed in the sulfur burners as a result of the fixation of atmospheric nitrogen. Recent measurements have indicated that the concentration of nitrogen oxides in the tail gas from a sulfuric acid plant can be around 0.12 pound per ton of acid produced.

4.1 EMISSION STANDARDS FOR SULFURIC ACID PLANTS

Federal New Source Performance Standards (NSPS) for sulfuric acid plants became effective on August 17, 1971. These standards are codified in 40 CFR 60, Subpart H and require sulfur dioxide emissions to be limited to no more than 4.0 pounds per ton of 100 percent acid produced and require that sulfuric acid mist emissions be limited to no more than 0.15 pounds per ton of 100 percent acid produced. Additionally, the standards limit the opacity of the emissions from new sulfuric acid plants to less than 10 percent. There are no emission standards for nitrogen oxides from sulfuric acid plants.

EPA's most recent review of the New Source Performance Standards for sulfuric acid plants in 1985 (EPA-450/3-85-012), concluded that because of variations in sulfur dioxide emissions as a function of catalyst age:

> "... the level of SO_2 emissions as specified in the current NSPS (should) not be changed ...."

Regarding the NSPS for sulfuric acid mist, EPA concluded:

> "Making the acid mist standard more stringent is not believed to be practical at this time because of the need to provide a margin of safety due to in-plant operating fluctuations, which introduce variable quantities of moisture into the sulfuric acid production line."

There has been no change in EPA philosophy related to sulfuric acid plants since the 1985 review.

A review of BACT/LAER determinations published in the EPA Clearinghouse indicates that no new control alternatives have been applied to the double absorption sulfuric acid plants as of 1996 that would result in a consistent reduction in sulfur dioxide emission below 4.0 pounds per ton of acid nor would result in a consistent reduction of sulfuric acid mist

emissions below 0.15 pounds per ton of acid. No control technologies for nitrogen oxides are discussed in either the NSPS review or in BACT/LAER determinations as there is typically no control of NOx from the double absorption sulfuric acid plants.

4.2 CONTROL TECHNOLOGIES

The control of sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants can be achieved by various processes. The process of choice for sulfur dioxide control has been dual absorption and the process of choice for controlling sulfuric acid mist emission has been one of the various types of fiber mist eliminators. These processes have been selected based on cost, product recovery, the formation of no undesirable by-products and the fact that neither introduces operating processes that are foreign to plant personnel.

In EPA's review of NSPS for sulfuric acid plants in March 1985 (EPA-450/3-85-012), 46 sulfuric acid plants built between 1971 and 1985 were reviewed. Of these 46 plants, 40 used the dual absorption process for sulfur dioxide control with the remaining six using some type of acid gas scrubbing. All 46 plants used the high efficiency mist eliminators for acid mist control. The control of nitrogen oxides in sulfuric acid plants has not been addressed to date because the low concentration of nitrogen oxides in the tail gases of sulfuric acid plants (10-20 parts per million) does not lend itself to cost effective controls.

Also in the EPA review, several potential control technologies that had been used to control sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants were addressed. The alternatives included the dual absorption process, ammonia scrubbing, sodium sulfite-bisulfite scrubbing, and molecular sieves for sulfur dioxide control and filter type mist eliminators and electrostatic precipitators for sulfuric acid mist control. A review of the EPA BACT/LAER Clearinghouse information indicated that no other control alternatives have been considered for sulfuric acid plants. No control alternatives were addressed for nitrogen oxides control in either the 1985 EPA NSPS review or in the BACT/LAER Clearinghouse.

4.2.1 Sulfur Dioxide Control

The control alternatives for sulfur dioxide have been summarized based upon information compiled by EPA in the 1985 NSPS review for sulfuric acid plants, and based on information recently submitted to FDEP by similar sulfuric acid plants during review of their production increase requests (refer to PSD-FL-225 & 229).

4.2.1.1 Dual Absorption Process

The dual absorption process has become the SO_2 control system of choice within the sulfuric acid industry since the promulgation of NSPS in 1971. Of the 46 new sulfuric acid plants constructed between 1971 and 1985, 40 employed this process for sulfur dioxide control. The process offers the following advantages over other SO_2 control technologies:

1. 99.4 percent of the sulfur is converted to sulfuric acid

compared with 97.7 percent conversion with a single absorption plant followed by scrubbing;

2. there are no by-products produced;

3. there are no new operating processes that plant personnel must become familiar with;

4. the process permits higher inlet sulfur dioxide concentrations resulting in a reduction in equipment size;

5. there is no reduction in overall plant operating time efficiency; and

6. there is no increase in manpower requirements.

The dual absorption process is capable of reducing sulfur dioxide emission rates to less than 4.0 pounds per ton of acid as required by New Source Performance Standards. However, in an effort to maximize production, most plants in the fertilizer industry tend to run at emission levels close to the permitted rates. As the catalyst ages, the production level is gradually reduced to keep the emissions within permitted levels. When the production level drops below a given threshold, the plant is shut down for turnaround. This typically occurs every 18 months.

It should be noted that more frequent turnarounds would not alter the emissions from the plant. It would only result in a higher production rate, on average, at a greater operating cost.

4.2.1.2 Sodium Sulfite-Bisulfite Scrubbing

Between 1971 and 1985, two sulfuric acid plants were constructed employing sodium sulfite-bisulfite scrubbing to control sulfur dioxide emissions. One of the plants was subsequently converted to ammonia scrubbing and the second plant has never been used. As a result, sodium sulfite-bisulfite scrubbing is not considered a demonstrated sulfur dioxide control alternative.

4.2.1.3 Ammonia Scrubbing

Ammonia scrubbing uses anhydrous ammonia and water in a scrubbing system to convert sulfur dioxide to ammonium sulfate. Depending upon the market, the ammonium sulfate can be converted to a fertilizer grade product.

Five sulfuric acid plants constructed between 1971 and 1985 use ammonia scrubbing for sulfur dioxide control. The process has proved effective for reducing sulfur dioxide emissions to below 4.0 pounds per ton and also for controlling sulfuric acid mist emissions. However, this process is used in conjunction with single absorption plants.

The major disadvantages of the ammonia scrubbing system, when compared with the dual absorption process are:

1. a waste by-product is produced unless there is a market for fertilizer grade ammonium sulfate;

2. the scrubbing system is a high maintenance item and requires additional manpower for operation; and

3. no sulfuric acid plant size reduction benefits are achieved with the scrubbing system.

4.2.1.4 Molecular Sieves

A molecular sieve was installed at one sulfuric acid plant in Florida for sulfur dioxide control. Extensive operating problems were experienced as the molecular sieve absorbed nitrogen oxides as well as sulfur dioxide. The regeneration of these gases resulted in the formation of nitric acid within the sulfuric acid plant. The nitric acid/sulfuric acid mixture resulted in severe corrosion problems which caused the molecular sieve system to be scrapped. As a result, molecular sieves are not considered a viable alternative for sulfur dioxide control in the sulfuric acid industry.

4.2.2 Sulfuric Acid Mist Control

Control alternatives that were reviewed by EPA in the 1985 New Source Performance Standards review are summarized in the following sections.

4.2.2.1 Fiber Mist Eliminators

The 46 new sulfuric acid plants constructed between 1971 and 1985, all used the fiber type mist eliminators for sulfuric acid mist control. Operations demonstrated that these types of mist eliminators can control sulfuric acid mist emissions to less than 0.15 pounds per ton of sulfuric acid.

The mist eliminators are the choice of control for sulfuric acid mist within the sulfuric acid industry because they require very little operation and maintenance attention and because of the small space requirement associated with these devices. The disadvantage of this type of mist eliminator is that the pressure drop across the elements varies from five to 15 inches of water; resulting in an increase in operating utility costs.

4.2.2.2 Electrostatic Precipitators

Electrostatic precipitators (ESPs) have the potential for controlling sulfuric acid mist emissions from sulfuric acid plants; however, there is no demonstrated application of ESPs. The disadvantages associated with ESPs and hence, the reason they have not been used, include the initial cost, size requirements, operating and maintenance requirements and the potential for corrosion.

4.2.3 Nitrogen Oxides Control

There are no demonstrated control technologies to reduce the nitrogen oxides that are present in the tail gas from sulfuric acid plants. No control alternatives were addressed for nitrogen oxides control in either the 1985 EPA NSPS review or in the BACT/LAER Clearinghouse.

4.4 BACT CONCLUSION

The FDEP's BACT determinations for all the recently permitted sulfuric acid plants, with due consideration given to other available control technology options, reflect the use of the dual absorption process for sulfur dioxide control and fiber mist eliminators for sulfuric acid mist control. Therefore, the dual absorption process is selected by IMC-Agrico as the control alternative for sulfur dioxide control and the fiber type high efficiency mist eliminator is selected for sulfuric acid mist control.

No add-on control is proposed for NOx emissions as there is no effective and demonstrated technology relative to sulfuric acid plants.

No add-on control is proposed for the SO_2 emissions from the molten sulfur system as there is no reference in any BACT/LAER determination of practical, effective and demonstrated technology.

5.0 AIR QUALITY REVIEW

The air quality review for the proposed project included emission increases associated with the two sulfuric acid plants and the molten sulfur system. The modeling associated with this review demonstrated that:

(1) the maximum predicted air impacts of NOx emission increases are less than significant;

(2) the maximum predicted air impacts of SAM emissions are below the 8-hour Florida Air Reference Concentration (ARC), but slightly above the 24-hour ARC (still within FDEP's approval criteria);

(3) the maximum predicted air impacts of sulfur dioxide emission increases are greater than the Class II area significant level for the 24-hour averaging period, but do not result in an exceedance of the ambient air quality standards or the allowable Class II area PSD increments; and,

(4) the maximum predicted impacts of sulfur dioxide emission increases are less than significant for the Class I area.

5.1 AIR QUALITY MODELING

A preliminary modeling analysis was conducted to determine the ambient air impacts resulting from increases in NOx, SAM and SO_2 emissions as a result of the proposed project. Based upon the results of the preliminary modeling, additional modeling was required only for SO_2.

5.1.1 Significant Impact Analysis

An analysis of the net impacts resulting from the increase in NOx, SAM and SO_2 emissions was conducted using the Industrial Source Complex-Short Term air quality model, Version 96113 (ISC3). The Significant Impact Analysis (SIA) modeling was conducted in accordance with guidelines established by EPA and published in the document, Guideline for Air Quality Modeling, (Revised), July 1986.

The SO_2 emissions modeled for the SIA were the net increase in emissions associated with the increases in the production rate of the two existing sulfuric acid plants and molten sulfur system. The currently permitted SO_2 emissions were represented as negative inputs while the proposed SO_2 emissions from the proposed project were represented as positive inputs to the model. For NOx and SAM, the proposed emissions were modeled without any negative inputs representing existing emission levels. The plants were modeled at annual hours of operation of 8760. Modeling inputs are presented in Table 5-1.

The Class II area SIA modeling included discrete receptors located along the property boundary and additional receptors located on a polar grid system extending beyond the property boundary. Fourteen sets of receptor rings were selected at distances ranging from 3 to 26 kilometers from the plant. The receptors were located at 10 degree intervals (10-360 degrees) on each receptor ring.

A SIA was also conducted for the nearest Class I area, Chassahowitzka National Wildlife Refuge, located about 115 kilometers from the plant. Although the ISC3 model is not generally recommended for impact analyses beyond 50 kilometers from a source, it has been accepted by FDEP, EPA and the NPS as a preliminary "screening" model to determine the potential impacts of the proposed project on the Class I area beyond 50 kilometers. From a practical standpoint, the regulatory agency has accepted ISC3 modeling analyses in these types of circumstances mainly because (a) the impacts predicted by the ISC model over such long distances are far greater (more conservative) than impacts predicted by the EPA recommended MESOPUFF (long range transport) model; and, (b) effort intensive MESOPUFF modeling could potentially be avoided by favorable ISC3 results.

The Class I area SIA modeling included 13 discrete receptors previously determined by FDEP to be representative of the Chassahowitzka National Wildlife Refuge.

The meteorological data used for the modeling were for Tampa, Florida and represented the five consecutive year period of 1987-1991.

5.1.1.1 Significant Impact Analysis for Nitrogen Oxides

The modeling results indicated maximum predicted NOx air impacts well below Class I and Class II area significant levels and, therefore, additional refined modeling was not necessary. The NOx SIA results are summarized in Table 5-2.

5.1.1.2 Significant Impact Analysis for Sulfuric Acid Mist

No ambient air quality standards, PSD increments or significant impact levels have been established for sulfuric acid mist. However, FDEP has established an Air Reference Concentration (ARC) for SAM as part of an Air Toxics Strategy for air permitting.

The predicted sulfuric acid mist air quality impacts are summarized in Table 5-2. It was estimated that because of the expected magnitude of the sulfuric acid mist emissions from other sources and the distances of these sources from IMC-Agrico, it would be very unlikely that any of the sources, individually or collectively, would result in a significant contribution to ambient acid mist levels in the project area.

The maximum predicted sulfuric acid mist impacts occur at locations which are both remote and far from the population centers. On the west side of the IMC-Agrico facility there is a large settling pond and on the east side is Hookers Prairie. Both those areas are fairly inaccessible. Furthermore, the sulfuric acid mist will be controlled by the Best Available Control Technology. As a result, the sulfuric acid mist emissions are not expected to be of great concern.

5.1.1.3 Significant Impact Analysis for Sulfur Dioxide

The results of the ISC3 air dispersion modeling for the Class II area SO_2 SIA modeling, summarized in Table 5-3, demonstrated that the maximum predicted impacts of emission increases associated with the proposed

project in the vicinity of the plant were significant (as defined in Rule 62-210, FAC) for the 24-hour period, and less than significant for the 3-hour and annual periods. The SIA modeling also demonstrated that the maximum predicted impacts from the proposed project were not significant beyond 3 kilometers from the plant.

As the predicted 24-hour SO_2 impacts were less than the de minimis impact level of 13 ug/m3, ambient air monitoring was not required for the proposed project.

Since the predicted Class II area SO_2 impacts from the proposed project were greater than significant for the 24-hour period, additional modeling was conducted to determine compliance with the 24-hour ambient air quality standard and allowable Class II area PSD increment.

The results of the Class I area SIA indicated less than significant impacts from the proposed project in accordance with the FDEP and proposed EPA significant impact criteria. However, the predicted 3-hour and 24-hour impacts were above the significant impact guideline levels suggested by the NPS.

As the Class I area impacts were below the significant impact levels listed in the EPA's proposed NSR rules, while using a very conservative modeling approach, it is expected that the proposed project will not cause any adverse impacts to the Class I area. Based on the SIA results, summarized in Table 5-3, no additional modeling was deemed necessary.

5.1.2 Ambient Air Quality Standards Analysis

Ambient air quality standards (AAQS) have been established for several criteria pollutants to protect the health and welfare of the general public. Modeling was conducted to estimate the maximum 24-hour impacts from all the significant SO_2 emitting sources in the vicinity of the plant. Significant sources upto 110 kilometers from the proposed project were identified using the FDEP approved "20xD" analysis. A list of the facilities modeled, is provided in Appendix B. The receptor grid was limited to receptors located within 3 kilometers of the plant, corresponding to the area of significant impact identified by the SIA.

Background levels for sulfur dioxide were assumed to be 9 ug/m^3 (FDEP 1994 air monitoring data, annual period). As stated in previous analyses, an assumption of a non-zero background concentration is conservative as all the significant SO_2 emitting facilities in the vicinity of the plant, which contribute to the background concentration, are already included in the emission inventory used for the air modeling. Using a background level in the analysis simply results in considerable double-counting.

The results of the AAQS modeling, summarized in Table 5-4, show that the maximum predicted impacts from all the sources modeled are well within the AAQS.

5.1.3. PSD Increment Analysis

To evaluate the SO_2 PSD increment consumption, the emission rates of all sources creating a significant impact at the project site constructed or permitted after applicable baseline dates are input to the model along with emission rate reductions after the baseline dates. The impacts of these emission rate increases and decreases are then compared with the allowable PSD increments for the applicable periods of time.

Sulfur dioxide emitting facilities listed on FDEP's SO_2 source inventory were screened using the "20xD" criteria to compile the source inventory used in the modeling. A list of significant sources is provided in Appendix B. The receptor grid was limited to receptors located within 3 kilometers of the plant, corresponding to the area of significant impact identified by the SIA.

The results of the PSD increment analysis, presented in Table 5-4, indicate maximum predicted SO_2 air impacts well below the allowable 24-hour Class II PSD increment.

TABLE 5-1

AIR QUALITY MODELING PARAMETERS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

Emission Unit		Stack Ht (m)	Stack Dia (m)	Stack Gas Vel (mps)	Stack Gas Temp (°K)	Emission Rates SO_2 (g/s)	Emission Rates SAM (g/s)	Emission Rates NOx (g/s)
10	Exist.	44.18	2.74	13.29	350	-56.7	NA	NA
	Prop.	44.18	2.74	14.79	350	63.0	2.4	1.9
11	Exist.	44.18	2.74	13.29	350	-56.7	NA	NA
	Prop.	44.18	2.74	14.79	350	63.0	2.4	1.9
Molten Sulfur								
	Exist.	3.0	0.3	17.5	366	-0.35	NA	NA
	Prop.	3.0	0.3	17.5	366	0.39	NA	NA

NOTES:

1. The molten sulfur system stack corresponds to the truck pit forced ventilation vent(s) which is the largest sulfur dioxide emitting exhaust within the system.

2. Building downwash effects, from the EPA approved BPIP program, were included in the modeling.

TABLE 5-2

SUMMARY OF NITROGEN OXIDES AND SULFURIC ACID MIST
SIGNIFICANT IMPACT ANALYSIS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

METEOROLOGICAL DATA	MAXIMUM PREDICTED IMPACTS (ug/m^3) (1)			
	NITROGEN OXIDES		SULFURIC ACID MIST	
	CI ANNUAL(2)	CII ANNUAL(2)	8-HOUR	24-HOUR
1987	0.002	0.27	7.9	3.9
1988	0.003	0.29	7.0	3.9
1989	0.004	0.21	8.2	4.1
1990	0.002	0.32	8.8	3.8
1991	0.002	0.31	7.4	3.5
Significant Impact (Rule 62-210,FAC)	NA	1.0	NA	NA
Significant Impact EPA, Proposed	0.1	NA	NA	NA
Significant Impact NPS, Guideline	0.03	NA	NA	NA
Florida Guideline Air Reference Concentration (ARC)	NA	NA	10.0	2.4 (3)
De minimis Impact (62-212,FAC)	NA	14.0	NA	NA

NOTE:

(1) The above maximum predicted impacts represent the highest-high impacts, as requested by FDEP.

(2) NOx Class I and Class II area impacts, respectively.

(3) The predicted impacts are less than significant. However, the predicted 24-hour period SAM impact is above the FDEP ARC.

TABLE 5-3

SUMMARY OF SULFUR DIOXIDE
SIGNIFICANT IMPACT ANALYSIS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT (ug/m^3)					
	CLASS I AREA			CLASS II AREA		
	ANNUAL (1)	3-HOUR (2)	24-HOUR (2)	ANNUAL (1)	3-HOUR (2)	24-HOUR (2)
1987	0.006	0.81	0.11	0.29	19.04	5.53 (3)
1988	0.009	0.67	0.11	0.20	16.85	4.16
1989	0.013	0.77	0.15	0.27	16.11	4.49
1990	0.007	0.64	0.14	0.33	19.93	5.32 (3)
1991	0.006	0.56	0.10	0.28	17.68	6.01 (3)
Sig. Impact (62-210,FAC)	NA	NA	1.0	1.0	25.0	**5.0**
De minimis Level (62-212,FAC)	NA	NA	NA	NA	NA	13.0
Sig. Impact EPA Proposed	0.1	1.0	0.2	NA	NA	NA
Sig. Impact NPS Guidance	0.03	**0.48**	**0.07**	NA	NA	NA

NOTE:

(1) The above maximum predicted impacts represent the highest-high impacts, in accordance with Rule 62-210, FAC.

(2) The above maximum predicted impacts represent the highest-second high impacts, in accordance with Rule 62-210, FAC.

(3) Predicted impacts are significant only for the Class II area 24-hour period.

TABLE 5-4

SUMMARY OF SULFUR DIOXIDE
AMBIENT AIR STANDARDS ANALYSIS

IMC-AGRICO COMPANY - SOUTH PIERCE PLANT
POLK COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT (ug/m^3) (1)	
	FAAQS 24-HOUR	CLASS II AREA PSD INCREMENT 24-HOUR
1987	164.5	42.83
1988	142.7	31.67
1989	163.7	26.96
1990	176.5	30.93
1991	161.3	45.54
Background Conc.	9.0	NA
Maximum Impact	185.5	45.54
Standard/ Increment	260	91

NOTE:

(1) The above maximum predicted impacts represent the highest-second high impacts, in accordance with Chapter 62, FAC.

6.0 GOOD ENGINEERING PRACTICE STACK HEIGHT

The criteria for good engineering practice stack height in Rule 62-210, FAC, states that the height of a stack should not exceed the greater of 65 meters (213) feet or the height of nearby structures plus the lesser of 1.5 times the height or cross-wind width of the nearby structure. This stack height policy is designed to prevent achieving ambient air quality goals solely through the use of excessive stack heights and air dispersion.

Based on this policy, the limiting height for the two sulfuric acid plant stacks is 213 feet. IMC-Agrico's stacks are less than 213 feet in height above-grade, and therefore, in compliance with GEP stack height criteria.

7.0 IMPACTS ON SOILS, VEGETATION AND VISIBILITY

7.1 IMPACT ON SOILS AND VEGETATION

The U. S. Environmental Protection Agency was directed by Congress to develop primary and secondary ambient air quality standards. The primary standards were to protect human health and the secondary standards were to:

> "... protect the public welfare from any known or anticipated adverse effects of a pollutant."

The public welfare was to include soils, vegetation and visibility.

As a basis for promulgating the air quality standards, EPA undertook studies related to the effects of all major air pollutants and published criteria documents summarizing the results of the studies. The studies included in the criteria documents were related to both acute and chronic effects of air pollutants. Based on the results of these studies, the criteria documents recommended air pollutant concentration limits for various periods of time that would protect against both chronic and acute effects of air pollutants with a reasonable margin of safety.

The air quality modeling demonstrated that the maximum predicted levels of SO_2 as a result of the proposed project, and including the impacts from all significant SO_2 emitting facilities, will be well below both primary and secondary air quality standards. As a result, it is reasonable to conclude that there will be no adverse effect to the soils, vegetation or visibility of the area. In the following paragraphs, the surrounding areas are discussed and related to the expected concentrations of air pollutants for the area.

The area in the vicinity of the plant has mining lands (phosphate), flatwoods, marshes, and sloughs. The soils of the area are primarily sandy and are typically low in both clay and silt content. These characteristics and the semi-tropic climatic factors of high temperature and rainfall are the natural factors which determine the terrestrial communities of the region.

This area supports various plant communities. The vegetation can be divided into upland and wetland categories. In each category, the following major formations have been identified:

Upland	Wetland
Pine flatwoods	Cypress swamp
Oak Scrub	Shrub swamp
Sandhill	Marsh

Much of the natural vegetation on the site and the surrounding areas has been altered due to mining and industrial use; primarily the phosphate fertilizer industry. As a result of mining and industrial activity, there is very little undisturbed land in existence in the vicinity of the plant.

In most areas, the soils encountered are coarse and contain increasing amounts of silt and clays until they contact the phosphate rock deposits. Soils in areas of low relief are influenced by flatwood vegetation, high

water tables and organic or mineral pan of varying thickness. Mucks are found in the lower physiographic areas where large amounts of plant debris have accumulated.

The soils and vegetation of the area will be exposed to IMC-Agrico's air pollutant levels when they lie downwind of the facility. The areas other than those downwind of the facility will be exposed to existing concentrations of air pollutants from other major emitting facilities in the immediate area. It is expected that the effects of air pollutants on plants or soils are expected primarily from the short-term higher doses or from acute effects.

Sulfur dioxide can produce two types of injury to vegetation; acute and chronic. The amount of acute injury caused by sulfur dioxide depends on the absorption rate of the gas which is a function of the concentration. Different varieties of plants vary widely in their susceptibility to sulfur dioxide injury. The threshold response of alfalfa to acute injury is 3400 micrograms per cubic meter over one hour, whereas privet requires 15 times this concentration for the same injury. Some species of trees and shrubs have shown injury at exposures of 1400 micrograms per cubic meter for seven hours, while injury has been produced in other species at three hour exposures of 1500 micrograms per cubic meter. From the various studies, it appears that acute symptoms of vegetation damage will not occur if the maximum annual concentration does not exceed 800 micrograms per cubic meter.

Chronic symptoms of sulfur dioxide exposure, including excessive leaf drop, may occur as a result of long-term exposure to lower concentrations. Such symptoms have been reported in areas where the mean annual concentration of sulfur dioxide is in the range of 80 micrograms per cubic meter.

Sulfur dioxide concentrations in the range of 270-680 micrograms per cubic meter react synergistically with either ozone or nitrogen dioxide during exposure periods of approximately four hours to produce moderate to severe injury in certain sensitive plants.

Sulfuric acid mist can cause injury as a result of the deposition of acid droplets. Such injury may occur at sulfuric acid mist concentrations in the range of 100 micrograms per cubic meter.

The effects reported in the above paragraphs have been summarized from criteria documents for sulfur dioxide, prepared by the U.S. Environmental Protection Agency. These documents further state that the sensitivity of plants is affected significantly by the plant species and environmental conditions, such as temperature, relative humidity, soil moisture, light intensity, and nutrient level.

The modeling analysis indicated that the maximum predicted sulfur dioxide levels were well below levels at which vegetation damage has been observed and well below standards that the U.S. Environmental Protection Agency has promulgated to protect human health and welfare.

The sulfur dioxide in the atmosphere reaches the soil by deposition from the air and is converted to sulfates. The sulfates that are deposited

could cause a slight acidification of already acidic soils. The predicted concentrations of sulfur dioxide from stack emissions will not be at a level, however, that will result in a measurable increase in sulfates; even over a long period of time. The slight increase that could occur is not expected to have an effect on natural vegetation.

7.2 GROWTH RELATED IMPACTS

The proposed modification will require no increase in personnel to operate the sulfuric acid plants. Also, the increase in sulfuric acid production may cause a slight increase in delivery truck tanker traffic but will have a negligible impact on traffic in the area as compared with traffic levels that presently exist. Therefore, no additional growth impacts are expected as a result of the proposed project.

7.3 VISIBILITY IMPACTS

The proposed project will result in an increase in the sulfur dioxide emissions which has the potential for adverse impacts on visibility.

A screening approach suggested by EPA (Workbook for Plume Visual Impact Screening and Analysis, 1988) and computerized in a model referred to as VISCREEN was used for the analysis. The emissions of acid mist and nitrogen oxides were input to the model. In the case of sulfur dioxide however, EPA has noted in discussions on visibility models that the sulfates formation resulting from sulfur dioxide emissions becomes a factor beyond 200 kilometers and so the sulfur dioxide emissions were not included in the analysis. The VISCREEN - Level 1 modeling results, presented in Table 7-1, indicate that there will be no adverse visibility impacts from the proposed project.

7.4 CLASS I AREA AQRV ANALYSIS

In the previous section, the impact of the air emission increases on air quality related values in the vicinity of the proposed project was addressed. The analysis addressed in this section extends the review of the impact of increased emissions on air quality related values to the Chassahowitzka Class I PSD area; an area in excess of 115 kilometers northwest of the proposed project.

7.4.1 Impact on Vegetation

The response of vegetation to air pollutants is influenced by the concentration of the pollutant, the duration of the exposure and the frequency of the exposure. The pattern of exposure expected from a single facility is that of a few episodes of relatively high concentrations interdispersed with long periods of no exposure or extremely low concentrations. This is the pattern of exposure that would be expected from sulfur dioxide and acid mist emissions from the proposed project at Chassahowitzka.

Vegetation responds to a dose of an air pollutant with a dose being defined as the product of the concentration of the pollutant and the duration of the exposure. The impact of the sulfur dioxide emissions on Chassahowitzka regional vegetation was assessed by comparing pollutant

doses that have been projected with air quality modeling to threshold doses reported in the literature.

Sulfur dioxide damage to vegetation can be grouped into two general categories: acute and chronic. Acute damage is caused by short-term exposure to relatively high concentrations of sulfur dioxide. This damage is usually characterized by a yellowing of leaf tips with a sharp, well defined separation between the damaged and healthy areas of a leaf. In pine trees, injury usually first occurs at the base of the youngest needles (the newest tissue on the plant).

Damaged plants typically show decreased growth and yield. These effects vary widely between species but studies have shown a rough correlation between the loss and yield and the exposure dose. These studies showed approximately a 10 percent yield loss for each 10-fold increase in sulfur dioxide dose beyond 260 micrograms per cubic meter-hour.

Susceptibility to acute damage varies widely with plant species and also with the time of exposure. For example, alfalfa can tolerate 3250 micrograms per cubic meter for one hour (3250 micrograms per cubic meter-hour dose), but only 1850 micrograms per cubic meter for two hours (3700 micrograms per cubic meter-hour dose). Table 7-2 shows the sulfur dioxide concentration/time thresholds for several plant species common to Florida.

The vegetation in the Chassahowitzka area is characterized by flatwoods, brackish-water, marine and halothytic terrestrial species. Predominant tree species are slash pine, laurel oak, sweet gum and palm. Other plants in the area include needlegrass rush, seashore saltgrass, marsh hay and red mangrove.

A study of the tolerance of native Florida species to sulfur dioxide (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak and mangrove exposed to 1300 micrograms per cubic meter of sulfur dioxide for 8-hours were not visibly damaged. This is consistent with the results reported in Table 7-2. Another study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a broad range of plants ranging from sensitive to tolerant were visibly injured when exposed to a sulfur dioxide concentration of 920 micrograms per cubic meter for a 3-hour period.

Acute injury results from a plants inability to quickly convert absorbed sulfur dioxide into the sulfate ion; an essential nutrient to plants. Chronic injury, on the other hand, results from a build-up of sulfate in tissue to the point where it becomes toxic. This sulfate build-up occurs over a relatively long period of time. Symptoms include a reduction in chlorophyll production resulting in decreased photosynthesis and yellow or reddish areas on leaves in a mottled pattern. In pines, sulfate injury is typically shown first at tips of older needles (the oldest tissue in the needle).

Chronic injury can result from sulfur dioxide exposures that are much lower than is required for acute injury. Unfortunately, there is a lack of quantitative experimental data for long term effects of sulfur dioxide exposure. The lowest average concentration for which chronic injury has been shown is 80 micrograms per cubic meter. The Environmental Protection

Agency has therefore established an ambient air quality standard of 80 micrograms per cubic meter, annual average. The Florida Department of Environmental Protection adopted a more conservative standard of 60 micrograms per cubic meter, annual average. Although the predicted maximum impacts exceed the Class I PSD increments, the sulfur dioxide impacts from the proposed project are expected to be well below the ambient air quality standards.

The maximum expected concentrations of acid mist in the Chassahowitzka area resulting from the increased emissions from the proposed project will be less than four percent of the expected sulfur dioxide impacts. Furthermore, it would be expected that by the time acid mist droplets have traveled over 115 kilometers from IMC-Agrico's South Pierce facility to the Chassahowitzka area, the droplets may react with particles in the atmosphere to produce a sulfate salt.

Salt deposition concentrations in coastal areas are in the range of 25-300 pounds per acre per year and may be as high as 4000 pounds per acre per year on exposed shorelines. Sulfates can account for 5 - 6 percent of the total salt; resulting in a deposition rate in the range of 1-200 pounds per acre per year.

One study (Mulchi Armbruster, 1975) demonstrated leaf damage in reduced yields in corn and soybeans with a salt deposition of 169 - 339 pounds per acre per year. Another study (Curtis, 1975) reported that broad leaf plants absorbed greater amounts of salt than do pines, probably due to leaf shape. It has been found that deciduous trees begin to exhibit adverse effects to salt exposure concentrations in the range of 100 micrograms per cubic meter (DeVine, 1975). The same study reported no observed injury to plants with long-term exposures to salt spray of 40 micrograms per cubic meter.

The sulfate concentrations resulting from acid mist emissions from the proposed project are well below concentrations which have been reported to produce vegetation damage.

7.4.2 Impact on Soils

The major soil classification in the Chassahowitzka area is Weeki Wachee-Durbin muck. This is an euic, hyderthermic typic sufihemist that is characterized by high levels of sulfur and organic matter. This soil is flooded daily with the advent of high tide and the pH ranges between 6.1 and 7.8. The upper level of this soil may contain as much as four percent sulfur (USDA, 1991).

Based upon the expected SO_2 and sulfate concentrations in the Chassahowitzka area, it is not expected that there will be any adverse impact on the native soils. A recent study (1994), coordinated by the National Park Service, supports this position.

7.4.3 Impact on Wildlife

As the predicted sulfur dioxide levels are below those known to affect vegetation, the proposed project is not expected to have any adverse impact on the wildlife in the Chassahowitzka area.

7.4.4. Impact on Visibility

Visibility impairment analysis was performed to determine potential impact of the proposed project in the Chassahowitzka area. The VISCREEN - Level 1 modeling results, presented in Table 7-1, indicate that no adverse visibility impacts are expected as a result of the proposed project.

A regional haze analysis was conducted in accordance with the NPS guidelines (IWAQM procedure). The results, presented in the Appendix, indicate that the proposed project would result in a 0.3 deciview (dv) change at the wilderness area. A dv change of less than 1.0 is generally imperceptible, and therefore the source will not contribute significantly to regional haze at Chassahowitzka.

TABLE 7-1

VISCREEN RESULTS

Visual Effects Screening Analysis for
Source: IMC-AGRICO SOUTH PIERCE
Class I Area: CHASS

*** Level-1 Screening ***

Input Emissions for

Particulates	.00	G	/S
NOx (as NO2)	3.80	G	/S
Primary NO2	3.80	G	/S
Soot	.00	G	/S
Primary SO4	4.80	G	/S

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	65.00 km
Source-Observer Distance:	116.00 km
Min. Source-Class I Distance:	116.00 km
Max. Source-Class I Distance:	135.00 km
Plume-Source-Observer Angle:	11.25 degrees
Stability: 6	
Wind Speed: 1.00 m/s	

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	116.0	84.	2.00	.156	.05	.002
SKY	140.	84.	116.0	84.	2.00	.106	.05	-.005
TERRAIN	10.	84.	116.0	84.	2.00	.206	.05	.002
TERRAIN	140.	84.	116.0	84.	2.00	.054	.05	.002

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	60.	106.1	109.	2.00	.165	.05	.003
SKY	140.	60.	106.1	109.	2.00	.115	.05	-.005
TERRAIN	10.	50.	101.4	119.	2.00	.268	.05	.003
TERRAIN	140.	50.	101.4	119.	2.00	.074	.05	.002

TABLE 7-2

SENSITIVITY OF VEGETATION TO SULFUR DIOXIDE

CONCENTRATION - TIME EXPOSURES TO
SULFUR DIOXIDE RESULTING IN DAMAGE TO
SEVERAL SPECIES COMMON TO FLORIDA

Sensitive Plants		
Poplar	Radish	Cabbage
Lombardy Poplar	Cucumber	Broccoli
Black Willow	Squash	Spinach
Elm	Bean	Wheat
American Elm	Pea	Begonia
Southern pines	Soybean	Zinnia
Red Oak	Cotton	Rubber plant
Black Oak	Eggplant	Bluegrass
Sumac	Celery	Ryegrass
Intermediate Plants		
Basswood	Yellow Poplar	Virginia creeper
Red Oxier Dogwood	Sweetgum	Rose
Maples	Locust	Hibiscus
Red Maple	Eastern Cottonwood	Gladiolus
Elm	Saltgrass	Honeysuckle
Pine	Cucumber	Wisteria
White Oak	Tobacco	Chrysanthemum
Pin Oak	Potato	
Tolerant Plants		
Juniper	Pine	Gardenia
Ginkgo	Sumac	Citrus
Dogwood	Cantaloupe	Celery
Oak	Corn	
Live Oak	Lily	

(Continued)

TABLE 7-2 (CONTINUED)

Exposure Time, Hours	Concentration Needed to Produce Injury ($\mu g/m^3$)		
	Sensitive	Intermediate	Tolerant
0.5	2,620 - 10,480	9,170 - 31,440	>26,200
1.0	1,310 - 7,860	6,550 - 26,200	>20,960
2.0	655 - 5,240	3,930 - 19,650	>15,720
4.0	262 - 2,620	1,310 - 13,100	>10,480
8.0	131 - 1,310	524 - 6,550	> 5,240

REFERENCES

Curtis, C.R., L.R. Krusbert, T.L. Lauver, and B.A. Francis. 1975. Chalk Point Cooling Tower Project: Field Research on Native Vegetation. Maryland Water Resources Research Center. Maryland Department of Natural Resources - Power Plant Siting Program. p.107.

McLaughlin, S.B. and N.T. Lee. 1974 Botanical Studies in the Vicinity of the Widows Creek Steam Plant. Review of Air Pollution Effects Studies, 1952-1972, and Results of 1973 Surveys. Internal Report I-EB-74-1. TVA.

United States Environmental Protection Agency, 1988. Workbook for Plume Visual Impact Screen and Analysis. EPA-450/4-88-015, September 1988.

United States Department of Agriculture, 1991. Surveys of Hernando and Citrus Counties, Florida. USDA Soil Conservation Service in cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department.

Woltz, S.S. and T.K. Howe, 1981. Effects of Coal Burning Emissions on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, Florida.

8.0 CONCLUSION

It can be concluded from the information in this report that the proposed increase in production rates of IMC-Agrico's sulfuric acid plants No. 10 and 11 as described in this report will not cause or contribute to a violation of any air quality standard, PSD increment, or any other provision of Chapter 62, FAC.

APPENDIX A

EMISSION RATE CALCULATIONS

1.0 PERMITTED EMISSION RATES

1.1 No. 10 SULFURIC ACID PLANT

SO_2	=	450 lbs/hr x 8760 hrs/yr x ton/2000 lbs
	=	1971 TPY
SAM	=	16.9 lbs/hr x 8760 hrs/yr x ton/2000 lbs
	=	73.9 TPY

1.2 No. 11 SULFURIC ACID PLANT

SO_2	=	450 lbs/hr x 8760 hrs/yr x ton/2000 lbs
	=	1971 TPY
SAM	=	16.9 lbs/hr x 8760 hrs/yr x ton/2000 lbs
	=	73.9 TPY

1.3 MOLTEN SULFUR SYSTEM

PM/PM10	=	6.94 TPY
SO2	=	8.9 TPY
H2S	=	5.25 TPY
VOC	=	6.34 TPY

2.0 ACTUAL EMISSION RATE CALCULATIONS

The following actual emission rates for the sulfuric acid plants are based on compliance test results and annual operation hours previously submitted to FDEP for the last two years.

2.1 No. 10 SULFURIC ACID PLANT

SO_2 = 399 lbs/hr
x 8498 hrs/yr x ton/2000 lbs
= 1695 TPY

SAM = 4.4 lbs/hr
x 8498 hrs/yr x ton/2000 lbs
= 18.7 TPY

NOx = 10.0 lbs/hr
x 8498 hrs/yr x ton/2000 lbs
= 42.5 TPY

2.2 No. 11 SULFURIC ACID PLANT

SO_2 = 370 lbs/hr
x 8104 hrs/yr x ton/2000 lbs
= 1499 TPY

SAM = 2.4 lbs/hr
x 8104 hrs/yr x ton/2000 lbs
= 9.7 TPY

NOx = 8.6 lbs/hr
x 8104 hrs/yr x ton/2000 lbs
= 34.8 TPY

2.3 MOLTEN SULFUR SYSTEM

(Same as permitted rates)

PM/PM10 = 6.94 TPY

SO2 = 8.9 TPY

H2S = 5.25 TPY

VOC = 6.34 TPY

3.0 PROPOSED EMISSION RATE CALCULATIONS:

3.1 No. 10 SULFURIC ACID PLANT

SO_2 = 500 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 2190 TPY

SAM = 18.8 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 82.1 TPY

NOx = 15 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 65.7 TPY

3.2 No. 11 SULFURIC ACID PLANT

SO_2 = 500 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 2190 TPY

SAM = 18.8 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 82.1 TPY

NOx = 15 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 65.7 TPY

3.3 MOLTEN SULFUR SYSTEM

Based on an 11 percent increase in annual throughput rate from 650,000 to 725,000 TPY molten sulfur:

PM/PM10 = (6.94 x 1.11) TPY = 7.7 TPY

SO2 = (8.9 x 1.11) TPY = 9.9 TPY

H2S = (5.25 x 1.11) TPY = 5.8 TPY

VOC = (6.34 x 1.11) TPY = 7.0 TPY

4.0 NET ANNUAL EMISSION CHANGES

Net Emission Change = Contemporaneous + Proposed - Actual

The only contemporaneous emissions are for NOx emissions from 1991 of 25.7 TPY (PSD permitting for sulfuric acid plants 10 and 11). By adding all the values from the information above, the net emissions increases as a result of the proposed project are as follows:

SO2 = (2190 - 1695) + (2190 - 1499) + (9.9 - 8.9) TPY	= 1187 TPY
SAM = (82.1 - 18.7) + (82.1 - 9.7) TPY	= 135.8 TPY
NOx = 25.7 + (65.7 - 42.5) + (65.7 - 34.8) TPY	= 79.8 TPY
PM/PM10 = (7.7 - 6.94) TPY	= 0.76 TPY
H2S = (5.8 - 5.25) TPY	= 0.55 TPY
VOC = (7.0 - 6.34) TPY	= 0.66 TPY

The emissions increases are well below PSD applicability threshold for PM/PM10 (25/15 TPY); H2S (10 TPY); and, VOC (40 TPY). As the emissions changes for these pollutants are quite insignificant, they are not included in Table 3-2, Net Emissions Increases.

The emissions increases over the PSD thresholds correspond to SO2 (40 TPY); NOx (40 TPY); and, SAM (7 TPY).

NOTE : COPIES OF THE CURRENT AIR PERMITS AND AOR DATA ARE NOT ATTACHED HEREIN AS THIS INFORMATION IS ALREADY IN FDEP FILES (SAVE A TREE).

REGIONAL HAZE ANALYSIS

IMC-AGRICO - SOUTH PIERCE PLANT

POLK COUNTY, FLORIDA

CALCULATION BASIS:

1. Highest Class I area sulfur dioxide 24-hr impact ,ug/m3	0.22
2. Highest Class I area sulfuric acid mist 24-hr impact, ug/m3	0.008
3. Highest Class I area PM10 24-hr impact, ug/m3	0
4. Background visibility, km	65
5. Wind speed, based on EARTH database, m/s	2.2
6. Max distance to Class I area, m	135409.32
7. Relative humidity factor (RH), %	3.5
8. Plume travel time, hr	17.1

Class I	Receptors	
-67200	94370	115851.4
-67200	96370	117486.2
-67200	98470	119214.9
-66800	100570	120733.4
-65500	102670	121784.1
-64500	104870	123117.7
-63800	106970	124551.3
-65100	109270	127192.5
-66400	112070	130263.8
-68500	112070	131346.6
-71000	112070	132667.6
-73500	112070	134022.1
-76000	112070	135409.3
	min dist	115851.4
	max dist	135409.3

Hour	Conversion	
	SO2	SO4
1	0.22	0.0066
2	0.2134	0.006402
3	0.206998	0.0062099
4	0.20078806	0.0060236
5	0.194764418	0.0058429
6	0.188921486	0.0056676
7	0.183253841	0.0054976
8	0.177756226	0.0053327
9	0.172423539	0.0051727
10	0.167250833	0.0050175
11	0.162233308	0.004867
12	0.157366309	0.004721
13	0.152645319	0.0045794
14	0.14806596	0.004442
15	0.143623981	0.0043087
16	0.139315262	0.0041795
17	0.135135804	0.0040541
SO4 =		0.0889183
conversion =		40%

b(ext)a	= 3.912/Background visibility,	0.0602	
SO4(so2)	= SO2 impact * 96/64,	0.3300	
SO4(am)	= 0.15/4 * SO2 impact * 96/98,	0.0081	
NH4SO4	= 1.375 * (SO4(so2) + (SO4(am)),	0.4649	
Transport time	= Travel distance / wind speed,	17.0971	
Conversion	= Total conversion at 3% per hr / Total impact,	0.1879	
b(ext)s	= 0.003 * RH * NH4SO4 + PM10,	0.0020	
dv, deciview change	= 10 * ln(1+ b(ext)s / b(ext)a)),	**0.3**	OK <1

Wind Speed Information:

F2=Control F3=Move F4=Output F5=Mark F6=Restart EARTHINFO SA EAST:3 1994
Record 26 of 30, 0 marked

DAILY

Station	TAMPA INT'L ARPT							WBAN		12842
County	HILLSBOROUGH			Latitude	N27:58:00			% Coverage		89
State	FL			Longitude	W082:32:00			Begin		01/01/1964
Rec Yrs	30			Elevation	5.8			End		12/31/1993

WIND(n. miles) Value Mask: Off

1989	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
6	156	157	170	169	164	163	147	128	121	122
7	125	170	151	157	153	205	126	174	119	103
8	117	129	165	137	135	236	130	171	131	162
9	109	221	195	125	149	222	110	143	138	161
10	138	175	212	116	177	153	113	118	115	114
11	165	124	161	159	170	115	98	136	135	170
12	126	112	121	146	127	140	75	162	108	158
13	101	128	149	139	136	160	111	157	90	132
14	129	196	141	133	111	158	134	119	97	98
15	139	211	116	156	127	178	131	142	87	96
16	122	175	116	122	118	211	124	132	93	109
17	130	177	152	149	132	165	140	110	73	104
18	122	186	140	136	192	142	133	144	101	125

F1=Help, F10=Quit, Enter=Step To, Esc=Step Back, Spacebar=Mark Record

$$V_s = \frac{103 \text{ N. miles}}{24 \text{ hrs}} \times \frac{1853.2 \text{ meters}}{\text{N. mile}} \times \frac{\text{hr}}{3600 \text{ s}} = 2.21 \text{ m/s}$$

APPENDIX B

AIR MODELING INFORMATION

This disk contains SO2, NOX, and SAM modeling for the IMC South Pierce facility. The disk contains the following files:

IMC-SP.EXE - Self-extracting archive
README.TXT - This file

To unarchive IMC-SP.EXE copy it to a hard disk drive and type the file name at the dos prompt. The files will automatically unarchive to the hard disk drive.

Contained in IMC-SP.EXE are the following files:

SO2SIA87	OUT	307,146	10-21-96	SO2 Significant Impact Analysis for 1987
SO2SIA88	OUT	307,146	10-21-96	SO2 Significant Impact Analysis for 1988
SO2SIA89	OUT	307,146	10-21-96	SO2 Significant Impact Analysis for 1989
SO2SIA90	OUT	307,146	10-21-96	SO2 Significant Impact Analysis for 1990
SO2SIA91	OUT	307,146	10-21-96	SO2 Significant Impact Analysis for 1991
NOXSIA87	OUT	160,567	10-21-96	NOx Significant Impact Analysis for 1987
NOXSIA88	OUT	160,567	10-21-96	NOx Significant Impact Analysis for 1988
NOXSIA89	OUT	160,567	10-21-96	NOx Significant Impact Analysis for 1989
NOXSIA90	OUT	160,567	10-21-96	NOx Significant Impact Analysis for 1990
NOXSIA91	OUT	160,567	10-21-96	NOx Significant Impact Analysis for 1991
SAMSIA87	OUT	332,830	10-21-96	SAM Significant Impact Analysis for 1987
SAMSIA88	OUT	332,830	10-21-96	SAM Significant Impact Analysis for 1988
SAMSIA89	OUT	332,830	10-21-96	SAM Significant Impact Analysis for 1989
SAMSIA90	OUT	332,830	10-21-96	SAM Significant Impact Analysis for 1990
SAMSIA91	OUT	332,830	10-21-96	SAM Significant Impact Analysis for 1991
SO2C1-87	OUT	62,867	11-01-96	SO2 Class I Area Impact Analysis for 1987
SO2C1-88	OUT	62,867	11-01-96	SO2 Class I Area Impact Analysis for 1988
SO2C1-89	OUT	62,867	11-01-96	SO2 Class I Area Impact Analysis for 1989
SO2C1-90	OUT	62,867	11-01-96	SO2 Class I Area Impact Analysis for 1990
SO2C1-91	OUT	62,867	11-01-96	SO2 Class I Area Impact Analysis for 1991
NOXC1-87	OUT	33,931	10-30-96	NOx Class I Area Impact Analysis for 1987
NOXC1-88	OUT	33,931	10-30-96	NOx Class I Area Impact Analysis for 1988
NOXC1-89	OUT	33,931	10-30-96	NOx Class I Area Impact Analysis for 1989
NOXC1-90	OUT	33,931	10-30-96	NOx Class I Area Impact Analysis for 1990
NOXC1-91	OUT	33,931	10-30-96	NOx Class I Area Impact Analysis for 1991
FQS87REV	OUJ	249,452	10-28-96	SO2 FAAQS Analysis for 1987
FQS88REV	OUJ	249,452	10-28-96	SO2 FAAQS Analysis for 1988
FQS89REV	OUJ	249,452	10-29-96	SO2 FAAQS Analysis for 1989
FQS90REV	OUJ	249,452	10-29-96	SO2 FAAQS Analysis for 1990
FQS91REV	OUJ	249,452	10-29-96	SO2 FAAQS Analysis for 1991
SO2C2-87	OUJ	241,863	10-29-96	SO2 Class II Area PSD Increment Analysis '87
SO2C2-88	OUJ	241,863	10-29-96	SO2 Class II Area PSD Increment Analysis '88
SO2C2-89	OUJ	241,863	10-29-96	SO2 Class II Area PSD Increment Analysis '89
SO2C2-90	OUJ	241,863	10-29-96	SO2 Class II Area PSD Increment Analysis '90
SO2C2-91	OUJ	241,863	10-29-96	SO2 Class II Area PSD Increment Analysis '91

IMC-AGRICO SOUTH PIERCE
20 D FAAQS & PSD INVENTORY
OF SO2 SOURCES

				SOURCE LOCATION		
			IMC-AGRICO/PIERCE	407.5		3071.3
SOURCE NAME	20 D (ton/yr)	UTM COORDINATES EAST (Km)	NORTH (Km)	Distance (Km)	20-D Emission (TPY)	Significant?
ASPHALT PAVERS	78	359.9	3162.4	103	2055	NO
ASPHALT PAVERS	61	361.4	3168.4	107	2149	NO
ATLANTIC SUGAR	567	553.3	2945.0	193	3858	NO
AUBURNDALE	221	420.8	3103.3	35	693	NO
BORDEN	-184	414.5	3109.0	38	766	NO
BORDEN	-225	394.8	3069.6	11	220	YES
BREWSTER/IMPERIAL	670	404.8	3069.5	3	65	YES
CARGILL/GARDINIER	612	415.3	3063.3	11	224	YES
CARGILL/GARDINIER	11779	363.4	3082.4	45	909	YES
CARGILL/SEMINOLE/W.R. GRACE	14931	409.8	3087.0	16	316	YES
CF BARTOW	29567	408.5	3082.5	11	224	YES
CF PLANT CITY PROPOSED	9048	388.0	3116.0	49	975	YES
CITRUS WORLD	1604	441.0	3087.3	37	742	YES
CLM CHLORIDE METALS	731	361.8	3088.3	49	975	NO
CONSOLIDATED MINERALS	943	393.8	3096.3	28	570	YES
COUCH CONST-ODESSA	252	340.7	3119.5	82	1647	NO
COUCH CONST-ZEPHYRHILLS	123	390.3	3129.4	61	1211	NO
DOLIME	355	404.8	3069.5	3	64	YES
DRIS PAVING	8	340.6	3119.2	82	1645	NO
ER JAHNA	29	386.7	3155.8	87	1740	NO
ESTECH/SWIFT	4856	411.5	3074.2	5	98	YES
EVANS PACKING	2188	383.3	3135.8	69	1377	YES
FARMLAND	7011	410.3	3079.7	9	176	YES
FDOC	104	382.2	3166.1	98	1962	NO
FLA MINING & MATERIALS	50	356.2	3169.9	111	2222	NO
FLORIDA CRUSHED STONE	3423	360.0	3162.4	103	2054	YES
FPC ANCLOTE	116916	324.4	3118.7	96	1913	YES
FPC BARTOW	65956	342.4	3082.6	66	1321	YES
FPC BAYBORO	6881	338.8	3071.3	69	1374	YES
FPC CRYSTAL RIVER	133484	334.2	3204.5	152	3040	YES
FPC DEBARY	16224	467.5	3197.2	139	2789	YES
FPC HIGGINS	12082	336.5	3098.4	76	1520	YES
FPC INT. CITY	8168	446.3	3126.0	67	1341	YES
FPC OSCEOLA	4380	446.3	3126.0	67	1341	YES
FPC POLK	1720	414.4	3073.9	7	147	YES
FPL FT MYERS	26872	422.1	2952.9	119	2387	YES
FPL MANATEE	83410	367.2	3054.1	44	877	YES
GAINESVILLE REGIONAL UTILITIES	197	365.5	3292.7	225	4506	NO
GEN. PORT. CEMENT	4602	358.0	3090.6	53	1062	YES
GOLD BOND	320	347.3	3082.7	61	1225	NO
GULF COAST LEAD	1711	364.0	3093.5	49	976	YES
HARDEE	9657	404.8	3057.4	14	284	YES
HILLS. CO. RESOURCE RECOVERY	744	368.2	3092.7	45	895	NO
HOSP CORP OF AM	6	333.4	3141.0	102	2034	NO
IMC - AGRICO /NICHOLS/CONSERVE	3495	398.4	3084.2	16	315	YES
IMC-AGRICO/NEW WALES	11416	396.6	3078.9	13	265	YES
IMC-AGRICO/NORALYN	504	414.7	3080.3	12	230	YES
IMC-AGRICO/PIERCE	1646	404.1	3079.0	8	167	YES
IMC-AGRICO/SO. PIERCE	4676	407.5	3071.3	0	1	YES
KISSIMMEE KANE IS.	1023	447.7	3127.9	69	1388	NO
KISSIMMEE UTIL	1117	460.1	3129.3	78	1566	NO
LAKE CO. COGEN. FACILITY PROPOSED	175	434.0	3198.8	130	2604	NO

IMC-AGRICO SOUTH PIERCE
20 D FAAQS & PSD INVENTORY
OF SO2 SOURCES

				SOURCE	LOCATION
		IMC-AGRICO/PIERCE		407.5	3071.3
SOURCE NAME	20 D (ton/yr)	UTM COORDINATES EAST (Km)	NORTH (Km)	Distance (Km)	20-D Emission (TPY)	Significant?
LAKELAND LARSEN	4944	409.3	3102.8	32	630	YES
LAKELAND MCINTOSH	30563	409.2	3106.2	35	698	YES
MOBIL BIG-4	87	394.9	3069.8	13	255	NO
MOBIL NICHOLS	971	398.3	3084.3	16	318	YES
MOBILE ELECTROPHOS	3337	405.6	3079.4	8	166	YES
MULBERRY COGENERATION	466	413.6	3080.6	11	222	YES
MULBERRY PROSPHATES/ROYSTER	5312	406.7	3085.2	14	278	YES
NEW PORT RICHEY HOSP	3	331.2	3124.5	93	1860	NO
NITRAM	108	363.1	3089.0	48	956	NO
OMAN CONST	73	359.8	3164.9	105	2101	NO
ORLANDO UTIL STANTON	24100	483.5	3150.6	110	2196	YES
OVERSTREET PAV.	128	355.9	3143.7	89	1778	NO
PANDA KATHLEEN	25	398.7	3101.4	31	627	NO
PASCO CO. COGEN. FACLITY PROPOSED	175	385.6	3139.0	71	1423	NO
PASCO COUNTY RRF	490	347.1	3139.2	91	1817	NO
PINELLAS RRF	2165	335.3	3084.4	73	1467	YES
PINEY POINT/ROYSTER SAP	1719	348.7	3057.3	60	1209	YES
REEDY CREEK	127	442.0	3139.0	76	1519	NO
REEDY CREEK	5	443.0	3144.3	81	1623	NO
RIDGE COGENERATION	480	416.7	3100.4	30	610	NO
SEBRING UTIL	3868	464.3	3035.4	67	1344	YES
SECI HARDEE	452	404.9	3057.4	14	283	YES
STAUFFER ROASTER	2265	325.6	3116.7	94	1873	YES
SULFUR TERMINALS	104	358.0	3090.0	53	1058	NO
TAMPA GENERAL HOSP	59	356.4	3091.0	55	1095	NO
TAMPA MCKAY BAY RRF	744	360.0	3091.0	51	1028	NO
TECO BIG BEND	372294	361.9	3075.0	46	915	YES
TECO GANNON	127495	360.0	3087.5	50	1004	YES
TECO HOOKERS POINT	13535	358.0	3091.0	53	1065	YES
TECO POLK POWER	4031	402.5	3066.9	7	134	YES
THATCHER GLASS	177	361.8	3088.3	49	975	NO
USS AGRI-CHEM BARTOW	1580	413.2	3086.3	16	320	YES
USSAC FT MEADE	3377	416.1	3068.6	9	181	YES

IMC-AGRICO SOUTH PIERCE
SO2 SOURCE INVENTORY

No.	SOURCE DESCRIPTION INVENTORY	NAAQS Designation	X (m)	Y (m)	Emissions (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
1	AUBURNDALE	A1AUBD	13300	31900	6.35	48.8	411	14.3	5.49
2	CARGILL/GARDINIER DAP	A2CARGILL/	-44100	11100	0.96	60.40	320.0	13.40	2.13
3	CARGILL/GARDINIER GTSP	A3CARGILL/	-44100	11100	1.90	38.40	328.0	11.56	2.44
4	CARGILL/GARDINIER MINE ROCK DRYER	A4CARGILL/	7800	-8000	17.60	19.20	290.0	7.00	2.90
5	CARGILL/GARDINIER SAP #7	A5CARGILL/	-44100	11100	46.20	45.60	340.0	12.64	2.29
6	CARGILL/GARDINIER SAP #8	A6CARGILL/	-44100	11100	52.50	45.60	339.0	13.93	2.44
7	CARGILL/GARDINIER SAP #9 (INCR. IN 9 OF 8 OR 9)	A7CARGILL/	-44100	11100	67.20	45.60	350.0	12.66	2.74
8	CARGILL/SEMINOLE/W.R. GRACE DAP 4	A8CARGILL/	2270	15690	0.30	40.20	316.0	26.20	2.10
9	CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	A9CARGILL	2270	15690	163.80	60.96	347.0	34.00	1.52
10	CF BARTOW DAP 1 3	A9CF-BART	1000	11200	7.93	36.40	339.0	16.11	2.13
11	CF BARTOW DAP 1 3	A10CF-BAR	1000	11200	3.97	36.40	339.0	16.11	2.13
12	CF BARTOW H2SO4 5 (2400 TPD)	A11CF-BAR	1000	11200	50.40	63.41	361.0	10.88	2.13
13	CF BARTOW H2SO4 6 (2400 TPD)	A12CF-BAR	1000	11200	50.40	63.41	370.0	7.28	2.13
14	CF BARTOW H2SO4 7 (2000 TPD)	A13CF-BAR	1000	11200	42.00	67.10	351.0	9.80	2.40
15	CF PLANT CITY	A14CF-PLA	-19500	44700	19.98	7.62	560.8	17.74	1.07
16	CF PLANT CITY	A15CF-PLA	-19500	44700	0.12	2.44	373.0	0.33	0.61
17	CF PLANT CITY DAP A	A16CF-PLA	-19500	44700	3.00	28.70	326.0	7.90	3.00
18	CF PLANT CITY DAP X	A17CF-PLA	-19500	44700	13.20	54.90	325.0	9.80	2.80
19	CF PLANT CITY DAP Z	A18CF-PLA	-19500	44700	13.20	54.90	331.0	13.10	2.80
20	CF PLANT CITY GTSP X	A19CF-PLA	-19500	44700	13.20	54.90	314.0	7.90	2.80
21	CF PLANT CITY H2SO4 A&B	A20CF-PLA	-19500	44700	88.20	33.50	316.0	19.50	1.52
22	CF PLANT CITY PROPOSED C & D	A21CF-PLA	-19500	44700	109.20	60.35	353.0	17.77	2.44
23	CITRUS WORLD DRYER 1	A22CITRUS-	33500	16000	8.10	22.90	323.0	10.70	1.00
24	CITRUS WORLD DRYER 2	A23CITRUS-	33500	16000	19.00	22.90	325.0	12.20	0.80
25	CITRUS WORLD DRYER 3	A24CITRUS-	33500	16000	19.00	24.40	313.0	21.90	0.80
26	CONSOLIDATED MINERALS	A25CONSO	-13700	25000	0.12	6.10	605.2	20.21	0.37
27	CONSOLIDATED MINERALS FLUID BED REACTOR	A26CONSO	-13700	25000	11.57	46.33	299.7	12.14	1.77
28	CONSOLIDATED MINERALS KILNS 3, 4 & 5	A27CONSO	-13700	25000	15.43	46.33	298.0	13.17	1.77
29	EVANS BOILER	A28EVANS-	-24200	64500	28.70	12.20	505.0	11.90	1.00
30	EVANS DRYER	A29EVANS-	-24200	64500	34.00	25.90	346.0	17.30	1.00
31	EVANS PACKING	A30EVANS-	-24200	64500	0.20	12.30	466.2	9.20	0.40
32	FARMLAND	A31FARMLA	2830	8355	2.33	28.96	605.2	3.58	1.68
33	FARMLAND 3 & 4 H2SO4 (2100 TPD)	A32FARMLA	2830	8355	88.20	30.48	355.0	12.02	2.29
34	FARMLAND 5 H2SO4 (2800 TPD)	A33FARMLA	2830	8355	58.80	45.72	355.0	13.42	2.44
35	FARMLAND SULFUR SYSTEM (EXISTING)	A34FARMLA	2830	8355	0.39	12.19	366.3	2.67	0.61
36	FARMLAND SULFUR SYSTEM (PROPOSED)	A35FARMLA	2830	8355	0.16	12.19	366.3	2.67	0.61
37	FLORIDA CRUSHED STONE	FCS	-47500	91100	98.4	97.60	442.0	23.23	4.88
38	FPC ANCLOTE	FPCANCLO	-83100	47400	3361	152.10	433.0	18.90	7.30
39	FPC BARTOW PEAKING 1 4	A36FPC-BA	-65100	11300	286.90	13.70	772.0	22.30	5.30
40	FPC BARTOW PIPELINE HEATER	A37FPC-BA	-65100	11300	1.80	9.10	541.0	5.20	0.90
41	FPC BARTOW UNIT 1 & 2	A38FPC-BA	-65100	11300	896.80	91.40	429.0	36.30	2.70
42	FPC BARTOW UNIT 3	A39FPC-BA	-65100	11300	710.54	91.40	408.0	34.40	3.40
43	FPC BAYBORO PEAKING 1 4	A40FPC-BA	-68700	0	197.80	12.20	755.0	6.40	7.00
44	FPC CRYSTAL RIVER 1 & 2	FPCCRY1	-73300	133200	1819.70	152.00	422.0	42.10	4.57
45	FPC CRYSTAL RIVER 4 & 5	FPCCRY4	-73300	133200	2017.60	182.90	398.0	21.00	6.90
46	FPC DEBARY	FPCDEBAR	60000	125900	466.40	15.24	819.8	56.21	4.21
47	FPC HIGGINS OTHER	FPCHIGG1	-13850	27100	25.21	16.76	727.4	113.47	4.60
48	FPC HIGGINS UNIT 3	FPCHIGG2	-13850	27100	129.90	53.00	423.0	7.30	3.80
49	FPC HIGGINS UNITS 1 & 2	FPCHIGG3	-13850	27100	192.20	53.00	429.0	8.20	3.80
50	FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	A41FPC-INT	38800	54700	124.40	15.24	819.8	56.21	4.21
51	FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	A42FPC-INT	38800	54700	110.40	15.24	880.8	32.07	7.04
52	FPC OSCEOLA PEAKING 1-6	A43FPC-OS	38800	54700	273.06	7.90	704.0	18.00	4.20
53	FPC OSCEOLA PEAKING 7-10	A44FPC-OS	38800	54700	111.88	15.20	834.8	18.00	4.20
54	FPC OSCEOLA PEAKING 11-12	FPCOSC2	38800	54700	102.56	15.20	895.9	18.00	7.04
55	FPC POLK	A45FPC-PO	6900	2610	24.70	34.40	400.0	40.50	4.10
56	FPL FT. MYERS 1	FPLFTM1	14600	-118400	192.40	92.00	422.0	29.90	2.90
57	FPL FT. MYERS 2	FPLFTM2	14600	-118400	555.40	124.10	408.1	19.20	5.50
58	FPL FT. MYERS PEAKING 1-12	FPLFTM3	14600	-118400	24.70	9.80	797.0	57.60	3.50
59	FPL MANATEE UNIT 1 & 2	A46FPL-MA	-40300	-17200	2397.80	152.10	426.0	17.10	8.00
60	GULF COAST LEAD	A47GULF-C	-43500	22200	48.45	29.57	344.1	37.59	0.61
61	GULF COAST LEAD	A48GULF-C	-43500	22200	0.75	8.84	309.1	20.85	0.34
62	HARDEE	A49HARDE	-2700	-13900	277.60	22.90	389.0	23.90	4.88
63	IMC AGRICO /NICHOLS/CONSERVE (2500 TPD @ 4	A50IMC---A	-9100	12900	52.50	45.70	352.0	12.00	2.30
64	IMC AGRICO /NICHOLS/CONSERVE DAP DRYER	A51IMC---A	-9100	12900	1.01	24.40	333.0	23.10	1.07
65	IMC AGRICO /NICHOLS/CONSERVE DRYER	A52IMC---A	-9100	12900	3.34	24.69	327.4	3.77	2.29
66	IMC AGRICO/NEW WALES AFI PLANT	A53IMC-AG	-10900	7600	0.20	52.40	322.0	13.10	2.40
67	IMC AGRICO/NEW WALES DAP	A54IMC-AG	-10900	7600	5.54	36.60	319.1	20.15	1.83
68	IMC AGRICO/NEW WALES DAP 1	A55IMC-AG	-10800	8100	3.70	40.50	314.0	14.90	2.10

IMC-AGRICO SOUTH PIERCE
SO2 SOURCE INVENTORY

No.	SOURCE DESCRIPTION INVENTORY	NAAQS Designation	X (m)	Y (m)	Emissions (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
69	IMC AGRICO/NEW WALES GTSP	A56IMC-AG	-10800	8100	9.20	40.50	316 0	20.40	1.80
70	IMC AGRICO/NEW WALES MULTIPHOS	A57IMC-AG	-10900	7600	4.80	52.40	314.0	15.80	1.40
71	IMC AGRICO/NEW WALES SAP #1,2,3 (3 AT 2900 TPD	A58IMC-AG	-10900	7600	182.85	61.00	350.0	15 31	2.60
72	IMC AGRICO/NEW WALES SAP #4,5 (2 AT 2900 TPD)	A59IMC-AG	-10900	7600	121.90	60.70	350.0	15.31	2.60
73	IMC AGRICO/NORALYN	A60IMC-AG	7200	9000	1.20	23.20	394.0	17.10	2.00
74	IMC AGRICO/NORALYN	A61IMC-AG	7200	9000	13.30	18.30	341.0	8.50	2.80
75	IMC AGRICO/SO. PIERCE DAP PLANT	A62IMC-AG	0	30	4.41	38.10	328.0	14.60	3.10
76	IMC AGRICO/SO. PIERCE GTSP PLANT	A63IMC-AG	0	0	16.60	42.70	305.0	10.40	2.70
77	IMC AGRICO/SO. PIERCE H2SO4 (10 @ 3000 TPD)	IMC1	0	0	63.00	44.18	350.0	14.79	2.74
	IMC AGRICO/SO. PIERCE H2SO4 (11 @ 3000 TPD)	IMC2	0	0	63.00	44.18	350.0	14.79	2.74
78	IMC AGRICO/SO. PIERCE MOLTEN SULFUR	IMC3	45.15	107.35	0.39	3.00	366.0	17.50	0.30
79	LAKELAND LARSEN	A65LAKELA	1800	31500	0.20	9.75	699.7	171.38	1.52
80	LAKELAND LARSEN 4	A66LAKELA	1800	31500	93.37	50.29	433.0	5.64	3.05
81	LAKELAND LARSEN 5	A67LAKELA	1800	31500	0.40	50.29	444.1	6.47	3.05
82	LAKELAND LARSEN 6	A68LAKELA	1800	31500	0.35	50.29	444.1	6.47	3.05
83	LAKELAND LARSEN 7	A69LAKELA	1800	31500	18.71	50.29	444.1	6.86	3.05
84	LAKELAND LARSEN CT	A70LAKELA	1800	31500	29.11	30.48	783.2	28.22	5.79
85	LAKELAND MCINTOSH	A71LAKELA	1700	34900	2.94	6.10	652.4	23.54	0.79
86	LAKELAND MCINTOSH	A72LAKELA	1700	34900	8.32	10.97	791.3	0.39	2.80
87	LAKELAND MCINTOSH 1	A73LAKELA	1800	34900	341.56	45.72	419.1	23.96	2.74
88	LAKELAND MCINTOSH 2	A74LAKELA	1700	34900	25.68	47.55	402.4	21.29	3.17
89	LAKELAND MCINTOSH 3	A75LAKELA	1700	34900	500.10	76.20	350.0	19.70	4.88
90	MOBIL NICHOLS DRYER 1	A76MOBIL-	-9200	13000	12.73	25.90	342.0	14.10	2.29
91	MOBIL NICHOLS DRYER 2	A77MOBIL-	-9200	13000	12.73	25.90	342.0	14.10	2.29
92	MOBIL NICHOLS DRYER 4	A78MOBIL-	-9200	13000	2.44	25.90	339.0	16.05	2.29
93	MULBERRY COGENERATION CT	A79MULBE	6100	9300	13.40	38.10	377.0	9.31	1.98
94	MULBERRY PROSPHATES/ROYSTER (1700 TPD @ 4	A80MULBE	-800	13900	35.70	61.00	360.0	12.20	2.13
95	MULBERRY PROSPHATES/ROYSTER DAP	A81MULBE	-800	13900	9.30	31.10	316.0	7.90	2.70
96	ORLANDO UTILITIES 1	ORLUTIL1	76000	79300	601.00	167.60	325.7	21.60	5.80
97	ORLANDO UTILITIES 2	ORLUTIL2	76000	79300	91.80	167.60	324.2	23.50	5.80
98	PINELLAS RRF	PINELLAS	-72200	13100	62.24	49.10	522.0	27.72	2.74
99	PINEY POINT/ROYSTER DAP	A82PINEY-P	-58800	-14000	7.40	61.00	328.0	15.50	3 00
100	PINEY POINT/ROYSTER SAP	A83PINEY-P	-58800	-14000	42.02	60.98	350.0	8.08	2.36
101	SEBRING UTIL 1 & 2	A84SEBRIN	56800	-35900	111.20	45.70	446.0	24.10	1.80
102	SECI HARDEE	SECIHARD	-2600	-13900	13.00	27.40	414.0	14.09	5.79
103	SUGAR CANE GROWERS 1-3	SUGAR1	127400	-118000	52.20	24.40	341.0	15.80	1.60
104	SUGAR CANE GROWERS 4	SUGAR2	127400	-118000	34.50	33.50	338.0	8.20	2.90
105	SUGAR CANE GROWERS 5	SUGAR3	127400	-118000	25.20	24.40	341.0	21.30	1.60
106	SUGAR CANE GROWERS 8	SUGAR4	127400	-118000	30.00	47.20	345.0	9.10	2.90
107	TECO BIG BEND TURBINE 1	A85TECO-BI	-45600	3700	11.30	10.70	816.0	136.20	1.50
108	TECO BIG BEND TURBINE 2&3	A86TECO-BI	-45600	3700	79.18	22.86	770.8	18.74	4.27
109	TECO BIG BEND UNIT 1	A87TECO-BI	-45600	3700	3309.00	149.35	404.7	13.74	7.32
110	TECO BIG BEND UNIT 2	A88TECO-BI	-45600	3700	3275.32	149.35	404.7	13.02	7.32
111	TECO BIG BEND UNIT 3	A89TECO-BI	-45600	3700	3372.92	149.35	410.2	14.47	7.32
112	TECO BIG BEND UNIT 4	A90TECO-BI	-45600	3700	654.70	149.40	342.2	19.81	7.32
113	TECO GANNON 1 & 2	A91TECO-G	-47500	16200	760.86	93.27	420.8	30.85	3.05
114	TECO GANNON 3	A92TECO-G	-47500	16200	483.96	93.27	419.7	38.64	3.23
115	TECO GANNON 4	A93TECO-G	-47500	16200	567.71	93.27	426.9	22.97	3.05
116	TECO GANNON 5	A94TECO-G	-47500	16200	691.28	93.27	423.6	23.18	4 45
117	TECO GANNON 6	A95TECO-G	-47500	16200	1149.41	93.27	433.0	24.74	5.36
118	TECO GANNON TURBINE	A96TECO-G	-47500	16200	11.90	10.67	816.3	136.61	1.52
119	TECO HOOKERS POINT 1 & 2	A97TECO-H	-49500	19700	82.60	85.30	419.0	6.10	3.40
120	TECO HOOKERS POINT 3 & 4	A98TECO-H	-49500	19700	114.00	85.30	434.0	7.90	3.70
121	TECO HOOKERS POINT 5	A99TECO-H	-49500	19700	84.60	85.30	448.0	11.00	3.40
122	TECO HOOKERS POINT 6	A100TECO-	-49500	19700	107.90	85 30	434.0	22.30	2.90
123	TECO POLK POWER	A101TECO-	-5484	-3660	0.016	22.90	1000.0	20.00	1.20
124	TECO POLK POWER	A102TECO-	-5202	-4003	1.27	60.70	1033.0	9.10	1.10
125	TECO POLK POWER	A103TECO-	-5172	-3828	8.20	60.70	1033.0	10.70	1.40
126	TECO POLK POWER	A104TECO-	-5080	-3980	0.30	6.10	533.0	13.10	0.91
127	TECO POLK POWER	A105TECO-	-5050	-3950	49.68	45.72	400.0	16.76	5.79
128	TECO POLK POWER	A106TECO-	-5012	-4346	5 42	22.86	812.0	27.43	5.49
129	TECO POLK POWER 4 CC	A107TECO-	-5050	-4084	17.60	45.72	389.0	16.15	4.42
130	TECO POLK POWER 5 CT	A108TECO-	-5012	-4386	33.40	22.86	785.0	31.39	5.49
131	USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	A109USSAC	8620	-2680	92.48	53.40	355.0	10.00	2.59

IMC-AGRICO SOUTH PIERCE
SO2 SOURCE INVENTORY

No.	SOURCE DESCRIPTION INVENTORY	PSD Designation	X (m)	Y (m)	Emissions (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diamenter (m)
1	AUBURNDALE	A1AUBD	13300	31900	6.35	48.8	411	14.3	5.49
2	BORDEN DRYER	P1BORDEN-	-12700	-1700	-6.48	30.48	344.0	14.79	1.82
3	BORDEN DRYER	P2BORDEN-	7000	37700	-5.29	17.07	333.0	8.26	2.34
4	BREWSTER/IMPERIAL DRYER	P3BREWST	-2700	-1800	-19.26	27.44	339.0	15.25	2.29
5	CARGILL/GARDINIER DRYER	P4CARGILL/	-44100	11100	-28.89	20.73	310.0	13.12	1.07
6	CARGILL/GARDINIER SAP #4,5,6	P5CARGILL/	-44100	11100	-187.70	22.60	363.0	7.00	1.52
7	CARGILL/GARDINIER SAP #7	P6CARGILL/	-44100	11100	-26.25	45.60	340.0	12.64	2.29
8	CARGILL/GARDINIER SAP #8	P7CARGILL/	-44100	11100	-41.16	45.60	339.0	13.93	2.44
9	CARGILL/GARDINIER SAP #9	P8CARGILL/	-44100	11100	-54.60	45.60	350.0	10.30	2.74
10	CARGILL/GARDINIER SAP #9 (INCR. IN 9 OF 8 OR	P9CARGILL/	-44100	11100	67.20	45.60	350.0	12.66	2.74
11	CARGILL/SEMINOLE/W.R. GRACE DRYER	P10CARGILL	2270	15690	-39.66	15.24	327.0	17.32	2.04
12	CARGILL/SEMINOLE/W.R. GRACE SAP #1 & #2	P11CARGILL	2270	15690	-216.00	45.72	352.0	16.50	1.37
13	CARGILL/SEMINOLE/W.R. GRACE SAP #3	P12CARGILL	2270	15690	-52.50	45.72	311.0	16.70	1.52
14	CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	P13CARGILL	2270	15690	163.80	60.96	347.0	34.00	1.52
15	CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	P14CARGILL	2270	15690	-121.07	60.96	347.0	25.10	1.52
16	CF BARTOW DAP 1 3	P15CF-BAR	1000	11200	3.97	36.40	339.0	16.11	2.13
17	CF BARTOW H2SO4 1 (400 TPD)	P16CF-BAR	1000	11200	-60.90	30.49	350.0	12.20	1.37
18	CF BARTOW H2SO4 2 (500 TPD)	P17CF-BAR	1000	11200	-110.25	30.49	350.0	10.37	1.68
19	CF BARTOW H2SO4 3 (600 TPD)	P18CF-BAR	1000	11200	-107.10	30.49	364.0	4.27	2.74
20	CF BARTOW H2SO4 4 (900 TPD)	P19CF-BAR	1000	11200	-174.83	30.49	358.0	7.93	2.13
21	CF BARTOW H2SO4 5 (2400 TPD)	P20CF-BAR	1000	11200	50.40	63.41	361.0	10.88	2.13
22	CF BARTOW H2SO4 5 (900 TPD)	P21CF-BAR	1000	11200	-226.80	63.41	358.0	10.67	2.13
23	CF BARTOW H2SO4 6 (2400 TPD)	P22CF-BAR	1000	11200	50.40	63.41	370.0	7.28	2.13
24	CF BARTOW H2SO4 6 (900 TPD)	P23CF-BAR	1000	11200	-170.10	63.41	359.0	10.37	2.13
25	CF BARTOW H2SO4 7 (2000 TPD)	P24CF-BAR	1000	11200	42.00	67.10	351.0	9.80	2.40
26	CF PLANT CITY BASELINE A & B	P25CF-PLAN	-19500	44700	-105.00	23.80	316.0	18.80	1.52
27	CF PLANT CITY BASELINE C & D	P26CF-PLAN	-19500	44700	-100.80	60.35	353.0	16.40	2.44
28	CF PLANT CITY H2SO4 A&B	P27CF-PLAN	-19500	44700	88.20	33.50	316.0	19.50	1.52
29	CF PLANT CITY PROPOSED C & D	P28CF-PLAN	-19500	44700	109.20	60.35	353.0	17.77	2.44
30	DOLIME BOILER	P29DOLIME-	-2687	-1752	-4.52	27.43	494.1	7.25	0.61
31	DOLIME DRYER	P30DOLIME-	-2687	-1752	-5.68	27.43	333.0	20.67	1.52
32	ESTECH/SWIFT DRYER	P31ESTECH	4000	2900	-23.94	18.29	339.0	8.47	2.95
33	ESTECH/SWIFT DRYER	P32ESTECH	4000	2900	-22.80	18.75	340.0	5.06	2.95
34	ESTECH/SWIFT SAP (610 TPD & 29 LB/TON)	P33ESTECH	4000	2900	-92.87	30.79	358.0	3.90	2.13
35	EVANS PACKING	P34EVANS-	-24200	64500	0.20	12.30	466.2	9.20	0.40
36	FARMLAND 1,2 H2SO4	P35FARMLA	2830	8355	-83.98	30.48	311.0	20.18	1.37
37	FARMLAND 3 & 4 H2SO4 (1620 TPD)	P36FARMLA	2830	8355	-67.16	30.48	355.0	9.27	2.29
38	FARMLAND 3 & 4 H2SO4 (2100 TPD)	P37FARMLA	2830	8355	88.20	30.48	355.0	12.02	2.29
39	FARMLAND 5 H2SO4 (2400 TPD)	P38FARMLA	2830	8355	-50.40	45.72	355.0	11.55	2.44
40	FARMLAND 5 H2SO4 (2800 TPD)	P39FARMLA	2830	8355	58.80	45.72	355.0	13.42	2.44
41	FLORIDA CRUSHED STONE	FCS	-47500	91100	98.4	97.60	442.0	23.23	4.88
42	FPC CRYSTAL RIVER 1 & 2	FPCCRY1	-73300	133200	-2173.00	152.00	422.0	42.10	4.57
43	FPC CRYSTAL RIVER 4 & 5	FPCCRY2	-73300	133200	2017.60	182.90	398.0	21.00	6.90
44	FPC DEBARY	FPCDEBAR	60000	125900	466.40	15.24	819.8	56.21	4.21
45	FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	P40FPC-INT.	38800	54700	124.40	15.24	819.8	56.21	4.21
46	FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	P41FPC-INT.	38800	54700	110.40	15.24	880.8	32.07	7.04
47	FPC OSCEOLA PEAKING 7-10	A44FPC-OS	38800	54700	111.88	15.20	834.8	18.00	4.20
48	FPC OSCEOLA PEAKING 11-12	FPCOSC1	38800	54700	102.56	15.20	895.9	18.00	7.04
49	FPC POLK	P42FPC-PO	6900	2610	24.70	34.40	400.0	40.50	4.10
50	GEN. PORT. CEMENT KILN 4	P43GEN.-PO	-49500	19300	-62.99	35.97	505.2	17.61	2.74
51	GEN. PORT. CEMENT KILN 5	P44GEN.-PO	-49500	19300	-69.30	45.42	494.1	5.80	3.81
52	HARDEE	P45HARDEE	-2700	-13900	277.60	22.90	389.0	23.90	4.88
53	IMC AGRICO /NICHOLS/CONSERVE (2 @ 1300 TP	P46IMC---AG	-9100	12900	-54.60	30.50	308.0	18.90	1.80
54	IMC AGRICO /NICHOLS/CONSERVE (2000 TPD @	P47IMC---AG	-9100	12900	-42.00	45.70	352.0	10.30	2.30
55	IMC AGRICO /NICHOLS/CONSERVE (2500 TPD @	P48IMC---AG	-9100	12900	52.50	45.70	352.0	12.00	2.30
56	IMC AGRICO /NICHOLS/CONSERVE ROCK DRYE	P49IMC---AG	-9100	12900	-3.88	24.40	339.0	12.90	1.52
57	IMC AGRICO/NEW WALES AFI PLANT	P50IMC-AG	-10900	7600	0.20	52.40	322.0	13.10	2.40
58	IMC AGRICO/NEW WALES DAP	P51IMC-AG	-10900	7600	5.54	36.60	319.1	20.15	1.83
59	IMC AGRICO/NEW WALES MULTIPHOS	P52IMC-AG	-10900	7600	4.80	52.40	314.0	15.80	1.40
60	IMC AGRICO/NEW WALES ROCK DRYER	P53IMC-AG	-10900	7600	-34.27	21.00	347.0	18.60	2.13
61	IMC AGRICO/NEW WALES SAP #1,2,3 (3 AT 2900 T	P54IMC-AG	-10900	7600	182.85	61.00	350.0	15.31	2.60

IMC-AGRICO SOUTH PIERCE
SO2 SOURCE INVENTORY

No.	SOURCE DESCRIPTION INVENTORY	PSD Designation	X (m)	Y (m)	Emissions (g/s)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
62	IMC AGRICO/NEW WALES SAP #1,2,3 BASELINE	P55IMC-AG	-10900	7600	-146.00	61.00	350.0	14.28	2.60
63	IMC AGRICO/NEW WALES SAP #4,5 (2 AT 2900 TP	P56IMC-AG	-10900	7600	121.90	60.70	350.0	15.31	2.60
64	IMC AGRICO/PIERCE DRYERS 1,2	P57IMC-AG	-3400	7650	-24.32	24.38	339.0	12.94	1.52
65	IMC AGRICO/PIERCE DRYERS 3,4	P58IMC-AG	-3400	7650	-23.00	24.38	339.0	18.82	2.43
66	IMC AGRICO/SO. PIERCE DAP PLANT	P59IMC-AG	0	30	4.41	38.10	328.0	14.60	3.10
67	IMC AGRICO/SO. PIERCE H2SO4 (10)	A64IMC-AG	0	0	63.00	44.18	350.0	14.79	2.74
68	IMC AGRICO/SO. PIERCE H2SO4 (10)	P61IMC-AG	0	0	-37.80	45.73	350.0	26.40	1.60
7a	IMC AGRICO/SO. PIERCE H2SO4 (11)	A64aIMC-AG	50.76	0	63.00	44.18	350.0	14.79	2.74
8a	IMC AGRICO/SO. PIERCE H2SO4 (11)	P61aIMC-AG	50.76	0	-37.80	45.73	350.0	26.40	1.60
69	IMC AGRICO/SO. PIERCE MOLTEN SULFUR	IMCAG1	45.15	107.35	0.39	3.00	366.0	17.50	0.30
70	LAKELAND LARSEN CT	P62LAKELA	1800	31500	29.11	30.48	783.2	28.22	5.79
71	LAKELAND MCINTOSH 3	P63LAKELA	1700	34900	500.10	76.20	350.0	19.70	4.88
72	MOBIL NICHOLS 75 HP BOILER	P64MOBIL-N	-9200	13000	-0.87	4.00	522.0	1.80	0.80
73	MOBIL NICHOLS CALCINER	P65MOBIL-N	-9200	13000	-13.89	28.40	340.0	19.24	1.09
74	MOBIL NICHOLS DRYER 4	P66MOBIL-N	-9200	13000	2.44	25.90	339.0	16.05	2.29
75	MOBILE ELECTROPHOS 400HP BOILER	P67MOBILE-	-1900	8100	-6.53	7.32	464.0	3.23	0.91
76	MOBILE ELECTROPHOS 600HP BOILER	P68MOBILE-	-1900	8100	-10.05	6.10	464.0	7.71	0.91
77	MOBILE ELECTROPHOS CALCINER	P69MOBILE-	-1900	8100	-7.11	25.61	306.0	6.97	2.13
78	MOBILE ELECTROPHOS COKE DRYER	P70MOBILE-	-1900	8100	-3.17	18.29	322.0	22.87	0.70
79	MOBILE ELECTROPHOS FURNACE (31.25 TPH RO	P71MOBILE-	-1900	8100	-47.25	29.27	314.0	8.52	2.13
80	MOBILE ELECTROPHOS ROCK DRYER	P72MOBILE-	-1900	8100	-21.81	18.29	350.0	6.79	1.83
81	MULBERRY COGENERATION CT	P73MULBER	6100	9300	13.40	51.00	356.0	9.90	2.13
82	MULBERRY PROSPHATES/ROYSTER (1003 TPD @	P74MULBER	-800	13900	-152.71	51.00	356.0	9.90	2.13
83	MULBERRY PROSPHATES/ROYSTER (1700 TPD @	P75MULBER	-800	13900	35.70	61.00	360.0	12.20	2.13
84	ORLANDO UTILITIES 1	ORLUTIL1	76000	79300	601.00	167.60	325.7	21.60	5.80
85	ORLANDO UTILITIES 2	ORLUTIL2	76000	79300	91.80	167.60	324.2	23.50	5.80
86	PINELLAS RRF	PINELLAS	-72200	13100	62.24	49.10	522.0	27.72	2.74
87	SEBRING UTIL 1 & 2	P76SEBRIN	56800	-35900	111.20	45.70	446.0	24.10	1.80
88	SECI HARDEE	SECIHARDE	-2600	-13900	13.00	27.40	414.0	14.09	5.79
89	STAUFFER BOILER	STAUF1	-81900	45400	-4.86	7.32	464.0	3.23	0.91
90	STAUFFER DRYER	STAUF2	-81900	45400	-1.50	18.29	322.0	22.87	0.70
91	STAUFFER FURNACE	STAUF3	-81900	45400	-50.93	49.00	335.0	3.60	1.20
92	STAUFFER KILN	STAUF4	-81900	45400	-7.36	25.61	306.0	6.97	2.13
93	STAUFFER ROASTER	STAUF5	-81900	45400	-0.45	25.61	322.0	6.97	0.91
94	TECO BIG BEND UNIT 3 (24 HR)	P77TECO-BI	-45600	3700	-1218.00	149.40	418.0	14.33	7.32
95	TECO BIG BEND UNIT 4	P78TECO-BI	-45600	3700	654.70	149.40	342.2	19.81	7.32
96	TECO BIG BEND UNITS 1&2 (24 HR)	P79TECO-BI	-45600	3700	-2436.00	149.40	422.0	28.65	7.32
97	TECO POLK POWER	P80TECO-P	-5484	-3660	0.016	22.90	1000.0	20.00	1.20
98	TECO POLK POWER	P81TECO-P	-5202	-4003	1.27	60.70	1033.0	9.10	1.10
99	TECO POLK POWER	P82TECO-P	-5172	-3828	8.20	60.70	1033.0	10.70	1.40
100	TECO POLK POWER	P83TECO-P	-5080	-3980	0.30	6.10	533.0	13.10	0.91
101	TECO POLK POWER	P84TECO-P	-5050	-3950	49.68	45.72	400.0	16.76	5.79
102	TECO POLK POWER	P85TECO-P	-5012	-4346	5.42	22.86	812.0	27.43	5.49
103	TECO POLK POWER 4 CC	P86TECO-P	-5050	-4084	17.60	45.72	389.0	16.15	4.42
104	TECO POLK POWER 5 CT	P87TECO-P	-5012	-4386	33.40	22.86	785.0	31.39	5.49
105	USS AGRI CHEM BARTOW DRYER	P88USS-AG	5700	15000	-3.41	15.80	332.0	10.01	1.83
106	USS AGRI CHEM BARTOW SAP (800 TPD & 10 LB/	P89USS-AG	5700	15000	-42.00	28.96	305.0	7.50	2.12
107	USSAC FT MEADE GTSP	P90USSAC-	8500	-2300	-18.27	28.35	330.0	17.60	1.52
108	USSAC FT MEADE H2SO4 (1500 TPD @ 10 LB/TON	P91USSAC-	8710	-2560	-78.80	29.00	314.0	6.77	3.02
109	USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	P92USSAC-	8620	-2680	92.48	53.40	355.0	10.00	2.59

SUMMARY OF LIST OF APPLICABLE REGULATIONS - S. PIERCE EMISSION UNITS

Emissions Unit ID	EMISSION UNIT	ADDITIONAL APPLICABLE REGULATION(S)
004	SULFURIC ACID PLANT #10	Rule 62-204.800, FAC Rule 62-212.100, FAC Rule 62-212.300, FAC Rule 62-212.400, FAC Rule 62-296.402(2), FAC 40 CFR 60, Subpart H
005	SULFURIC ACID PLANT # 11	Rule 62-204.800, FAC Rule 62-212.100, FAC Rule 62-212.300, FAC Rule 62-212.400, FAC Rule 62-296.402(2), FAC 40 CFR 60, Subpart H
030-045	MOLTEN SULFUR SYSYTEM	Rule 62-212.100, FAC Rule 62-212.300, FAC Rule 62-212.400, FAC Rule 62-296.411(1), FAC

Precautions to Prevent Emission of Unconfined Particulate Matter

Reasonable precautions to minimize the emissions of unconfined particulate matter may include, but shall not be limited to the following:

1. Paving and maintenance of roads, parking areas and yards.

2. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.

3. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar sources.

4. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the source to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.

5. Landscaping or planting of vegetation.

6. Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.

7. Confining abrasive blasting where possible.

8. Enclosure or covering of conveyor systems.

MEMORANDUM OF UNDERSTANDING
REGARDING BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

The parties jointly agree: for the purposes of Rule 17-2.250, the foregoing practices constitute "best operational practices" for the start-up of sulfuric acid plants.

The Department will not seek to incorporate these practices into permits for existing facilities during the first 18 months after implementation. After the expiration of this 18-month period, which is a typical catalyst cycle, the Department may seek to modify the permits, in accordance with Rule 17-4.080 and other applicable laws, to incorporate appropriate site-specific start-up procedures as enforceable permit conditions.

These Sulfuric Acid Plant Best Operation Start-Up Practices will be made available in the control room at all times.

Since these specific procedures are undergoing evaluation, the Department will not consider these practices to be the only means of demonstrating best operating procedures. If a company chooses to use another method, it will be its responsibility to demonstrate that it constitutes best operational practices in accordance with 17-2.250, F.A.C.

BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO_2 at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMs emission rates for the immediately preceding 20 minutes.

2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO_2 monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested and validated, the Department will accept this in lieu of directly documenting the operating rate. Implementation requires the development of a suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.

3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) out of compliance for more than three consecutive hours. Thereafter, the plant shall be shut down. The plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of start-up. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.

4. Cold Start-Up Procedures.

a. Converter.

(1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO_2 enters the masses. In no event shall the inlet temperature to the first mass be less than 800°F or the outlet temperature to the first two masses be less than 700°F.

These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.

(2) The gas stream entering the converter shall contain SO_2 at a level less than normal, and sufficiently low to promote catalytic conversion to SO_3.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

5. Warm Restart.

a. Converter.

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

(1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F; or

(2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F; or

(3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F. Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F.

Failure to meet one of the above conditions, requires use of cold start-up procedures.

To allow for technological improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.