Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 15, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Melody Russo
Environmental Superintendent
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, Florida 33831

Re: DEP File No. 1050046-008-AC (PSD-FL-255)
No. 3 Fertilizer Plant Expansion - Bartow

Dear Ms. Russo:

The Bureau of Air Regulation reviewed the above application received on September 21 and found that additional information is required. The completeness items are listed below.

1. The application contains only a summary of stack test data. Please submit the detailed test reports for the most recent three annual stack tests (5/7/98, 6/9/97 and 9/11/97) for each pollutant containing data on production rates, fuel consumption, stack flows, scrubber conditions, etc. for each test run.

2. The information presented on the proposed scrubbers is insufficient. Please provide a sufficient engineering description of the new and existing scrubbers including their calculated design efficiencies for PM/PM10 and fluoride removal as newly configurated and provide mechanical sketches of their design. Since the proposed modification calls for doubling of the stack gas velocity to the very high level of 80 ft/sec which could have implications for sampling accuracy, please provide a cost analysis for installing a second stack. Calculations must be provided for all emissions in Table 3-2 as well as cost effectiveness calculations for the BACT analysis.

3. The required modeling analysis was not submitted with the application. This must be submitted before the application can be processed further.

Permit applicants are advised that Rule 62-4.055, F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call John Reynolds at 850/921-9536.

Sincerely,

A. A. Linero 10/15

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/JR

cc: Brian Beals, EPA
John Bunyak, NPS
Bill Thomas, SWD
Joe King, Polk Co.
David Buff, Golder Assoc.

Is your RETURN ADDRESS completed on the reverse side?

- ... address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

... wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Ms. Melody Russo, ES
Cargill Fertilizer
PO Box 9002
Bartow, Fl 33831

4a. Article Number
Z333 612 530

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature ...
X

PS Form ... Domestic Return Receipt

Thank you for using Return Receipt Service.

Z 333 612 530

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Melody Russo	
Street & Number Cargill	
Post Office, State, & ZIP Code Bartow, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	10-15-95

PS Form 3800, April 1995

NATIONAL PARK SERVICE AIR RESOURCES DIVISION

P.O. BOX 25287, Denver, CO 80225-0287

FACSIMILE COVER SHEET

Date: October 28, 1998

Telephone: (303) 969-2075
Fax: (303) 969-2822

To: *Al Linero, FDEP*

From: *Don Shepherd, Policy, Planning, and Permit Review Branch*

Subject: *Cargill—Bartow Plant—MAP/DAP Expansion* PSD-FI-255

Ellen Porter has asked that I fax the following comments to you for inclusion into the record.

Subject: PSD-FL-255

We have reviewed the PSD permit application for expansion of the MAP/DAP Plant #3 at Cargill's Bartow Plant. The facility is 107 km SE of the Chassahowitzka Wildlife Refuge Class I air quality area administered by the U.S. Fish and Wildlife Service.

Cargill is proposing to increase the MAP/DAP capacity of its Bartow fertilizer plant #3 from 2640 TPD to 3000 TPD. A PSD-significant emissions increase will occur for PM and F. Cargill will replace or upgrade many of the emission control systems, and has proposed that its PM limit be reduced.

Prevention of Significant Deterioration (PSD) Applicability

One overarching issue that must be addressed is the relationship of the proposed project to other emission units at this source. Cargill has quantified the increases in emissions that occur at the existing MAP plant due to its increased production, and also reviewed any increases in emissions that could occur "upstream" at the phosphoric and sulfuric acid plants that also supply materials to the MAP plant. Cargill has determined that emissions from the phosphoric acid plant will increase as a result of this modification, and has therefore included them in its analysis. On the other hand, Cargill has determined that, because the sulfuric acid plant will still not be able to supply all of the plant's needs, the extra demand resulting from MAP/DAP expansion will simply require that more acid be purchased. Material handling system and load-out emissions occurring "downstream" were also be included.

Best Available Control Technology (BACT)

Cargill proposes to expand and upgrade the existing wet scrubbing system and meet limits of 0.0417 lb fluoride per ton of phosphate (lb/T) and 0.19 lb particulate /T. Stack test results submitted by Cargill indicate that it should be able to meet these limits, although some improvement in fluoride removal brought about by the plant upgrade may be necessary to maintain compliance. These permit limits are consistent with those issued by FDEP for other similar fertilizer operations.

Conclusions & Recommendations

Cargill has provided an adequate explanation of which parts of the plant and which pollutants are effected by the modification and subject to PSD.

Cargill's proposed emission limits are based upon the expected performance of the upgraded control equipment and are consistent with the 0.19 lb PM/T phosphate and 0.0417 lb F/T limits required by other permits issued by FDEP. Those limits represent BACT for this project.

Number of Pages: 2 (Including this cover sheet)

Office Location: 7333 W. Jefferson, Room 450, Lakewood, CO 80235

(Send Mail to: 12795 W. Alameda Parkway, Lakewood, CO 80228)

cc: D. Buff
SWD
Polk Co
EPA
M. Russo, Cargill

Golder Associates

October 30, 1998 9837551-0100

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

RECEIVED
OCT 30 1998
BUREAU OF
AIR REGULATION

Re: DEP FILE NO. 1050046-008-AC (PSD-FL-255)
NO.3 FERTILIZER PLANT EXPANSION – BARTOW

Dear Mr. Linero:

Cargill Fertilizer has received the Department's letter dated October 15, 1998, regarding the above referenced air construction permit application for the No. 3 Fertilizer Plant at Bartow, Florida. Responses to each of the Department's questions are presented below, in the same order as they appear in your letter.

Additional stack test data for the most recent three annual stack tests on the No. 3 Fertilizer Plant are attached. Stack test results for the test dates 6/9/97, 9/11/97 and 5/7/98 are provided for fluorides, particulate matter (PM) and visible emissions. Complete stack data is provided. Process operational data is provided also which includes ammonia and acid feed rates, MAP/DAP production rate, heat input rates, and scrubber parameters.

1. Design efficiencies for the scrubbers to be included in the proposed system are provided in attached Table 1. Mechanical sketches of the scrubber designs are also attached.

In regards to the projected stack exit velocity of 80 ft/sec for the modified plant, I have checked with Cargill's source testing consultant (Southern Environmental Sciences), and Ken Roberts of Southern Environmental stated that such a velocity does not present any special problems in terms of stack sampling. A smaller probe nozzle diameter is all that is needed to assure accurate sampling. Therefore, a second stack for the No. 3 Fertilizer Plant is not necessary.

A new Table 3-2a is provided which provides more detail on emission calculations for the baseline emissions presented in Table 3-2. Also, it is noted that Cargill is now planning on increasing the stack height for the No. 3 Fertilizer

Plant from the current 125 feet to 141 feet. The report tables and text have been revised to incorporate this change. In regards to providing cost information for the BACT analysis, fluorides and PM are addressed individually below:

FLUORIDES

The alternatives presented in the application for control of fluoride emissions consists of a packed bed scrubber utilizing one of the following:

1. Once through fresh water
2. A neutralized water/pond system to provide fresh water makeup
3. Process cooling pond water

The first option was ruled out on the basis of unacceptable consumption of fresh water, as well as impacts upon the plant water balance.

The second option is technically feasible, but economic impacts are prohibitive. This option would entail constructing a dedicated pond system, associated tanks and pumps, and a double-lime treatment unit. Using the Department's economic analysis from the IMC-Agrico New Wales PSD permit (1050059-020-AC; PSD-FL-241), prorated based on the differences in plant capacity (160 TPH P2O5 for IMC-Agrico vs. 61TPH P2O5 for Cargill-Bartow), the estimated annual cost of this option is as follows:

Scrubber Pond with Liner (2 acres – spray cooling)	$ 75,000
Tanks, Pumps and Equipment	210,000
Other costs	40,000
Total Installed Cost (TIC)	$325,000
Annual Operating Costs:	
Raw Materials	$ 8,000
Solid Waste Disposal	10,000
Operation & Maintenance (8.4% of TIC)	27,000
Depreciation & Financial Charges (16.9% of TIC)	55,000
Total Annual Cost	$100,000

Therefore, the total estimated annual cost impact of this option is $100,000 per year.

Bartow's pond water fluoride concentration is approximately 5,500 ppm. The estimated reduction in fluoride emissions to the atmosphere from the two packed bed tail gas scrubbers, by the use of fresh water vs. pond water, is shown in Table 1 attached. The scrubber inlet fluoride loadings are based on engineering estimates. As shown, the estimated reduction in fluoride emissions for the two scrubbers is 1.5 lb/hr, or 6.6 TPY at 8,760 hr/yr operation. The cost effectiveness of the fluoride removal option is calculated as follows:

$100,000/yr ÷ 6.6 TPY = $15,150/ton of fluoride removed.

This cost effectiveness number, which is higher than that estimated for IMC-Agrico for a similar system, is sufficiently high to rule out the option of a dedicated scrubber water treatment system. Therefore, the third option, that of a packed bed scrubber utilizing process cooling pond water, is selected as BACT.

Particulate Matter

The alternative presented in the application for control of PM emissions consisted of high-energy venturi scrubbers in place of the medium-energy venturi scrubbers being proposed by Cargill. Cargill will employ a total of four venturi scrubbers, which will be the primary means of PM removal. The two tailgas scrubbers are primarily for fluoride removal, and therefore are not considered in the BACT analysis for PM.

The option of using high-energy venturi scrubbers for PM control is technically feasible, but economic impacts are prohibitive. This option would entail purchasing four new scrubbers instead of the three new venturi scrubbers proposed by Cargill, since Cargill is planning on utilizing one of the existing venturi scrubbers in the proposed system. Each of the four proposed venturis will be designed for a pressure drop of 15 to 16 in. H_2O. As presented in the application, the proposed system will employ two ID fans; one for the reactor/vents, granulator and cooler (RGCV) scrubbers, and one for the dryer scrubbers. Each of these fans will be designed to accommodate a system pressure drop of approximately 30 in. H_2O. One of these fans is the existing RGCV fan, while the second fan will be a new fan replacing the existing dryer fan.

For the option of employing high-energy venturi scrubbers, the pressure drop across each scrubber would double to approximately 30 in. H_2O. This would in turn require higher energy fans for both the RGCV scrubbers and the dryer scrubbers; each designed to accommodate a system pressure drop of approximately 60 in. H_2O.

Estimated capital and annual operating costs for the proposed scrubbers as well as the alternative high-energy venturi scrubbers option are presented in Tables 2 through 9 attached. These costs were developed using the COSTAIR spreadsheets developed by the U.S. EPA. The spreadsheet for high-energy venturi scrubbers was used.

Estimated costs for the proposed system scrubbers (medium energy scrubbers) are presented in Tables 2 and 3. The reactor/vents scrubber and the dryer scrubber are similar in capacity and pressure drop, and therefore a single costing sheet was developed for simplification to represent both scrubbers. Likewise, the granulator and cooler scrubbers are similar in capacity and pressure drop, and therefore a single cost sheet was developed to represent both.

Fan and energy costs associated with the scrubbers were developed on separate cost sheets, using the same costing algorithms, since one existing fan and one new fan will serve all four venturi scrubbers. Costs for the fans are provided in Tables 4 and 5. In the case of the RGCV fan, the existing fan will be utilized, therefore capital costs were not included for this fan, and only energy costs were considered. The proposed dryer fan will be new, and therefore both capital and operating costs were considered in the cost estimates for this equipment.

Note that operating, supervisor and maintenance labor and materials, water treatment and other O & M costs were not considered in the analysis. Therefore, the cost estimates represent conservative estimates.

Similarly, cost estimates for the alternative option of high-energy venturi scrubbers and fans are presented in Tables 6 through 9. The capital costs of the high-energy venturi scrubbers are virtually the same as the medium energy scrubbers, since the capital cost algorithms are based primarily on volumetric flow rate. However, the energy costs for the fans are higher due to the higher pressure drops across the scrubbers. For this case, the existing RGCV fan would need to be replaced with a higher energy fan.

The estimated capital and annual operating costs for the proposed system and the alternative system are summarized below

Total Capital Investment	Proposed (Medium Energy) System	Alternative (High Energy) System
R/V Scrubber	$222,000	$222,000
Dryer Scrubber	222,000	222,000
Granulator Scrubber	170,000	170,000
Cooler Scrubber	170,000	170,000
RGCV Fan	N/A	332,000
Dryer Fan	124,000	140,000
Total Capital Investment	$908,000	$1,256,000

Annual Operating Costs	Proposed (Medium Energy) System	Alternative (High Energy) System
R/V Scrubber	$174,000	$176,000
Dryer Scrubber	174,000	176,000
Granulator Scrubber	163,000	164,000
Cooler Scrubber	163,000	164,000
RGCV Fan	432,000	925,000
Dryer Fan	223,000	413,000
Total Capital Investment	$1,329,000	$2,018,000

Therefore, the total estimated incremental annual cost impact of the alternative high-energy venturi scrubber option is at least $689,000 per year. The primary difference between the medium and high-energy cases lies in energy costs. This is a conservative estimate since it does not include additional ductwork modifications that would be required to accommodate the new ID fans that would be needed. The cost of pumps, tanks, piping and other related equipment are also not included in either control option.

Bartow's No. 3 Fertilizer plant scrubbers will be designed to remove greater than 99percent of the PM entering the scrubbers. The proposed maximum PM emission rate for the plant is 11.6 lb/hr. If it is conservatively assumed that the proposed scrubbers will achieve a 95percent efficiency, then uncontrolled PM emissions are 232 lb/hr. If it is assumed that the high-energy venturi scrubbers will achieve a 99percent efficiency, then the controlled PM emission rate becomes 2.3 lb/hr. Therefore, the incremental reduction in PM emissions for the high energy system is 9.3 lb/hr, or 41 TPY at 8,760 hr/yr operation. The cost effectiveness of the PM control option is calculated as follows:

$689,000/yr ÷ 41 TPY = $16,8000/ton of PM removed

This cost effectiveness number is sufficiently high to rule out the option of high energy wet scrubbers. Therefore, the option of medium energy wet scrubbers is selected as BACT.

A complete revised Sections 1 through 5 of the PSD report, along with the completed modeling analysis (Sections 6 and 7), are attached to aid the Department's review of this new information.

Please continue to process this permit application. If any further information is needed, or you have any questions, please call me as soon as possible.

Sincerely,

GOLDER ASSOCIATES INC.
David A. Buff
David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011
SEAL

Attachments

Cc: David Jellerson
Kathy Edgemon
Melody Russo
Taylor Abel

CC: J. Reynolds, BAR
C. Holladay, BAR
EPA
NPS
Polk Co
SWD

January 8, 1999 Certified Mail: P 376 476 169

Mr. A. A. Linero, P.E.
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Cargill Fertilizer, Inc.
No. 3 Fertilizer Plant Expansion
PSD-FL-255 / 1050046-008-AC

Dear Al,

As per our discussion yesterday, please accept this letter as a waiver of the Department's 90-day permit processing time limit for the above-referenced permit. It is our understanding that without a waiver, the Department will be required to complete processing of the permit application by January 11, 1999. In order to provide you with the the time necessary to properly review the application materials and for Cargill to submit additional information regarding air quality impacts, this waiver grants an extension until February 12, 1999.

Should you have any questions, please do not hesitate to call me at 813/671-6297 or send me an e-mail at david_jellerson@cargill.com.

Sincerely,

David B. Jellerson, P.E.
Environmental Superintendent

cc: David A. Buff, P.E., Golder Associates
Morris, Macleod, Russo, Edgemon
File

CARGILL
FERTILIZER, INC.

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

RECEIVED
JAN 14 1999
BUREAU OF
AIR REGULATION

January 8, 1999 **Certified Mail: P 376 476 169**

Mr. A. A. Linero, P.E.
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Cargill Fertilizer, Inc.
No. 3 Fertilizer Plant Expansion
PSD-FL-255 / 1050046-008-AC

Dear Al,

As per our discussion yesterday, please accept this letter as a waiver of the Department's 90-day permit processing time limit for the above-referenced permit. It is our understanding that without a waiver, the Department will be required to complete processing of the permit application by January 11, 1999. In order to provide you with the the time necessary to properly review the application materials and for Cargill to submit additional information regarding air quality impacts, this waiver grants an extension until February 12, 1999.

Should you have any questions, please do not hesitate to call me at 813/671-6297 or send me an e-mail at *david_jellerson@cargill.com*.

Sincerely,

David B. Jellerson

David B. Jellerson, P.E.
Environmental Superintendent

cc: David A. Buff, P.E., Golder Associates
Morris, Macleod, Russo, Edgemon

recycled paper

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

January 8, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Melody Russo
Environmental Superintendent
Cargill Fertilizer, Inc.
Post Office Box 9002
Bartow, Florida 33831

Re: DEP File No. 1050046-008-AC (PSD-FL-255)
No. 3 Fertilizer Plant Expansion - Bartow

Dear Ms. Russo:

We received by E-Mail the waiver extension for the subject project. This is to clarify a couple of points and no response is needed.

The January 11 date by which we needed to act is approximately day 73 of 90. Issuing an Intent on that date would have allowed us to take a final action within the 90 day requirement. That assumes that the clock is tolled (stopped) from the time the Intent is issued until 14 days after we receive proof of publication of the notice. Upon restart of the clock, another 16 days would transpire until day 90.

The 14 days that the clock is tolled together with the 16 days mentioned add up to the 30 day comment period. Therefore, we are clarifying by this letter, that the waiver is for 30 days, meaning that day 73 (and not day 90) will now occur on February 12. Day 90 cannot be accurately predicted because it depends upon future actions by both the Department and Cargill.

We look forward to working with Cargill on the matter of the modeled increment exceedances. If you have any questions, please call John Reynolds at 850/921-9536.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/aal

cc: Bill Thomas, SWD
David Buff, Golder Assoc.

* no green card
Z 333 612 592

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail (*See reverse*)

Sent to [illegible]	
Street & Number [illegible] Ext.	
Post Office, State, & ZIP Code [illegible]	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 1-12-99 IC5CC46-008-9C PSD-FI-255	

PS Form **3800**, April 1995

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

Golder Associates

January 28, 1999

9837551-0100

Bureau of Air Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED

JAN 29 1999

BUREAU OF
AIR REGULATION

Attention: Mr. Cleveland Holladay

RE: CARGILL NO. 3 FERTILIZER PLANT PSD APPLICATION – REVISED AIR ANALYSIS

Dear Cleve:

Please find enclosed the revised air quality analysis for the above referenced project. This package includes a 3.5-inch disk containing modeling input and output files. If you have any questions, please email or call me at (352) 336-5600. Thank you.

Sincerely,

GOLDER ASSOCIATES INC.

Steven R. Marks, C.C.M.
Senior Scientist

SRM/tla

Enclosures

cc: D. Buff

G:\DATA\DP\PROJECTS\98\9837\9837551Y\F1\WP\REVISED\#01.doc

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 SIGNIFICANT IMPACT ANALYSIS

The general modeling approach followed EPA and FDEP modeling guidelines for determining compliance with ambient air quality standards (AAQS) and PSD increments. For all criteria pollutants that will be emitted in excess of the PSD significant emission rate due to a proposed project, a significant impact analysis is performed to determine whether the emission and/or stack configuration changes due to the project alone will result in predicted impacts that are in excess of the EPA significant impact levels at any location beyond the plant property boundaries. For the proposed Cargill project, PM/PM_{10} are the only criteria pollutants emitted in excess of the PSD significant emission rates. Fluoride emissions were also modeled to support the air quality related values analysis, since fluorides are subject to PSD review.

Generally, if the facility undergoing the modification also is within 200 kilometers of a PSD Class I area, then a significant impact analysis is also performed for the PSD Class I area. Currently, the National Park Service (NPS) has recommended significant impact levels for PSD Class I areas. The recommended levels have not been promulgated as rules.

Current FDEP policies stipulate that the highest annual average and highest short-term (i.e., 24 hours or less) concentrations are to be compared to the applicable significant impact levels. Based on the screening modeling analysis results, additional modeling refinements with a denser receptor grid are performed, as necessary, to obtain the maximum concentration. Modeling refinements are performed with a receptor grid spacing of 100 meters (m) or less.

If the project's impacts are above the significant impact levels, then a more detailed air modeling analysis that includes background sources is performed. This consists of evaluating compliance with AAQS and PSD increments.

6.2 AAQS/PSD MODELING ANALYSIS

For each pollutant for which a significant impact is predicted, a refined impact analysis to demonstrate compliance with AAQS and PSD increments is required. This analysis must consider other nearby sources and background concentrations and predict concentrations for comparison to ambient standards. For the proposed project, a refined impact analysis is required for PM_{10}.

In general, when 5 years of meteorological data are used in the analysis, the highest annual and the highest, second-highest (HSH) short-term concentrations are compared to the applicable AAQS and allowable PSD increments. The HSH concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with AAQS and allowable PSD increments, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum short-term concentrations for the proposed project, the modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. For this study, the only difference between the two modeling phases is the density of the receptor grid spacing employed when predicting concentrations. Concentrations are predicted for the screening phase using a coarse receptor grid and a 5-year meteorological data record.

If the original screening analysis indicates that the highest concentrations are occurring in a selected area(s) of the grid and, if the area's total coverage is too vast to directly apply a refined receptor grid, then an additional screening grid(s) will be used over that area. The additional screening grid(s) will employ a greater receptor density than the original screening grid, so refinements can be performed if necessary.

Refinements of the maximum predicted concentrations are typically performed for the receptors of the screening receptor grid at which the highest and/or HSH concentrations occurred over the 5-year period. Generally, if the maximum concentration from other years in the screening analysis are within 10 percent of the overall maximum concentration, then those other concentrations are refined as well. Typically, if the highest and HSH concentrations are in different locations, concentrations in both areas are refined.

Modeling refinements are performed for short-term averaging times by using a denser receptor grid, centered on the screening receptor to be refined. The angular spacing between radials is 1 degree and the radial distance interval between receptors is 100 m. Annual modeling refinements employ an angular spacing between radials of 1 degree and a distance interval from 100 to 300 m, depending on the concentration gradient in the vicinity of the screening receptor to be refined. If the maximum screening concentration is located on the plant property boundary, additional plant boundary receptors are input, spaced at a 1 degree angular intervals and centered on the screening receptor. The domain of the refinement grid will extend to all adjacent screening receptors. The air dispersion model is then executed with the refined grid for the entire year of meteorology during which the screening concentration occurred. This approach is used to ensure that a valid HSH concentration is obtained. A more detailed description of the model, along with the emission inventory, meteorological data, and screening receptor grids, is presented in the following sections.

6.2.1 MODEL SELECTION

The Industrial Source Complex Short-term (ISCST3, Version 97363) dispersion model (EPA, 1995) was used to evaluate the pollutant impacts due to the proposed modification to Cargill's No. 3 Fertilizer Plant. This model is maintained on the EPA's Technical Transfer Network (TTN) internet web site. A listing of ISCST3 model features in presented in Table 6-1. The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights).

In this analysis, the EPA regulatory default options were used in all model executions. Based on the land-use within a 3.5-km radius of the Cargill facility, the rural dispersion coefficients were used in the modeling analysis. The ISCST3 model was used to provide maximum concentrations for the annual and 24-hour averaging times.

6.2.2 METEOROLOGICAL DATA

Meteorological data used in the ISCST3 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport and Ruskin, respectively. The 5-year period of meteorological data was from 1987 through 1991. The NWS station at Tampa International Airport, located approximately 69 km to the northwest of the Cargill plant site, was selected for use in the study because it is the closest primary weather station to the study area that is representative of the plant site.

6.2.3 EMISSION INVENTORY

Significant Impact Analysis

The PM_{10} emission rate increases and the physical and operational stack parameters for the No. 3 Fertilizer Plant are summarized in Table 6-2. These data are based on emission and stack parameter data presented in Tables 2-1, 2-2, and 3-2. For the PM_{10} analysis, the modeled sources included the pre-modification No. 3 Fertilizer Plant stack, the post-modification No. 3 Fertilizer Plant stack, the Phosphoric Acid Plant stacks and the No. 3 Shipping Plant stack. These sources were modeled at locations relative to the No. 4 Fertilizer Plant stack, which is the modeling origin that has been used in previous PSD applications for the Cargill Bartow facility.

AAQS Analysis

The non-Cargill PM facilities that were considered in the air modeling analysis are provided in Attachment C, Table C-1. The competing source data were obtained from a modeling analysis performed for a PSD application for IMC-Agrico, a source in Polk County, provided to Golder by FDEP.

PSD Class II Analysis

Cargill's PM_{10} PSD increment consuming sources are provided in Table 6-2. Non-Cargill PSD sources were obtained from the IMC-Agrico PSD analysis, provided to Golder by FDEP. The PSD source emission inventory is presented in Attachment C, Table C-2.

PSD Class I Analysis

Because the proposed No. 3 Fertilizer Plant expansion's maximum air impacts do not exceed the recommended NSPS significant impact levels for PM_{10} at the Chassahowitzka NWA PSD Class I area, a PSD Class I increment consumption modeling assessment is not required. However, the proposed project's emissions of SO_2, PM_{10}, and NO_x were evaluated at the Class I area in support of the regional haze analysis. Fluoride emissions were evaluated in support of the air quality related values (AQRV) analysis. Emissions of SO_2 and NO_x from the proposed project, based on Table 2-3, are presented in Table 6-3. The AQRV analysis is presented in Section 7.0.

6.2.4 RECEPTOR LOCATIONS

Site Vicinity

To determine the PM_{10} significant impact area for the proposed project, concentrations were predicted for 324 regular and 146 discrete polar grid receptors located in a radial grid centered on the No. 4 Fertilizer Plant stack. Receptors were located in "rings" with 36 receptors per ring, spaced at 10E intervals and at distances along the fence line 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 6.0, 7.0, and 8.0 km from the No. 4 Fertilizer Plant stack location. Discrete receptors were placed at 10E intervals along the plant property boundary and off-property receptors at distances of 1.5, 2.0, 2.5, 3.0, 3.5 and 4.0 km from the No. 4 Fertilizer Plant stack. The 18 property boundary receptors used for the screening analysis are presented in Table 6-4. Based on the results of the significant impact analysis, a maximum receptor distance of 3.3 km was used for the screening grid for the AAQS and PSD Class II analysis.

Class I Area

Maximum PM_{10} impacts for the Chassahowitzka NWA were predicted at 13 discrete receptors located along the border of the PSD Class I area. Impacts for the proposed modification only were also compared to the Class I significance levels recommended by the National Park Service (NPS). A listing of Class I receptors is provided in Table 6-5.

6.2.5 BACKGROUND CONCENTRATIONS

To estimate total air quality concentrations in the site vicinity, a background concentration must be added to the modeling results. The background concentration is considered to be the air quality concentration contributed by sources not included in the modeling evaluation.

The derivation of the background concentration for the modeling analysis was presented in Section 4.0. Based on this analysis, the PM_{10} background concentration was determined to be 18 $\mu g/m^3$ for the 24-hour and annual averaging periods. These background levels were added to model-predicted concentrations to estimate total air quality levels for comparison to AAQS.

6.2.6 BUILDING DOWNWASH EFFECTS

All significant building structures within Cargill's existing plant area were determined by a site plot plan. The plot plan of the Bartow facility was presented in Figure 2-2. All building structures were processed in the EPA Building Input

Profile (BPIP, Version 95086) program to determine direction-specific building heights and projected widths for each 10-degree azimuth direction for each source that was included in the modeling analysis.

6.3 MODEL RESULTS

6.3.1 SIGNIFICANT IMPACT MODELING ANALYSIS

A summary of the predicted maximum PM_{10} concentrations for the proposed modification only for the screening analysis is presented in Table 6-6. The modeling demonstrates that the maximum 24-hour concentration of 11.1 $\mu g/m^3$ is above the significance level of 5 $\mu g/m^3$, 24-hour average. The maximum annual PM_{10} impact of 1.03 $\mu g/m^3$ is above the significance level of 1.0 $\mu g/m^3$, annual average. As the proposed project's maximum impacts are above the significant impact levels, further PSD Class II increment and AAQS analysis are required for PM_{10}. The distance to which PM_{10} is significant was determined to be 3.3 km, based on 24-hour impacts.

6.3.2 AAQS ANALYSIS

A summary of the maximum PM_{10} concentrations predicted for all sources for the screening analysis is presented in Table 6-7. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-8. The maximum predicted annual and 24-hour PM_{10} concentrations are 31.1 $\mu g/m^3$ and 119.8 $\mu g/m^3$ (high, second high), respectively, which includes an ambient non-modeled background concentration of 18 $\mu g/m^3$. The maximum high, second high PM_{10} concentrations are less than the AAQS of 50 and 150 $\mu g/m^3$, respectively.

6.3.3 PM_{10} PSD CLASS II ANALYSIS

The results of the screening analysis for PSD Class II increment consumption are presented in Table 6-9. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-10. The refined modeling results indicate that the maximum predicted PSD Class II 24-hour increment of 29.4 μg/m³ is predicted to meet the allowable PM_{10} PSD Class II increment of 30 μg/m³.

6.3.4 PSD CLASS I MODELING ANALYSIS

Maximum PM_{10} concentrations predicted for the proposed project alone at the Chassahowitzka NWA PSD Class I area are compared with the NPS recommended PSD Class I significance levels in Table 6-11. As the proposed project's maximum impacts are below the Class I significant impact levels, a full PSD Class I increment analysis is not required. However, PM10 impacts are required for the AQRV analysis for the Class I area, presented in Section 7.0.

6.3.5 FLUORIDE IMPACTS

PSD Class II Modeling Analysis

Maximum fluoride concentrations due to the proposed project at the site vicinity, PSD Class II area, are presented in Table 6-12 for the 8-hour, 24-hour, and annual averaging times. There are no AAQS or PSD increments for fluorides. However, fluoride impacts are required for the additional impact analysis and AQRV analysis for the Class II area, presented in Section 7.0.

PSD Class I Modeling Analysis

Maximum fluoride concentrations due to the proposed project at the Chassahowitzka Class I area are presented in Table 6-13 for the 8-hour, 24-hour, and annual averaging times. There are no AAQS or PSD increments for fluorides. However, fluoride impacts are required for the additional impact analysis and AQRV analysis for the Class I area, presented in Section 7.0.

Table 6-9. Maximum Predicted PM10 Increment Consumption - PSD Class II Screening Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Distance (m)	Period Ending (YYMMDDHH)
Annual	3.85	110.	2500.	87123124
	3.36	110.	3000.	88123124
	3.82	200.	1212.	89123124
	3.81	110.	2500.	90123124
	3.88	110.	2500.	91123124
HIGH 24-Hour	24.11	180.	3300.	87032824
	25.21	180.	3300.	88090624
	28.25	160.	3000.	89031424
	30.42	180.	3300.	90010624
	21.81	100.	2500.	91052124
HSH 24-Hour	22.66	170.	2500.	87032824
	18.37	190.	3300.	88090624
	23.71	170.	3300.	89071424
	25.58	170.	3000.	90022024
	18.04	100.	2629.	91020324

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

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Table 6-10. Maximum Predicted PM10 PSD Increment Consumption Compared with PSD Class II Increments -- Refined Analysis

		Receptor Location[a]			
Averaging Time	Concentration ($\mu g/m^3$)	Direction (degrees)	Distance (m)	Period Ending (YYMMDDHH)	Allowable PSD Increment ($\mu g/m^3$)
Annual	3.90	108	2600	91123124	17
HSH 24-Hour	29.39	174	3300	90022024	30

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

[a] Relative to No. 4 DAP stack location.

Table 6-11. Maximum Predicted PM10 Concentrations for the Proposed Modification Only at the Chassahowitzka Wilderness Area

Averaging	Concentration	Receptor Location[a]		Period Ending	EPA Significance
		UTM-E	UTM-N	(YYMMDDHH)	Levels ($\mu g/m^3$)
Annual	0.003	340300.	3165700.	87123124	0.1
	0.003	340300.	3165700.	88123124	
	0.004	343700.	3178300.	89123124	
	0.002	342000.	3174000.	90123124	
	0.002	340300.	3165700.	91123124	
HIGH 24-Hour	0.058	341100.	3183400.	87080524	0.33
	0.061	340300.	3167700.	88073124	
	0.071	340300.	3169800.	89100624	
	0.075	342000.	3174000.	90071424	
	0.056	340300.	3169800.	91072724	
HIGH 8-Hour	0.173	341100.	3183400.	87080508	NA
	0.176	340300.	3165700.	88101208	
	0.244	343700.	3178300.	89072024	
	0.202	342000.	3174000.	90071416	
	0.142	340300.	3165700.	91083024	

Note: YY=Year, MM=Month, DD=Day, HH=Hour, HSH = Highest, Second-Highest, NA = Not Applicable.

[a] All receptor coordinates are reported in Universal Transverse Mercator (UTM) Coordinates.

Table 6-12. Maximum Predicted Fluoride Impacts Due to the Future No. 3 Fertilizer Plant —Site Vicinity

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a]		Period Ending (YYMMDDHH)
		Direction (degrees)	Distance (m)	
Site Vicinity				
Annual	0.096	250	2092	87123124
	0.128	210	1313	88123124
	0.139	190	1158	89123124
	0.105	260	1996	90123124
	0.106	250	2092	91123124
HIGH 24-Hour	1.064	210	1313	87101124
	1.187	200	1212	88070524
	1.443	150	1137	89030724
	0.870	170	1160	90111924
	1.012	210	1313	91012624
HIGH 8-Hour	1.479	200	1313	87110524
	2.039	190	1158	88120224
	2.074	160	1131	89103008
	1.633	180	1142	90013116
	1.724	180	1142	91110324

Note: Impacts reported are highest predicted.
YY=Year, MM=Month, DD=Day, HH=Hour, HSH=Highest, Second-Highest.

[a] Relative to No. 4 DAP stack location. Impacts reported are highest predicted.

Table 6-13. Maximum Predicted Fluoride Concentrations for the Future No. 3 Fertilizer Plant — Chassahowitzka Wilderness Area

		Receptor Location[a]		
Averaging	Concentration	UTM-E	UTM-N	Period Ending (YYMMDDHH)
Annual	0.00060	340300.	3165700.	87123124
	0.00077	340300.	3165700.	88123124
	0.00086	340300.	3165700.	89123124
	0.00044	340300.	3165700.	90123124
	0.00055	340300.	3165700.	91123124
HIGH 24-Hour	0.01304	342400.	3180600.	87080524
	0.01371	340300.	3167700.	88073124
	0.01559	340300.	3169800.	89100624
	0.01267	340700.	3171900.	90070324
	0.01237	340300.	3169800.	91072724
HIGH 8-Hour	0.03911	342400.	3180600.	87080508
	0.03550	340300.	3165700.	88101208
	0.05342	343700.	3178300.	89072024
	0.03371	340700.	3171900.	90070324
	0.03104	340300.	3165700.	91083024

Note: YY=Year, MM=Month, DD=Day, HH=Hour, HSH = Highest, Second-Highest, NA = Not Applicable.

[a] All receptor coordinates are reported in Universal Transverse Mercator (UTM) Coordinates.

Table C-2. PSD-PM Inventory for Proposed Cargill Project

ISCST ID	Relative Coordinates (m		QS	HS	TS	VS	DS
	X	Y	(g/s)	(m)	(K)	(m/s)	(m)
IMCKLN	-13100	-7300	2.52	52.4	314	21.4	1.37
IMCCOLR	-13100	-7300	0.79	26.21	394.3	32.3	0.91
IMCMILL	-13100	-7300	0.23	27.44	327.4	34.45	0.46
AGSP2	-2420	-15235	4.002	3	344.1	20.69	0.55
AGSP3	-2420	-15235	0.23	19.8	300.2	88.45	0.49
AGSP4	-2420	-15235	4.318	18.3	323	9.7	0.3
AGSP5	-2420	-15235	5.067	24.4	295.2	7.23	3.35
AGSP6	-2420	-15235	5.067	24.4	296.9	7.8	3.35
AGSP7	-2420	-15235	0.259	19.8	310.2	5.48	0.49
AGSP10	-2420	-15235	3.023	38.1	327.4	14.55	3.05
AGSP11	-2420	-15235	0.432	38.1	319.1	15.84	1.07
CFPLT2	-21920	29265	2.007	33.5	316.5	19.68	1.52
CFPLT4	-21920	29265	1.197	60.7	352.6	16.4	2.44
CFPLT5	-21920	29265	1.197	60.7	337.6	9.7	2.44
CFPLT6	-21920	29265	3.91	36.3	314.3	13.64	1.22
CFPLT7	-21920	29265	4.115	28.6	326.5	7.93	3.05
CFPLT10	-21920	29265	4.725	35.1	299.9	11.01	2.8
CFPLT11	-21920	29265	0.63	27.4	298.2	19.02	0.52
CFPLT14	-21920	29265	0.63	10.1	298.8	5.94	1.01
CFPLT18	-21920	29265	0.126	30.5	294.3	7.64	0.76
CFPLT19	-21920	29265	2.667	25.9	298.2	11.64	0.15
CRGL1	-47020	-4535	1.036	20.7	314.7	11.09	1.07
CRGL2	-47020	-4535	0.662	19.8	303	11.74	1.22
CRGL3	-47020	-4535	1.267	20.1	333	16.17	0.61
CRGL4	-47020	-4535	2.246	22.6	305.2	7.84	1.22
CRGL5	-47020	-4535	1.036	20.7	319.1	1.16	1.07
CRGL6	-47020	-4535	0.662	19.8	301.9	14.43	1.22
CRGL7	-47020	-4535	3.858	16.8	323.6	19.93	1.31
CRGL8	-47020	-4535	0.979	9.8	308.6	8.04	0.4
CRGL9	-47020	-4535	1.209	6.1	488.6	15.89	1.22
CRGL12	-47020	-4535	0.173	6.1	298.6	16.31	0.37
CRGL13	-47020	-4535	0.547	9.1	298.6	13.2	1.07
CRGL14	-47020	-4535	0.173	18.3	588.6	6.94	2.53
CRGL15	-47020	-4535	0.605	12.2	298	11.21	0.46
CRGL16	-47020	-4535	0.403	15.2	303.6	12.42	0.76
CRGL17	-47020	-4535	0.029	12.2	321.9	9.94	0.52
CRGL18	-47020	-4535	0.633	27.4	333.6	17.32	1.07
CRGL19	-47020	-4535	0.144	26.5	331.9	8.18	0.37
CRGL20	-47020	-4535	2.879	16.5	320.2	19.69	1.31
CRGL21	-47020	-4535	0.72	27.4	334.1	21.96	1.01
CRGL22	-47020	-4535	0.72	27.4	334.1	19.58	1.01
CRGL23	-47020	-4535	0.086	13.7	298.6	16.31	0.37
CRGL24	-47020	-4535	0.086	9.1	298.6	16.31	0.37
CRGL25	-47020	-4535	0.144	22.9	298.6	12.42	0.58
CRGL27	-47020	-4535	0.118	11.6	298.6	17.75	0.82

Table C-2. PSD-PM Inventory for Proposed Cargill Project

ISCST ID	Relative Coordinates (m		QS	HS	TS	VS	DS
	X	Y	(g/s)	(m)	(K)	(m/s)	(m)
CNRV7	-11220	-2535	0.633	54.6	338.6	14.37	0.18
CNRV8	-11220	-2535	0.202	55.5	310.8	2.97	0.43
CNRV12	-11220	-2535	0.633	63.1	330.2	21.12	0.43
CNSDM2	-16120	9565	0.202	13.7	349.7	14.17	0.55
CNSDM3	-16120	9565	0.202	16.5	298	19.96	0.55
CNSDM4	-16120	9565	4.405	24.4	308	79.21	1.37
CNSDM5	-16120	9565	0.115	16.5	298	19.14	0.43
CNSDM7	-16120	9565	0.662	9.8	295.8	10.76	0.46
CNSDM9	-16120	9565	1.756	24.4	319.1	6.2	1.68
CNSDM10	-16120	9565	1.9	45.7	313	18.34	1.77
CNSDM11	-16120	9565	0.173	32.6	298	33.69	0.37
CNSDM12	-16120	9565	0.259	24.7	315.2	9.05	0.82
CNSDM13	-16120	9565	1.67	30.5	338	11.98	1.37
CNSDM14	-16120	9565	0.029	15.2	294.1	20.7	0.15
CNSDM15	-16120	9565	0.058	3	338.6	18.19	0.24
CNSDM18	-16120	9565	0.029	21.3	298	12.58	0.18
CNSDM19	-16120	9565	0.144	20.4	298	11.5	0.46
CNSDM20	-16120	9565	0.259	18.9	298	24.95	0.55
CNSDM21	-16120	9565	0.086	21.3	298	31.89	0.37
CNSDM22	-16120	9565	0.202	17.4	298	28.75	0.46
CNSDM23	-16120	9565	0.892	10.4	327.4	19.16	0.82
CNSDM24	-16120	9565	0.086	14	298	17.97	0.18
CNSDM25	-16120	9565	0.864	30.5	319.1	0.01	0.91
CNSDM26	-16120	9565	0.058	29.6	298	13.58	0.3
CNSDM27	-16120	9565	0.115	15.8	298	19.14	0.43
FRMGB2	-420	-6635	2.937	56.4	338	5.17	1.52
FRMGB3	-420	-6635	3.8	39.3	319.1	10.66	2.13
FRMGB6	-420	-6635	0.144	12.2	366.3	0.03	0.61
FRMGB7	-420	-6635	6.622	35.1	349.7	22.72	0.67
FRMGB9	-420	-6635	3.224	39.6	311.9	5.66	1.22
FRMGB12	-420	-6635	0.086	12.2	366.3	0.03	0.61
FRMGB13	-420	-6635	0.086	12.2	366.3	2.67	0.61
FRMGB14	-420	-6635	3.311	50.3	298	8.86	0.7
FRMGB15	-420	-6635	3.426	26.8	349.7	19.09	0.73
IMCFL1	-20320	-18835	6.766	22.9	314.7	17.33	0.85
IMCFL4	-20320	-18835	6.45	45.7	316.3	8.43	0.82
IMCNW9	-13220	-7335	0.432	19.8	352.4	14.37	0.46
IMCNW10	-13220	-7335	0.432	32.6	313.6	20.96	0.55
IMCNW11	-13220	-7335	0.115	30.5	299.7	54.62	0.46
IMCNW14	-13220	-7335	0.432	31.7	313.6	21.48	0.49
IMCNW20	-13220	-7335	0.432	17.4	352.4	22.96	0.4
IMCNW21	-13220	-7335	0.432	5.2	380.2	38.27	0.4
IMCNW23	-13220	-7335	0.777	51.8	316.3	1.97	1.52
IMCNW25	-13220	-7335	0.662	7.6	333	10.49	1.31
IMCNW29	-13220	-7335	0.806	12.2	299.7	9.39	0.27

Table C-2. PSD-PM Inventory for Proposed Cargill Project

ISCST ID	Relative Coordinates (m X	Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)
IMCNW31	-13220	-7335	0.058	30.5	311.9	12.58	0.55
IMCNW32	-13220	-7335	0.576	28.7	352.4	10.78	1.83
IMCNW33	-13220	-7335	0.173	33.5	316.3	13.86	0.43
IMCNW34	-13220	-7335	0.202	26.2	299.7	16.5	0.21
IMCNW35	-13220	-7335	0.345	32.6	338.6	15.84	1.07
IMCNW37	-13220	-7335	0.432	36	313.6	10.35	0.3
IMCNY1	4780	-6435	0.076	8.2	302.4	16.17	0.61
IMCNY2	4780	-6435	0.025	8.2	296.9	4.85	0.61
IMCNY3	4780	-6435	0.025	7.6	296.9	11.5	0.46
IMCNY4	4780	-6435	0.113	7.3	316.3	8.09	0.61
IMCNY5	4780	-6435	0.013	13.1	303	18.11	0.61
IMCNY6	4780	-6435	0.19	41.1	288.6	16.75	0.85
IMCNY13	4780	-6435	0.025	8.2	302.4	16.17	0.61
IMCNY14	4780	-6435	0.214	45.7	310.8	15.84	1.07
LLMC6	-720	19365	40.82	76.2	349.7	32.85	4.88
MMM2	-11520	-1635	0.144	4.6	312.4	16.5	0.43
MMM3	-11620	-1635	6.996	25.9	296.9	19.4	1.52
MMM6	-11520	-1535	1.555	24.4	326.9	11.68	0.49
MMM7	-11520	-1535	1.123	30.5	338.6	19.02	1.1
MMM8	-11520	-1535	1.411	24.4	326.9	11.68	0.49
MMM9	-11520	-1435	1.382	12.2	344.1	11.83	1.07
MMM10	-11520	-1435	0.058	24.1	349.7	14.64	0.24
MMM11	-11520	-1435	0.72	4	521.9	2.12	0.76
MMM12	-11520	-1435	1.958	25.9	299.7	14.54	1.68
TCOBB1	-48020	-11735	0.029	42.4	333	18.19	0.49
TCOBB2	-48020	-11735	2.102	34.4	394.1	123.77	0.27
TCOBB3	-48020	-11735	0.662	31.1	394.1	16.04	0.76
TCOBB4	-48020	-11735	0.173	54.6	298.6	21.04	0.52
TCOPP1	-7420	-19335	2.02	6.1	533	13.1	0.9
TCOPP2	-7420	-19335	7.43	45.7	400	16.79	5.8
TCOPP3	-7420	-19335	3.15	60.7	1033	9.14	1.07
USAC1	3280	-435	2.85	22.6	299.7	48.51	0.61
USAC3	3280	-435	4.866	39.9	327.4	11.09	2.13

Source: FDEP

Golder Associates Fax

Al Linero /

To: John Reynolds **Fax Number:** 850-922-6979

Company: FDEP **Date:** Feb 4, 1999

From: David Buff **e-mail:** @golder.com

Our ref: 9837585-0100 **Voice Mail:**

RE:

Total pages (including cover): 3 **Hard copy to follow** ☐

MESSAGE

Original to file

copy to JR.

Golder Associates

6241 NW 23rd St., Suite 500
Gainesville, FL 32653
U.S.A.
Telephone: (352) 336-5600
Fax: (352) 336-6603

Comprehensive Consulting Services in Geotechnical Engineering, Environmental Remediation and Waste Management

Environmental Remediation
Waste Management
Water Resources
Landfill Siting & Design
Geophysics
Civil Engineering & Construction
Mining & Quarrying
Oil and Gas Waste Management
Soil and Rock Mechanics
Nuclear Waste Management
Risk Assessment
Energy Projects
Transportation

Offices in Australia, Canada, Finland, Germany, Hong Kong, Hungary, Indonesia, Italy, South America, Sweden, United Kingdom, United States

Cargill Fertilizer -Bartow plant
No. 3 Fertilizer Plant - Rate Increase
1050046-008-AC; PSD-FL-255

Comments to Pre-Draft PSD Permit

Section I. FACILITY INFORMATION

REGULATORY CLASSIFICATION

2nd para.- The facility is not classified as a "Phosphate Rock Processing Plant". In regards tot he list of 28 source categories, it is more appropriately classified as a "Chemical Process plant".

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

2. Add at the end of sentence for clarification "...when operating in the DAP mode", since there is no NSPS for MAP plants.

3. The production rates should be specified as a "daily average", as presented in the application. There is no reason to regulate the production rate on a shorter time period. Also, since the emission limitations are all based on P205 input, there is no reason to limit the MAP/DAP product rate.

7. The visible emissions limit should be adjusted to 15% opacity, consistent with the BACT determination for the IMC Agrico Co. No. 2 DAP Plant PSD permit issued in early 1998 (PSD-FL-241; 1050059-020-AC).

8. No. 6 fuel oil firing should not be limited to just during periods of natural gas curtailment. Cargill may have other reasons to fire No. 6 oil, such as during gas line or gas burner maintenance. As presented in the application, Cargill will limit No. 6 fuel oil burning to 338,000 gal/yr. This level of fuel oil burning did not trigger PSD for SO2 emissions, therefore there is no regulatory basis for further limiting oil usage or emissions. Also, the 40 MMBtu/hr limit should be specified as a "daily average".

9. A minimum operating pressure drop for the venturi scrubbers should not be imposed as a condition of the construction permit. An emission limitation is already being imposed on the control equipment. The pressure drop requirement is an additional work practice standard. The PSD regulations and definition of BACT define BACT as an "emission limitation" (Rule 62-212.200(42)). Only if the Department determines that technological or economic limitations on the application of measurement methodology would make the imposition of an emission limitation infeasible, then the Department may prescribe a work practice, design, equipment or operational standard, to satisfy the requirement for BACT.

   The Department has prescribed the technology that the BACT emission limitation is based upon (i.e., venturi scrubbers for PM control). Cargill has stated in the application that they will install this technology, and that the venturi scrubbers will be designed to achieve 15 in. H2O pressure drop. However, they will be fixed throat venturis and therefore the pressure drop is not adjustable. To require a 15 in. H2O pressure drop at all times is premature and inappropriate. The BACT emission limitation may well be achievable at a lower pressure drop on some scrubbers. Any imposition of a minimum pressure drop should be delayed until the initial compliance testing, and then limits can be established under periodic monitoring requirements in the Title V operating permit. Cargill's Title V permit for Bartow currently incorporates minimum pressure drop requirements on the venturi scrubbers. These can be modified after the initial compliance tests.

Also, reword the last sentence of this condition as follows: "Accuracy of the monitoring devices shall be ±5% over the operating range, when operating in the DAP mode." Also, Rule 62-297.310 applies to process variables only, and not to monitoring equipment. This rule also only requires 10 percent accuracy.

12. The last sentence of this condition, referring to a baghouse, should be deleted because the No. 3 Fertilizer Plant has no baghouses.

13. The second half of this condition, related to measuring phosphorous bearing material, should be clarified that it only applies when operating in DAP mode since there is no NSPS for MAP plants.

BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

2nd paragraph, last sentence. "Air pollution control equipment will consist of high efficiency bag collectors for PM/PM10 and wet scrubbers for F emissions" should be changed to reflect wet scrubbers since there are no baghouses in the No. 3 Fertilizer Plant.

BACT determination procedure, 5th bullet, states Fluorides "(primarily HF)", is not accurate. Fluorides are also emitted as SiF4, and in fact the HF released in the process may immediately convert to SiF4 prior to exiting the stack.

And under the PM/PM10 and VE section it states that the BACT requirement will be satisfied by the minimum pressure drop for the acid scrubbers. As discussed above, the minimum pressure drops should be determined through stack testing. The VE limit should be set at 15% opacity consistent with previous BACT determinations.