

TO: Trina L. Vielhauer  
THRU: Jim Pennington *JKP*  
FROM: John Reynolds *JR*  
DATE: December 19, 2003  
SUBJECT: Cargill Fertilizer, Incorporated - Bartow  
Green Bay Facility – File 1050053-033-AC (PSD-FL-334)

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Attached is the Public Notice package for Cargill Fertilizer to modify its Phosphoric Acid Production System, South DAP Fertilizer Plant, and its North MAP/DAP Plant. The Phosphoric Acid Production System is being modified to improve process efficiency, plant stability, and evaporation capacity. The South DAP and North MAP/DAP are being modified to improve product quality and production capabilities. As a result of these changes, significant emission increases will occur for particulate matter (PM), PM with an aerodynamic diameter of 10 microns or less (PM<sub>10</sub>), fluoride (F) and nitrogen oxides (NO<sub>x</sub>).

The project is therefore subject to the Prevention of Significant Deterioration (PSD) review for F, NO<sub>x</sub>, PM, and PM<sub>10</sub> in accordance with 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination was conducted for these pollutants as required by Rules 62-212.400 and 62-296, F.A.C.

The annual increases shall not exceed: 36 TPY Sulfur Dioxide, 93 TPY NO<sub>x</sub>, 40 TPY Carbon Monoxide, 63 TPY PM, 66 TPY PM<sub>10</sub>, 5 TPY Volatile Organic Compounds, 4 TPY Total Reduced Sulfur, 0.4 TPY Sulfuric Acid Mist, and 33 TPY Fluoride.

December 19 is Day 79 for the project.

We recommend your approval and signature.

JKP/jr

Attachments

**U.S. Postal Service**  
**CERTIFIED MAIL RECEIPT**  
*(Domestic Mail Only; No Insurance Coverage Provided)*

7000 2870 0000 7028 3697

OFFICIAL USE

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	

**Sent To**  
E. O. Morris  
-----  
**Street, Apt. No., or PO Box No.**  
8813 US Hwy. 41 S.  
-----  
**City, State, ZIP+ 4**  
Riverview, FL 33569



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

## P.E. Certification Statement

### Permittee:

Cargill Fertilizer, Incorporated  
Green Bay Plant

**DEP File No.** 1050053-033-AC

**Permit No.** PSD-FL-334

**Project type:** Permit to modify the South Diammonium Phosphate (DAP) Plant, the North Monoammonium Phosphate (MAP)/ DAP Plant and the Phosphoric Acid Plants. The South DAP plant modifications will improve product quality by implementing changes to the reactor, granulator, screening operation, and the cooling system, as well as enabling the production of both MAP and DAP. The applicant is also proposing an increase in the production rate from 46 TPH  $P_2O_5$  to 65 TPH  $P_2O_5$  for production of ammoniated phosphates (AP). The proposed maximum allowable emission rates for the modified South AP plant are 0.17 lb/ton  $P_2O_5$  for PM/PM<sub>10</sub> and 0.04 lb/ton  $P_2O_5$  for F emissions. This represents a reduction in permitted PM/PM<sub>10</sub> emissions of 155 TPY and a reduction in permitted F emissions of 41 TPY.

The applicant is proposing to modify the North MAP/DAP plant to improve product quality by implementing changes to the reactor, granulators, the screening operations, and the cooling systems. The modified plant will be renamed the "*North Ammoniated Phosphate (AP) Plant*". The applicant is also proposing a change in the production rate for the North AP plant from the current 106.1 TPH  $P_2O_5$  when producing MAP and 70.4 TPH  $P_2O_5$  when producing DAP, to 80 TPH  $P_2O_5$  for producing AP. The applicant is proposing to reduce the allowable PM/PM<sub>10</sub> emission rate to 0.17 lb/ton  $P_2O_5$  and F emission rate to 0.04 lb/ton  $P_2O_5$ . The Department will require that these limits be met to three significant figures; i.e., 0.0170 and 0.040 lb F/ton  $P_2O_5$ .

The Phosphoric Acid Production System, consisting of the Phosphoric Acid Plant (PAP) No. 1-North, PAP No. 1-South, PAP No. 2, and Phosphoric Acid Storage, Blending, Clarification, Evaporation and Aging Tanks, is being modified to improve process efficiency, plant stability, and evaporation capacity. The applicant is not proposing changes in the permitted rates of PAP No. 1-North, PAP No. 1-South and PAP No.2, but is proposing that the production rate be stated as a combined rate for the system. The applicant is proposing to reduce the allowable Fluoride (F) emission rate at the Phosphoric Acid Production System to 0.012 lb/ton  $P_2O_5$ . Based on the test data, the Department is setting the limit at 0.009 lb F/ton  $P_2O_5$ .

"More Protection, Less Process"

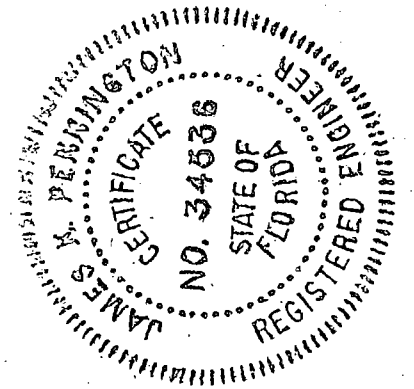
Printed on recycled paper.

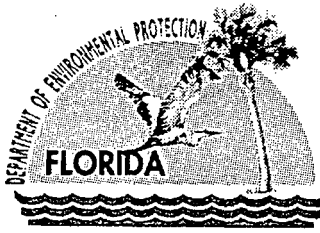
Fluoride emissions will be controlled by the use of scrubbers using process pond water. An air quality impact analysis was required for sulfur dioxide and nitrogen oxides.

*I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).*

James K. Pennington 12/19/03  
James K. Pennington, P.E. Date  
Registration Number:

Department of Environmental Protection  
Bureau of Air Regulation  
111 South Magnolia Drive, Suite 4  
Tallahassee, Florida 32301  
Phone (850) 488-0114  
Fax (850) 922-6979





Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

December 22, 2003

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. E. O. Morris  
Vice President  
Cargill Fertilizer, Incorporated  
8813 U.S. Highway 41 South  
Riverview, Florida 33569

Re: DRAFT Permit No. 1050053-033-AC (PSD-FL-334)  
Green Bay Phosphate Fertilizer Facility

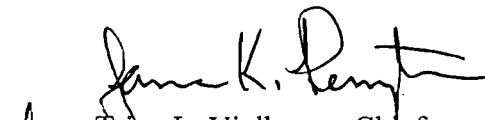
Dear Mr. Morris:

Enclosed is one copy of the Draft Air Construction Permit for modification of the Green Bay Phosphate Fertilizer Facility, located at 4390 County Road 640 West, Bartow, Polk County, Florida. The Technical Evaluation and Preliminary Determination, Best Available Control Technology, the Department's Intent to Issue Air Construction Permit and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT" are also included.

The "PUBLIC NOTICE" must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Jim Pennington, P.E., Permitting Administrator, North Section, at the above letterhead address. If you have any other questions, please contact John Reynolds at 850/921-9530 or Jim Pennington at 850/921-9515.

Sincerely,

  
Trina L. Vielhauer, Chief,  
Bureau of Air Regulation

TLV/jr

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

In the Matter of an  
Application for Permit by:

Mr. E. O. Morris, V.P. of Environment, Health & Safety  
Cargill Fertilizer, Inc.  
8813 U.S. Highway 41 South  
Riverview, Florida 33569

DEP File No. 1050053-033-AC  
Draft Permit No. PSD-FL-334  
Bartow Plant  
Polk County

### **INTENT TO ISSUE PSD PERMIT**

The Department of Environmental Protection (Department) gives notice of its intent to issue a Prevention of Significant Deterioration (PSD) air construction permit (copy of DRAFT Permit attached) for the proposed project, detailed in the application specified above and in the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Cargill Fertilizer, Inc., submitted an application on April 30, 2003 (complete on October 2, 2003) to the Department for a PSD permit to modify several existing emission units at its phosphate fertilizer manufacturing facility located in Bartow. The facility is located at 4390 County Road 640 West, Bartow, Polk County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a review for Prevention of Significant Deterioration (PSD), a determination of Best Available Control Technology (BACT) and a PSD permit are required for the proposed work.

The Department intends to issue this Air Construction Permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the Final PSD Permit in accordance with the conditions of the attached Draft PSD permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the Draft PSD Permit, the permitting authority shall issue a Revised Draft PSD Permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

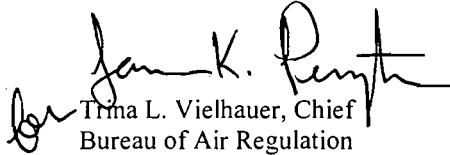
The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would

justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

  
Tina L. Vielhauer, Chief  
Bureau of Air Regulation

**CERTIFICATE OF SERVICE**

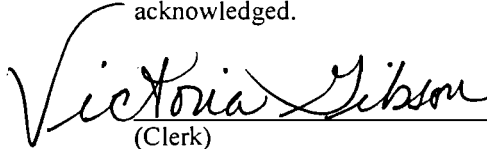
The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, Draft BACT Determination, and the DRAFT permit) was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 12/22/03 to the person(s) listed:

E. O. Morris, Cargill Fertilizer, Inc.\*  
Gregg Worley, EPA  
John Bunyak, NPS  
Gerry Kissel, DEP-SWD  
David Buff, Golder Associates, Inc.



Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

  
(Clerk) 12/22/03  
(Date)



**PUBLIC NOTICE OF INTENT TO ISSUE PSD AIR CONSTRUCTION PERMIT**

STATE OF FLORIDA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DEP File No. 1050053-033-AC (PSD-FL-334)  
 Green Bay Facility  
 Cargill Fertilizer, Incorporated  
 Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue a Prevention of Significant Deterioration (PSD) air construction permit to Cargill fertilizer, Inc. to modify several existing emission units at its Green Bay Phosphate Fertilizer Facility located in Bartow, Florida. A Best Available Control Technology (BACT) determination was required for nitrogen oxides (NO<sub>x</sub>), fluorides (F), particulate matter (PM) and particulate matter less than or equal to 10 micrometers (PM<sub>10</sub>) pursuant to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). The applicant's name and address are Cargill Fertilizer, Inc., 8813 U.S. Highway 41 South, Riverview, Florida 33569.

Cargill applied on April 30, 2003 (complete on October 2, 2003) to modify its Phosphoric Acid Plants (PAP), South Diammonium Phosphate (DAP) Fertilizer Plant, and its North Monoammonium Phosphate (MAP)/DAP Plant. The PAP plant is being modified to improve process efficiency, plant stability, and evaporation capacity. The South DAP and North MAP/DAP are being modified to improve product quality and production capabilities. As a result of these changes, significant emission increases will occur for PM/PM<sub>10</sub>, F and NO<sub>x</sub>. The annual increases, adjusted for contemporaneous emission changes over the last five years, are approximately: 36 tons per year (TPY) Sulfur Dioxide (SO<sub>2</sub>), 93 TPY NO<sub>x</sub>, 40 TPY Carbon Monoxide (CO), 63 TPY PM, 66 TPY PM<sub>10</sub>, 5 TPY Volatile Organic Compounds, 4 TPY Total Reduced Sulfur, 0.4 TPY Sulfuric Acid Mist, and 33 TPY F.

The Department proposes the following as BACT for this project:

**Phosphoric Acid Production System (PAP No. 1 North & South Train and PAP No. 2)**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	1.15 lb/hr 5.03 ton/yr	0.009 lb F/ton P <sub>2</sub> O <sub>5</sub> input	(2) Cyclonic Jet Scrubbers-North 1 (2) Cyclonic Jet Scrubbers-South 1 Poly-Con Wet Scrubber-PAP No.2

**South Ammoniated Phosphate (AP) Plant**

PM/PM <sub>10</sub>	11.1 lb/hr, 48.4 TPY	0.170 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
VE	10% opacity	Prior Permits	
F	2.6 lb/hr, 11.4 TPY	0.040 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	12.6 lb/hr, 55.2 TPY	0.210 lb/MMBtu	Low N fuel, good combustion

**North Ammoniated Phosphate (AP) Plant**

PM/PM <sub>10</sub>	13.6 lb/hr, 59.6 TPY	0.170 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
VE	10% opacity	Prior permits	
F	3.2 lb/hr, 14.0 TPY	0.040 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	7.4 lb/hr, 32.4 TPY	0.0150 lb/MMBtu	Low N fuel, good combustion

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

An air quality impact analysis was conducted. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards. The maximum predicted PM<sub>10</sub>, and NO<sub>2</sub> PSD Class II increments in the vicinity of the project consumed by all sources in the area, including this project, will be as indicated below:

<b>Averaging Time</b>	<b>Allowable Increment (µg/m<sup>3</sup>)</b>	<b>Increment Consumed (µg/m<sup>3</sup>)</b>	<b>Percent Consumed</b>
<b>PM<sub>10</sub></b>			
24-hour	30	13	43
Annual	17	<0	0
<b>NO<sub>2</sub></b>			
Annual	25	2	8

There were no significant impacts predicted for the PSD Class I Chassahowitzka National Wilderness Area located 110 km to the northwest. Based on the required increment analyses, the Department has reasonable assurance that the proposed project will not cause or significantly contribute to a violation of any PSD increment in the Class I or Class II areas.

The permitting authority has determined that a PSD Air Construction Permit is required. The Department will issue the Final PSD Air Construction Permit in accordance with the conditions of the Draft PSD Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE PSD AIR CONSTRUCTION PERMIT." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

**NOTICE TO BE PUBLISHED IN THE NEWSPAPER**

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection	Dept. of Environmental Protection
Bureau of Air Regulation	Southwest District
Suite 4, 111 S. Magnolia Drive	3804 Coconut Palm Drive
Tallahassee, Florida, 32301	Tampa, Florida 33619-8218
Telephone: 850/488-0114	Telephone: 813/744-6100
Fax: 850/922-6979	Fax: 813/744-6084

The complete project file includes the application, technical evaluations, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, North Permitting Section at 111 South Magnolia Drive, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

**TECHNICAL EVALUATION  
AND  
PRELIMINARY DETERMINATION**

**CARGILL FERTILIZER, INC.**

**GREEN BAY FACILITY  
Polk County, Florida**

**Facility Expansion**

**DEP File No. 1050053-033-AC  
PSD-FL-334**

**Florida Department of Environmental Protection  
Division of Air Resources Management  
Bureau of Air Regulation**

**December 19, 2003**

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

## I. APPLICATION INFORMATION

### A. Applicant

Cargill Fertilizer, Inc.  
8813 U.S. Highway 41 South  
Riverview, Florida 33569

*Responsible Official:* Mr. E. O. Morris, Vice President

### B. Reviewing and Process Schedule

04-30-2003: Date of receipt of Application  
05-29-2003: DEP's Completeness Request  
08-29-2003: Applicant requested additional 30 days to respond to DEP's Completeness Request  
09-29-2003: Applicant requested additional 4 days to respond to DEP's Completeness Request  
10-02-2003: Applicant's response to DEP's Completeness Request  
10-02-2003: Application Complete

### C. Facility Location

This facility is located at 4390 County Road 640 West, Bartow, Polk County, Florida. Latitude and Longitude are 27°50'39" and 81°56'26" respectively. UTM coordinates of the site are: Zone 17, 409.5 km E and 3080.1 km N. This location is approximately 110 km from the nearest Class I area, the Chassahowitzka National Wilderness Area (CNWA).

Facility Identification Code (SIC):

Major Group No. 28, Industry Group No. 2874.

This facility was acquired by Cargill in November 2002 from Farmland Hydro, L.P.



Figure 1. Location of Plant



Figure 2- Regional Location

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

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## D. Facility Description

This existing facility consists of several industrial processes which convert insoluble rock containing phosphorus ore into a soluble form suitable for agricultural use. This facility includes several Sulfuric Acid plants, Phosphoric Acid plants, Monoammonium Phosphate (MAP)/Diammonium Phosphate (DAP) fertilizer plants, a molten sulfur handling and storage plant, a Green Superphosphoric Acid plant and several other minor emission units and ancillary equipment.

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), or volatile organic compounds (VOC) exceed 100 TPY. The facility is also a Major facility for Hazardous Air Pollutants because emissions of Hydrogen Fluoride (HF) exceed 10 TPY.

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions from the facility are greater than 100 TPY for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). PSD Review and a BACT determination are required for each pollutant emitted in excess of the Significant Emission Rates listed in Table 62-212.400-2, F.A.C. These values are: 3 TPY for Fluoride, 40 TPY for NO<sub>x</sub>, SO<sub>2</sub>, and VOC; 25/15 TPY of PM/PM<sub>10</sub>; 7 TPY of Sulfuric Acid Mist (SAM); and 100 TPY of CO.

## II. PROJECT DESCRIPTION

The applicant is proposing to modify the South Diammonium Phosphate (DAP) Plant [Emission Unit No. 007], the North Monoammonium Phosphate (MAP)/ DAP Plant [Emission Unit No. 029] and the Phosphoric Acid Production System Plants [Emission Units Nos. 013, 016 and 017] as described below:

### A. South DAP Plant

The applicant is proposing to modify the South DAP plant to improve product quality by implementing changes to the reactor, granulator, the screening operation, and the cooling system, as well as enabling the production of both MAP and DAP. The modified plant will be renamed the "*South Ammoniated Phosphate (AP) Plant*". The applicant is also proposing an increase in the production rate from 46 TPH P<sub>2</sub>O<sub>5</sub> to 65 TPH P<sub>2</sub>O<sub>5</sub> for production of AP fertilizer. The proposed maximum allowable emission rates for the modified South AP plant are 0.17 lb/ton P<sub>2</sub>O<sub>5</sub> for PM/PM<sub>10</sub> and 0.04 lb/ton P<sub>2</sub>O<sub>5</sub> for F emissions. This represents a reduction in permitted PM/PM<sub>10</sub> emissions of 155 TPY and a reduction in permitted F emissions of 41 TPY.

### B. North MAP/DAP Plant

The applicant is proposing to modify the North MAP/DAP plant to improve product quality by implementing changes to the reactor, granulators, the screening operations, and the cooling systems. The modified plant will be renamed the "*North Ammoniated Phosphate (AP) Plant*". The applicant is also proposing a change in the production rate for the North AP plant from the current 106.1 TPH P<sub>2</sub>O<sub>5</sub> when producing MAP and 70.4 TPH P<sub>2</sub>O<sub>5</sub> when producing DAP, to 80 TPH P<sub>2</sub>O<sub>5</sub> for producing AP. The applicant is proposing to reduce the allowable PM/PM<sub>10</sub> emission rate to 0.17 lb/ton P<sub>2</sub>O<sub>5</sub> and F emission rate to 0.04 lb/ton P<sub>2</sub>O<sub>5</sub>.

### C. Phosphoric Acid Production System

The Phosphoric Acid Production System, consisting of the Phosphoric Acid Plant (PAP) No. 1-North, PAP No. 1-South, PAP No. 2, and Phosphoric Acid Storage, Blending, Clarification, Evaporation and Aging Tanks, is being modified to improve process efficiency, plant stability, and evaporation capacity. The applicant is not proposing changes in the permitted rates of PAP No. 1-North, PAP No. 1-South and PAP No.2, but is proposing that the production rate be stated as a combined rate for the system. The applicant is proposing to reduce the allowable Fluoride (F) emission rate at the Phosphoric Acid Production System to 0.012 lb/ton P<sub>2</sub>O<sub>5</sub>.

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Proposed changes to the air pollution control equipment are indicated in the following table:

North AP (old)	Primary	Solution	Secondary	Solution	Tertiary	Solution
Reactor/Granulator	V/C	PA	V/C	PA	AV	CW
Dryer	V/C	PA, PW	PCF	PW	-	-
Screens/Mills	V/C	PA, PW	PCF	PW	-	-
Cooler	V/C	PA	-	-	-	-
North AP (new)						
Reactor/Granulator	V/C (old)	PA (old)	V/C (old)	PA (old)	AV (old)	CW (old)
Dryer	V/C (new)	PW (new)	-	-	-	-
Screens/Mills	V/C (new)	PW (new)	-	-	-	-
Cooler	V/C (old)	PW (new)	-	-	-	-
South DAP (old)						
Reactor/Granulator	V/C	PA	S/C	PW	-	-
Dryer	V/C	PA	PCF	PW	-	-
Screens/Mills	V/C	PA	PCF	PW	-	-
Cooler	V/C	PA	-	-	-	-
South AP (new)						
Reactor/Granulator	S/C (new)	PA (old)	V/C (new)	PA (new)	AV (new)	CW (new)
Dryer	V/C (new)	PW (new)	-	-	-	-
Screens/Mills	V/C (new)	PW (new)	-	-	-	-
Cooler	V/C (old)	PW (new)	-	-	-	-

V/C = Venturi/Cyclonic, S/C = Spray/Cyclonic, PCF = Packed Crossflow, PA = Phosphoric Acid, PW = Pond Water, AV = Ammonia Vaporizer, CW = Condensed Water (tube-side vaporizer condensate)

### III. PROCESS DESCRIPTION

#### A. Phosphoric Acid

Briefly, phosphoric acid is made by reacting wet phosphate rock with sulfuric acid in agitated tanks, filtering the acid, then concentrating the weak phosphoric acid in vacuum evaporators. Waste gypsum (calcium sulfate) from the filtration process is pumped in slurry form with filter wash water to a gypsum pile (stack) where the water is collected and runs off to a cooling pond before being recirculated back to the process. Process water is used not only for filtration but in barometric condensers for vacuum cooling and evaporation. Clarification tanks remove impurities from the phosphoric acid before it is stored or used in making upgraded products. Air emissions of fluorides evolved from the reactor and filter are controlled by scrubbers using pond water.

#### B. Ammoniated Phosphates

To make ammoniated phosphates, anhydrous ammonia is reacted with phosphoric acid. The slurry produced by the ammoniation is then sprayed onto a bed of solids in the granulator and additional ammonia, as required, is added to complete the acid neutralization. The resulting solids mixture contains excess water which is removed by heating in a direct contact rotary dryer. The dried solids are then screened to remove off-size product. The product is passed through a rotary cooler and then sent to shipping or storage. The off-spec materials are resized and recirculated through the granulator.

Emissions of fluorides, particulate matter and ammonia are controlled by the process reactions and add-on wet scrubbers. Fluoride-containing gases including hydrogen fluoride (HF) and silicon tetrafluoride (SiF<sub>4</sub>) are evolved during the exothermic reaction between ammonia and phosphoric acid that occurs in the Reactor/Granulator. Since the vent gases from the Reactor/Granulator contain ammonia in high concentrations, the first scrubbing stage uses a phosphoric acid stream as the scrubbing medium for recovery of ammonia so that it is recycled back to the process. Another stage of pond water scrubbing removes most of the fluoride evolved from the reaction process as well as that which is stripped out of the phosphoric acid in the first stage scrubber. Residual amounts of ammonia are recovered from the Dryer exhaust in a first-stage acid scrubber.

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

followed by a second stage of pond water scrubbing required for fluoride control. Gaseous fluoride and ammonia emissions from the Cooler are relatively low and therefore the Cooler controls are designed to capture particulate emissions primarily.

## IV. EMISSIONS UNITS IMPACT ANALYSIS

The following table compares the current actual emissions to the applicant's proposed maximum emissions for this project's affected emissions units in tons/year:

Source Description	Pollutant Emission Rate (TPY)								
	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM	PM <sub>10</sub>	VOC	TRS	SAM	Fluoride
<b><u>Potential Emissions From Modified/New/Affected Sources</u></b>									
South AP Fertilizer Plant	13.82	55.17	22.08	48.40	48.40	1.45	--	0.23	11.39
North AP Fertilizer Plant	11.52	32.44	18.40	59.57	59.57	1.20	--	0.20	14.02
MAP/DAP Storage and Shipping Building <sup>a</sup>	--	--	--	18.00	18.00	--	--	--	12.05
Phosphoric Acid Plant No. 1-North Train	--	--	--	--	--	--	--	--	1.45
Phosphoric Acid Plant No. 1-South Train	--	--	--	--	--	--	--	--	2.37
Phosphoric Acid Plant No. 2	--	--	--	--	--	--	--	--	2.89
Phosphoric Acid Storage Tanks-2 (PAP 1, R-R)	--	--	--	--	--	--	--	--	0.09
Phosphoric Acid Storage Tanks-2 (PAP 2, N-N)	--	--	--	--	--	--	--	--	0.09
Phosphoric Acid Blend Tanks-4	--	--	--	--	--	--	--	--	0.44
<b><u>Total Potential Emission Rates</u></b>	<b>25.34</b>	<b>87.61</b>	<b>40.48</b>	<b>125.97</b>	<b>125.97</b>	<b>2.65</b>	<b>0.00</b>	<b>0.43</b>	<b>44.17</b>
<b><u>Actual Emissions from Current Operations<sup>b</sup></u></b>									
South AP Fertilizer Plant	0.03	7.37	2.94	24.15	22.41	0.25	--	--	6.25
North AP Fertilizer Plant	0.03	4.71	2.65	32.49	30.90	3.18	--	--	3.28
MAP/DAP Storage and Shipping Building	--	--	--	6.05	5.82	--	--	--	0.17
Phosphoric Acid Plant No. 1-North Train	--	--	--	--	--	--	--	--	0.23
Phosphoric Acid Plant No. 1-South Train	--	--	--	--	--	--	--	--	0.55
Phosphoric Acid Plant No. 2	--	--	--	--	--	--	--	--	0.30
Phosphoric Acid Storage Tanks-2 (PAP 1, R-R)	--	--	--	--	--	--	--	--	0.01
Phosphoric Acid Storage Tanks-2 (PAP 2, N-N)	--	--	--	--	--	--	--	--	0.05
Phosphoric Acid Blend Tanks-4	--	--	--	--	--	--	--	--	0.0004
<b><u>Total Actual Emission Rates</u></b>	<b>0.06</b>	<b>12.08</b>	<b>5.58</b>	<b>62.68</b>	<b>59.13</b>	<b>3.43</b>	<b>0.00</b>	<b>0.00</b>	<b>10.77</b>
<b>TOTAL INCREASE DUE TO PROPOSED PROJECT</b>	<b>25.28</b>	<b>75.53</b>	<b>34.90</b>	<b>63.29</b>	<b>66.85</b>	<b>-0.78</b>	<b>0.00</b>	<b>0.00</b>	<b>33.41</b>



# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Source Description	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM	PM <sub>10</sub>	VOC	TRS	SAM	Fluoride
<b><u>Contemporaneous Emission Changes</u></b>									
No. 6 Sulfuric Acid Plant Construction (July 1998) <sup>c</sup>	d	d	--	--	--	5.50	3.60	d	--
North MAP/DAP Plant Modification (September 1998) <sup>c</sup>	11.10	21.70	5.40	d	d	--	--	--	d
Shutdown of Green Phosphoric Acid Plant (November 2002) <sup>c</sup>	--	-4.10	--	-0.14	-0.12	--	--	--	-0.01
Shutdown of Therminol Heater (November 2002) <sup>c</sup>	-0.003	-0.77	-0.19	-0.08	-0.02	--	--	--	--
<b><u>Total Contemporaneous Emission Changes</u></b>	<b>11.10</b>	<b>17.60</b>	<b>5.40</b>	<b>-0.14</b>	<b>-0.12</b>	<b>5.50</b>	<b>3.60</b>	<b>0.00</b>	<b>-0.01</b>
<b>TOTAL NET INCREASE</b>	<b>36.38</b>	<b>93.13</b>	<b>40.30</b>	<b>63.16</b>	<b>66.73</b>	<b>4.72</b>	<b>3.60</b>	<b>0.43</b>	<b>33.40</b>
<b>PSD SIGNIFICANT EMISSION RATE</b>	<b>40</b>	<b>40</b>	<b>100</b>	<b>25</b>	<b>15</b>	<b>40</b>	<b>10</b>	<b>7</b>	<b>3</b>
<b>PSD REVIEW TRIGGERED?</b>	No	Yes	No	Yes	Yes	No	No	No	Yes

<sup>a</sup> Debottlenecking analysis revealed that emissions from this sources could potentially increase as part of this project.

<sup>b</sup> Based on actual emissions for 2002 and 2001.

<sup>c</sup> Emissions from the PSD permit application.

<sup>d</sup> Denotes that PSD review was triggered for this pollutant; therefore any previous contemporaneous increases/decreases are wiped clean.

<sup>e</sup> Emissions are based on the average of 2001 and 2002 actual emissions as reported in the AORs.

## V. RULE APPLICABILITY

### A. Prevention of Significant Deterioration

The proposed project was reviewed under Rule 62-212.400(5), F.A.C., New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a modification to a major stationary source resulting in a significant increase in NO<sub>x</sub>, PM/PM<sub>10</sub>, and fluoride emissions. This review consisted of a determination of Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The emission units affected by this PSD permit shall comply with all applicable provisions of the Florida Administrative Code; specifically, the following Chapters and Rules:

Chapter 62-4	Permits
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted By Reference

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Rule 62-210.200	Definitions
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Chapter 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.400	Compliance Test Methods

## B. Federal and State Emission Standards

The proposed project is subject to the applicable provisions of Chapter 403, Florida Statutes, Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.), and 40 CFR 60. The facility is located in an area designated attainment or maintenance for all criteria pollutants in accordance with F.A.C. Rule 62-275.400.

The Phosphoric Acid Plant (PAP) is subject to federal NSPS under 40 CFR 60, Subpart T. Specifically, Subpart T applies to Wet-Process PAPs and regulates F emissions from such plants. The PAP is also subject to the emission limitations of Rule 62-296.403(1)(a) F.A.C. pertaining to fluoride emissions from phosphate processing plants. The PAP is also subject to 40 CFR 63, Subpart AA, National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants. Subpart AA regulates total F emissions from phosphoric acid plants.

The DAP plant is subject to federal NSPS under 40 CFR 60, Subpart V. Subpart V regulates F emissions from DAP plants. The DAP plant is also subject to the emission limitations of Rule 62-296.403(1)(f) F.A.C. pertaining to fluoride emissions from phosphate processing plants. The MAP/DAP plant is also subject to 40 CFR 63, Subpart BB, National Emission Standards for Hazardous Air Pollutants from Phosphate Fertilizers Production Plants. Subpart BB regulates total F emissions from phosphate fertilizer plants, including MAP/DAP production, and Granular Triple Superphosphate (GTSP) production and storage.

## VI. AIR QUALITY ANALYSIS

### A. Introduction

According to the application, the proposed project will increase emissions of three pollutants in excess of PSD significant amounts: NO<sub>x</sub>, PM/PM<sub>10</sub>, and fluorides. PM<sub>10</sub> and NO<sub>x</sub> are criteria pollutants and have national and state ambient air quality standards (AAQS) and PSD increments defined for them. Fluoride is not a criteria pollutant and has no AAQS or PSD increments defined for it. Therefore, no AAQS or PSD increment air quality impact analysis was required for fluoride. Instead, the BACT requirement will establish the fluoride emission limits for this project. The PSD regulations require the following air quality analyses for this project:

- Significant impact analysis for PM<sub>10</sub> and NO<sub>x</sub>.
- Analysis of existing air quality for PM<sub>10</sub>, NO<sub>x</sub> and F.
- PSD increment analysis for PM<sub>10</sub> and NO<sub>x</sub>.
- AAQS analysis for PM<sub>10</sub> and NO<sub>x</sub>.

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- Analysis of impacts on soils, vegetation, wildlife, visibility and growth-related air quality impacts for PM<sub>10</sub>, NO<sub>x</sub>, and fluorides.

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause nor significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the required analyses follows.

## B. Analysis of Existing Air Quality and Determination of Background Concentrations

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. The monitoring requirement may be satisfied by using existing representative monitoring data, if available. An exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific *de minimis* concentration. In addition, if EPA has not established an acceptable monitoring method for the specific pollutant, monitoring may not be required.

If preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants with established AAQS may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

The table below shows that predicted PM<sub>10</sub> and F impacts from the project are predicted to be above the *de minimis* level. Preconstruction ambient air quality monitoring is therefore required for PM<sub>10</sub> and F. However, since there are existing monitoring data in the vicinity of the plant, the monitoring requirement can be satisfied by using these data. PM<sub>10</sub> background concentrations of 78 and 27  $\mu\text{g}/\text{m}^3$  for the 24-hour and annual averaging times, respectively, were established by the Department from these previously existing air quality data for use in the AAQS analysis required for PM<sub>10</sub>. No AAQS for fluorides has been promulgated. Therefore, preconstruction monitoring is not required for F. The table shows that predicted NO<sub>2</sub> impacts from the project are predicted to be below the *de minimis* level. Preconstruction ambient air quality monitoring is not required for NO<sub>2</sub>; however, a background of 21  $\mu\text{g}/\text{m}^3$  was developed from existing air quality data for use in the AAQS analysis.

**Maximum Project Air Quality Impacts for Comparison to De Minimis Ambient Levels**

Pollutant	Avg. Time	Max Predicted Impact ( $\mu\text{g}/\text{m}^3$ )	De Minimis Level ( $\mu\text{g}/\text{m}^3$ )	Impact Above De Minimis?
PM <sub>10</sub>	24-hour	20	10	Yes
NO <sub>2</sub>	Annual	2.4	14	No
F	24-hour	5.9	0.25	Yes

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

## C. Models and Meteorological Data Used in the Air Quality Impact Analysis

### PSD Class II Area Model

The applicant and the Department used the EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model to evaluate the pollutant emissions from the proposed project. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters were used for all sources for which downwash was considered.

Meteorological data used in the ISCST3 model consisted of a consecutive 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, Florida (surface data) and Ruskin, Florida (upper air data). The 5-year period of meteorological data was from 1991 through 1995. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

Since five years of data were used in ISCST3, the highest-second-high (HSH) short-term predicted concentrations were compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the project's significant impact area in the vicinity of the facility and in the PSD Class I area, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

### PSD Class I Area Model

Since the Chassahowitzka National Wilderness Area (CNWA) PSD Class I Area is greater than 50 km from the facility, long-range transport modeling was required for the Class I impact assessment. The California Puff (CALPUFF) dispersion model was used to evaluate the potential impact of the proposed pollutant emissions on the PSD Class I increments and on one Air Quality Related Value (AQRV): regional haze. CALPUFF is a non-steady state, Lagrangian, long-range transport model that incorporates Gaussian puff dispersion algorithms. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, line, area, and volume sources. The CALPUFF model has the capability to treat time-varying sources. It is also suitable for modeling domains from tens of meters to hundreds of kilometers, and has mechanisms to handle rough or complex terrain situations. Finally, the CALPUFF model is applicable for inert pollutants as well as pollutants that are subject to linear removal and chemical conversion mechanisms.

The meteorological data used in the CALPUFF model was processed by the California Meteorological (CALMET) model. The CALMET model utilizes data from multiple meteorological stations and produces a three-dimensional modeling grid domain of hourly temperature and wind fields. The wind field is enhanced by the use of terrain data, which is also input into the model. Two-dimensional fields such as mixing heights, dispersion properties, and surface characteristics are produced by the CALMET model as well. For this project, the CALMET model produced a modeling domain extending 280 km in the north-south direction by 350 km in the east-west direction. The CALPUFF analysis was performed with mesoscale meteorological data for the following three years: 1990 with 80-km MM4 data, 1992 with 80-km MM5 data and 1996 with 36-km MM5 data. Additional meteorological data files were input into the CALMET model from 3 upper air, 6 surface, and 27 precipitation stations located throughout the state of Florida.

## D. Significant Impact Analysis

Initially, the applicant conducts modeling using only the proposed project's emissions changes. If this modeling shows significant impacts, further modeling is required to determine the project's impacts on the AAQS or PSD increments. To determine the PM<sub>10</sub> and NO<sub>x</sub> significant impact areas for the proposed project, concentrations were predicted for 3618 discrete Cartesian receptors out to 10 km from the southwest corner of the MAP/DAP Storage Building. The receptor spacing ranged from 100 m, along the property boundary and within 2 km, to 500 m, if fenced or have other physical barriers (equivalent to a fence), and are properly posted and patrolled.

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Thirteen discrete receptors were located in the Chassahowitzka National Wilderness Area (CNWA) which is a PSD Class I area located approximately 110 km to the north-northwest of the project at its closest point.

For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project are predicted in the vicinity of the facility or in the CNWA. The tables below show the results of this modeling. A significant impact was predicted in the Class II area in the vicinity of the project for PM<sub>10</sub> and NO<sub>2</sub>. Therefore, further PM<sub>10</sub> and NO<sub>2</sub> AAQS and PSD increment analyses in the vicinity of the project were required. Based on the results of these significant impact analyses, maximum receptor distances of 1.5 and 1.0 km were used for the screening grid for the AAQS and PSD Class II analyses for PM<sub>10</sub> and NO<sub>2</sub>, respectively. No significant impact was predicted in the CNWA PSD Class I area for PM<sub>10</sub> or NO<sub>2</sub>. Therefore, further PSD Class I increment analyses are not required.

**Maximum Project Air Quality Impacts for Comparison  
to PSD Class II Significant Impact Levels in the Vicinity of the Facility**

Pollutant	Averaging Time	Maximum Predicted Impact (µg/m <sup>3</sup> )	Significant Impact Level (µg/m <sup>3</sup> )	Significant Impact
PM <sub>10</sub>	Annual	2.7	1	Yes
	24-hour	20	5	Yes
NO <sub>x</sub>	Annual	2.4	1	Yes

**Maximum Project Air Quality Impacts in the CNWA for Comparison  
to PSD Class I Significant Impact Levels**

Pollutant	Averaging Time	Maximum Predicted Impact (µg/m <sup>3</sup> )	Significant Impact Level (µg/m <sup>3</sup> )	Significant Impact
PM <sub>10</sub>	Annual	0.0008	0.2	NO
	24-hour	0.023	0.3	NO
NO <sub>x</sub>	Annual	0.0005	0.1	NO

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

## E. AAQS Analysis

For pollutants subject to an AAQS review, the total impact on ambient air quality is obtained by adding "background" concentrations to the maximum modeled concentrations for each pollutant and averaging time. The maximum modeled concentrations are based on the maximum allowable emissions from facility sources and all other sources in the vicinity of the facility. The "background" concentrations take into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis for PM<sub>10</sub> are summarized in the table below. As shown in this table, emissions from the proposed project are not expected to cause or contribute to a violation of any AAQS.

**Ambient Air Quality Impacts**

Pollutant	Averaging Time	Modeled Sources Impact (µg/m <sup>3</sup> )	Background Conc. (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	Florida AAQS (µg/m <sup>3</sup> )	Total Impact Greater Than AAQS
PM <sub>10</sub>	Annual	10	27	37	50	No
	24-hour	37	78	115	150	No
NO <sub>2</sub>	Annual	10	21	31	100	No

## F. PSD Class II Analysis

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a baseline concentration which was established in 1977 for PM<sub>10</sub> and SO<sub>2</sub> (the baseline year was 1975 for existing major sources of PM<sub>10</sub> and SO<sub>2</sub>), and 1988 for NO<sub>2</sub> (the baseline year was 1988 for existing major sources of NO<sub>2</sub>). The emission values that are input into the model for predicting increment consumption are based on maximum potential emissions from increment-consuming facility sources and all other increment-consuming sources in the vicinity of the facility. The maximum predicted PSD Class II area PM<sub>10</sub> increments consumed by this project and all other increment-consuming sources in the vicinity of the facility are shown below.

**PSD Class II Increment Analysis**

Pollutant	Averaging Time	Maximum Predicted Impact (µg/m <sup>3</sup> )	Allowable Increment (µg/m <sup>3</sup> )	Impact Greater Than Allowable Increment
PM <sub>10</sub>	Annual	<0	17	No
	24-hour	13	30	No
NO <sub>2</sub>	Annual	2	25	No

# TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

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## G. Additional Impact Analysis

### *Impact Analysis Impacts On Soils, Vegetation, And Wildlife*

According to the modeling results, the maximum air quality impacts due to the Cargill Bartow facility emitting at maximum rate are predicted to be below Class II increments and AAQS for PM<sub>10</sub> and NO<sub>2</sub>. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II area. An air quality related values (AQRV) analysis was performed by the applicant for the Class I area. Since the maximum predicted impacts in the Class I area were predicted to be less than the PSD Class I significant impact levels for PM<sub>10</sub> and NO<sub>2</sub>, no significant impacts on this area are expected due to the proposed project. In addition, the maximum predicted nitrogen deposition predicted for the project is less than the criteria value of 0.01 kg/ha/yr. Also a qualitative analysis was performed for F emissions in the vicinity of the facility and in the Class I area.

### *Impact On Visibility*

A regional haze analysis was used to assess the potential for a significant increase in regional haze in the Class I CNWA due to this source's projected increase in emissions. A regional haze analysis to determine visibility impacts in the Class I area was required by the Fish and Wildlife Service. The maximum change in background extinction coefficient is 1.43 percent, which is less than the criteria value of 5 percent. The results indicate that the impact of this project on visibility in the Class I area is insignificant.

### *Growth-Related Air Quality Impacts*

The proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

## VII. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by Cargill Fertilizer, Inc., the Department has made a preliminary determination that the proposed project will comply with all applicable state air pollution regulations provided that the Department's Best Available Control Technology Determination is implemented and certain conditions are met. The General and Specific Conditions are listed in the attached draft conditions of approval.

*Permit Engineer:* John Reynolds  
*Meteorologist:* Cleve Holladay

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**BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)**

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**Cargill Fertilizer, Inc.**  
**Green Bay Facility**  
**PSD-FL-334/1050053-033-AC**  
**Bartow, Polk County**

Cargill Fertilizer, Inc. operates the Green Bay phosphate fertilizer manufacturing facility near Bartow, Polk County, Florida, producing sulfuric acid, wet-process phosphoric acid, ammoniated phosphate fertilizers and related products. The company has applied to modify its Phosphoric Acid Production System, South DAP Fertilizer Plant, and its North MAP/DAP Fertilizer Plant.

The Phosphoric Acid Production System is being modified to improve process efficiency, plant stability, and evaporation capacity. The South DAP and North MAP/DAP Fertilizer Plants are being modified to improve product quality and production capabilities. As a result of this project, increases in emissions of fluoride (F), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), and particulate matter less than or equal to 10 micrometers (PM<sub>10</sub>) from the proposed modifications will occur.

The increases in emissions of F, NO<sub>x</sub>, and PM/PM<sub>10</sub> will exceed the significant emission rates listed in Table 212.400-2 of Rule 62-212.400, Florida Administrative Code (F.A.C.). Therefore, the project is subject to Prevention of Significant Deterioration (PSD) review for F, NO<sub>x</sub>, and PM/PM<sub>10</sub> in accordance with Rule 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C.

Descriptions of the process, project, air quality effects, and rule applicability are given in the Technical Evaluation and Preliminary Determination, accompanying the Department's Intent to Issue.

**DATE OF RECEIPT OF COMPLETE APPLICATION:**

The original application was received on April 30, 2003. The revised application was complete on October 2, 2003.

**BACT DETERMINATION PROCEDURE:**

In accordance with Chapter 62-212.400, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (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. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

- Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.
- All scientific, engineering, and technical material and other information available to the Department.
- The emission limiting standards or BACT determination of any other state.



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- The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically unfeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility for which a BACT determination is required can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as indicated below:

- **Fluorides** (HF and SiF<sub>4</sub>). Controlled generally by scrubbing with pond water.
- **Particulate Matter** (PM, PM<sub>10</sub>/**Visible Emissions** (VE)). Controlled generally by wet scrubbing or filtration.
- **Combustion Products** (NO<sub>x</sub>). NO<sub>x</sub> controlled generally by good combustion of clean fuels.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the pollutant control equipment and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

In the case of the proposed project at Cargill, annual emissions of F, NO<sub>x</sub>, PM, and PM<sub>10</sub> are above significant emission rates triggering review for these pollutants. Therefore, since the proposed project involves physical modification of the facility, the BACT analysis will address emissions of F, PM/PM<sub>10</sub>, VE and NO<sub>x</sub>.

## **POLLUTANT ANALYSIS**

### ***Gaseous Fluoride (F)***

Phosphoric acid is made by reacting wet phosphate rock with sulfuric acid in agitated tanks, filtering the acid, then concentrating the weak phosphoric acid in vacuum evaporators. Waste gypsum (calcium sulfate) from the filtration process is pumped in slurry form with filter wash water to a gypsum pile (stack) where the water is collected and runs off to a cooling pond before being recirculated back to the process. Process water is used not only for filtration but in barometric condensers for vacuum cooling and evaporation. Clarification tanks remove impurities from the phosphoric acid before it is stored or used in making upgraded products. Emissions of fluorides, including hydrogen fluoride (HF) and silicon tetrafluoride (SiF<sub>4</sub>), are evolved from the reactor, filter and other sources. Fluoride emissions are controlled by scrubbers using pond water.

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In the ammoniated phosphates process, fluoride-containing gases including HF and SiF<sub>4</sub> are evolved during the exothermic reaction between ammonia and phosphoric acid that occurs in the Reactor and to a lesser extent in the Granulator. Since the vent-gases from the Reactor and Granulator contain ammonia in high concentrations, the first scrubbing stage uses a phosphoric acid stream as the scrubbing medium for recovery of ammonia so that it is recycled back to the process. A final stage of pond water scrubbing removes much of the fluoride evolved from the process as well as that which is stripped out of the phosphoric acid in the first stage scrubber.

Additional fluoride and ammonia emissions are generated in the Dryer and are controlled by the Dryer scrubbing system. Gaseous fluorides and ammonia emissions from the Cooler are relatively low and typically do not require additional controls beyond a particulate scrubber.

***Particulate Matter (PM/PM<sub>10</sub>) and Visible Emissions (VE)***

The sources of PM/PM<sub>10</sub> and VE, consisting primarily of MAP/DAP dust along with relatively small amounts of ammonium fluoride and other related compounds, are the Reactor/Granulator, Dryer, Cooler, Screens and Mills. Cyclone separators remove most of the larger particles with the remainder controlled by wet scrubbers.

***Nitrogen Oxides (NO<sub>x</sub>)***

NO<sub>x</sub> is controlled generally by good combustion of clean fuels.

**BACT EMISSION LIMITS PROPOSED BY APPLICANT:**

**Phosphoric Acid Production System (PAP No. 1 North & South Train and PAP No. 2)**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	1.53 lb/hr 6.71 ton/yr	0.012 lb F/ton P <sub>2</sub> O <sub>5</sub> input	Arco Cyclonic Jet Scrubber-North 1 Arco Cyclonic Jet Scrubber-South 1 Poly-Con Wet Scrubber- PAP No.2

**South Ammoniated Phosphate (AP) Plant**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM <sub>10</sub>	11.1 lb/hr	0.17 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
F	2.6 lb/hr	0.04 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	N/A	N/A	Good combustion practices
VE	(None proposed)		

**North Ammoniated Phosphate (AP) Plant**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM <sub>10</sub>	13.6 lb/hr	0.17 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
F	3.2 lb/hr	0.04 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	N/A	N/A	Good combustion practices
VE	(None proposed)		

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**BACT DETERMINATION BY THE DEPARTMENT**

**Phosphoric Acid Production System (PAP No. 1 North & South Train and PAP No. 2)**

***Gaseous Fluoride (F)***

Phosphoric acid production facilities consist of the No. 1 North and South Trains and the No. 2 Train. The applicant requested that the three plants be combined for permitting purposes as a single emissions unit (called the "Phosphoric Acid Plant"). This has been done at the applicant's Riverview and Bartow facilities. The No. 1 Train units are controlled by spray-cyclonic scrubbers using pond water, whereas the No. 2 Train has a spray scrubber with packing.

The applicant initially proposed that the No. 1 Train cyclonic scrubbers be replaced with a new packed scrubber. This was later revised to keep the existing scrubbing system on the grounds that the originally submitted test results had been incorrectly stated and that the existing scrubbers are achieving a very high rate of mass transfer, operating near equilibrium with the pond water. The applicant's revised proposal that the phosphoric acid plant's cyclonic scrubbers not be replaced with a packed scrubber represents a departure from past BACT determinations. Table 5-1 in the original application includes a summary of BACT determinations since 1993, all of which required packed fluoride scrubbers.

Typically, over 9.0 mass transfer units are required to achieve equilibrium in fluoride scrubbers, and, in the absence of a chemical reaction between the scrubbing medium and the pollutants, cyclonic scrubbers can only achieve about half of that at most. Historically, the Department has required packed scrubbers as BACT controls for phosphoric acid plants without exception.

Fluoride emissions from PAP plants at the facility are currently limited to 0.02 lb/ton of P<sub>2</sub>O<sub>5</sub>, and 1.00 lb/hr (PAP No. 2); 1.50 lb/hr (PAP No.1 North) and 0.83 lb/hr (PAP No. 1 South) [Fluoride Allocation Table Per "4/10" Rule; Title V permit No. 1050053-012-AV].

According to the applicant's test data, the existing scrubber system is achieving far lower fluoride emissions than the current allowable permitted rates or the applicant's proposed BACT limit. As shown by stack test data averaged over the last three years, actual fluoride emission rates for the existing PAPs ranged from 0.0015 lb F/ton P<sub>2</sub>O<sub>5</sub> to 0.0019 lb F/ton of P<sub>2</sub>O<sub>5</sub>. Thus, actual fluoride emissions are from six to eight times lower than the 0.012 lb F/ton P<sub>2</sub>O<sub>5</sub> BACT limit proposed by the applicant. Although the phenomena accounting for these low test values have not been fully explained by the applicant, the Department believes that they may be the result of a combination of factors including low reactor surface evacuation rates and favorable pond water characteristics rather than high scrubber efficiencies.

Consequently, for this atypical case, the Department proposes 0.009 lb F/ton of P<sub>2</sub>O<sub>5</sub> input as the new BACT emission limit for the combined PAP plant. Though lower than the 0.012 lb/ton proposed by the applicant, this limit is over four times the actual demonstrated performance based on the compliance test data averaged for the last three years (2001, 2002, and 2003). Based on the test data, the Department has reasonable assurance that the proposed limit can be readily achieved. This BACT limit is specific to the Green Bay facility only.

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**North and South Ammoniated Phosphate (AP) Plants**

***Gaseous Fluoride (F)***

PSD-FI-246, issued for this facility in 1998, contained the following BACT analysis for the Green Bay North MAP/DAP Plant:

*The top-down BACT determination for fluorides identified the control technologies listed below starting with the most stringent:*

1. *Packed scrubber using once-through fresh water.*
2. *Packed scrubber using neutralized water from a dedicated pond (fresh water makeup).*
3. *Packed scrubber using process cooling pond water.*

*Use of once-through fresh water would achieve the highest level of fluoride removal but this option is not practical for operations where water conservation is required and plant water balance problems would be created.*

*Option 2 is possible, the main considerations being the cost of installing the pond and equipment and the cost of operating a lime treatment unit. Lime treatment to a pH level of 3.5 to 4.0 causes fluorides to precipitate out of solution, primarily as calcium fluoride. At this point the water would contain as low as 30-60 ppm fluoride. With second-stage lime treatment to a pH of 6.0 or more, the calcium compounds (mainly dicalcium phosphate) precipitate out along with additional calcium fluoride. Upon settling at a PH in the range of 6.5 to 8.8, the fluoride content of the clear neutralized water may be as low as 15 ppm, depending on the quality of the neutralization facility and the mixing efficiency.*

*Costs for Option 2 are based on the data submitted by the applicant:*

<i>ITEM</i>	<i>COST</i>
<i>Packed Scrubber</i>	<i>\$ 1,500,000</i>
<i>Lined Pond</i>	<i>\$ 4,500,000</i>
<i>Total Installed Cost (TIC)</i>	<i>\$ 6,000,000</i>
 <i>Annual Costs:</i>	
<i>Capital Recovery</i>	<i>\$ 705,000</i>
<i>Operation &amp; Maintenance</i>	<i>\$ 52,000</i>
<i>Total Annual Cost</i>	<i>\$ 757,000</i>

*Based on the Department's recently proposed BACT for fluorides from a fertilizer (prilled MAP) plant of 0.019 lb/ton P<sub>2</sub>O<sub>5</sub> feed, which has an option for a recirculated scrubber water treatment system with a dedicated pond to meet the BACT emissions limit, the potential emissions from the North MAP/DAP Plant can be projected as follows:*

$$F \text{ Removed} = 106.1 \text{ tph } P_2O_5 \times 0.019 \text{ lb/ton } P_2O_5 \times 8760 \text{ hrs/yr} \times \text{ton}/2000 \text{ lbs}$$

8.8 tpy

*The cost of additional control:*

$$\begin{aligned} \text{Total Cost} &= \$757,400 / (27.9 \text{ tpy} - 8.8 \text{ tpy}) \\ &= \$ 39,654/\text{ton additional F removed} \end{aligned}$$

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*This figure is sufficiently high to rule out Option 2. However it should be noted that the low magnitude of fluoride emissions relative to their potential environmental impact justifies the consideration of higher fluoride cost effectiveness figures relative to the high tonnage pollutants such as sulfur dioxide and nitrogen oxides. Option 3, therefore, is determined by the top-down approach as the basis for the fluoride BACT emission limit.*

The above analysis indicates the conclusion would be no different if costs were updated for this new BACT determination, thus ruling out Options 1 and 2. Therefore, Option 3 is determined as BACT, however, a remaining issue concerns the applicant's proposal to remove all packed scrubbing for final gas cleaning and rely on venturi/cyclonic scrubbers exclusively. The applicant indicated that this should be acceptable since the new venturi/cyclonic scrubbers for the dryer, screens and mills will be designed for a higher pressure drop (about 15 – 19 inches H<sub>2</sub>O) and will use pond water as "scrubbing solution" rather than recirculated phosphoric acid. The applicant doesn't mention that the gas scrubbing efficiency of cyclonic scrubbers can't compare with that of packed scrubbers. As stated earlier, packed fluoride scrubbers typically achieve 8 to 9 mass transfer units whereas cyclonic scrubbers can achieve only about four.

The revised drawings don't identify the current "scrubber solution" as phosphoric acid, nor do they identify the future "scrubber solution" as pond water, although the revised discussion refers to the current use of phosphoric acid in the dryer, cooler, and screens/mills scrubbers being changed to pond water so as not to require a packed pond water tail gas scrubber. "Scrubber solution" is defined in the original application as "recirculated phosphoric acid" or "weak phosphoric acid."

Following is a table showing the applicant's revised proposals for the ammonium phosphate plant scrubber and solution changes:

North AP (old)	Primary	Solution	Secondary	Solution	Tertiary	Solution
Reactor/Granulator	V/C	PA	V/C	PA	AV	CW
Dryer	V/C	PA, PW	PCF	PW	-	-
Screens/Mills	V/C	PA, PW	PCF	PW	-	-
Cooler	V/C	PA	-	-	-	-
North AP (new)						
Reactor/Granulator	V/C (old)	PA (old)	V/C (old)	PA (old)	AV (old)	CW (old)
Dryer	V/C (new)	PW (new)	-	-	-	-
Screens/Mills	V/C (new)	PW (new)	-	-	-	-
Cooler	V/C (old)	PW (new)	-	-	-	-
South DAP (old)						
Reactor/Granulator	V/C	PA	S/C	PW	-	-
Dryer	V/C	PA	PCF	PW	-	-
Screens/Mills	V/C	PA	PCF	PW	-	-
Cooler	V/C	PA	-	-	-	-
South AP (new)						
Reactor/Granulator	S/C (new)	PA (old)	V/C (new)	PA (new)	AV (new)	CW (new)
Dryer	V/C (new)	PW (new)	-	-	-	-
Screens/Mills	V/C (new)	PW (new)	-	-	-	-
Cooler	V/C (old)	PW (new)	-	-	-	-

V/C = Venturi/Cyclonic, S/C = Spray/Cyclonic, PCF = Packed Crossflow, PA = Phosphoric Acid, PW = Pond Water, AV = Ammonia Vaporizer, CW = Condensed Water (tube-side vaporizer condensate)

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As indicated, no changes are proposed for the North Reactor/Granulator scrubbing system, while the North Dryer and Screens/Mills scrubbers along with their common packed crossflow pond water scrubber will be replaced with new venturi/cyclonic scrubbers using pond water instead of phosphoric acid. The existing Cooler scrubber will remain unchanged except for the solution switch from acid to pond water. Proposed for the South DAP Plant are new scrubbers for the Reactor/Granulator, Dryer, and Screens/Mills, with pond water being the new scrubbing solution.

(Note: It should be pointed out that the ammonia vaporizer is not designed to be a scrubber, although some scrubbing action is generated due to the turbulent flow inside the tubes causing the tube-side condensed moisture to come into contact with fluoride-containing gases. The applicant presented no information indicating the relative fluoride scrubbing efficiencies of the ammonia vaporizer vs. the packed pond water scrubber).

In its BACT determinations, the Department has long held that venturi/cyclonic scrubbers are not the equivalent of packed scrubbers for removing gaseous pollutants. This view is widely supported in the literature and has been verified by test data in numerous instances. Although packed scrubbers do a far better job of scrubbing gaseous pollutants than sprays, venturis or cyclonics, packed scrubbers can plug if not maintained properly. Thus, industry has preferred to install non-packed scrubbers whenever possible, and this application appears to follow that strategy.

The applicant proposed an AP Plant BACT fluoride limit of 0.04 lb F/ton  $P_2O_5$ , which is equivalent to past BACT limits where packed tail gas scrubbers have been installed. The Department issued one lower fluoride BACT limit in 2002 for U. S. Agri-Chemicals' Ft. Meade granular MAP/DAP plant (0.037 lb F/ton  $P_2O_5$ ). The 0.037 limit was proposed by USAC and accepted by the Department based on test data for USAC's 19-20 inch pressure drop pond water scrubber.

Test data for the period 1999 – 2002 show that the North plant met the applicant's proposed limit each year except for one of three sets of tests reported for 1999 (0.0951 lb/ ton during October 1999). The applicant didn't indicate why three tests were done in 1999, or which of the three sets constituted the official annual compliance test. Data submitted for the South plant show that it met the proposed limit only one year (2000) during the period 1999 – 2002, with results ranging from 0.0348 to 0.1353 lb F/ton  $P_2O_5$ . Reasonable assurance that the South plant, modified as the applicant proposed, could meet the proposed limit depends on an assumption that the new controls for the South plant will perform at least as well as those for the North plant.

Since the North plant tests over the last three years show that the applicant's proposed 0.04 lb F/ton  $P_2O_5$  limit can be met, and since phosphoric acid scrubbing is being replaced with pond water scrubbing for the non-reactor/granulator sources at both plants (thereby eliminating fluoride gases formerly stripped from the acid solution), the Department will accept the proposed control scheme as BACT in this instance. This does not mean that the Department will no longer require packed scrubbers for future projects, however. BACT limits are always determined on a case-by-case basis and must be consistent with the feasibility and cost dynamics of each project. As stated earlier for the phosphoric acid plant, the Department believes that the Green Bay facility's relatively low fluoride test values result from a combination of favorable conditions and therefore this BACT determination does not necessarily set any precedents for future projects elsewhere.

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The BACT limit for the modified AP plants is determined to be 0.040 lb F/ton P<sub>2</sub>O<sub>5</sub> input based on the test results submitted. The appropriateness of this limit has been adequately demonstrated based on compliance test results.

***Particulate Matter (PM/PM<sub>10</sub>) and Visible Emissions (VE)***

The top-down approach for control of PM/PM<sub>10</sub> and VE identified the following BACT options:

1. High-energy (>30 in.w.c.) venturi scrubber or ionizing wet scrubber.
2. Medium-energy (15-30 in.w.c.) venturi scrubber.

Characteristic of this process, in the usual sense, is that the first stage of scrubbing (acid scrubber) is primarily for ammonia recovery while the primary function of the second stage scrubber is fluoride removal, leaving PM/PM<sub>10</sub> control with a secondary priority from a design standpoint. Since recovery of ammonia takes place by chemical reaction with the acid scrubbing medium, the required removal can be effected using a medium energy scrubber which also removes up to 85% of the product dust escaping the cyclones. The tail gas scrubber is a low pressure drop device that removes gaseous fluorides by absorption. For these reasons, employment of a high energy, high efficiency device for PM/PM<sub>10</sub> removal has not been a design consideration for these plants.

If maximum PM/PM<sub>10</sub> removal is considered to be a design parameter, the cost effectiveness of adding high energy scrubbing to the existing system (Option 1) would likely be in the range of \$50,000 - \$75,000 per incremental ton of PM/PM<sub>10</sub> removed based on recent analyses for other projects. On a non-incremental basis, however, assuming replacement of the existing scrubbers with high energy ones, the cost effectiveness would drop to about \$7,000 to \$9,000 per ton for PM/PM<sub>10</sub> removal in the 98+% efficiency range. Due to the high costs of installing new ducts, pumps, fans, and instrumentation for retrofitting an existing system, and the high energy costs, Option 1 is not feasible for this project.

Option 2 is the feasible choice, and since the proposed scrubbers are capable of being operated in the medium energy range (16 – 19 inches pressure drop), the BACT control technology considerations will be satisfied. On the basis of test data submitted, the applicant's proposed PM/PM<sub>10</sub> limit of 0.17 lb/ton P<sub>2</sub>O<sub>5</sub> input, modified to 0.170, is acceptable as BACT.

Visible emission limits for fertilizer plant stacks have been variously established in recent permits issued by the Department. The most recent BACT determinations have not set VE limits in the BACT determination; rather, the VE limits have been included in the permits issued with the BACT determinations. VE limits contained in several PSD permits issued recently by the Department for these plants are listed below:

Facility Name	Permit No.	Process	Date Issued	VE Limit
Cargill-Bartow	PSD-FL-322	DAP	03/20/02	10%
US Agri-Chemicals	PSD-FL-321	MAP/DAP	03/15/02	20%
Cargill-Riverview	PSD-FL-315	DAP	11/21/01	10%
Cargill-Bartow	PSD-FL-255	MAP/DAP	04/21/99	15%

The two facilities with 10% opacity limits are operated by the applicant at other locations. Both plants utilize first-stage venturi scrubbers and second-stage packed crossflow scrubbers. The Riverview No. 5 DAP venturi scrubbers are comparable in terms of energy input (pressure drop)

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to the proposed Green Bay scrubbers. According to Department records, the No. 4 Bartow DAP plant venturi scrubbers appear to be operated at somewhat lower pressure drop (about 12-14 vs. 15-19 inches w.c. proposed for Green Bay).

The Riverview No. 5 DAP plant listed above has three venturi scrubbers and two tailgas scrubbers. The three primary venturi scrubbers are of different but similar design, as are the two tailgas scrubbers. One venturi scrubber controls PM/PM<sub>10</sub> and ammonia emissions from the Reactor/Granulator; the second controls the Cooler and equipment vents; the third venturi controls PM emissions from the Dryer. One tailgas scrubber controls fluoride emissions from the Reactor/Granulator and Cooler, while the second controls emissions from the Dryer. Exhaust gases go to a common stack for the No. 5 DAP plant. The Green Bay plant will have a separate stack for the Reactor/Granulator exhaust while the remaining sources will vent through a main stack. From a plant operations standpoint, maintaining 10% opacity might be more difficult where there is only one stack, since separate stacks allow more immediate indication of where an opacity problem may be occurring. (Note: The applicant currently has an application pending to install a separate stack for the Riverview No. 5 DAP Reactor/Granulator).

The Department believes that, for particulate emissions, stack opacity is directly related to scrubber energy input (pressure drop) which determines removal efficiency. The fact that the applicant currently operates two similar facilities with comparable or somewhat lower pressure drop equipment that achieves 10% opacity seems sufficient to require that the new, higher-pressure drop controls for the Green Bay plant also meet a 10% VE limit.

***Nitrogen Oxides (NO<sub>x</sub>)***

Although the AP dryers are relatively small sources of NO<sub>x</sub> compared to industrial boilers, the NO<sub>x</sub> increase from this project is PSD-significant and therefore NO<sub>x</sub> emissions must be reviewed for BACT controls and limits. The applicant's NO<sub>x</sub> BACT analysis is acceptable and is briefly summarized below.

There are essentially five types of NO<sub>x</sub> controls that could be considered for this project. These are: (1) Low Nitrogen Fuel; (2) NO<sub>x</sub> oxidation with injectants to form NO<sub>3</sub> with absorption as HNO<sub>3</sub>; (3) Reduction by catalysis (SCR) or absorption (SCONO<sub>x</sub>) or chemicals (SNCR); (4) Reducing residence time at peak gas temperature (air staging, fuel staging, steam injection); (5) Reducing peak gas temperature (Flue Gas Recirculation, Reburn, Overfire Air, Low Excess Air, Low-NO<sub>x</sub> burners, Combustion Optimization).

Controlling NO<sub>x</sub> emissions from AP Dryers with conventional control equipment would require major alterations to the dryer operation. No NO<sub>x</sub> control techniques other than low-nitrogen fuel, combustion optimization and good combustion practices have been demonstrated for this process. The applicant has proposed these as BACT control measures and the Department is in agreement. Based on test data, the proposed NO<sub>x</sub> BACT limits are 0.210 lb/MMBtu and 0.150 lb/MMBtu for the South and North AP plants, respectively.



**APPENDIX BD**  
**BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)**

The above BACT determinations are summarized in the following table:

**Phosphoric Acid Production System (PAP No. 1 North & South Train and PAP No. 2)**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	1.15 lb/hr 5.03 ton/yr	0.009 lb F/ton P <sub>2</sub> O <sub>5</sub> input	(2) Cyclonic Jet Scrubbers-North 1 (2) Cyclonic Jet Scrubbers-South 1 Poly-Con Wet Scrubber-PAP No.2

**South Ammoniated Phosphate (AP) Plant**

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM <sub>10</sub>	11.1 lb/hr, 48.4 TPY	0.170 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
VE	10% opacity	Prior Permits	
F	2.6 lb/hr, 11.4 TPY	0.040 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	12.6 lb/hr, 55.2 TPY	0.210 lb/MMBtu	Low N fuel, good combustion

**North Ammoniated Phosphate (AP) Plant**

PM/PM <sub>10</sub>	13.6 lb/hr, 59.6 TPY	0.170 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
VE	10% opacity	Prior permits	
F	3.2 lb/hr, 14.0 TPY	0.040 lb/ton P <sub>2</sub> O <sub>5</sub> input	Two-stage scrubbers using acid/pond water
NO <sub>x</sub>	7.4 lb/hr, 32.4 TPY	0.0150 lb/MMBtu	Low N fuel, good combustion

**COMPLIANCE PROCEDURES**

Compliance with the emission limits shall be in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department:

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
Phosphoric Acid Plant	F	13A or 13B
North AP Plant	PM/PM <sub>10</sub>	5
	VE	9
	F	13A or 13B
	NO <sub>x</sub>	7 or 7A
South AP Plant	PM/PM <sub>10</sub>	5
	VE	9
	F	13A or 13B
	NO <sub>x</sub>	7 or 7A

**DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:**

Jim Pennington, P.E. Administrator  
 John Reynolds, Permit Engineer  
 New Source Review Section  
 Department of Environmental Protection  
 Bureau of Air Regulation  
 2600 Blair Stone Road, MS 5505  
 Tallahassee, Florida 32399-2400

Cargill Fertilizer, Inc.  
 Green Bay Plant

DEP File No. 1050053-033-AC  
 Permit No. PSD-FL-334

**APPENDIX BD**  
**BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)**

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Recommended By:

Approved By:

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Trina L. Vielhauer, Chief  
Bureau of Air Regulation

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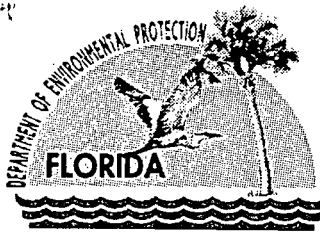
Michael G. Cooke, Director  
Division of Air Resources Management

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Date:

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Date:



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

## PERMITTEE:

Cargill Fertilizer, Inc.  
8813 U.S. Highway 41 South  
Riverview, Florida 33569

### *Responsible Official:*

Mr. E. O. Morris  
Vice President of Environmental, Health and Safety

<b>File No.</b>	1050053-033-AC
<b>Permit No.</b>	PSD-FL-334
<b>SIC No.</b>	2874
<b>Project:</b>	Facility Expansion
<b>Expires:</b>	June 1, 2006

## PROJECT AND LOCATION:

Permit for the modification of the Phosphoric Acid Production System, the South DAP Fertilizer Plant, and the North MAP/DAP Fertilizer Plant. The project is located at the Cargill Fertilizer facility, 4390 C.R. 640 West, Bartow, Polk County. UTM coordinates are Zone 17; 409.5 km E; 3080.1 km N.

## STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

## ATTACHED APPENDICES ARE MADE A PART OF THIS PERMIT:

Appendix BD      BACT Determination  
Appendix GC      Construction Permit General Conditions

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Michael G. Cooke, Director  
Division of Air Resources  
Management

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**SECTION I – FACILITY INFORMATION****FACILITY DESCRIPTION**

Cargill Fertilizer, Inc. operates the Green Bay phosphate fertilizer manufacturing facility near Bartow, Polk County, Florida, producing sulfuric acid, wet-process phosphoric acid, ammoniated phosphate fertilizers and related products. The company has applied to modify its Phosphoric Acid Production System, South DAP Fertilizer Plant, and its North MAP/DAP Plant. The Phosphoric Acid Production System is being modified to improve process efficiency, plant stability, and evaporation capacity. The South DAP and North MAP/DAP are being modified to improve product quality and production capabilities. As a result of these changes, significant emission increases will occur for particulate matter (PM), PM with an aerodynamic diameter of 10 microns or less (PM<sub>10</sub>), fluoride (F) and nitrogen oxides (NO<sub>x</sub>).

**REGULATORY CLASSIFICATION**

The Cargill Green Bay Plant is classified as a “Major or Title V Source” per Rule 62-210.200, F.A.C., because it has the potential to emit at least 100 tons per year of particulate matter when potential fugitive emissions are included with potential controlled emissions.

Phosphate rock processing plants are listed as a Major Facility Category in Table 62-212.400-1, F.A.C., “Major Facility Categories.” Therefore, stack and fugitive emissions of over 100 TPY of a regulated pollutant are sufficient to classify the installation as a “Major Facility” per the definitions in Rule 62-210.200, F.A.C., subject to the Significant Emission Rates given in Table 62-212.400-2, F.A.C. and the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT).

The Cargill Bartow Facility is also classified as a “Major Source” per 40 CFR 63.2, Definitions (adopted and incorporated by reference by the Department at Paragraph 62-204.800(11)(d)) because it consists of a group of stationary sources located within a contiguous area and under common control that emit or have the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

**PERMIT SCHEDULE:**

- 04-30-2003: Original Application Received
- 10-02-2003: Application Complete
- 12-22-2003: Mailed Intent to Issue Permit
- XX-XX-200X: Notice published in the \_\_\_\_\_

**RELEVANT DOCUMENTS:**

The documents listed below are specifically related to this permitting action and form the basis of the permit. They are on file with the Department:

- Application received 04-30-2003
- Department letter dated 05-29-2003
- Applicant’s e-mail received 08-29-2003 and 09-29-03
- Technical Evaluation and Preliminary Determination dated 12-19-2003
- Best Available Control Technology determination (issued concurrently with permit)

**SECTION II – ADMINISTRATIVE REQUIREMENTS**

1. Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District Office, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218. All applications for permits to construct or modify an emissions unit(s) *subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements* should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/488-0114).
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. Expiration: This air construction permit shall expire on **June 1, 2006** [Rule 62-210.300(1), F.A.C.]. The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Department's Southwest District Office of any delays in completion of the project which would affect the startup day by more than 90 days. [Rule 62-4.090, F.A.C.]
6. Application for Title V Permit: Within 90 days of expiration of this permit or 180 days of commencing operation, an application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Southwest District Office. [Chapter 62-213, F.A.C.]
7. Permit Approval: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)].
8. BACT Determination: In conjunction with extension of the 18-month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology for the source. [40 CFR 52.21(j)(4)]
9. Annual Reports: Pursuant to Rule 62-210.370(2), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports using DEP Form 62-210.900(4) shall be sent to the DEP's Southwest District office by March 1st of each year.
10. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

**SECTION II – ADMINISTRATIVE REQUIREMENTS**

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11. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7 (a)(7) (c) (1997 version), shall be submitted to the DEP's Southwest District office.
12. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

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**AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334**  
**SECTION III - EMISSION UNIT(S) CONDITIONS**

**SUBSECTION A. COMMON CONDITIONS**

The Common Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
013*	Phosphoric Acid Plant No. 2
013* (formerly 016)	Phosphoric Acid Plant No. 1 (North Train)
013* (formerly 017)	Phosphoric Acid Plant No. 1 (South Train)
014,015,037	Phosphoric Acid Tanks *
007	South Ammoniated Phosphate (AP) Fertilizer Plant
029	North AP Fertilizer Plant

\*Since three units are being combined for regulatory purposes as a single unit, Emissions Unit Nos. 016 and 017 will be changed to "Inactive" when the final permit is issued.

1. Regulations: Emissions Unit No. 013 is subject to the provisions of 40 CFR 63, Subpart AA, and Emissions Units Nos. 007 and 029 are subject to 40 CFR 63 Subpart BB adopted by the Department at Paragraph 62-204.800(11)(b), F.A.C.
2. Unless otherwise indicated, the modification/construction and operation of the Phosphoric Acid Plants, the South AP Fertilizer Plant and the North AP Plant shall be in accordance with the capacities and specifications stated in the application. Total capacities are 128 TPH for Phosphoric Acid and 145 TPH for Ammonium Phosphates, expressed as 100% P<sub>2</sub>O<sub>5</sub>. **[Rule 62-210.300, F.A.C.]**
3. Before this construction permit expires, and annually, the subject emissions units shall be tested for compliance with the applicable emission limits. For the duration of all tests the emission units shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**
4. The Department's Southwest District office shall be notified in writing at least 15 days prior to source testing. Written reports of the test results shall be submitted to that office within 45 days of test completion. **[Rule 62-297.310, F.A.C.]**
5. The compliance test procedures shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 5, 7E, 8, 9, and 13A or 13B, as appropriate, as published in 40 CFR 60, Appendix A, or as otherwise specifically authorized by the Department **[Rules 62-204.800 and 62-297.310(7)(c), F.A.C.]**
6. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. **[Rule 62-296.320, F.A.C.]**
7. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. **[Rule 62-210.650, F.A.C.]**

AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334  
SECTION III - EMISSION UNIT(S) CONDITIONS

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8. The subject emissions units shall be subject to the following:

- Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700, F.A.C.]
- Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. [Rule 62-210.700, F.A.C.]
- Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. [Rule 62-210.700, F.A.C.]
- In case of excess emissions resulting from malfunctions, each source shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700, F.A.C.]

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**AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334**  
**SECTION III - EMISSION UNIT(S) CONDITIONS**

• **SUBSECTION B. Phosphoric Acid Production System Specific Conditions**

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
013*	Phosphoric Acid Plant (PAP) No. 2
013*	PAP No. 1 (North Train)
013*	PAP No. 1 (South Train)

\*See Page 5 – Common Conditions

**EMISSION AND PERFORMANCE REQUIREMENTS**

1. The combined maximum permitted production rate for the three Phosphoric Acid Plants shall not exceed 128 tons per hour of P<sub>2</sub>O<sub>5</sub>. [Rule 62-210.200, F.A.C.]
2. The Phosphoric Acid Plant may operate up to 8,760 hours per year. [Rule 62-210.200, F.A.C.]
3. Fluoride emissions from the three combined Phosphoric Acid Plants shall not exceed 0.009 lb/ton of equivalent P<sub>2</sub>O<sub>5</sub> feed, 1.15 lb/hr, and 5.03 TPY. [Rule 62-212.400, F.A.C.]

**TEST METHODS AND PROCEDURES**

4. The compliance test procedures for fluorides shall be in accordance with EPA Reference Method 13A or 13B as published in 40 CFR 60, Appendix A. [Rule 62-297.401(13), F.A.C.]
5. Before this construction permit expires, and annually, the subject emissions units shall be tested concurrently for compliance with the applicable emission limits. For the duration of all tests the emission units shall be operating at permitted capacity. Permitting capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. The current maximum operating capacity limits are: PAP No. 1-North - 27.5 TPH P<sub>2</sub>O<sub>5</sub>, PAP No. 1-South - 45.03 TPH P<sub>2</sub>O<sub>5</sub> and PAP No. 2 - 55.0 TPH P<sub>2</sub>O<sub>5</sub>. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in this case, subsequent combined emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.310, F.A.C.]

**MONITORING REQUIREMENTS**

6. Each owner or operator of a new or existing wet-process phosphoric acid process line shall install, calibrate, maintain, and operate a monitoring system which can be used to determine and permanently record the mass flow of phosphorus-bearing feed material to the process. The monitoring system shall have an accuracy of ±5 percent over its operating range. [Rule 40 CFR 63.605(a)]
7. Each owner or operator of a new or existing wet-process phosphoric acid process line using a wet scrubbing emission control system shall install, calibrate, maintain, and operate the following monitoring systems:

**AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334**  
**SECTION III - EMISSION UNIT(S) CONDITIONS**

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(1) A monitoring system which continuously measures and permanently records the pressure drop across each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of  $\pm 5$  percent over its operating range.

(2) A monitoring system which continuously measures and permanently records the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of  $\pm 5$  percent over its operating range.

**[Rule 40 CFR 63.605(c)]**

8. Following the date on which the performance test required in § 63.606 is completed, the owner or operator of a new or existing affected source using a wet scrubbing emission control system and subject to emissions limitations for total fluorides or particulate matter contained in this subpart must establish allowable ranges for operating parameters using the methodology of either paragraph (d)(1) or (2) of this section:

(d)(1) The allowable range for the daily averages of the pressure drop across each scrubber and of the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system is  $\pm 20$  percent of the baseline average value determined as a requirement of § 63.606(c)(4), (d)(4), or (e)(2). The Administrator retains the right to reduce the  $\pm 20$  percent adjustment to the baseline average values of operating ranges in those instances where performance test results indicate that a source's level of emissions is near the value of an applicable emissions standard, but, in no instance shall the adjustment be reduced to less than  $\pm 10$  percent. The owner or operator must notify the Administrator of the baseline average value and must notify the Administrator each time that the baseline value is changed as a result of the most recent performance test. The baseline average values used for compliance shall be based on the values determined during the most recent performance test. The new baseline average value shall be effective on the date following the performance test.

(d)(2) The owner or operator of any new or existing affected source shall establish, and provide to the Administrator for approval, allowable ranges of baseline average values for the pressure drop across and of the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system for the purpose of assuring compliance with this subpart. Allowable ranges may be based upon baseline average values recorded during previous performance tests using the test methods required in this subpart and established in the manner required in § 63.606(c)(4), (d)(4), or (e)(2). As an alternative, the owner or operator can establish the allowable ranges of baseline average values using the results of performance tests conducted specifically for the purposes of this paragraph using the test methods required in this subpart and established in the manner required in § 63.606(c)(4), (d)(4), or (e)(2). The source shall certify that the control devices and processes have not been modified subsequent to the testing upon which the data used to establish the allowable ranges were obtained. The allowable ranges of baseline average values developed pursuant to the provisions of this paragraph must be submitted to the Administrator for approval. The owner or operator must request and obtain approval of the Administrator for changes to the allowable ranges of baseline values. When a source using the methodology of this paragraph is retested, the owner operator shall determine new allowable ranges of baseline average values unless the retest indicates no change in the operating parameters from previous tests. Any new allowable ranges of baseline average values resulting from the most recent performance test shall be effective on the date following the retest. Until changes to allowable ranges

AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334  
SECTION III - EMISSION UNIT(S) CONDITIONS

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of baseline average values are approved by the Administrator, the allowable ranges for use in § 63.604 shall be based upon the range of baseline average values proposed for approval.

[Rule 40 CFR 63.605(d)]

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**AIR CONSTRUCTION PERMIT 1050053-033-AC, PSD-FL-334**  
**SECTION III - EMISSION UNIT(S) CONDITIONS**

**SUBSECTION C. AP Plants Specific Conditions**

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	South AP Fertilizer Plant
029	North AP Fertilizer Plant

**EMISSION AND PERFORMANCE REQUIREMENTS**

- The feed rate of materials, expressed as 100% phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>), for the South AP Fertilizer Plant shall not exceed 65 tons per hour. [Rule 62-212.400, F.A.C.]
- The feed rate of material, expressed as 100% P<sub>2</sub>O<sub>5</sub>, for the North AP Fertilizer Plant shall not exceed 80 tons per hour. [Rule 62-212.400, F.A.C.]
- The rotary dryer shall be fired with natural gas only, except that No. 2 fuel oil with a maximum sulfur content of 0.05% by weight is allowed as a back-up fuel. The maximum heat input rate for South and North AP Plants shall be 60 MMBtu/hr and 50 MMBtu/hr respectively. [Rule 62-212.400, F.A.C.]
- The South and North AP Plants each may operate up to 8,760 hours per year. [Rule 62-210.200, F.A.C.]
- Emissions from the South and North AP Plants each shall not exceed the following [Rule 62-212.400, F.A.C.]:

Pollutant	South AP Fertilizer Plant			North AP Fertilizer Plant		
	lb/ton P <sub>2</sub> O <sub>5</sub>	lb/hr	TPY	lb/ton P <sub>2</sub> O <sub>5</sub>	lb/hr	TPY
PM/PM <sub>10</sub>	0.170	11.1	48.4	0.170	13.6	59.6
Fluorides	0.040	2.6	11.4	0.040	3.2	14.0
	lb/MMBtu			lb/MMBtu		
NOx	0.210	12.6	55.2	0.0150	7.4	32.4

- Visible emissions from the South and North AP Plants shall not exceed 10% opacity. [Permit No. 1050053-012-AV]

**TEST METHODS AND PROCEDURES**

- The compliance test procedures for particulates shall be in accordance with EPA Reference Method 5 as published in 40 CFR 60, Appendix A. [Rule 62-297.410(5), F.A.C.]
- The compliance test procedures for fluorides shall be in accordance with EPA Reference Methods 13A or 13B as published in 40 CFR 60, Appendix A. [Rule 62-297.410(13), F.A.C.]
- The compliance test procedures for visible emissions shall be in accordance with EPA Reference Method 9 as published in 40 CFR 60, Appendix A. [Rule 62-297.410(9), F.A.C.]

**MONITORING REQUIREMENTS**

10. Each owner or operator of a new or existing diammonium and/or monoammonium phosphate process line or granular triple superphosphate process line subject to the provisions of this subpart shall install, calibrate, maintain, and operate a monitoring system which can be used to determine and permanently record the mass flow of phosphorus-bearing feed material to the process. The monitoring system shall have an accuracy of  $\pm 5$  percent over its operating range.

**[Rule 40 CFR 63.625(a)]**

11. Each owner or operator of a new or existing diammonium and/or monoammonium phosphate process line, granular triple superphosphate process line, or granular triple superphosphate storage building using a wet scrubbing emission control system shall install, calibrate, maintain, and operate the following monitoring systems:
- (1) A monitoring system which continuously measures and permanently records the pressure drop across each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of  $\pm 5$  percent over its operating range.
  - (2) A monitoring system which continuously measures and permanently records the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of  $\pm 5$  percent over its operating range.

**[Rule 40 CFR 63.625(c)]**

12. Following the date on which the performance test required in § 63.626 is completed, the owner or operator of a new or existing affected source using a wet scrubbing emission control system and subject to emissions limitations for total fluorides or particulate matter contained in this subpart must establish allowable ranges for operating parameters using the methodology of either paragraph (1) or (2) of this section:
- (1) The allowable range for the daily averages of the pressure drop across each scrubber and of the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system is  $\pm 20$  percent of the baseline average value determined as a requirement of § 63.626(c)(4) or (d)(4). The Administrator retains the right to reduce the  $\pm 20$  percent adjustment to the baseline average values of operating ranges in those instances where performance test results indicate that a source's level of emissions is near the value of an applicable emissions standard, but, in no instance shall the adjustment be reduced to less than  $\pm 10$  percent. The owner or operator must notify the Administrator of the baseline average value and must notify the Administrator each time that the baseline value is changed as a result of the most recent performance test. The baseline average values used for compliance shall be based on the values determined during the most recent performance test. The new baseline average value shall be effective on the date following the performance test.
  - (2) The owner or operator of any new or existing affected source shall establish, and provide to the Administrator for approval, allowable ranges of baseline average values for the pressure drop across and of the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system for the purpose of assuring compliance with this subpart. Allowable ranges may be based upon baseline average values recorded during previous performance tests using the test methods required in this subpart and established in the manner required in § 63.626(c)(4) or (d)(4). As an alternative, the owner or operator can establish the allowable ranges of baseline average values

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using the results of performance tests conducted specifically for the purposes of this paragraph using the test methods required in this subpart and established in the manner required in § 63.626(c)(4) or (d)(4). The source shall certify that the control devices and processes have not been modified subsequent to the testing upon which the data used to establish the allowable ranges were obtained. The allowable ranges of baseline average values developed pursuant to the provisions of this paragraph must be submitted to the Administrator for approval. The owner or operator must request and obtain approval of the Administrator for changes to the allowable ranges of baseline average values. When a source using the methodology of this paragraph is retested, the owner operator shall determine new allowable ranges of baseline average values unless the retest indicates no change in the operating parameters from previous tests. Any new allowable ranges of baseline average values resulting from the most recent performance test shall be effective on the date following the retest. Until changes to allowable ranges of baseline average values are approved by the Administrator, the allowable ranges for use in § 63.624 shall be based upon the range of baseline average values proposed for approval.

[Rule 40 CFR 63.625(f)]

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**APPENDIX GC**  
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

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- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- a) Have access to and copy and records that must be kept under the conditions of the permit;
  - b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
  - c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- a) A description of and cause of non-compliance; and
  - b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages, which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

- G.9 *In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida*

**APPENDIX GC**  
**GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]**

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Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- a) Determination of Best Available Control Technology (X)
  - b) Determination of Prevention of Significant Deterioration (X);
  - c) Compliance with New Source Performance Standards (X). Subpart V requirements and
  - d) Compliance with National Emission Standards for Hazardous Air Pollutants (X). Subpart BB requirements
- G.14 The permittee shall comply with the following:
- a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
  - b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
  - c) Records of monitoring information shall include:
    - 1. The date, exact place, and time of sampling or measurements;
    - 2. The person responsible for performing the sampling or measurements;
    - 3. The dates analyses were performed;
    - 4. The person responsible for performing the analyses;
    - 5. The analytical techniques or methods used; and
    - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.