

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301



BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

MEMORANDUM

CERTIFIED MAIL

TO: Mr. J. R. Terry, Vice President, W. R. Grace & Co.
Mr. M. J. Martinasek, Project Engineer, W. R. Grace & Co.
Mr. William Hennessey, DER, S. W. District

FROM: Steve Smallwood, BACM *Smallwood*

DATE: May 27, 1980

SUBJ: W. R. Grace & Co. - AC 53-24460
Application for Permit to Construct DAP Plant

Attached is one copy of the revised application, Technical Evaluation and Preliminary Determination, BACT Determination and proposed permit to construct a diammonium phosphate plant with venturi and tail-gas scrubbers at the phosphate fertilizer manufacturing complex located north of Highway 60 west, Bartow, Florida.

Please send any comments which you wish to be considered concerning this action, in writing, to Willard Hanks of the Bureau of Air Quality Management.

SS:caa

Attachment

cc: Jim Ester (w/o attachments)

Revised
Technical Evaluation

and

Preliminary Determination

W. R. Grace & Company
Polk County, Florida

Construction Permit

Application Number:

AC 53-24460

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

May 8, 1980

I. PROPOSED DEPARTMENT ACTION*

The Department of Environmental Regulation (DER) intends to issue W. R. Grace and Company a permit to construct a diammonium phosphate plant (DAP) at its phosphate fertilizer manufacturing complex located north of State Road 60 west, Bartow, Florida. The permit will include conditions to assure compliance with Chapter 17-2, FAC.

Any person may submit written comments on this action to:

Willard Hanks
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Any comments postmarked within 30 days of the date of the published notice will be considered in the Department's final determination regarding construction of this source.

Any person whose substantial interest would be affected by the issuance of this permit may request an administrative hearing by filing a petition as set forth in Section 28-5.15, FAC (copy attached). Such petition must be filed within 14 days of the date of the published notice with:

Mary Clark
Office of General Counsel
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

II. SUMMARY OF EMISSIONS AND AIR QUALITY ANALYSIS

a. The proposed plant will be located at the phosphate fertilizer chemical complex on Highway 60 west of Bartow, Florida. This site is "unclassifiable" for the criteria pollutant particulate and "attainment" for the remaining criteria pollutants. However, it is in the "area of influence" for Hillsborough County particulate nonattainment area. W. R. Grace is required to comply with paragraph 17-2.03, BACT, and paragraph 17-2.04, PSD, under the current regulations given in Chapter 17-2, FAC.

b. Best Available Control Technology (BACT) for the DAP plant was determined to be venturi scrubbers using an acid scrubbing medium for the removal of ammonia, particulate and sulfur dioxide, followed by a packed, counter-flow tail-gas scrubber using process water for the removal of fluoride. The emission standards selected as BACT is 0.5 pounds particulate emission per ton P_2O_5 feed, 0.7 pounds sulfur dioxide per ton P_2O_5 feed and 0.06 lbs. fluoride per ton P_2O_5 feed.

*Because of significant modifications to the original application, the Department has revised its original technical evaluation. Only one DAP plant for W. R. Grace and Co. is under consideration for a construction permit at this time.

c. All permitted emissions from the DAP plant will be discharged through a 7 foot diameter, 132.5 foot high stack. The total emission rates and the maximum allowable emission from the DAP plant, based on 7,000 hours per year operation, are:

Pollutant	Rate (lbs./ton P ₂ O ₅ feed)	max lbs/hr	max TPY
Particulate	0.5	28	98
Sulfur Dioxide	0.7	35	122.5
Fluoride	0.06	3.36	11.8

d. Two existing plants will be shut down after the new DAP plant begins operation. The 300x TSP/DAP plant (AO 53-25191) will shut down when the new DAP plant begins operation. The 300y GTSP/ROP plant (AO 53-13210) will shut down within 6 months of start up of the new DAP plant. An estimate of the emissions that will be eliminated when the plants are shut down is given below:

Plant	Particulate Emissions (TPY)	Fluoride Emissions (TPY)	Sulfur Dioxide Emissions (TPY)
300x	41.3	13.3	40
300y	26.3	14.8	40
TOTAL	67.6	28.1	80

e. Net change in plant emission will be:

Pollutant	Increase (decrease) TPY	Pollutant
Particulate	30.4	
Fluoride	(16.3)	
Sulfur Dioxide	42.5	

The original study, based on greater emissions of pollutant from the complex, showed there was no significant adverse effect on the ambient air quality related to the new plant. Thus, it was not necessary to repeat this study for the revised application.

III. SYNOPSIS OF APPLICATION

a. Applicant

W. R. Grace & Co.
P. O. Box 471
Bartow, Florida

b. Description of Project and Controls

This project is the proposed construction of an 115 TPH TVA type DAP plant with particulate, ammonia, sulfur dioxide and fluoride emission controlled by 3 dry cyclones, 3 venturi scrubbers and 2 tail-gas scrubbers. The plant will make DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric acid and sulfuric acid using a gas fired (no. 5 fuel oil stand by) dryer, screens, mills, cooler, granulator, reactor and conveying equipment. The attached process flow diagrams show the manufacturing process and scrubber system design.

c. Description of Process and Abatement System

Phosphoric Acid (56 TPH), sulfuric acid (1.75 TPH), and anhydrous ammonia (27 TPH) are fed to a reactor and form an ammonium phosphate slurry which is pumped to a granulator. In the granulator, additional anhydrous ammonia and recycle DAP (650 TPH) are blended with the slurry and sent to the dryer. The dried material is then conveyed to the process screens. The product size from the screens discharge into the product bin. The oversize material is ground and, along with the undersized DAP and a controlled amount from the product bin, recycled to the granulator. The DAP from the product bin, (115 TPH) passes through a cooler and another set of screens before being transported to storage.

Emissions from the reactor and granulator go to the Reactor/granulator scrubber where phosphoric acid removes the ammonia gas and particulate matter. The gases leaving this scrubber then go to the granulator/cooler tail gas scrubber where pond water removes most of the gaseous fluoride pollutant. The gas is then discharged to the atmosphere.

Emissions from the dryer pass through a dry cyclone that removes some of the particulate matter before going to the dryer scrubber where most of the particulate matter and sulfur dioxide are removed with phosphate acid scrubbing liquid. The gases then go to the dryer tail gas scrubber where pond water removes most of the fluoride compounds before the gas is discharged to the atmosphere.

Gases from the product cooler and equipment vents pass through a cyclone before going to the cooler venturi scrubber and then, along with gases from the reactor/granulator, to the granulator/cooler tail gas scrubber.

The phosphate acid used in the venturi scrubber is sent to the process. The tail gas scrubber water recirculates to the process water pond.

IV. RULE APPLICABILITY

The proposed source is a major emitting facility for particulate, fluoride and sulfur dioxide as defined in 17-2.02(70) FAC. The plant has the potential to emit more than 100 TPY of these pollutants. Therefore, the application is subject to the requirements of 17-2.04, Prevention of Significant Deterioration, and 17-2.03, Best Available Control Technology.

The proposed plant is located in the area of influence for Hillsborough County particulate nonattainment area. Mathematical modeling for maximum particulate and sulfur dioxide concentrations for 3 hours (SO₂ only) and 24 hours (SO₂ and particulate) was performed. Results show the significance levels of particulate and sulfur dioxide are not exceeded. Therefore, the application is not subject to the nonattainment provisions of 17-2.17 FAC.

V. FINDINGS AND PERMIT CONDITIONS

1. On the basis of air quality modeling performed in accordance with applicable DER guidance, particulate and sulfur dioxide emissions will not contribute to ground level concentrations in exceedance of any PSD class II increment as specified by 17-2.04(1)(b). These emissions were also found not to have an impact on any particulate matter or sulfur dioxide nonattainment area or PSD class I area nor will they contribute to ground level concentrations in excess of ambient air quality standards. Thus, the application is exempt from the requirements of paragraphs 17-2.17 and 17-2.04(8) of Chapter 17-2, FAC.

2. The proposed new source is classified as a major emitting facility (one with the potential of emitting in excess of 100 T/yr of any air pollutant) for particulate, fluoride and SO₂. Therefore under 17-2.03, FAC, a BACT determination was required. Emission limitations under this rule is summarized in permit condition no. 3

3. The permitted emissions for all pollutants will be:

Pollutant	Rate lb/TP ₂ O ₅	Maximum Allowable	
		lbs/hr	T/yr
Particulate	0.5	28.0	98.0
Sulfur Dioxide	0.7	35.0	122.5
Fluoride	0.06	3.36	11.8

These emissions are based on all emissions from the plant being controlled by (3) venturi and (2) tail gas scrubbers.

4. Maximum operation time will be 7,000 hours per year.

5. Maximum production rate will be 115 TPH DAP.

6. Maximum sulfur content of the fuel oil will be 2.4%.

7. Fugitive particulate and fluoride emissions in the plant will be controlled by sealing and venting all fumes from the process equipment to pollution control equipment.

8. Construction will commence and be completed within a reasonable time based on the projections included in the application.

9. Construction will reasonably conform to the plans submitted.

10. The applicant will submit semi-annual reports on construction progress (% completion) until the permit to construct expires or is replaced by a permit to operate.

11. The applicant will install, calibrate, maintain, operate and record data from flow monitoring devices that measure total phosphorus input to the plant and continuously measure and record the total pressure drops across each scrubbing system. Pressure drop across the venturi scrubber must be 12 inches water or greater during plant operations. Records will be maintained for 2 years and made available to regulatory personnel on request.

12. Before the construction permit expires, the DAP plant will be sampled for particulate, fluoride and sulfur dioxide (while the dryer is being fired with oil). Test will be made in accordance with EPA reference methods 1, 2, 3, 5, 6 and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any alternate method approved by DER.

13. DER will be notified 30 days in advance of the compliance tests. Tests will be conducted when the plant is operating at permitted capacity while burning oil containing the maximum amount of sulfur allowed. P_2O_5 input, pH of the scrubber solution, pressure drop across the scrubbers and other process parameters will be normal for this plant's operation during any emission tests and the value of the operation parameters will be reported, along with test data and results, at least 90 days before the construction period expires.

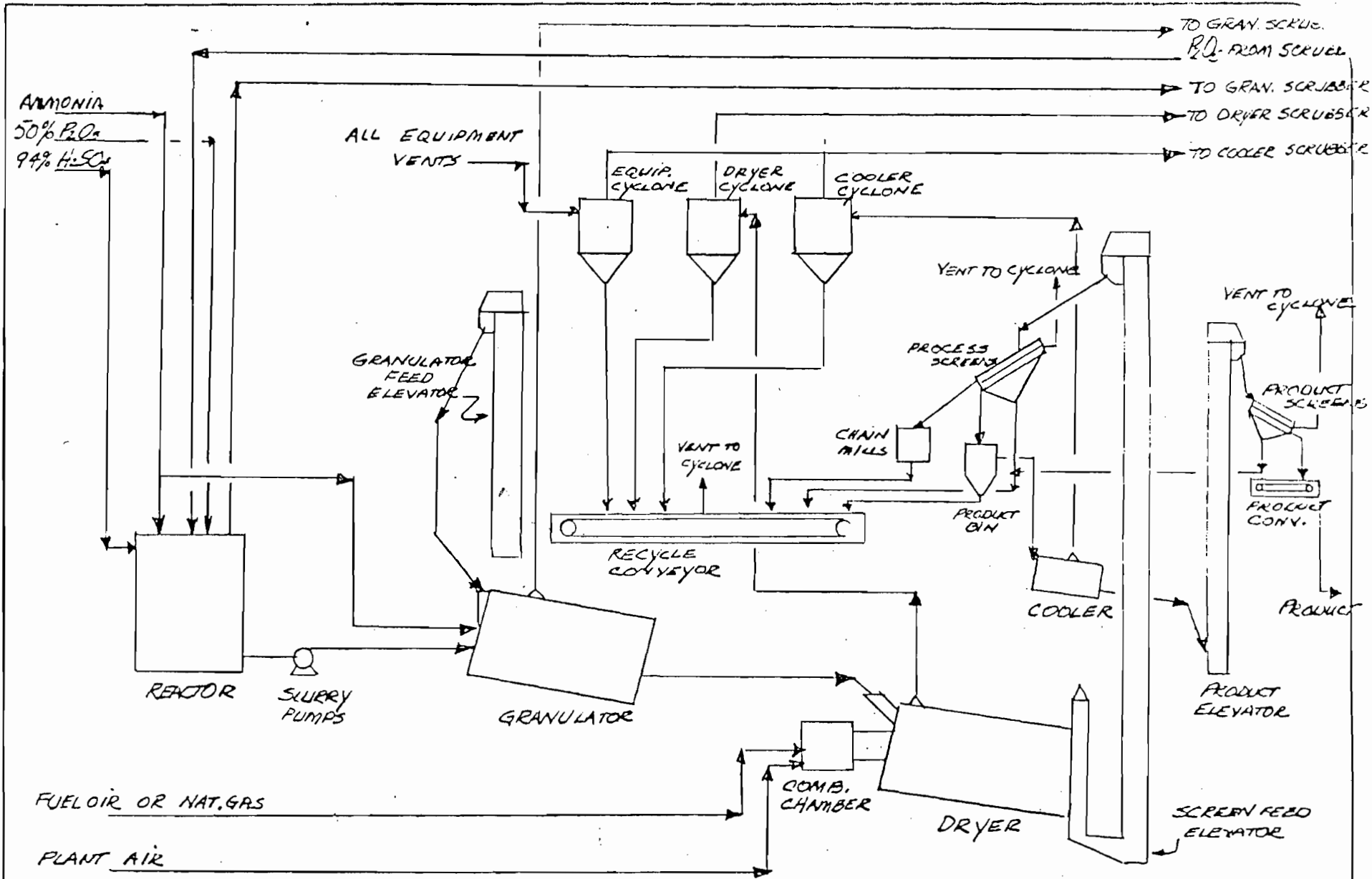
14. Periodic emission test or test on request of DER will be a condition to any permit to operate this plant.

15. A complete application for permit to operate will be submitted to DER Southwest District office 90 days before this construction permit expires.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Test plan to show compliance must be approved by DER. Upon demonstration of compliance with the operational limits of this permit and submission of a complete application for an operation permit to DER's S. W. District Office, prior to 90 days before expiration of permit no. AC 53-24460, the permittee may continue to operate in compliance with all terms of this permit until expiration of this permit or issuance of an operating permit.

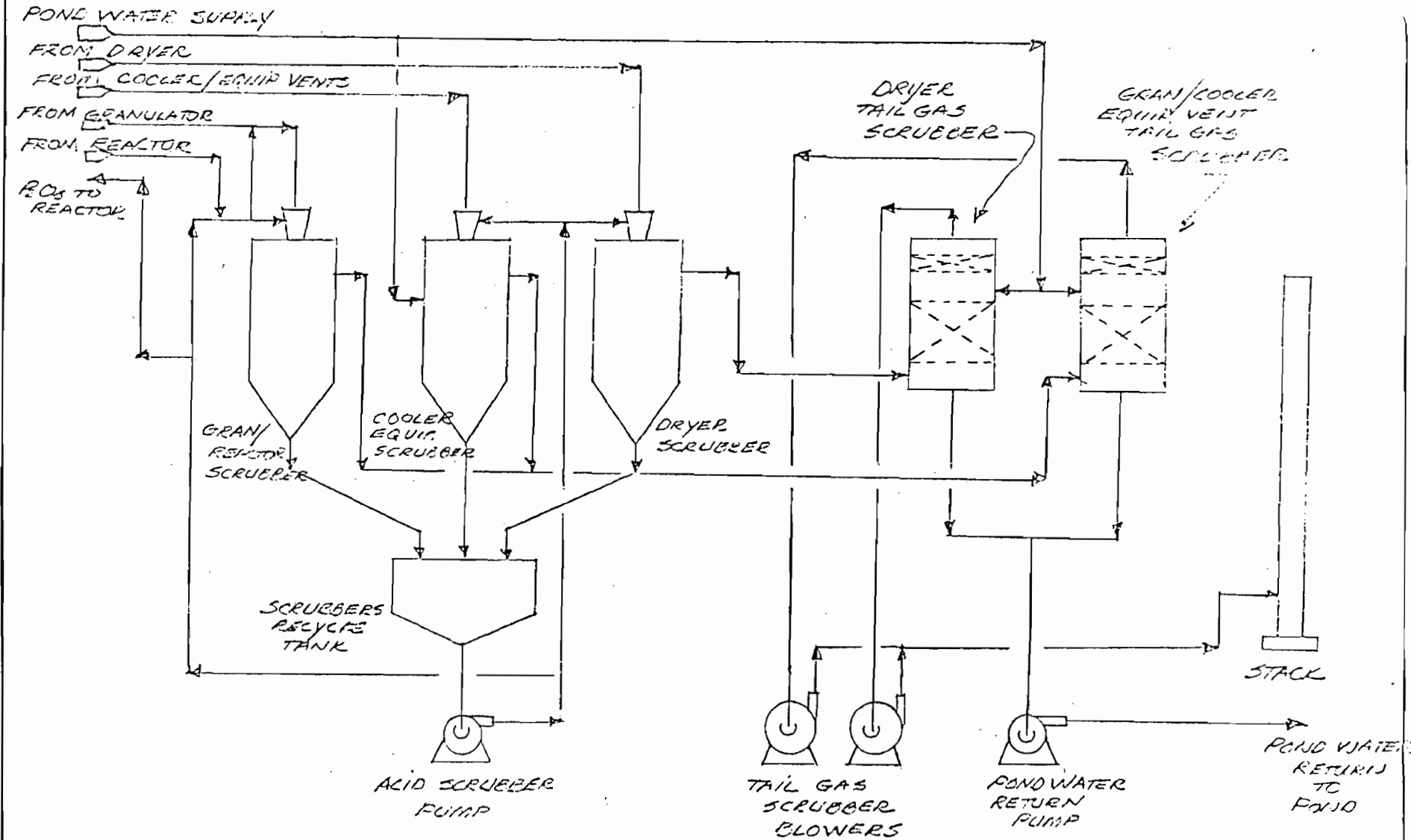
18. The fertilizer plant 300x (AO 53-25191) will cease operation when the new DAP plant begins production. Fertilizer plant 300y (AO 53-13210) will cease operations within 6 months of the start-up of the new DAP plant.



W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA

DAP GRANULATION PLANT
 PROCESS FLOW DIAGRAM - PROCESS

DRAWN: H. CORTES | 12/79 | D'WG. NO. 1



W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA
 DAP GRANULATION PLANT
 PROCESS FLOW DIAGRAM
 SCRUBBER SYSTEM
 DRAWN: H. CORTES
 D'W'G. NO. 2

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
 - (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name and address of the petitioner or petitioners;
 - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
 - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
 - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
 - (f) A demand for the relief to which the petitioner deems himself entitled; and
 - (g) Such other information which the petitioner contends is material.

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STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: W. R. Grace & Company
P. O. Box 471
Bartow, Florida 33830

PERMIT/CERTIFICATION
NO. AC 58-24460

COUNTY: Polk County

PROJECT: DAP/Fertililzer Plan

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the construction of a diammonium phosphate plant to be located at the permittee's phosphate fertilizer complex north of State Road 60 west, Bartow, Florida. The latitude, longitude and UTM coordinates of the proposed plant are 27°54'13"N by 81°55'17"W and 409.290E, 3,086.960N respectively.

Construction shall be in accordance with the attached permit application, plans, documents and drawings except as otherwise noted in the following list of "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER form 17-1.122(16) dated April 16, 1980.
2. Figure, Stack Test Faciliites.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions", and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace & Co.
Bartow, Florida

on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. 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 notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact 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 revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor 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.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, 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.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation 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.

13. This permit also constitutes:

- Determination of Best Available Control Technology (BACT)
- Determination of Prevention of Significant Deterioration (PSD)
- Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace & Company

Specific Conditions

1. The maximum production rate of the plant will be 15 TPH DAP (18-46-0) and the plant shall operate a maximum of 7,000 hours per year.
2. The allowable emissions from the 7 foot diameter, 132.5 foot high stack for the DAP plant will be:

Pollutant	Emission Rate	Maximum Emissions	
		lbs/hr	T/yr.
Particulate	0.5	28.0	98.0
Sulfur Dioxide	0.7	35.0	122.5
Fluoride	0.06	3.36	11.8

3. Fugitive particulate and fluoride emissions from the process, conveying and storage equipment will be controlled by sealing and/or venting all fumes from the equipment to pollution abatement devices.
4. No. 5 fuel oil used by the dryer shall not contain more than 2.4% sulfur.
5. Construction shall commence and be completed within a reasonable time based on the schedule given the application. Construction will reasonably conform to the plans submitted.
6. Reasonable precautions to prevent fugitive emissions during construction, such as coating or spraying roads and construction sites used by contractors with a liquid to prevent dust, will be taken by the permittee.
7. Semi-annual progress reports showing approximate percent completion of modifications and construction of new and affected existing facilities will be submitted to the Department until construction permit AC 53-24460 expires or

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace and Company

is replaced by a permit to operate.

8. The permittee will install, calibrate, maintain, operate and record data from flow monitoring devices that can be used to determine total P_2O_5 input to the plant.
9. The permittee will measure and record the pressure drop of the gas stream across each scrubber system. Pressure drop across the venturi scrubber must be at least 12 inches water during plant operations. The records will be maintained for 2 years and available for inspection by regulatory agency personnel on request.
10. Permittee shall submit a test plan for approval and notify the Bureau of Air Quality Management prior to any compliance testing of the facility. Upon demonstration of compliance with the operational limits of this permit the permittee shall submit a complete application for an operating permit to the Southwest District office. The application must be submitted at least 90 days before expiration of the construction permit. Permittee may continue to operate in compliance with all terms of this permit until expiration of this permit or issuance of an operating permit.
11. DER will be notified 30 days in advance of the compliance test. The test procedures will be EPA reference methods 1, 2, 3, 4, 5, 6 and 13A or 13B as described in 40 CFR 60, Appendix A or any approved alternate test method. The test will be conducted with the plant operating at 115 TPH DAP (+10%) with the dryer burning fuel oil containing 2.4% sulfur (+10%).
12. Periodic emissions tests or tests by the request of the Department at the sources expense will be a condition to any permit to operate. If the source can furnish a study on this source showing a high correlation (.95+) between the emission of any pollutant and plant operation parameters, the periodic emission test for that pollutant may be waived by the Department.
13. Stack sampling facilities will include the eyebolt and angle described in the attached sketch.

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace and Company

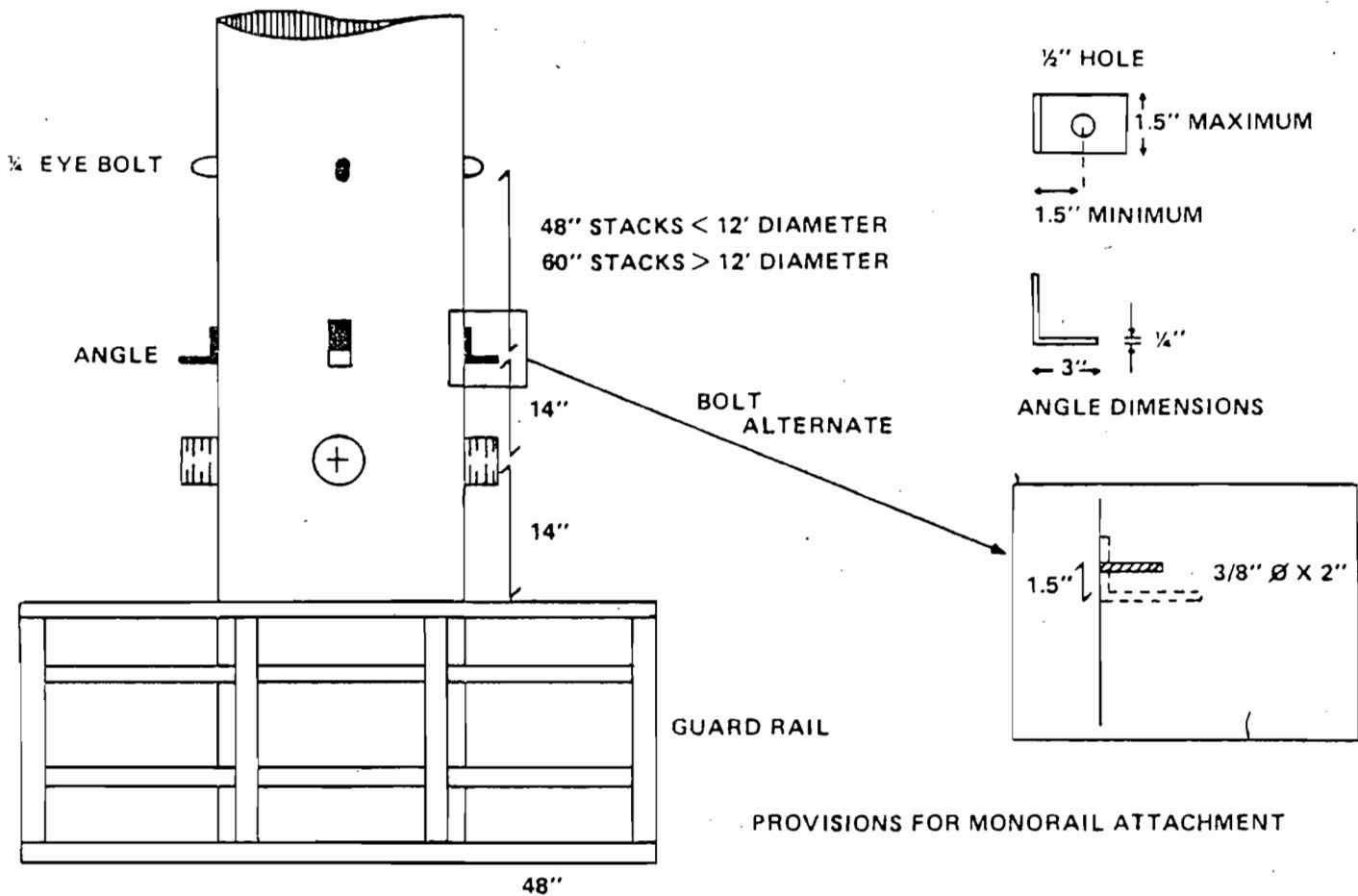
14. The fertilizer plant 300-x(AO 53-25191) will be shut down before No. 3 DAP plant starts up. Fertilizer plants 300-y (AO 53-13210) will cease operations within 6 months after the no. 3 DAP plant start-up. Operation permits will be returned to DER within 10 days of the shut down of each plant.

Expiration Date: December 31, 1980

Issued this _____ day of _____, 19 _____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AN EYEBOLT AND ANGLE SHALL BE ATTACHED DIRECTLY ABOVE EACH PORT OF VERTICAL STACKS AND ABOVE EACH VERTICAL SET OF PORTS FOUND ON THE SIDES OF HORIZONTAL DUCTWORK 1.6 WORKING PLATFORMS. THE DIMENSIONS AND PLACEMENT OF THESE FIXTURES ARE SHOWN IN FIGURE 1-1.



IF EYEBOLT IS MORE THAN 120 INCHES ABOVE THE PLATFORM A PIECE OF CHAIN SHOULD BE ATTACHED TO IT TO BRING THE POINT OF ATTACHMENT WITHIN SAFE REACH. THE EYEBOLT SHOULD BE CAPABLE OF SUPPORTING A 500 POUND WORKING LOAD.

FIGURE 12 - 1



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: DAP Fertilizer Plant New¹ Existing¹
APPLICATION TYPE: Construction Operation Modification
COMPANY NAME: W. R. Grace & Co., Bartow Works COUNTY: Polk
Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Proposed DAP Fertilizer Plant No. 3 stack
SOURCE LOCATION: Street N. of S. R. 60 City W of Bartow
UTM: East 409,290 North 3,086,960
Latitude 27 ° 54 ' 13 "N Longitude 81 ° 55 ' 17 "W
APPLICANT NAME AND TITLE: A. F. Vondrasek, General Manager
APPLICANT ADDRESS: P. O. Box 471, Bartow, FL 33830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of W. R. Grace & Co., Bartow Works

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: A. F. Vondrasek
A. F. Vondrasek, General Manager
Name and Title (Please Type)
Date: 4-16-80 Telephone No. (813) 533-2171

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: D. M. Weatherly
D. M. Weatherly
Name (Please Type)
The D. M. Weatherly Co.
Company Name (Please Type)
1802 Peachtree Rd., N.W. Atlanta, Ga
Mailing Address (Please Type)

Florida Registration No. 5513 Date: 3-3-80 Telephone No. (404) 355-5323

¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Three venturi scrubbers & cyclonic mist eliminators in parallel, using phosphoric acid to remove particulates and ammonia, followed by two vertical packed counter flow scrubbers: one for dryer gases and one for the remaining fumes.
Emissions will comply with DER Rules & Regulations for Particulates and Fluorides.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction January 1981 Completion of Construction July 1982

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Steel tanks & scrubbers	\$1,500,000)	
Ductwork, piping, pumps, blower	1,100,000)	Total \$4,000,000
Electrical & Instrumentation	600,000)	
Engineering & Starting	800,000)	

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None; however this plant will replace 300-X and 300-Y plants averaging a discharge of 67 tons of particulates and 28 tons of fluorides per year. (see permits Nos. AO53-25191 and AO53-13210). The old plants will be phased out within 6 months after the new plant is in normal operations.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes No

F. Normal equipment operating time: hrs/day 16-24 ; days/wk 7 ; wks/yr 50 ; if power plant, hrs/yr 7,000 ; if seasonal, describe: _____

G. If this is a new source or major modification, answer the following questions. (Yes or No)

- | | |
|---|------------|
| 1. Is this source in a non-attainment area for a particular pollutant? | <u>No</u> |
| a. If yes, has "offset" been applied? | _____ |
| b. If yes, has "Lowest Achievable Emission Rate" been applied? | _____ |
| c. If yes, list non-attainment pollutants. | _____ |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. | <u>Yes</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u> |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? | <u>Yes</u> |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? | <u>No</u> |

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: for the proposed DAP plant

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Phos. Acid(100% ^{P₂O₅})	Fluorides	1.8-3.8%	112,000 (dry basis)	sketch No. 1
Ammonia, 100%	-	N.A.	54,000	"
Sulfuric Acid 100%	-	N.A.	3,500	"
Inert filler	-	-	as required	

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 112,000 of 100% P₂O₅, (56 TPH)

2. Product Weight (lbs/hr): 230,000 of diammonium phosphate (115 TPH)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C.	Allowable ³ Emission lbs/hr	Inlet Loading ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulates	28 BACT	98	45 lbs/hr. @650tph	45	<1000	<3500	sketch
Fluorides	3.36	12	0.06 lbs./ton P ₂ O ₅	3.36	70	245	No. 2:
*SO ₂	35	< 70	BACT	39	100	< 175	stack
NO _x	8	28	BACT				
CO	2	7	BACT				

*Only during cold weather spells when natural gas is restricted for brief periods.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
Same "D. M. Weatherly" design as the D. A. P. plant at USSAG at Bartow, Florida	DAP PARTI- culates & Fluorides	> 96%	Not Applicable	Designer's guarantee
	SO ₂	> 65%	N.A.	confirmed by performance test results.
	NO _x	N.A.		
	CO	N.A.		

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard

⁴Emission, if source operated without control (See Section V, Item 3) (it will be physically impossible to operate this plant without the "pollution control equipment functioning. Bypassing it is not possible.

⁵If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural gas	37 MMCF	44 MMCF	30
or			
#5 Fuel Oil (occasionally)	2000 lbs.	2700 lbs.	30
	Intermittent		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 2.4 Percent Ash: 0.04
 Density: 7.7 lbs/gal Typical Percent Nitrogen: N. A.
 Heat Capacity: 18,500 BTU/lb 142,000 BTU/gal
 Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N. A. Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

None. Process "Pond" Water used in scrubbers is combined with contaminated waters from other plants of the chemical complex and recirculated thru cooling ponds. DAP plants have a negative water balance.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 132.5 ft. Stack Diameter: 7'0" ft.
 Gas Flow Rate: 200,000 ACFM Gas Exit Temperature: 110-120° °F.
 Water Vapor Content: saturated 10 % Velocity: approx. 70 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr: Incinerated							

Description of Waste _____
 Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____
 Approximate Number of Hours of Operation per day _____ days/week _____
 Manufacturer _____
 Date Constructed _____ Model No. _____

NOT APPLICABLE

	Volume (ft) ³	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: Cyclone Wet Scrubber Afterburner Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation. See III a & b, based on exist.plants'usage
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.).
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
 Yes [] No

Contaminant	Rate or Concentration
Fluorides	0.06 lbs. /ton 100% P ₂ O ₅ input
Particulates	0.5 lbs. /ton 100% P ₂ O ₅ input
SO ₂	0.7 lbs. /ton 100% P ₂ O ₅ input

- B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [] Yes No

Contaminant	Rate or Concentration

- C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Fluorides	0.06 lbs. /ton P ₂ O ₅ input
DAP Particulates	0.5 lbs. /ton P ₂ O ₅ input
SO ₂	≤ 0.7 lbs. /ton P ₂ O ₅ input

- D. Describe the existing control and treatment technology (if any).

- Control Device/System: venturi-cyclonic scrubber demisters followed by counter flow packed towers.
- Operating Principles: Acceleration, absorption, condensation, deceleration, inertial impact.
- Efficiency: * (to meet standards)
- Capital Costs: \$2,500,000
- Useful Life: 11 yrs. (Packing: 3 yrs.)
- Operating Costs:) Approx. 10-15% of capital cost
- Energy: 2,000 KWH*
- Maintenance Cost:)
- Emissions: 3.7 #F/hr.; ≤ 16 #Particulates/hr.; NH₃=2-10 lbs./hr.; SO₂: negligible, < 25#/hr., (neutralized by NH₃ & scrubbed)

Contaminant	Rate or Concentration
Fluorides:	inlets not known; outlets vary from 1.5 to 3.7 lbs. /hr. *
Particulates:	inlets not known; outlets vary from 6 to 16 lbs. /hr. *
*Note: outlets from our existing fertilizer plant at 45-60 TPH of D.A.P.	

*Explain method of determining D 3 above.

10. Stack Parameters: Existing DAP plant. (see p. 4, H for the proposed stack data.)
- | | | | | | |
|---------------|---------|------|-----------------|-----------|-----|
| a. Height: | 99 | ft. | b. Diameter: | 7.5' | ft. |
| c. Flow Rate: | 126,000 | ACFM | d. Temperature: | 120°-140° | °F |
| e. Velocity: | 47 | FPS | | | |

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.
 - a. Control Device: Venturi scrubbers & demisters followed by vertical counter flow packed towers, which are more efficient than cross-flow or co-current packed scrubbers.
 - b. Operating Principles: Condensation, absorption, acceleration in the venturi, deceleration and inertial impact.
 - c. Efficiency*: to meet standards
 - d. Capital Cost: \$5-6/TPY
 - e. Useful Life: approx. 11 yrs.
 - f. Operating Cost:) Approx. 10-15% of
 - g. Energy*: dependent on plant size
 - h. Maintenance Cost:) capital cost
 - i. Availability of construction materials and process chemicals: good
 - j. Applicability to manufacturing processes: good: venturis are self cleaning.
 - k. Ability to construct with control device, install in available space, and operate within proposed levels: This technology has been proven in Florida.
2. All the existing scrubbing systems use the same principle (E. T. A.) and technology. Venturi scrubbers & packed scrubbers.
 - a. Control Device:
 - b. Operating Principles: same as above
 - c. Efficiency*: to meet EPA & DER standards
 - d. Capital Cost: as above
 - e. Useful Life: approx. 11 yrs.
 - f. Operating Cost: "
 - g. Energy**: as above
 - h. Maintenance Costs: "
 - i. Availability of construction materials and process chemicals:
 - j. Applicability to manufacturing processes:
 - k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency. calculated inlet loading less stack emissions ÷ by inlet.

**Energy to be reported in units of electrical power - KWH design rate. these data are not available from out competitors.

3.
 - a. Control Device: same as above
 - b. Operating Principles:
 - c. Efficiency*:
 - d. Capital Cost:
 - e. Life:
 - f. Operating Cost:
 - g. Energy:
 - h. Maintenance Cost:

*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
 - j. Applicability to manufacturing processes:
 - k. Ability to construct with control device, install in available space and operate within proposed levels:
- 4.
- a. Control Device same as above
 - b. Operating Principles:
 - c. Efficiency*:
 - d. Capital Cost:
 - e. Life:
 - f. Operating Cost:
 - g. Energy:
 - h. Maintenance Cost:
 - i. Availability of construction materials and process chemicals:
 - j. Applicability to manufacturing processes:
 - k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

3 venturi scrubbers & cyclonic demisters followed by 2 counter flow packed scrubbers & demisters.

- 1. Control Device:
- 2. Efficiency*: F > 95%; particul > 96%
- 3. Capital Cost: \$4,000,000
- 4. Life: 11 yrs.
- 5. Operating Cost: 230,000
- 6. Energy: 2000 KWH/hr.
- 7. Maintenance Cost: 180,000
- 8. Manufacturer: "Weatherly" design (or equivalent) made in any local shop.
- 9. Other locations where employed on similar processes:

a. The "Weatherly" wet scrubbing system has been operated successfully at

- (1) Company: USS Agri-Chemicals Division (USSAG) of U.S. Steel Corp.
- (2) Mailing Address: Hwy. 60 W. Bartow, P. O. Box 150
- (3) City: Bartow (4) State: Florida 33830
- (5) Environmental Manager: James Carroll
- (6) Telephone No.: (813) 533-0471

*Explain method of determining efficiency above. inlet loading less stack emissions ÷ by inlet.

(7) Emissions*:

Contaminant	Rate or Concentration	
	Design	Field Test
Fluorides	0.06#/ton P ₂ O ₅	< 0.043#/T (.143mg/scf)
Particulates (D. A. P.)	33.7 lbs./hr.	< 10#/hr. (> .01gr/scf)

(8) Process Rate* approx. 90 TPH and 70 TPH respectively.

b.

- (1) Company: Our own existing DAP plant equipped with a similar scrubbing system has been operating in compliance thru 1979.
- (2) Mailing Address: P. O. Box 471
- (3) City: Bartow (4) State: Florida 33830

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

- (5) Environmental Manager: M. J. Altenburger
 (6) Telephone No.: 813/533-2171
 (7) Emissions*:

Contaminant	Rate or Concentration
Particulates:	14.2 lbs./hr. average, 16.8 lbs./hr. max. at 300 TPH recycle rate = 40 T/yr. (1977)
Fluorides:	11.2T/yr.

- (8) Process Rate*: 300 TPH recycle rate thru' the dryer; 45-60 TPH DAP product rate.
10. Reason for selection and description of systems:

Stack emissions from the D.A.P. fertilizer plant scrubbing system designed by "D. M. WEATHERLY" Engineering Company represent the lowest emissions known to the phosphate industry engineers at this time.

The three venturi scrubbers & demisters installed in parrallel remove most of the ammonia fumes and particulate matter, and the two counter current packed towers represent the most efficient scrubber for the removal of fluorides.

D. M. Weatherly has designed the scrubbing system for USSAG plant in Bartow, Florida, and his design was accepted as B.A.C.T. by D.E.R. at the guaranteed emission level 33.7 lbs./hr. Particulates and 0.06 #F/ton of 100% P₂O₅ input. The plant test data indicate that the Weatherly scrubbing system reduced the stack emissions well below the design criteria.

We therefore believe that the proposed scrubbing systems similar to the Weatherly design, will meet the B.A.C.T. as per D.E.R.'s recent determination of the following parameters:

Particulates	0.5 #/T P ₂ O ₅ input
Fluorides	0.06 #/T P ₂ O ₅ input
SO ₂	0.7 #/T P ₂ O ₅ input

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION Not Required

A. Company Monitored Data

1. _____ no sites _____ TSP _____ () SO²• _____ Wind spd/dir

Period of monitoring _____ / _____ / _____ to _____ / _____ / _____
 month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? _____ Yes _____ No

b) Was instrumentation calibrated in accordance with Department procedures? _____ Yes _____ No _____ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____
 month day year month day year

2. Surface data obtained from (location) _____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO ²	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

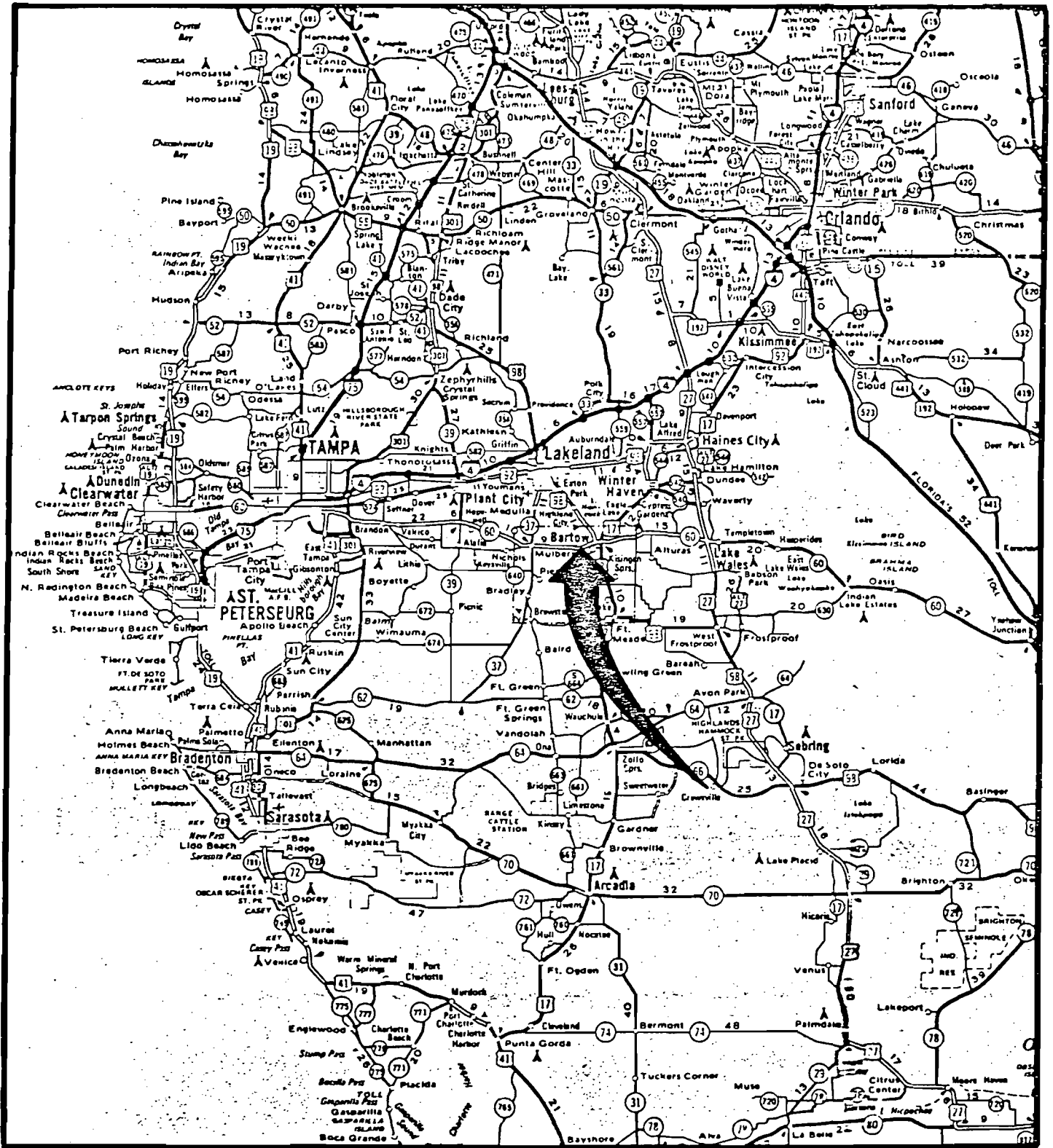


Figure 1. Location of the W. R. Grace Phosphate Fertilizer Complex.

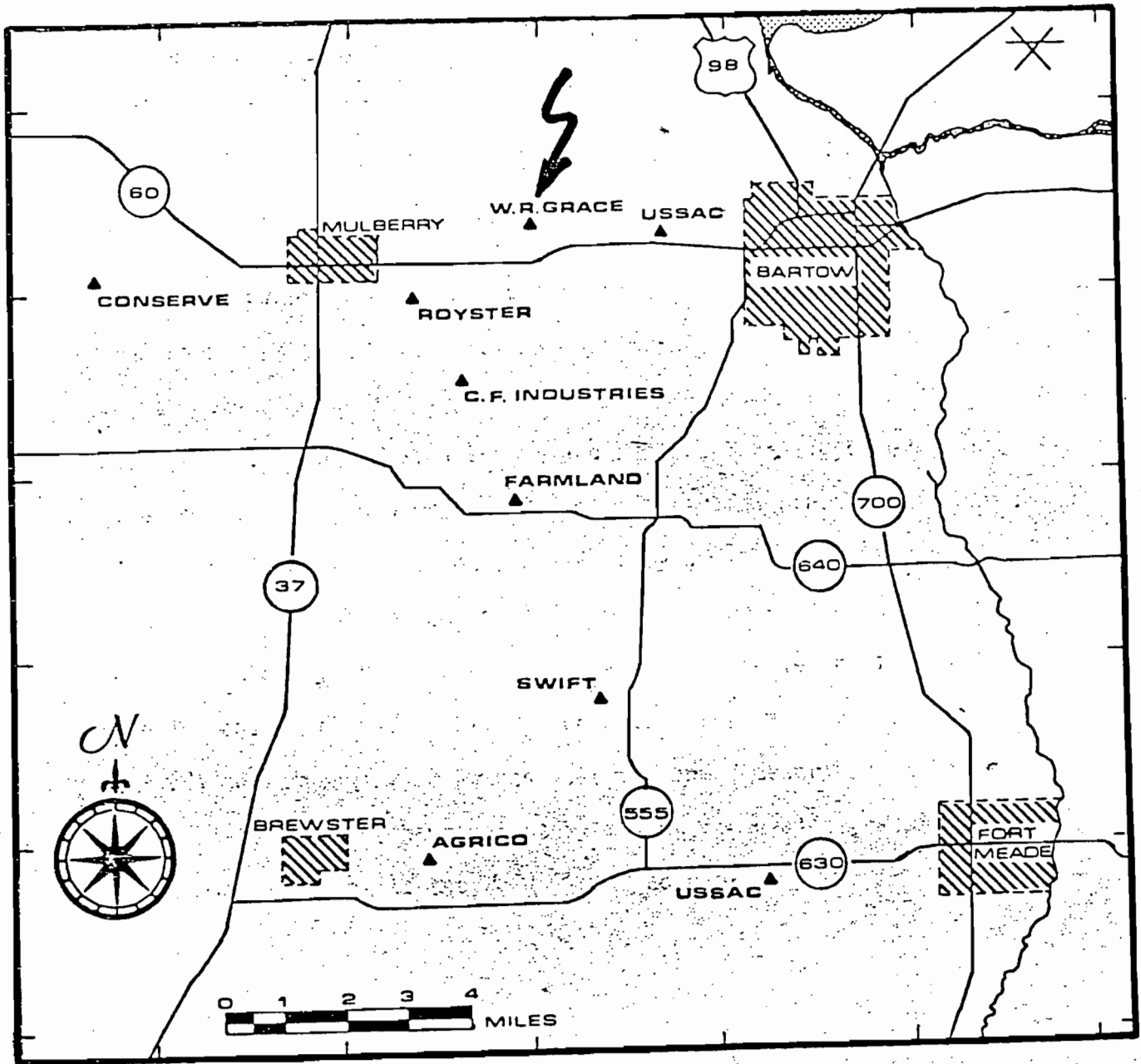
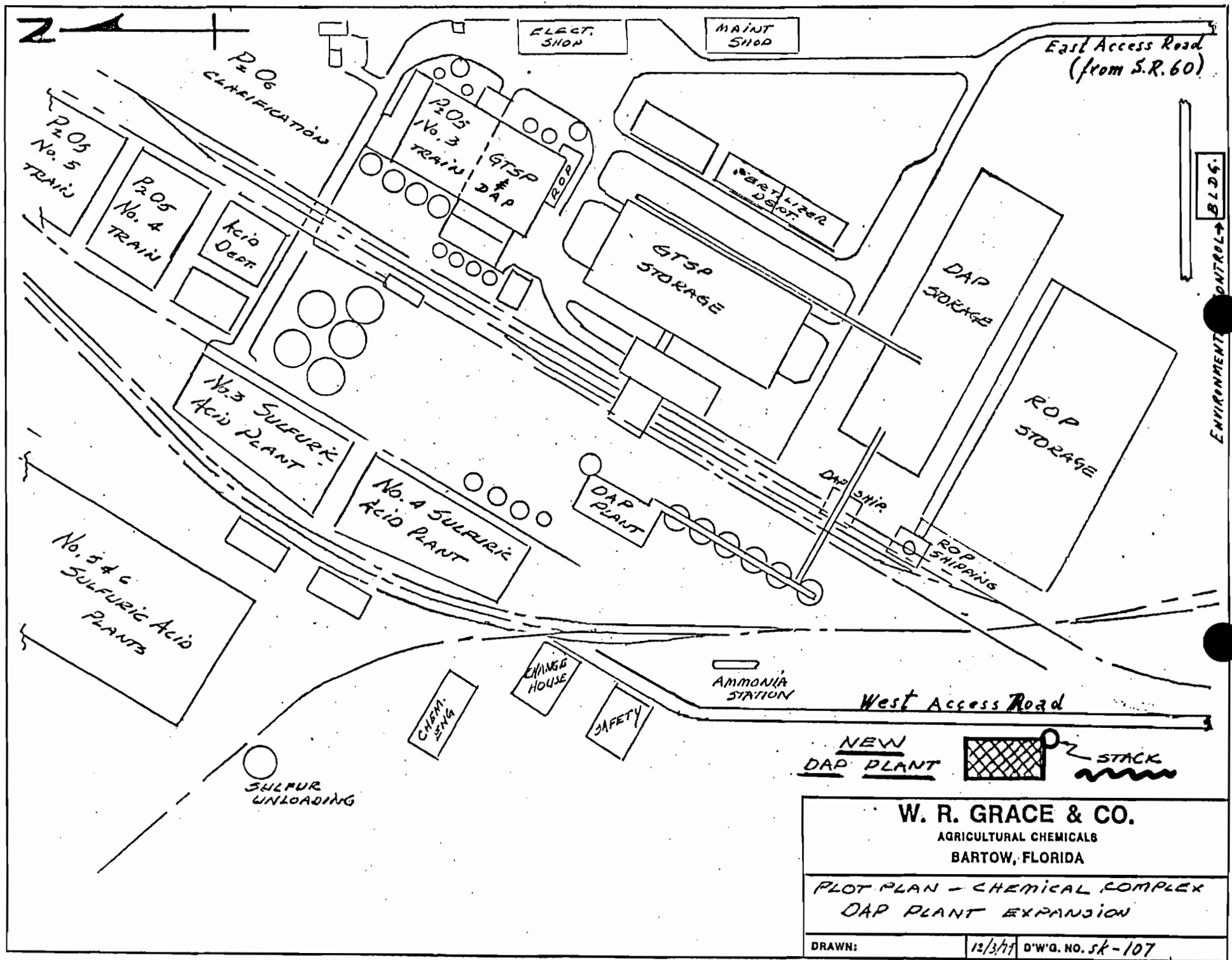


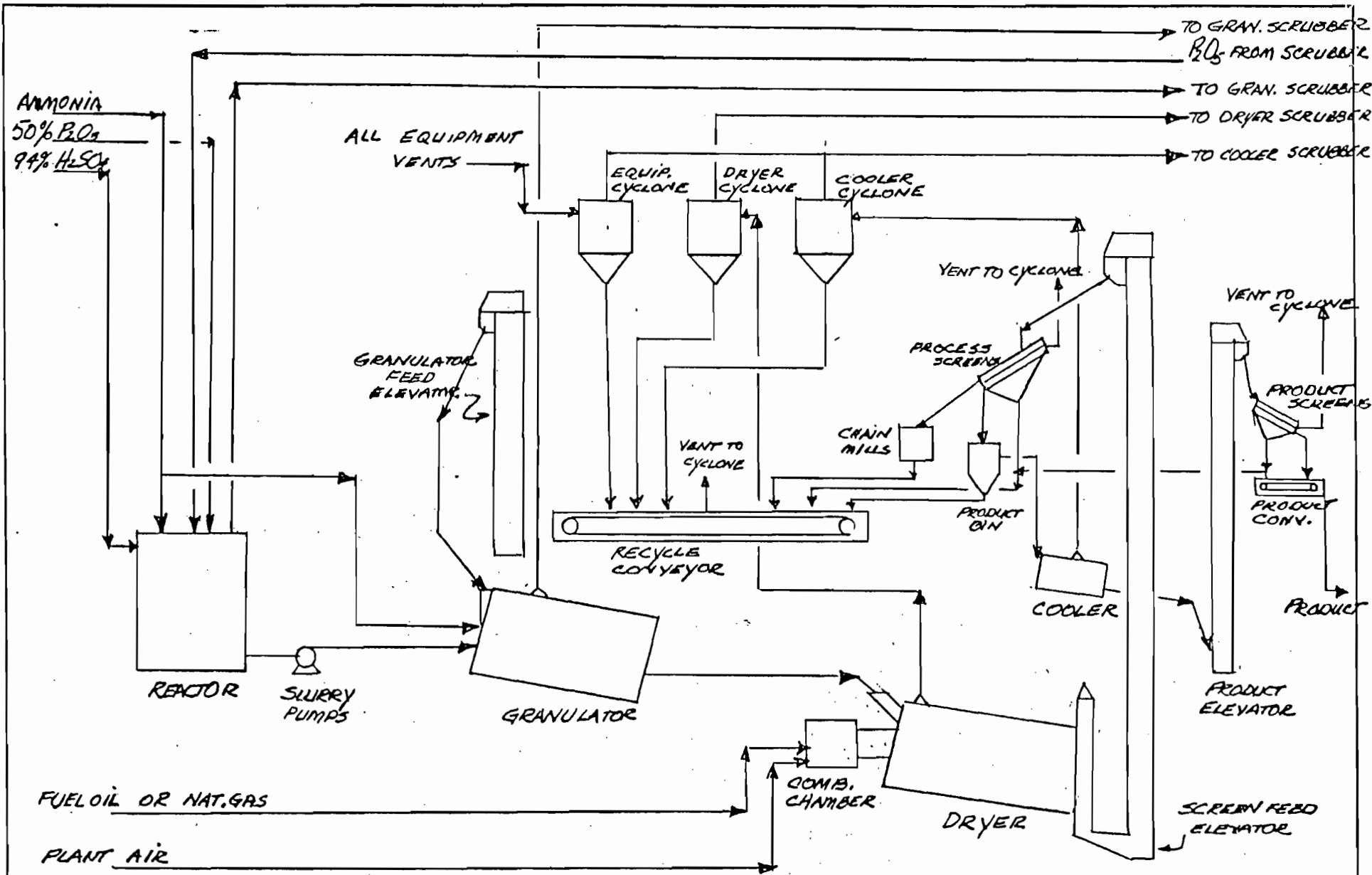
Figure 2. Study Area



W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA

PLOT PLAN - CHEMICAL COMPLEX
 DAP PLANT EXPANSION

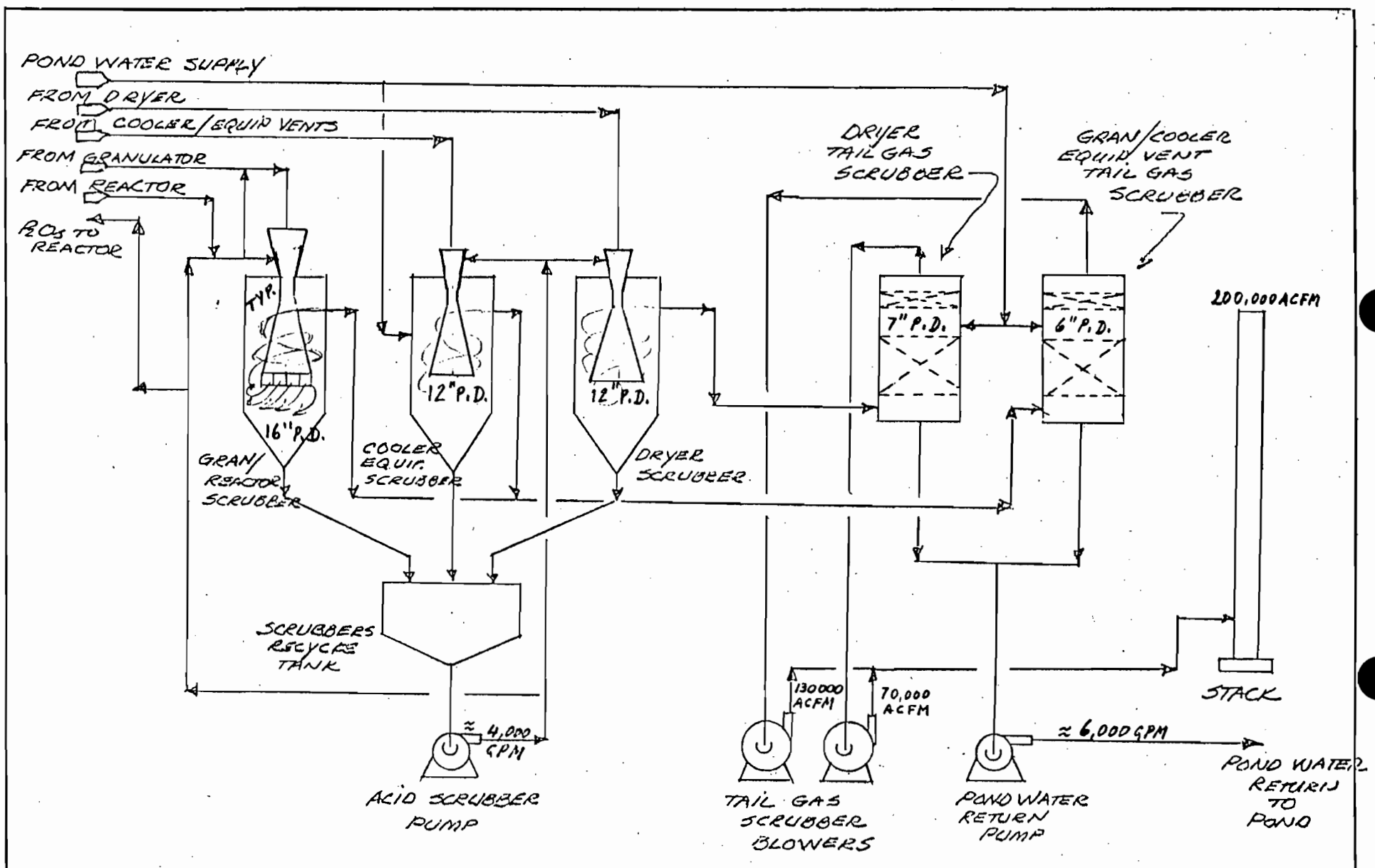
DRAWN: 12/3/77 D'W'G. NO. SK-107



W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA

DAP GRANULATION PLANT
 PROCESS FLOW DIAGRAM - PROCESS

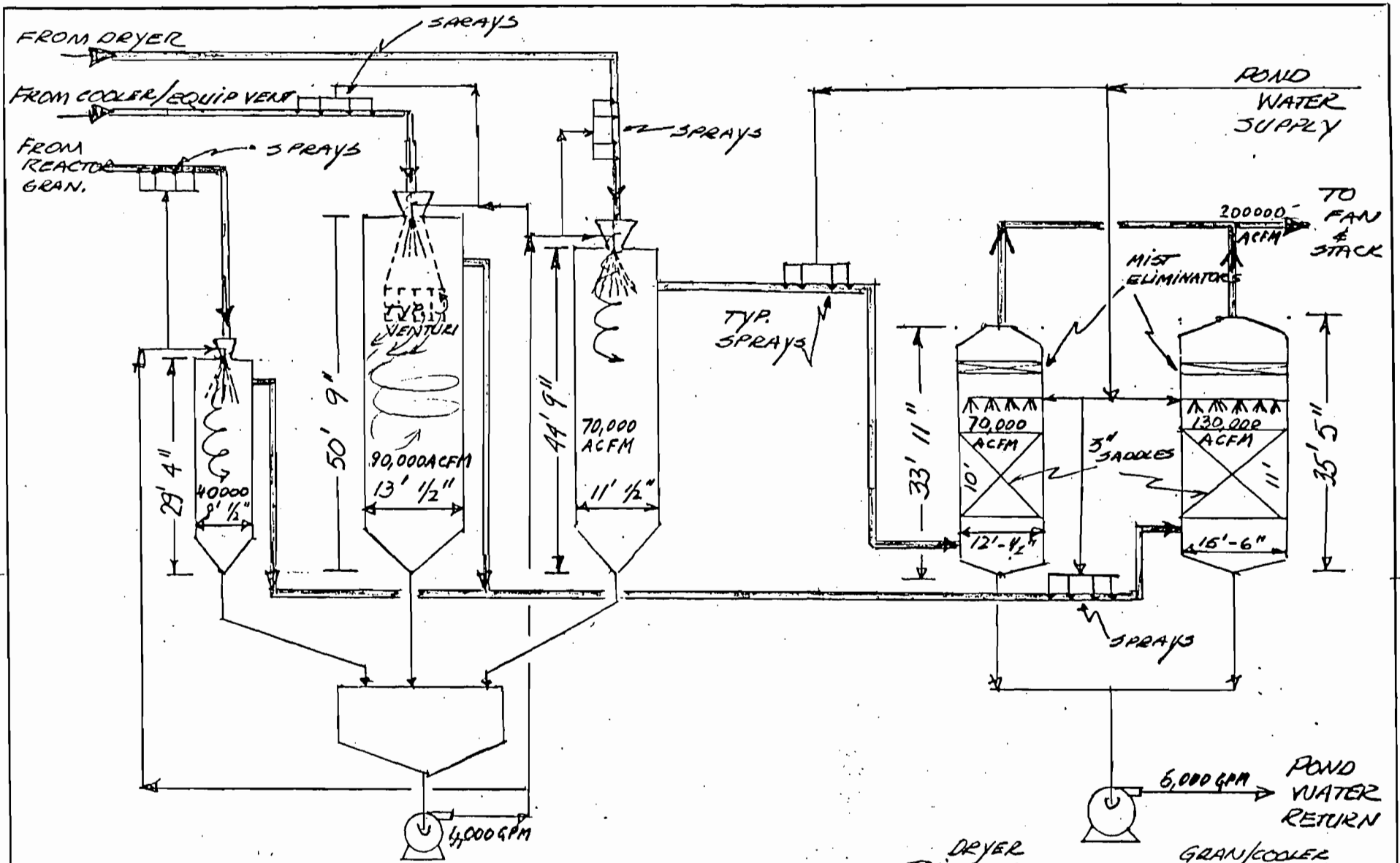
DRAWN: H. CORTES 12/79 D'W'G. NO. 1



W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA

DAP GRANULATION PLANT
 PROCESS FLOW DIAGRAM
 SCRUBBER SYSTEM

DRAWN: H. CORTES REV. 1 D'W'G. NO. 2



REACTOR
GRAN.
SCRUBBER

COOLER
EQUIPMENT
VENT
SCRUBBER

DRYER
SCRUBBER

DRYER
TAIL GAS
SCRUBBER

GRAN/COOLER
EQUIP VENT TAIL
GAS SCRUBBER

W. R. GRACE & CO.
 AGRICULTURAL CHEMICALS
 BARTOW, FLORIDA

DAP GRANULATION PLANT
 PROCESS FLOW DIAGRAM
 SCRUBBER SYSTEM

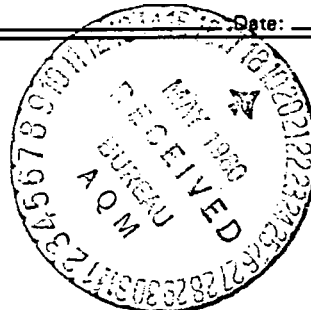
DRAWN: HORTES 12/79 D'W'G. NO. 3

SCALE: 1" = 20'

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Jacob D. Varn
 FROM: Steve Smallwood
 DATE: May 13, 1980
 SUBJ: BACT Amendment - Diammonium Phosphate Plant W. R. Grace and Company, Polk County



Affected Facility: An 115 ton per hour diammonium phosphate (DAP) plant. The plant will manufacture DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric acid and sulfuric acid using a gas fired (no. 5 fuel oil occasionally) dryer, screens, mills, cooler, granulator, reactor and conveying equipment.

Original BACT Requirements:

Pollutant:	Emission Limitation (lbs./TP ₂ O ₅ feed)
Fluoride	0.06
DAP Particulate	34 lbs./hr. or 130 TPY

Amended BACT: Basic change is the addition of a BACT standard for sulfur dioxide.

Pollutant	Emission Limitation	
	Maximum Emission Rate (lbs/TP ₂ O ₅ feed)	Maximum Emission (lbs/hr.)
Fluoride	0.06	3.36
Particulate	0.5	28
Sulfur Dioxide	0.7	35

Justification of the Amendment:

After the Department had published the proposed permit to construct a DAP plant for W. R. Grace and Company but before the permit was issued, the company requested their application for permit be modified to allow the construction of a 115 TPH DAP instead of the original 80 TPH plant. All plant equipment would be increased in size to accomodate the larger flows. The 115 TPH plant would be a major emitting facility (potential to emit more than 100 TPY) of fluoride, particulate and sulfur dioxide and, thus, requires a BACT determination for each pollutant.

Jacob D. Varn
Page Two

Recent (March, 1980) BACT determination on 3 DAP plants (New Wales Chemicals, Inc., Gardiner Inc, and W. R. Grace and Company) had established BACT emission rates for these three pollutants. BAQM believes these rates still represent BACT for this process.

As the production of the modified W. R. Grace DAP plant will increase, the total emissions measured as pounds per hour, will also increase. This revised BACT determination lists a maximum hourly emission which will be included as a special condition for the company to meet in any permit issued to construct the source. The company has volunteered to shut down two older DAP plants at their fertilizer manufacturing complex if the 115 TPH DAP plant can be built. These two plants emit 67.6 TPY particulate, 28.1 TPY fluoride and 80 TPY sulfur dioxide. Maximum emissions from the 115 TPY plant will be 98 TPY particulate, 11.8 TPY fluoride and 122.5 TPY sulfur dioxide. Thus, the facilities proposed in the modified application will result in a net emission difference of 30.4 more TPY particulate, 16.3 TPY fluoride and 42.5 more TPY sulfur dioxide. The permit that would have been issued had the company not requested it be modified would have resulted in an increased emission of 74.1 TPY particulate, 9.0 TPY fluoride and 95 TPY sulfur dioxide. Modeling showed these emissions did not have a significant impact on the ambient air. Thus, the environment would be better off if the modified application is approved instead of the original one.

Shut down of the two existing DAP plants will be a special condition to any permit to construct the 115 TPH DAP plant.

Details of the Analysis May be Obtained by Contacting:

Willard Hanks, Review Engineer
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommendation from: Bureau of Air Quality Management:

By: _____

Steve Smallwood
Steve Smallwood

Date: _____

Approved by: _____

Jacob D. Varn
Jacob D. Varn

Date: _____

23 May 1980

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Jacob D. Varn

FROM: Steve Smallwood *MLC for SS*

DATE: March 28, 1980

SUBJECT: BACT Determination - Diammonium Phosphate Plant,
W. R. Grace & Company, Polk County

Facility: An 80 ton per hour diammonium phosphate (DAP) plant. The plant will produce DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric acid and sulfuric acid using a gas fired (No. 5 fuel oil standby) dryer, screens, mills, cooler, granulator, reactor and conveying equipment. Estimated potential emissions of pollutants subject to the BACT rule are:

Particulate 3,000 tons/year

BACT Determination Requested by the Applicant:

Pollutant	Maximum Emission
Fluoride	0.06 lb/ton P ₂ O ₅ Feed
DAP Particulate	34 lb/hr or 130 TPY

Date of Receipt of a Complete BACT Application:

February 5, 1980

Date of Publication in the Florida Administrative Weekly:

March 28, 1980

Date of Publication in a Newspaper of General Circulation:

April 2, 1980, Tampa Tribune

Jacob D. Varn
Page Two
March 28, 1980

Study Group Members:

Thomas Davis, DER South Florida District, Ft. Myers;
Pepe de Castro, DER Bureau of Wastewater Management & Grants
Tallahassee;
Johnny Cole, DER St. Johns River District, Jacksonville;
Robert Garrett, DER Southwest District, Tampa;
Joseph Griffiths, Hillsborough County Pollution Control, Tampa;
Willard Hanks, DER Bureau of Air Quality Management, Tallahassee

Study Group Recommendations:

	<u>Particulate lb/Ton P₂O₅</u>
Thomas Davis	0.50 (0.015 gr/scf)
Pepe de Castro	0.62 (0.02 gr/scf)
Johnny Cole	1.0 (34 lb/hr)
Robert Garrett	0.33 (0.15 lb/ton DAP)
Joseph Griffiths	0.93 (0.03 gr/scf)
Willard Hanks	0.43 (0.20 lb/TDSP)

BACT Determination by Florida Department of Environmental Regulation:

Pollutant	Maximum Emission
Particulate	0.5 lb/TP ₂ O ₅

Justification of DER Determination:

Particulate Matter: The 0.5 lb/ton P₂O₅ emission limit reduces the applicant's permit request by a factor of 2. However, similarly designed plants can meet this limit selected as representative of Best Available Control Technology.

Details of the Analysis May be Obtained by Contacting:

Victoria Martinez, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

Jacob D. Varn
Page Three
March 28, 1980

Recommendation from: Bureau of Air Quality Management

By: Martin Habel for
Steve Smallwood

Date: March 31, 1980

Approved by: Jacob D. Varn
Jacob D. Varn

Date: 31st MARCH 1980

SS: jr
attachment

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

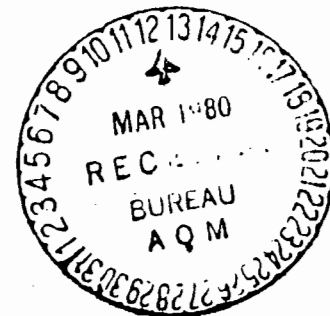
ST. JOHNS RIVER SUBDISTRICT, JACKSONVILLE

TO: Vicky Martinez
BAQM

FROM: Johnny Cole

DATE: March 12, 1980

SUBJECT: BACT Determination for DAP Plants



My recommendations are as follows:

1. For fluoride, the 17-2 limit which is the same as NSPS (0.06 lb F per ton of P₂O₅ input) should be used unless there is some local ambient problem that requires a smaller limit.
2. For particulates, the proposed controls should be BACT. Emission limits should be the rates used in each model unless the model and/or results are not acceptable. In such case, run a CRSTER to establish a limit. Limits in applications:

Gardinier	maximum 10 lbs/hr
New Wales	model needed
Grace	run model; proposed 34 lbs/hr as avg. On PSD page, stated < 50 TPY while on page 3 stated 140 TPY.

3. For SO₂, the use of 2.5% sulfur fuel oil should be BACT.
4. For ammonia, the proposed scrubbers to control other emissions should be BACT.
5. For NO_x, the proposed controls and the nature of the process should be considered BACT.
6. Unless these sources can document otherwise, the acid input should be limited to a 30%-50% P₂O₅ split acid feed.

INTEROFFICE MEMORANDUM

For Routing To District Offices
And/Or To Other Than The Addressee

To: _____	Locn.: _____
To: _____	Locn.: _____
To: _____	Locn.: _____
From: _____	Date: _____

TO: Victoria Martinez, BACT Coordinator

FROM: Willard Hanks *wmh*

DATE: March 5, 1980

SUBJ: Bact Determination - Diammonium Phosphate Plants (DAP)
W. R. Grace & Co./Gardinier, Inc./New Wales Chemical Co.

The applications for permits to construct DAP plants for the subject companies along with emission data from USS Agri-Chemicals and other DAP plants has been reviewed. The control equipment selected by the applicant appears to be the best type available for the process. However, the Department does not have the information needed to establish a standard for particulate and sulfur dioxide emissions from these plants. To the best of my knowledge, the information is not available and a special study program would be required to obtain the data.

I suggest the BACT determinations of emissions standards for these plants be postponed until the plants are built and in operation. The standards would be established based on tests of the actual emission from the facility. This could be handled by the permits to construct listing operation parameters for the control devices and specifying a test program to determine the emission standards. The provisions could also contain a maximum allowable emission, based on the PSD study, which would be permitted. Suggested wording of the permit provisions would be:

1. The emission standards for particulate and sulfur dioxide will be established by a series of emission tests conducted under the Department's supervision at the expense of the applicants with the control devices operating at the following conditions:

Company	Plant Capacity TPH DAP	MIN. ΔP VENTURI (in. H ₂ O)	MIN. GPM FROM VENTURI	MIN. GPM FROM TAIL GAS	% SULFUR IN FUEL OIL	P ₂ O ₅ CONTENT OF VENTURI SCRUBBER LIQUOR
W. R. GRACE	80	12	2,500 total for 3 scrubbers	4,000 total for 2 scrubbers	2.3	20-30
GARDINIER	50	12	1,600 total for 3 scrubbers	2,600 total for 2 scrubbers	2.0	20-30
NEW WALES	70/Train (140 TOTAL)	12	1,600/Train	6,000/Train	2.5	20-30

2. A minimum of 3 test (9 runs) using EPA reference methods 1,2,3,4,5 and 6, as published in 40 CFR 60, Appendix A, dated 7/1/78 will be the basis of the study. One test will be conducted while the scrubbers are clean, one prior to scheduled shutdown for plant for clean up or 6 month-whichever is first, and one about midway between these tests. The plant will be operating near its permitted rate (+10%) with the dryer burning oil containing the maximum per cent sulfur allowed (+15%) during all tests. The standard selected for the source may be up to 10% above the average for all tests but, under no circumstances, will exceed the intern values listed in the construction permit.
3. The Department will be notified 30 days in advance of any test that will be used in establishing the BACT emissions. All valid test data collected during the test period will be considered in establishing the standard.
4. Intern emission standards should be:

Company	Particulate			Sulfur Dioxide	
	Grains/DSCF	lbs/TDAP	lbs/hr.	lbs/TDAP	lbs/hr
W.R. Grace	0.020	0.29	23.0	0.30	25
Gardinier*	0.016	0.23	11.4	0.30	15
New Wales**	0.020	0.23	32.0	0.30	44

5. The fluoride standard is 0.06 lbs. total fluoride per ton P_2O_5 input as measured by reference method 13 A or 13 B as published in 40 CFR 60, Appendix A, dated 7/1/78.

If BACT cannot be established after the plants are built, I recommend the particulate standard be set at 0.20 lbs/TDAP for a total complex which corresponds to the 99.9 percentile of the emission data reported for USS Agri-Chemicals new DAP plant. The sulfur dioxide standard should be 0.30 lbs/TDAP, which is approximately what 2 of the plants requested in their application.

* PSD regulations forces this Company to meet more restrictive emission standards

** For venturi/tailgas scrubber system only. The 0.01 grains/DSCF and 4.42 lbs/hr. for the bag filter serving the cooler is acceptable for BACT.

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
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From: _____	Date: _____

TO: Victoria Martinez

THRU: Steve Smallwood
Philip R. Edwards *PRE*

FROM: Tom Davis *T.D.S.*

DATE: March 11, 1980

SUBJECT: BACT Determination - DAP Fertilizer Plants



My review of the three BACT applications indicates that all would qualify for BACT review for particulates, sulfur dioxide, and fluoride emissions (these pollutants in all applications exceed the 100 ton/yr potential criteria as listed in Chapter 17-2).

My BACT recommendation for each pollutant is as follows:

- (1) Fluorides - inasmuch as Chapter 17-2.03(1)(a) implies that NSPS should be considered as BACT, the NSPS of 0.060 lbs F/ton of P₂O₅ feed is recommended.
- (2) Sulfur Dioxide - the applications indicate there is a SO₂ removal rate in the DAP process of between 60% to 70%. Fuel consumption rates vary between 4.0 and 6.0 gal/ton of P₂O₅ feed. It is recommended that the BACT SO₂ limit be issued as 0.70 lbs. SO₂/ton of P₂O₅ feed. This is equivalent to using 1% S fuel based upon an average consumption rate of 4.5 gal/ton of P₂O₅. The data supplied by Gardinier showed an unusually high fuel consumption rate - roughly 1.4 times the other two facilities. Since there should not be any reason for a large difference between facilities, the Gardinier data was adjusted downwind using a factor of 2 gallons/ton of DAP for fuel usage. The figure of 4.5 gal/ton of P₂O₅ feed fuel usage was the highest value supplied of the three applications (after adjusting the Gardinier data). Accordingly, it is felt that BACT proposed should be readily achievable by all three facilities (Gardinier estimates a SO₂ emission rate of 10 lbs/hr - the proposed BACT would allow 15.8 lbs/hr). It is noted there was virtually no information provided on the economics of low vs high sulfur fuel oil. However, the recommendation offered is felt to be reasonable in that it would allow use of 2.5% S fuel.