CARGILL
FERTILIZER, INC.

8813 Highway 41 South - Riverview, Florida 33569 - Telephone 813-677-9111 - TWX 810-876-0648 - Telex 52666 - FAX 813-671-6146

1041692

September 20, 1995

Certified Mail: Z 073 905 479

Mr. Clair H. Fancy, Bureau Chief
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399

Dear Mr. Fancy:

Re: Cargill Fertilizer, Inc. - Tampa Plant
Phosphoric Acid Plants Construction Permit Application
AIRS No. 0570008; Emission Unit ID 073

Please find enclosed four copies of a construction permit application for the 3 & 4 Phosphoric Acid Production Plants currently permitted under Permit No. AO29-234447. Included with these applications is a check in the amount of $7,500 (check # 577219057) for the Florida Department of Environmental Protection.

If you have any questions or require additional information, please call me at (813) 671-6369.

Sincerely,

Kathleen Edgemon
Environmental Specialist

cc: Morris
Byram
File P-20-3

cc: EPA
NPS
B. Thomas
Hillsboro Co.
Cleve
John R.

1995 SEP 26 PM 3:14

recycled paper

CARGILL FERTILIZER, INC

Norwest Bank Lewistown, N.A.
Lewistown, Montana 59457

01046 95-816

577219057

DATE	VENDOR NUMBER	AMOUNT
08/23/95	4115	$*********7,500.00

THE SUM OF Seven Thousand Five Hundred and NO/100 Dollars

PAY TO THE ORDER OF FLORIDA DEPT. OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE FL 32399-2400

AUTHORIZED SIGNATURE

⑈577219057⑈ ⑆092905168⑆ 21⑈274⑈0⑈ 262

APPLICATION TO MODIFY NOS. 3 AND 4 PHOSPHORIC ACID PLANTS PRODUCTION RATE CARGILL FERTILIZER, INC. RIVERVIEW, FLORIDA

Prepared For:

Cargill Fertilizer, Inc.
8813 Highway 41 south
Riverview, FL 33569

Prepared By:

KBN Engineering and Applied Sciences, Inc.
6241 NW 23rd Street
Gainesville, Florida 32653-1500

September 1995
14361Y/F2

Department of Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT
APPLICATION FOR AIR PERMIT - LONG FORM

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

I. APPLICATION INFORMATION

This section of the Application for Air Permit form provides general information on the scope of this application, the purpose for which this application is being submitted, and the nature of any construction or modification activities proposed as a part of this application. This section also includes information on the owner of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department on diskette, this section of the Application for Air Permit must also be submitted in hard-copy form.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility name, if any; and a brief reference to the facility's physical location. If known, also enter the ARMS or AIRS facility identification number. This information is intended to give a quick reference, on the first page of the application form, to the facility addressed in this application. Elsewhere in the form, numbered data fields are provided for entry of the facility data in computer-input format.

Cargill Fertilizer, Inc.; Riverview Facility; Hillsborough County; 40HIL290008

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	9-26-95
2. Permit Number:	0570008-004-AC
3. PSD Number (if applicable):	PSD-FL-231
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

   Karen Byram, Environmental Supervisor

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

Organization/Firm: **Cargill Fertilizer, Inc.**
Street Address: **8813 Highway 41 South**
City: **Riverview** State: **FL** Zip Code: **33569**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

Telephone: **(813) 671-6297** Fax: **(813) 671-6149**

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative of the facility (non-Title V source) addressed in this Application for Air Permit or the responsible official, as defined in Chapter 62-213, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application 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. If the purpose of this application is to obtain an air operation permit or operation permit revision for one or more emissions units which have undergone construction or modification, I 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. 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 source.*

Karen Byram
Signature

9/20/95
Date

* Attach letter of authorization if not currently on file.

Scope of Application

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

Emissions Unit ID / Description of Emissions Unit

Unit #	ARMS ID	Emissions Unit Name/Description
1	73	Phosphoric Acid Production

See individual Emissions Unit sections for more detailed Emissions Unit descriptions. Multiple ARMS IDs are indicated with an asterisk (*)

Purpose of Application and Category

Check one (except as otherwise indicated):

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

This Application for Air Permit is submitted to obtain:

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

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

Current construction permit number: _____

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

Operation permit to be renewed: _____

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

Current construction permit number: _____

Operation permit to be renewed: _____

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

Operation permit to be revised/corrected: _____

_____

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

Operation permit to be revised: _____

Reason for revision: _____

_____

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

This Application for Air Permit is submitted to obtain:

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

Current operation/construction permit number(s): _____

_____

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

Operation permit to be renewed: _____

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

Operation permit to be revised: _____

Reason for revision: _____

_____

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

This Application for Air Permit is submitted to obtain:

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

Current operation permit number(s), if any: _____

AO29-234447

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

Current operation permit number(s): _____

_____

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

Application Processing Fee

Check one:

[X] Attached - Amount: $ **$ 7,500.00** [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Refer to Attachment A

2. Projected or Actual Date of Commencement of Construction (DD-MON-YYYY):

1 Nov 1995

3. Projected Date of Completion of Construction (DD-MON-YYYY):

1 Jan 1996

Professional Engineer Certification

1. Professional Engineer Name: **David A. Buff**
   Registration Number: **19011**

2. Professional Engineer Mailing Address:
   Organization/Firm: **KBN Eng and Applied Sciences**
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**

3. Professional Engineer Telephone Numbers:
   Telephone: **(904) 336-5600** Fax: **(904) 336-6603**

4. Professional Engineer's Statement:

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

(1) To the best of my knowledge, there is reasonable assurance (a) 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; or (b) for any application for a Title V source air operation permit, 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;

(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; and

(3) For any application for an air construction permit for one or more proposed new or modified emissions units, 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.

David A. Buff — Signature (seal)

9/15/95 — Date

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:
   Karen Byram, Environmental Supervisor

2. Application Contact Mailing Address:

   Organization/Firm: **Cargill Fertilizer, Inc.**
   Street Address: **8813 Highway 41 South**
   City: **Riverview** State: **FL** Zip Code: **33569**

3. Application Contact Telephone Numbers:

   Telephone: **(813) 671-6297** Fax: **(813) 671-6149**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Name, Location, and Type

1. Facility Owner or Operator: **Cargill Fertilizer, Inc.**

2. Facility Name: **Riverview**

3. Facility Identification Number: **40HIL290008** [ ] Unknown

4. Facility Location Information:
   Facility Street Address: **8813 Highway 41 South**
   City: **Riverview** County: **Hillsborough** Zip Code: **33569**

5. Facility UTM Coordinates:
   Zone: **17** East (km): **362.9** North (km): **3082.5**

6. Facility Latitude/Longitude:
   Latitude (DD/MM/SS): **27 / 51 / 30** Longitude: (DD/MM/SS): **82 / 23 / 57**

7. Governmental Facility Code:	8. Facility Status Code:	9. Relocatable Facility?	10. Facility Major Group SIC Code:
0	**A**	[ ] Yes [x] No	**28**

11. Facility Comment:

Facility Contact

1. Name and Title of Facility Contact:
   Karen Byram, Environmental Supervisor

2. Facility Contact Mailing Address:
   Organization/Firm: **Cargill Fertilizer, Inc.**
   Street Address: **8813 Highway 41 South**
   City: **Riverview** State: **FL** Zip Code: **33569**

3. Facility Contact Telephone Numbers:
   Telephone: **(813) 671-6297** Fax: **(813) 671-6149**

Facility Regulatory Classifications

1. Small Business Stationary Source?		
[ ] Yes	[x] No	[ ] Unknown
2. Title V Source?		
[x] Yes	[ ] No	
3. Synthetic Non-Title V Source?		
[ ] Yes,	[x] No	
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?		
[x] Yes	[ ] No	
5. Synthetic Minor Source of Pollutants Other than HAPs?		
[ ] Yes	[x] No	
6. Major Source of HAPs?		
[ ] Yes	[x] No	[ ] Possible
7. Synthetic Minor Source of HAPs?		
[ ] Yes	[x] No	
8. One or More Emissions Units Subject to NSPS?		
[x] Yes	[ ] No	
9. One or More Emissions Units Subject to NESHAP?		
[x] Yes	[ ] No	
10. Title V Source by EPA Designation?		
[ ] Yes	[x] No	
11. Facility Regulatory Classifications Comment:		
NESHAP: 40 CFR 61 Subpart R		

B. FACILITY REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of federal, state, and local regulations applicable to the facility as a whole. (Regulations applicable to individual emissions units within the facility are addressed in Subsection III-B of the form.)

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

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

62-212.400; PSD

C. FACILITY POLLUTANT INFORMATION

This subsection of the Application for Air Permit form allows for the reporting of potential and estimated emissions of selected pollutants on a facility-wide basis. It must be completed for each pollutant for which the applicant proposes to establish a facility-wide emissions cap and for each pollutant for which emissions are not reported at the emissions-unit level.

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

Facility Pollutant Information: Pollutant _____ of _____

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

D. FACILITY SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the facility as a whole. (Supplemental information related to individual eissions units within the facility is provided in Subsection III-I of the form.) Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location:
   [X] Attached, Document ID: Attachment A
   [ ] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [X] Attached, Document ID: Attachment A
   [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [X] Attached, Document ID(s): Attachment A
   [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: _____
   [X] Not Applicable

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: Attachment A
   [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

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

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

9. Alternative Methods of Operation:
[ ] Attached, Document ID: _____
[x] Not Applicable

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

11. Enhanced Monitoring Plan:
[ ] Attached, Document ID: _____
[x] Not Applicable

12. Risk Management Plan Verification:

[ ] Plan Submitted to Implementing Agency - Verification Attached
Attached, Document ID: _____

[ ] Plan to be Submitted to Implementing Agency by Required Date

[x] Not Applicable

13. Compliance Report and Plan
[ ] Attached, Document ID: _____
[x] Not Applicable

14. Compliance Statement (Hard-copy Required)
[ ] Attached, Document ID: _____
[x] Not Applicable

Emissions Unit Information Section 1 of 1

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through I 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

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

Type of Emissions Unit Addressed in This Section

Check one:

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

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a collectively-regulated 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.

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section:

   Phosphoric Acid Production Facility

2. ARMS Identification Number: [ ] No Corresponding ID [ ] Unknown

   73

3. Emissions Unit Status Code:	4. Acid Rain Unit?	5. Emissions Unit Major Group SIC Code:
A	[ ] Yes [X] No	**28**

6. Initial Startup Date (DD-MON-YYYY):

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: Model Number:

9. Generator Nameplate Rating: MW

10. Incinerator Information:

Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

11. Emissions Unit Comment:

Emissions Unit Control Equipment Information

A.

1. Description:

Two packed-bed scrubbers (refer to Table 3-1 of Attachment A).

2. Control Device or Method Code: **50**

B.

1. Description:

Two venturi scrubbers (refer to Table 3-1 of Attachment A).

2. Control Device or Method Code: **53**

C.

1. Description:

One venturi/packed-bed/demister scrubber (refer to Table 3-1 of Attachment A).

2. Control Device or Method Code: **53**

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:	mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr tons/day
3. Maximum Process or Throughput Rate:	170 TPH P2O5
4. Maximum Production Rate:	163 TPH P2O5
5. Operating Capacity Comment: **Maximum production rate = 163.2 TPH P2O5.**	

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:

24	hours/day,	7	days/week,
52	weeks/yr	8,760	hours/yr

B. EMISSIONS UNIT REGULATIONS

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

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

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

40 CFR 60, Subpart T, Standards of Performance for the Phosphate Fertilizer Industry
62-212.400 PSD
62-296.310, Unconfined Particulate Matter Emissions
62-296.320(2), Objectionable Odors
62-296.800, New Source Performance Standards

C. EMISSION POINT (STACK/VENT) INFORMATION

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:

   See Comment

2. Emission Point Type Code:

   [ ] 1 [ ] 2 [x] 3 [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

5. Discharge Type Code:

   [ ] D [ ] F [ ] H [ ] P
   [ ] R [x] V [ ] W

6. Stack Height:	**110**	ft
7. Exit Diameter:	**4.8**	ft
8. Exit Temperature:	**100**	°F
9. Actual Volumetric Flow Rate:	**40,000**	acfm
10. Percent Water Vapor:		%
11. Maximum Dry Standard Flow Rate:		dscfm
12. Nonstack Emission Point Height:		ft

13. Emission Point UTM Coordinates:

Zone: East (km): North (km):

14. Emission Point Comment:

Identification of Point on Plot Plan or Flow Diagram: 3PA, 4PA, CLAR, 300K, 3FIL; Exit Diameter: 4.83 ft; Five scrubbers; refer to Attachment A.

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 1 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Phosphoric Acid: Wet Process: Reactor**	
2. Source Classification Code (SCC): **3-01-016-01**	
3. SCC Units: **Tons Phos. Rock**	
4. Maximum Hourly Rate: **243**	5. Maximum Annual Rate: **2,128,680**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Process rate is for the No. 3 Prayon phosphoric acid plant. Combined maximum input rate to both No. 3 and No. 4 plants is 550.0 TPH phosphate rock. These rates are based on an assumed phosphate rock P2O5 content of 30.9%.**	

Segment Description and Rate Information: Segment 2 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Phosphoric Acid: Wet Process: Reactor**	
2. Source Classification Code (SCC): **3-01-016-01**	
3. SCC Units: **Tons Phos. Rock**	
4. Maximum Hourly Rate: **363**	5. Maximum Annual Rate: **3,179,880**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Process Rate is for the No. 4 Dorrco phosphoric acid plant. Combined maximum input rate to both No. 3 and No. 4 plants is 550.0 TPH phosphate rock. These rates are based on an assumed phosphate rock P2O5 content of 30.9%.**	

D. SEGMENT (PROCESS/FUEL) INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

Segment Description and Rate Information: Segment 3 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): **Phosphoric Acid: Wet Process: Reactor**	
2. Source Classification Code (SCC): **3-01-016-01**	
3. SCC Units: **Tons Phos. Rock**	
4. Maximum Hourly Rate: **550**	5. Maximum Annual Rate: **4,818,000**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment: **Combined maximum input rate to both No. 3 and No. 4 plants is 550.0 TPH phosphate rock. Based on an assumed phosphate rock P2O5 content of 30.9%.**	

Segment Description and Rate Information: Segment _____ of _____

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode):	
2. Source Classification Code (SCC):	
3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment:	

Emissions Unit Information Section 1 of 1

E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

Pollutant Potential/Estimated Emissions: Pollutant 1 of 1

1. Pollutant Emitted: **FL**
2. Total Percent Efficiency of Control: **99** %
3. Primary Control Device Code: **050**
4. Secondary Control Device Code: **053**
5. Potential Emissions: **2.72** lbs/hr **11.91** tons/yr
6. Synthetically Limited? [ ] Yes [x] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
8. Emission Factor: **2.72 lb/hr** Reference:
9. Emissions Method Code (check one): [ ] 1 [ ] 2 [ ] 3 [ ] 4 [x] 5
10. Calculation of Emissions: **2.72 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 11.91 TPY**
11. Pollutant Potential/Estimated Emissions Comment:

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code:	OTHER
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	0.02 lb/ton P2O5
4. Equivalent Allowable Emissions:	2.72 lbs/hr 11.91 tons/yr
5. Method of Compliance:	Stack testing of each scrubber using EPA Methods 13A or 13B
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	Maximum emissions are limited to the lesser of 2.72 lb/hr or 0.02 lb/ton P2O5 input.

B.

1. Basis for Allowable Emissions Code:	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units:	
4. Equivalent Allowable Emissions:	lbs/hr tons/yr
5. Method of Compliance:	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):	

F. VISIBLE EMISSIONS INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of _____

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

G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor 1 of 5

1.	Parameter Code:
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY): **1 Jan 1985**
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **No. 13 Rock Grinding Mill scale (or equivalent); 40 CFR 60, Subpart T; Parameter is mass flow of phosphorus-bearing material (P2O5 input).**

Continuous Monitoring System Continuous Monitor 2 of 5

1.	Parameter Code:
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY): 1 Jan 1985
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **No. 14 Rock Grinding Mill scale (or equivalent); 40 CFR 60, Subpart T; Parameter monitored is mass flow of phosphorus-bearing material (P2O5 input).**

Continuous Monitoring System Continuous Monitor 3 of 5

1.	Parameter Code:
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY): 1 Jun 1990
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **Teller scrubber (No. 3 reactor; No. 1 filter and filtrate tank); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**

G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor 4 of 5

1.	Parameter Code:
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY): **1 Jun 1990**
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **VESCOR scrubber (No. 4 reactor; No. 2 filter/filtrate tank; gypsum tank); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**

Continuous Monitoring System Continuous Monitor 5 of 5

1.	Parameter Code:
2.	CMS Requirement: [X] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY): **1 Jun 1990**
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment: **VESCOR Replica (No. 3 filter/filtrate tank; seven other tanks); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**

Continuous Monitoring System Continuous Monitor _____ of _____

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] Other
3.	Monitor Information: Monitor Manufacturer: Model Number: Serial Number:
4.	Installation Date (DD-MON-YYYY):
5.	Performance Specification Test Date (DD-MON-YYYY):
6.	Continuous Monitor Comment:

H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review persuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissons Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

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

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

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

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

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

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

2. Increment Consuming for Nitrogen Dioxide?

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

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

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

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

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

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

3.	Increment Consuming/Expanding Code:			
	PM	[ ] C	[ ] E	[ ] Unknown
	SO_2	[ ] C	[ ] E	[ ] Unknown
	NO_2	[ ] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	lbs/hr		tons/yr
	SO_2	lbs/hr		tons/yr
	NO_2			tons/yr
5.	PSD Comment:			

I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

Supplemental Requirements for All Applications

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

Additional Supplemental Requirements for Category I Applications Only

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.	Enhanced Monitoring Plan [ ] Attached, Document ID: _____ [X] Not Applicable
13.	Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [X] Not Applicable
14.	Acid Rain Permit Application [ ] 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: _____ [X] Not Applicable

ATTACHMENT A

Attachment A

CARGILL FERTILIZER, INC.
NOS. 3 AND 4 PHOSPHORIC ACID PRODUCTION PLANTS

1.0 PROJECT DESCRIPTION

Cargill Fertilizer, Inc., operates a phosphate fertilizer manufacturing facility located in Riverview, Florida, just south of Tampa (refer to Figures 1-1 and 1-2). As part of the overall manufacturing process, the Nos. 3 and 4 Phosphoric Acid production plants are operated (refer to Figure 1-3). Phosphoric acid is produced in these plants for utilization in other processes within the facility.

Cargill is proposing to increase the permitted hourly input rate of the phosphoric acid plants from the current 139.0 tons per hour (TPH) of P_2O_5 input to an allowable rate of 170.0 TPH of P_2O_5 input. Through operating experience gained since the installation of the third acid filter and other changes permitted under construction permit AC29-186726 in 1991, the plants are capable of increased production rates. Other than the increase in feed rates of the raw materials, there will be no other changes to the production equipment or the pollution control equipment.

A flow diagram of the phosphoric acid reactors and filters, as they currently exist and as planned with this project, is shown in Figure 1-4. Dry phosphate rock and sulfuric acid is fed to two reactors (named No. 3 Prayon and No. 4 Dorrco, respectively). The No. 3 Prayon reactor discharges to the new No. 3 filter. The No. 4 Dorrco reactor discharges to either the No. 1 filter or the No. 2 filter. The filters separate the phosphoric acid from the solids (gypsum). The phosphoric acid, which is about 30 percent strength at this point, is sent to the filtrate tanks, to a clarifier, and then to the 30 percent storage tanks. The gypsum waste is sent to the gypsum pond. A portion of the 30 percent acid is then sent through evaporators (Nos. 1-10) to concentrate the acid to 54 percent strength, and is then stored in two 54 percent storage tanks. From these tanks, the phosphoric acid is sent to other processes at the facility.

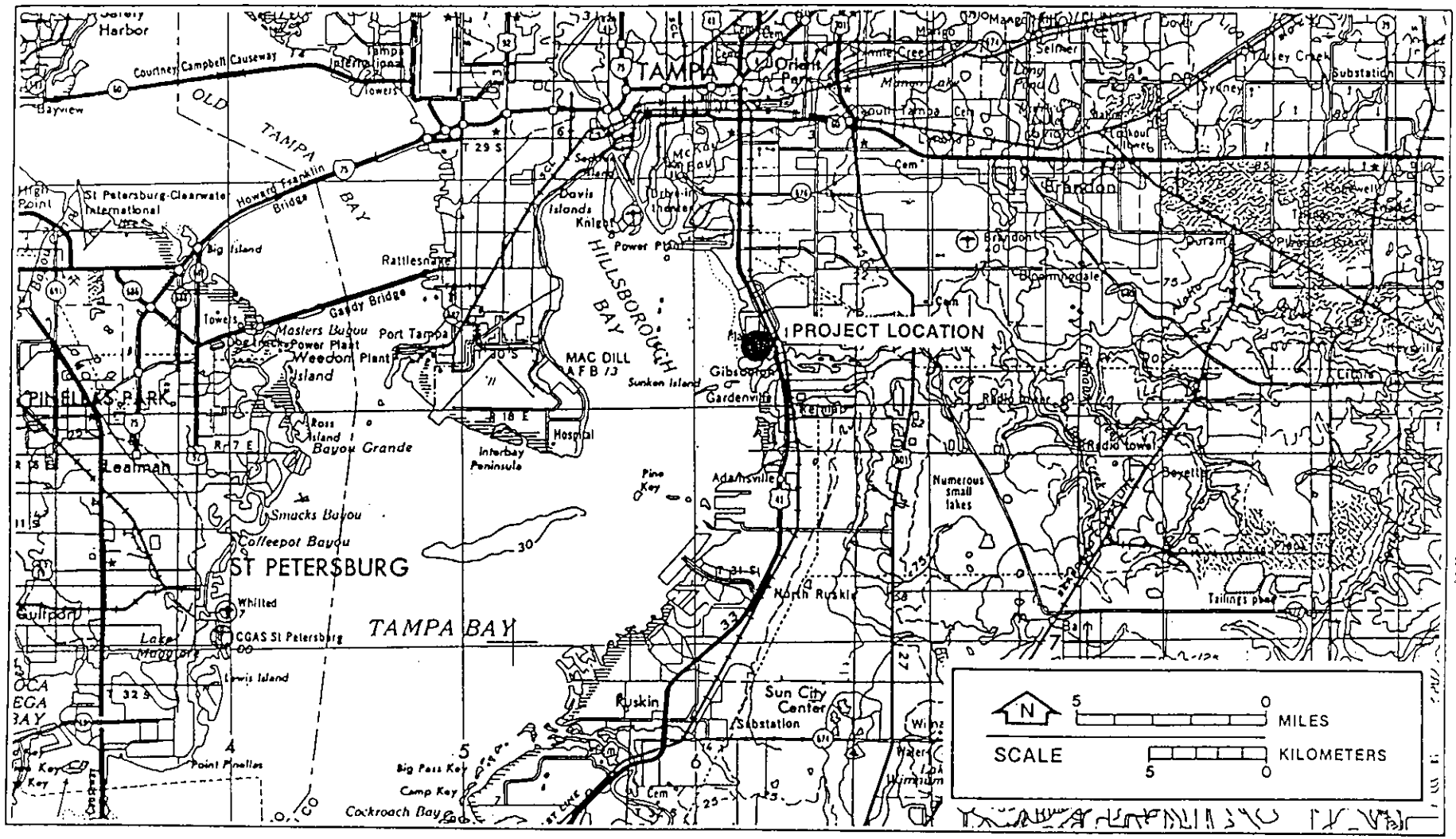

Figure 1-1
General Location Map of Cargill Fertilizer, Inc.

Source: USGS, 1981.

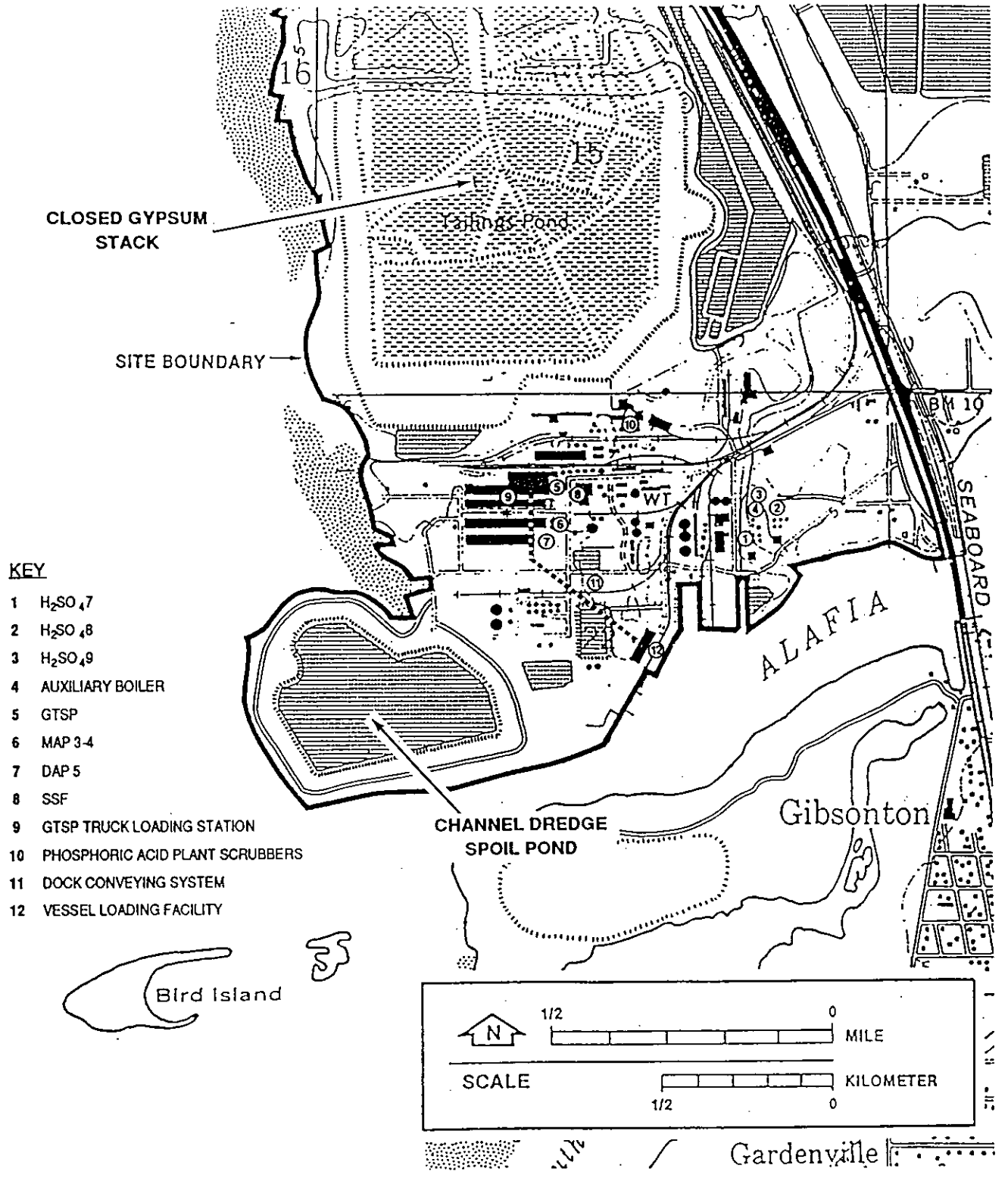

Figure 1-2
Site Location Map of Cargill Fertilizer, Inc.

Source: USGS, 1981.

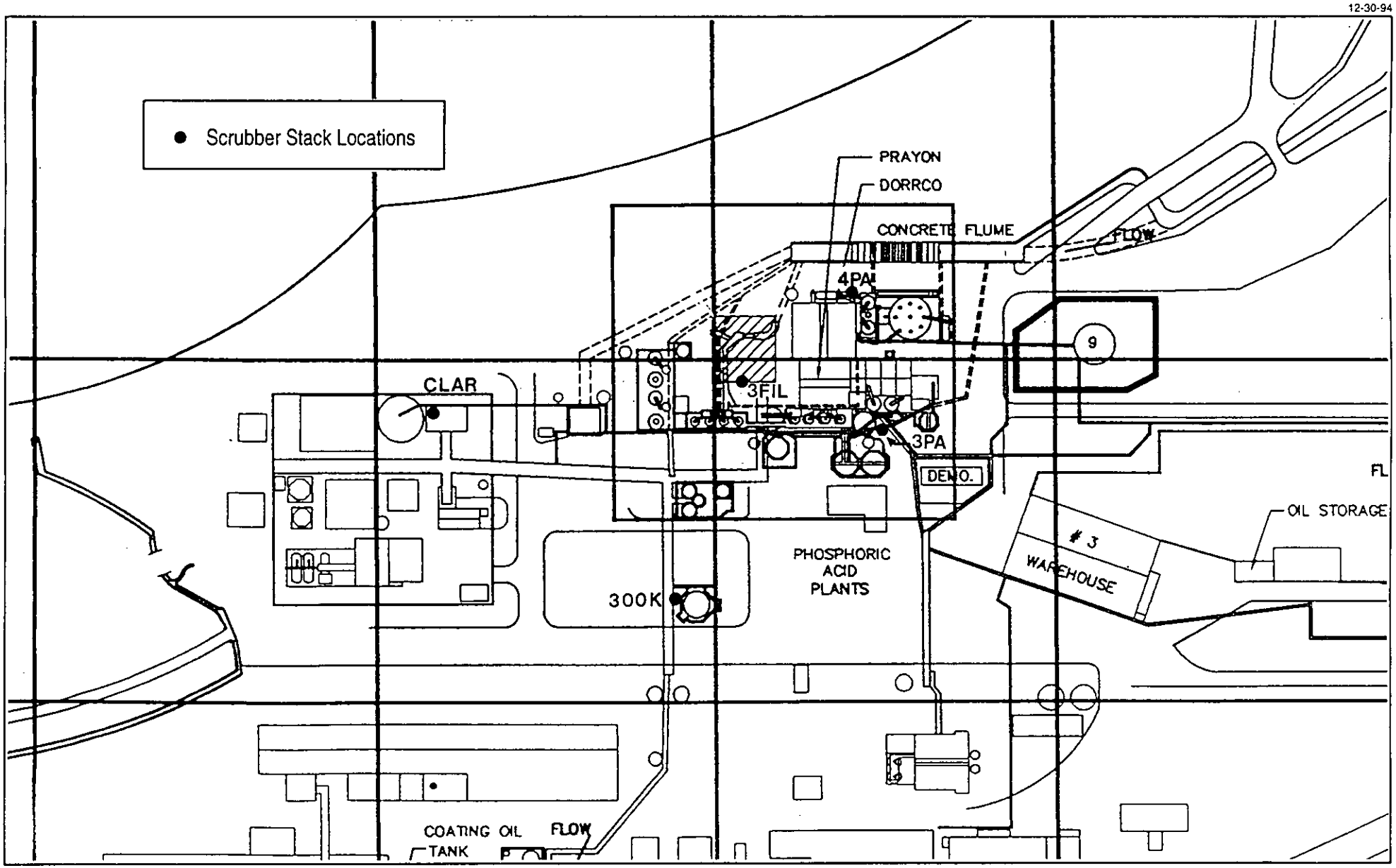

Figure 1-3
Layout of Phosphoric Acid Plant, Riverview

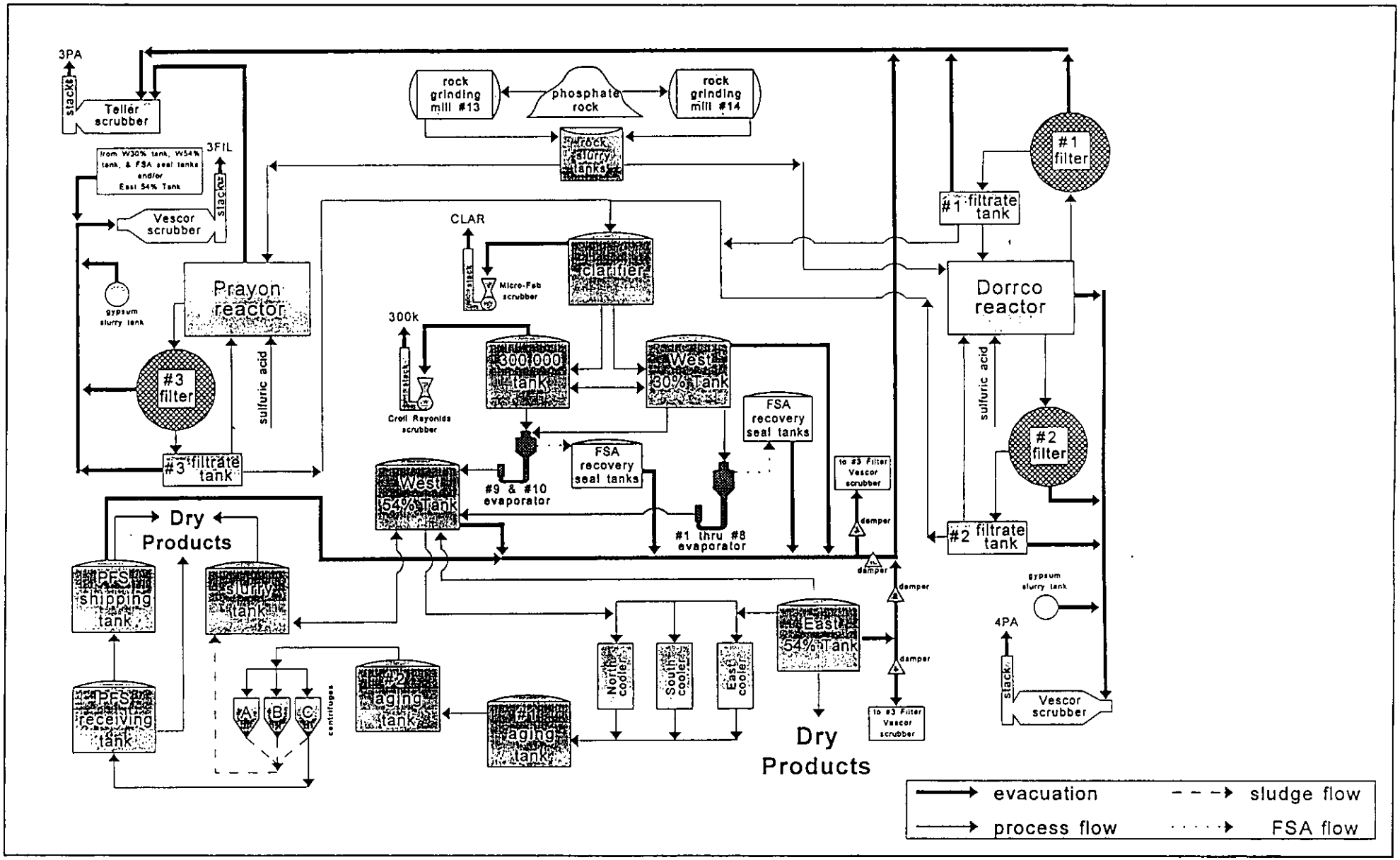

Figure 1-4
Phosphoric Acid Plant Process Flow Diagram

2.0 PROCESS/PRODUCT RATES

The proposed maximum process input rate for the phosphoric acid production plant is 170.0 tons per hour (TPH) of P_2O_5. This maximum input rate corresponds to a dry phosphate rock input rate of 550 TPH, assuming a phosphate rock P_2O_5 content of 30.9 percent. The resulting phosphoric acid production rate is 163.2 TPH P_2O_5, based on 96 percent conversion efficiency.

The effect of the increase in phosphoric acid production upon the rest of the Riverview facility is already reflected in current construction permits for the facility. All of the production facilities at the plant which utilize phosphoric acid are currently under construction permits. These include: the No. 5 DAP (diammonium phosphate) plant, the Nos. 3 and 4 MAP (monoammonium phosphate) plants, the GTSP (granular triple super phosphate) plant, the sulfuric acid plants, the new animal feed plant, and the dock loading system. Therefore, regulatory review has previously been conducted on all of the facilities at Riverview which would utilize phosphoric acid.

3.0 FLUORIDE SCRUBBERS

The fluoride scrubbers associated with the present phosphoric acid production facility at Cargill are shown in Figure 1-4 and are summarized in Table 3-1. The fluoride sources controlled by each scrubber are identified, as well as the type of scrubber and make/model number. These scrubbers will not be modified for the proposed project. Operation will continue consistent with the current operating permit. It is noted that only the reactors, filters, and hotwells associated with the phosphoric acid plant are subject to the federal New Source Performance Standards (NSPS) (40 CFR 60, Subpart T). However, Cargill has voluntarily controlled a number of other process equipment within the plant. Since the Micro-Fab and Croll-Reynolds scrubbers are not required for regulatory purposes, it is requested that they not be regulated in the air permit.

Stack and scrubber parameters for each scrubber are presented in Table 3-2. The parameters include stack height and diameter, gas flow rate, temperature, and pressure drop across the scrubber.

Table 3-1. Summary of Scrubbers Within Cargill's Riverview Phosphoric Acid Plant

Scrubber/Make-Model No.	Sources Controlled	Type
Teller Packed Bed	No. 3 Prayon reactor	Packed bed
	No. 1 filter	
	No. 1 filtrate tank	
VESCOR Model 2155RL	No. 4 Dorrco reactor	Venturi/packed bed/ demister
	No. 2 filter	
	No. 2 filtrate tank	
	Gypsum slurry tank	
Micro-Fab	Phosphoric acid clarifier	Upflow packed scrubber
Croll-Reynolds Model 66-24V	300,000 gal 30 percent phosphoric acid tank	Venturi scrubber
VESCOR Replica	No. 3 filter	Venturi/demister
	West 30 percent acid feed tank[a]	
	No. 3 filtrate tank	
	Gypsum slurry tank	
	54 percent phosphoric acid tanks (2)[a]	
	Nos. 1 - 8 evaporators[a]	
	Nos. 9 and 10 evap. seal tanks[a]	
	PFS shipping tank[a]	

[a] When maintenance is being performed on VESCOR replica scrubber, these sources are controlled by the Teller scrubber.

Table 3-2. Summary of Design Parameters for Cargill's Riverview Phosphoric Acid Plant Fluoride Scrubbers

Scrubber	Stack Height[a] (ft)	Stack Diameter (ft)	Exhaust Gas Flow Rate (acfm)	Exhaust Gas Temperature (°F)	Pressure Drop (in. H_2O)
Teller Packed Bed	110	4.00	33,000	95	3.6
VESCOR 2155RL	110	4.83	40,000	100	1.9
Micro-Fab	55	1.13	3,900	100	< 1
Croll-Reynolds Model 66-24V	50	0.63	110	95	< 1
VESCOR Replica	115	4.92	53,000	95	0.45

[a] Height above grade elevation.

4.0 FLUORIDE EMISSIONS

The current allowable fluoride emission rate is 2.35 lb/hr and 0.02 lb/ton P_2O_5 input. Fluoride emission test data from the Cargill Riverview phosphoric acid plant have been obtained over the past several years. Actual emissions based on the stack test results and actual hours of operation over the last 2 years are presented in Table 4-1. As shown, average annual fluoride emissions were 5.68 TPY. These emissions represent "baseline" emissions for new source review applicability.

Cargill is proposing a new allowable fluoride emission rate of 2.72 lb/hr. This is equivalent to 0.016 lb/ton P_2O_5 input at the maximum production rate of 170.0 TPH P_2O_5 input. The requested allowable Fl emissions for the phosphoric acid plant, based on 8,760 hours per year operation, are 11.91 TPY.

Table 4-1. Current Actual Fluoride Emissions, Cargill's Riverview Phosphoric Acid Plant

Year	Fluoride (lb/hr)	Hours of Operation	Actual Emissions
1992	1.50	8,760	6.57
1993	0.92	8,760	4.03
1994	1.47	8,760	6.44
		Average	5.68

5.0 SOURCE APPLICABILITY

New source review applicability is based on the net increase in fluoride emissions from the phosphoric acid plant. The net increase in emissions is based on the difference between the future maximum allowable emissions (11.91 TPY) and the historic actual emissions (5.68 TPY). As a result, the net increase in fluoride emissions is 6.23 TPY. The significant emission rate for Prevention of Significant Deterioration (PSD) review is 3.0 TPY for fluorides. Since the significant emission rate is exceeded, PSD review applies for this project. The required PSD reviews are presented in the following sections.

6.0 NEW SOURCE REVIEW FOR FLUORIDES

6.1 REQUIREMENTS

Under PSD new source review requirements, a proposed modification that results in a significant net emissions increase must undergo the following reviews:

1. Best Available Control Technology (BACT) evaluation,
2. Air quality impact analysis,
3. Ambient monitoring analysis, and
4. Additional impact analysis.

These requirements are addressed in the following sections.

6.2 BACT ANALYSIS FOR FLUORIDE EMISSIONS

The Nos. 3 and 4 Phosphoric Acid plants are existing plants that use wet scrubbers to control fluoride (Fl) emissions. Wet scrubbers typically are used in phosphoric acid plants throughout Florida where water is readily available from process ponds, and where fluoride control is required to meet Florida or NSPS emission standards. Dry controls (i.e., fabric filters) would not control fluoride.

A review was conducted of prior BACT/LAER determinations made for Fl emissions from phosphoric acid plants. Five BACT determinations have been identified and are summarized below.

Agrico Chemical	3/20/80	PSD-FL-0016	0.02 lb/ton P_2O_5	Scrubber
U.S.S. Agri-Chemicals	4/1/81	PSD-FL-064	0.02 lb/ton P_2O_5	Scrubber
Chevron USA (WY)	6/13/84	CT-550	0.02 lb/ton P_2O_5	Scrubber
IMC	8/4/93	PSD-FL-201	0.02 lb/ton P_2O_5	Scrubber
Cargill Bartow	8/18/95	PSD-FL-224	0.016 lb/ton P_2O_5 (existing plants); 0.012 lb/ton P_2O_5 (new plants)	Scrubber

All five determinations employed wet venturi scrubbers.

Cargill's proposed Fl emission rate of 2.72 lb/hr (equivalent to 0.016 lb/ton P_2O_5 at 170.0 TPH) is lower than the four earlier BACT determinations. In the most recent Cargill BACT, a 0.016 lb/ton limit was established for existing plant sections, and a 0.012 lb/ton limit was established for new plant sections. The Cargill Riverview phosphoric acid plant is an existing installation which will utilize existing process and control equipment. No changes will be made to this equipment as part of this project. As described in Section 3.0, the Nos. 3 and 4 Phosphoric Acid plants already have in place extensive Fl control equipment (see Table 3-1).

Actual historic Fl emissions from Cargill's Nos. 3 and 4 Phosphoric Acid plants have ranged up to 1.50 lb/hr at production rates of 126.7 TPH P_2O_5. This would equate to approximately 0.012 lb/ton P_2O_5. The historic test data is summarized below.

		Fluoride Emissions	
Date	Production Rate (TPH P_2O_5)	lb/hr[a]	lb/ton P_2O_5 input
2/26/92	123.6	1.50	0.012
3/18/93	135.9	0.92	0.007
3/17/94	126.7	1.47	0.012
3/07/95	128.0	0.56	0.004
Average			0.009
Standard Deviation			0.0034
95% Confidence Level			0.0155

[a] Represents total fluoride emissions from all sources within the phosphoric acid plants (average of three test runs).

The proposed Cargill limit of 2.72 lb/hr, equivalent to 0.016 lb/ton P_2O_5 input at the maximum production rate, is equal to the 95 percent confidence level for the historical test data. Although the historic test data indicate Fl emission levels less than the proposed limit, the following should be considered. The proposed process input and output rates are approximately 30 percent higher than the rates during the historic testing. This will result in an increase in Fl loading to the scrubbing systems. As a result, Fl emissions on a lb/ton basis could increase as well. The NSPS for phosphoric acid plants would allow fluoride emissions up to 3.4 lb/hr (0.02 lb/ton P_2O_5 input).

The proposed limit is also consistent with the recently issued BACT for Cargill's Bartow plant, which specified a 0.016 lb/ton limit for existing phosphoric acid plants.

Considering those aspects and an adequate margin of safety to consistently demonstrate compliance, Cargill's proposed limit of 2.72 lb/hr achieved by the existing wet scrubbing system is considered as BACT.

6.3 AIR QUALITY IMPACT ANALYSIS

6.3.1 Model Selection

The Industrial Source Complex Short-term (ISCST2, Version 92062) dispersion model (EPA, 1992) was used to evaluate the pollutant emissions from Cargill's Phosphoric Acid plant fluoride scrubbers. This model is contained in EPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6 (EPA, 1988). The ISCST2 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. The ISCST2 model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). In this analysis, the EPA regulatory default options were used to predict all maximum impacts. Based on the land-use within a 3-km radius of the Cargill facility, the rural dispersion coefficients were used in the modeling analysis. The ISCST2 model was used to provide maximum concentrations for the annual, 24-hour, 3-hour, and 1-hour averaging times.

6.3.2 Meteorological Data

Meteorological data used in the ISCST2 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport and Ruskin, respectively. The 5-year period of meteorological data was from 1982 through 1986. The NWS station at Tampa International Airport, located approximately 18 km to the northwest of the Cargill plant site, was selected for use in the study because it is the closest primary weather station to the study area which is representative of the plant site.

6.3.3 Emission Inventory

The Cargill phosphoric acid plant fluoride scrubber source inventory stack data are presented in Table 3-2. These data were obtained from design data. Fluoride emissions for plant sources

were based on the proposed allowable fluoride emission rate of 2.72 lb/hr. As a conservative approach for the modeling analysis, all fluoride emissions for the plant were assumed to be emitted from the Dorrco Vescor scrubber stack. Phosphoric acid plant fluoride test data have shown that fluoride emissions from the Micro-Fab scrubber stack and the Croll-Reynolds scrubber stack are minimal. Therefore, the VESCOR scrubber stack was selected as representative of the three stacks with significant fluoride emissions.

6.3.4 Receptor Locations

For predicting maximum fluoride concentrations in the vicinity of the plant, a polar receptor grid comprised of 119 discrete receptors was used for the screening analysis. These receptors included 36 receptors located on the plant property boundary at 10° intervals, plus 83 additional off-property receptors at distances of 0.5, 0.8, 1.1, and 1.5 km from the H_2SO_4 No. 9 stack, which is the origin of the grid. The 36 property boundary receptors used for the screening analysis are presented in Table 6-1.

Modeling refinements were performed by employing a polar receptor grid with a maximum spacing of 100 m along each radial and an angular spacing between radials of 2 degrees.

For predicting impacts at the Chassahowitzka National Wilderness Area, 13 discrete receptors were used along the border of the PSD Class I area. A listing of the Class I receptors in included in Table 6-2. Modeling refinements at the Chassahowitzka NWA were not performed.

6.3.5 Building Downwash Effects

Structures within the phosphoric acid plant area were determined by a site plot plan. The structures include two 100-ft tall buildings associated with the reactors. The EPA Building Input Profile (BPIP, Version 94074) program was used to determine direction specific building heights and projected widths for each 10-degree azimuth direction to be included in the modeling analysis.

6.3.6 Modeling Results

The modeling analysis results for the vicinity of the plant are summarized in Table 6-3. Based on the screening results, refinements were performed for each averaging time. The maximum

Table 6-1. Cargill Property Boundary Receptors Used in the Modeling Analysis

Direction (deg)	Distance (m)	Direction (deg)	Distance (m)
10	965	190	362
20	805	200	390
30	675	210	796
40	597	220	971
50	550	230	1,296
60	525	240	1,512
70	517	250	1,494
80	524	260	1,019
90	550	270	1,064
100	596	280	1,151
110	414	290	1,296
120	338	300	1,421
130	294	310	1,623
140	285	320	1,962
150	293	330	2,000
160	311	340	1,843
170	343	350	1,759
180	347	360	1,245

Note: Distances are relative to the H_2SO_4 No. 9 stack location.
deg = degree.
m = meter.

Table 6-2. Chassahowitzka Wilderness Area Receptors Used in the Modeling Analysis

UTM Coordinates	
East (km)	North (km)
340.3	3,165.7
340.3	3,167.7
340.3	3,169.8
340.7	3,171.9
342.0	3,174.0
343.0	3,176.2
343.7	3,178.3
342.4	3,180.6
341.1	3,183.4
339.0	3,183.4
336.5	3,183.4
334.0	3,183.4
331.5	3,183.4

Table 6-3. Maximum Predicted Fluoride Impacts in the Vicinity of the Cargill Plant - Screening Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)
Annual				
	0.44	270.	1064.	82------
	0.40	270.	1064.	83------
	0.47	270.	1064.	84------
	0.41	270.	1064.	85------
	0.40	270.	1064.	86------
24-Hour				
	2.9	270.	1064.	82111924
	3.2	140.	285.	83011124
	5.0	270.	1064.	84121624
	3.6	270.	1064.	85120824
	4.0	270.	1100.	86092024
3-Hour				
	10.0	270.	1064.	82051306
	10.4	140.	285.	83082024
	13.5	120.	338.	84033024
	10.0	290.	1296.	85072006
	12.9	270.	1064.	86091824
1-Hour				
	20	290.	1296.	82110307
	19	10.	965.	83082909
	19	180.	347.	84081124
	19	140.	285.	85060224
	23	270.	1064.	86022819

Note: YY = Year, MM = Month, DD = Day, HH = Hour.

[a] All receptor coordinates are reported with respect the No. 9 H_2SO_4 stack location.

refined modeling results are provided in Table 6-4. The maximum fluoride concentrations predicted at the Chassahowitzka NWA are presented in Table 6-5.

6.4 ADDITIONAL AIR QUALITY IMPACT ANALYSIS

Fluoride in the form of gaseous hydrogen fluoride is the only compound of significant consequence which will be emitted from Cargill Nos. 3 and 4 Phosphoric Acid plant. This section addresses the potential impacts of these emissions upon soils, vegetation, and visibility in the vicinity of the Cargill plant, as well as within the Chassahowitzka Class I area.

6.4.1 Soils

Many of the soils in the region and a large portion of the site have been disturbed and altered by industrial activities. They were originally sandy, siliceous hyperthermic Haploquods with very strongly acid subsoils. The undisturbed soils of the Payne Creek floodplain have formed in unconsolidated loamy textured sediment influenced by calcareous material (USDA, 1991). They are mapped as coarse-loamy siliceous, hyperthermic Typic Ochraqualfs.

No particulate deposition will occur; therefore, no measurable soil accumulation will occur from the proposed emissions. As a result, the impact of the proposed emissions upon soils will not be significant.

6.4.2 Vegetation and Wildlife

The response of vegetation and wildlife to atmospheric pollutants is influenced by the concentration of the pollutant, duration of exposure, and frequency of exposures. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration which occur during certain meteorological conditions interspersed with long periods of extremely low ground-level concentrations. If there are any effects of stack emissions on plants and animals they will be from the short-term, higher doses. A dose is the product of the concentration of the pollutant and duration of the exposure. The impact of the Cargill phosphoric acid plants on regional vegetation and wildlife was assessed by comparing pollutant doses that are predicted from modeling with threshold doses reported from the scientific literature which could adversely affect plant or animal species typical of those present in the region.

Table 6-4. Maximum Predicted Fluoride Impacts in the Vicinity of the Cargill Plant - Refined Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)
Annual	0.47	270.	1064.	84------
24-Hour	5.0	270.	1064.	84121624
3-Hour	13.5	120.	338.	84033024
1-Hour	23.4	270.	1064.	86022819

Note: YY=Year, MM=Month, DD=Day, HH=Hour.
[a] All receptor coordinates are reported with respect to the No. 9 H_2SO_4 stack location.

Table 6-5. Maximum Predicted Fluoride Impacts at the Chassahowitzka NWA

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)
All Sources				
Annual				
	0.00030	340300.	3165700.	82------
	0.00034	343700.	3178300.	83------
	0.00021	340300.	3165700.	84------
	0.00034	340300.	3165700.	85------
	0.00038	340300.	3165700.	86------
24-Hour				
	0.009	343700.	3178300.	82042724
	0.014	343000.	3176200.	83080824
	0.007	340300.	3165700.	84041524
	0.011	331500.	3183400.	85013124
	0.011	342000.	3174000.	86061324
3-Hour				
	0.063	340300.	3165700.	82062603
	0.067	343000.	3176200.	83080824
	0.054	340300.	3167700.	84070103
	0.057	340300.	3165700.	85103109
	0.068	342000.	3174000.	86061324
1-Hour				
	0.16	340300.	3167700.	82010220
	0.16	340700.	3171900.	83091204
	0.16	340300.	3167700.	84070103
	0.17	340300.	3165700.	85103107
	0.16	340300.	3167700.	86020922

Note: YY = Year, MM = Month, DD = Day, HH = Hour.

[a] All receptor coordinates are reported with respect to the No. 9 H_2SO_4 stack location.

Fluoride is an inhibitor of plant metabolism. As fluoride accumulates in plants, it causes an inhibition of plant metabolism and chlorosis (a yellowing of the leaf). With further increases in accumulation of fluoride, the cells die and necrosis is observed. Leaf tips and margins accumulate the highest concentrations of fluoride and are the sites of initial visible injury. Gaseous fluoride is taken up primarily through the stomata of transpiring plants. There is negligible contribution to leaf fluoride content by uptake by roots (Applied Sciences Associates, Inc., 1978).

The sensitivity of plants varies widely. Gladiolus are considered the most sensitive. Visible symptoms are reported to occur when gladiolus have been exposed to concentrations >0.5 microgram per cubic meter ($\mu g/m^3$) for 5 to 10 days. More tolerant fruit tree species and conifers first showed symptoms at around 1 $\mu g/m^3$ at 10-day exposures (Treshow and Anderson, 1989). Plant sensitivities can range from 16 $\mu g/m^3$ of fluoride in sensitive plants to 500 $\mu g/m^3$ of fluoride in tolerant plants for 3-hour exposures. The lowest observed effect levels for sensitive plants are reported to be as follows (Applied Sciences Associates, Inc., 1978):

<50 $\mu g/m^3$ for 1-hour exposures
<16 $\mu g/m^3$ for 3-hour exposures
<1.6 $\mu g/m^3$ for 24-hour exposures

The ingestion of excessive amounts of fluoride can lead to an animal disease called fluorosis. Fluorosis is a skeletal and dental disease resulting in softening of bone and dental tissue that can lead to injury and other health problems. In general, forage plants with over 30 ppm of fluoride which are regularly ingested by animals such as cattle and deer can result in mild fluorosis. A number of states (but not Florida) have fluoride standards. These range from 25 to 40 parts per million (ppm) of fluoride as a maximum annual average (Newman, 1984).

Data suggest that a fluoride accumulation factor might be calculated under fumigation conditions with an uncertainty factor of less than 2. One study indicated that hydrogen fluoride concentrations of 0.3 $\mu g/m^3$ would lead to an accumulation of up to 20 ppm of fluoride in conifer foliage after 2 years of exposure (Treshow and Anderson, 1989).

The predicted maximum 1-hour, 3-hour, 24-hour, and annual fluoride concentrations in the vicinity of the Cargill plant due to the expanded phosphoric acid plant are 23.4, 13.5, 5.0, and 0.47 $\mu g/m^3$, respectively. Based on these predicted impacts, no significant effects are predicted for the short-term exposures of 1 and 3 hours. Some chlorosis in sensitive plants might occur at the 24 hour exposures. These maximum values are predicted to occur due west of the plant at the plant boundary. No significant adverse effects to vegetation are predicted because these are singular events and the effects are reversible and no significant vegetative resources occur in this area. The accumulation of fluoride to levels that could present a risk to herbivores is also unlikely given the predicted low annual levels.

6.4.3 Visibility Impacts

Fluoride is a colorless gas. The existing phosphoric acid plants have wet scrubbers which emit a water vapor plume. This visibility characteristic will not change as a result of the phosphoric acid plant expansion.

6.4.4 Air Quality Related Values Analysis: Vegetation, Soils, and Wildlife

The vegetation and soils components of the additional impacts analysis have been expanded to constitute an air quality-related values (AQRVs) analysis to assess the potential risk to AQRVs of the Chassahowitzka NWA due to the expansion of the phosphoric acid plant. Potential air quality impacts of the proposed project were predicted at the PSD Class I area portion of the Chassahowitzka NWA. The U.S. Department of the Interior (National Park Service) in 1978 administratively defined AQRVs to be:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are assets that are to be preserved if the area is to achieve the purposes for which it was set aside.

Except for visibility, AQRVs have not been specifically defined by the U.S. Fish and Wildlife Service (USFWS) for Chassahowitzka NWA. However, soil, flora, fauna, cultural resources, geological features, water, and climate potentially affected by air quality have been identified by

land managers as general AQRVs to be addressed in these types of analyses. This AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found In the Chassahowitzka NWA, which are the AQRVs directly affected by air quality.

Vegetation type AQRVs and their representative species types have been defined as:

Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass

Marsh Islands - cabbage palm and eastern red cedar

Estuarine Habitat - black needlerush, salt marsh cordgrass, and wax myrtle

Hardwood Swamp - red maple, red bay, sweet bay, and cabbage palm

Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle, and saw palmetto

Mangrove Swamp - red, white, and black mangrove

Wildlife AQRVs have been defined as endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles, and mammals.

A screening approach was used that compared the maximum predicted ambient concentration of air pollutants of concern in the Chassahowitzka NWA with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted that specifically addressed the effects of air contaminants on plant species reported to occur in the NWA. While the literature search focused on such species as cabbage palm, eastern red cedar, and species of the hardwood swamplands and mangrove forest found in the Chassahowitzka NWA, no specific air quality citations were found that addressed these species. Therefore, studies on general vegetation effects and other similar Florida species can be used as indicators of effects.

6.4.4.1 Vegetation

As stated earlier, the effects of contaminants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage, which is considered to be the major pathway of exposure. For purposes of this analysis, it is assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels of air contaminants can be termed acute, physiological, and chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms. Chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms but with some effect on the overall growth and productivity of the plant.

Fluoride is an inhibitor of plant metabolism. As fluoride accumulates in plants, it causes an inhibition of plant metabolism and chlorosis (a yellowing of the leaf). With further increases in accumulation of fluoride, the cells die and necrosis is observed. Leaf tips and margins accumulate the highest concentrations of fluoride and are the sites of initial visible injury. Gaseous fluoride is taken up primarily through the stomata of transpiring plants. There is negligible contribution to leaf fluoride content by uptake by roots (Applied Sciences Associates, Inc., 1978).

The sensitivity of plants varies widely. Gladiolus are considered the most sensitive. Visible symptoms are reported to occur when gladiolus have been exposed to concentrations >0.5 microgram per cubic meter ($\mu g/m^3$) for 5 to 10 days. More tolerant fruit tree species and conifers first showed symptoms at around 1 $\mu g/m^3$ at 10-day exposures (Treshow and Anderson, 1989). Plant sensitivities can range from 16 $\mu g/m^3$ of fluoride in sensitive plants to 500 $\mu g/m^3$ of fluoride in tolerant plants for 3-hour exposures. The lowest observed effect levels for sensitive plants are reported to be as follows (Applied Sciences Associates, Inc., 1978):

<50 $\mu g/m^3$ for 1-hour exposures
<16 $\mu g/m^3$ for 3-hour exposures
<1.6 $\mu g/m^3$ for 24-hour exposures

The ingestion of excessive amounts of fluoride can lead to an animal disease called fluorosis. Fluorosis is a skeletal and dental disease resulting in softening of bone and dental tissue that can lead to injury and other health problems. In general, forage plants with over 30 ppm of fluoride which are regularly ingested by animals such as cattle and deer can result in mild fluorosis. A

number of states (but not Florida) have fluoride standards. These range from 25 to 40 parts per million (ppm) of fluoride as a maximum annual average (Newman, 1984).

Data suggest that a fluoride accumulation factor might be calculated under fumigation conditions with an uncertainty factor of less than 2. One study indicated that hydrogen fluoride concentrations of 0.3 $\mu g/m^3$ would lead to an accumulation of up to 20 ppm of fluoride in conifer foliage after 2 years of exposure (Treshow and Anderson, 1989).

The predicted maximum 1-hour, 3-hour, 24-hour, and annual fluoride concentrations in the Chassahowitzka NWA due to the modified phosphoric acid plant are 0.17, 0.067, 0.014, and 0.00038 $\mu g/m^3$, respectively. These predicted values are well below the lowest observed effect levels for sensitive vegetation. No significant adverse effects are predicted to occur to the vegetative AQRVs of Chassahowitzka NWA. Since the predicted annual concentration is very low, no measurable accumulation of fluoride will occur in vegetation that would be the prime forage of wildlife. Therefore, no significant adverse effects to wildlife AQRVs will occur.

6.4.4.2 Soils

The majority of the soil in the Class I area is classified as Weekiwachee-Durbin muck. This is an euic, hyperthermic 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 4 percent sulfur (USDA, 1991).

No particulate deposition is predicted; therefore, no measurable soil accumulation will occur from the proposed emissions.

6.4.4.3 Wildlife

The predicted fluoride concentrations are well below the lowest observed effects levels for plants and, therefore, animals. Given these conditions, the proposed source's emissions poses no risk to wildlife AQRVs at Chassahowitzka NWA.

6.4.4.4 Summary

In summary, no toxic or adverse significant effects from proposed plant emissions are expected to occur in the Chassahowitzka NWA.

6.4.5 Impact Due to Associated Growth

No associated growth is expected to occur as a result of this production rate increase. No new employees are expected to be hired as a result of the expansion. The effect of the increased phosphoric acid production upon the Cargill facility is already reflected in current construction and operating permits.

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