

# Department of Environmental Protection

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

Virginia B. Wetherell  
Secretary

Lawton Chiles  
Governor

August 3, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Farris  
Vice President - Operations  
Farmland Hydro, L.P.  
County Road 640 West  
Bartow, Florida 33830

Dear Mr. Farris:

Enclosed is a copy of the Technical Evaluation and Preliminary Determination, Best Available Control Technology (BACT) determination, Intent to Issue, and proposed permit for Farmland Hydro, L.P. to increase the production rate of the Nos. 3, 4 and 5 sulfuric acid plants at their Bartow facility, Polk County, Florida. Also included is the Notice of Intent to Issue for you to publish as indicated.

Please submit any written comments to be considered concerning the Department's proposed action to Mr. A. A. Linero at the above address. If you have any questions, please call Mr. John Reynolds at 904-488-1344.

Sincerely,

C. H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

CHF/jr/t

Enclosures

cc: W. Thomas, SWD  
R. Harwood, Polk Co.  
J. Harper, EPA  
J. Bunyak, NPS  
J. Koogler, K&A

Is your RETURN ADDRESS completed on the reverse side?

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- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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 C M Farris, VP  
 Fairland Hydro, LP  
 County Rd 640 West  
 Bartow, FL 33830

4a. Article Number  
 Z 392 979 015

- 4b. Service Type
- Registered  Insured
  - Certified  COD
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 8/14/95

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 Linda Johnson

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6. Signature

PS

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PS Form 3800, March 1993

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	AC 53-265 755
	PSD-FL-225

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an  
Application for Permit by:

DEP File No. PSD-FL-225  
AC 53-265755  
Polk County.

Mr. C. M. Farris  
Vice President - Operations  
Farmland Hydro, L.P.  
County Road 640 West  
Bartow, Florida 33830

INTENT TO ISSUE

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy attached) for the applicant's facility as detailed in the application specified above for the reasons stated in the Technical Evaluation and Preliminary Determination.

The applicant, Farmland Hydro, L.P., applied on May 11, 1995, to the Department for a permit to increase the combined total production of their sulfuric acid plants, Nos. 3, 4, and 5, from 5,640 to 7,000 tons per day. The facility is located in Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit is required for the proposed project.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;


- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under

Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

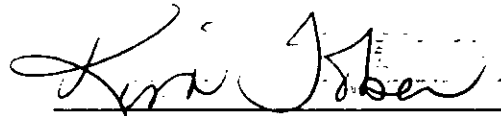
  
C. H. Fancy, P.E., Chief  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399  
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that all copies of this INTENT TO ISSUE PERMIT were mailed by certified mail before the close of business on 8-3-95 to the listed persons.

Clerk Stamp

FILED AND ACKNOWLEDGMENT  
FILED on this date, pursuant to  
§120.52(11), Florida Statutes,  
with the designated Department  
Clerk, receipt of which is hereby  
acknowledged.

  
Clerk 8-3-95  
Date

Copies furnished to:

W. Thomas, SWD  
R. Harwood, Polk Co.  
J. Harper, EPA  
J. Bunyak, NPS  
J. Koogler, K&A

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT TO ISSUE PERMIT

PSD-FL-225

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit to Farmland Hydro, L.P., County Road 640 West, Bartow, Florida 33830. This company operates a phosphate fertilizer manufacturing facility at that address. The permit will allow the combined total sulfuric acid production rate of the Nos. 3, 4 and 5 plants to be increased from a total of 5,640 to 7,000 tons per day with only minor physical modifications required. A determination of Best Available Control Technology (BACT) was required since the proposed project is subject to Prevention of Significant Deterioration (PSD) regulations. BACT consists of employment of the Dual Absorption Process plus high efficiency mist eliminators. Modeling results indicate that the proposed project is not expected to cause or significantly contribute to any violation of the ambient air quality standards. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application/request is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection  
Bureau of Air Regulation  
111 S. Magnolia Drive  
Tallahassee, Florida 32301

Department of Environmental Protection  
Southwest District  
8407 Laurel Fair Circle  
Tampa, Florida 33619

Any person may send written comments on the proposed action to Administrator, New Source Review Section, Bureau of Air Regulation at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

Technical Evaluation  
and  
Preliminary Determination

Farmland Hydro, L.P.  
Bartow, Polk County, Florida

SULFURIC ACID PRODUCTION INCREASE  
SAP Nos. 3, 4 and 5

Department File No.: AC 53-265755  
PSD-FL-225

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

August 3, 1995



I. General Information

A. Applicant

Farmland Hydro, L.P.  
County Road 640 West  
Bartow, Florida 33830

B. Request

On February 21, 1995, the applicant submitted an application for a permit to increase the production rate of the existing No. 3, 4 and 5 sulfuric acid plants from 5640 to 7000 tons per day (TPD). The application was considered complete on May 11, 1995, when the Department received additional information requested.

C. Classification

The applicant's facility (SIC 2819) is located at County Road 640 West in Bartow, Polk County, Florida. The UTM coordinates for this facility are Zone 17, 410.3 km E and 3079.7 km N.

II. Project Description/Emissions

The applicant proposes to increase the total production of the No. 3, 4 and 5 sulfuric acid plants from 5,640 tons per day (TPD) to 7,000 TPD. The proposed project will increase each plant's daily sulfuric acid production rate which will increase the allowable emissions of sulfur dioxide (SO<sub>2</sub>) and sulfuric acid mist (SAM) as shown below:

Plant	Present Capacity (TPD)	New Capacity (TPD)	Present SO <sub>2</sub> Allowable (TPY)	New SO <sub>2</sub> Allowable (TPY)	Present SAM Allowable (TPY)	New SAM Allowable (TPY)
3	1,620	2,100	1,183	1,533	44.3	57.5
4	1,620	2,100	1,183	1,533	44.3	57.5
5	2,400	2,800	1,752	2,044	65.7	76.7
Total	5,640	7,000	4,118	5,110	154.3	191.7

The production increase will be accomplished with no major equipment changes. Catalyst will be added as necessary and one of the smaller heat exchangers in the No. 5 plant will be replaced with a larger unit. A comparison of total allowable emissions with the two-year average actual representative emissions shows significant increases in SO<sub>2</sub> and SAM. An insignificant increase in NO<sub>x</sub> is presumed based on a previously-assumed NO<sub>x</sub> emission factor of 0.12 lb/ton x 1,360 ton/day x 365 days/yr x ton/2000 lb = 29.8 tons/yr < 40 tons/yr:

	TPY SO <sub>2</sub>	TPY SAM
New Allowables	5,110.0	191.7
Two-Year Actuals (8,460 hr/yr avg)	2,160.6	114.6
Increase for PSD Significance	2,949.4 > 40	77.1 > 7

The amount by which the allowables exceed actual emissions might suggest the need for lower allowables in the BACT determination. However, in cases such as this where the process itself is the "control device", a lower allowable limit does not of itself force lower emissions. In a typical sulfuric acid plant, SO<sub>2</sub> emissions are lowest just after a catalyst change and gradually rise as the catalyst loses reactivity. Continuous emission monitoring data typically show that SO<sub>2</sub> emissions start out very low after a catalyst change and then may rise to near the new source performance standard (4.0 lb/ton) at the end of the catalyst's life. The effect of lowering the allowable limit would be to require more frequent catalyst changes at greatly increased costs which would likely be prohibitive.

### III. Rule Applicability

The construction permit application is subject to review under the provisions of Chapter 403, Florida Statutes, and Chapters 62-209 through 62-297, Florida Administrative Code (F.A.C.). The facility is located in an area designated as attainment for each of the regulated air pollutants. The proposed project is subject to the Prevention of Significant Deterioration Regulations, Rule 62-212.400, F.A.C., because the emissions increases of sulfur dioxide and acid mist from the sulfuric acid plants exceed the significant emission rates listed in Table 212.400-2 of Rule 62-212, F.A.C. Preconstruction review must include a determination of Best Available Control Technology (BACT) pursuant to Rule 62-212.410, F.A.C. The applicant is also subject to the other preconstruction review requirements listed in Rule 62-212.400, F.A.C. In addition, the proposed modifications are subject to 40 CFR 60, Subpart H, Standards of Performance for Sulfuric Acid Plants.

### IV. Air Quality Analysis

#### A. Introduction

As stated in Section II, the production rate increases due to the proposed project will result in emissions increases which are projected to be greater than the PSD significant rates for SO<sub>2</sub> and SAM. The air quality impact analyses required by the PSD regulations for these pollutants include:

- o An analysis of existing air quality.
- o A PSD increment analysis for SO<sub>2</sub>.
- o An Ambient Air Quality Standards (AAQS) analysis.
- o An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts.
- o A Good Engineering Practice (GEP) stack height determination

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the projected production rate increase, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any PSD increment or AAQS. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the modeling procedure and required analyses follows.

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

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration. If the projected emissions increase is greater than the de minimus concentration, previously existing representative monitoring data may be used to satisfy the preconstruction monitoring requirement instead of preconstruction ambient air quality monitoring.

However, even if preconstruction ambient monitoring is exempted, determination of background concentrations may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from previously existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling. The predicted maximum concentration increase for SO<sub>2</sub> is given in Table 1.

There are no monitoring de minimus concentrations for SAM. As shown in Table 1, the predicted impact for SO<sub>2</sub> is greater than the corresponding de minimus concentration; therefore, preconstruction monitoring is required for SO<sub>2</sub>.

There are previously existing representative SO<sub>2</sub> monitoring data in the vicinity of the proposed project. Data from the SO<sub>2</sub> monitor in Mulberry were used to satisfy the preconstruction monitoring requirement. In addition, the Department established a background concentration of 9 ug/m<sup>3</sup> for all averaging times from 1994 data collected at this monitor.

### C. Modeling Procedure

The EPA-approved Industrial Source Complex Short-Term (ISCST2) dispersion model was used to evaluate the pollutant emissions from the proposed project and other existing major facilities. The model determines ground-level concentrations of gases or small particles emitted into the atmosphere by point, area and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST2 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options in each modeling scenario. Direction-specific downwash parameters were used for all sources for which downwash was considered.

Initially, for the significant impact analysis, concentrations were predicted at polar receptors placed along 36 standard radial directions (10 degrees apart) surrounding the sulfuric acid plants at the following downwind distances: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 7.5, 10.0, 15.0, 20.0, and 25.0 km. The results of this analysis showed that the increases in ambient ground-level SO<sub>2</sub> concentrations were significant out to 25.0 km, thus requiring the applicant to do a full impact analysis for comparison with the AAQS and the PSD Class II SO<sub>2</sub> increments.

The receptor grids for both the AAQS and PSD Class II analyses contained polar and discrete receptors. Receptors were placed along 36 standard radial directions surrounding the sulfuric acid plants at the following downwind distances: 3.0, 4.0, 5.0, 7.5, 10.0, 13.0, 15.0, 20.0 and 25.0 km. In addition, a total of 240 discrete receptors were placed along the plant boundary.

Impacts for the PSD Class I Chassahowitzka National Wilderness Area (NWA) were predicted at 13 standard discrete receptors approved by the Department. This Class I area is located 110 km to the northwest of Farmland.

Five years of sequential hourly surface and mixing depth data from the Tampa, Florida National Weather Service collected during 1987 through 1991 were used in this model. Since five years of data were used, the highest-second high, short-term predicted concentrations are compared with the appropriate ambient air quality standards or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

### D. AAQS Analysis

For the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a "background

concentration" to the maximum modeled concentration. This "background concentration" takes into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis for SO<sub>2</sub> are summarized in Table 3. As shown in this table, emissions from the proposed project are not expected to cause or contribute to a violation of an AAQS.

#### E. PSD Increment Analysis

##### 1. Class II Area

The PSD increment represents the amount that new sources in an area may increase predicted ambient ground level concentrations of a pollutant. Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The results, summarized in Table 4, show that the maximum SO<sub>2</sub> increment consumption will not exceed the allowable Class II PSD increments.

##### 2. Class I Area

The nearest PSD Class I area is the Chassahowitzka National Wilderness Area located 110 km northwest of the facility. Maximum SO<sub>2</sub> concentrations predicted for the proposed modification only at receptors in this area show impacts greater than the National Park Service (NPS) recommended significance levels for all averaging times, as shown in Table 5. Therefore, for these averaging times, a more extensive PSD Class I modeling analysis was performed using all increment-consuming sources in the area of the CWNA. The results of this analysis are shown in Table 6. The maximum predicted 3-hour and 24-hour concentrations due to all increment-consuming sources in the vicinity of this Class I area exceed the PSD Class I increments on numerous occasions. In order to assess the proposed modification's contribution to any predicted Class I exceedances, an analysis was performed to determine all time periods and receptors at which an exceedance was predicted to occur. For each case, the proposed modification's impact was determined and compared to the NPS recommended significance levels. The impact of the proposed modification was always less than these significance levels at any receptor and for any time period when there were predicted exceedances or violations of increments. Therefore, the proposed modification will not contribute significantly to any predicted exceedance or violation of Class I increments and may be permitted by Department rules.

#### F. Non-criteria pollutants

SAM is a non-criteria pollutant, which means that neither a national AAQS nor a PSD increment has been defined for this pollutant; therefore, no air quality dispersion modeling was done for SAM. Instead, SAM emissions for this project will be controlled by the BACT.

### G. Additional Impacts Analysis

The applicant did an air quality related values (AQRV) analysis for both the PSD Class II area near the facility and for the Chassahowitzka Class I area located 110 km to the northwest of the project. The increased emissions from the project are not expected to impact the AQRVs of either area. The AQRV analysis includes impacts on vegetation, soils, wildlife and visibility. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

### V. Conclusion

Based on the information provided by Farmland Hydro, L.P., the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapters 62-209 through 62-297 of the Florida Administrative Code.

09/8/3

**Table 1. Maximum Project Air Quality Impacts for Comparison to the De Minimus Ambient Levels.**

Pollutant	Avg. Time	Max Predicted Impact <sup>1</sup> (ug/m <sup>3</sup> )	De Minimus Level (ug/m <sup>3</sup> )
SO <sub>2</sub>	24-hour	17	10

1. Highest, second-highest value over a five year period for 24-hour averaging time.

**Table 2. Maximum Project Air Quality Impacts for Comparison to the PSD Class II Significant Impact Levels.**

Pollutant	Avg. Time	Max Predicted Impact <sup>1</sup> (ug/m <sup>3</sup> )	Significant Impact Level (ug/m <sup>3</sup> )
SO <sub>2</sub>	Annual	1.5	1
	24-hour	21.4	5
	3-hour	66.7	25

1. Highest, high value over a five year period for all averaging times.

**Table 3. Ambient Air Quality Impacts**

Pollutant	Averaging Time	Major Sources Impact <sup>1</sup> (ug/m <sup>3</sup> )	Background Conc. (ug/m <sup>3</sup> )	Total Impact (ug/m <sup>3</sup> )	Florida AAQS (ug/m <sup>3</sup> )
SO <sub>2</sub>	Annual	50	9	59	60
	24-hour	245	9	254	260
	3-hour	761	9	770	1300

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

**Table 4. PSD Class II Increment Analysis**

Pollutant	Averaging Time	Max. Predicted Impact <sup>1</sup> (ug/m <sup>3</sup> )	Allowable Increment (ug/m <sup>3</sup> )
SO <sub>2</sub>	Annual	0	20
	24-hour	44	91
	3-hour	180	512

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

**Table 5. Maximum Project Air Quality Impacts for Comparison to the PSD Class I Significant Impact Levels**

Pollutant	Averaging Time	Max. Predicted Impact <sup>1</sup> (ug/m <sup>3</sup> )	National Park Service (NPS) Significant Impact Level (ug/m <sup>3</sup> )
SO <sub>2</sub>	Annual	0.06	0.025
	24-hour	0.82	0.07
	3-hour	5.48	0.48

1. Highest, high value over a five year period for all averaging times.

**Table 6. PSD Class I Increment Analysis**

Pollutant	Averaging Time	Max. Predicted Impact <sup>1</sup> (ug/m <sup>3</sup> )	Allowable Increment (ug/m <sup>3</sup> )
SO <sub>2</sub>	Annual	0	2
	24-hour	6.3 <sup>2</sup>	5
	3-hour	34.7 <sup>2</sup>	25

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

2. The project has less than significant impacts for all predicted exceedances of SO<sub>2</sub> increments.





# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

**PERMITTEE:**  
Farmland Hydro, L.P.  
County Road 640 West  
Bartow, Florida 33830

**Permit Number:** AC 53-265755  
PSD-FL-225  
**Expiration Date:** Dec. 31, 1996  
**County:** Polk  
**UTM Coordinates:** 17-410.3 km E  
17-3079.7 km N  
**Project:** Sulfuric Acid Plant  
Production Increase

This permit is issued under the provisions of Chapter 403, Florida Statutes; Chapters 62-210, 212, 272, 296 and 297, Florida Administrative Code (F.A.C.); and, Chapter 62-4, F.A.C. The above named permittee is hereby authorized to perform the work or operate the emission unit/source shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department of Environmental Protection (Department) and specifically described as follows:

For the increase in production rate of the Nos. 3, 4 and 5 sulfuric acid plants from a total of 5,640 tons of sulfuric acid product/day to 7,000 tons/day. No major physical changes are required for this modification. The sources are located at the permittee's facility in Bartow, Polk County, Florida.

The modification shall be in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application received February 21, 1995
2. Department's letter dated March 22, 1995
3. USDOE's letter dated March 29, 1995
4. Koogler & Assoc. letter dated May 10, 1995
5. Memorandum of Understanding Regarding Best Operational Start-up Practices for Sulfuric Acid Plants, 1989

**PERMITTEE:**  
**Farmland Hydro, L.P.**

**Permit Number: AC53-265755**  
**PSD-FL-225**  
**Expiration Date: December 31, 1996**

**GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or

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auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and,

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source

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arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- (x) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application

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for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and,
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

**SPECIFIC CONDITIONS:**

1. Unless otherwise indicated, the subject modification shall be in accordance with the capacities and specifications stated in the application.

2. The maximum production rates for the Nos. 3 and 4 sulfuric acid plants shall be 2,100 tons/day each while that for the No. 5 sulfuric acid plant shall be 2,800 tons/day, based on 100% sulfuric acid (H<sub>2</sub>SO<sub>4</sub>). [Rule 62-212.200(56), F.A.C.]

3. The Nos. 3, 4 and 5 sulfuric acid plants may operate on a full-time basis (8,760 hours per year). [Rule 62-212.200(56), F.A.C.]

4. Emissions of sulfur dioxide (SO<sub>2</sub>), sulfuric acid mist (SAM) and visible emissions (VE) from the Nos. 3, 4 and 5 sulfuric acid plants shall not exceed the following limits [Rule 62-212.410, F.A.C.]:

Plant	SO <sub>2</sub>		SAM		VE
	lb/hr	TPY	lb/hr	TPY	%
3	350	1,533	13.1	57.5	10
4	350	1,533	13.1	57.5	10
5	467	2,044	17.5	76.7	10

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**SPECIFIC CONDITIONS:**

5. Before this permit expires, performance testing of emissions from each unit shall be conducted with the emission unit operating at permitted capacity. Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then emission units may be tested at less than 90% of the maximum operating rate allowed by the permit. In this case, subsequent emission unit operation is limited to 110% of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.340(1)(a), F.A.C.]

6. Performance testing shall be conducted and compliance determined using the test methods and procedures set forth in 40 CFR 60.85(a) through (c). Pursuant to Rule 62-297.340(1)(i), the Department's Southwest District office shall be notified in writing 15 days prior to performance testing. Pursuant to Rule 62-297.570(1) and (2), written reports of the test results shall be submitted to that office within 45 days of test completion.

7. A continuous monitoring system for the measurement of sulfur dioxide emissions shall be installed, calibrated, operated and maintained as described in 40 CFR 60.84(a) through (e). [Rule 62-296.800, F.A.C.; 40 CFR 60.84]

8. Objectionable odors associated with air emissions shall be prohibited. [Rule 62-296.320(2), F.A.C.]

9. Pursuant to Rule 62-210.700(1), F.A.C., excess emissions from the sulfuric acid plants resulting from startup, shutdown, malfunction, or load change shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed three hours in any 24-hour period unless specifically authorized by the Department for a longer duration. Best operational start-up practices shall be followed as described in the attached Memorandum of Understanding signed in 1989.

10. Stack sampling facilities shall be provided by the permittee in accordance with Rule 62-297.345, F.A.C.

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**SPECIFIC CONDITIONS:**

11. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.090, F.A.C.].

12. An application for an operation permit must be submitted to the Department's Southwest District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. The operation permit application shall include a set of conditions acceptable to the Department for startup/shutdown of the permittee's sulfuric acid plant. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit. [Rules 62-4.055 and 62-4.220, F.A.C.].

**STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION**

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Virginia B. Wetherell, Secretary

Best Available Control Technology (BACT) Determination  
Farmland Hydro, L.P.  
Polk County  
Permit Number AC 53-265755  
PSD-FL-225

The applicant proposes to increase the total production of the No. 3, 4 and 5 Sulfuric Acid Plants (SAP) from 5,640 tons per day (TPD) to 7,000 TPD at the applicant's phosphate fertilizer manufacturing facility on County Road 640 West in Polk County, Florida. The proposed project will result in a significant increase in emissions of sulfur dioxide (SO<sub>2</sub>) and sulfuric acid mist. The project is therefore subject to Prevention of Significant Deterioration (PSD) review in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). The BACT determination is part of the PSD review requirements in accordance with Rule 62-212.410, F.A.C.

Date Application Received: February 21, 1995

Date Application Complete: May 11, 1995

BACT Determination Proposed by Applicant:

Control Technology: Double Absorption/Fiber Mist Eliminators

Emission Limits: SO<sub>2</sub>: 4 lbs/ton of 100% H<sub>2</sub>SO<sub>4</sub> produced  
Acid Mist: 0.15 lb/ton of 100% H<sub>2</sub>SO<sub>4</sub> produced  
Visible Emissions: 10% opacity

BACT Determination Procedure:

In accordance with Chapter 62-212, F.A.C., this determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.



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

BACT Determined by the Department:

Same as proposed by applicant

BACT Determination Rationale

The Department's BACT determination is the same as that proposed by the applicant. This is consistent with determinations completed by other states and the Standards of Performance for Sulfuric Acid Plants, 40 CFR 60 Subpart H, (double absorption process). The process itself is the control technology for SO<sub>2</sub>. For this reason, more stringent limits have not been required. The emission limits reflect a conversion efficiency of around 99.4% of SO<sub>2</sub> to H<sub>2</sub>SO<sub>4</sub>. High efficiency mist eliminators are considered BACT for sulfuric acid mist. BACT/LAER Clearinghouse information indicates that double absorption technology and the use of high efficiency mist eliminators are representative of BACT using the top-down approach.

Environmental Impact Analysis

The impact analysis for the BACT determination is based on full-time operation (8,760 hours/year). The increment impact analysis and the ambient air quality analysis resulted in the following for SO<sub>2</sub> emissions:

<u>Avg Time</u>	<u>Increment Impact (ug/m<sup>3</sup>)</u>	<u>Allowable Increment (ug/m<sup>3</sup>)</u>	<u>Predicted Ambient Air Quality Impact (ug/m<sup>3</sup>)</u>	<u>Fla. AAQS (ug/m<sup>3</sup>)</u>
24-hr	44	91	254	260
3-hr	180	512	770	1300

Conclusion

The incremental impact and the ambient air quality impact from SO<sub>2</sub> emissions due to the proposed modification is in compliance with all air pollution regulations. It is concluded that the emission limits established herein represent BACT.

BACT Analysis Details Available From:

A. A. Linero, P.E., Administrator  
New Source Review Section  
Bureau of Air Regulation  
Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

\_\_\_\_\_  
C. H. Fancy, P.E., Chief  
Bureau of Air Regulation

\_\_\_\_\_  
Virginia B. Wetherell, Secretary  
Dept. of Environmental Protection

\_\_\_\_\_, 1995  
Date

\_\_\_\_\_, 1995  
Date

MEMORANDUM OF UNDERSTANDING  
REGARDING BEST OPERATIONAL START-UP PRACTICES  
FOR SULFURIC ACID PLANTS

The parties jointly agree: for the purposes of Rule 17-2.250, the foregoing practices constitute "best operational practices" for the start-up of sulfuric acid plants.

The Department will not seek to incorporate these practices into permits for existing facilities during the first 18 months after implementation. After the expiration of this 18-month period, which is a typical catalyst cycle, the Department may seek to modify the permits, in accordance with Rule 17-4.080 and other applicable laws, to incorporate appropriate site-specific start-up procedures as enforceable permit conditions.

These Sulfuric Acid Plant Best Operation Start-Up Practices will be made available in the control room at all times.

Since these specific procedures are undergoing evaluation, the Department will not consider these practices to be the only means of demonstrating best operating procedures. If a company chooses to use another method, it will be its responsibility to demonstrate that it constitutes best operational practices in accordance with 17-2.250, F.A.C.

## BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS

1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO<sub>2</sub> at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMS emission rates for the immediately preceding 20 minutes.

2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO<sub>2</sub> monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested and validated, the Department will accept this in lieu of directly documenting the operating rate. Implementation requires the development of a suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.

3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) out of compliance for more than three consecutive hours. Thereafter, the plant shall be shut down. The plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of start-up. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.

### 4. Cold Start-Up Procedures.

#### a. Converter.

(1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO<sub>2</sub> enters the masses. In no event shall the inlet temperature to the first mass be less than 800°F or the outlet temperature to the first two masses be less than 700°F.

These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.

(2) The gas stream entering the converter shall contain  $\text{SO}_2$  at a level less than normal, and sufficiently low to promote catalytic conversion to  $\text{SO}_3$ .

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent  $\text{H}_2\text{SO}_4$ .

5. Warm Restart.

a. Converter.

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

(1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of  $700^\circ\text{F}$ ; or

(2) Two of the four inlet and outlet temperatures must be greater than or equal to  $800^\circ\text{F}$ ; or

(3) The inlet temperature of the first catalyst must be greater than or equal to  $600^\circ\text{F}$  and the outlet temperature greater than or equal to  $800^\circ\text{F}$ . Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to  $700^\circ\text{F}$ .

Failure to meet one of the above conditions, requires use of cold start-up procedures.

To allow for technological improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent  $\text{H}_2\text{SO}_4$ .

*Steve Smallwood 10-16-89*  
Steve Smallwood, P.E. Date  
Director, Division of Air  
Resources Management  
Department of Environmental  
Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

*[Signature]*  
Gardinet, Inc., Plant Manager

*40.11.1991*  
*11/1/99*  
*10/25/89*  
Date

**ATTACHMENTS PROVIDED UPON REQUEST**