PSD PERMIT APPLICATION

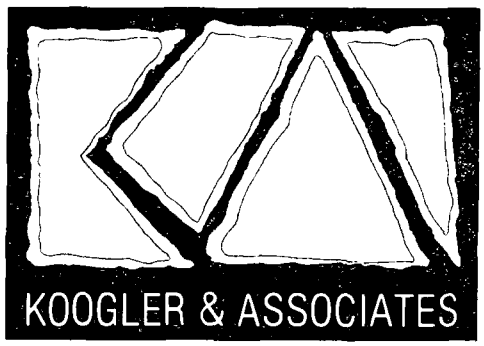
Prepared for:

IMC Phosphates Company
New Wales Facility
Polk County, Florida

November 2001

Prepared by:

Koogler & Associates
4014 N.W. 13th Street
Gainesville, Florida 32609
352–377-5822



ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX 377-7158

124-01-03

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **IMC Phosphates MP Inc.**	
2. Site Name: **IMC New Wales**	
3. Facility Identification Number: **1050059**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **3095 Highway 640** City: **Mulberry** County: **Polk** Zip Code: **33860**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Pradeep Raval, Consultant**
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 Processing Information (DEP Use)

1. Date of Receipt of Application:	11-21-01
2. Permit Number:	1050059-036-AC
3. PSD Number (if applicable):	PSD-FL-385
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit 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:_____

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

Current construction permit number:_____

Operation permit number to be revised:_____

[ ] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected:_____

[ ] Title V air operation permit revision 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 number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[X] Air construction permit to construct or modify one or more emissions units.

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

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

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
Mike Daigle, General Manager

2. Owner/Authorized Representative or Responsible Official Mailing Address:
Organization/Firm: **IMC Phosphates MP Inc.**
Street Address: **P.O. Box 2000**
City: **Mulberry** State: **FL** Zip Code: **33860**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
Telephone: **(863) 428-2500** Fax: ( ) -

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [X], if so) 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.*

M Daigle — Signature

11/9/01 — Date

* Attach letter of authorization if not currently on file.

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

11/15/01
Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
002	Sulfuric Acid Plant 1	AC1A	7500
003	Sulfuric Acid Plant 2	AC1A	0
004	Sulfuric Acid Plant 3	AC1A	0
042	Sulfuric Acid Plant 4	AC1A	0
044	Sulfuric Acid Plant 5	AC1A	0

Application Processing Fee

Check one: [X] Attached - Amount: $ **7500** [ ] Not Applicable

Construction/Modification Information

This application is submitted to increase the sulfuric acid production rate of the existing five plants at IMC's New Wales facility from 2900 to 3400 tons per day of 100 percent sulfuric acid. As all plants will not be modified at the same time, the proposed project is presented as a phased construction project. A schedule of equipment replacements is submitted under separate cover.

2. Projected or Actual Date of Commencement of Construction: **6/02**

3. Projected Date of Completion of Construction: **6/07**

Application Comment

The application is presented in the format previously discussed with FDEP. The information submitted herein is limited to the requested changes.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **396.6** North (km): **3078.9**			
2. Facility Latitude/Longitude: **NA** 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: **P.A. Steadham, Manager Environmental Services – Florida Concentrates**
2. Facility Contact Mailing Address: Organization/Firm: **IMC Phosphates MP Inc.** Street Address: **P.O. Box 2000** City: **Mulberry** State: **FL** Zip Code: **33860**
3. Facility Contact Telephone Numbers: Telephone: Telephone: **(863) 428- 2500** Fax: ( ) -

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?
5. [ ] Synthetic Minor Source of HAPs?
6. [X] One or More Emissions Units Subject to NSPS?
7. [X] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters):

List of Applicable Regulations

FDEP CORE LIST	
FS 120, 403	
FAC 62-4, 204, 210, 212, 213, 214, 252, 256, 257, 281, 296, 297	
40 CFR 52, 55, 60, 61, 63, 82.	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
PM/PM10	**A**				
SO2	**A**				
NOX	**A**				
SAM	**A**				
FL	**A**				

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

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
7. Supplemental Requirements Comment: **See attached report in support of PSD permit application.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [ ] Attached, Document ID:_____ [X] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [X] Not Applicable

10. Alternative Methods of Operation:
   [ ] Attached, Document ID:_____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
   [ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements:
   [ ] Attached, Document ID:_____ [X] Not Applicable

13. Risk Management Plan Verification:
   [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____)
   [ ] Plan to be submitted to CEPPO (Date required:_____)
   [X] Not Applicable

14. Compliance Report and Plan:
   [ ] Attached, Document ID:_____ [X] Not Applicable

15. Compliance Certification (Hard-copy Required):
   [ ] Attached, Document ID:_____ [X] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J 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.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (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.

2. 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.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Sulfuric Acid Plant 1

4. Emissions Unit Identification Number:
ID: **002**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code: **A**	6. Initial Startup Date: **NA**	7. Emissions Unit Major Group SIC Code: **28**	8. Acid Rain Unit? [ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
Double Absorption and Mist Eliminators

2. Control Device or Method Code(s): **044, 014**

Emissions Unit Details

1. Package Unit: **NA**		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3400 TPD 100% H2SO4**		
5. Requested Maximum Operating Schedule:		
	24 hours/day	**7** days/week
	52 weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See attached report.	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **SAD1**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **SAD1**		
5. Discharge Type Code: **V**	6. Stack Height: **200** feet	7. Exit Diameter: **8.5** feet
8. Exit Temperature: **170** °F	9. Actual Volumetric Flow Rate: **164,000** acfm	10. Water Vapor: **NA** %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone:	East (km):	North (km):
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment _1____ of __1___

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Sulfuric Acid Production**		
2. Source Classification Code (SCC): **3-01-023-04**	3. SCC Units: **Tons Product**	
4. Maximum Hourly Rate: **141.7**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

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

Emissions Unit Information Section ___1___ **of** ___5___

Pollutant Detail Information Page __1____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **99.7**
3. Potential Emissions: **496.0** lb/hour **2172.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **3.5 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SO2 = 3.5 lb/ton acid x 141.7 tph = 496.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 2172.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **496.0 lb/hr**	4. Equivalent Allowable Emissions: **496.0** lb/hour **2172.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8, 6C**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___1___ **of** ___5___

Pollutant Detail Information Page __2____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **99**
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SAM = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___1___ **of** ___5___

Pollutant Detail Information Page __3____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year		4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **0.12 lb/ton acid** Reference: **Permit**		7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **NOX = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**		
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

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: **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): **BACT**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

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: **NA** Manufacturer: Model Number: Serial Number:	
5. Installation Date: **NA**	6. Performance Specification Test Date: **NA**
7. Continuous Monitor Comment (limit to 200 characters): **No changes proposed.**	

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

Supplemental Requirements

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:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
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
10. Supplemental Requirements Comment: **See Report.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part 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:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J 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.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (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.

2. 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.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Sulfuric Acid Plant 2

4. Emissions Unit Identification Number:
ID: **003**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code: **A**	6. Initial Startup Date: **NA**	7. Emissions Unit Major Group SIC Code: **28**	8. Acid Rain Unit? [ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
Double Absorption and Mist Eliminators

2. Control Device or Method Code(s): **044, 014**

Emissions Unit Details

1. Package Unit: **NA**		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3400 TPD 100% H2SO4**		
5. Requested Maximum Operating Schedule:		
	24 hours/day	7 days/week
	52 weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See attached report.	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **SAD2**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **SAD2**		
5. Discharge Type Code: **V**	6. Stack Height: **200** feet	7. Exit Diameter: **8.5** feet
8. Exit Temperature: **170** °F	9. Actual Volumetric Flow Rate: **164,000** acfm	10. Water Vapor: **NA** %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment _1____ of __1___

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Sulfuric Acid Production**		
3. Source Classification Code (SCC): **3-01-023-04**	3. SCC Units: **Tons Product**	
4. Maximum Hourly Rate: **141.7**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

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

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **99.7**
3. Potential Emissions: **496.0** lb/hour **2172.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **3.5 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SO2 = 3.5 lb/ton acid x 141.7 tph = 496.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 2172.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **496.0 lb/hr**	4. Equivalent Allowable Emissions: **496.0** lb/hour **2172.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8, 6C**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___2___ **of** ___5___

Pollutant Detail Information Page __2____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **99**
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SAM = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___2___ **of** ___5___

Pollutant Detail Information Page __3____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **Permit**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **NOX = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

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: **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): **BACT**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

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: **NA** Manufacturer: Model Number:	Serial Number:
5. Installation Date: **NA**	6. Performance Specification Test Date: **NA**
7. Continuous Monitor Comment (limit to 200 characters): **No changes proposed.**	

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

Supplemental Requirements

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:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
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
10. Supplemental Requirements Comment: **See Report.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part 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:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J 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.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (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.

2. 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.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Sulfuric Acid Plant 3

4. Emissions Unit Identification Number:
ID: **004**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code: **A**	6. Initial Startup Date: **NA**	7. Emissions Unit Major Group SIC Code: **28**	8. Acid Rain Unit? [ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
Double Absorption and Mist Eliminators

2. Control Device or Method Code(s): **044, 014**

Emissions Unit Details

1. Package Unit: **NA** Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3400 TPD 100% H2SO4**		
5. Requested Maximum Operating Schedule:		
	24 hours/day	**7** days/week
	52 weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See attached report.	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **SAD3**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **SAD3**		
5. Discharge Type Code: **V**	6. Stack Height: **200** feet	7. Exit Diameter: **8.5** feet
8. Exit Temperature: **170** °F	9. Actual Volumetric Flow Rate: **164,000** acfm	10. Water Vapor: **NA** %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment _1____ of __1___

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Sulfuric Acid Production**		
4. Source Classification Code (SCC): **3-01-023-04**	3. SCC Units: **Tons Product**	
4. Maximum Hourly Rate: **141.7**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

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

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **99.7**
3. Potential Emissions: **496.0** lb/hour **2172.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **3.5 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SO2 = 3.5 lb/ton acid x 141.7 tph = 496.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 2172.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **496.0 lb/hr**	4. Equivalent Allowable Emissions: **496.0** lb/hour **2172.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8, 6C**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___3___ **of** ___5___

Pollutant Detail Information Page __2____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **99**
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SAM = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___3___ **of** ___5___

Pollutant Detail Information Page __3____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **Permit**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **NOX = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

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: **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): **BACT**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

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: **NA** Manufacturer: Model Number: Serial Number:	
5. Installation Date: **NA**	6. Performance Specification Test Date: **NA**
7. Continuous Monitor Comment (limit to 200 characters): **No changes proposed.**	

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

Supplemental Requirements

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:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
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
10. Supplemental Requirements Comment: **See Report.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part 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:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J 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.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (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.

2. 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.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Sulfuric Acid Plant 4

4. Emissions Unit Identification Number:
ID: **042**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code: **A**	6. Initial Startup Date: **NA**	7. Emissions Unit Major Group SIC Code: **28**	8. Acid Rain Unit? [ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
Double Absorption and Mist Eliminators

2. Control Device or Method Code(s): **044, 014**

Emissions Unit Details

1. Package Unit: **NA**		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3400 TPD 100% H2SO4**		
5. Requested Maximum Operating Schedule:		
	24 hours/day	**7** days/week
	52 weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See attached report.	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **SAD4**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **SAD4**		
5. Discharge Type Code: **V**	6. Stack Height: **200** feet	7. Exit Diameter: **8.5** feet
8. Exit Temperature: **170** °F	9. Actual Volumetric Flow Rate: **164,000** acfm	10. Water Vapor: **NA** %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment _1____ of __1___

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Sulfuric Acid Production**		
5. Source Classification Code (SCC): **3-01-023-04**	3. SCC Units: **Tons Product**	
4. Maximum Hourly Rate: **141.7**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

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

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **99.7**
3. Potential Emissions: **496.0** lb/hour **2172.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **3.5 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SO2 = 3.5 lb/ton acid x 141.7 tph = 496.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 2172.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **496.0 lb/hr**	4. Equivalent Allowable Emissions: **496.0** lb/hour **2172.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8, 6C**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___4___ **of** ___5___

Pollutant Detail Information Page __2____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **99**
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SAM = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___4___ **of** ___5___

Pollutant Detail Information Page __3____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **Permit**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **NOX = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

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: **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): **BACT**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

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: **NA** Manufacturer: Model Number: Serial Number:	
5. Installation Date: **NA**	6. Performance Specification Test Date: **NA**
7. Continuous Monitor Comment (limit to 200 characters): **No changes proposed.**	

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

Supplemental Requirements

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:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
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
10. Supplemental Requirements Comment: **See Report.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part 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:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J 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.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (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.

2. 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.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Sulfuric Acid Plant 5

4. Emissions Unit Identification Number:
ID: **044**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code: **A**	6. Initial Startup Date: **NA**	7. Emissions Unit Major Group SIC Code: **28**	8. Acid Rain Unit? [ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
Double Absorption and Mist Eliminators

2. Control Device or Method Code(s): **044, 014**

Emissions Unit Details

1. Package Unit: **NA**		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate: **3400 TPD 100% H2SO4**		
5. Requested Maximum Operating Schedule:		
	24 hours/day	**7** days/week
	52 weeks/year	**8760** hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See attached report.	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **SAD5**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **SAD5**		
5. Discharge Type Code: **V**	6. Stack Height: **200** feet	7. Exit Diameter: **8.5** feet
8. Exit Temperature: **170** °F	9. Actual Volumetric Flow Rate: **164,000** acfm	10. Water Vapor: **NA** %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone:	East (km):	North (km):
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment _1___ of __1__

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Sulfuric Acid Production**		
6. Source Classification Code (SCC): **3-01-023-04**	3. SCC Units: **Tons Product**	
4. Maximum Hourly Rate: **141.7**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

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

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control: **99.7**
3. Potential Emissions: **496.0** lb/hour **2172.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **3.5 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SO2 = 3.5 lb/ton acid x 141.7 tph = 496.0 lb/hr** **X 8760 hrs/yr x ton/2000 lbs = 2172.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **496.0 lb/hr**	4. Equivalent Allowable Emissions: **496.0** lb/hour **2172.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8, 6C**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___5___ **of** ___5___

Pollutant Detail Information Page __2____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **99**
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **SAM = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **BACT**	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

Emissions Unit Information Section ___5___ **of** ___5___

Pollutant Detail Information Page __3____ **of** ___3___

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton acid** Reference: **Permit**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **NOX = 0.12 lb/ton acid x 141.7 tph = 17.0 lb/hr X 8760 hrs/yr x ton/2000 lbs = 74.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ___1___ of ___1___

1. Basis for Allowable Emissions Code: **BACT**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **17.0 lb/hr**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **BACT.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

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: **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): **BACT**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

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: **NA** Manufacturer: Model Number: Serial Number:	
5. Installation Date: **NA**	6. Performance Specification Test Date: **NA**
7. Continuous Monitor Comment (limit to 200 characters): **No changes proposed.**	

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

Supplemental Requirements

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:_____ [ ] Not Applicable [X] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [ ] Not Applicable [X] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
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
10. Supplemental Requirements Comment: **See Report.**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part 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:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

A REPORT IN SUPPORT OF
PSD PERMIT APPLICATION

PREPARED FOR:

IMC PHOSPHATES COMPANY
NEW WALES FACILITY
POLK COUNTY, FLORIDA

NOVEMBER 2001

PREPARED BY:

KOOGLER & ASSOCIATES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(352) 377-5822

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LIST OF FIGURES

LIST OF TABLES

1.0 SYNOPSIS OF APPLICATION

1.1 APPLICANT

IMC Phosphates Company - New Wales Plant, P.O. Box 2000, Mulberry, FL 33860

1.2 FACILITY LOCATION

IMC's New Wales Plant, consists of a phosphate chemical fertilizer manufacturing facility located south of Mulberry on County Road 640 in Polk County. The UTM coordinates of IMC's New Wales plant are Zone 17, 396.6 km east and 3078.9 km north.

1.3 PROJECT SUMMARY

IMC proposes to increase the allowable sulfuric acid production for the site from 14,500 to 17,000 tons per day 100% H2SO4. IMC will modify the existing five sulfuric acid plants over a period of five years in order to increase production. The proposed project will not increase molten sulfur handling rates, currently being permitted at 14,000 tons per day. Truck traffic is expected to decrease as less sulfur would be shipped out and less sulfuric acid will be delivered to the site. No other plant in the facility will be affected by the proposed project.

The proposed project will result in a significant net increase (in accordance with Rule 62-212, Florida Administrative Code (FAC), in the emission rates of sulfur dioxide (SO2), sulfuric acid mist (SAM), and nitrogen oxides (NOX).

IMC is submitting this report in support of the application to the Florida Department of Environmental Protection (FDEP) for the modification of the existing sulfuric acid plants. This report, includes a description of the existing facility and the proposed project, a review of Best Available Control Technology, an ambient air quality analysis and an evaluation of the impact of the proposed project on soils, vegetation, visibility, and the Class I area.

2.0 FACILITY DESCRIPTION

2.1 EXISTING FACILITY

The existing fertilizer complex processes wet 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, super phosphoric acid plant, monoammonium phosphate (MAP) and diammonium phosphate (DAP) plants, animal feed ingredients, and storage, handling, grinding and shipping facilities for phosphate rock, ammonia, sulfur, fertilizer and animal feed ingredients. Figure 2-1 shows the plant location; Figure 2-2 shows the area map; and, Figure 2-3 shows the facility plot plan.

2.1.1 Sulfuric Acid Plants

There are five existing sulfuric acid plants. All five sulfuric acid plants utilize the double absorption process. The first absorption tower of the Sulfuric Acid Plant No. 3 utilizes a heat recovery system (HRS). Molten sulfur is fired into a furnace producing sulfur dioxide. Multiple beds of catalyst convert the sulfur dioxide to sulfur trioxide. Dual absorption towers use sulfuric acid to absorb the sulfur trioxide forming a concentrated acid (product). A significant amount of process heat is recovered by heat exchangers. There are also turbo-generators that convert excess steam into electrical power.

Dual absorption towers control SO2 emissions from the sulfuric acid plants. Mist eliminators are used to control emissions of SAM. There are uncontrolled emissions of NOX from the sulfur combustion process.

The existing sulfuric acid plants, subject to federal New Source Performance Standards as set forth in 40 CFR 60, Subpart H, are presently permitted under a Title V permit.

FIGURE 2-1

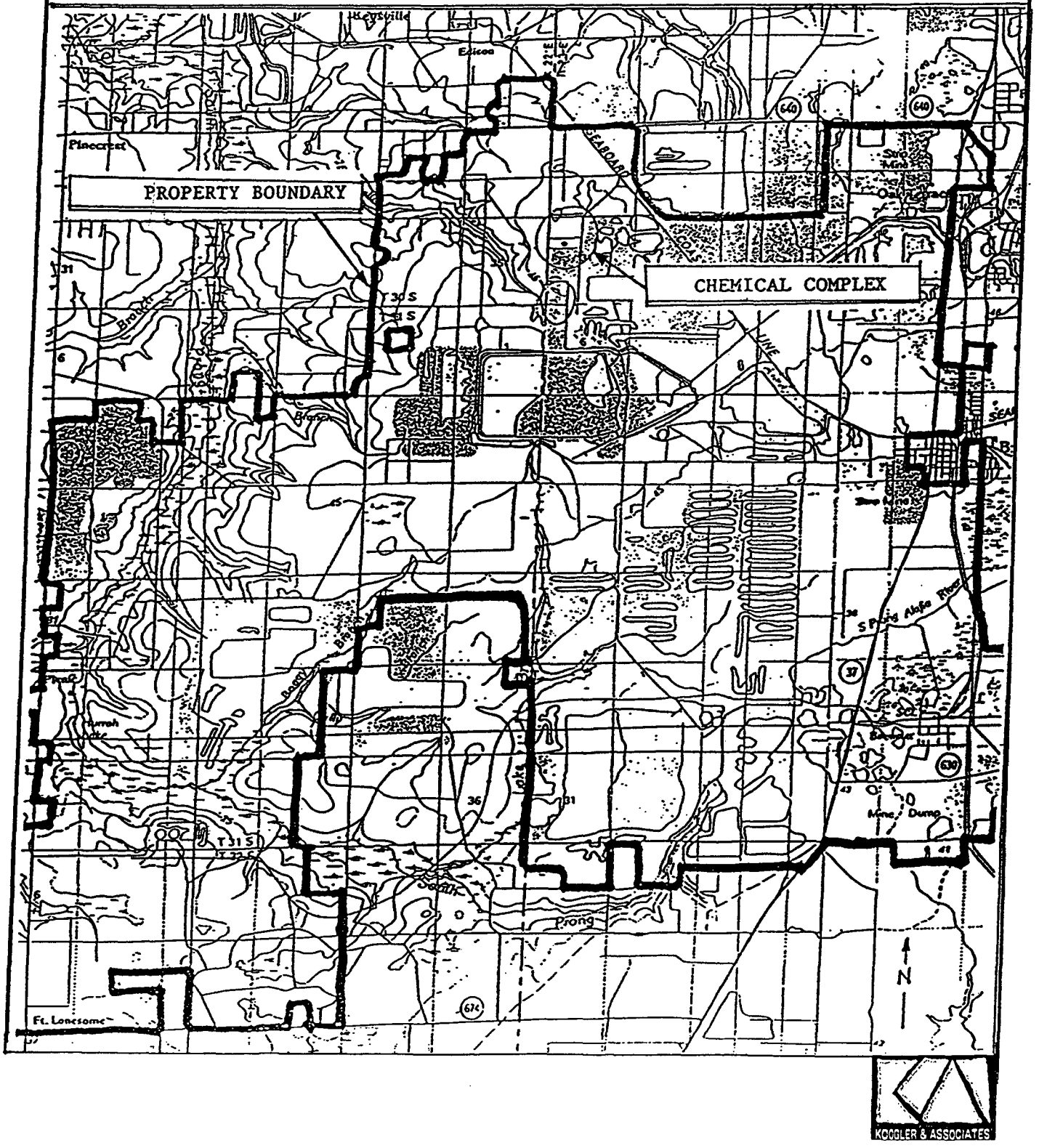
SITE LOCATION MAP

IMC PHOSPHATES COMPANY
NEW WALES PLANT

FIGURE 2-2

AREA LOCATION MAP

IMC PHOSPHATES COMPANY
NEW WALES PLANT



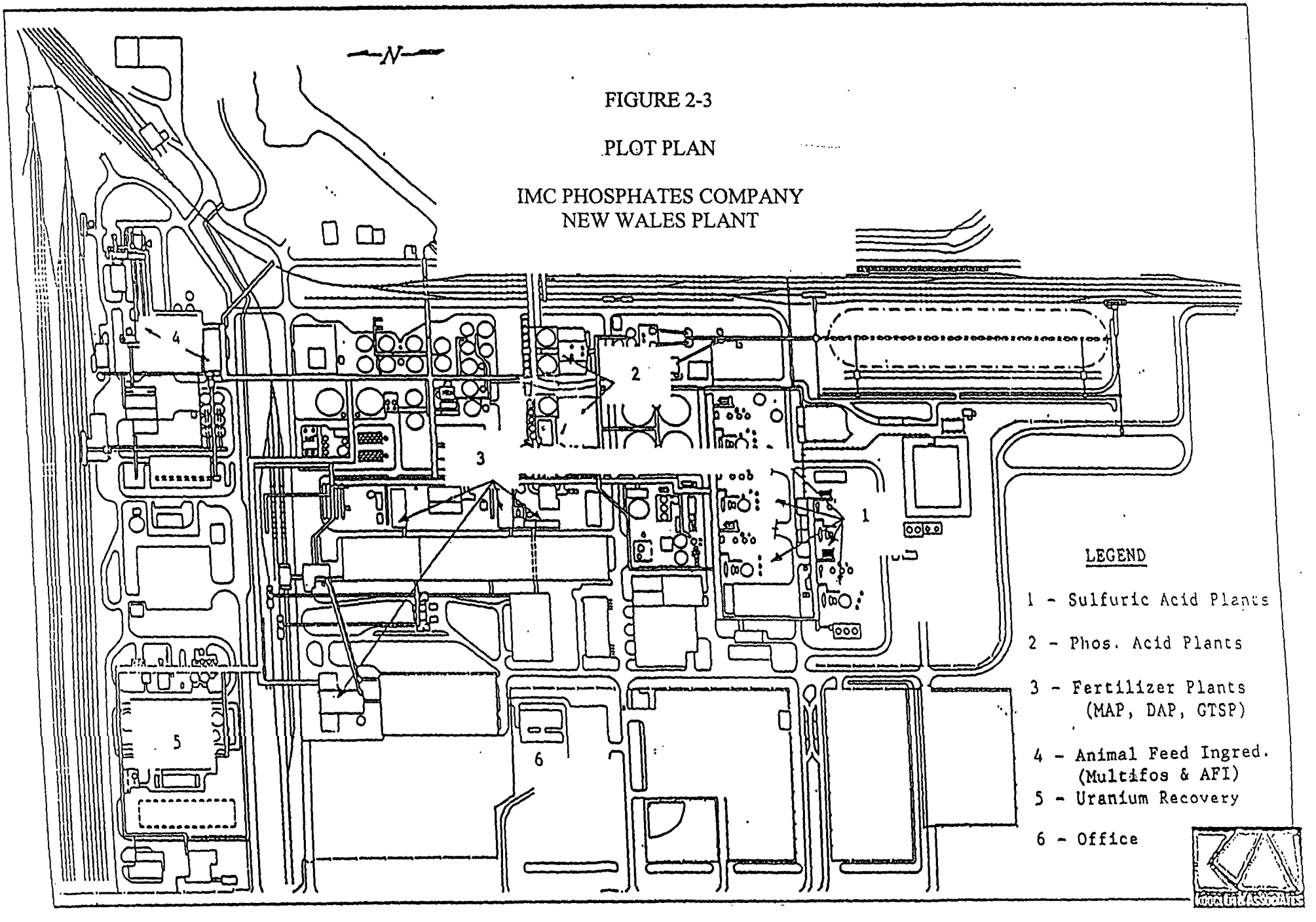


FIGURE 2-3

PLOT PLAN

IMC PHOSPHATES COMPANY
NEW WALES PLANT

3.0 PROPOSED PROJECT

3.1 PROJECT DESCRIPTION

IMC proposes to modify the five existing sulfuric acid plants over the next few years in order to increase the sulfuric acid production rates. The modifications are a combination of routine maintenance and replacement of some equipment along with upgrading of the converters. However, given the financial and operational constraints, all the equipment repairs/replacements will not be done at one time. A schedule of equipment repairs/replacements is presented under separate cover. It is expected that FDEP will identify the items that constitute routine repair and maintenance in order to distinguish them from items that constitute modification. The proposed project does not involve any changes to the manufacturing process. A process flow diagram, for a sulfuric acid plant, is presented in Figure 3-1.

The proposed project will not increase molten sulfur handling rates, currently being permitted at 14,000 tons per day as part of the truck loadout project. As a result of the proposed project, however, truck traffic is expected to decrease as less sulfur would be shipped out and less sulfuric acid will be delivered to the site. No other plant at the facility will be affected by the proposed project.

The proposed SO2 and SAM emission limits for the sulfuric acid plants are more restrictive than required under Federal NSPS and Rule 62-296, Florida Administrative Code (FAC). The SO2 emission limit will be 3.5 pounds per ton of 100 percent sulfuric acid; and, SAM emission limit will be 0.12 pounds per ton of 100 percent sulfuric acid. The emissions of NOX will be limited to 0.12 pounds per ton of 100 percent sulfuric acid, based on an emission factor used in recent permitting of similar sources.

A summary of emission rates is presented in Table 3-1. The net emission changes, summarized in Table 3-2, indicate that the proposed project is expected to result in a

significant net increase in the annual emissions of SO2, SAM and NOX, as defined in Rule 62-212, FAC.

3.2 RULE REVIEW

The following are the state and federal air regulatory requirements that apply to new or modified sources subject to a 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 that are essentially identical to the federal regulations and are contained in Chapter 62-212 of the Florida Administration Code (FAC). All new major sources and major modifications to existing sources 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 CAA. 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 is usually subject to more stringent air permitting requirements. Projects proposed in attainment areas are subject to air permit requirements that ensure continued attainment status.

3.2.2 PSD Increments

In promulgating the 1977 CAA Amendments, Congress quantified concentration increases above an air quality baseline concentration levels for sulfur dioxide (SO_2) and particulate matter (PM/TSP) 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, as amended August 7, 1980, 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 PM (TSP) 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 62-212, 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 that 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 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 applicant 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 exceed 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 minimus 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. In recent years, FDEP has considered the highest-high impacts as indicators for requiring expanded, refined modeling on a case-by-case basis.

3.2.6 Additional Impact Analysis

The PSD rules also require analyses of the impairment to visibility and the impact on soils and vegetation resulting from a project in the vicinity of the project. A visibility impairment analysis must be conducted for PSD Class I areas. Impacts due to commercial, residential, industrial, and other growth associated with the source must be addressed. The National Park Service also requires an Air Quality Related Values (AQRV) Analysis for a Class I area.

3.2.7 Good Engineering Practice Stack Height

In accordance with Chapter 62, 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 greater 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.

At a given site, the actual stack height may be higher or lower.

3.3 RULE APPLICABILITY

The proposed project at IMC, as previously described herein, is classified as a major modification to a major source subject to both state and federal regulations as set forth in Rule 62-212, FAC.

The facility is located in an area classified as attainment for each of the regulated air pollutants in accordance with Rule 62-275, FAC.

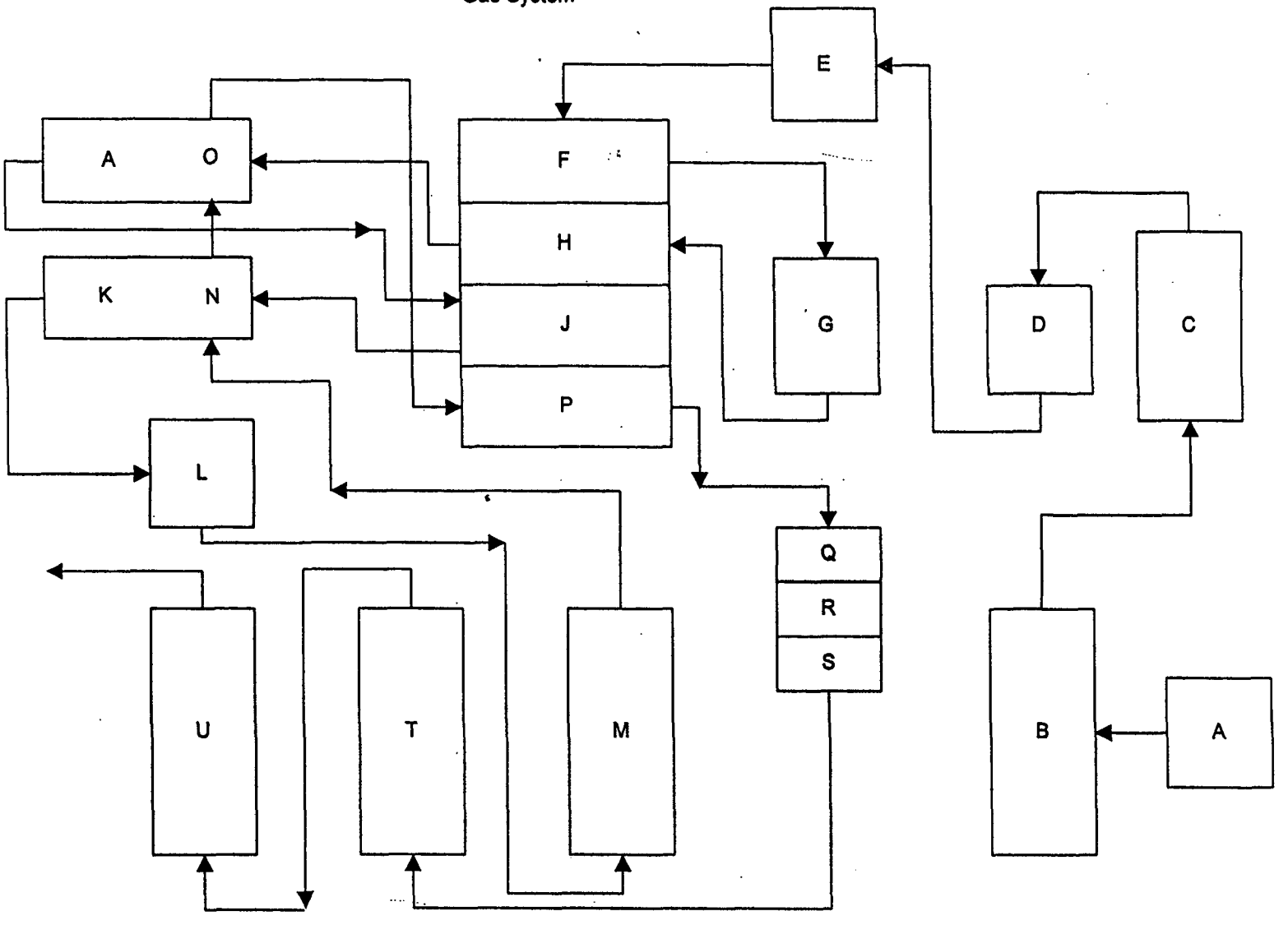
The proposed project will result in significant increases in the emissions of SO2, SAM and NOX, as defined in Rule 62-212, FAC; and, will therefore be subject to PSD preconstruction review requirements.

The PSD review will include a determination of Best Available Control Technology, an air quality review, Good Engineering Practice stack height analysis and an evaluation of impacts on soils, vegetation and visibility.

FIGURE 3-1

Process Flow Diagram - 01 Sulfuric Acid Plant

Gas System



A – Blower (Turbine)
B – Drying Tower
C – Furnace
D – #1 Waste Heat Boiler
E – OA Superheater
F – Converter; 1st Pass
G – #2 Waste Heat Boiler
H – Converter; 2nd Pass
I – Hot Pass Heat Exchanger
J – Converter; 3rd Pass
K – Cold Pass Heat Exchanger
L – 3B Economizer
M – Interpass (IPA) Tower*
O – Hot Pass Heat Exchanger
P – Converter;4th Pass
N – Cold Pass Heat Exchanger
Q – 4A Superheater
R – 4C Economizer
S – 4A Economizer
T – Final Absorption Tower
U – Stack

TABLE 3-1

SUMMARY OF EMISSION CHANGES

Emission Unit	SAD1	SAD2	SAD3	SAD4	SAD 5
ALLOWABLES					
Operating Rate, tph	120.8	120.8	120.8	120.8	120.8
Annual Hours	8760	8760	8760	8760	8760
Sulfur Dioxide, lb/hr	483.3	483.3	483.3	483.3	483.3
Sulfur Dioxide, tpy	2117	2117	2117	2117	2117
Acid Mist, lb/hr	18.1	18.1	18.1	18.1	18.1
Acid Mist, tpy	79.4	79.4	79.4	79.4	79.4
Nitrogen Oxides, lb/hr	14.5	14.5	14.5	14.5	14.5
Nitrogen Oxides, tpy	63.5	63.5	63.5	63.5	63.5
ACTUALS					
Operating Rate, tph	120.8	120.8	120.8	120.8	120.8
Avg.Annual Hours	8511	8551	8463	8545	8485
Sulfur Dioxide, lb/hr	398	423	388	416	395
Sulfur Dioxide, tpy	1694	1808	1640	1777	1676
Acid Mist, lb/hr	5	7	8	10	11
Acid Mist, tpy	21	30	32	41	45
Nitrogen Oxides, lb/hr	8	11	7	7	8
Nitrogen Oxides, tpy	34	47	30	30	34
PROPOSED					
Operating Rate, tph					
Annual Hours	8760	8760	8760	8760	8760
Sulfur Dioxide, lb/hr	496	496	496	496	496
Sulfur Dioxide, tpy	2172.5	2172.5	2172.5	2172.5	2172.5
Acid Mist, lb/hr	17	17	17	17	17
Acid Mist, tpy	74.5	74.5	74.5	74.5	74.5
Nitrogen Oxides, lb/hr	17	17	17	17	17
Nitrogen Oxides, tpy	74.5	74.5	74.5	74.5	74.5

TABLE 3-2

NET EMISSION INCREASES

Emission Unit	SAD1	SAD2	SAD3	SAD4	SAD 5	Total
ACTUAL EMISSIONS						
Sulfur Dioxide, tpy	1694	1808	1640	1777	1676	8595
Acid Mist, tpy	21	30	32	41	45	169
Nitrogen Oxides, tpy	34	47	30	30	34	175
PROPOSED EMISSIONS						
Sulfur Dioxide, tpy	2172.5	2172.5	2172.5	2172.5	2172.5	10862.5
Acid Mist, tpy	74.5	74.5	74.5	74.5	74.5	372.5
Nitrogen Oxides, tpy	74.5	74.5	74.5	74.5	74.5	372.5

NET EMISSIONS INCREASE	TPY	PSD SIG. TPY	PSD REVIEW
Sulfur Dioxide, tpy	2267.5	40	YES
Acid Mist, tpy	203.5	7	YES
Nitrogen Oxides, tpy	197.5	40	YES

NOTES:
(1) The allowable emissions are based on the current Title V permit.
(2) Actual emissions are estimated based on 1999 and 2000 data.
(3) Proposed emissions based on BACT review.
(4) PSD significant emission levels based on Rule 62-212, FAC.

TABLE 3-3

MAJOR FACILITY CATEGORIES

Fossil fuel fired steam electric plants of 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

Pollutant	Significant Emission Rate tons/yr	De-Minimus Ambient Impacts ug/m^3
CO	100	575 (8-hour)
NOX	40	14 (NO_2, 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)
H_2SO_4 mist	7	-
Fluorides	3	0.25 (24-hour)
MSW Combustor:		
Organics (Dioxins/Furans)	3.5E-6	
Metals (PM)	15	
Acid Gases (SO2/HCl)	40	
MSW Landfill Gases (NMOC)	50	
	pounds/yr	
Lead	1200	0.1 (Quarterly avg)
Mercury	200	0.25 (24-hour)

TABLE 3-5

AMBIENT AIR QUALITY STANDARDS

Pollutant	FDEP (State)		USEPA (National)			
			Primary		Secondary	
	ug/m^3	PPM	ug/m^3	PPM	ug/m^3	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

Pollutant	Allowable PSD Increments (State/National)		
	Class I	Class II	Class III
	ug/m3	ug/m3	ug/m3
PM10, Annual	4	17	34
24-hour	8	30	60
SO2, Annual	2	20	40
24-hour	5	91	182
3-hour	25	512	700
NO_2, 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 have been summarized in Table 3-2. The SO2, SAM and NOX emissions increase from the proposed project will represent a significant increase.

The SO2, 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 SO2 in the tail gas is approximately 30 pounds per ton of acid produced and the SAM is approximately 4 pounds per ton of acid produced. In a typical plant with a double absorption system, the SO2 in the tail gas is approximately 4 pounds per ton of acid produced and the SAM is approximately 0.15 pounds per ton of acid produced. The NOX that are present in the tail gas are formed in the sulfur burners as a result of the fixation of atmospheric nitrogen. NOX emissions have been typically permitted at 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 SO2 emissions to be limited to no more than 4.0 pounds per ton of 100 percent acid produced and require that SAM 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 or modified sulfuric acid plants to less than 10 percent. There are no applicable emission standards for NOX 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 SO2 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 SAM, 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 1997. No control technologies for NOX 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.

IMC is proposing to continue to use the double absorption process in the existing plants.

4.2 CONTROL TECHNOLOGIES

The control of SO2 and SAM emissions from sulfuric acid plants can be achieved by various processes. The process of choice for SO2 control has been double absorption and the process of choice for controlling SAM 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 double absorption process for SO2 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 NOX in sulfuric acid plants has not been addressed to date because the low concentration of NOX 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 SO2 and SAM emissions from sulfuric acid plants were addressed. The alternatives included the double absorption process, ammonia scrubbing, sodium sulfite-bisulfite scrubbing, and molecular sieves for SO2 control and filter type mist eliminators and electrostatic precipitators for SAM 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 NOX control in either the 1985 EPA NSPS review or in the BACT/LAER Clearinghouse.

4.2.1 Sulfur Dioxide Control

The control alternatives for SO2 have been summarized based upon information compiled by EPA in the 1985 NSPS review for sulfuric acid plants and information recently submitted to FDEP by companies with similar sulfuric acid plants during review of production increase requests (refer to PSD-FL-225, 229, 235, 238 and 278).

4.2.1.1 Double Absorption Process

The double 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 SO2

control. The process offers the following advantages over other SO_2 control technologies:

- 99.7 percent of the sulfur is converted to sulfuric acid compared with about 97.7 percent conversion with a single absorption plant;
- there are no by-products produced;
- there are no new operating processes that plant personnel must become familiar with;
- the process permits higher inlet SO2 concentrations resulting in a reduction in equipment size;
- there is no reduction in overall plant operating time or efficiency; and
- there is no increase in manpower requirements.

A double absorption plant is capable of operating at a SO2 emission rate of 4.0 pounds per ton of acid or less as required by New Source Performance Standards (NSPS). However, in an effort to optimize plant performance, most plants in the fertilizer industry tend to run at SO2 emission levels close to the permitted rate.

It should be noted that when EPA adopted the NSPS for sulfuric acid plants in 1971, it was recognized that double absorption plants could operate with a SO2 emission rate in the range of 2-4 pounds per ton of acid. The SO2 emission limit, however, was set at 4.0 pounds per ton of acid to account for small fluctuations that invariably occur in operating plants.

Since the adoption of the NSPS, there have been design and operating changes in sulfur burning sulfuric acid plants as well as changes and improvements in catalyst technology. At the time the NSPS were adopted, the SO2 concentration in the gas stream leaving the

sulfur burner was in the range of 9.0-9.5 percent. In recent years, the SO2 concentration at the burner exit has been increased to 11.5-11.7 percent to optimize a plant capacity.

It should be noted that sulfuric acid plants operating in conjunction with smelters or spent acid regeneration plants still operate with a feed gas SO2 concentration in the range of 7-9 percent. Because of the effect the O2:SO2 ratio has on the SO2:SO3 equilibrium, it is not possible to compare the performance of a sulfur burning sulfuric acid plant as operated in Florida with a sulfuric acid plant operating at a smelter or a spent acid recovery plant.

The second improvement in sulfuric acid plant technology has been in catalyst performance. Changes have occurred in the composition of the vanadium/sodium/ potassium catalyst and in the physical shape of the catalyst; from a pellet (4 and 6 millimeters in diameter by 8-15 millimeters long) to a ring-type structure. The change in the composition of the catalyst plus the change in the catalyst shape has resulted in a catalyst with a higher activity and a much lower pressure drop. These changes coupled with the increase in the SO2 concentration of the feed gas have allowed sulfur burning sulfuric acid plants to operate much more efficiently and still operate in compliance with the NSPS limit for SO2 of 4.0 pounds per ton of acid.

As in 1971, plants can still operate with SO2 emissions somewhat below 4.0 pounds per ton of acid but slight fluctuations do occur which result in SO2 emissions that approach the NSPS limit. It was the intent of EPA when the NSPS limits were adopted in 1971 and reviewed in 1985 that the SO2 emission limit should be set with a margin of safety that will allow for these slight fluctuations in plant operation without the occurrence of a reportable violation.

Suggestions have been made that if the time between turnarounds is reduced to approximately nine months, the activity of the catalyst will be upgraded more frequently resulting in lower SO2 emissions. While catalyst activity will be improved as a result of screening and partial replacement, the plant production rate will also be increased.

Consequently, the effect of increasing the frequency of sulfuric acid plant turnaround from once every 18 months to once every nine months is not expected to substantially reduce SO2 emissions since the plant will be operating at an overall higher production rate and thus emitting more SO2.

A recent detailed cost analysis for a similar plant in the vicinity of IMC indicated a cost of the interim turnaround (the 9-month turnaround) in the range of $600,000 with an expected decrease in SO2 emissions of approximately 25 tons per year. The cost of SO2 control using this approach is almost $24,000 per ton. More frequent catalyst changes are therefore rejected from BACT consideration.

4.2.1.2 Addition of Another Catalyst Bed to a Double Absorption Sulfuric Acid Plant

Most double absorption sulfur burning sulfuric acid plants consist of a sulfur burner, three catalyst beds to convert SO2 to SO3, an intermediate absorption tower, a fourth catalyst bed, a final absorption tower, acid mist control and a heat recovery system. These plants are referred to as 3 by 1 (three catalyst beds followed by one) plants. The predominance of this type of plant is dictated by the fact that this arrangement has been determined to be the most cost-effective design.

The conversion of SO2 produced in the sulfur burner to SO3 in the catalyst bed and the subsequent absorption of the SO3 determines the conversion efficiency of a plant (conversion of sulfur to sulfuric acid). As the only release of unconverted sulfur is as SO2 (and a small amount of acid mist) in the stack gas, the conversion efficiency also determines the emissions from the plant.

The conversion from SO2 to SO3 is a complex reaction. The equilibrium concentrations of this reaction are determined in part by temperature, the O2:SO2 ratio and the SO3 concentration. The approach to this equilibrium is a function of temperature, reaction time and the activity of the catalyst.

Lower temperatures promote a higher conversion of SO2 to SO3; however, lower temperatures reduce the reaction rate. Increasing the contact time to compensate for a reduced reaction rate at lower temperatures requires more catalyst (greater contact time). The overall conversion process is a complex balance between these and possibly other factors in a temperature range between approximately 770°F and 1150°F and in a time period of approximately 1.5 seconds.

The lower temperature limit is determined by the activation temperature of the catalyst. Conventional catalysts have an operating temperature range of approximately 770°F to 1150°F.

In a typical double absorption plant (a 3 by 1 plant), approximately 90-94 percent of the SO2 is converted to SO3 in the first three catalyst beds. The gas stream then passes through an intermediate absorption tower where the SO3 is absorbed resulting in a shift in the equilibrium curve favoring further conversion of SO2 to SO3. In the fourth catalyst bed, conversion from 90-94 percent to the final overall conversion of 99.7 percent occurs. This overall conversion results in a SO2 emission rate of 4.0 pounds per ton of acid produced.

The addition of one or more catalyst beds following the final bed (without the addition of a third absorption tower) will theoretically result in a fractional increase in conversion efficiency. The increase is limited by the slope of the equilibrium curve and by the fact that the temperature required to reach the higher conversion approaches the lower activation limits of the catalyst. In practice, no measurable improvement in conversion is observed between a 3 by 1 plant and a 3 by 2 plant. Therefore, additional catalyst beds are rejected as BACT.

4.2.1.3 Ammonia Scrubbing

Five sulfuric acid plants constructed between 1971 and 1985 use ammonia scrubbing for SO2 control. None of these plants were double absorption plants. The process can be

effective for reducing SO2 emissions to below 4.0 pounds per ton and also for controlling sulfuric acid mist emissions. The major disadvantages of ammonia scrubbing are:

- a waste by-product is produced;
- the scrubbing system is a high maintenance item and requires additional manpower for operation; and
- no sulfuric acid production increase benefits are achieved with the scrubbing system.
- the environmental liabilities of introducing a toxic air pollutant release point at another location in the plant.

Ammonia scrubbing uses anhydrous ammonia and water in a scrubbing system to convert SO2 to ammonium sulfite/bisulfite and eventually to ammonium sulfate. The ammonium sulfate can be crystallized and sold as a market commodity, it can be blended in a MAP/DAP plant or it can be disposed of as a waste. One plant that operates ammonia scrubbers on sulfuric acid plants had an ammonium sulfate crystallizer but abandoned it because of the volatility of the market. Blending with MAP or DAP is viable only if the additional sulfate (from ammonium sulfate) does not adversely affect the grade of the MAP/DAP product. At IMC, the additional sulfate cannot be added to the granular fertilizer as the grade of the fertilizer has to be maintained to be competitive in the market.

Due to the reduced plant reliability from the scrubber system, and the environmental liability associated with the waste disposal and accidental release provisions of the Clean Air Act, the ammonia scrubbing is rejected as BACT.

4.2.1.4 Other Scrubbing Technologies

Between 1971 and 1985, two sulfuric acid plants were constructed employing sodium sulfite-bisulfite scrubbing to control SO2 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 SO2 control alternative.

Other scrubbing liquors that have a potential for reducing SO2 emissions include caustic, sodium carbonate, calcium oxide and hydrogen peroxide. Without going through a detailed cost analysis to evaluate these scrubbing technologies, it can be stated that the capital investment cost and many of the direct and indirect annual costs will be very similar to the costs incurred with ammonia scrubbing. Because of higher chemical costs and/or waste disposal costs, these other technologies are expected to be more costly than ammonia scrubbing. For this reason, these technologies are rejected as BACT.

4.2.1.5 Molecular Sieves

A molecular sieve was installed at one sulfuric acid plant in Florida for SO2 control. The system was effective for controlling SO2; however, extensive operating problems were experienced as the molecular sieve also absorbed NOX. The molecular sieve regeneration process 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 abandoned. As a result, molecular sieves are not considered a viable alternative for SO2 control in sulfuric acid plants.

4.2.1.6 Catalyst Selection

Changes in catalyst composition and shape have occurred since the promulgation of the NSPS for sulfuric acid plants. The first major change was a change in catalyst shape. The catalyst went from pellets that were 4.0 millimeters and 6.0 millimeters in diameter

by 8-15 millimeters long to a ring-type catalyst. The major effect of this shape change was to reduce the pressure drop through the catalyst beds. The results of this improvement were to extend the time between plant turnarounds to around 24 months and to reduce blower operating costs.

A change in catalyst composition, beyond changes in the vanadium content of the catalyst, has been the reintroduction of the "cesium catalyst". The cesium catalyst is a 6-8 percent vanadium catalyst with a portion of the potassium promoter replaced by cesium. The introduction of cesium reduces the activation temperature of the catalyst by approximately 20°F (from about 770°F to 750°F). At temperatures above approximately 770°F, the performance of the cesium catalyst and the conventional catalyst are about the same.

The advantage of the cesium catalyst is that it allows the startup of a sulfuric acid plant at a lower entrance gas temperature. This is a distinct advantage for sulfuric acid plants operating at smelters and spent acid recovery plants where there are frequent plant startups and shutdowns. In sulfuric acid plants that are operating at a steady-state, the potential advantage of using a cesium catalyst is that the temperature (normally of the last catalyst bed) can be reduced about 20°F.

The disadvantage of the shift to a lower temperature is the reduction in the reaction rate which slows the approach to equilibrium. The reduction in reaction rate therefore could offset the more favorable conversion resulting in no appreciable overall improvement in plant conversion efficiency.

Although cesium catalyst has rarely been used in sulfur burning plants, it has some advantages in spent acid and metallurgical sulfuric acid plants. The advantages are related to plant startup at lower gas temperatures. However, there is a potential for pressure buildup when using cesium catalyst as well as a compatibility problem of the heat exchange systems operating temperature ranges in existing plants with cesium

catalyst. Another disadvantage of the cesium catalyst is that the cesium catalyst cost is about twice the cost of conventional catalyst.

Thus, the improved conversion efficiency must be balanced against the reduced reaction rate and the heat exchange capacity of existing plants. Other unknowns or disadvantages of using cesium catalyst in sulfur burning double absorption plants include the potential for pressure drop buildup which will increase plant turnaround frequency and the costs associated therewith, and the premium costs of cesium catalysts. For these reasons, cesium catalyst has not been used in sulfur burning double absorption plants and hence, is rejected as BACT.

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 Mist Eliminators

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

The mist eliminators are the control of choice for SAM 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 SAM 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.

IMC may use Brinks HV pads, or may opt to use ES candles. In either case, it will offer very effective control of SAM emissions.

4.2.3 Nitrogen Oxides Control

The combustion of sulfur in a sulfur burning sulfuric acid plant is a relatively low temperature process at oxygen levels that are, out of necessity, relatively high. The gas temperature exiting a sulfur furnace is in the range of 2000°F with an oxygen concentration in the range of 9.2 percent. If the oxygen concentration is decreased (and the SO2 concentration correspondingly increased), the catalyst in sulfuric acid plants becomes ineffective and SO2 to SO3 conversion efficiency drops off markedly. The temperature of the exit gas is strictly a function of the heat of combustion of sulfur at the air flow rate necessary to provide approximately 9.2 percent oxygen and 11.7 percent SO2 in the furnace exit gas.

Compared to a fossil fuel fired combustion source, the temperature of a sulfur furnace is generally lower and the oxygen content of the combustion gas is generally higher. As a result of the relatively low combustion temperature, the NOX concentration in the gas stream leaving the sulfur furnace is inherently quite low. As a result, there has historically not been any emphasis placed on controlling NOX emissions from the sulfuric acid plants. For purposes of this analysis, control technologies for NOX will be briefly reviewed as they might apply to sulfur burning sulfuric acid plants.

Flue gas recirculation and low-NOX burners are not applicable. Flue gas recirculation would not be practical as reducing oxygen levels below 9.2 percent will be counterproductive as previously discussed. The low-NOX burner is not applicable for the reason that combustion temperatures are already relatively low and further refinements to the combustion process will not be productive in further reducing the NOX concentration in the furnace exit gas. Furthermore, low-NOX for sulfur furnaces do not exist.

Add-on control devices include selective catalytic and non-catalytic NOX reduction. Both involve the introduction of ammonia to the stack gas. If introduced, the ammonia would first react with any sulfuric acid mist that is present, producing an ammonium sulfite/bisulfite/sulfate aerosol. These aerosols will plug the mist eliminator normally used in sulfuric acid plants if the NOX control system is installed prior to the mist eliminator. If installed after the mist eliminator, the aerosols will be extremely difficult to remove from the gas stream and will result in a very visible plume from the sulfuric acid plant.

Another consideration related to the use of catalytic and non-catalytic NOX reduction is the operating temperature of the systems. The catalytic reduction system requires a temperature in the range of 600-750°F while the non-catalytic reduction system requires a temperature between 1500-2200°F. The temperature of the gas stream exiting a sulfuric acid plant is normally in the range of 170°F. The energy to heat the gas stream to a temperature range of 600-700°F would be about 50 MMBtu per hour. The NOX generated by the production of this heat by fossil fuel combustion would be about 7.5 pounds per hour. This compares to the total NOX emissions rate from a nominal 2000 ton per day plant of about 10 pounds per hour.

This brief analysis of NOX control alternatives demonstrates that none are applicable to sulfur burning sulfuric acid plants.

4.3 BACT CONCLUSION

Considering the above BACT analysis, IMC proposes the use of the double absorption system for SO2 control with no restrictions on operating practices or on catalyst type. For SAM control, IMC proposes the use of mist eliminators and for NOX emissions, no control is proposed.

5.0 AIR QUALITY REVIEW

The air quality review required of a PSD construction permit application potentially requires both air quality modeling and air quality monitoring. The air quality monitoring is required when the impact of air pollutant emission increases and decreases associated with a proposed project exceed the de minimis impact levels (see Table 3-4) or in cases where an applicant wishes to define existing ambient air quality by monitoring rather than by air quality modeling. The air quality modeling is required to provide assurance that the increases and decreases in air pollutant emissions associated with the project, combined with all other applicable air pollutant emission rate increases and decreases associated with new sources affecting the project area, will not cause or contribute to an exceedance of the applicable ambient air quality standards.

The air quality review for the proposed project included emission increases associated with the sulfuric acid plants. The pollutants evaluated include SO2, SAM, and NOX.

5.1 AIR QUALITY MODELING

5.1.1 Significant Impact Analysis

The emission rates used for air quality modeling purposes for Significant Impact Analysis (SIA) represent the proposed net increase in the emission rate associated with the proposed project. Table 5-1 contains modeling input parameters used in the ambient air quality impacts analysis.

The impact analysis of the net increase in emissions was conducted using the Industrial Source Complex-Short Term air quality model, Version 00101 (ISC3), in accordance with guidelines established by EPA and published in the document, Guideline for Air Quality Modeling. The meteorological data used with the model were for Tampa, Florida and represented the period 1987-1991.

The emissions from sulfuric acid plants 1, 2, 3, 4 and 5 were modeled in the SIA. The currently permitted emission rates were represented as a negative input while the proposed emission rates were represented as a positive inputs to the model.

The SIA modeling included discrete receptors at the facility property boundary and additional receptors established by the polar grid system extending to 20 kilometers from the plant. The discrete receptors were placed along the property boundary at 100-meter intervals. 24 sets of receptor rings were placed at distances ranging from about 1700 to 20,000 meters from the plant with receptors placed at 10 degree intervals from 10^{o} to 360^{o} on each receptor ring, with the exclusion of receptors within IMC's property boundary. The downwind receptor distances were selected in order to provide a higher concentration of receptors closer to the source where the maximum impacts were expected. Receptor locations are shown in Figure 5-1. Additional receptors were also located in a 1000 meter square grid surrounding the maximum impact location to confirm the maximum predicted impact.

The SIA modeling for the Class I area were conducted using the CALPUFF model, as requested by FDEP, for estimating the ambient air impacts of SO2 and NOX emissions at Chassahowitzks National Wildlife Refuge. This Class I area is located more that 100 km from the proposed project.

The results of the SIA modeling, summarized in Table 5-2, demonstrate that the predicted ambient air quality impact of the SO2 emission increases from the proposed project for the Class II area are less than significant for the 3-hour, 24-hour and annual periods as well as for the Class I area. Consequently, additional modeling was not required to determine compliance with the ambient air quality standards and allowable Class II area PSD increments.

The SIA modeling also demonstrated that the maximum predicted NOX impacts from the proposed project will not be significant.

No ambient air quality standards, PSD increments or significant impact levels have been established for SAM. FDEP's current permitting guideline for air toxics requires temporary facilities to evaluate short-term impacts for comparison with Air Reference Concentrations (ARC) listed in Version 3 of the Air Toxics List. However, permanent facilities have to evaluate annual impacts to compare with the ARCs. As there is no annual ARC for sulfuric acid mist, no comparisons are required.

It should be noted that the maximum sulfuric acid mist impacts from the proposed project would be expected to occur at locations which are both remote and far from the population centers (based on the results of the modeling for sulfur dioxide emissions). Also, 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 concern.

FIGURE 5-1

RECEPTOR LOCATIONS

IMC PHOSPHATES COMPANY
NEW WALES PLANT

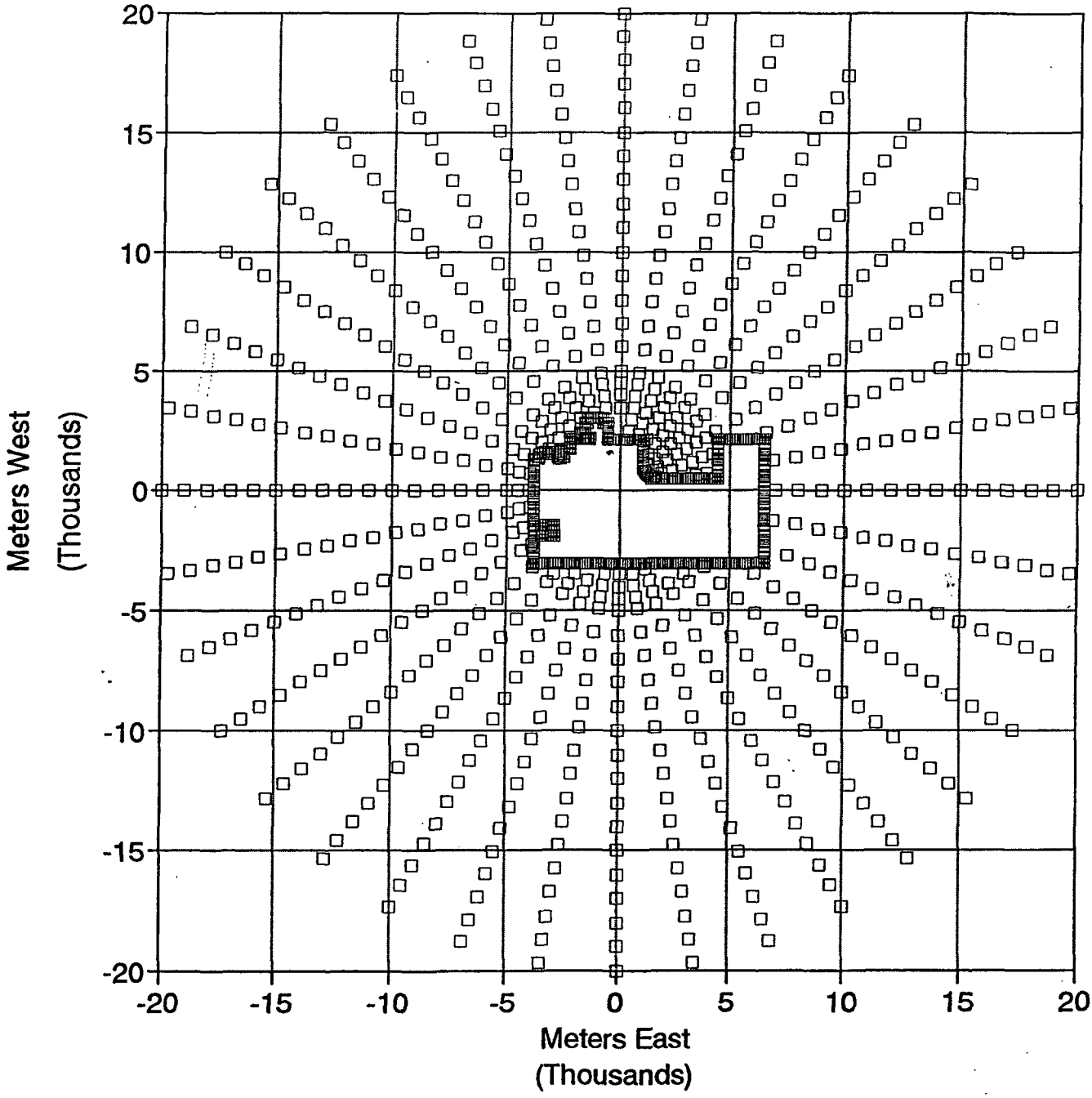


TABLE 5-1

AIR QUALITY MODELING PARAMETERS

	Stack		Stack Gas		Emission Rates	
Emission	Ht	Dia	Vel	Temp	SO2	NOX
Unit	(m)	(m)	(mps)	(°K)	(g/s)	(g/s)
Existing						
SAP1	60.98	2.59	12.50	350	60.9	0.97
SAP2	60.98	2.59	12.50	350	60.9	1.38
SAP3	60.98	2.59	12.50	350	60.9	0.91
SAP4	60.98	2.59	12.50	350	60.9	0.87
SAP5	60.98	2.59	12.50	350	60.9	0.97
Proposed						
SAP1	60.98	2.59	14.60	350	62.5	2.14
SAP2	60.98	2.59	14.60	350	62.5	2.14
SAP3	60.98	2.59	14.60	350	62.5	2.14
SAP4	60.98	2.59	14.60	350	62.5	2.14
SAP5	60.98	2.59	14.60	350	62.5	2.14

NOTES:

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

TABLE 5-2

SUMMARY OF SULFUR DIOXIDE AND NITROGEN OXIDES
SIGNIFICANT IMPACT ANALYSIS

MET. DATA	CLASS II AREA IMPACTS (1)			
	SO2			NOX
	ANNUAL	3-HR	24-HR	ANNUAL
ISC3 Model				
1987	0.01	5.79	0.77	0.17
1988	0.01	5.76	1.01	0.14
1989	0.01	6.56	1.04	0.20
1990	0.01	13.25	1.75	0.19
1991	0.01	8.78	2.08	0.18
Sig. Impact Level	1	25	5	1
CALPUFF Model				
Class I Impact	0.002	0.24	0.06	0.002
Sig. Impact Level	0.03	1.0	0.2	0.1

NOTE:

(1) The impacts represent the highest-high impact.

(2) The impacts are based on the difference between the existing and proposed SO2 emissions from the sulfuric acid plants (see Table 5-1).

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 sources addressed in this application is 213 feet. The IMC sulfuric acid plant stacks are all less than 213 feet in height above-grade. This satisfies the good engineering practice (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 that has been conducted as a requirement for the PSD application demonstrates that the levels of SO2 expected in the vicinity of the proposed project are below the ambient 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.

The IMC plant property and the surrounding areas are comprised of 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 that determine the terrestrial communities of the region.

The land in the vicinity of the IMC plant supports various plant communities. 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. As a result, no adverse impacts from the proposed project are expected on the soils and vegetation in the vicinity of the facility.

7.2 GROWTH RELATED IMPACTS

The proposed modification will require no increase in personnel to operate the facility. Also, as mentioned previously, truck traffic is expected to decrease as less sulfur would be shipped out and less sulfuric acid will be delivered to the site. Therefore, no additional growth impacts are expected as a result of the proposed project. Additionally, emissions of unconfined particulate matter are controlled by using paved roads.

7.3 VISIBILITY IMPACTS

The proposed project will result in an increase in air emissions and therefore 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 IMPACTS ON CLASS I AREA AIR QUALITY RELATED VALUES

The analysis addressed in this section addresses the review of the impact of increased emissions on air quality related values associated with the Chassahowitzka Wildlife Refuge, a Class I area located in excess of 100 kilometers northwest of the IMC New Wales Plant.

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 inter-dispersed with long periods of no exposure or extremely low concentrations. This is the pattern of exposure that would be expected from SO2, NOX and SAM emissions from the proposed project impacting the Class I area.

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 SO2 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.

SO2 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 SO2. 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 SO2 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 7-3 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 SO2 (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak and mangrove exposed to 1300 micrograms per cubic meter of SO2 for 8-hours were not visibly damaged. This is consistent with the results reported in Table 7-3. 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 SO2 concentration of 920 micrograms per cubic meter for a 3-hour period.

Acute injury results from a plants inability to quickly convert absorbed SO2 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 SO2 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 SO2 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 SO2 impacts from the proposed project are expected to be well below the ambient air quality standards (see Table 5-2).

The maximum expected concentrations of acid mist in the Chassahowitzka area resulting from the increased emissions from IMC 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 100 kilometers from IMC 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 IMC are well below concentrations that have been reported to produce vegetation damage.

Given that the maximum predicted Class I area NOX impacts are less than significant, no adverse impact to the Class I area vegetation are expected from the NOX emissions from the proposed project.

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 SO2 and sulfate concentrations in the Chassahowitzka area resulting from the increased emissions from the IMC plant, 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.

Given that the maximum predicted Class I area NOX impacts are less than significant, no adverse impact to the Class I area soils are expected from the NOX emissions from the proposed project.

7.4.3 Impacts on Wildlife

As the predicted SO2 and NOX 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. Visibility Impairment Analysis

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, and the regional haze analysis, presented in Table 7-2, indicate that no adverse visibility impacts are expected as a result of the proposed project.

TABLE 7-1

VISUAL EFFECTS SCREENING ANALYSIS

IMC PHOSPHATES COMPANY
NEW WALES PLANT

Class I Area: CHASSAHOWITZKA NWR

Input Emissions for
Particulates 2.14 G /S
NOx (as NO2) 2.14 G /S
Primary NO2 .00 G /S
Soot .00 G /S
Primary SO4 .00 G /S

Transport Scenario Specifications:
Background Ozone: .04 ppm
Background Visual Range: 65.00 km
Source-Observer Distance: 103.00 km
Min. Source-Class I Distance: 103.00 km
Max. Source-Class I Distance: 123.00 km
Plume-Source-Observer Angle: 11.25 degrees
Stability: 6
Wind Speed: 1.00 m/s

RESULTS

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.	103.0	84.	2.00	.092	.05	.001
SKY	140.	84.	103.0	84.	2.00	.019	.05	-.001
TERRAIN	10.	84.	103.0	84.	2.00	.044	.05	.000
TERRAIN	140.	84.	103.0	84.	2.00	.009	.05	.000

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.	30.	78.1	139.	2.00	.113	.05	.001
SKY	140.	30.	78.1	139.	2.00	.020	.05	-.001
TERRAIN	10.	50.	90.0	119.	2.00	.057	.05	.001
TERRAIN	140.	50.	90.0	119.	2.00	.012	.05	.000

FIGURE 7-2

REGIONAL HAZE ANALYSIS

IMC PHOSPHATES COMPANY
NEW WALES PLANT

Example Calculation

Background from the 20% Cleanest Days				
SO2 =	0.00329	ppm =	8.62	ug/m^3
SO4 = SO2 * 1.5 =			12.92	ug/m^3
(NH4)SO4 = 1.1875 * SO4 =			15.35	ug/m^3
NO2 =	0.0085	ppm =	16	ug/m^3
NO3 = 1.348 * NO2 =			21.55	
(NH4)2NO3 = 1.29 * NO3 =			27.80	ug/m^3
(NH4)SO4 + (NH4)2NO3 =			43.15	ug/m^3
PM10 =	22.5		22.5	ug/m^3
Assume 90% RH fRH =	5			
Background extinction =		b back	238.26	Mm-1

Source	Impact ug/m^3
NO2	0.002205
SO2	0.055292
H2SO4 =	0.00203

SO4 = SO2 * 1.5 =	0.08598		
(NH4)2SO4 = 1.375 * SO4 =		0.1182	ug/m^3
(SO2+H2SO4)*1.5*1.375 =		2.14	ug/m^3
NO3 = 1.348 * NO2 =	0.0030	ug/m^3	
(NH4)NO3 = 1.29 * NO3 =		0.0038	ug/m^3
PM10 =	0	ug/m^3	
Source extinction =		b source	0.610 Mm-1

Change in Deciview

Ddv = 10 * ln (b back + b source / b back) =	0.026	dv

TABLE 7-3

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	Cucumber	Broccoli
Lombardy Poplar	Squash	Spinach	Pea	Begonia
Black Willow	Bean	Wheat	Cotton	Rubber plant
Elm	Soybean	Zinnia	Eggplant	Bluegrass
American Elm	Celery	Ryegrass	Red Oak	Black Oak
Southern pines	Sumac			

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	

TABLE 7-3, continued

Exposure, Hours	SO2 Concentration Needed to Produce Injury (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

8.0 CONCLUSION

It can be concluded from the information in this report that the proposed modification of the five existing sulfuric acid plants at IMC's New Wales Plant, as described in this report, will not cause or significantly contribute to an exceedance of any air quality standard, PSD increment, or any other provision of Chapter 62, FAC.

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APPENDIX A - EMISSION RATE CALCULATIONS

APPENDIX A - EMISSION RATE CALCULATIONS

1.0 PERMITTED EMISSION RATES

1.1 SULFURIC ACID PLANT Nos 1-5, each.

SO2 = 483.3 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 2117 TPY

SAM = 18.1 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 79.4 TPY

NOX = 14.5 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 63.5 TPY

2.0 ACTUAL EMISSION RATE CALCULATIONS

Based on past two-year compliance test and annual operating hours information, the actual emissions for the five existing plants can be estimated as follows:

2.1 SULFURIC ACID PLANT 1

SO2 = (348 + 448) lb/hr / 2 x (8347 + 8674) hrs/yr / 2 x ton/2000 lbs
= 1694 TPY

SAM = (6 + 4) lb/hr / 2 x (8347 + 8674) hrs/yr / 2 x ton/2000 lbs
= 21 TPY

NOX = 8 lb/hr x (8347 + 8674) hrs/yr / 2 x ton/2000 lbs

= 34 TPY

2.2 SULFURIC ACID PLANT 2

SO2 = (393 + 453) lb/hr / 2 x (8666 + 8435) hrs/yr / 2 x ton/2000 lbs

= 1808 TPY

SAM = (6 + 8) lb/hr / 2 x (8666 + 8435) hrs/yr / 2 x ton/2000 lbs

= 30 TPY

NOX = 11 lb/hr x (8666 + 8435) hrs/yr / 2 x ton/2000 lbs

= 47 TPY

2.3 SULFURIC ACID PLANT 3

SO2 = (363 + 412) lb/hr / 2 x (8562 + 8363) hrs/yr / 2 x ton/2000 lbs

= 1640 TPY

SAM = (7 + 8) lb/hr / 2 x (8562 + 8363) hrs/yr / 2 x ton/2000 lbs

= 32 TPY

NOX = 7 lb/hr x (8562 + 8363) hrs/yr / 2 x ton/2000 lbs

= 30 TPY

2.4 SULFURIC ACID PLANT 4

SO2 = (401 + 431) lb/hr / 2 x (8376 + 8713) hrs/yr / 2 x ton/2000 lbs

= 1777 TPY

SAM = (5 + 14) lb/hr / 2 x (8376 + 8713) hrs/yr / 2 x ton/2000 lbs

= 41 TPY

NOX = 7 lb/hr x (8376 + 8713) hrs/yr / 2 x ton/2000 lbs

= 30 TPY

2.5 SULFURIC ACID PLANT 5

SO2 = (415 + 375) lb/hr / 2 x (8537 + 8432) hrs/yr / 2 x ton/2000 lbs

= 1676 TPY

SAM = (15 + 6) lb/hr / 2 x (8537 + 8432) hrs/yr / 2 x ton/2000 lbs

= 45 TPY

NOX = 8 lb/hr x (8537 + 8432) hrs/yr / 2 x ton/2000 lbs

= 34 TPY

3.0 PROPOSED EMISSION RATE CALCULATIONS

3.1 SULFURIC ACID PLANT Nos. 1-5, each

SO2 = 496.0 lb/hr x 8760 hrs/yr x ton/2000 lbs

= 2172.5 TPY

SAM = 17.0 lb/hr x 8760 hrs/yr x ton/2000 lbs

= 74.5 TPY

NOX = 17.0 lb/hr x 8760 hrs/yr x ton/2000 lbs

= 74.5 TPY

4.0 NET ANNUAL EMISSION CHANGES

Net Emissions = Proposed - Actual

Total Proposed SO2 = 2172.5 tpy x 5 = 10,862.5 tpy

Total Proposed SAM = 74.5 tpy x 5 = 372.5 tpy

Total Proposed NOX = 74.5 tpy x 5 = 372.5 tpy

Total Actual SO2 = (1694+1808+1640+1777+1676) tpy = 8,595 tpy

Total Actual SAM = (21+30+32+41+45) tpy = 169 tpy

Total Actual NOX = (34+47+30+30+34) tpy = 175 tpy

NET SO2 = (10,862.5 – 8,595) tpy = 2,267.5 tpy

NET SAM = (372.5 – 169) tpy = 203.5 tpy

NET NOX = (372.5 – 175) tpy = 197.5 tpy

APPENDIX B - MODELING OUTPUT ON DISK

IMC New Wales Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
01/02/90			2		1.5	0.0000				
01/03/90			3		1.82	0.0000				
01/04/90			4		2.62	0.0000				
01/05/90		118.30	5	0.00314	4.7	0.0067	0.00011	0.0001869	0.0324361	0.003
01/06/90		118.30	6	0.005116	6.3	0.0109	0.00018	0.0003046	0.0708381	0.006
01/07/1990		118.30	7	3.18E-05	8.86	0.0001	1.1E-06	1.892E-06	0.0006188	0.000
01/08/1990		118.30	8	0.007123	3.18	0.0152	0.00024	0.000424	0.0497819	0.004
01/09/1990			9		2.62	0.0000				
01/10/1990			10		3.3	0.0000				
01/11/1990			11		2.62	0.0000				
01/12/1990		118.30	12	8.2E-07	2.22	0.0000	2.8E-08	4.883E-08	4.002E-06	0.000
01/13/1990			13		1	0.0000				
01/14/1990			14		1.54	0.0000				
01/15/1990			15		1.78	0.0000				
01/16/1990			16		2.22	0.0000				
01/17/1990			17		1.78	0.0000				
01/18/1990		118.30	18	0.002044	1.82	0.0044	7E-05	0.0001217	0.0081747	0.001
01/19/1990		118.30	19	0.002644	2.14	0.0057	9.1E-05	0.0001574	0.0124374	0.001
01/20/1990		118.30	20	0.001862	2.62	0.0040	6.4E-05	0.0001109	0.0107231	0.001
01/21/1990		118.30	21	0.021436	4.7	0.0458	0.00073	0.0012761	0.2214284	0.019
01/22/1990			22	0.003242	1.78	0.0069				
01/23/1990			23		1.86	0.0000				
01/24/1990		118.30	24		2.46	0.0000				
01/25/1990		118.30	25	0.001585	3.3	0.0034	5.4E-05	9.438E-05	0.0114981	0.001
01/26/1990		118.30	26	0.020038	1.26	0.0428	0.00069	0.0011929	0.0554897	0.005
01/27/1990			27		1.38	0.0000				
01/28/1990			28		1.86	0.0000				
01/29/1990		118.30	29		5.5	0.0000				
01/30/1990		118.30	30	0.000715	3.5	0.0015	2.4E-05	4.258E-05	0.0055017	0.000
01/31/1990	2.22	118.30	31	0.002514	3.3	0.0054	8.6E-05	0.0001497	0.0182327	0.002
02/01/1990		118.30	32		3.06	0.0000				
02/02/1990		118.30	33	0.002126	3.06	0.0045	7.3E-05	0.0001266	0.0142988	0.001
02/03/1990		118.30	34	0.028577	2.62	0.0611	0.00098	0.0017012	0.1645529	0.014
02/04/1990		118.30	35	0.002289	3.3	0.0049	7.8E-05	0.0001363	0.0166047	0.001
02/05/1990			36		1.48	0.0000				
02/06/1990			37		1.82	0.0000				
02/07/1990		118.30	38	0.002377	1.82	0.0051	8.1E-05	0.0001415	0.0095076	0.001
02/08/1990		118.30	39	7E-06	2.22	0.0000	2.4E-07	4.166E-07	3.414E-05	0.000
02/09/1990		118.30	40	0.000613	2.22	0.0013	2.1E-05	3.651E-05	0.0029923	0.000
02/10/1990		118.30	41	0.019051	4.34	0.0407	0.00065	0.0011341	0.1817168	0.015
02/11/1990			42		3.06	0.0000				
02/12/1990			43		1.36	0.0000				
02/13/1990		118.30	44	0.007831	1.58	0.0167	0.00027	0.0004662	0.027193	0.002
02/14/1990		118.30	45	0.010721	1.66	0.0229	0.00037	0.0006382	0.0391128	0.003
02/15/1990		118.30	46	0.035081	1.86	0.0750	0.0012	0.0020884	0.1434077	0.012
02/16/1990		118.30	47	0.038271	2.7	0.0818	0.00131	0.0022783	0.2271021	0.019
02/17/1990		118.30	48	0.005532	3.18	0.0118	0.00019	0.0003294	0.0386666	0.003
02/18/1990		118.30	49	0.000353	2.46	0.0008	1.2E-05	2.101E-05	0.0019085	0.000
02/19/1990		118.30	50	0.004222	2.94	0.0090	0.00014	0.0002514	0.0272831	0.002
02/20/1990		118.30	51	5.98E-05	3.98	0.0001	2E-06	3.561E-06	0.0005233	0.000
02/21/1990		118.30	52	0.000798	2.54	0.0017	2.7E-05	4.748E-05	0.0044521	0.000
02/22/1990		118.30	53	0.006201	2.82	0.0133	0.00021	0.0003691	0.0384306	0.003

IMC New Wales Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
02/23/1990		118.30	54	0.014786	5.5	0.0316	0.00051	0.0008802	0.1787266	0.015
02/24/1990		118.30	55	0.005741	1.54	0.0123	0.0002	0.0003418	0.019431	0.002
02/25/1990			56		1.36	0.0000				
02/26/1990			57		1.54	0.0000				
02/27/1990			58		1.86	0.0000				
02/28/1990	2.22		59		1.82	0.0000				
03/01/1990		102.76	60		1.7	0.0000				
03/02/1990			61		2.62	0.0000				
03/03/1990		102.76	62	0.001716	2.62	0.0037	5.9E-05	0.0001022	0.0098807	0.001
03/04/1990			63		1.74	0.0000				
03/05/1990			64		1.82	0.0000				
03/06/1990		102.76	65		2.06	0.0000				
03/07/1990		102.76	66		2.06	0.0000				
03/08/1990			67		1.78	0.0000				
03/09/1990			68		1.7	0.0000				
03/10/1990			69		1.82	0.0000				
03/11/1990			70		1.66	0.0000				
03/12/1990			71		1.78	0.0000				
03/13/1990			72		1.74	0.0000				
03/14/1990			73		1.82	0.0000				
03/15/1990		102.76	74	0.003399	2.06	0.0073	0.00012	0.0002024	0.0153902	0.001
03/16/1990		102.76	75	0.008993	2.14	0.0192	0.00031	0.0005353	0.0422948	0.004
03/17/1990		102.76	76	0.007946	3.3	0.0170	0.00027	0.0004731	0.0576331	0.006
03/18/1990		102.76	77	0.017618	1.46	0.0377	0.0006	0.0010488	0.056533	0.005
03/19/1990		102.76	78		1.74	0.0000				
03/20/1990		102.76	79		1.66	0.0000				
03/21/1990			80		1.28	0.0000				
03/22/1990			81		1.7	0.0000				
03/23/1990			82		1.62	0.0000				
03/24/1990			83		1.66	0.0000				
03/25/1990		102.76	84		1.86	0.0000				
03/26/1990		102.76	85		2.38	0.0000				
03/27/1990		102.76	86		2.06	0.0000				
03/28/1990		102.76	87		1.86	0.0000				
03/29/1990		102.76	88		2.22	0.0000				
03/30/1990		102.76	89	0.003088	2.3	0.0066	0.00011	0.0001838	0.0156071	0.002
03/31/1990	1.86	102.76	90	0.01234	2.94	0.0264	0.00042	0.0007346	0.0797326	0.008
04/01/1990		101.04	91	0.016155	2.7	0.0345	0.00055	0.0009618	0.0958676	0.009
04/02/1990			92		2.94	0.0000				
04/03/1990			93		1.78	0.0000				
04/04/1990			94		1.36	0.0000				
04/05/1990			95		1.5	0.0000				
04/06/1990			96		1.9	0.0000				
04/07/1990		101.04	97	0.002841	1.98	0.0061	9.7E-05	0.0001691	0.012363	0.001
04/08/1990			98		1.66	0.0000				
04/09/1990			99		1.86	0.0000				
04/10/1990			100		1.86	0.0000				
04/11/1990		101.04	101	0.002118	2.82	0.0045	7.3E-05	0.0001261	0.0131254	0.001
04/12/1990			102		1.4	0.0000				
04/13/1990			103		1.38	0.0000				
04/14/1990			104		1.54	0.0000				
04/15/1990		101.04	105		2.3	0.0000				
04/16/1990		101.04	106		1.86	0.0000				
04/17/1990		101.04	107		1.9	0.0000				

IMC New Wales Visibility Calculations
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DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
04/18/1990		101.04	108		1.74	0.0000				
04/19/1990		101.04	109		2.3	0.0000				
04/20/1990			110		1.62	0.0000				
04/21/1990			111		1.54	0.0000				
04/22/1990			112		1.98	0.0000				
04/23/1990			113		2.22	0.0000				
04/24/1990			114		1.82	0.0000				
04/25/1990			115		1.54	0.0000				
04/26/1990			116		1.46	0.0000				
04/27/1990		101.04	117		1.54	0.0000				
04/28/1990		101.04	118	0.006622	2.82	0.0142	0.00023	0.0003942	0.0410387	0.004
04/29/1990		101.04	119	0.033659	2.54	0.0720	0.00115	0.0020038	0.1878982	0.019
04/30/1990		101.04	120		2.54	0.0000				
05/01/1990	1.82	101.04	121		2.14	0.0000				
05/02/1990		104.49	122		1.7	0.0000				
05/03/1990		104.49	123		1.78	0.0000				
05/04/1990		104.49	124	2.94E-06	1.98	0.0000	1E-07	1.753E-07	1.281E-05	0.000
05/05/1990		104.49	125	0.00182	2.3	0.0039	6.2E-05	0.0001084	0.0092016	0.001
05/06/1990		104.49	126	0.005436	2.3	0.0116	0.00019	0.0003236	0.0274796	0.003
05/07/1990			127		1.36	0.0000				
05/08/1990			128		1.36	0.0000				
05/09/1990		104.49	129		2.06	0.0000				
05/10/1990		104.49	130	0.001237	2.62	0.0026	4.2E-05	7.364E-05	0.0071227	0.001
05/11/1990		104.49	131	0.008022	1.44	0.0172	0.00027	0.0004776	0.0253879	0.002
05/12/1990			132		1.66	0.0000				
05/13/1990		104.49	133	0.002403	2.06	0.0051	8.2E-05	0.000143	0.0108789	0.001
05/14/1990		104.49	134	0.012111	1.66	0.0259	0.00041	0.000721	0.0441851	0.004
05/15/1990		104.49	135		1.78	0.0000				
05/16/1990		104.49	136	0.001052	1.82	0.0022	3.6E-05	6.262E-05	0.0042077	0.000
05/17/1990		104.49	137	0.002832	1.86	0.0061	9.7E-05	0.0001686	0.0115773	0.001
05/18/1990		104.49	138	0.002412	1.82	0.0052	8.3E-05	0.0001436	0.0096476	0.001
05/19/1990		104.49	139		1.9	0.0000				
05/20/1990		104.49	140		1.86	0.0000				
05/21/1990		104.49	141	0.001574	2.62	0.0034	5.4E-05	9.37E-05	0.0090628	0.001
05/22/1990		104.49	142	0.004816	3.06	0.0103	0.00016	0.0002867	0.0323862	0.003
05/23/1990		104.49	143		1.86	0.0000				
05/24/1990			144		2.54	0.0000				
05/25/1990		104.49	145		2.14	0.0000				
05/26/1990		104.49	146		2.3	0.0000				
05/27/1990		104.49	147		2.94	0.0000				
05/28/1990		104.49	148		2.82	0.0000				
05/29/1990		104.49	149	3.19E-05	2.3	0.0001	1.1E-06	1.9E-06	0.0001614	0.000
05/30/1990			150		1.54	0.0000				
05/31/1990	1.9		151		1.9	0.0000				
06/01/1990		114.85	152		2.46	0.0000				
06/02/1990		114.85	153		3.06	0.0000				
06/03/1990		114.85	154		2.46	0.0000				
06/04/1990		114.85	155		2.06	0.0000				
06/05/1990		114.85	156	0.012912	1.98	0.0276	0.00044	0.0007687	0.0561884	0.005
06/06/1990			157		1.9	0.0000				
06/07/1990		114.85	158		2.38	0.0000				
06/08/1990		114.85	159		2.38	0.0000				
06/09/1990		114.85	160	0.002626	2.38	0.0056	9E-05	0.0001563	0.0137344	0.001
06/10/1990		114.85	161	6.87E-05	2.38	0.0001	2.4E-06	4.09E-06	0.0003594	0.000

IMC New Wales Visibility Calculations
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DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
06/11/1990		114.85	162	4.21E-05	2.46	0.0001	1.4E-06	2.508E-06	0.0002277	0.000
06/12/1990			163		1.7	0.0000				
06/13/1990			164		1.5	0.0000				
06/14/1990			165		1.54	0.0000				
06/15/1990		114.85	166		1.62	0.0000				
06/16/1990		114.85	167	0.001008	1.62	0.0022	3.5E-05	6.001E-05	0.0035892	0.000
06/17/1990		114.85	168		1.7	0.0000				
06/18/1990			169		2.14	0.0000				
06/19/1990			170		2.7	0.0000				
06/20/1990		114.85	171	8.01E-05	2.14	0.0002	2.7E-06	4.768E-06	0.0003767	0.000
06/21/1990		114.85	172		2.3	0.0000				
06/22/1990		114.85	173		2.14	0.0000				
06/23/1990		114.85	174	0.000842	3.98	0.0018	2.9E-05	5.013E-05	0.0073654	0.001
06/24/1990		114.85	175	-0.0011	2.46	-0.0024	-3.8E-05	-6.56E-05	-0.005955	-0.001
06/25/1990		114.85	176	0.017183	2.14	0.0367	0.00059	0.0010229	0.0808166	0.007
06/26/1990			177		2.7	0.0000				
06/27/1990		114.85	178	0.000576	2.7	0.0012	2E-05	3.428E-05	0.0034169	0.000
06/28/1990		114.85	179	0.00456	1.78	0.0098	0.00016	0.0002715	0.0178406	0.002
06/29/1990		114.85	180	0.005026	2.3	0.0107	0.00017	0.0002992	0.0254076	0.002
06/30/1990		114.85	181		2.7	0.0000				
07/01/1990	2.14	114.85	182		2.38	0.0000				
07/02/1990		139.01	183	5.65E-06	2.94	0.0000	1.9E-07	3.363E-07	3.65E-05	0.000
07/03/1990			184		2.82	0.0000				
07/04/1990		139.01	185	0.017657	2.7	0.0378	0.0006	0.0010512	0.1047787	0.008
07/05/1990		139.01	186	0.001459	2.22	0.0031	5E-05	8.687E-05	0.0071193	0.001
07/06/1990		139.01	187	0.009725	2.14	0.0208	0.00033	0.0005789	0.0457395	0.003
07/07/1990			188		2.82	0.0000				
07/08/1990		139.01	189		2.94	0.0000				
07/09/1990		139.01	190	3E-05	2.62	0.0001	1E-06	1.786E-06	0.0001727	0.000
07/10/1990		139.01	191	2.26E-05	2.54	0.0000	7.7E-07	1.345E-06	0.0001261	0.000
07/11/1990		139.01	192	2.12E-06	3.06	0.0000	7.3E-08	1.265E-07	1.428E-05	0.000
07/12/1990		139.01	193		2.62	0.0000				
07/13/1990		139.01	194		2.94	0.0000				
07/14/1990		139.01	195	0.021885	6.3	0.0468	0.00075	0.0013029	0.3030224	0.022
07/15/1990		139.01	196	0.055292	3.5	0.1182	0.00189	0.0032916	0.4253221	0.031
07/16/1990		139.01	197	0.049479	2.54	0.1058	0.00169	0.0029456	0.2762118	0.020
07/17/1990		139.01	198		2.94	0.0000				
07/18/1990			199		3.06	0.0000				
07/19/1990		139.01	200	0.003136	2.3	0.0067	0.00011	0.0001867	0.0158513	0.001
07/20/1990			201		2.94	0.0000				
07/21/1990		139.01	202		2.46	0.0000				
07/22/1990		139.01	203	1.2E-05	2.94	0.0000	4.1E-07	7.16E-07	7.772E-05	0.000
07/23/1990		139.01	204	0.005752	2.3	0.0123	0.0002	0.0003424	0.0290745	0.002
07/24/1990			205		2.62	0.0000				
07/25/1990			206		3.5	0.0000				
07/26/1990		139.01	207	0.000276	2.62	0.0006	9.5E-06	1.645E-05	0.0015908	0.000
07/27/1990			208		2.38	0.0000				
07/28/1990			209		2.94	0.0000				
07/29/1990			210		2.54	0.0000				
07/30/1990		139.01	211		2.38	0.0000				
07/31/1990	2.7	139.01	212		2.3	0.0000				
08/01/1990		128.65	213		1.98	0.0000				
08/02/1990			214		2.14	0.0000				
08/03/1990			215		2.54	0.0000				

IMC New Wales Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
08/04/1990			216		2.3	0.0000				
08/05/1990			217		2.22	0.0000				
08/06/1990		128.65	218		2.14	0.0000				
08/07/1990		128.65	219	0.010797	2.06	0.0231	0.00037	0.0006428	0.0488839	0.004
08/08/1990			220		2.22	0.0000				
08/09/1990			221		2.94	0.0000				
08/10/1990		128.65	222	0.024991	2.54	0.0534	0.00086	0.0014878	0.1395099	0.011
08/11/1990		128.65	223	0.015801	2.22	0.0338	0.00054	0.0009407	0.0770948	0.006
08/12/1990		128.65	224	0.000236	2.46	0.0005	8.1E-06	1.403E-05	0.0012743	0.000
08/13/1990		128.65	225	0.007255	2.7	0.0155	0.00025	0.0004319	0.0430498	0.003
08/14/1990		128.65	226		2.82	0.0000				
08/15/1990		128.65	227	0.004164	2.94	0.0089	0.00014	0.0002479	0.0269064	0.002
08/16/1990		128.65	228		2.14	0.0000				
08/17/1990		128.65	229	0.00507	2.06	0.0108	0.00017	0.0003018	0.0229542	0.002
08/18/1990		128.65	230	0.007491	2.7	0.0160	0.00026	0.0004459	0.0444496	0.003
08/19/1990		128.65	231	0.006767	2.62	0.0145	0.00023	0.0004029	0.0389659	0.003
08/20/1990		128.65	232	0.005634	2.62	0.0120	0.00019	0.0003354	0.0324396	0.003
08/21/1990		128.65	233	0.001901	2.7	0.0041	6.5E-05	0.0001132	0.0112806	0.001
08/22/1990		128.65	234		2.38	0.0000				
08/23/1990		128.65	235	0.000506	2.94	0.0011	1.7E-05	3.01E-05	0.0032669	0.000
08/24/1990		128.65	236	0.001686	3.3	0.0036	5.8E-05	0.0001004	0.0122296	0.001
08/25/1990		128.65	237	0.007208	2.38	0.0154	0.00025	0.0004291	0.0377033	0.003
08/26/1990		128.65	238	0.003861	2.54	0.0083	0.00013	0.0002298	0.0215531	0.002
08/27/1990		128.65	239	0.001351	2.14	0.0029	4.6E-05	8.041E-05	0.0063525	0.000
08/28/1990		128.65	240		2.46	0.0000				
08/29/1990		128.65	241	2.45E-05	2.54	0.0001	8.4E-07	1.46E-06	0.0001369	0.000
08/30/1990			242		2.94	0.0000				
08/31/1990	2.46		243		2.46	0.0000				
09/01/1990		114.85	244	0.013369	2.46	0.0286	0.00046	0.0007959	0.0722806	0.006
09/02/1990		114.85	245	2.74E-05	3.06	0.0001	9.4E-07	1.628E-06	0.000184	0.000
09/03/1990		114.85	246		2.22	0.0000				
09/04/1990			247		1.86	0.0000				
09/05/1990			248		1.9	0.0000				
09/06/1990			249		1.86	0.0000				
09/07/1990			250		1.78	0.0000				
09/08/1990		114.85	251		2.14	0.0000				
09/09/1990		114.85	252		1.86	0.0000				
09/10/1990		114.85	253	3.87E-05	1.98	0.0001	1.3E-06	2.302E-06	0.0001683	0.000
09/11/1990		114.85	254		2.38	0.0000				
09/12/1990			255		2.62	0.0000				
09/13/1990			256		1.98	0.0000				
09/14/1990			257		2.22	0.0000				
09/15/1990		114.85	258		2.38	0.0000				
09/16/1990		114.85	259		2.7	0.0000				
09/17/1990			260		2.46	0.0000				
09/18/1990			261		2.22	0.0000				
09/19/1990			262		2.06	0.0000				
09/20/1990			263		1.78	0.0000				
09/21/1990			264		2.22	0.0000				
09/22/1990			265		2.22	0.0000				
09/23/1990		114.85	266	4.01E-05	2.06	0.0001	1.4E-06	2.388E-06	0.0001816	0.000
09/24/1990			267		1.38	0.0000				
09/25/1990			268		1.62	0.0000				
09/26/1990			269		1.9	0.0000				

IMC New Wales Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
09/27/1990		114.85	270		1.7	0.0000				
09/28/1990			271		3.06	0.0000				
09/29/1990			272		3.7	0.0000				
09/30/1990	2.14	114.85	273		6.3	0.0000				
10/01/1990		121.75	274		2.82	0.0000				
10/02/1990		121.75	275		2.22	0.0000				
10/03/1990		121.75	276		2.38	0.0000				
10/04/1990			277		2.46	0.0000				
10/05/1990			278		2.54	0.0000				
10/06/1990			279		2.06	0.0000				
10/07/1990			280		2.14	0.0000				
10/08/1990			281		2.06	0.0000				
10/09/1990			282		2.46	0.0000				
10/10/1990			283		3.7	0.0000				
10/11/1990		121.75	284		3.98	0.0000				
10/12/1990		121.75	285	2.77E-05	3.06	0.0001	9.5E-07	1.651E-06	0.0001866	0.000
10/13/1990		121.75	286	0.002365	2.46	0.0051	8.1E-05	0.0001408	0.0127839	0.001
10/14/1990			287		2.3	0.0000				
10/15/1990		121.75	288	6.83E-06	2.22	0.0000	2.3E-07	4.067E-07	3.333E-05	0.000
10/16/1990			289		2.46	0.0000				
10/17/1990			290		2.7	0.0000				
10/18/1990			291		2.82	0.0000				
10/19/1990		121.75	292	0.00111	2.7	0.0024	3.8E-05	6.61E-05	0.0065892	0.001
10/20/1990			293		2.7	0.0000				
10/21/1990			294		2.54	0.0000				
10/22/1990		121.75	295	1.26E-05	2.7	0.0000	4.3E-07	7.507E-07	7.483E-05	0.000
10/23/1990		121.75	296		3.06	0.0000				
10/24/1990		121.75	297	0.001299	2.54	0.0028	4.4E-05	7.735E-05	0.0072532	0.001
10/25/1990			298		1.46	0.0000				
10/26/1990			299		1.58	0.0000				
10/27/1990			300		1.7	0.0000				
10/28/1990			301		2.06	0.0000				
10/29/1990			302		1.74	0.0000				
10/30/1990			303		1.82	0.0000				
10/31/1990	2.3		304		1.78	0.0000				
11/01/1990		118.30	305		1.9	0.0000				
11/02/1990			306		1.78	0.0000				
11/03/1990			307		1.98	0.0000				
11/04/1990			308		2.22	0.0000				
11/05/1990			309		2.38	0.0000				
11/06/1990			310		3.06	0.0000				
11/07/1990			311		3.3	0.0000				
11/08/1990		118.30	312		2.38	0.0000				
11/09/1990		118.30	313		3.3	0.0000				
11/10/1990		118.30	314	0.004501	2.14	0.0096	0.00015	0.0002679	0.021169	0.002
11/11/1990			315		1.5	0.0000				
11/12/1990			316		1.44	0.0000				
11/13/1990			317		1.98	0.0000				
11/14/1990			318		1.82	0.0000				
11/15/1990			319		1.82	0.0000				
11/16/1990			320		2.06	0.0000				
11/17/1990			321		2.06	0.0000				
11/18/1990			322		1.46	0.0000				
11/19/1990			323		1.78	0.0000				

IMC New Wales Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m^3	RH Factor	Source (NH4)2SO4 ug/m^3	Source NO2 ug/m^3	Source (NH4)NO3 ug/m^3	Source Extinction Mm-1	Change in Deciview ddv dv
11/20/1990			324		1.78	0.0000				
11/21/1990			325		1.82	0.0000				
11/22/1990			326		2.54	0.0000				
11/23/1990			327		2.62	0.0000				
11/24/1990			328		6.3	0.0000				
11/25/1990		118.30	329	0.001297	4.34	0.0028	4.4E-05	7.719E-05	0.0123675	0.001
11/26/1990			330		2.54	0.0000				
11/27/1990		118.30	331		3.5	0.0000				
11/28/1990		118.30	332	0.000945	3.7	0.0020	3.2E-05	5.626E-05	0.0076854	0.001
11/29/1990		118.30	333	0.00965	2.94	0.0206	0.00033	0.0005745	0.0623524	0.005
11/30/1990	2.22	118.30	334	0.000523	1.36	0.0011	1.8E-05	3.113E-05	0.0015632	0.000
12/01/1990		128.65	335		2.06	0.0000				
12/02/1990			336		2.38	0.0000				
12/03/1990			337		2.82	0.0000				
12/04/1990		128.65	338	0.005063	2.7	0.0108	0.00017	0.0003014	0.0300423	0.002
12/05/1990		128.65	339		1.42	0.0000				
12/06/1990			340		2.7	0.0000				
12/07/1990		128.65	341		3.18	0.0000				
12/08/1990		128.65	342	0.009125	3.3	0.0195	0.00031	0.0005432	0.0661833	0.005
12/09/1990			343		1.74	0.0000				
12/10/1990			344		1.74	0.0000				
12/11/1990			345		1.9	0.0000				
12/12/1990			346		1.9	0.0000				
12/13/1990		128.65	347		1.82	0.0000				
12/14/1990		128.65	348		1.9	0.0000				
12/15/1990			349		2.38	0.0000				
12/16/1990		128.65	350	8.27E-05	2.38	0.0002	2.8E-06	4.924E-06	0.0004326	0.000
12/17/1990		128.65	351		2.62	0.0000				
12/18/1990		128.65	352	0.000935	3.7	0.0020	3.2E-05	5.565E-05	0.0076015	0.001
12/19/1990		128.65	353	0.012886	4.34	0.0276	0.00044	0.0007671	0.1229123	0.010
12/20/1990		128.65	354	0.00138	2.82	0.0030	4.7E-05	8.214E-05	0.0085517	0.001
12/21/1990		128.65	355	0.006496	2.54	0.0139	0.00022	0.0003867	0.0362616	0.003
12/22/1990		128.65	356		2.46	0.0000				
12/23/1990		128.65	357	0.006489	2.54	0.0139	0.00022	0.0003863	0.036222	0.003
12/24/1990		128.65	358	0.00261	3.18	0.0056	8.9E-05	0.0001554	0.0182392	0.001
12/25/1990			359		1.58	0.0000				
12/26/1990			360		3.06	0.0000				
12/27/1990			361		2.38	0.0000				
12/28/1990			362		3.7	0.0000				
12/29/1990			363		2.82	0.0000				
12/30/1990			364		3.5	0.0000				
12/31/1990	2.46	128.65		0.00116	3.7	0.0025	4E-05	6.909E-05	0.0094368	0.001
				126						
									Max	0.03
									Min	-0.00
		Days with Class 1 Impact =			126				Avg	0.00

APPENDIX C – CURRENT AIR PERMIT

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(Only referenced herein, not copied)