May 6, 1980

Mr. Tom Gibbs, Chief
Air and Hazardous Materials
345 Courtland Street, N.E.
USEPA, Region IV
Atlanta, Georgia 30308

Dear Mr. Gibbs:

Attached please find copies of the Air Construct Permits recently issued to IMC New Wales and Gardinier, one each, for DAP plants, to be located in Polk and Hillsborough Counties respectively.

Sincerely,

M. G. Hodges
Environmental Scientist
Bureau of Air Quality Management

MGH:caa

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

May 6, 1980

Mr. Thomas L. Craig, Vice President and
General Manager
New Wales Chemicals, Incorporated
P.O. Box 1035
Mulberry, Florida 33860

Dear Mr. Craig:

Enclosed is Permit Number AC 53-23546, dated May 5, 1980 to New Wales Chemicals, Incorporated, for a DAP plant, issued pursuant to Section Chapter 403, Florida Statutes.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Sincerely,

M. Smallwood FOR

Steve Smallwood, Chief
Bureau of Air Quality Management

DER Form 17-1.122(65)

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

CONSTRUCTION
PERMIT

NO. AC 53-23546

NEW WALES CHEMICALS, INC.
DAP PLANT
MULBERRY, FLORIDA

DATE OF ISSUANCE

MAY 5, 1980

DATE OF EXPIRATION

SEPTEMBER 30, 1983

JACOB D. VARN,
SECRETARY

DER FORM PERM 11-42

Final Determination

New Wales Chemicals, Incorporated

Mulberry, Florida

Construction Permit

AC 53-23546

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

May 5, 1980

New Wales Chemicals, Inc. Construction Permit

Final Determination

New Wales Chemicals, Inc.'s application for a Construction Permit for a diammonium phosphate plant in Polk County has been reviewed by the Bureau of Air Quality Management. Public notice of the Departments Intent to Issue was published in the Tampa Tribune on April 2, 1980. Copies of the preliminary determination have been available for public inspection at the Southwest District Office in Tampa and at the Bureau of Air Quality Management in Tallahassee.

Comments were received from New Wales regarding typographical errors in the permit package which have been corrected in the final determination in Section V. These errors do not effect the permit and are corrected in the amended pages. In addition to these changes, several others have been made in Table I of the permit. The alterations were made to be consistent with the actual phase out of the dry rock process and indicate reductions of permitted emissions of other existing facilities within the New Wales complex. None of the changes affect the impact of proposed facility. The product cooler will be allowed to operate 8,760 hours per year (provision 1). Copies of these changes are enclosed in this determination.

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

APPLICANT: New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

PERMIT/CERTIFICATION
NO. AC 53-23546

COUNTY: Polk

PROJECT: Diammonium Phosphate Plant

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 two 70 TPH (140 TPH total) diammonium phosphate plants with a common cooler facility to be located at the permittee's phosphate fertilizer complex in Polk County near the intersection of highway 640 and the Polk/Hillsborough County line. The UTM coordinates of the proposed plant are 396.700E and 3079.400N.

Construction shall be in accordance with the attached permit application, and plans, documents and drawings except as otherwise noted on page 3 through 4 "Specific Conditions".

Attachments are as follows:*

1. Application to Construct Air Pollution Sources, DER form 17-1.22(16).
2. Table I.
3. Stack Sampling Facilities, Figure 12-1.

*Previously distributed

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

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 penalities 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:

[X] Determination of Best Available Control Technology (BACT)
[X] 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 53-23546
APPLICANT: New Wales Chemicals, Inc.

Specific Conditions

1. Maximum production rate of each plant will be 70 TPH DAP (140 TPH DAP for both plants) and the plants will not operate over 7,920 hours per year. The cooler will be allowed to operate 8,760 hours per year.

2. The maximum allowable discharge through the 6 foot diameter, 120 foot high stacks serving each train will be:

Pollutant	Maximum Emission Rate	Maximum Emission
Particulate	0.5 lbs/ton P_2O_5 feed or 14.1 lbs/hr whichever is less	56 TPY
Fluoride	0.060 lbs. fluoride/ton P_2O_5 feed or 2.1 lbs/hr. whichever is less	9 TPY
Sulfur Dioxide	0.7 lbs/ton P_2O_5 feed or 22 lbs/hr. whichever is less	87 TPY

The maximum allowable discharge of particulate from the bag filters serving the cooler will be 0.01 grains/DSCF and 4.5 lbs./hr. which is 17.8 TPY.

3. Fugitive particulate and fluoride emissions from process, conveying and storage equipment will be controlled by sealing and/or venting all fumes from the equipment to pollution abatement equipment.

4. No. 6 fuel oil for the dryer shall not contain more than 2.5% sulfur.

5. The permittee shall install, calibrate, maintain, operate and record data from flow monitoring devices that can be used to determine total P_2O_5 input to each plant.

6. The permittee will measure and record the pressure drop across each scrubber system. Pressure drop across the venturi scrubber must be at least 12" H_2O during plant operations. These records will be maintained for 2 years and available for inspection by regulatory agency personnel on request.

7. Construction should commence and be completed within a

reasonable time based on the schedule given in the application.

8. Reasonable precautions to prevent fugitive emissions during construction, such as coating or spraying roads and construction sites used by contractors with a liquid as needed to control dust, will be taken by the permittee.

9. 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 53-23546 expires or is replaced by a permit to operate.

10. Stack sampling facilities will include the eyebolt and angle bracket shown in figures 12-1.

11. The company's ambient air station measuring TSP will be operated on a 6 day schedule approved by DER and the data reported to the DER office in Tampa on a quarterly basis.

12. Before construction permit expires, the DAP plant will be sampled for particulate, fluoride, and sulfur dioxide while operation at permitted capacity (±10%) with the dryer burning oil containing 2.5% sulfur (±10%). Test procedures will be 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 other state approved methods. The permittee shall notify the Bureau of Air Quality Management 30 days in advance of the compliance test and shall submit a test plan for approval. P_2O_5 input, pH of the scrubber solution, and pressure drop across the scrubbers will be normally operated and reported, along with test data and results, to the Department.

13. Prior to the testing , the operation permits of all sources listed in Table I will be revised to reduce the allowable emissions from those sources to the values shown. This includes the shut down of nine

facilities; West Phosphate Rock Grinding Plant, West Rock Feed Bin and the Dry Rock Storage Bottom Load Out.

14. Upon demonstration of compliance with the operational limits of this permit and the submission of complete applications for operation permits for each DAP facility and cooler system (3 total), prior to 90 days before expiration of this permit, the permittee may continue to operate in compliance with all terms of this permit until expiration of this permit or issuance of the operation permits.

Jacob D. Varn

Jacob D. Varn
Secretary

Expiration Date:

Issued this 5TH day of May, 19 80.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Table I

(amended)

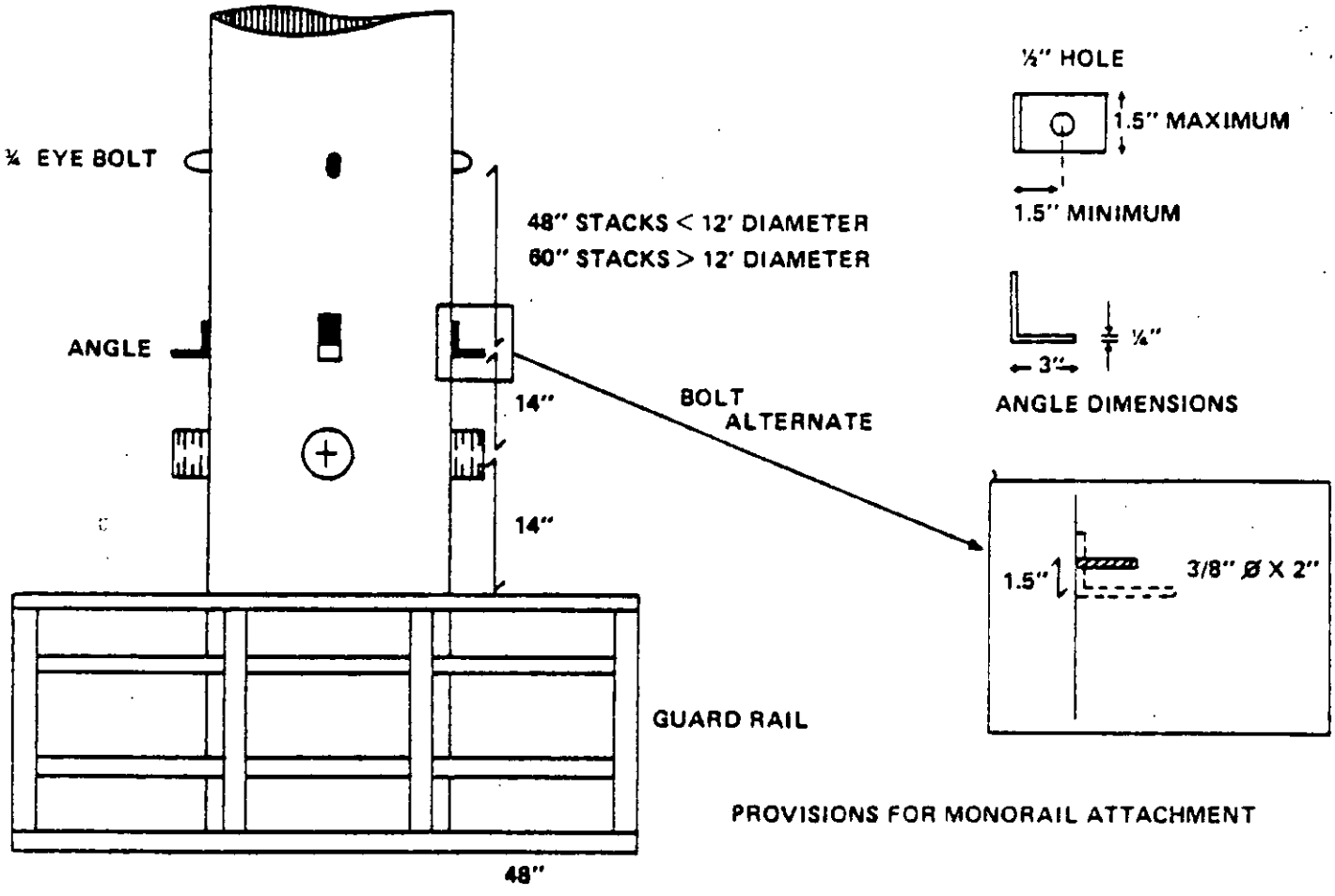
Modifications to Existing Operating Permits

Permit #	Source	Existing Permitted Emission Rate	Modified Emission Rate
AO53-5963	Dry Rock Silo	44.3	0*
AO53-5967	Rock Grind East	41.3	0*
AO53-5968	Phos. Acid Rock Bin East	41.3	0*
AO53-5969	Rock Grind West		0*
AO53-5970	Phos. Acid Rock Bin West	41.3	0*
AO53-5979	Dry Rock L/O		0*
AO53-5980	Dry Rock Storage B/L		0*
AO53-5981	Dryer Product Belt Transfer	44.0	0*
AO53-5982	Wet Rock Dryer	46.1	0*
AO53-7029	AFI Storage Silo A	36	4.8
AO53-5964	Railcar Unload	31.3	4.8
AO53-5974	GSTR Rock Bin	28.0	4.8
AO53-7026	Multiphos. Ship Bin	9.7	3.6
AO53-7027	Limestone Storage Silo	33.3	3.6
AO53-7023	Silica Handling	15.0	1.6
AO53-7028	AFI Storage Silo B	36	4.8
AO53-5965	Fert. Prod. Shp.	41.7	20.0
AO53-7024	AFI Limestone Feed Silos	34.5	3.6
AO53-7022	AFI Truck Ship	40.4	3.6
AO53-7030	AFI Rail Ship	40.3	3.6
AO53-16910	Soda Ash Unloading	5.7	3.6
AO53-16911	Soda Ash Conveying	5.7	3.6
AO53-16908	Multiphos. Cooler A	15.0	4.8
AO53-16909	Multiphos. Cooler B	15.0	4.8
AO53-16905	Multiphos. Sizing	23.0	3.6
AO53-16907	Multiphos.Classification	18.4	3.6
AO53-22670	Second Product L/O (A)	38.5	3.6
AO53-22669	Second Product L/O (B)	38.5	3.6

The actual particulate emissions from the above sources shall be determined by testing at permitted capacity (+ 10%) for particulates. Test methods will be reference methods 1, 2, 3, and 5 as described in 40 CFR 60 Appendix A or by other methods approved by the Department before this permit to construct expires. On particular processes where these testing methods are not practical, a method approved by the Department of estimating the emissions would be acceptable. These should be noted in the results.

*To be shut down

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.



PROVISIONS FOR MONORAIL ATTACHMENT

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

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

TO: District and Subdistrict Managers, and Local Program Directors

ATTN: Air Engineers

FROM: Mark Hodges

DATE: April 9, 1980

SUBJ: BACT Determinations for the following sources -

Gardinier, Inc. Hillsborough Co., DAP Plant;

New Wales Chemicals, Inc., Polk Co., DAP Plant;

W. R. Grace and Co. Polk Co., DAP Plant;

Lonestar Florida, Pennsuco, Inc., Dade Co., Portland Cement Plant;

Attached, for your information and files, are copies of the above mentioned BACT's as determined by the Department of Environmental Regulation.

The emission limitation for each respective source is to be found on the first page of the BACT for that source.

Further information regarding the determinations of these BACT's is available upon request. Address inquiries to Mark Hodges, Department of Environmental Regulation, Bureau of Air Quality Management, 2600 Blair Stone Road, Tallahassee, Florida, 32301.

MH:caa

Attachments(4)

cc: Jim Estler
Archie Lee
Central Files

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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

To: _____ Loctn.: _____

To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

RECEIVED
MAR 31 1980
Office of the Secretary

TO: Jake Varn

FROM: Steve Smallwood MK for S.S.

DATE: March 28, 1980

SUBJECT: Best Available Control Technology (BACT) Determination
Diammonium Phosphate Plant, New Wales Chemicals, Inc.
Polk County

Facility: A 140 ton per hour diammonium phosphate (DAP) plant. The plant will produce DAP fertilizer from anhydrous ammonia, and phosphoric acid using No. 6 oil fired dryer, screens, mills, cooler, reactor and granulator. Estimated potential emission of pollutants subject to the BACT rule are:

Particulate	6,000 tons/year
Sulfur Dioxide	444 tons/year

BACT Determination Requested by the Applicant:

Pollutant	Maximum Allowable Emission
Fluorides	0.060 lbs/ton P_2O_5 Feed

Date of Receipt of a Complete BACT Application:

February 13, 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

Study Group Members:

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

Study Group Recommendations:

	Particulate #/Ton P_2O_5 Feed	Sulfur Dioxide #/Ton P_2O_5 Feed
Thomas Davis	0.50 (0.015 gr/scf)	0.70 (2.5% S in fuel)
Pepe de Castro	0.62 (0.02 gr/scf)	None given
Robert Garrett	0.33 (.15 lb/ton DAP)	None given
Joseph Griffiths	0.83 (0.03 gr/scf on scrubbers) (0.015 gr/scf on baghouse)	None given
Willard Hanks	0.43 (0.20 lbs/ton DAP)	0.65 (.3 lb/TDAP)

BACT Determination by the Florida Department of Environmental Regulation:

Pollutant	Maximum Emission lb/ton P_2O_5 Feed
Sulfur Dioxide	0.7
Particulate	

NOTE: Particulate emission proportioned to 3 stacks as follows:

Stack	Feed	Emissions	Equivalent
Common Cooler	65.1 TP_2O_5/Hr.	4.5 lbs/hr.	-
East Train	32.6 "	14.1 "	0.433 lbs/tonP_2O_5 Feed
West Train	32.6 "	14.1 "	0.433 "
Total for facilities	65.2	32.7 "	0.5 "

Justification of DER Determination

Particulate Matter: The 0.5 lbs/ton P_2O_5 feed emission limitation selected is representative of Best Available Control Technology and can be met with the proposed design.

Sulfur Dioxide: On the basis of the information provided the 0.7 lb/ton P_2O_5 limit is attainable with the 2.5% S fuel proposed by the applicant.

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

Recommendation from: Bureau of Air Quality Management

By: Martin Kahel for
Steve Smallwood

Date: March 31, 1980

Approved by: Jacob D. Varn
Jacob D. Varn

Date: 31st March 1980

SS:jr
attachment

PUBLIC NOTICE

PSD-FL-034

The New Wales Chemical Company proposes to expand their plant in Western Polk County and thereby increase emissions of air pollutants. The expansion will increase production of phosphoric acid (P_2O_5) by 50 percent or 500,000 tons per year. Corresponding increases in phosphate products also will result.

The proposed construction has been reviewed by the U.S. Environmental Protection Agency (EPA) under Federal Prevention of Significant Deterioration regulations (40 CFR 52.21). EPA has made a preliminary determination of approval with conditions. A summary of the basis for this determination and the permit application submitted by New Wales is available for public review in the Bartow Public Library, Bartow, Florida.

The total allowable emissions from the proposed construction is as follows in tons per year:

PM	SO_2	Fluorides	NO_x	Acid Mist
155	2967	39.9	127	104

Further, the maximum increment consumed by the source is as follows:

	Annual	24-Hour	3-Hour
PM	58%	65%	N/A
SO_2	25%	52%	24%

Any person may submit written comments to EPA regarding the proposed modification. All comments, postmarked not later than 30 days from the date of this notice, will be considered by EPA in making a Final Determination regarding approval for construction of this source. These comments will be made available for public review at the above location. Furthermore, a public hearing can be requested by any person. Such requests should be submitted within 15 days of the date of ths notice. Letters should be addressed to:

Mr. Tommie A. Gibbs, Chief
Air Facilities Branch
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30308

PSD-FL-034

PRELIMINARY DETERMINATION SUMMARY

I. Applicant

New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

II. Project Location

The plant site is in western Polk County, Florida, at Highway 640 and County Line Road. UTM coordinates are 396.6km east and 3078.9km north.

III. Project Description

The existing New Wales plant manufactures several fertilizer products using both wet and dry phosphoric acid processes. The dry process, with its existing facilities, is to be eliminated.+ Production of phosphoric acid (P_2O_5) will be increased by 50% or 500,000 tons/year (as 54% concentrate) using the wet process exclusively. Sulfuric acid for the wet process will be provided from two new sulfuric acid plants producing 2000 tons/day H_2SO_4 each. A dual train diammonium phosphate (DAP) plant will produce 140 tons/hour of DAP by reacting anhydrous ammonia with the P_2O_5 produced at the plant.* A third product loadout system will separately handle granular triple super phosphate (GTSP) from the existing complex.

Phosphate rock, as a raw material, is mined and shipped by truck and rail to the New Wales plant from mines within Polk County. These include Kingsford, Phosphoria, Noralyn, and Clear Springs.

Plans are to begin construction in early 1980 with completion by January, 1982. Startups will be phased throughout the interim as construction is completed.

+(The trend towards the increasing use of the wet process is not because of improved technology, but is, instead, because the increasingly expensive fuel costs and air emission regulations are forcing the industry to abandon the dry process)[7].

*A liming station will be built for water treatment.

IV. Source Impact Analysis

Prevention of Significant Air Quality Deterioration (PSD) Regulations require a full preconstruction permit review of the following for major sources and major modifications with allowable emission increases of 50 tons/year or more:

1) Determination of Best Available Control Technology for control of each facility emitting any quantity of a major pollutant.
2) An Air Quality Review of each major pollutant for source impact on National Ambient Air Quality Standards.
3) An Air Quality Review of source impact on allowable increments for SO_2 and TSP, if SO_2 and particulate emissions are major.
4) An Air Quality Review of source impact on Class I areas for major pollutants with any increase in allowable emissions.
5) An Air Quality Review of source-related Growth Impacts.
6) An Air Quality Review of source impact on Soils, Vegetation, and Visibility.

"Phosphate rock processing plants" have been determined to be an important contributor to national air pollution. Therefore, as a named source, potential emissions for the proposed project in excess of 100 tons/year define the major pollutants, 40CFR52.21(b)(1)(i). From Table 1 the major pollutants are particulate matter (PM), sulfur dioxide (SO_2), "total fluorides", nitrogen oxides (NO_x), and acid mists.

Full PSD preconstruction review applies to those major pollutants with net increases in proposed allowable emissions in excess of 50 tons/year, including accumulative increases since the date of any previous PSD permit or August 7, 1977, whichever is more recent, 40CFR52.21 (b)(2). The accumulative increase in total fluoride allowable emissions is less than 50 tons/year under the proposed project. Therefore, total fluoride emissions are exempt from control technology review, 40CFR52.21 (j)(2). Also, the net increase in

total fluoride emissions is less than 50 tons/year, meaning these are also exempt from PSD impact analyses, 40CFR52.21 (k)(1)(ii).

Emissions data from Tables 1 through 4 is used to determine applicability of PSD regulations. In Tables 1 and 2, SO_2 emissions from the proposed H_2SO_4 plants result when sulfur burned in the furnaces to form SO_2 is not completely oxidized to SO_3 by the catalytic converter. Acid mists of H_2SO_4 result from carryover of liquid when SO_3 is passed through a water solution of H_2SO_4 in making the concentrated H_2SO_4 final product. NO_x emissions occur from fixation of atmospheric nitrogen (N_2) under the extreme heat conditions in the sulfur burners.

"Total fluorides" means elemental fluorine and all fluoride compounds as measured by Methods 13A or 13B. Fluorides naturally present in phosphate rock (about 4%) are vaporized and emitted by the heat of reaction between H_2SO_4 and phosphate rock in P_2O_5 production.* A portion of these fluoride contaminates are also emitted as fugitives from the gypsum pond, with HF being the predominant species in this instance. Heat of reaction between ammonia (NH_3) and P_2O_5 in the DAP plant causes fluoride compounds to be vaporized and emitted in this facility, with SiF_4 being the predominant species here.

SO_2 and NO_x emissions in the DAP plant occur from fuel oil burning in the product dryer. The DAP product is dried so it may be handled as a solid.

PM emissions from the GTSP loadout system will consist of airborne GTSP arising from truck and rail car loading. PM emissions from the new liming station will consist of lime (CaO) and limestone ($CaCO_3$). These materials will be trucked into New Wales daily and will be pneumatically transferred to storage bins for use in treating process waters for recycling within the plant.

*These are silicon fluoride compounds, and to a lesser extent, HF.

TABLE I

POTENTIAL AIR EMISSIONS FOR THE PROPOSED PROJECTS (tons/year)

Facility	PM	CO	SO_2	Total Fluorides	NO_x	HC	Acid Mist
No. 4 H_2SO_4 plant	0	0	1387	0	52	0	520
No. 5 H_2SO_4 plant	0	0	1387	0	52	0	520
No. 3 P_2O_5 plant	0	0	0	124	0	0	0
DAP plant	8916	6.1	491	436	23	1.2	0
GTSP product loadout	36	0	0	0	0	0	0
Liming station	60	0	0	0	0	0	0
Gypsum pond (fugitive emissions)	0	0	0	17.5	0	0	0
Total	9012	6.1	3265	577.5	127	1.2	1040

TABLE II

ALLOWABLE EMISSIONS FOR THE PROPOSED PROJECTS (tons/year)

Facility	PM	CO *	SO_2	Fluorides	NO_x	HC *	Acid Mist
No. 4 H_2SO_4 plant	0	0	1387	0	52	0	52
No. 5 H_2SO_4 plant	0	0	1387	0	52	0	52
No. 3 P_2O_5 plant	0	0	0	5.0	0	0	0
DAP plant	148.4	6.1	193	17.4	23	1.2	0
GTSP product loadout	6.0	0	0	0	0	0	0
Liming station	0.6	0	0	0	0	0	0
Gypsum pond (fugitive emissions)	0	0	0	17.5	0	0	0
Total	155.0	6.1	2967	39.9	127	1.2	104

*CO and HC are not major pollutants, and are therefore not regulated by this PSD permit.

TABLE III

POTENTIAL EMISSIONS OF FACILITIES CONSTRUCTED

SINCE AUGUST 7, 1977 (TONS/YEAR)

Facility	PM	CO	SO_2	Total Fluorides	NO_x	HC	Acid Mist
Multiphos. Shipping	399	0	0	0	0	0	0
Multiphos. Plant	315	0	964	79	55	0	0
Multiphos. Soda Ash Unloading	56	0	0	0	0	0	0
Multiphos. Soda Ash Conveying	56	0	0	0	0	0	0
Multiphos. Coolers	2050	0	0	0	0	0	0
Multiphos. Sizing	355	0	0	0	0	0	0
Multiphos. Classifying	157	0	0	0	0	0	0
2nd Product Loadout	36	0	0	0	0	0	0
Uranium Rec. Solvent Ext.	0	0	0	1	0	34	0
Uranium Rec. Refining	48	0	13	0	1	0	0
Total	3472	0	977	80	50	34	0

TABLE IV

ACTUAL EMISSIONS FROM FACILITIES BEING PHASED OUT IN CONJUNCTION WITH THIS PERMIT
(ton/year)

Facility	PM	SO_2	NO_x
Dry Rock Silo	3.9	0.0	0.0
Rock Grinding-west	12.3	0.0	0.0
Dry Rock Load-out (never used)	0.0	0.0	0.0
Rock Grinding-east	12.2	0.0	0.0
Dry Rock Silo bottom	0.0	0.0	0.0
Dryer Prod. Belt. Trans.	3.9		0.0
Wet Rock Dryer*	100.9	1,576.80	88.
Phos. Acid Rock Bin-west	3.9	0.0	0.0
Phos. Acid Rock Bin-east	3.9	0.0	0.0
Total	140.9	1,576.80	88.

*This dryer consumes 1,000 gallons of No. 6 oil per hour, and is being shutdown.

A. Control Technology Review

PSD regulations require Best Available Control Technology (BACT) be applied to major pollutants where allowable emissions are to exceed 50 tons/year, 40CFR52.21 (j)(2).

NSPS specifies SO_2 and acid mist emission limitations for the two proposed H_2SO_4 plants. These serve as a starting point for defining BACT. A recent review of NSPS for sulfuric acid plants sponsored by EPA concluded the current emission limitations not be made more stringent.(2) Therefore, the applicant proposed NSPS levels as BACT. EPA agrees with the proposed limits as case by case BACT for these sulfuric acid plants.

Proposed BACT for control of H_2SO_4 plant SO_2 emissions is the double absorption process. The typical single absorption process is not capable of meeting current SO_2 emission standards when considering the economics of converter design. A platinum/vanadium pentoxide catalyst converts SO_2 to SO_3 in the converter. Catalyst changeover will be once every five years in the first 3 of 4 beds to ensure SO_2 is converted to SO_3 in high yield, avoiding unnecessary SO_2 emissions. A 3-year changeover interval is not recommended because it would cut pre-tax profits by 20%.(2) The sodium sulfite/bisulfite scrubber and the ammonia scrubber systems were considered feasible, but were rejected as SO_2 control measures because these systems introduce complex technology, they are relatively untested, and the SO_2 emission control would not be significantly greater than that obtainable through double absorption alone. Since NSPS promulgation, only one H_2SO_4 plant has used an alternate molecular sieve control technology, and this system has since been retrofitted due to operational difficulties.

Acid mists from H_2SO_4 plants have historically been controlled by use of electrostatic precipitators (ESP). Power and maintenance costs are high and ESP's are bulky in size. In general, ESP's have been superseded by fiber-type mist eliminators for tail gas cleanup. New Wales intends to use the Brink HV (high velocity) mist eliminators. HE (high efficiency) mist eliminators are an alternate consideration. The HV types work just as well, require less space, and can be built at a lower cost than HE types. Therefore, HE mist eliminators are rejected. Acid mists of H_2SO_4 are also controlled in part by a 10%

visible emissions standard imposed by the NSPS. Acid mists form a blue-white plume where emitted.

NO_x emissions from combustion sources are commonly controlled by reducing the nitrogen content of the fuel, reducing the air/fuel ratio, and reducing the peak flame temperature. None of these methods are applicable to sulfur burners in H_2SO_4 plants. The sulfur (fuel) in the sulfur burners is essentially nitrogen-free. At reduced burner air/fuel ratios, the converter temperature increases and the absorber efficiency drops off resulting in increased SO_2 emissions. Also, combustion air in a sulfur burner is introduced adjacent to the sulfur nozzle, meaning the concept of a "low NO_x" burner is not applicable because no air is mixed with the sulfur in the burner to begin with. Steam injection would foul the converter catalyst and cause excessive acid mist emissions. As a point of comparison, however, a 2000 TPD H_2SO_4 plant will produce 200,000 lb/hr of useful steam and emit 13 lb/hr NO_x while an oil-fired boiler producing 200,000 lb/hr steam will emit 80-170 lb/hr NO_x. Proposed allowable emissions are based on New Wales' stack testing results of an identical existing 2000 TPD H_2SO_4 plant. The emission factor developed was 2.1×10^{-6} lb NO_x/dscf, or 18ppm. No literature value can be found for reference. By comparison, however, NO_x concentrations in power boiler flue gases average 100-200ppm.

Exclusive use of the wet rock process (wet rock has 12% moisture) eliminates the fugitive PM dust problem associated with dry rock handling.[7] Therefore, the proposed P_2O_5 plant will have only fluoride emissions. NSPS requires total fluoride emissions from this source category be no greater than 0.020 lb/ton of equivalent P_2O_5 feed. Gaseous fluoride compounds generated from the digester and the filter will be vented to a common spray crossflow packed scrubber. Scrubbers identical to this are installed in the New Wales No. 1 and 2 P_2O_5 plants, and these have successfully complied with NSPS emission limitations.

Emissions control is more elaborate for the DAP plant because of the greater potential for PM to plug scrubber packings and spray nozzles. The ammonia used in DAP manufacturing neutralizes the process flow medium such that SiF_4 contaminants form gelatinous deposits of polymeric silica ($Si(OH)_4$ and H_2SiF_6) responsible for

plugging. This problem is avoided by placing a coaxial venturi scrubber in series and preceding a secondary scrubber. This primary scrubber removes excess PM and ammonia by using acidic pond water as the scrubbing solution. It is designed to be self-cleaning to avoid plugging. The secondary scrubber is a packed type similar to the one to be used in the P_2O_5 plant except that the flow of scrubbing medium (pond water) is countercurrent to tail gas flow instead of "crossflow" or normal (A crossflow scrubber may be described as a compromise between a concurrent and a countercurrent flow scrubber.) In spite of the use of a dual scrubber system, however, it is still necessary to periodically shutdown a DAP plant for scrubber cleaning. Therefore, the secondary scrubber is designed to meet 0.01 gr/dscf and is shutdown for cleaning when PM emissions approach 0.02 gr/dscf. Finally, the tail gas stream will pass through a mist eliminator before being emitted to the atmosphere. Note that the emission controls for the DAP plant coexist in duplicate since the process flow is a dual train system.

A bag collector with 99% control of potential emissions is proposed for use on each of 2 DAP coolers. High ammonia vapor levels keep fluoride emissions suppressed so that PM is the only significant pollutant at this facility. The PM recovered in the filters is actually DAP product, and when retrieved, increases the total product yield. Wet scrubbers could be just as effective as bag filters. However, the use of pond water as the scrubbing medium might introduce fluoride emissions into a source that otherwise was uncontaminated.

The DAP dryer will be a source of those emissions commonly associated with combustion. No. 6 residual oil at 2.5% S will be fired at a rate of 140 gal/hr in each of the two dual trains.* AP42 emission factors for fuel oil combustion are used to estimate potential emissions. On the basis of the fuel analyses, one would project an SO_2 emission rate of 56 lb/hr from each train. New Wales believes they can meet a 22 lb/hr SO_2 emission rate, however, because ammonia vapors offer a strong natural suppression effect on the acidic SO_2 emissions. PM emissions are controlled by the same wet scrubbing systems used for controlling reactor and granulator emissions from each train. NO_x emissions are controlled by steam

DAP NO_x

*The 140 gal/hr rate is based on the assumption that two gallons of fuel oil are required to dry one ton of DAP product.

atomizing the fuel oil and injecting 300 to 500 percent excess quench air. Because of the nature of the drying operation, the burners function similar to a "low NO_x burner" design. Air/fuel ratios are controlled by use of orifices in air and fuel lines and by varying the load on the oil pump.* In actual practice fuel oil is used as an alternate heat source. Primary heat for the dryers will be excess steam from the H_2SO_4 plants. For permitting purposes, however, it is assumed dryers operate continuously.

PM emissions from the liming station occur only when lime and limestone are discharged to two storage silos. Emission rates are based on 0.010 gr/dscf at 1600 acfm each. Bag filters are the obvious choice for control technology.

The third product loadout system for GTSP will be identical to a second now in operation. There will be two negative air system bag filters to recover product during loading of trucks and rail cars. A maximum 0.010 gr/dscf is achievable. Product recovered by bag filters increases the total product yield.

The control technologies proposed by New Wales comply with NSPS and BACT requirements. The use of double absorption for H_2SO_4 plants has been the chosen technology in 28 of 32 new or modified H_2SO_4 plants built since 1971, with all 32 plants having the acid mist eliminators being proposed by New Wales. The control technologies for the phosphate rock processes where chosen for being the best systems currently available within the industry.

*The concept of air/fuel ratio control by flue gas oxygen monitoring is often applied to combustion sources to minimize NO_x emissions. In such cases the flue gas oxygen monitor assists in maintaining excess air within a narrow optimum range of 10 to 20 percent over stoichiometry. Such instrumentation is not applicable to DAP dryers, however, because these are designed to operate over a wide range of 300 to 500 percent excess air.

B. Source Impact on Class II Increments

PM and SO_2 are major pollutants with defined allowable Class II increments, 40CFR52.21 (c). Increments provide for future industrial growth in areas shown not to violate National Ambient Air Quality Standards (NAAQS).

New Wales' increment impacts were evaluated using air dispersion models approved by the EPA Guideline for Air Quality Models, March 1978. Meteorological model input data was obtained for the period 1970 through 1974 from the National Weather Service in Tampa, Florida, 25 miles west of the source.

The CRSTER model (single source model) was used initially. Proposed PM emissions and SO_2 emissions of this permit were examined for ground level concentration (g.l.c.) impacts. The first CRSTER run revealed the annual mean g.l.c.'s, maximum 24-hr average g.l.c.'s, and the 2nd highest 24-hr averaged g.l.c.'s for each receptor at a range of 0.5 to 2.5 km from the source. A second CRSTER run with PM proposed emissions and receptors spaced 2.0 to 5.0 km from the source resolved the PM "impact areas". Impact areas are areas outside of which g.l.c.'s from a source's emissions are less than significance levels defined in PSD regulations. They may be isopleths, but for simplicity are often drawn as unresolved circles. Impact areas expressed as circles are shown below for PM and SO_2 proposed emissions.

Parameter	Significance Level	Impact Area Radii
PM, annual geo. mean	1 $\mu g/m^3$	2.0 km
PM, 24-hr mean	5 $\mu g/m^3$	3.4 km
SO_2, annual mean	1 $\mu g/m^3$	30. km
SO_2, 24-hr mean	5 $\mu g/m^3$	55 km
SO_2, 3-hr mean	25 $\mu g/m^3$	72 km

The SO_2 long term and short term averaged g.l.c.'s and impact areas were defined in a series of five CRSTER runs.

At this point, model results were reviewed to determine which year's meteorological data from 1970 through 1974 had given the worst case annual mean g.l.c.'s for both PM and SO_2. Similarly, 24-hr and 3-hr intervals of meteorological data were analyzed to determine what periods resulted in worst case second highest g.l.c.'s. (The highest short term average g.l.c.'s were properly ignored because a broad meteorological data base of five years had been used.) These selections provided the meteorological data base for all subsequent short term impact modeling which consisted of five predominent wind directions for PM 24-hr average impacts, five similar wind directions for SO_2 24-hr average impacts, and four wind directions for SO_2 3-hr average impacts.

The PTMTPW model (multiple point source model) was used to refine second worst case short term PM and SO_2 impacts disclosed by CRSTER. PM and SO_2 emissions of this permit with other increases in allowable emissions at New Wales since 1-6-75 were modeled along with all other increment consuming emissions within a 50 mile radius. This emission inventory was prepared by examining permit files at the Florida Department of Environmental Regulation office in Tampa. The list included twenty-five PM and SO_2 sources. New Wales' increment emissions were modeled with upwind increment emissions to project downwind g.l.c.'s for any given wind direction selected.

The Air Quality Display Model (AQDM) was run to determine annual mean SO_2 and PM increment consumption using the 1970 through 1974 meteorological data in the STAR format with five stability classes.

The worst case increment consumption concluded from PTMTPW and AQDM modeling is summarized below:

Parameter	Allowable Increment	Increment Consumed
PM, annual geo. mean	19	11
PM, 24-hr mean	37	24
SO_2, annual mean	20	5
SO_2, 24-hr mean	91	47
SO_2, 3-hr mean	512	124

C. Source Impacts on National Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQS) protect public health and welfare, Table 5. PSD regulations required the affected permit applicant to demonstrate their proposed allowable emissions will not cause or contribute to any NAAQS violations, 40 CFR 52.21 (k)(1).

PM, SO_2, and NO_x are New Wales' major pollutants for which NAAQS exist. For permit applications submitted after August 7, 1978, the application must use continuous air quality monitoring data from the previous year to support conclusions that NAAQS would not be violated, 40 CFR 52.21 (h)(2). This monitoring requirement for PM, SO_2, and NO_x was waived by the Administrator, however, due to a consideration of several factors. This exempting authority is also defined at 40 CFR 52.21 (n)(2).

NO_x monitoring was not required because New Wales adequately demonstrated that increased NO_x emissions associated with this permit would impact the annual average g.l.c. at less than 1 ug/m^3, or less than the significance level defined in PSD regulations. Additionally, this value is less than 1 percent of the annual mean 100 ug/m^3 NAAQS, and does not justify the source to be required to monitor NO_x. NO_x allowable emissions in this permit were modeled with AQDM with 1970 through 1974 meteorological data supporting this determination.

Site-specific SO_2 monitoring was not required because the permit applicant's consultant had available existing SO_2 monitoring data for the period January 1977 through January 1978. This data from four monitoring sites situated within ten miles northeast of New Wales reflected existing air quality in the predominant downwind region of the source. The EPA Reference Method (40 CFR 50, Appendix A) 24-hour SO_2 bubbler was the instrumentation. The highest annual mean value was 9.2 ug/m^3; the highest 24-hour values, 215 ug/m^3, with the second highest 24-hour value being only 92 ug/m^3 at that same site. Since existing SO_2 air quality for the year 1977 indicated no threat to NAAQS, the Administrator decided additional SO_2 monitoring should not be required.

Monitoring of total suspended particulate (TSP) is done with "high volume samplers" to assess the impact of existing PM emissions and background on existing TSP air quality. New Wales has operated a high volume sampler since January 1975 six miles west of their plant.

This is in an upwind direction from the source 90 percent of the time, and therefore provides a good indication of existing background TSP. From 1975 to 1979 annual geometric mean values ranged 28.7 to 38.8 ug/m^3. The highest 24-hour value was 132 ug/m^3. Since these values indicate no threat to the NAAQS, and PM allowable emissions increases for the source in this permit are only 14.1 tons per year, EPA decided additional site-specific TSP monitoring should not be required.

Modeling the additive impacts of proposed allowable PM and SO_2 emissions along with permitted existing and new source emissions within 50 km was the technique used by the applicant to demonstrate no threat of NAAQS violations for these pollutants. This emission inventory was obtained from the FDER permit files in Tampa.

CRSTER was used to select five predominant wind directions for PM emission 24-hour average increment impact, five directions for the SO_2 emission 24-hour average, and four directions for the SO_2 3-hour increment impact study. These same selected meteorological data were used to assess impacts of all existing and proposed allowable emissions on the 24-hour and 3-hour period NAAQS. The Air Quality Display Model (AQDM) was used to assess impacts of all proposed and permitted emissions on the annual NAAQS, and PTMTPW was used to project short-term impacts.

Background concentrations for SO_2 in NAAQS modeling are assumed 20 ug/m^3 in accordance with EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), May 1978. Background concentrations for TSP are assumed 40 ug/m^3 in accordance with the same document. Both of these assume backgrounds more conservative than those actually measured in the site's vicinity from the above discussion. These background concentrations are added to worst case g.l.c.'s from the PTMTPW and AQDM models to project worst-case future air quality. The results summarized below demonstrate worst case future air quality within each applicable NAAQS from Table 5, and on this basis New Wales demonstrates proposed allowable emission increases from this permit will cause no NAAQS violations.

Parameter	Background (ug/m^3)	Worst Case G.L.C. (ug/m^3)	Projected Future Air Quality (ug/m^3)	NAAQS (ug/m^3)
TSP, Annual Geo. Mean	40	20	60	75
TSP, 24-Hr Mean	65	42	107	150
SO_2, Annual Mean	20	50	70	80
SO_2, 24-Hr Mean	20	174	194	365
SO_2, 3-Hr. Mean	20	393	413	1300

*This background concentration was selected by the applicant as a conservative estimate.

TABLE V

National Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard ($\mu g/m^3$)	Secondary Standard ($\mu g/m^3$)
Sulfur Dioxide	Annual Arithmetic Mean	80	--
	24-Hour*	365	
	3-Hour*	--	1,300
Particulate Matter	Annual Geometric Mean	75	60
	24-Hour*	260	150
Carbon Monoxide	8-Hour*	10,000	10,000
	1-Hour*	40,000	40,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100
Ozone	1-Hour*	240	240
Lead	Calendar Quarter	1.5	1.5
	Arithmetic Mean	--	--

* Not to be exceeded more than once per year

It should be noted that, consistent with EPA Region IV policy, the small amount of fugitive TSP emissions from the wet rock storage pile are not considered in the increment and NAAQS impacts. This exemption is made on the basis of the current controversy over the accuracy of available analytical techniques for predicting impacts of fugitive TSP. Further, the high moisture content of the New Wales phosphate rock (12%) precludes the potential for fugitive TSP emissions from this source.

Downwash from proposed stacks at the plant was considered for adverse air quality impacts, 40 CFR 52.21(h). The H_2SO_4 plants will have 200 foot stacks, 2.33 times the height of the nearest important structures which are 86 feet high. The tail gas velocity exiting these will be 10.8 m/s, or nearly three times the average wind speed. Due to this fact and the closeness of these stack heights to GEP (200 vs. 215 ft.), these stacks should not contribute any downwash problem.

The three stacks exhausting the DAP plant and the stack from the third product load-out system are each less than two times the height of nearby structures. Impact of downwash for SO_2, and PM emissions is analyzed with the PAL model. The initial O_z is set equal to the structure width divided by 4.3 in accordance with recommendations in D.B. Turner's Workbook of Atmospheric Dispersion Estimates, 1969. Meteorological data resulting in worst case dispersion as determined from CRSTER is used. Results indicate PM downwash could amount to a 13 ug/m^3 concentration as a 24-hr average. For SO_2 worst case downwash is 31 ug/m^3 as a 3-hr average. Furthermore, these values occur within the property boundaries. At distances further than property boundaries impacts from normal dispersion become more significant than downwash impacts.

Modeling analyses with PAL demonstrated no adverse air quality impacts from downwash, and the stack heights proposed are concluded to meet good engineering practice design.

D. Source Impact on Soils, Vegetation, and Visibility

This impact analyses is required at 40 CFR 52.21(p) for PM, SO_2, NO_x, and acid mist major pollutants.

Impacts of increased PM, NO_x, and SO_2 emissions are minimized by offsets within the source. The maximum ground level NO_x concentration was estimated at less than 1 $\mu g/m^3$. This is less than the significance level for that pollutant as defined in PSD regulations.

SO_2 behaves as an acid causing lesions on plant leaves and lowers the pH of the soil. Concentration levels for these phenomena, however, are beyond the limits permitted by NAAQS.* No impact on soils and vegetation from SO_2 is anticipated.

Visibility impacts are controlled by visible emission standards of (20% opacity for all facilities except for the H_2SO_4 plants which are subject to visible emissions standard of 10% opacity defined in the NSPS.

No significant impacts on soils, vegetation, or visibility are projected.

E. Growth Impacts

PSD regulations require the impact of community growth associated with a proposed project be evaluated for its additional impact on future air quality, 40 CFR 52.21(p)(2).

The entire southwest section of Polk County is the richest phosphate rock deposition in the world. Therefore, this entire region is devoted to the phosphate rock processing industry. Property for several miles around the site is either privately owned by New Wales or by other phosphate rock companies with a mutual interest in the industry. The proposed project with associated growths is typical for the area. About 300 people will be hired to operate the expansion facilities.*

On the basis of air quality impact analyses in this permit, there would also be ample increment available for another major source in this area.

*Also there are no agricultural crops, or other vegetation of commercial significance in the area.

* Expansion of mining operations should not be a significant secondary source impact. Over 98% of the phosphate rock produced in the United States is mined from ground where the moisture content is high enough to preclude particulate emissions. Mobile source emissions will include an additional 150 trucks and 75 railcars per day.

F. Source Impact on Class I Areas

PSD regulations require source impact on Class I areas be assessed, 40 CFR 52.21(q)(1).

The nearest Class I area to the New Wales site is the Chassahowitzka National Wildlife Refuge 62 miles northwest. The largest area of significant impact of proposed emissions is 72 km or 45 miles, and this is for the SO_2 3-hr average. This means there is no significant impact of emissions on the Class I area. New Wales' proposed emissions will not impact the Chassahowitzka National Wildlife Refuge.

V. Conclusions

EPA Region IV proposes a preliminary determination of approval with conditions for New Wales to construct the proposed expansion projects described in the PSD permit application, PSD-FL-034. This approval recommendation is based on information submitted to EPA by the applicant in the following correspondence:

1.	June 5, 1979	PSD permit application submittal
2.	September 5, 1979	DAP plant proposal
3.	October 19, 1979	additional information submittal
4.	December 20, 1979	more additional information
5.	February 14, 1980	applicant's response to FDER's comments on air quality modeling

This approval recommendation requires the following conditions be a part of the PSD permit to be issued:

1. In the P_2O_5 plant all potential sources of total fluoride emissions including (but not limited to) the hotwell, Prayon filter, seal tank, vents from sumps, clarifiers and acid tanks, will either be unexposed to ambient air or will be ducted to this facility's wet scrubber system.
2. There will be no visible emissions from the phosphate rock receiving, unloading, and conveying operations at the source. There will also be no visible emissions from the rock storage pile.
3. Fugitive PM emissions during construction phases of the proposed project are limited to 20% opacity. Control will be achieved through use of water suppression, wind breaks, and road paving as needed to meet the opacity limitation.

4. The following existing source facilities scheduled to be phased out will have zero emissions after any facility of this permit begins operating:

Facility	Designation Code
Dry Rock Silo	A053-5963
Rock Grinding-west	A053-5969
Dry Rock load-out	A053-5979
Rock Grinding-east	A053-5967
Dry Rock Silo Bottom	A053-5980
Dry Prod. Belt. Trans.	A053-5981
Wet Rock Dryer	A053-5982
Phos. Acid Rock Bin-west	A053-4970
Phos. Acid Rock Bin-east	A053-5968

5. Unless otherwise specified, each emission point associated with this permit is subject to a 20% visible emission standard using Method 9.
6. H_2SO_4 plant SO_2 continuous emission monitoring is required in accordance with 40 CFR 60.84.
7. The mass flow of phosphorus-bearing feed will be monitored at the DAP plant and the P_2O_5 plant in accordance with 40 CFR 60.223 and 40 CFR 60.203, respectively.
8. The total pressure drop across process scrubbing systems in the DAP plant and the P_2O_5 plant will be monitored in accordance with 40 CFR 60.223 and 40 CFR 60.204, respectively.
9. The emissions from the constructed facilities will not exceed the allowable emission limits outlined in the attached allowable emissions tables for fluorides, particulate matter, sulfur dioxide, and acid mist (H_2SO_4).
10. In accordance with 40 CFR 60.8 performance tests using EPA approved methods will be conducted to ensure that each allowable emission of this permit is complied with.
11. Post construction continuous monitoring for particulate matter and sulfur dioxide will be performed for a period of at least one year. Such monitoring will be in accordance with the EPA quality assurance procedures and the requirements outlined in the Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA-450/2-78-019).
12. The applicant will comply with the requirements and procedures of the attached general conditions.

Total Fluoride allowable emissions:

Facility	Allowable Emissions
No. 3 P_2O_5 plant 1500 ton P_2O_5/day	0.020 lb/ton of equivalent P_2O_5 feed and 1.25 lb/hr
DAP reactor, granulator, and dryer (35) ton/hr P_2O_5 each train	0.060 lb/ton of equivalent P_2O_5 feed and 2.10 lb/hr from each of two trains
DAP cooler	zero – 0.060 lb/ton P_2O_5 total complex

Note: control technology is not specified for total fluoride emissions because of exemption authorized at 40 CFR 52.21(j)(2).

PM allowable emissions

Facility	Allowable Emissions	Control Technology
DAP reactor, granulator, and dryer. (35) ton/hr P_2O_5 each train (nominal capacity)	14.8 lb/hr* each train, and 0.020 gr/dscf based on 100,000 dscfm on each train, and 0.50 lb/ton P_2O_5 equivalent feed.	primary scrubber: coaxial venturi; secondary scrubber: spray chamber, and countercurrent packed bed; mist eliminators
DAP cooler bag collector 1 unit common to both trains	4.30 lb/hr, and 0.010 gr/dscf based on 50,000 scfm	99% control of potential emissions 10,000 ft^2 cloth, 50,000 SCFM
3rd GTSP Product Loadout:		
a) truck loading system	0.90 lb/hr, and 0.010 gr/dscf	A negative air bag collector system is provided for each; 99% removal of potential emissions is design.
b) railcar loading system	0.80 lb/hr, and 0.010 gr/dscf	
Liming Station	0.140 lb/hr each, and 0.010 gr/dscf at 1600 scfm each	A bag collector for each of 2 silos; 99% removal of potential emissions is design; emissions occur only during material transfer into the silos.

*14.8 lb/hr is consistent with State permitted allowable emissions rate.

Sulfur dioxide allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant (2000 TPD capacity each)	4 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4, and 233 lb/hr each	double adsorption process; catalyst changeover as required to keep SO_2 emissions within compliance
DAP reactor, granulator, and dryer (dual train)	22 lb/hr from each of two dryers, and 1.1 lb/10^6 Btu input	2.5% S maximum No. 6 fuel oil; free ammonia present in the dryer vapors naturally supresses SO_2 emissions, 60% control is estimated based on firing 140 gal/hr total.

NO_x allowable emissions:

No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.6 lb/hr each, and 2.1×10^{-6} lb/dscf	good engineering practices; no scrubber technology known. Allowable emissions are based on actual measurements of existing identical units
DAP reactor, granulator, and dryer	4.3 lb/hr each train, and 0.21 lb/10^6 Btu input	low NO_x type burners for the dryer; free ammonia present in the dryer vapors naturally supresses some NO_x species. Air/fuel control for oil firing in dryers is achieved by fixed orifices in both oil and air lines and using variable pressure on the oil pump; high excess air is required for proper process flow; steam atomization of fuel oil.

Acid mist (H_2SO_4) allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.5 lb/hr each, and 0.15 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4	HE or HV mist eliminators, 90% control of potential emissions; opacity must not exceed 10% by Method 9

REFERENCES

1. Sulfuric Acid Plants, New Source Performance Standards Inspection Manual for Enforcement of, EPA-340/1-77-008, May 1977.

2. Sulfuric Acid Plants, A Review of Standards of Performance for New Stationary Sources, EPA-450/3-79-003, January 1979.

3. Source Assessment: Chemical and Fertilizer Mineral Industry, State of the Art, EPA-600/2-78-004p, June 1978.

4. Inspection Manual for Enforcement of New Source Performance Standards: Phosphate Fertilizer Plants, EPA-340/1-77-009, May 1977.

5. Fluoride Emissions from Phosphoric Acid Plant Gypsum Ponds, EPA-650/2-74-095, October 1974.

6. Atmospheric Emissions from Wet-Process Phosphoric Acid Manufacture, U.S. Department of H.E.W., April 1970.

7. Phosphate Rock Plants - Background Information for Proposed Standards, Draft EIS, EPA-450/3-79-017, September 1979.

GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.

2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.

3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.

4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:

   (a) description of noncomplying emission(s),

   (b) cause of noncompliance,

   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,

   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

   and

   (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.

7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.

8. The permittee shall allow representatives of the State environmental control agency or representatives of the Environmental Protection Agency, upon the the presentation of credentials:

   (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;

   (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;

   (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

   (d) to sample at reasonable times any emission of pollutants;

   and

   (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

   Chief, Air Facilities Branch
   Air and Hazardous Materials Division
   U.S. Environmental Protection Agency
   Region IV
   345 Courtland Street
   Atlanta, Georgia 30308

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

Routing To District Offices Or To Other Than The Addressee

To: _____ Loctn.: _____

To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

TO: Jake Varn, Secretary, FDER

FROM: Steve Smallwood, Chief, BAQM

DATE: May 2, 1980

SUBJ: Approval and Signature of Attached Air Construction Permit(s) described below.

Attached please find 1 Air Construction Permit for which the applicant is New Wales Chemicals, Inc., of Mulberry, Florida, the proposed construction is for a DAP Plant

to be located at Mulberry, Polk County, Florida.

Day 90, after which the permit would be issued by default, is May 6, 1980.

The Bureau recommends your approval and signature.

Steve Smallwood, Chief
Bureau of Air Quality Management

Date May 2, 1980

SS:caa

H6 - Rev 7/76

USS AGRI CHEMICAL DATA
DAP

WELCOME TO L O G N O P M A L 1 !

THIS IS A PROGRAM WHICH ATTEMPTS TO DETERMINE HOW WELL A GIVEN SET OF DATA FITS A LOGNORMAL DISTRUBUTION. THE PROGRAM WILL PLOT A A RANKED FREQUENCY DISTRIBUTION TABLE WHICH LISTS THE NUMBER OF STANDARD DEVIATIONS (Z) GIVEN VALUES ARE FROM THE 50TH PERCENTILE. THIS PROGRAM WILL PLOT THE INDIVIDUAL DATA POINTS AND THE LINES OF BEST FIT FOR ALL (100%) OF THE DATA (REPRESENTED BY A DASHED '---' LINE) AND THE UPPER 50% OF THE DATA (REPRESENTED BY A SOLID '-' LINE). BOTH THE PRINTER AND THE PLOTTER OUTPUTS INCLUDE EQUATIONS FOR THE LINES OF BEST FIT; THE CORRELATION COEFFICIENTS 'R' FOR THE LINES OF BEST FIT; THE ARITHMETIC MEAN AND STANDARD DEVIATION OF THE DATA; AND, THE GEOMETRIC MEAN AND THE GEOMETRIC DEVIATION OF THE DATA. WHEN THE MINIMUM VALUE IS REQUESTED; ENTER THE LOWEST POWER OF TEN SUCH AS .01,.1,1,10,100,.....1000000. DO NOT ENTER VALUES SUCH AS .04,.6,8,25,.....50000. THIS PROGRAM HAS BEEN DESIGNED TO RUN ON PROBABILITY (99.99 TO .01) X 3 LOG CYCLE PAPER OF A SIZE EQUAL TO 8 INCHES X 10 INCHES. THE MAXIMUM NUMBER OF POINTS WHICH CAN BE HANDLED WITHOUT MODIFICATION OF THE DIMENSION STATEMENT IS 200.

USS AGRICHEM DAP

N	CONCENTRATION
1	0.06
2	0.07
3	0.04
4	0.05
5	0.05
6	0.09
7	0.03
8	0.06
9	0.06
10	0.13
11	0.07

F L O R I D A D E P A R T M E N T
O F
E N V I R O N M E N T A L R E G U L A T I O N

L O G N O R M A L 1

USS AGRICHEM DAP

RANK	CONCENTRATION	FREQUENCY	EST. FREQ.	STD. DEV
1	0.13	5.45	5.45	-1.60238
2	0.09	14.55	14.55	-1.05606
3	0.07	23.64	23.64	-0.71804
4	0.07	32.73	32.73	-0.44746
5	0.06	41.82	41.82	-0.20655
6	0.06	50.91	50.91	0.02279
7	0.06	60.00	60.00	0.25335
8	0.05	69.09	69.09	0.49843
9	0.05	78.18	78.18	0.77833
10	0.04	87.27	87.27	1.13929
11	0.03	96.36	96.36	1.79546

ARITMETIC MEAN= 0.07 STANDARD DEVIATION = 0.03
GEOMETRIC MEAN= 0.06 GEOMETRIC DEVIATION= 1.42
E Q U A T I O N S

THE FOLLOWING EQUATION IS BASED ON ALL OF THE DATA:
Y = 1 0 ^ (-0.158239002 * -1.20912000)
THE CORRELATION COEFFICIENT 'R' =-0.9754

THE FOLLOWING EQUATION IS BASED ON THE UPPER 50% OF THE DATA:
Y = 1 0 ^ (-0.167437002 * -1.21069000)
THE CORRELATION COEFFICIENT 'R' =-0.9602
THE VALUE OF 'Z' IN THE ABOVE EQUATIONS IS THE NUMBER OF STANDARD DEVIATIONS FROM THE MEAN.

USS AGRI CHEM EMISSION DATA

WELCOME TO L O G N O R M A L 1

THIS IS A PROGRAM WHICH ATTEMPTS TO DETERMINE HOW WELL A GIVEN SET OF DATA FITS A LOGNORMAL DISTRUBUTION. THE PROGRAM WILL PLOT A A RANKED FREQUENCY DISTRIBUTION TABLE WHICH LISTS THE NUMBER OF STANDARD DEVIATIONS (Z) GIVEN VALUES ARE FROM THE 50TH PERCENTILE. THIS PROGRAM WILL PLOT THE INDIVIDUAL DATA POINTS AND THE LINES OF BEST FIT FOR ALL (100%) OF THE DATA (REPRESENTED BY A DASHED '----' LINE) AND THE UPPER 50% OF THE DATA (REPRESENTED BY A SOLID '—' LINE). BOTH THE PRINTER AND THE PLOTTER OUTPUTS INCLUDE EQUATIONS FOR THE LINES OF BEST FIT; THE CORRELATION COEFFICIENTS 'R' FOR THE LINES OF BEST FIT; THE ARITHMETIC MEAN AND STANDARD DEVIATION OF THE DATA; AND, THE GEOMETRIC MEAN AND THE GEOMETRIC DEVIATION OF THE DATA. WHEN THE MINIMUM VALUE IS REQUESTED, ENTER THE LOWEST POWER OF TEN SUCH AS .01,.1,1,10,100,.....,100000. DO NOT ENTER VALUES SUCH AS .04,.6,8,25,.....,50000. THIS PROGRAM HAS BEEN DESIGNED TO RUN ON PROBABILITY (99.99 TO .01) X 3 LOG CYCLE PAPER OF A SIZE EQUAL TO 8 INCHES X 10 INCHES. THE MAXIMUM NUMBER OF POINTS WHICH CAN BE HANDLED WITHOUT MODIFICATION OF THE DIMENSION STATEMENT IS 200.

USS AGRICHEM DAP

N	CONCENTRATION
1	0.05
2	0.06
3	0.02
4	0.05
5	0.05
6	0.10
7	0.04
8	0.07
9	0.06
10	0.10
11	0.05

F L O R I D A D E P A R T M E N T O F
E N V I R O N M E N T A L R E G U L A T I O N

L O G N O R M A L 1

USS AGRICHEM DAP x10^-1

RANK	CONCENTRATION	FREQUENCY	EST. FREQ.	STD. DEV
1	0.10	5.45	5.45	-1.60238
2	0.10	14.55	14.55	-1.05606
3	0.07	23.64	23.64	-0.71804
4	0.06	32.73	32.73	-0.44746
5	0.06	41.82	41.82	-0.20655
6	0.05	50.91	50.91	0.02279
7	0.05	60.00	60.00	0.25385
8	0.05	69.09	69.09	0.49843
9	0.05	78.18	78.18	0.77823
10	0.04	87.27	87.27	1.13929
11	0.03	96.36	96.36	1.79546

ARITMETIC MEAN= 0.06 STANDARD DEVIATION = 0.01
GEOMETRIC MEAN= 0.06 GEOMETRIC DEVIATION= 1.42
E O F T I O N S

THE FOLLOWING EQUATION IS BASED ON ALL OF THE DATA:
Y = .1 0 * (-0.157893002 * -1.25103000)
THE CORRELATION COEFFICIENT 'R' =-0.9764

THE FOLLOWING EQUATION IS BASED ON THE UPPER 50% OF THE DATA:
Y = 1 0 * (-0.170750002 * -1.2477788)
THE CORRELATION COEFFICIENT 'R' =-0.9704
THE VALUE OF 'Z' IN THE ABOVE EQUATIONS IS THE NUMBER OF STANDARD DEVIATIONS FROM THE MEAN.

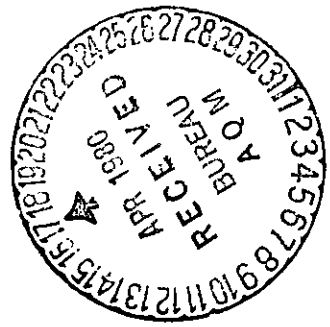
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

APR 15 1980

REF: 4AH-AF



Mr. Steve Smallwood, Chief
Bureau of Air Quality Management
Division of Environmental Programs
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: New Wales Chemicals
PSD-FL-034

Dear Mr. Smallwood:

Enclosed for your review and comment are the Public Notice and Preliminary PSD Determination for the modification to the phosphate fertilizer complex proposed in Bartow and Mulberry, Flordia. The public notice will appear in a local newspaper, The Lakeland Ledger, in the near future.

Please let my office know if you have comments or questions regarding this determination. You may contact Kent Williams of my staff at 404/881-4552 or Jeffrey L. Shumaker of TRW Inc. at 919/541-9100. TRW Inc. is under contract to EPA, and TRW personnel are acting as authorized representatives of the Agency in providing aid to the Region IV PSD review program.

Sincerely,

Tommie A. Gibbs

Tommie A. Gibbs, Chief
Air Facilities Branch

TAG:JLS:jt

Enclosure

RECEIVED

APR 16 1980

DEPT. OF
ENVIRONMENTAL REGULATION