REVISED
PSD REPORT FOR FACILITY EXPANSION CARGILL FERTILIZER, INC. RIVERVIEW, FLORIDA

Prepared For:
Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, FL 33569

Prepared By:
Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

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LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
AQRV	air quality related values
acfm	actual cubic feet per minute
AFI	Animal Feed Ingredient
BACT	Best Available Control Technology
CAA	Clean Air Act
Cargill	Cargill Fertilizer, Inc.
CFR	Code of Federal Regulations
CNWA	Chassahowitzka National Wildlife Area
CO	carbon monoxide
DAP	diammonium phosphate
DCP	dicalcium phosphate
DE	diatomaceous earth
dscfm	dry standard cubic feet per minute
EPA	U.S. Environmental Protection Agency
F	fluoride
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FGD	flue gas desulfurization
ft^2	square foot
ft^3	cubic foot
GEP	Good Engineering Practice
gpm	gallons per minute
gr/dscf	grains per dry standard cubic foot
GTSP	Granular Triple Super Phosphate
GPM	gallons per minute
H_2O	water
H_2S	hydrogen sulfide

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LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

H_2SO_4	sulfuric acid
hr/yr	hours per year
HSH	highest, second-highest
lb	pound
lb/hr	pounds per hour
lb/ton	pounds per ton
MAP	monoammonium phosphate
MCP	monocalcium phosphate
mg/m^3	milligrams per cubic meter
NO_2	nitrogen dioxide
NO_3	nitric oxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
NSR	new source review
NTU	number of transfer unit
P_2O_5	phosphorous pentoxide
PAP	Phosphoric Acid plant
PA	Phosphoric Acid
PFS	phosphatic fertilizer solution
PM	particulate matter
PM_{10}	particulate matter less than or equal to 10 micrometers
PSD	prevention of significant deterioration
RACT	Reasonably Available Control Technology
RGCV	reactor-granulator-cooler-equipment vents
SAM	sulfuric acid mist
SiF_4	silicon tetrafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO4	sulfate

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LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

TPD	tons per day
TPH	tons per hour
TPY	tons per year
TSP	triple super phosphate
$\mu g/m^3$	micrograms per cubic meter
VOC	volatile organic compound

1.0 INTRODUCTION

Cargill Fertilizer, Inc. is proposing to modify several existing emission units at its phosphate fertilizer manufacturing facility located in Riverview, Florida. The proposed changes will include increased molten sulfur through the molten sulfur handling system, additional digestion capacity associated with the Dorrco Reactor at the Phosphoric Acid plant (PAP), modification of the Granular Triple Super Phosphate (GTSP) plant, modification of the Animal Feed Ingredient (AFI) plant, and modification of the No. 5 Diammonium Phosphate (DAP) plant. Cargill is also requesting removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid (H_2SO_4) plants, to allow these plants to simultaneously operate up to their maximum capacities, with a reduction in allowable emissions.

Cargill is requesting a removal of the existing allowable production rate cap of 5,700 tons per day (TPD) of 100-percent H_2SO_4 for the Nos. 8 and 9 H_2SO_4 plants. The removal of this production rate cap will allow both plants to simultaneously operate up to their maximum individual capacities of 2,700 and 3,400 TPD, respectively, of 100-percent H_2SO_4. The plants will also be modified to allow for a reduction in allowable SO_2 emissions. As a result of the increased H_2SO_4 production, the actual and potential maximum molten sulfur sent through the molten sulfur handling and storage system will increase. However, with the reduction in allowable SO_2 emissions from the H_2SO_4 plants, the overall potential SO_2 emissions for the facility will decrease as a result of the project.

The proposed modifications to the PAP will add a digestion system downstream of the Dorrco reactor and, by allowing greater time for gypsum crystallization, will increase phosphoric acid production by up to 10,000 tons per year (TPY) as 100-percent phosphorous pentoxide (P_2O_5). Other downstream changes to the PAP will also be made.

The GTSP plant will be converted to allow for the production of enhanced phosphate fertilizers including GTSP, ammoniated phosphates [such as monoammonium phosphate (MAP) and DAP], and phosphate fertilizers with added nitrogen, sulfur and micronutrients. The modifications will also include work necessary to provide proper product granulation and improve overall plant evacuation and pollution control. Upon implementation of the modifications, the plant will be renamed the Enhanced Phosphate Products (EPP) plant.

Cargill is proposing to modify the AFI plant to produce up to 394,200 TPY (1,080 TPD) of granular animal feed ingredients product, utilizing the additional 10,000 TPY of P_2O_5 produced in the PAP. The existing AFI granulation tram will continue to be used for all of the AFI production.

The existing No. 5 DAP plant will be modified to improve the energy efficiency of the plant by utilizing waste heat to vaporize some or all of the ammonia fed to the DAP plant and to the adjacent Nos. 3 and 4 MAP plants. The project also seeks to enhance the chemical and physical characteristics of the DAP product by improving the granulation/reaction conditions.

Based on the potential increase in actual emissions of fluoride (F), sulfur dioxide (SO_2), nitrogen oxides (NO_X), sulfuric acid mist (SAM), particulate matter (PM), and particulate matter less than or equal to 10 micrometers (PM_{10}) due to the proposed modifications, the proposed project will constitute a major modification to a major stationary source, and thus trigger a new source review (NSR) under the provisions of the prevention of significant deterioration (PSD) regulations.

For each pollutant subject to PSD review, the following analyses are required:

1. Ambient monitoring analysis, unless the net increase in emissions due to the modification causes impacts that are below specified significant impact levels;
2. Application of best available control technology (BACT) for each new or modified emissions unit;
3. Air quality impact analysis, unless the net increase in emissions due to the modification causes impacts which are below specified significant impact levels; and
4. Additional impact analysis (impact on soils, vegetation, visibility), including impacts on PSD Class I areas.

This PSD permit application addresses these requirements and is organized into six additional sections, followed by the appendices. A description of the project including air emission sources and pollution control equipment is presented in Section 2.0. A regulatory applicability analysis of the proposed project is presented in Section 3.0. An ambient air monitoring analysis is presented in Section 4.0. The BACT analysis is presented in Section 5.0. The air quality impact analysis and additional impact analysis are presented in Sections 6.0 and 7.0, respectively. Supporting documentation is presented in the appendices.

2.0 PROJECT DESCRIPTION

Cargill has proposed modifications to several emission units to expand the maximum production capacity of the phosphate fertilizer manufacturing plant located in Riverview, Florida. These emission units are as follows:

- Molten Sulfur Handling System,
- Nos. 8 and 9 H_2SO_4 plants,
- PAP,
- GTSP plant [to be renamed Enhanced Phosphate Products (EPP) plant],
- AFI plant, and
- No. 5 DAP plant.

The Cargill facility is located south of Tampa on Hillsborough Bay (Figure 2-1). A plot plan of the facility, showing stack locations, is presented in Figure 2-2. The following sections describe the project modifications to each plant in more detail.

2.1 MOLTEN SULFUR HANDLING SYSTEM

2.1.1 GENERAL

Cargill currently operates a molten sulfur handling facility with a maximum throughput of 1,478,020 TPY. In May 1999, Cargill proposed to install a new solid sulfur handling and storage system and to modify the existing molten sulfur handling and storage system by adding a truck loading station, and increasing the permitted molten sulfur ship unloading rate from 1,456 to 2,240 tons per hour (TPH). This modification included installation of a scrubber to control emissions from the molten sulfur tanks and proposed truck-loading station. Cargill is currently awaiting issuance of this construction permit. Cargill was previously issued construction Permit No. 0570008-029-AC to rebuild Molten Sulfur Tank No. 1 and is currently in the process of constructing this tank.

Cargill is now proposing to increase the combined H_2SO_4 production rates of the Nos. 8 and 9 H_2SO_4 plants and to install a molten sulfur tank at the EPP plant (formerly the GTSP plant). The molten sulfur will be transferred from the molten sulfur tanks (Nos. 1, 2, or 3) to the EPP plant. The new tank will have a 50,000-gallon capacity. Molten sulfur from the tank will be fed to the EPP plant as the sulfur source for the fertilizer products containing sulfur.

2.1.2 PROCESS DESCRIPTION

The molten sulfur handling and storage system currently consists of Molten Sulfur Tank Nos. 2 and 3, covered pits Nos. 7, 8, and 9, and associated transfer pumps and piping for storage and handling of molten sulfur. Molten sulfur is delivered by ship or truck and held in the steam-heated tanks and pits prior to use in three of the several onsite sulfuric acid plants. Molten sulfur will also be transferred offsite upon the completion of the molten sulfur truck loading station. A flow diagram of the existing molten sulfur handling system is presented in Figure 2-3 and includes the new tank and associated scrubber under construction.

A new pump station will be installed to pump molten sulfur from the Molten Sulfur Tank Nos. 1, 2, and 3 to the EPP plant. The molten sulfur will be used as the sulfur source in production of dry products at the EPP plant. In addition, the changes described in Section 2.1.1 will be implemented. A flow diagram showing the revised system arrangement is presented in Figure 2-4.

2.1.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

As previously proposed by Cargill, a scrubber will be installed to control emissions from Molten Sulfur Tank Nos. 1, 2, and 3. The scrubber will control emissions of sulfur particulates from the tanks and the planned truck loading station.

Sources of air emissions from the molten sulfur system are summarized below:

1. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the stack for the scrubber controlling the molten sulfur storage tanks and truck loading station. Emissions from the two existing tanks are currently uncontrolled.
2. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur storage tank Nos. 1, 2 and 3 vents during periods of natural ventilation

3. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur pits. Emission rates from the molten sulfur pits will not be affected by the proposed project.

Historically, emission rates of sulfur particulate, H_2S, SO_2, and VOCs from the existing molten sulfur tanks have been calculated using emission factors developed from source testing. These emission factors are in terms of weight of pollutant per volume of ventilation gases. For particulate sulfur, separate emission factors have been used for molten sulfur storage and for transfer operations (tank loading and unloading). For H_2S, SO_2, and VOCs, the emission factors are the same for both storage and transfer operations.

Hourly emission rates are calculated by multiplying the emission factor by the exhaust flow rate for a given mode of operation (transfer or storage of molten sulfur). Annual emission rates are calculated by multiplying the hourly emission rates by the number of hours of operation in a given mode determined from the annual molten sulfur throughput and the maximum ship and tank unloading rates. Therefore, emission rates are a function of ventilation rate, transfer rates, and throughput, and not tank capacity. Actual emission rate calculations for 1999 and 2000 are presented in Appendix A and are summarized in Table 2-2. Future potential emissions are also calculated and presented in Appendix B.

2.1.4 STACK DATA

Vent geometry and operating data for the sources in the molten sulfur system are presented in Tables 6-3 through 6-6.

2.2 NOS. 8 AND 9 SULFURIC ACID PLANTS

2.2.1 GENERAL

Phosphate fertilizers are manufactured at the Cargill facility. A raw material utilized in the manufacture of phosphate fertilizers is H_2SO_4. H_2SO_4 is used to react with phosphate rock to produce phosphoric acid. Cargill currently operates three H_2SO_4 plants (Nos. 7, 8, and 9) at its Riverview facility. In the manufacture of H_2SO_4, molten sulfur is burned in a combustion chamber and the gases are sent over a catalyst bed and then through absorbers. All of the

H_2SO_4 plants at Cargill use double absorption technology to increase the efficiency of H_2SO_4 recovery and to minimize emissions.

The current allowable maximum individual production rates for the Nos. 8 and 9 H_2SO_4 plants are 2,700 and 3,400 TPD 100-percent H_2SO_4, respectively. However, there is also a combined maximum allowable production rate cap for Nos. 8 and 9 H_2SO_4 plants of 5,700 TPD 100-percent H_2SO_4. Cargill is requesting removal of this production rate cap to allow both plants to operate simultaneously up to their maximum capacities. However, the increased higher production rates will not require an increase in the current allowable daily emission limits for SO_2, as Cargill is proposing a lower SO_2 emission limit of 3.5 pounds per ton (lb/ton) of 100-percent H_2SO_4 (24-hour daily average). The current daily limit is 4 lb/ton of 100-percent H_2SO_4 for both the Nos. 8 and 9 H_2SO_4 plants. Cargill is requesting to retain the NSPS limit of 4 lb/ton of 100-percent H_2SO_4 along with the 24-hour average limit of 3.5 lb/ton of 100-percent H_2SO_4. The allowable SAM limit for both plants is being reduced from 0.15 lb/ton acid to 0.12 lb/ton acid.

2.2.2 PROCESS DESCRIPTION

The H_2SO_4 plants utilize double absorption technology. In the H_2SO_4 plants, sulfur is burned with dried atmospheric oxygen to produce SO_2. The SO_2 is catalytically oxidized to sulfur trioxide (SO_3) over a catalyst bed. The SO_3 is then absorbed in H_2SO_4 to produce additional H_2SO_4. The remaining SO_2, not previously oxidized, is passed over a final converter bed of catalyst and the SO_3 produced is then absorbed in H_2SO_4. SO_2 and SAM emissions result from the process, as well as a small amount of NO_x. No changes to the process equipment will be made as part of the proposed project except as necessary to meet the reduced emission limit. Refer to Figure 2-5 for a flow diagram of the process.

2.2.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The control equipment for the H_2SO_4 plants consists of two systems in series. The first system is integral to the H_2SO_4 production process and is the double contact process where the converted SO_3 emissions from the sulfur combustion are absorbed by water in a tower. This process is at least 99 percent efficient at absorbing SO_3. This system is considered process equipment and not considered control equipment. The second system is a high-velocity mist eliminator, which causes moisture (droplets containing sulfuric acid mist) from the double-contact process to be removed from the air stream by impingement. This process is at least 90 percent efficient at removing SAM from the air stream and, therefore, recovering the product.

To achieve the proposed lower SO_2 emission limit of 3.5 lb/ton H_2SO_4 (24-hour average) for the two plants, Cargill will need to implement changes to each unit. These changes could include replacing a portion of the vanadium catalyst with cesium-promoted catalyst, increasing the catalyst volumes, or other changes as necessary to achieve the reduced emissions while maintaining the permitted production capacity.

Table 2-1 summarizes the current and proposed allowable emission rates for the Nos. 8 and 9 H_2SO_4 plants. The table includes existing permitted allowable emission rates and proposed allowable emission rates for SO_2 and SAM for both H_2SO_4 plants. Estimated NO_x emissions are also included. Table 2-2 summarizes the current actual average emissions for 1999-2000. Refer to Appendix A for supportive information.

2.2.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for the existing and modified H_2SO_4 plants. Each H_2SO_4 plant has a separate stack. The physical stacks for each plant will not be modified with the proposed project.

2.3 PHOSPHORIC ACID PLANT

2.3.1 GENERAL

Cargill is proposing to modify the reaction systems at the PAP to improve the efficiency of the downstream filtration system. The existing PAP is currently operating under Permit No. 0570008-014-AV, issued April 28, 1999. The PAP consists of two reactors (Dorrco and Prayon), three filtration units (Nos. 1, 2, and 3 filters and filtrate tanks), evaporators, clarifiers, and storage tanks. One packed-bed scrubber and two venturi/packed-bed scrubbers serve as fluoride emission control systems. Refer to the flow diagram in

Figure 2-6. The proposed modifications will include installation of additional phosphoric acid digestion capacity downstream of the existing Dorrco Reactor. A new scrubber and stack will also be added to handle vapors from the new digestion compartments and the existing Dorrco Reactor. Other changes will also be implemented. The changes will result in an increase of up to 10,000 TPY of P_2O_5 production without increasing the P_2O_5 feed rate to the PAP.

2.3.2 PROCESS DESCRIPTION

Additional digestion capacity is being added to improve the efficiency of the filtration system. The digester will be vented to a new scrubber system. A revised process flow diagram is presented in Figure 2-7.

Currently, the Dorrco system feeds phosphoric acid to three filter systems, one of which is the Prayon model 24 C filter (No. 1 filter). This filter will be replaced with a 24 D model, which will provide better efficiency by adding up to 50 percent more filter area than the 24 C model. The filter vent system will remain unchanged. There will be no new emission sources in this area. The filter system produces weak phosphoric acid, which is sent to storage. An additional weak acid storage tank will be added to provide more holdup time between plant operations. This new tank is not considered to be a regulated emission unit.

Weak acid is clarified and further processed in Evaporators 1 through 11 where the concentration is increased. Modifications on Evaporators 1 through 8 and their auxiliaries will be made to provide improved efficiency and increased capacity. There will be no new emission sources in this area.

The strong acid from the evaporators may be pumped to a new clarifier for further purification prior to use in downstream manufacturing. Emissions from the clarification systems and storage tanks are considered insignificant and, therefore, are not regulated.

The PAP is currently permitted for a maximum input rate of 170 TPH of P_2O_5. Cargill is not proposing to increase this maximum input rate. However, due to the improved efficiency, actual P_2O_5 recovery will increase by up to 10,000 TPY P_2O_5. This additional P_2O_5 will be fed primarily to the AFI plant for production of animal feed.

2.3.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The vent gases from the new digester section will be vented to a new venturi/packed-bed scrubber [Phosphoric Acid (PA) Scrubber No. 4]. The vapors from the existing Dorrco reactor will also be diverted to this new scrubber. The scrubber system will consist of a low-pressure drop venturi scrubber followed by a multi-stage packed cross-flow scrubber. Pond water will be used to scrub fluorine in the venturi, at the packed scrubber inlet via spray nozzles, and on the packing within the scrubber itself. The exhaust gas from the scrubber will vent to the atmosphere via the existing Vescor scrubber (PA Scrubber No. 2) stack.

The existing Vescor scrubber (PA Scrubber No. 2) presently handles the fluorine vapors from the Dorrco reactor and the Nos. 1 and 2 filters. In the future, the fluorine load on this existing scrubber will be reduced by venting the Dorrco reactor vapors into the new PA Scrubber No. 4 described above. No changes will be made to the evacuation systems to the existing Teller Scrubber (PA Scrubber No. 1), which primarily serves the Prayon reactor, or to the existing Vescor replica scrubber (PA Scrubber No. 3), which serves the No. 3 filtration system.

The PAP is currently subject to a fluoride emission limit of 0.0135 lb/ton P_2O_5 feed, 2.29 pounds per hour (lb/hr) and 10.03 TPY, as specified in Operating Permit No. 0570008-014-AV. The current operating permit limits the production rate of the existing PAP to 170 TPH of P_2O_5. Although the proposed project will likely result in an increase in the amount of P_2O_5 produced, the increase will be due to better recovery of P_2O_5 and not an increase in the amount of P_2O_5 feed rate. While actual fluorine emissions may increase slightly, they are not expected to exceed the current allowable of 2.29 lb/hr of fluorine or 0.0135 lb/ton of P_2O_5 feed. Therefore, Cargill is not requesting to increase the F emission rate currently permitted for the PAP.

Table 2-4 summarizes the pollution control equipment and allowable fluoride emission rates for the PAP. The table includes information about the existing PAP and the proposed modifications to the PAP. Current actual emissions (1999-2000) from the PAP are shown in Table 2-2 (also refer to Appendix A).

2.3.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission point located at the PAP. These sources include the existing Nos. 1, 2 and 3 PA scrubbers as well as the proposed PA Scrubber No. 4.

2.4 GRANULAR TRIPLE SUPER PHOSPHATE PLANT (ENHANCED PHOSPHATE PRODUCTS)

2.4.1 GENERAL

Cargill currently operates a GTSP plant at its Riverview facility under Operating Permit No. 0570008-014-AV. The existing GTSP plant consists of reactors, a granulator, a dryer, a cooler, and associated screening and material handling systems. This plant is also permitted for the production of DAP. However, it is not currently capable of DAP production without undergoing physical modifications.

The proposed modifications are intended to improve the quality of the existing GTSP product by providing additional cooling and screening, improve product granulation by modifying the existing burner unit and improve the overall plant evacuation system. In addition to the improvements, additional modifications will allow the opportunity to produce GTSP containing nitrogen and/or sulfur, ammoniated phosphates (such as MAP and DAP), and ammoniated phosphates containing sulfur. All products can additionally include micronutrients. Since the modified unit will be capable of producing products other than GTSP, it will be redesignated as the Enhanced Phosphate Products (EPP) plant.

2.4.2 PROCESS DESCRIPTION

Cargill is proposing to add additional EPP product cooling capacity. The cooling system will take in ambient air and, utilizing a system comprised of a chiller, compressor, condenser, and refrigerant, will provide chilled air to the existing rotary cooler while providing heated air to the burner in the dryer.

The proposed modifications will also include changes to the existing rotary cooler and product screening systems, addition of a sulfur feed tank (50,000 gal) at the EPP plant, replacement of the existing reactor-granulator-cooler-equipment vents (RGCV) and dryer primary venturi scrubbers with new units, and other miscellaneous modifications as necessary to achieve the production and product quality goals.

Cargill is proposing to additionally produce phosphate products containing sulfur and/or nitrogen and ammoniated phosphate products with and without sulfur. All products may include micronutrients. Up to 15 TPH of molten sulfur will be fed to the process for sulfur input. Sources of nitrogen may include urea, nitric acid, etc. Sources of ammonia can include gaseous or liquid ammonia and ammonium sulfate.

A flow diagram of the existing GTSP plant is presented in Figure 2-8. The flow diagram of the modified EPP plant is shown in Figure 2-9.

The GTSP plant is currently permitted for a maximum production rate of 92 TPH of GTSP, with a maximum annual average heat input rate for the rotary dryer of 60.0 million British thermal units (MMBtu) per hour. The proposed maximum production rate is 92 TPH for GTSP products and 100 TPH for phosphate products containing nitrogen (such as MAP and DAP). The new burner in the rotary dryer will have a maximum heat input rate of 80 MMBtu per hour (monthly average) and will continue to be fired primarily with natural gas with No. 2 fuel oil as a back-up. No. 2 fuel oil will be used for less than 400 hours per year (hr/yr).

2.4.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

A new RGCV venturi scrubber, followed by the existing RGCV tailgas scrubber, will control emissions from the reactors, granulator, cooler, and various other miscellaneous equipment vents. A new venturi scrubber, followed by the existing packed tower tailgas scrubber, will control emissions from the dryer. The new primary venturi scrubbers will utilize recirculating process water or phosphoric acid as the scrubbing liquid depending on the product being manufactured.

The proposed emission limits for the EPP plant in GTSP production mode are 0.13 lb/ton of product, 12.0 lb/hr, 52.56 TPY for PM/PM_{10}, and 0.058 lb/ton of P_2O_5 input, 2.45 lb/hr, and 10.75 TPY for F. The proposed emission limits for the EPP plant when manufacturing ammoniated phosphates are 0.08 lb/ton product, 8.0 lb/hr, 35.0 TPY for PM/PM_{10}, and 0.041 lb/ton of P_2O_5 input, 1.89 lb/hr, and 8.26 TPY for F. The proposed modifications will not result in emissions above the current allowable rates.

A summary of pollution control equipment and current and proposed allowable emission rates for the EPP plant are presented in Table 2-5. The table details the existing and proposed control equipment and allowable emission rates for PM, PM_{10}, and F. Maximum future emissions due to fuel combustion in the dryer are presented in Table 2-6. Maximum estimated emissions from the new molten sulfur storage tank are presented in Appendix B. Table 2-2 summarizes the actual emissions from the GTSP plant for calendar years 1999-2000 (refer to Appendix A).

2.4.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission source located at the existing and modified GTSP plant. All scrubber gases exhaust through a common stack.

2.5 ANIMAL FEED INGREDIENT PLANT

2.5.1 GENERAL

Cargill's AFI plant began operations in January 1996. The original AFI plant permit was issued on June 16, 1994 (Permit No. AC29-242897) and was amended on January 12, 1996, with the issuance of Air Construction Permit No. 0570008-002-AC. The purpose of this amendment was to update the design data for the plant. The original plant capacity was 480

TPD and 150,000 TPY of AFI, based on two acid defluorination batch tanks and one granulation area.

In early 1996, Cargill submitted an application to expand the AFI plant, consisting of adding a third acid defluorination batch tank and a second granulation train. This expansion, permitted under Air Construction Permit No. 0570008-013-AC issued on June 12, 1997, increased the AFI production capacity to 1,160 TPD (580 TPD for each granulation area) and 300,000 TPY. Subsequently, Cargill installed a third acid defluorination tank, but did not construct the second granulation train.

In December 1998, Cargill submitted a construction permit application to increase the production rate of the existing granulation train from 580 to 770 TPD AFI. The requested increase in production was attained through implementing minor modifications to the existing granulation train (i.e., the second granulation train was not added). Air Construction Permit No. 0570008-028-AC for this modification was issued on June 9, 1999.

In April 2000, Cargill proposed to add a second AFI granulation train (dryer, pug mill, and cooler/classifier) with a production capacity of 281,050 TPY of AFI. Construction of the second AFI granulation train was never started and the permit application was withdrawn. The AFI plant is currently permitted to produce 770 TPD and 281,050 TPY of granular AFI. Cargill withdrew this permit application on January 24, 2001.

Cargill is now proposing to modify the existing AFI plant. The plant will be redesigned to produce 394,200 TPY or 1,080 TPD of granular AFI product.

2.5.2 PROCESS DESCRIPTION

The granulation plant can produce two types of animal feed phosphate: dicalcium phosphate (DCP) and monocalcium phosphate (MCP). PFS is defluorinated and mixed with limestone in a reactor to produce DCP or MCP. The ratio of limestone to PFS determines which product is produced. After mixing, the products are combined with recycle material in a pug mill. The pug mill discharges into a dryer. The solids are discharged from the dryer to the solids handling section of the granulation plant where the product is classified, cooled, and de-dusted. Product material is then transferred to bulk storage where it is subsequently loaded into trucks or railcars. The defluorination process can be operated in either a continuous or batch process. The process operations of the existing and proposed modifications to the plant are described in the following sections. Flow diagrams of the existing and modified plants are presented in Figures 2-10 and 2-11, respectively.

2.5.2.1 Acid Defluorination

The defluorination area produces PFS that is low in fluorine content. PFS is defluorinated in a continuous or batch air stripping process. Currently, when operating with the continuous defluorination process, phosphoric acid flows through a series of two or three tanks. The acid is defluorinated by adding a silica source [diatomaceous earth (DE)] and stripping silicon tetrafluoride (SiF_4). Prior to this process, the DE is pneumatically unloaded from truck or railcars and conveyed to the defluorination process. The defluorinated PFS is pumped to a storage tank and used in the granulation process or loaded into trucks as defluorinated PFS for animal feed. Cargill is proposing to add a fourth acid defluorination tank as part of this project.

2.5.2.2 Granulation Process

The granulation process consists of a reaction step and a drying step. The defluorinated PFS is reacted with limestone to produce calcium phosphate. Ground limestone is pneumatically unloaded from trucks into a bulk storage silo adjacent to the granulation plant area. A pneumatic conveyer transfers limestone to a bin in the granulation plant building. Limestone is metered into a mixer (reactor) where it reacts with the PFS to form MCP or DCP. The PFS/limestone slurry mixture is fed into the pug mill with a stream of recycle material consisting of product and fines material. The pug mill discharges into the rotary dryer. Heated air is supplied from a separate combustion chamber fueled by natural gas. Provisions are made to use No. 2 fuel oil as a stand-by fuel in case of natural gas interruption. No. 2 fuel oil will be used for less than 400 hr/yr. Dry solids discharge from the dryer to the solids handling section.

2.5.2.3 Solids Handling

The solids handling section of the granulation plant receives the raw product discharged from the dryer and screen and classifies, cools, and de-dusts the materials. The dryer elevator discharges material onto screens that separate the material into oversize, product, and fines streams. Oversize material is sent to milling equipment and undersized material is sent to recycle in the granulation process. Some product size material is fed to recycle to maintain a constant level of recycle. The balance of product size material discharges to a fluid bed classifier/cooler.

Material from the fluid bed cooler is sent by a covered belt conveyor to bulk storage. AFI will be stored in up to eight silos (five existing and up to three new). The products will be loaded out to both trucks and railcars. Railcar and truck loading facilities already exist, and an additional truck loading station will be added. The silos and load-out systems are equipped with ventilation systems and a baghouse to control particulate emissions.

Loaded railcars can be sent to the dock area and unloaded in an existing partially enclosed, bottom-dump railcar hopper. The unloaded material is then loaded onto ships via a ship loader.

2.5.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

Various scrubbers, cyclones, and baghouses control potential emissions from process equipment and product storage and handling operations. Cyclones and a wet scrubber are used to control PM emissions from the mixer, pug mill, and dryer. Baghouses are used to control dust emissions from equipment in the plant and storage and handling operations. The pollution control equipment of the proposed plant is described in the following sections.

2.5.3.1 DE Hopper and Limestone Silo

The DE silo baghouse will not be modified as part of this project. The limestone silo will also not be modified; however, a new baghouse will replace the existing baghouse to increase loading rates.

2.5.3.2 Defluorination Area

Two new scrubbers will be added in the defluorination area to replace the existing packed cross-flow scrubber. Air from the defluorination tanks and the defluorinated acid storage tank will be scrubbed in a venturi scrubber that removes F emissions. The gases will then pass through a new packed cross-flow scrubber to remove additional F emissions. The packed scrubber contains three packed stages and a de-mister stage. Pond water is used as the scrubbing media and is returned to the existing plant process pond cooling system. The gases will discharge to the atmosphere through a new stack adjacent to the AFI building.

2.5.3.3 Granulation Plant

Equipment in the granulation plant will be vented through equipment designed to remove PM from the gas stream before venting to the atmosphere. During manufacture of the AFI, the only raw materials used are limestone and defluorinated acid; thus, fluorine emissions from the process equipment are insignificant. The granulation plant dryer gases are sent through a high-efficiency cyclone system to recover solids materials, and then through a venturi scrubber. Gases from the pug mill are also vented to the venturi scrubber. The exhaust gases from this venturi scrubber will be sent to the existing stack.

The screens, mills, cooler, classifier, and material-handling equipment evacuation will be sent through a high-efficiency cyclone system to recover solids materials and then through a new baghouse filter. This gas stream currently is sent through the venturi scrubber controlling the reactor, pug mill, granulator, and dryer.

2.5.3.4 Materials Storage and Loading System

A ventilation system and baghouse filter is used to control PM emissions from the AFI product storage and loading operations. Currently, there are five storage silos. Up to three new AFI storage silos will be added. The existing storage and load-out baghouse will be used for these operations.

A truck loading station will be added adjacent to the existing rail/truck loading station. The system will consist of an evacuated telescoping spout to minimize fugitive emissions.

Railcars loaded with AFI can be sent to the plant dock area and unloaded. The AFI product is then transferred into docked ships.

The pollution control equipment for the proposed project will be equivalent in design to the existing control equipment. A summary of pollution control equipment and allowable emission rates for the existing and proposed AFI plant are presented in Table 2-7. The table lists allowable emission rates for F, PM, and PM_{10}. Future potential combustion-related emissions are presented in Table 2-8. Future potential fugitive PM/PM_{10} emissions from the AFI railcar unloading operation at the plant dock are presented in Appendix B. Table 2-2 summarizes the actual emissions from the calendar years 1999-2000 (also refer to Appendix A).

2.5.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission source located at the existing AFI plant. These sources include the new defluorination area venturi scrubber and new packed-cross flow scrubber, the existing granulation venturi scrubber, the equipment baghouse, the existing DE silo baghouse, the limestone silo baghouse, and the existing AFI product load-out baghouse.

2.6 NO. 5 DAP PLANT

2.6.1 GENERAL

Cargill operates the No. 5 DAP plant at its Riverview facility. The No. 5 DAP plant is currently operating under Operating Permit No. 0570008-014-AV, issued April 28, 1999. The No. 5 DAP plant consists of a reactor, granulator, dryer, screens and mills, a cooler, and associated equipment.

Cargill is proposing to modify the No. 5 DAP plant to improve the energy efficiency of the plant by utilizing waste heat to vaporize some or all of the ammonia fed to the DAP plant and the adjacent Nos. 3 and 4 MAP plants. The project also intends to enhance the chemical and physical characteristics of the product by improving the granulation/reaction conditions.

2.6.2 PROCESS DESCRIPTION

In the DAP manufacturing process, phosphoric acid and anhydrous ammonia are reacted in a sealed reaction tank. Ammonia is then further added to the ammoniated acid in a rotary reactor-granulator. The granulated, unsized DAP is then dried in a rotary dryer. The dryer is fired by natural gas as the primary fuel and by No. 2 fuel oil as the backup fuel.

The dried DAP material is sized and screened, and the oversized and undersized material is recycled back to the granulator. The product is then cooled, screened, and sent to storage.

The proposed project will include the addition of an ammonia vaporizer, a water circulation system to transfer heat from the evacuation duct gases to the vaporizer, a preneutralizer tank, an ammonia recovery spray duct and separator with associated pumps and tanks, a pipe reactor for all or a portion of the granulator feed slurry, and other miscellaneous changes as necessary to achieve the desired production and product quality goals. Excess ammonia vapor from the DAP vaporizer will be piped to the Nos. 3 and 4 MAP plants to displace ammonia vaporized there using steam.

The plant is currently permitted to produce 156.6 TPH of DAP (on a dry basis) with a maximum process input rate of 73.5 TPH of P_2O_5 (on a daily average basis). The proposed modifications to the No. 5 DAP plant will not result in an increase in the maximum production rates. A flow diagram of the existing and future No. 5 DAP plant are presented in Figure 2-12.

2.6.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The No. 5 DAP plant currently utilizes five scrubbers to control emissions. Evacuated air from the reactor and granulator is vented to the "RG" venturi scrubber. This air stream is then vented to the RG/cooler/equipment vents packed tailgas scrubber (the "RGCE" scrubber). Emissions from the cooler and equipment vents are evacuated through the cooler/equipment vents venturi scrubber, and then also through the RGCE tailgas scrubber. Emissions from the dryer are controlled by the dryer venturi scrubber and then the dryer tailgas scrubber. Both the RGCE tailgas scrubber and the dryer tailgas scrubber are routed to a common plant stack.

The proposed modifications to the No. 5 DAP plant will include an improved ammonia recovery system, the addition of a vaporizer for heat recovery located between the RG scrubber and the RGCE tailgas scrubber and other miscellaneous modifications necessary to achieve the desired production and product quality goals.

The current maximum allowable emission rates for the No. 5 DAP plant are 12.8 lb/hr or 56.0 TPY of PM/PM_{10}, 12.7 lb/hr or 2.6 TPY of SO_2, and 3.3 lb/hr or 14.5 TPY of F. The proposed modifications to the No. 5 DAP plant will not result in an increase in the allowable emission rates.

A summary of pollution control equipment and allowable emission rates for the No. 5 DAP plant are presented in Table 2-9. The table details the existing and proposed control equipment and the allowable emission rates for PM, PM_{10}, and F. Maximum future emissions due to fuel combustion in the dryer are presented in Table 2-10. Table 2-2 summarizes the actual emissions from the calendar years 1999-2000 (refer to Appendix A).

2.6.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for the common stack located at the existing and modified No. 5 DAP plant.

2.7 AFFECTS ON OTHER EMISSION UNITS

Due to the proposed modifications to the existing facility, several other emission units will potentially be affected (i.e., increased production rates or actual emission rates). The following sections describe the other emission units at Cargill Riverview and the potential to be affected by the proposed modifications.

2.7.1 NO. 7 SULFURIC ACID PLANT

The No. 7 Sulfuric Acid Plant will not be modified as part of the proposed project, nor will it be affected by this project.

2.7.2 NOS. 3 AND 4 MAP PLANTS

The Nos. 3 and 4 MAP plants have recently undergone permitting including PSD review and a BACT determination by the Department (DEP File No. 0570008-026-AC, PSD-FL-251). No changes are planned for these units except as under that permit. Therefore, there is no expected effect on this emission unit as part of this project.

2.7.3 NOS. 5, 7, AND 9 ROCK MILL AND GTSP (EPP) GROUND ROCK HANDLING

The Nos. 5, 7, and 9 Rock Mill receive wet or dry phosphate rock, and dry and grind the rock for use in the EPP plant. The unit has four baghouses: one for each rock mill and one that controls the ground rock storage silo. The ground rock is then transferred to the EPP ground rock storage bin, which also has a baghouse dust collector. Since the EPP plant is affected by the proposed modification, the rock mills and the EPP ground rock bin will also be affected. Presented in Table 2-2 are the current actual emissions from the rock mills and storage bin (1999-2000 average; refer to Appendix A). Future potential emissions from the mills, ground rock storage silo, and EPP ground rock bin are presented in Appendix B.

2.7.4 MATERIAL HANDLING SYSTEM

The Material Handling System is used to convey DAP from the DAP storage building, MAP from the MAP storage building, and GTSP from the GTSP storage buildings to the ship loader at the dock. AFI is currently sent to the material handling area on railcar and can be loaded onto ships. Since the proposed modifications may result in increased GTSP and ammoniated phosphate production (through the EPP plant), and will increase AFI production, potential throughput and subsequent PM/PM_{10} emissions for the Material Handling System may increase. Current actual emissions from the Material Handling System are presented in Table 2-2 (also refer to Appendix A). Future potential emissions from the Material Handling System baghouses are based on the current Title V permit, except that the allowable emissions of the Transfer Tower East baghouse (ID 053) are being reduced from 3.10 to 0.8 lb/hr on the basis of historic stack testing data (refer to Appendix C for test data). The resulting emissions for the Material Handling System are 19.5 TPY for PM/PM_{10}.

2.7.5 GTSP (EPP) STORAGE BUILDINGS

The products from the EPP plant (GTSP, GTSP with sulfur and nitrogen, ammoniated phosphates, etc.) will be transferred to the GTSP (EPP) storage buildings. From there, the products will be transferred to the Material Handling System for ship or railcar loadout, or can be loaded out into trucks. Since the EPP plant will be producing non-GTSP, the actual Fluoride emissions from the storage buildings can be expected to decrease. However, for worst-case fluoride estimates, it is assumed that the EPP plant will produce only GTSP. Current actual F emissions from the storage buildings are shown in Table 2-2 (refer to Appendix A). Future potential F emissions are based on the current Title V permit and are as follows: 9.92 lb/hr and 43.45 TPY from the two buildings combined.

2.7.6 GTSP (EPP) TRUCK LOADING STATION

Following storage in the EPP storage buildings, the GTSP and ammoniated phosphate products may be loaded into trucks at the EPP truck loading station. The increase in production at the EPP plant may result in an increase in operation of the EPP truck load-out station. The station may operate up to 8,760 hr/yr in the future. Current actual emissions are presented in Table 2-2 (refer to Appendix A). Future potential emissions are presented in Appendix B (includes baghouse and fugitive emissions).

Table 2-1. Summary of Emission Rates for the Nos. 8 and 9 Sulfuric Acid Plants

Source	EU ID	Maximum Capacity (100% H_2SO_4)	Operating Hours	SO_2 Allowable Emission Rate				SAM Allowable Emission Rate			NO_X Average Emission Rate	
				lb/ton H_2SO_4	3-hr (lb/hr)	24-hr (lb/hr)	Annual (TPY)	lb/ton H_2SO_4	Hourly (lb/hr)	Annual (TPY)	lb/ton H_2SO_4	Annual (TPY)
Existing Plants												
No. 8 H_2SO_4	005	2,700 TPD	8,760	4.0	450.0	450.0	1,971.0	0.15	16.88	73.91	0.12	59.13
No. 9 H_2SO_4	006	3,400 TPD	8,760	4.0	566.7	566.7	2,482.0	0.15	21.25	93.08	0.12	74.46
		5,700 TPD			950.0	950.0	4,161.0		35.63	156.04		124.83
Modified Plants												
No 8 H_2SO_4	005	2,700 TPD	8,760	4.0	450.0	--	--	0.12	13.50	59.13	0.12	59.13
				3.5	--	393.8	1,724.6					
No. 9 H_2SO_4	006	3,400 TPD	8,760	4.0	566.7	--	--	0.12	17.00	74.46	0.12	74.46
				3.5	--	495.8	2,171.8					
		6,100 TPD			1,016.7	889.6	3,896.4		30.50	133.59		133.59

Notes:
SO_2 = Sulfur Dioxide
SAM = Sulfuric Acid Mist
NO_X = Nitrogen Oxides

Table 2-2. Average Actual Emissions for 2000[b] and 1999[c]--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage Handling Facility										
Molten Sulfur Storage--Tank No. 1		a	a	a	a	a	a	a	a	a
Molten Sulfur Storage--Tank No. 2	064	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.03	--	--	0.22	0.22	0.02	0.01	--	--
Molten Sulfur Storage--Pit No 8	067	0.03	--	--	0.21	0.21	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.23	0.23	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.34	--	--	0.44	0.44	0.24	0.17	--	--
Molten Sulfur Storage--Truck Loading Stn.	074	a	a	a	a	a	a	a	a	a
Total		**1.55**	--	--	**1.74**	**1.74**	**1.10**	**0.74**	--	--
B. No 8 Sulfuric Acid Plant	005	**1,250.74**	**44.05**	--	--	--	--	--	**14.68**	--
C No 9 Sulfuric Acid Plant	006	**1,525.82**	**51.23**	--	--	--	--	--	**13.43**	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	4.80	4.03	2.29	2.29	0.27	--	--	--
No. 9 Rock Mill	101	0.03	4.75	3.99	1.64	1.64	0.26	--	--	--
No. 7 Rock Mill	106	0.01	1.61	1.35	0.09	0.09	0.09	--	--	--
Ground Rock Handling Storage System	034 102	--	--	--	0.09	0.09	--	--	--	--
Total		**0.07**	**11.15**	**9.37**	**4.10**	**4.10**	**0.62**	--	--	--
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	**3.92**
F. GTSP Plant	007	0.11	18.05	15.16	16.66	16.66	0.99	--	--	3.62
GTSP Ground Rock Handling Baghouse	008	--	--	--	3.80	3.80	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	19.89
GTSP Storage Building No 4	071	--	--	--	--	--	--	--	--	19.01
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.00	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.03	0.01	--	--	--	--
Total		**0.11**	**18.05**	**15.16**	**20.50**	**20.47**	**0.99**	--	--	**42.52**
G AFI Plant No. 1	078	0.04	5.71	4.80	17.46	17.46	0.31	--	--	1.79
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.64	0.64	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.19	0.04	--	--	--	--
Total		**0.04**	**5.71**	**4.80**	**18.37**	**18.22**	**0.31**	--	--	**1.79**
H. No 5 DAP Plant		**0.02**	**3.91**	**3.29**	**8.67**	**8.67**	**0.22**	--	--	**8.37**
I. Material Handling System										
West Baghouse Filter	051	--	--	--	0.64	0.64	--	--	--	--
South Baghouse	052	--	--	--	0.57	0.57	--	--	--	--
Vessel Ldg. System--Twr Baghouse Exhaust	053	--	--	--	0.45	0.45	--	--	--	--
Building No 6 Belt to Conveyor No 7	058	--	--	--	0.32	0.32	--	--	--	--
Conveyor No.7 to Conveyor No. 8	059	--	--	--	0.64	0.64	--	--	--	--
Conveyor No.8 to Conveyor No. 9	060	--	--	--	0.64	0.64	--	--	--	--
Railcar Unloading of AFI Product		--	--	--	0.03	0.01	--	--	--	--
E. Vessel Ldg. Facility-Shiphold-Chokefeed	061	--	--	--	0.25	0.25	--	--	--	--
Total		--	--	--	**3.53**	**3.51**	--	--	--	--
Total Avg. Actual Emission Rates--2000 & 1999		**2,778.35**	**134.11**	**32.61**	**56.91**	**56.71**	**3.24**	**0.74**	**28.11**	**56.60**

[a] Emission unit did not operate for these years

[b] As calculated.

[c] Emissions from the Annual Operating Report.

Table 2-3. Stack and Vent Geometry and Operating Data for the Modified Emissions Units – Cargill Riverview

Source	EU ID	Stack/Vent Release Height (ft)	Stack/Vent Diameter (ft)	Actual Exhaust Gas Flow Rate ACFM	SCFM	DSCFM	Exhaust Gas Exit Temperature (Deg F)	Exhaust Gas Water Vapor Content (%)	Exhaust Gas Velocity (ft/sec)
EXISTING OPERATIONS									
No. 8 Sulfuric Acid Plant	005	150	8.00	118,900	100,400	100,400	165	0.00%	39.4
No 9 Sulfuric Acid Plant	006	150	9.00	159,600	137,000	137,000	155	0.00%	41.4
Phosphoric Acid Plant–Prayon Reactor/No 1 Filtration Unit[a]	073	110	4.00	18,300	17,102	16,200	105	5.13%	24.2
Phosphoric Acid Plant–No 1 Filtration Unit[a]/No 2 Filtration Unit/Dorrco Reactor	073	110	4.83	38,900	35,720	33,400	115	6.48%	35.3
Phosphoric Acid Plant–No 3 Filtration Unit	073	115	4.92	57,100	54,816	52,700	90	3.92%	41.3
GTSP Plant Common Stack	007	126	8.00	171,700	153,138	138,900	132	9.30%	51.1
AFI Defluorination System/Granulation System	078	136	6.00	108,400	94,300	79,600	147	15.60%	63.9
AFI Diatomaceous Earth Hopper	079	64	1.50	600	580	518	90	10.00%	5.7
AFI Limestone Silo	080	85	1.50	800	770	691	90	10.00%	5.7
AFI Product Loadout	081	30	3.00	21,100	20,300	18,300	90	10.00%	49.5
No 5 DAP Plant	055	133	7.00	140,600	125,400	109,600	132	12.60%	60.9
MODIFIED OPERATIONS									
No. 8 Sulfuric Acid Plant	005	150	8.00	129,400	109,300	109,300	165	0.00%	39.4
No. 9 Sulfuric Acid Plant	006	150	9.00	171,100	146,900	146,900	155	0.00%	41.8
Phosphoric Acid Plant–Prayon Reactor	073	110	4.00	20,900	19,531	18,500	105	5.13%	24.2
Phosphoric Acid Plant–Nos. 1 and 2 Filtration Units	073	110	4.83	45,000	41,322	38,600	115	6.48%	35.3
Phosphoric Acid Plant–Dorrco Reactor and New Digester	073	110	4.83	55,000	50,947	47,600	110	6.48%	50.0
Phosphoric Acid Plant–No 3 Filtration Unit	073	115	4.92	57,100	54,816	52,700	90	3.92%	41.3
EPP Plant–Common Stack	007	126	8.00	237,000	211,378	179,700	132	15.00%	25.0
AFI Defluorination System	078	35	3.00	25,400	23,700	23,000	105	3.00%	61.0
AFI Granulation System (Reactor, Pug Mill, Granulator, Dryer)	–	136	6.00	109,400	94,700	90,000	150	5.00%	66.0
AFI Diatomaceous Earth Hopper	079	64	1.50	600	580	518	90	10.00%	5.7
AFI Milling Classification and Cooling Emission Equipment	–	85	5.00	56,000	51,000	50,000	120	2.00%	45.0
AFI Limestone Silo	080	85	3.00	3,500	3,400	3,100	90	10.00%	5.7
AFI Product Loadout	081	30	3.00	23,100	22,200	20,000	90	10.00%	49.5
No. 5 DAP Plant	055	133	7.00	148,000	132,000	115,400	132	12.60%	64.1

[a] No 1 Filter can be vented to either the Teller scrubber or the Vescor scrubber

Table 2-4. Summary of Pollution Control Equipment and Allowable Emission Rates for the Phosphoric Acid Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Maximum Process Rate (TPH P_2O_5)	Fluoride Allowable Emission Rate		
						lbs/ton P_2O_5 feed	lb/hr	TPY
Existing Phosphoric Acid Plant								
Prayon Reactor/No. 1 Filtration Unit[a]	073	Teller-Packed Scrubber	33,000 acfm	8,760	--	--	--	--
No. 1 Filtration Unit[a]/No. 2 Filtration Unit/ Dorrco Reactor	073	VESCOR Scrubber	57,000 acfm	8,760	--	--	--	--
No. 3 Filtration Unit	073	VESCOR Replica Scrubber	53,000 acfm	8,760	--	--	--	--
Total--Existing Plant	073			8,760	170[b]	0.0135	2.29	10.03
Modified Phosphoric Acid Plant								
Prayon Reactor	073	Teller-Packed Scrubber	33,000 acfm	8,760	--	--	--	--
Nos. 1 and 2 Filtration Units	073	VESCOR Scrubber (modified)	45,000 acfm	8,760	--	--	--	--
Dorrco Reactor and New Digester	073	Dorrco Scrubber (new)	55,000 acfm	8,760	--	--	--	--
No. 3 Filtration Unit	073	VESCOR Replica Scrubber	53,000 acfm	8,760	--	--	--	--
Total--Modified Plant	073			8,760	170[b]	0.0135	2.29	10.03

[a] No.1 Filter can be vented to either the Teller Scrubber on the Vescor scrubber.
[b] As maximum daily average.

Table 2-5. Summary of Pollution Control Equipment and Allowable Emission Rates for the GTSP/EPP Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Maximum Process Rate		PM/PM_{10} Allowable Emission Rate			Fluoride Allowable Emission Rate		
					TPH GTSP	TPH P_2O_5	lbs/ton Product	lb/hr	TPY	lb/ton P2O5 Input	lb/hr	TPY
Existing GTSP Plant												
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Venturi Scrubber	60,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Venturi Scrubber	100,000 acfm	8,760			--	--	--	--	--	--
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Tailgas Scrubber	60,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Tailgas Scrubber	100,000 acfm	8,760			--	--	--	--	--	--
Common Stack	007		160,000 acfm	8,760	92.00	42.32	0.24	21 60	94.60	--	3.45	15 10
Future EPP Plant												
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Venturi Scrubber (new)	110,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Venturi Scrubber (new)	115,000 acfm	8,760			--	--	--	--	--	--
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Tailgas Scrubber	110,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Tailgas Scrubber	115,000 acfm	8,760			--	--	--	--	--	--
Common Stack --GTSP Mode	007		225,000 acfm	8,760	92.00	42 32	0.13	12 00	52.56	0.058	2.45	10.75
--MAP/DAP Mode	007		225,000 acfm	8,760	100.00	46.00	0.08	8.00	35.04	0.041	1.89	8 26

Table 2-6. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the Future EPP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6 Btu/hr	80	80
Hourly Fuel Oil Usage[a]	10^3 gal/hr	0.5714	N/A
Annual Fuel Oil Usage	10^3 gal/yr	229	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	scf/hr	N/A	80,000
Annual Natural Gas Usage	10^6 scf/yr	N/A	701

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S) lb/10^3 gal[d]	40.57	8.11	--	--	--	--
Natural gas	0.6 lb/10^6 ft^3	--	--	0.048	0.21	--	--
Worse-Case Combination of Fuels		--	--	--	--	40.57	8.11
Nitrogen Oxides							
Fuel oil	20 lb/10^3 gal	11.43	2.29	--	--	--	--
Natural gas	100 lb/10^6 ft^3	--	--	8.000	35.04	--	--
Worse-Case Combination of Fuels		--	--	--	--	11.43	35.04
Carbon Monoxide							
Fuel oil	5 lb/10^3 gal	2.86	0.57	--	--	--	--
Natural gas	84 lb/10^6 ft^3	--	--	6.720	29.43	--	--
Worse-Case Combination of Fuels		--	--	--	--	6.72	29.43
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3 gal	0.11	0.023	--	--	--	--
Natural gas	5.5 lb/10^6 ft^3[e]	--	--	0.440	1.927	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.44	1.93

Footnotes:

Particulate matter emissions through the common plant stack are included in Table 2-5

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table 2-7. Summary of Pollution Control Equipment and Allowable Emission Rates for the AFI Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Fluoride Allowable Emission Rate		PM/PM$_{10}$ PM/PM$_{10}$ Allowable Emission Rate		
					lb/hr	TPY	gr/dscf	lb/hr	TPY
Existing AFI Plant									
Defluorination System/AFI Granulation System (Reactor, Pug Mill, Granulator, and Dryer System)	078	Packed Cross-Flow Scrubber/Venturi Scrubber	100,000 acfm	8,760	1.0	4.30	N/A	8.0	35.04
Diatomaceous Earth Hopper	079	Baghouse	518 dscfm	8,760	N/A	N/A	0.012	0.053	0.23
Limestone Silo	080	Baghouse	691 dscfm	8,760	N/A	N/A	0.012	0.071	0.31
AFI Product Loadout	081	Baghouse	18,280 dscfm	8,760	N/A	N/A	0.012	1.88	8.24
Total Emissions from the Existing AFI Plant					1.0	4.30		10.00	43.82
Modified AFI Plant									
Defluorination System	078	Venturi Scrubber (new)/Packed Cross-Flow Scrubber (new)	25,400 acfm	8,760	1.0	4.38	N/A	N/A	N/A
AFI Granulation System (Reactor, Pug Mill, Granulator, and Dryer System)	--	Venturi Scrubber	90,000 dscfm	8,760	N/A	N/A	N/A	8.00	35.04
Diatomaceous Earth Hopper	079	Baghouse	518 dscfm	8,760	N/A	N/A	0.012	0.053	0.23
Milling, Classification, and Cooling Equipment	--	Baghouse (new)	50,000 dscfm	8,760	N/A	N/A	0.012	5.14	22.53
Limestone Silo	080	Baghouse (new)	3,110 dscfm	8,760	N/A	N/A	0.012	0.32	1.40
AFI Product Loadout	081	Baghouse	20,000 dscfm	8,760	N/A	N/A	0.012	2.06	9.01
Total Emissions from the Modified AFI Plant					1.0	4.38		15.57	68.21

Table 2-8. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the AFI Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6 Btu/hr	50	50
Hourly Fuel Oil Usage[a]	10^3 gal/hr	0.357	N/A
Annual Fuel Oil Usage	10^3 gal/yr	143	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6 scf/hr	N/A	0.050
Annual Natural Gas Usage	10^6 scf/yr	N/A	438

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3 gal[d]	25 357	5 071	--	--	--	--
Natural gas	0 6 lb/10^6 ft^3	--	--	0 030	0.131	--	--
Worse-Case Combination of Fuels		--	--	--	--	25 36	5.07
Nitrogen Oxides							
Fuel oil	20 lb/10^3 gal	7.143	1.429	--	--	--	--
Natural gas	100 lb/10^6 ft^3	--	--	5 000	21.900	--	--
Worse-Case Combination of Fuels		--	--	--	--	7 14	21.90
Carbon Monoxide							
Fuel oil	5 lb/10^3 gal	1 786	0.357	--	--	--	--
Natural gas	84 lb/10^6 ft^3	--	--	4.200	18 396	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.20	18.40
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3 gal	0.071	0.014	--	--	--	--
Natural gas	5 5 lb/10^6 ft^3[e]	--	--	0.275	1.205	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.28	1.20

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon

[b] Based on the heat content of natural gas of 1,000 Btu/scf

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table 2-9. Summary of Pollution Control Equipment and Allowable Emission Rates for the No. 5 DAP Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Process Rate (TPH P_2O_5)	Fluoride Emission Rate		PM/PM_{10} Emission Rate	
						lb/hr	TPY	lb/hr	TPY
Existing DAP Plant									
Reactor, Granulator, Cooler, and Equipment		RGCE Tailgas Scrubber	64,000 acfm	8,760	--	--	--	--	--
Dryer		Dryer Tailgas Scrubber	37,000 acfm	8,760	--	--	--	--	--
Reactor and Granulator		Venturi Scrubber	24,000 acfm	8,760	--	--	--	--	--
Cooler and Equipment		Venturi Scrubber	55,000 acfm	8,760	--	--	--	--	--
Dryer		Venturi Scrubber	49,000 acfm	8,760	--	--	--	--	--
Total--DAP Common Plant Stack	055		101,000 acfm	8,760	73.5	3.3	14.5	12.8	56.1
Modified DAP Plant									
Reactor, Granulator, Cooler, and Equipment		Tailgas Scrubber	126,000 acfm	8,760	--	--	--	--	--
Dryer		Tailgas Scrubber	55,000 acfm	8,760	--	--	--	--	--
Reactor and Granulator		Venturi Scrubber	24,000 acfm	8,760	--	--	--	--	--
Cooler and Equipment		Venturi Scrubber	55,000 acfm	8,760	--	--	--	--	--
Dryer		Venturi Scrubber	49,000 acfm	8,760	--	--	--	--	--
Total--DAP Common Plant Stack	055		172,000 acfm	8,760	73.5	3.3	14.5	12.8	56.1

Notes: DAP = Diammonium Phosphate
PM/PM_{10} = Particulate Matter/Particulate Matter with aerodynamic diameter less than or equal to 10 micrometers

Table 2-10. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the No. 5 DAP Plant

Parameter	Units	No. 2 Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6 Btu/hr	40	40
Hourly Fuel Oil Usage[a]	10^3 gal/hr	0.286	N/A
Annual Fuel Oil Usage	10^3 gal/yr	114	N/A
Maximum Sulfur Content	Weight %	0.31	N/A
Hourly Natural Gas Usage[b]	10^6 scf/hr	N/A	0.040
Annual Natural Gas Usage	10^6 scf/yr	N/A	350

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	12.577	2.515	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.024	0.105	--	--
Worse-Case Combination of Fuels		--	--	--	--	12.58	2.52
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	5.714	1.143	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	4.000	17.520	--	--
Worse-Case Combination of Fuels		--	--	--	--	5.71	17.52
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.429	0.286	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	3.360	14.717	--	--
Worse-Case Combination of Fuels		--	--	--	--	3.36	14.72
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.057	0.011	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.220	0.964	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.22	0.96

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.31%.

[e] Based on methane comprised of 52% total VOC.

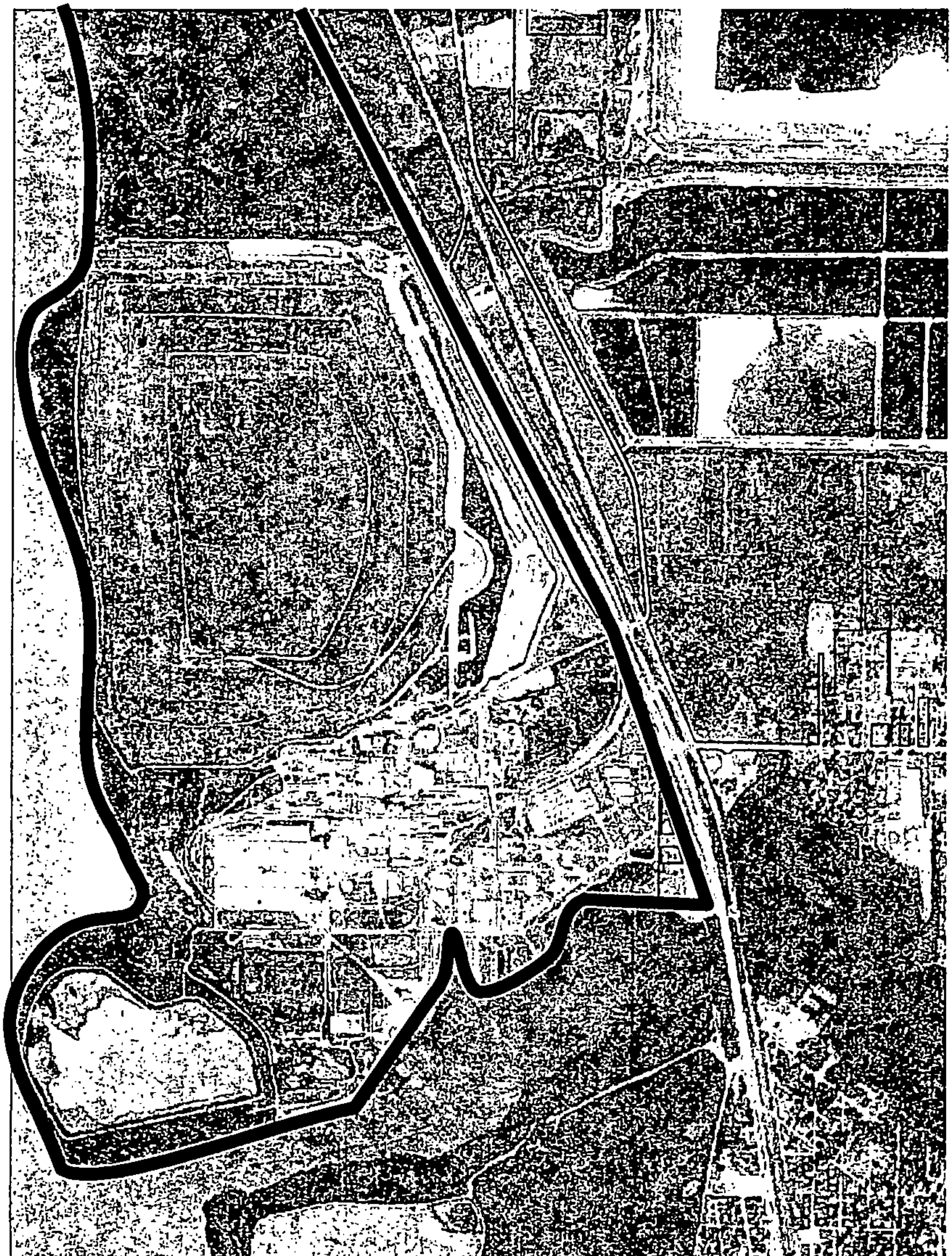


Figure 2-1
Site Location
Cargill Fertilizer, Inc. - Riverview Facility

Golder Associates

Source: Golder, 2000.

0037650Y\F1\WP\Figure 2-1.doc (3/10/01)

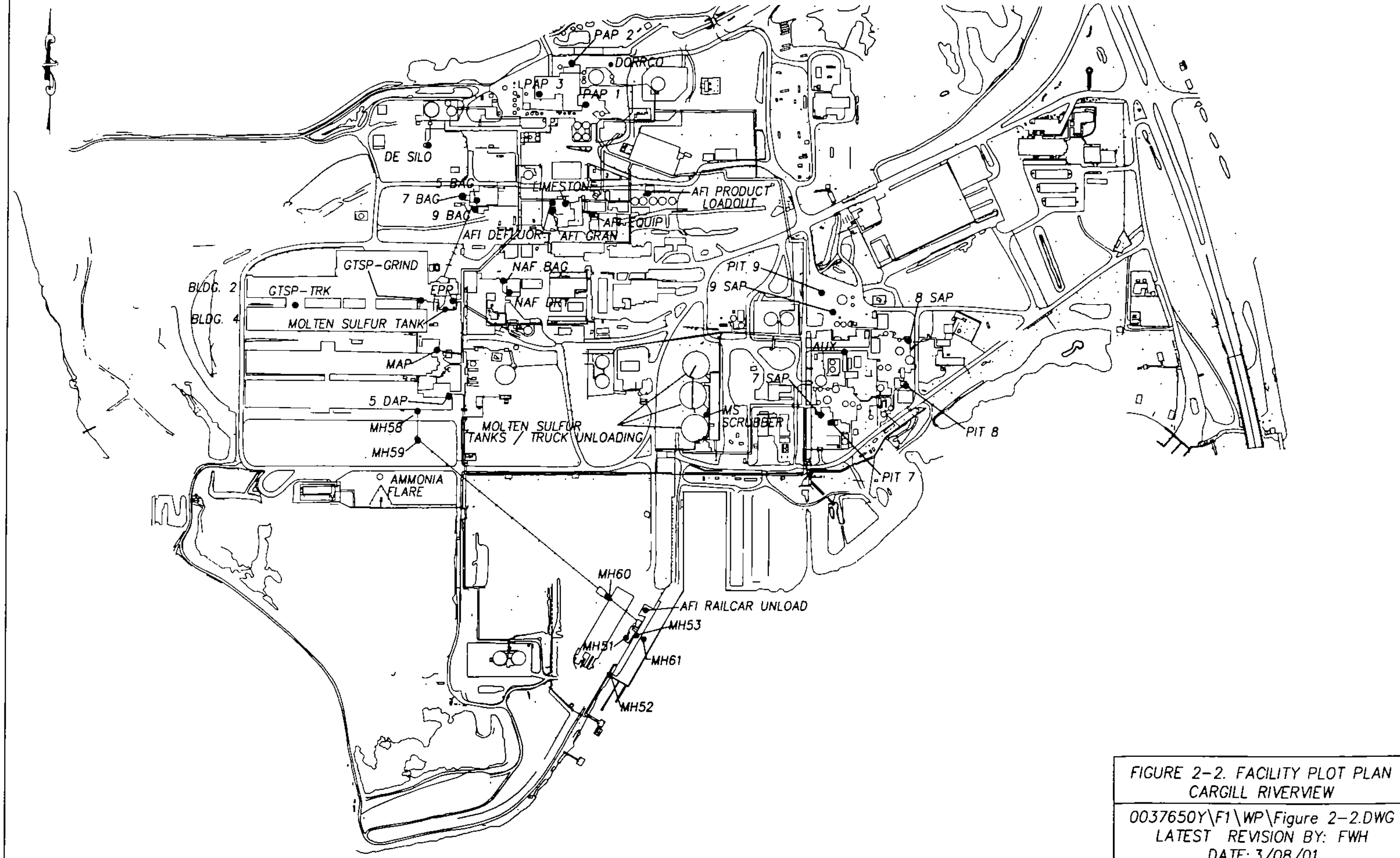
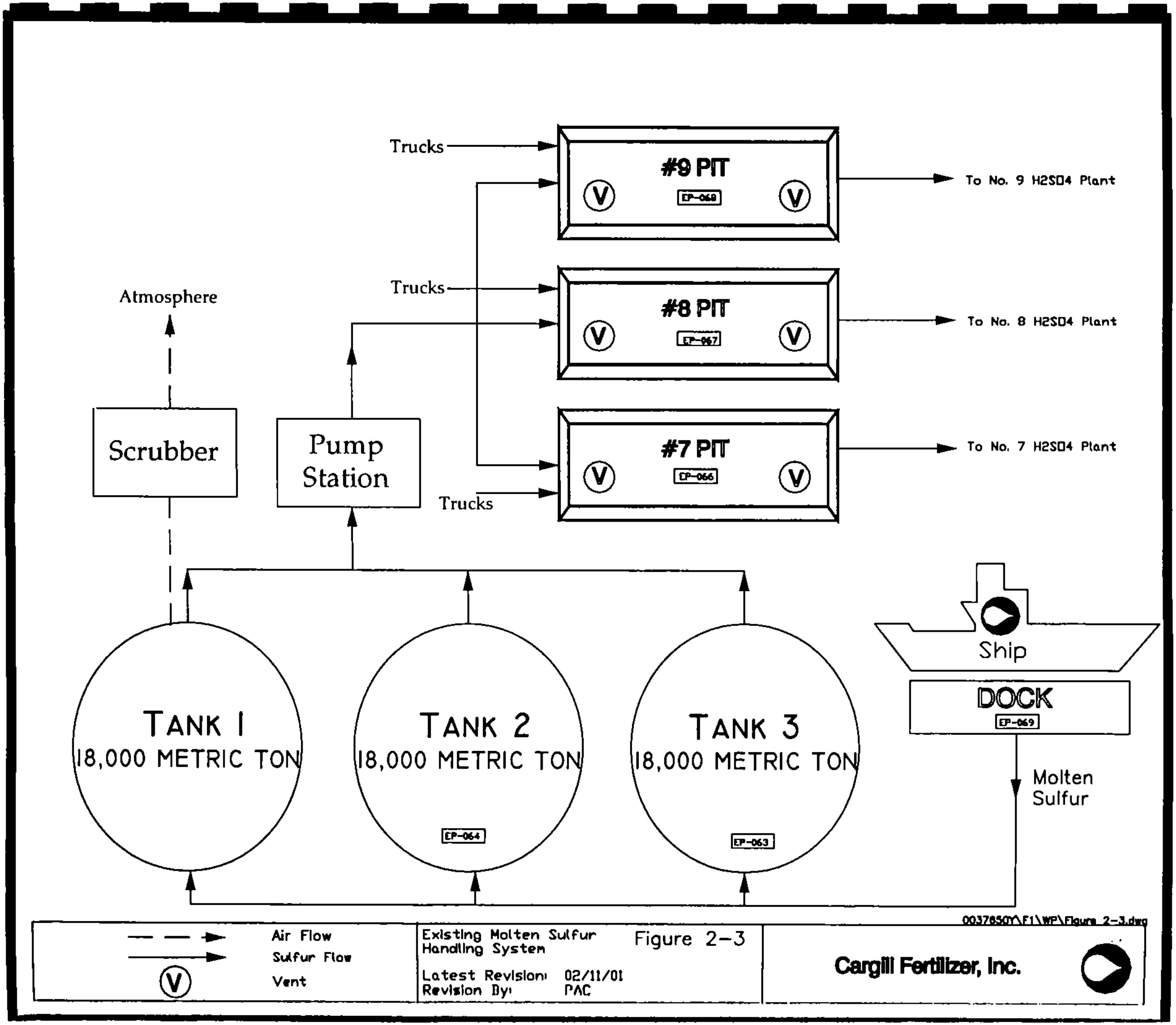
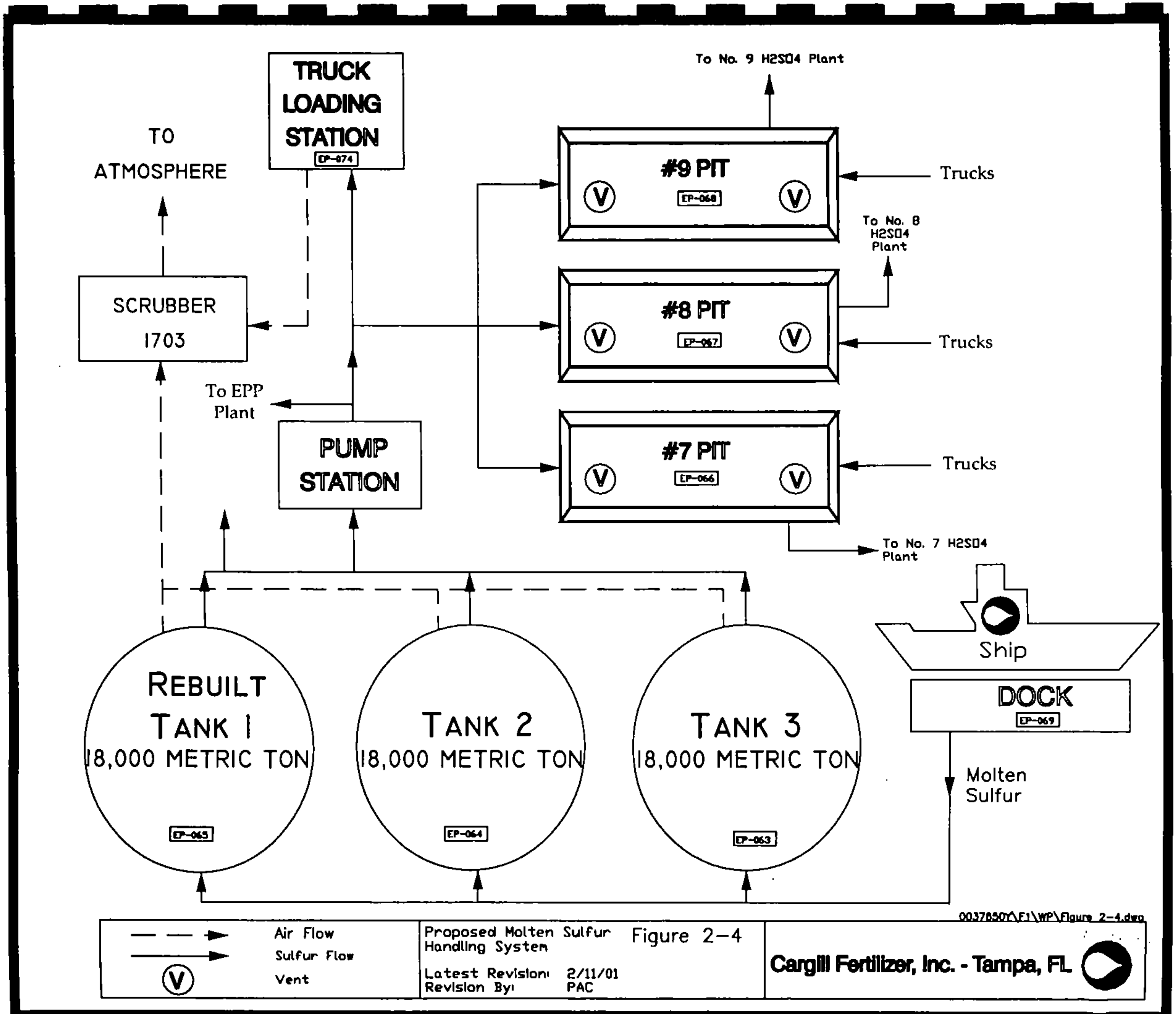


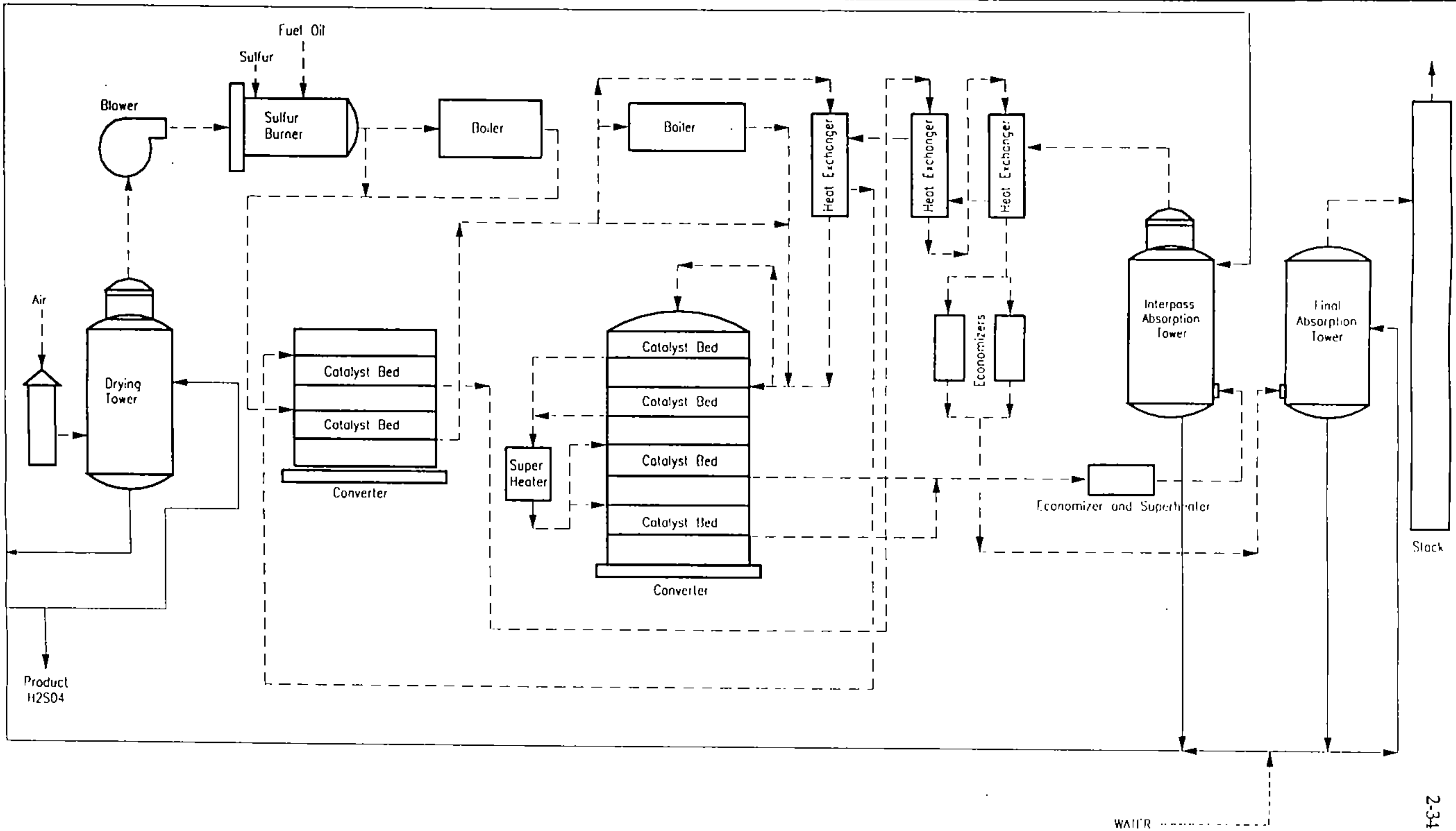
FIGURE 2-2. FACILITY PLOT PLAN
CARGILL RIVERVIEW

0037650Y\F1\WP\Figure 2-2.DWG
LATEST REVISION BY: FWH
DATE: 3/08/01


Trucks
#9 PIT
EP-068
To No. 9 H2SO4 Plant
Trucks
#8 PIT
EP-067
To No. 8 H2SO4 Plant
Atmosphere
Scrubber
Pump Station
#7 PIT
EP-066
To No. 7 H2SO4 Plant
Trucks
Ship
DOCK
EP-069
TANK 1
18,000 METRIC TON
TANK 2
18,000 METRIC TON
EP-064
TANK 3
18,000 METRIC TON
EP-063
Molten Sulfur
00376501\F1\WP\Figure 2-3.dwg
Air Flow
Sulfur Flow
V Vent
Existing Molten Sulfur Handling System
Figure 2-3
Latest Revision: 02/11/01
Revision By: PAC
Cargill Fertilizer, Inc.



TRUCK LOADING STATION
EP-074
TO ATMOSPHERE
SCRUBBER 1703
To No. 9 H2SO4 Plant
#9 PIT
EP-068
Trucks
To No. 8 H2SO4 Plant
#8 PIT
EP-067
Trucks
#7 PIT
EP-066
Trucks
To No. 7 H2SO4 Plant
To EPP Plant
PUMP STATION
Ship
DOCK
EP-069
Molten Sulfur
REBUILT TANK 1
18,000 METRIC TON
EP-065
TANK 2
18,000 METRIC TON
EP-064
TANK 3
18,000 METRIC TON
EP-063
Air Flow
Sulfur Flow
Vent
Proposed Molten Sulfur Handling System
Figure 2-4
Latest Revision: 2/11/01
Revision By: PAC
Cargill Fertilizer, Inc. - Tampa, FL



Gas Flow

Sulfuric Acid Flow

Figure 2-5
Sulfuric Acid Plant
Process Flow Diagram
Cargill Riverview

EMISSION UNIT	H_2SO_4 Plants
PROCESS AREA:	H_2SO_4 Production
FILENAME:	0037650Y\F1\WP\Figure 2-5.dwg
LATEST REVISION:	02/06/01 by MJA

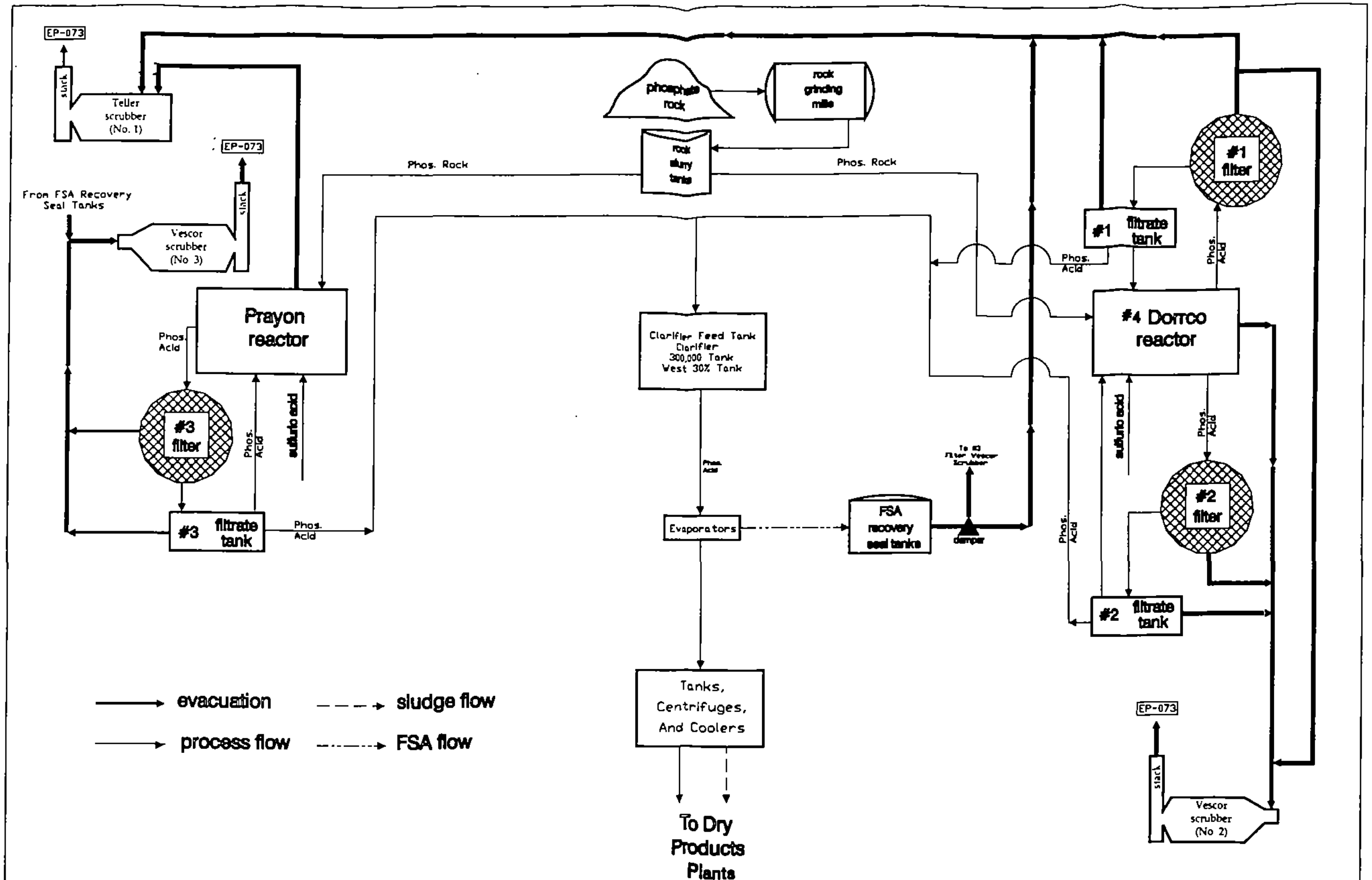


Figure 2-6. Existing Phosphoric Acid Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: PHOSPHORIC ACID PLANT
	PROCESS AREA: PHOSPHORIC ACID PRODUCTION
	FILENAME: 0037650Y\F1\WP\Figure 2-6.dwg
	LATEST REVISION: 02/11/01 by PAC

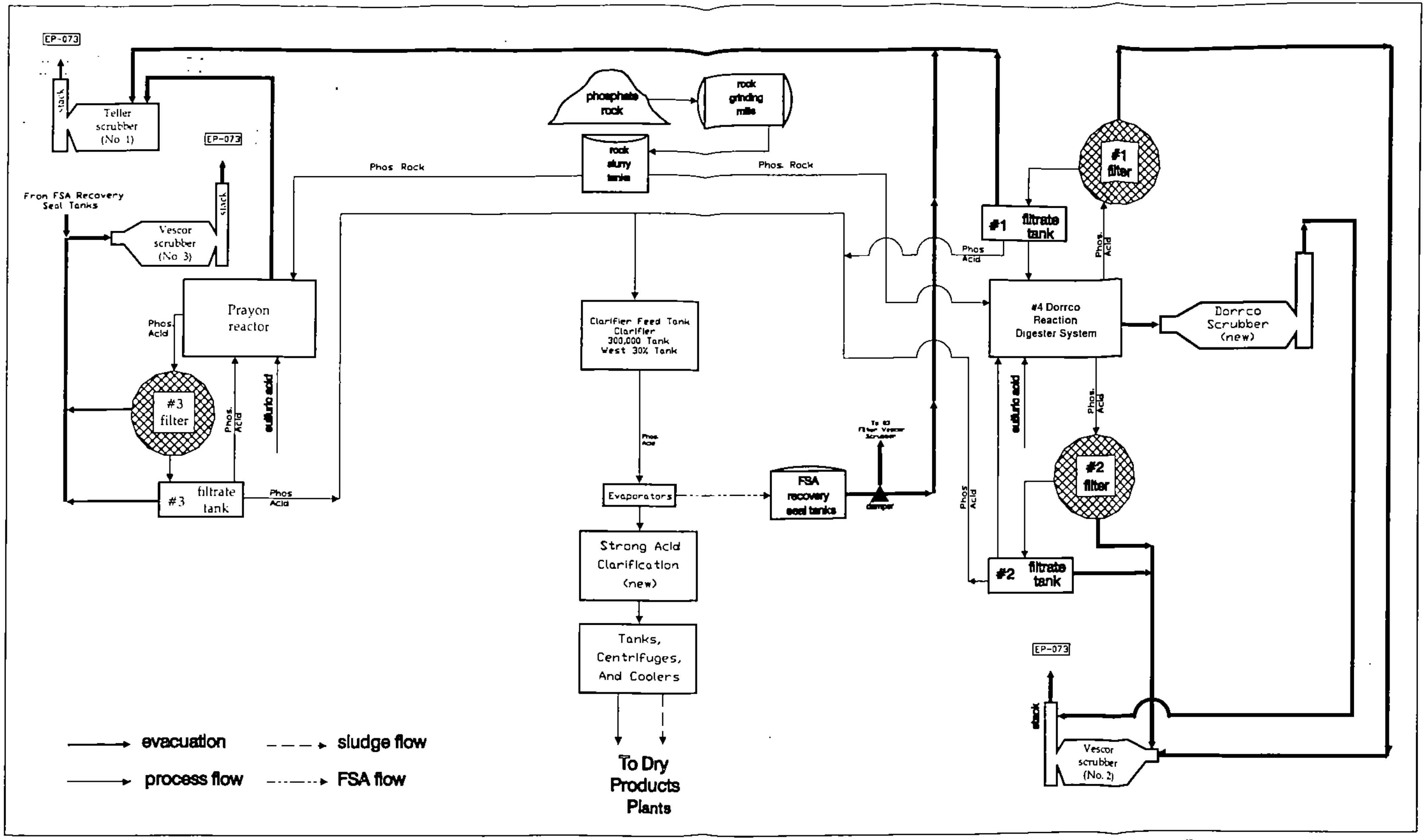


Figure 2-7 – Future Phosphoric Acid Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: FACILITY WIDE
	PROCESS AREA:
	FILENAME: 0037650Y\F1\WP\Figure 2-7.dwg
	LATEST REVISION: 02/11/01 by PAC

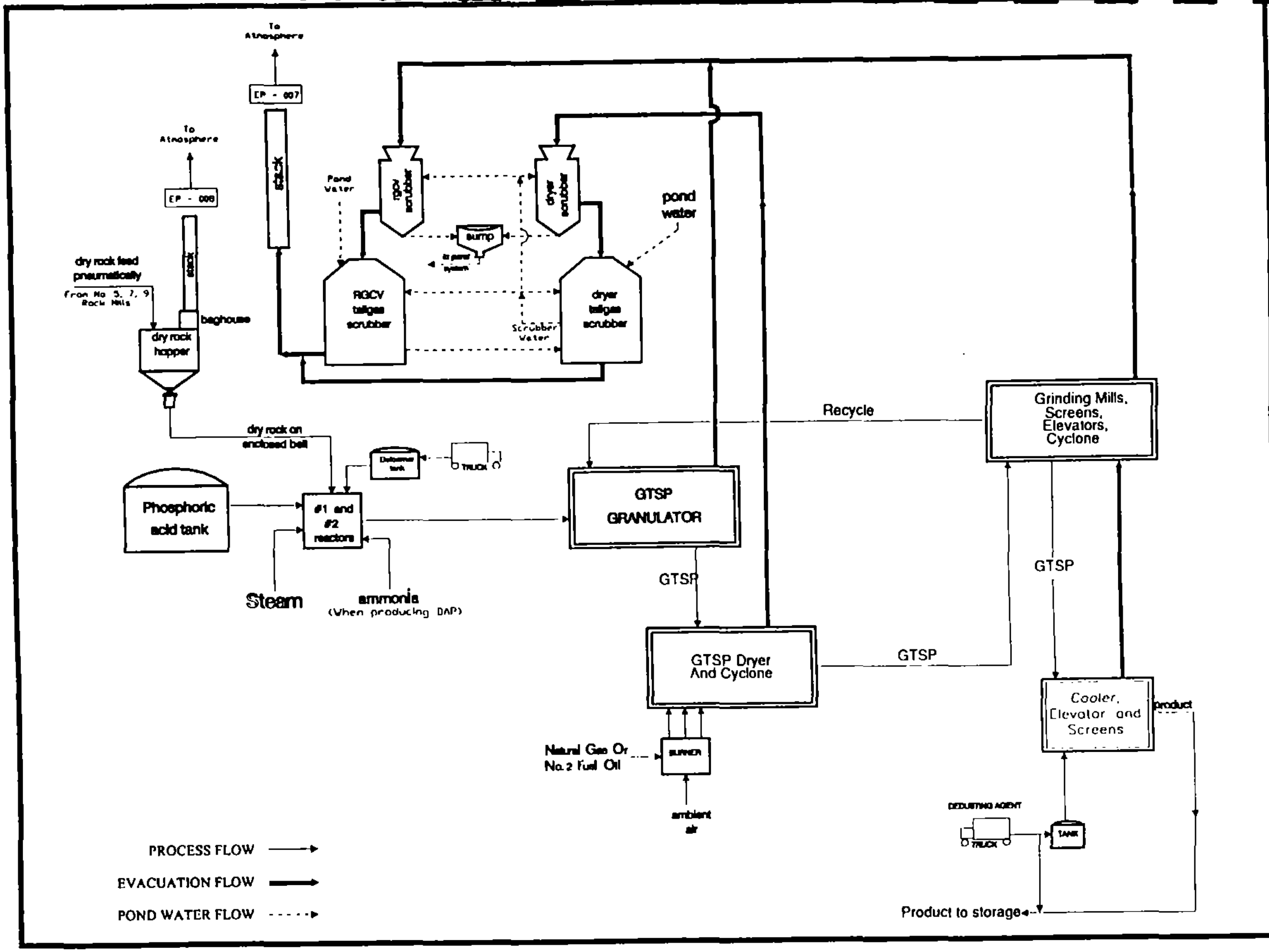


Figure 2-8. Existing GTSP Plant Process Flow Diagram Cargill Riverview	
	EMISSION UNIT: GTSP PLANT
	PROCESS AREA: GTSP / AP PRODUCTION
	FILENAME: 0037650Y\F1\WP\Figure 2-8.dwg
	LATEST REVISION: 02/06/01 by MJA

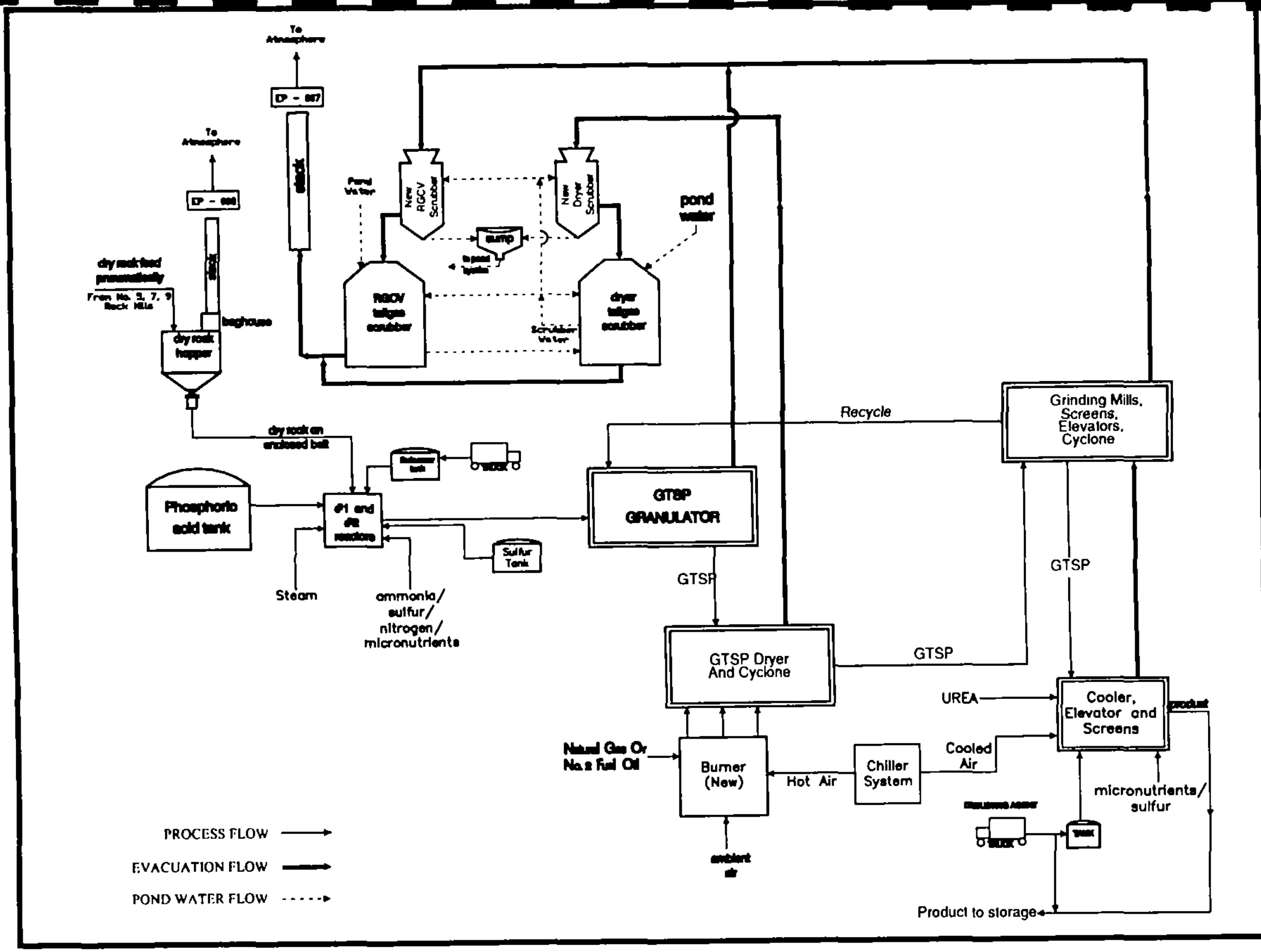
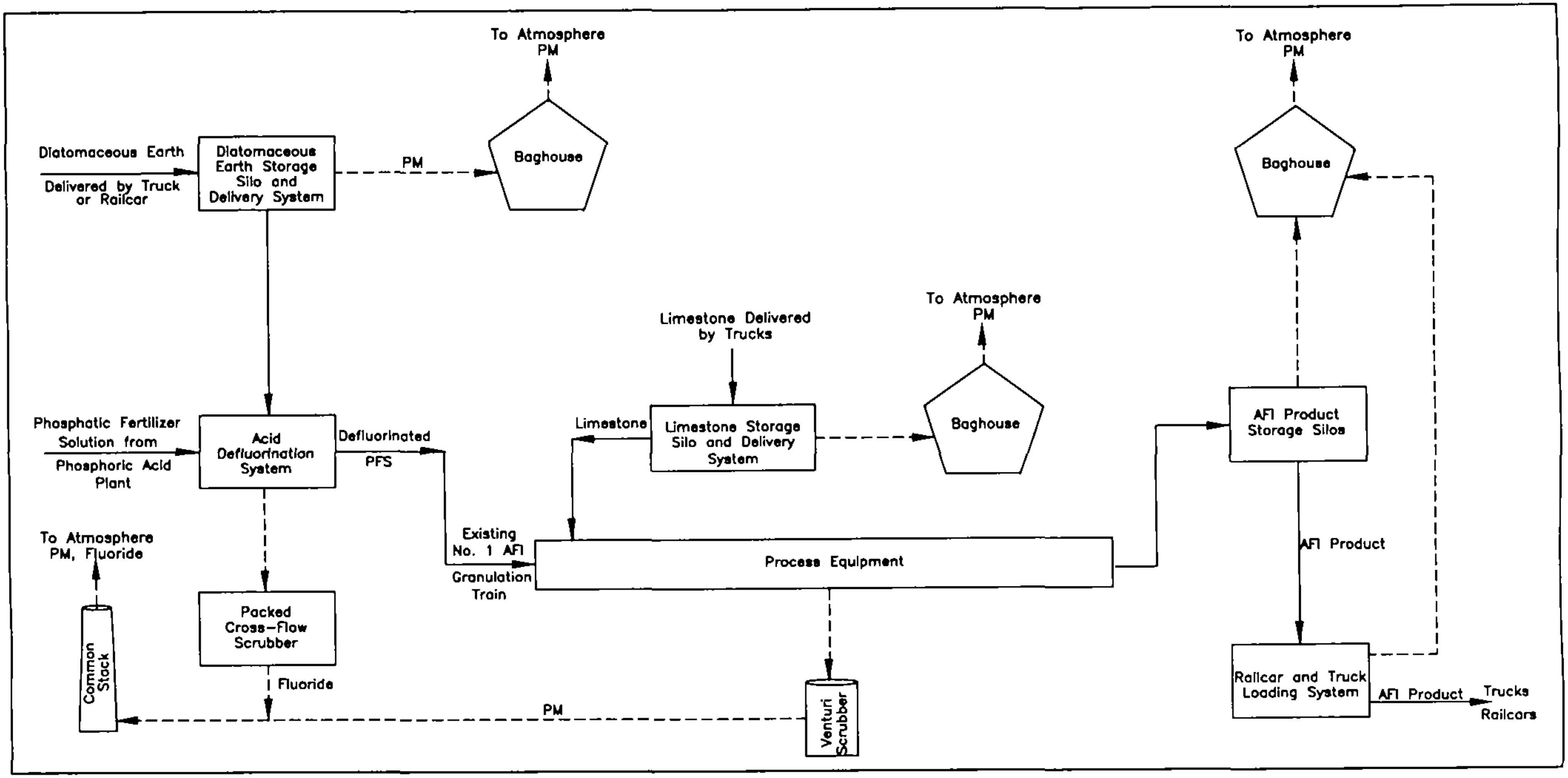
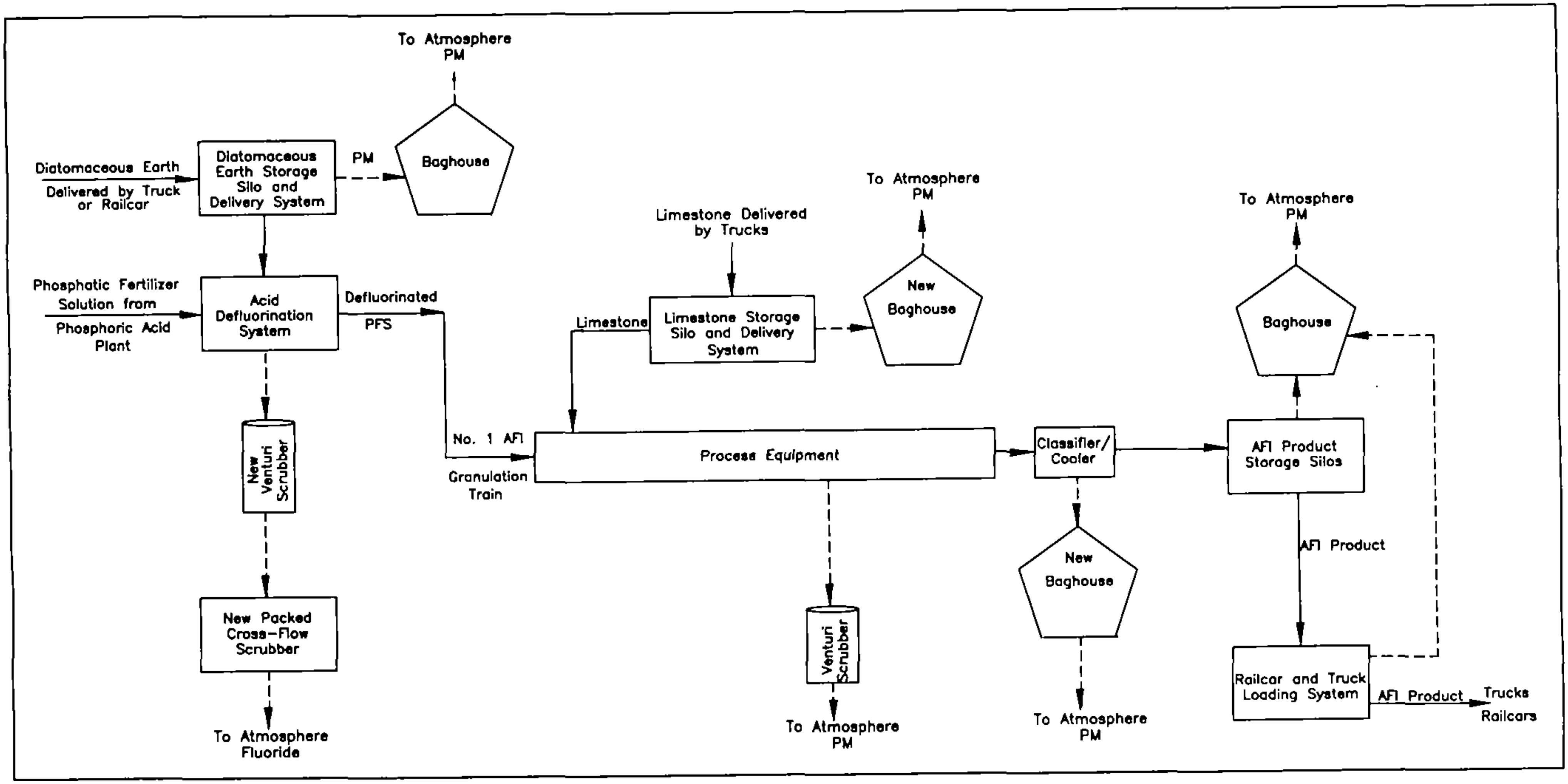


Figure 2-9. Future EPP Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: EPP PLANT
	PROCESS AREA: EP PRODUCTION
	FILENAME: 0037650Y\F1\WP\Figure 2-9.dwg
	LATEST REVISION: 02/11/01 by PAC



MATERIAL FLOW AIR FLOW	Figure 2-10. Existing AFI Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: AFI PLANT PROCESS AREA: AFI PRODUCTION FILENAME: 0037650Y\F1\WP\FIGURE 2-10.DWG LATEST REVISION: 03\09\01 by ARZ



MATERIAL FLOW	——▶
AIR FLOW	- - -▶

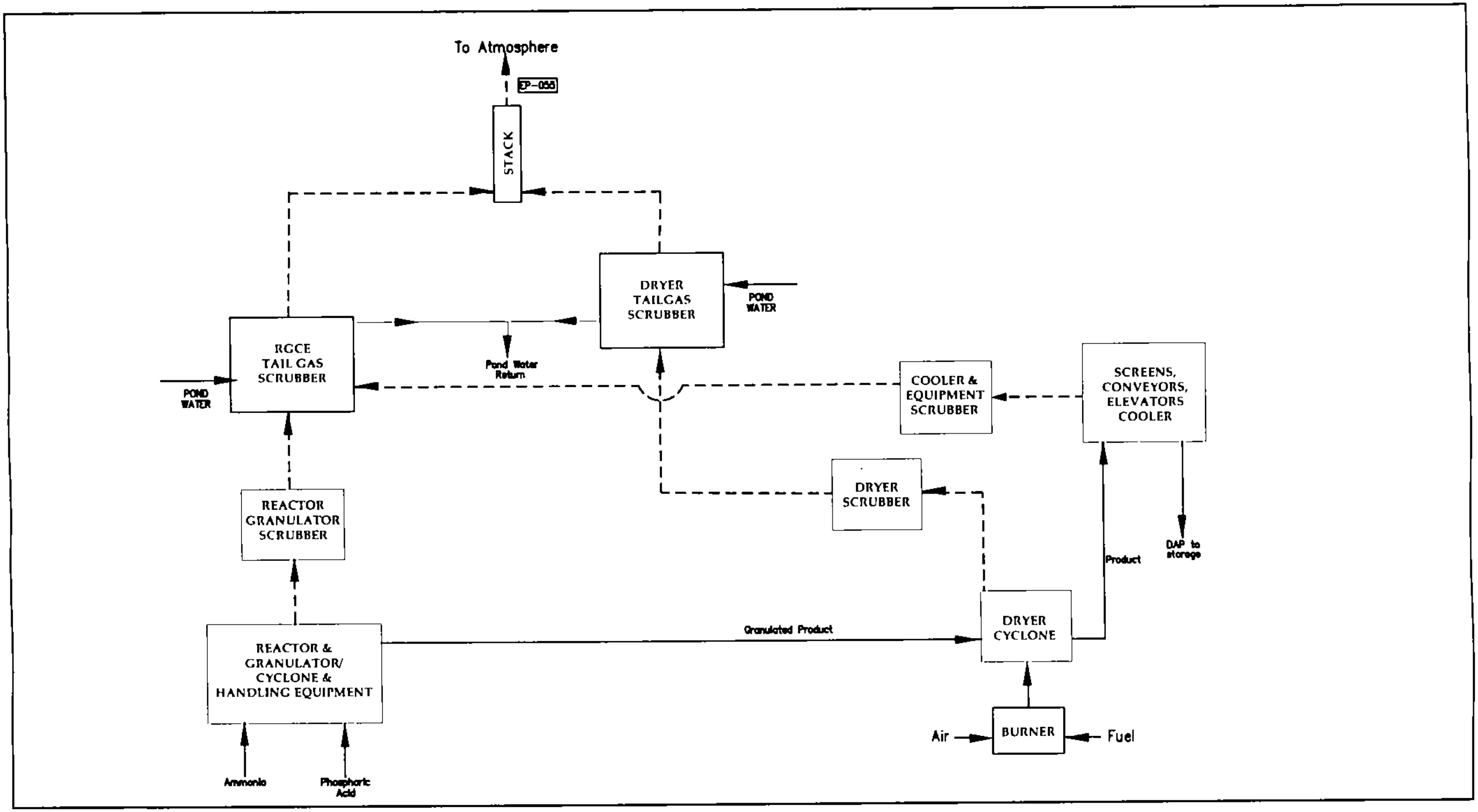
Figure 2-11.
Future AFI Plant
Process Flow Diagram
Cargill Riverview

EMISSION UNIT: AFI PLANT

PROCESS AREA: AFI PRODUCTION

FILENAME: 0037650Y\F1\WP\FIGURE 2-11.DWG

LATEST REVISION: 03/09/01 by ARZ



MATERIAL FLOW	AIR FLOW

Figure 2-12.
No. 5 DAP PLANT
PROCESS FLOW DIAGRAM
CARGILL RIVERVIEW

EMISSION UNIT:	No. 5 DAP PLANT
PROCESS AREA:	DAP PRODUCTION PLANT
FILENAME:	0037650Y\F1\WP\Figure 2-12.dwg
LATEST REVISION:	03/09/01 by PAC

3.0 AIR QUALITY REVIEW REQUIREMENTS

Federal and state air regulatory requirements for a major new or modified source of air pollution are discussed in Sections 3.1 through 3.4. The applicability of these regulations to the proposed Cargill modifications is presented in Section 3.5. These regulations must be satisfied before the proposed project can be approved.

3.1 NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS (AAQS)

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

Florida has adopted state AAQS in Rule 62-204.240. These standards are the same as the national AAQS, except in the case of SO_2. For SO_2, Florida has adopted the former 24-hour secondary standard of 260 micrograms per cubic meter ($\mu g/m^3$) and former annual average secondary standard of 60 $\mu g/m^3$.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Under Federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA; therefore, PSD approval authority has been granted to the Florida Department of Environmental Protection (FDEP).

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The PSD significant emission rates are shown in Table 3-2.

The EPA class designation and allowable PSD increments are presented in Table 3-1. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications are designated based on criteria established in the Clean Air Act Amendments. Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO_2, PM_{10}, and NO_2 increments.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 Code of Federal Regulations (CFR) 52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted the federal PSD regulations by reference [Rule 62-212.400, Florida Administrative Code (F.A.C.)]. Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new facility must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility exceeds the significant emission rate (see Table 3-2).

BACT is defined in 40 CFR 52.21 (b)(12), as:

> *An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Act which would be emitted by any proposed major stationary source of major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determination is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant, which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means, which achieve equivalent results.*

BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's *Guidelines for Determining Best Available Control Technology (BACT)* (EPA, 1978) and in the PSD *Workshop Manual* (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis required the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgement, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

3.2.3 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source or major modification subject to PSD review, and for each pollutant for which the increase in emissions exceeds the PSD significant emission rate (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication *Guideline on Air Quality Models* (EPA, 1980).

To address compliance with AAQS and PSD Class II increments, a source impact analysis must be performed for the criteria pollutants. However, this analysis is not required for a specific pollutant if the net increase in impacts as a result of the new source or modification is below significant impact levels, as presented in Table 3-1. The significant impact levels are threshold levels that are used to determine the level of air impact analyses needed for the project. If the new or modified source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with AAQS and PSD increments.

EPA has proposed significant impact levels for Class I areas as follows:

SO_2	3-hour	1 $\mu g/m^3$
	24-hour	0.2 $\mu g/m^3$
	Annual	0.1 $\mu g/m^3$
PM_{10}	24-hour	0.3 $\mu g/m^3$
	Annual	0.2 $\mu g/m^3$
NO_2	Annual	0.1 $\mu g/m^3$

Although these levels have not been officially promulgated as part of the PSD review process and may not be binding for states in performing PSD review, the proposed levels serve as a guideline in assessing a source's impact in a Class I area. The EPA action to incorporate Class I significant impact levels in the PSD process is part of implementing the NSR provisions of the 1990 CAA Amendments. Because the process of developing the regulations will be lengthy, EPA believes that the proposed rules concerning the significant impact levels is appropriate in order to assist states in implementing the PSD permit process.

Various lengths of record for meteorological data can be used for impact analysis. A 5-year period is normally used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The meteorological data are selected base on an evaluation of measured weather data from a nearby weather station that represents weather conditions at the project site. The criteria used in this evaluation include determining the distance of the project site to the weather station; comparing topographical and land use features between the locations; and determining availability of necessary weather parameters.

The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is important because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If fewer than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO_2 and PM [triple super phosphate (TSP)]

concentrations, or February 8, 1988, for NO_2 concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM (TSP) concentrations, and after February 8, 1988, for NO_2 concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

1. The major facility baseline date, which is January 6, 1975, in the cases of SO_2 and PM (TSP), and February 8, 1988, in the case of NO_2.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO_2 and PM (TSP), and February 8, 1988, for NO_2.

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 CFR 52.21(m), any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

Ambient air monitoring for a period of up to 1 year generally is appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (EPA, 1987a).

The regulations include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements, with respect to a particular pollutant, if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3-2.

3.2.5 SOURCE INFORMATION/GEP STACK HEIGHT

Source information must be provided to adequately describe the proposed project. The general type of information required for this project is presented in Section 2.0.

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). The FDEP has adopted identical regulations (Rule 62-210.550, F.A.C.). GEP stack height is defined as the highest of:

1. 65 meters (m); or
2. A height established by applying the formula:

$$Hg = H + 1.5L$$

where: Hg = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or projected width) of nearby structure(s); or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometer. Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula.

3.2.6 ADDITIONAL IMPACT ANALYSIS

In addition to air quality impact analyses, federal and State of Florida regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21(o) and Rule 62-212.400, F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.3 NONATTAINMENT RULES

Based on the current nonattainment provisions, all major new facilities and modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant.

3.4 EMISSION STANDARDS

3.4.1 NEW SOURCE PERFORMANCE STANDARDS

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the CAA Amendments of 1977, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

Federal NSPS exist for facilities producing phosphoric acid and phosphate fertilizer products (40 CFR 60, Subparts T through X). Specifically, Subpart T applies to wet-process PAPs, Subpart V applies to DAP plants, and Subpart W applies to plants manufacturing triple super phosphate (TSP) in any form. The NSPS apply to all facilities constructed or modified after October 22, 1974. Subparts T, V, and W regulate F emissions from the plants.

Federal NSPS also exist for facilities producing H_2SO_4 (40 CFR 60, Subpart H). Subpart H applies to all newly constructed or modified H_2SO_4 plants that commenced construction after August 18, 1971. Subpart H regulates SO_2 and H_2SO_4 mist emissions.

3.4.2 FLORIDA RULES

The PAP and GTSP plant are subject to the emission limitations of Rule 62-296.403(1) F.A.C. pertaining to fluoride emissions from phosphate processing plants. The provisions of Rule 62-296.403(1)(a) apply to the PAP, the provisions of Rule 62-296.403(1)(f) apply to the DAP plant, and the provisions of 62-296.403(1)(d)2 apply to the GTSP (EPP) plant. Since the provisions of Rule 62-296.403(1)(a) through (h) do not apply to the AFI plant, the provisions of paragraph (i) would apply. This provision states that a BACT determination would apply to the source, as determined pursuant to Rule 62-212.400(6), F.A.C. Therefore, a BACT determination must be made regarding fluoride emissions from the AFI plant. The BACT analysis for the proposed project is presented in Section 5.0.

H_2SO_4 plants are subject to the emission limitations of Rule 62-296.402(2), F.A.C. pertaining to SO_2, H_2SO_4 mist, and visible emissions from H_2SO_4 plants.

3.5 SOURCE APPLICABILITY

3.5.1 AREA CLASSIFICATION

The project site is located in Hillsborough County, which has been designated by EPA and FDEP as an attainment or maintenance area for all criteria pollutants. Hillsborough County and surrounding counties are designated as PSD Class II areas for all criteria pollutants. The site is located about 85 km from a PSD Class I area (Chassahowitzka National Wilderness Area).

3.5.2 PSD REVIEW

3.5.2.1 Pollutant Applicability

The Cargill facility is considered to be an existing major stationary facility because potential emissions of certain regulated pollutants exceed 100 TPY (for example, potential SO_2 emissions currently exceeds 100 TPY). Therefore, PSD review is required for any pollutant for which the increase in emissions due to the modification is greater than the PSD significant emission rates (see Table 3-2).

Presented in Table 3-3 are the future potential emissions from all emissions units at the facility that are being modified or otherwise affected by the proposed project. The future potential emissions are based on information from Section 2.0 and Appendix B. The current actual emissions were presented in Table 2-2. The net increase in emissions due to the proposed modification at the facility is shown in Table 3-4. Also included in this table are contemporaneous emission increases which have occurred at Cargill in the last 5 years. As shown, the net increase exceeds the PSD significant emission rates for PM, PM_{10}, SO_2, NO_x, SAM, and F. As a result, PSD review applies for these pollutants.

3.5.2.2 Source Impact Analysis

A source impact analysis was performed for PM_{10}, NO_x, SO_2, and F emissions resulting from the proposed modification. This analysis is presented in Section 6.0.

3.5.2.3 Ambient Monitoring

Based on the increase in emissions from the proposed modification (see Table 3-4), a pre-construction ambient monitoring analysis is required for PM_{10}, SO_2, NO_x, SAM, and F and monitoring data is required to be submitted as part of the application. However, if the net increase in impacts of a pollutant is less than the applicable *de minimis* monitoring concentration, then an exemption from submittal of pre-construction ambient monitoring data may be obtained [40 CFR 52.21(i)(8)]. In addition, if EPA has not established an acceptable ambient monitoring method for the pollutant, monitoring is not required.

Pre-construction monitoring data for NO_x may be exempted for this project because, as shown in Section 6.0, the proposed modification's impacts are predicted to be below the applicable *de minimis* monitoring concentration for NO_x. In addition, no air monitoring data is presented for SAM and F since AAQS have not been established for these pollutants. A pre-construction ambient monitoring analysis is required for PM_{10} and SO_2. This analysis is presented in Section 4.0.

3.5.2.4 GEP Stack Height Impact Analysis

No existing stacks at the Cargill facility currently exceed the *de minimis* GEP stack height of 213 feet. In addition, none of the proposed new stacks will exceed this height. Therefore, the proposed modification will comply with the GEP stack height regulations.

3.5.3 EMISSION STANDARDS

3.5.3.1 New Source Performance Standards

The Nos. 8 and 9 H_2SO_4 plants are currently subject to the NSPS for H_2SO_4 plants, as contained in 40 CFR 60, Subpart H. These NSPS will continue to apply to the H_2SO_4 plants in the future.

Since the PAP produces phosphoric acid, the PAP is subject to NSPS requirements. Subpart V applies to DAP plants constructed or modified after October 22, 1974. Since the No. 5 DAP plant produces DAP, it is subject to NSPS requirements. Subpart W applies to triple super phosphate plants constructed or modified after October 22, 1974. The GTSP plant produces GTSP, but is not currently subject to NSPS since the plant was constructed prior to October 22, 1974, and has not been modified since that time. However, the proposed modification may result in an increase in actual F emissions and, therefore, the GTSP plant (EPP plant) will become subject to Subpart W.

The applicable federal NSPS for H_2SO_4 plants (40 CFR 60.80) are 0.15 lb/ton of 100-percent H_2SO_4 for SAM and 4 lb/ton of 100-percent H_2SO_4 for SO_2. The applicable NSPS for PAPs (40 CFR 60.202) is 0.020 lb/ton P_2O_5 for F. The applicable NSPS for GTSP plants (40 CFR 60.232) is 0.20 lb/ton P_2O_5 for F. The applicable NSPS for DAP plants (40 CFR 60.222) is 0.060 lb/ton P_2O_5 input for F.

The proposed SAM, SO_2, and F emission limits will comply with the applicable limits for the H_2SO_4, GTSP (EPP), PAP, and DAP plants at Cargill Riverview..

3.5.3.2 State of Florida Standards

The applicable State of Florida emission limits for new H_2SO_4 plants are 4 lb/ton of 100-percent acid for SO_2 and 0.15 lb/ton of 100-percent acid for SAM [Rule 62-296.402(2)]. The applicable State of Florida fluoride emissions limits for new phosphate processing plants or plant sections [Rule 62-296.403] are 0.02 lb/ton P_2O_5 for wet process phosphoric acid production, 0.06 lb/ton P_2O_5 for DAP production, and 0.15 lb/ton P_2O_5 for GTSP made from phosphoric acid and phosphate rock slurry. The subject sources at Cargill Riverview will comply with the Florida standards contained in Rules 62-296.402 and 62-296.403.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels ($\mu g/m^3$)

Pollutant	Averaging Time	AAQS			PSD Increments		Significant Impact Levels[d]
		National Primary Standard	National Secondary Standard	State of Florida	Class I	Class II	
Particulate Matter[a] (PM_{10})	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum[b]	150[b]	150[b]	150[b]	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum[e]	365[b]	NA	260[b]	5	91	5
	3-Hour Maximum[b]	NA	1,300[b]	1,300[b]	25	512	25
Carbon Monoxide	8-Hour Maximum[b]	10,000[b]	10,000[b]	10,000[b]	NA	NA	500
	1-Hour Maximum[b]	40,000[b]	40,000[b]	40,000[b]	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone[a]	1-Hour Maximum	235[c]	235[c]	235[c]	NA	NA	NA
	1-Hour Maximum	235	235	NA	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: NA = Not applicable, i.e., no standard exists.
PM_{10} = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

[a] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, $PM_{2.5}$ standards were introduced with a 24-hour standard of 65 $\mu g/m^3$ (3-year average of 98th percentile) and an annual standard of 15 $\mu g/m^3$ (3-year average at community monitors). Implementation of these standards are many years away. The ozone standard was modified to be 0.08 ppm for 8-hour average; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

[b] Short-term maximum concentrations are not to be exceeded more than once per year except for the PM_{10} AAQS (these do not apply to significant impact levels). The PM_{10} 24-hour AAQS is attained when the expected number of days per year with a 24-hour concentration above 150 $\mu g/m^3$ is equal to or less than 1. For modeling purposes, compliance is based on the sixth highest 24-hour average value over a 5-year period.

[c] Achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

[d] Maximum concentrations.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978. 40 CFR 50. 40 CFR 52.21. Rule 62-204, F.A.C.

Table 3-2. PSD Significant Emission Rates and *De Minimis* Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis Monitoring Concentration[a] (μg/m3)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter [PM(TSP)]	NSPS	25	NA
Particulate Matter (PM_{10})	NAAQS	15	10, 24-hour
Nitrogen Dioxide	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[b]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour
Beryllium	NESHAP	0.0004	0.001, 24-hour
Asbestos	NESHAP	0.007	NM
Vinyl Chloride	NESHAP	1	15, 24-hour
MWC Organics	NSPS	3.5×10^{-6}	NM
MWC Metals	NSPS	15	NM
MWC Acid Gases	NSPS	40	NM
MSW Landfill Gases	NSPS	50	NM

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below de minimis monitoring concentrations.

NA = Not applicable.
NAAQS = National Ambient Air Quality Standards.
NM = No ambient measurement method established; therefore, no *de minimis* concentration has been established.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.
$\mu g/m^3$ = micrograms per cubic meter.
MWC = Municipal waste combustor
MSW = Municipal solid waste

[a] Short-term concentrations are not to be exceeded.

[b] No de minimis concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

Sources: 40 CFR 52.21.
Rule 62-212.400

Table 3-3 Future Potential Emissions from Modified/New/Affected Sources

Source Description	EU ID	Pollutant Emission Rate (TPY) SO$_2$	NO$_x$	CO	PM	PM$_{10}$	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility										
Molten Sulfur Storage--Tank No. 1		2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Tank No 2	064	2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Tank No. 3	065	2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Pit No. 7	066	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Pit No 8	067	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Pit No 9	068	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Ship Unloading	069	1.07	--	--	0.06	0.06	0.76	0.51	--	--
Molten Sulfur Storage--Truck Loading Station	074	0.04	--	--	0.02	0.02	0.03	0.02	--	--
Total		**8.99**	--	--	**2.12**	**2.12**	**6.41**	**4.31**	--	--
B No. 8 Sulfuric Acid Plant	005	**1,724.63**	**59.13**	--	--	--	--	--	**59.13**	--
C. No. 9 Sulfuric Acid Plant	006	**2,171.75**	**74.46**	--	--	--	--	--	**74.46**	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No 5 Rock Mill	100	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
No. 9 Rock Mill	101	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
No. 7 Rock Mill	106	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
Ground Rock Handling and Storage System	034/102	--	--	--	1.78	1.78	--	--	--	--
Total		**3.96**	**17.07**	**14.34**	**22.33**	**22.33**	**0.93**	--	--	--
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	**10.03**
F. EPP Plant	007	8.11	35.04	29.43	52.56	52.56	1.93	--	--	10.75
EPP Ground Rock Handling	008	--	--	--	4.16	4.16	--	--	--	--
EPP Storage Building No. 2	070	--	--	--	--	--	--	--	--	21.73
EPP Storage Building No 4	071	--	--	--	--	--	--	--	--	21.73
EPP Truck Loadout Baghouse	072	--	--	--	2.30	2.30	--	--	--	--
EPP Truck Loadout Fugitive Emissions		--	--	--	2.00	0.40	--	--	--	--
New Molten Sulfur Tank		0.66	--	--	0.85	0.85	0.47	0.32	--	--
Total		**8.77**	**35.04**	**29.43**	**61.87**	**60.27**	**2.40**	**0.32**	--	**54.20**
G AFI Plant Defluorination System	078	--	--	--	--	--	--	--	--	4.38
AFI Granulation System		5.07	21.90	18.40	35.04	35.04	1.20	--	--	--
DE Hopper Baghouse	079	--	--	--	0.23	0.23	--	--	--	--
Milling, Classification, & Cooling Equipment Baghouse		--	--	--	22.53	22.53	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	1.40	1.40	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	9.01	9.01	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.20	0.04	--	--	--	--
Total		**5.07**	**21.90**	**18.40**	**68.41**	**68.25**	**1.20**	--	--	**4.38**
H No 5 DAP Plant	055	**2.52**	**17.52**	**14.72**	**56.10**	**56.10**	**0.96**	--	--	**14.50**
I. Material Handling System										
West Baghouse Filter[a]	051	--	--	--	4.60	4.60	--	--	--	--
South Baghouse[a]	052	--	--	--	4.60	4.60	--	--	--	--
Vessel Loading System--Tower Baghouse Exhaust[c]	053	--	--	--	3.20	3.20	--	--	--	--
Building No 6 Belt to Conveyor No. 7[a]	058	--	--	--	1.20	1.20	--	--	--	--
Conveyor No.7 to Conveyor No. 8[a]	059	--	--	--	1.90	1.90	--	--	--	--
Conveyor No 8 to Conveyor No. 9[a]	060	--	--	--	3.60	3.60	--	--	--	--
Railcar Unloading of AFI Product[b]		--	--	--	0.30	0.06	--	--	--	--
East Vessel Loading Facility-Shiphold Chokefeed[a]	061	--	--	--	0.42	0.42	--	--	--	--
Total		--	--	--	**19.82**	**19.58**	--	--	--	--
Total Future Potential Emission Rates		**3,925.69**	**225.12**	**76.89**	**230.65**	**228.65**	**11.90**	**4.63**	**133.59**	**83.11**

[a] Emission Rates based on Title V Permit No 0570008-014-AV.

[b] See Appendix B for calculation of emission rate.

[c] Based on stack tests, see Appendix C and Section 2.0.

Table 3-4. Contemporaneous and Debottlenecking Emissions Analysis and PSD Applicability

Source Description	Pollutant Emission Rate (TPY)								
	SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
Potential Emissions From Modified/New/Affected Sources[a]									
A. Existing Molten Sulfur Storage/Handling Facility	8 99	–	–	2 12	2 12	6.41	4.31	–	–
B. Modified No. 8 Sulfuric Acid Plant	1,724.63	59.13	–	–	–	–	–	59.13	–
C. Modified No. 9 Sulfuric Acid Plant	2,171.75	74 46	–	–	–	–	–	74.46	–
D Existing Nos. 5, 7, and 9 Rock Mills[b]	3.96	17 07	14.34	22.33	22 33	0 93	–	–	–
E. Modified Phosphoric Acid Plant	–	–	–	–	–	–	–	–	10 03
F. Modified EPP Plant	8 77	35.04	29.43	61 87	60 27	2.40	0.32	–	54.20
G Modified AFI Plant No 1	5.07	21 90	18.40	68.41	68 25	1 20	–	–	4 38
H. Modified No 5 DAP Plant	2 52	17.52	14.72	56 10	56 10	0.96	–	–	14.50
I. Existing Material Handling System[b]	–	–	–	19.82	19 58	–	–	–	–
Total Potential Emission Rates	**3,925.69**	**225.12**	**76.89**	**230.65**	**228.65**	**11.90**	**4.63**	**133.59**	**83.11**
Actual Emissions from Current Operations[c]									
A. Molten Sulfur Storage/Handling Facility	1.55	–	–	1.74	1 74	1.10	0.74	–	–
B. No. 8 Sulfuric Acid Plant	1,250.74	44 05	–	–	–	–	–	14.68	–
C. No. 9 Sulfuric Acid Plant	1,525 82	51.23	–	–	–	–	–	13.43	–
D. Nos. 5, 7, and 9 Rock Mills	0.07	11.15	9 37	4.10	4 10	0 62	–	–	–
E. Phosphoric Acid Plant	–	–	–	–	–	–	–	–	3 92
F. GTSP Plant	0.11	18.05	15 16	20.50	20 47	0.99	–	–	42.52
G. AFI Plant No. 1	0.04	5 71	4.80	18.37	18 22	0 31	–	–	1 79
H. No. 5 DAP Plant	0 02	3.91	3.29	8 67	8 67	0 22	–	–	8 37
I Material Handling System	–	–	–	3.53	3 51	–	–	–	–
Total Actual Emission Rates	**2,778.35**	**134.11**	**32.61**	**56.91**	**56.71**	**3.24**	**0.74**	**28.11**	**56.60**
TOTAL CHANGE DUE TO PROPOSED PROJECT	**1,147.34**	**91.01**	**44.28**	**173.74**	**171.94**	**8.66**	**3.89**	**105.48**	**26.51**
Contemporaneous Emission Changes									
A. Upgrade of Phosphate Rock Grinding System (June 1996)	2.70	–	3 99	–	–	0.31	0.00	0.00	–
B. AFI Plant Expansion (July 1996)	9.40	[e]	14.20	–	–	1.10	0.00	0.00	–
C. MAP Plant Expansion (May 1998)	0.61	2 23	0.56	[e]	[e]	0.04	0.00	0.00	[e]
D. DAP Plant Cooler Upgrade (August 1998)[d]	0.00	0 00	0.00	0.00	0 00	0.00	0.00	0.00	0.00
E. Reconstruction of Molten Sulfur Tank No. 1 (February 1999)	2.82	0 00	0.00	3.40	3.40	2.01	1.35	0.00	0.00
F. Molten Sulfur Increase/Truck Loadout (pending)	0.32	0.00	0 00	1.25	1 25	0.23	0.15	0.00	0.00
Total Contemporaneous Emission Changes	**15.85**	**2.23**	**18.75**	**4.65**	**4.65**	**3.69**	**1.50**	**0.00**	**0.00**
TOTAL NET CHANGE	**1,163.19**	**93.24**	**63.03**	**178.39**	**176.59**	**12.35**	**5.39**	**105.48**	**26.51**
PSD SIGNIFICANT EMISSION RATE	40	40	100	25	15	40	10	7	3
PSD REVIEW TRIGGERED?	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes

Footnotes:

[a] Total future potential emissions from Table 3-3

[b] Debottlenecking analysis revealed that emissions from this sources could potentially increase as part of this project.

[c] Based on actual emissions for 2000 and 1999 from Tables A-1 and A-2, respectively.

[d] Project was determined to not result in an increase in emissions of any pollutant.

[e] Denotes that PSD review was triggered for this pollutant, therefore any previous contemporaneous increases/decreases are wiped clean.

4.0 AMBIENT MONITORING ANALYSIS

4.1 MONITORING REQUIREMENTS

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-1). As discussed in Section 3.1, PM/PM_{10}, SO_2, and F require an air quality analysis to meet PSD pre-construction monitoring requirements for the proposed Cargill expansion.

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (1987).

An exemption from the pre-construction ambient monitoring requirements is also available if certain criteria are met. If the predicted increase in ambient concentrations, due to the proposed modification, is less than specified *de minimis* concentrations, then the modification can be exempted from the pre-construction air monitoring requirements for that pollutant.

The PSD *de minimis* monitoring concentration for PM_{10} is 10 micrograms per cubic meter ($\mu g/m^3$), 24-hour average; for SO_2 is 13 $\mu g/m^3$, 24-hour average; for NO_x is 14 $\mu g/m^3$, annual average; and for F is 0.25 $\mu g/m^3$, 24-hour average. The predicted increase in PM_{10}, SO_2, and F concentrations due to the proposed modification only are presented in Section 6.0. Since the predicted increases of PM_{10}, SO_2, and F impacts due to the proposed modification are greater than the *de minimis* monitoring concentration levels, a pre-construction air monitoring analysis must be conducted for these three pollutants. A pre-construction air monitoring analysis is not required for NO_x.

4.2 PM_{10} AMBIENT MONITORING ANALYSIS

The PSD ambient monitoring guidelines allow the use of existing data to satisfy pre-construction review requirements. Presented in Table 4-1 is a summary of existing ambient PM_{10} data for monitors located in the vicinity of Cargill's Riverview facility. Data are presented for 1999 and January through September of 2000, except for the Riverview station, 1998 data are also shown. As shown, several PM_{10} monitors were operational in the vicinity of Cargill's Riverview facility during this period. One of these stations, the Gardinier Park station, is located immediately adjacent to the Riverview facility.

The monitors show that ambient PM_{10} concentrations were well below the AAQS of 150 $\mu g/m^3$, maximum 24-hour average, and 50 $\mu g/m^3$, annual average. For purposes of an ambient PM_{10} background concentration for use in the modeling analysis, the highest annual average concentration, and sixth-highest 24-hour average concentration occurring over the 3-year period were selected. These concentrations are 26 and 39 $\mu g/m^3$, respectively, measured at Riverview (Gardinier Park) directly adjacent to Cargill's facility. This monitor is likely impacted by several existing point sources, such as Cargill and Tampa Electric's Big Bend power station, which are already included explicitly in the modeling dispersion analysis. As a result, this background concentration is conservatively high.

4.3 SO_2 AMBIENT MONITORING ANALYSIS

A background SO_2 concentration must be estimated to account for SO_2 sources, which are not explicitly included in the atmospheric dispersion modeling analysis. To estimate reasonable background SO_2 concentrations, a review of recent, available SO_2 monitoring data in the area of Cargill was performed. Presented in Table 4-2 is a summary of ambient SO_2 data available for 1999 and for January through September 2000, for all monitors located within 10 km of the Cargill site, plus a monitor in Plant City. A total of five stations are located within 10 km of Cargill, all of which have continuous SO_2 monitors. The Plant City monitor is also continuous. The monitors are operated by Hillsborough County Environmental Protection Commission. Data recoveries exceed 98 percent for all but two of the monitors.

Annual average, 24-hour maximums, and 3-hour maximums for SO_2 are shown in Table 4-1. Since all of the monitors except the Plant City monitor are located in an area of multi-source emissions (refer to Section 6.0), these concentrations are expected to include substantial contributions from sources in the area, including the existing Cargill facility. These potential major contributing sources are explicitly included in the modeling analysis, as are almost all emissions from sources located within 50 km of the Cargill facility. As a result, these concentrations are not representative of actual background concentrations which would be expected to occur in conjunction with the worst-case meteorology.

To develop a representative background concentration for the modeling analysis, a review of the Plant City SO_2 monitoring data was performed. Since the vast majority of point source SO_2 emissions are accounted for in the dispersion modeling analysis, the background concentration should represent distant point sources, local and distant area sources, and natural sources. The Plant City monitor is more remote and, therefore, more representative of the background concentration. The monitoring data indicate that the maximum second-high SO_2 values recorded in Plant City during 1998-2000 were 121 $\mu g/m^3$ for the 3-hour averaging time, 31 $\mu g/m^3$ for the 24-hour averaging time, and 8 $\mu g/m^3$ for the annual average. These values were used as background concentrations in the modeling analysis.

4.4 FLUORIDE AMBIENT MONITORING ANALYSIS

There are no known existing fluoride monitors in the vicinity of Cargill's Riverview facility. However, no AAQS for fluorides has been promulgated. Typically, pre-construction monitoring has not been required for pollutants for which no AAQS exists. However, potential effects of fluoride impacts are addressed in Section 7.0.

Table 4-1. Summary of PM_{10} Monitoring Data Collected Within 10 km of Cargill Fertilizer, Inc.

						Reported Concentration ($\mu g/m^3$)			
						24-Hour			
City	Site ID No. (Distance Away)	Monitoring Method	Year	Number of Observations	Percent of Data Recovery	Highest	Second-Highest	Third Highest	Annual
Ruskin	12-057-0066 (3.7 km)	Hi-Volume Sampler	1999	60	95	82	81	--	35
			2000 (Jan-Sep)	46	96	112	65	--	33
Tampa	12-057-0085 (8.0 km)	Hi-Volume Sampler	1999	60	95	45	35	--	20
			2000 (Jan-Sep)	46	96	85	35	--	24
Riverview	12-057-0083 (0.8 km)	Hi-Volume Sampler	1998	54	86	49	42	42	25
			1999	59	94	55	39	37	24
			2000 (Jan-Sep)	46	96	45	38	37	26
Tampa	12-057-0095 (6.8 km)	Hi-Volume Sampler	1999	60	95	58	49	--	27
			2000 (Jan-Sep)	44	92	49	44	--	29
Tampa	12-057-1035 (9.6 km)	Continuous	1999	364	100	57	51	--	25
			2000 (Jan-Sep)	272	99	60	52	--	26

Note: $\mu g/m^3$ = micrograms per cubic meter.

Source: FDEP: Allsum Report; 1999, 2000.

Table 4-2. Summary of Ambient SO_2 Data for Sites Within 10 km of Cargill Fertilizer, Inc.

City	Site ID No. (Distance Away)	Monitoring Method	Year	Number of Observations	Percent of Data Recovery	Reported Concentration ($\mu g/m^3$) 3-Hour[a]	24-Hour[a]	Annual Average
Ruskin	12-057-0021[b] (8.2 km)	Continuous	1999	8,386	98.6	257	45	8
			2000 (Jan-Sep)	--	--	--	--	--
Tampa	12-057-0095[b] (6.8 km)	Continuous	1999	8,581	98.0	288	58	13
			2000 (Jan-Sep)	6,517	99.2	354	60	10
Tampa	12-057-1035[b] (9.6 km)	Continuous	1999	8,714	99.5	270	71	21
			2000 (Jan-Sep)	6,470	98.5	210	60	18
Tampa	12-057-0053[b] (9.2 km)	Continuous	1999	8,642	98.7	186	47	13
			2000 (Jan-Sep)	6,094	92.8	173	52	13
Riverview	12-057-0109[c] (1.1 km)	Continuous	1999	8,642	98.7	469	157	16
			2000 (Jan-Sep)	6,537	99.5	199	52	10
Plant City	12-057-4004	Continuous	1998	6,476	73.9	115	31	8
			1999	5,245	60.0	81	21	8
			2000 (Jan-Sep)	6,435	97.9	121	26	8

[a] Second-highest concentrations for calendar year are shown.
[b] Monitoring objective for this site is to measure the impact of a significant source.
[c] Monitoring objective for this site is to measure pollutant concentrations representative of areas of high population density.

Source: FDEP: Allsum Report; 1999, 2000.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 REQUIREMENTS

The 1977 CAA Amendments established requirements for the approval of pre-construction permit applications under the PSD program. One of these requirements is that the BACT be installed for applicable pollutants. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the so called "top-down" approach to BACT determinations. As mentioned previously, this approach has been challenged in court and a settlement agreement reached, which requires EPA to initiate formal rulemaking concerning the "top-down" approach. Nonetheless, in the absence of formal rules related to this approach, the "top-down" approach is followed in the Cargill BACT analysis.

The first step in a top-down BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is not feasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

In the case of the proposed modification at Cargill, PM/PM_{10}, SO_2, SAM, and F are the only pollutants requiring BACT analysis. The BACT analysis is presented in the following sections.

5.2 MOLTEN SULFUR STORAGE AND HANDLING SYSTEM

The molten sulfur handling and storage system is not being physically modified as part of the proposed project. However, molten sulfur throughputs may increase as a result of the sulfur usage in the GTSP plant. Cargill was issued a construction permit in November 1999 to rebuild the No. 1 molten sulfur storage tank (permit No. 0570008-029-AC). Cargill also has a permit application pending for a new molten sulfur truck loading station. Neither of these applications addressed BACT for the system since they were minor source applications. Since the proposed project is subject to BACT for PM/PM_{10} and SO_2, which are emitted from the molten sulfur system, this section presents a BACT analysis for these pollutants.

In the aforementioned permit application for a new molten sulfur truck loading station, Cargill proposed to use wet scrubbers to control PM/PM_{10} emissions from all three sulfur storage tanks. The sulfur pits at the H_2SO_4 plants were uncontrolled. The wet scrubbers are the first control devices known to be used on the molten sulfur storage tanks anywhere in Florida. Based on the very low PM/PM_{10} and SO_2 emissions from the entire sulfur handling system, the proposed BACT is the use of wet scrubbers to control PM/PM_{10} from the storage tanks and no controls for SO_2. Potential emissions from the system are presented in Section 2.0.

5.3 NOS. 8 AND 9 H_2SO_4 PLANTS

The source applicability analysis for the proposed expansion of Cargill Nos. 8 and 9 H_2SO_4 plants, presented in Section 3.0, identified SO_2, NO_x, and SAM as air pollutants requiring a BACT review. This section describes the proposed BACT and emission limits for these pollutants. An analysis of alternative control technologies is also presented.

5.3.1 SULFUR DIOXIDE

5.3.1.1 Proposed SO_2 BACT

The Nos. 8 and 9 H_2SO_4 plants at Cargill are double-absorption plants. The existing double-absorption technology is considered to be state-of-the-art in reducing SO_2 emissions from H_2SO_4 plants and is already in operation at the Nos. 8 and 9 H_2SO_4 plants. Therefore, this control technology is proposed as BACT for SO_2.

Although there will be no change in each plant's maximum permitted capacity, physical modifications may be needed to meet the proposed SO_2 emission limit. As described in Section 2.0, Cargill may need to replace the existing vanadium catalyst with cesium-promoted vanadium catalyst in the fourth pass of the No. 8 H_2SO_4 plant. This change has already been implemented in the No. 9 H_2SO_4 plant (with FDEP approval). As an alternative, additional catalyst volume may be added to the plants. Additional physical changes may be needed.

The proposed BACT SO_2 emission limit for the Nos. 8 and 9 H_2SO_4 plants is 3.5 lb/ton of H_2SO_4 produced, 24-hour average, which is equal to the recent BACT determination for Cargill Riverview's No. 7 H_2SO_4 plant, and more stringent than the BACT emission rate recently determined by FDEP for Piney Point Phosphates proposed reconstructed sulfuric acid plant of 2,000 TPD capacity. The Piney Point determination was 3.5 lb/ton for a 48-hour average.

On a 3-hour average, the proposed BACT emission rate is 4.0 lb/ton, equivalent to the NSPS. This higher 3-hour average emission rate is necessary to account for plant process fluctuations and variability.

SO_2 compliance test data for the Nos. 8 and 9 H_2SO_4 plant for the last 3 years are presented in Table 5-1. As shown, tests indicate the average SO_2 emissions are between 3.1 and 3.8 lb/ton. These levels are above the proposed 3.5 lb/ton, 24-hour average limit, but less than the proposed 3-hour limit of 4.0 lb/ton. Variable emissions result from changing operating rates, process variables, and catalyst aging. An SO_2 emission level lower than 3.5 lb/ton, 24-hour average, may not be achievable on a continuous basis without significant changes to the catalyst system, particularly in light of the potential effects of higher production, catalyst aging, and other process variables.

5.3.1.2 Alternative SO_2 Control Technologies

EPA's latest review of NSPS for H_2SO_4 plants (MITRE Corp., 1979) presents a comprehensive assessment of alternative control technologies for removing SO_2 from H_2SO_4 plant tailgases. Alternative technologies identified included the double-absorption contact H_2SO_4 plant, sodium sulfite-bisulfite scrubbing, ammonia scrubbing, and molecular sieves. The study concluded that the best demonstrated control technology to reduce SO_2 emissions is the double-absorption H_2SO_4 plant. Nearly all the H_2SO_4 plants built in the United States since

1971 have used the double-absorption process, wherein two absorber stages are used. The SO_2 conversion efficiency for the double-absorption plant is 96 percent or greater.

A review of H_2SO_4 plant BACT determinations was conducted to determine control technologies and emission rates associated with plants constructed or modified since the EPA study was conducted in 1979. The results of the review are summarized in Table 5-2. This information was obtained from the EPA's BACT/LAER Clearinghouse. As indicated in the table, all BACT determinations since 1979 have resulted in allowable SO_2 levels equivalent to the NSPS of 4.0 lb/ton, except for the Cargill Riverview and the Piney Point plants. These plants have ranged in capacity from 700 to 3,200 TPD. All have used the double-absorption technology.

Mississippi Phosphates initially proposed an SO_2 emissions limit of 3.25 lb/ton of acid to avoid PSD and BACT. The final permitted limit for the Mississippi Phosphates project is 4.0 lb SO_2 per ton of acid. The annual emission cap (limiting future annual emissions after the production increase to past emissions) will necessitate that emissions at the plant be maintained between 3.0 and 4.0 lb/ton.

Reduction of SO_2 emissions below those proposed for the Nos. 8 and 9 H_2SO_4 double-absorption plants would require add-on control equipment, such as one of the flue gas desulfurization (FGD) processes described above. This would add considerable capital and operating costs to the present system and produce a waste disposal problem. The proposed Cargill expansion will increase the allowable SO_2 emissions from the two plants by 58.3 lb/hr based on a 24-hour average. This represents a 6-percent increase in total allowable SO_2 emissions from the two H_2SO_4 plants. The air quality impact analysis presented in Section 6.0 demonstrates that the proposed increase in emissions will have a very minor impact upon current air quality levels.

The EPA NSPS review analyzed the SO_2 control alternative of replacing the catalyst bed in the dual-absorption plant more frequently than is normally practiced. Complete replacement of the first three beds of a 4-stage converter at a frequency rate three times greater than is normally practiced was estimated to result in a cost impact of $0.50/ton of H_2SO_4 produced. This was considered to be an unacceptable method because pretax profits to the plant could be reduced by 20 percent or more.

FGD systems have not been applied to sulfuric acid plants. This is because the double adsorption plants result in a high degree of reduction in potential SO_2 emissions (greater than 99 percent), resulting in rather low SO_2 flue gas concentrations.

A significant impediment to applying an FGD system to a sulfuric acid plant is the economic impact, reflected in an increase in capital costs, annual operating costs, and the cost per ton of H_2SO_4 manufactured. No sulfuric acid plant is known to have employed FGD as a control technology. In the recent PSD permits issued to Cargill Riverview and Piney Point Phosphates, FGD systems were dismissed as not being practical or economically feasible. As a result of these considerations, FGD systems were not considered further as BACT.

The FDEP, in its BACT determination for the No. 7 H_2SO_4 plant, indicated that the Centaur process, which uses low-temperature wet carbon catalysis/adsorption in place of the standard final pass and absorption tower, is feasible and was stated to be demonstrated on a pilot scale at a sulfur burning plant. It is licensed by Calgon Carbon and Monsanto Enviro-Chem. Emissions as low as 1 lb SO_2 per ton of acid are theoretically possible. However, the process has not yet been optimized and might result in a separate excess weak sulfuric acid stream (beyond plant water makeup needs), which might require treatment and disposal. Process optimization and building contingency treatment facilities would delay expansion of the plant. The FDEP did not recommend the Centaur process for Cargill at that time.

Use of a cesium-promoted vanadium catalyst in place of the conventional vanadium catalyst in the final converter pass was required as a specific condition of the Piney Point Phosphates, Inc. permit by FDEP, although it was not specifically required by the permit for the No. 7 H_2SO_4 plant at Cargill. A cesium-promoted vanadium catalyst can theoretically reduce SO_2 emissions by 20 to 40 percent. However, cesium catalyst is 2.5 times more expensive than vanadium, and therefore is normally used only where space limitations prohibit the use of vanadium. Cargill proposes either an increase in volume of the conventional vanadium catalyst or use of cesium-promoted catalyst to achieve a more stringent emission rate compared to the Piney Point BACT limit (3.5 lb/ton H_2SO_4 48-hour average).

None of the alternative SO_2 control technologies is considered to be superior to the selected BACT, based on economic, energy, and environmental impacts. The chosen SO_2 BACT for the Nos. 8 and 9 H_2SO_4 plants is the currently operating double-absorption plant with catalyst enhancement, reflective of a maximum 24-hour SO_2 emission rate of 3.5 lb/ton.

5.3.2 SULFURIC ACID MIST

The Nos. 8 and 9 H_2SO_4 plants at Cargill are currently equipped with high-efficiency mist eliminators to control H_2SO_4 mist emissions. These are conventional mist eliminators. The current emission limit is 0.15 lb/ton for H_2SO_4 mist based upon the NSPS. The proposed BACT emission level for H_2SO_4 mist is equal to the current BACT limit for the No. 7 H_2SO_4 plant of 0.12 lb/ton.

Alternatives to the conventional mist eliminator are impaction based devices and brownian-type devices. The Monsanto CS-type eliminator is an impaction-based product which is stated to remove approximately 100 percent of particles above 3 microns in diameter, and 50 to 95 percent of particles between 0.5 and 3 microns. In order to implement this change, the final towers of each plant would need to be modified (enlarged) at considerable expense to Cargill. Based on the No. 7 H_2SO_4 plant, the total cost would be $350,000.

Cargill Riverview was recently required to meet an emission limit for H_2SO_4 mist of 0.12 lb/ton using impaction-based mist eliminators for the No. 7 H_2SO_4 plant. The brownian-type mist eliminators are much more expensive than the impaction type and the existing towers on the Nos. 8 and 9 H_2SO_4 plants at Cargill could not be modified; new towers would need to be built to accommodate the larger size requirements, structural support, etc. The brownian-type product (Monsanto ES, or equivalent) is estimated to cost an additional $500,000 for just the mist eliminator elements for each plant. This additional cost is considered economically prohibitive, considering that a significant reduction in total mass emissions of mist would not be achieved. This is because the smaller particles controlled by the brownian-type elements constitute a small fraction of the total mass emissions.

H_2SO_4 mist source test data from the No. 8 and 9 plants operating near their current permitted rates are presented in Table 5-1. Review of the source test data presented in Table 5-1 shows that past H_2SO_4 mist compliance test values have ranged from 0.033 to 0.052 lb/ton for the two H_2SO_4 plants. These data indicate that emissions can fluctuate significantly, due to the factors discussed previously for SO_2. Based on the source test data, a reduction in the current allowable level is proposed for the Nos. 8 and 9 H_2SO_4 plants.

Previous BACT determinations for H_2SO_4 mist from sulfuric acid plants throughout the U.S. are summarized in Table 5-3. This information was obtained from the EPA's BACT/LAER Clearinghouse. The data show that all BACT determinations for H_2SO_4 plants constructed or modified since 1980 have resulted in allowable H_2SO_4 mist emission rates equivalent to the NSPS of 0.15 lb/ton, except for the No. 7 H_2SO_4 plant at Cargill. Based on these considerations, the selected BACT for control of H_2SO_4 mist emissions is the proposed impaction-type, high-efficiency mist eliminators to control mist emissions to 0.12 lb/ton.

The proposed Cargill H_2SO_4 expansion will not increase allowable H_2SO_4 mist emissions. Current allowable H_2SO_4 emissions from the No. 8 and 9 H_2SO_4 plants combined will decrease by 14 percent. A lower BACT emission limit would not result in significant benefits to the environment.

5.3.3 NITROGEN OXIDES

The NO_x emissions from the H_2SO_4 plants at Cargill are very low, estimated at about 0.12 lb/ton H_2SO_4 produced. Add-on NO_x control equipment is not known to be applied on any H_2SO_4 plant. Add-on technology would have a significant economic impact on Cargill and would not result in significant emission reductions. Therefore, the proposed BACT for NO_x is the existing combustion system and good combustion practices.

5.4 PHOSPHORIC ACID PLANT

Fluoride emissions from the existing PAP are currently controlled by three scrubbers. As described in Section 2.0, the proposed project will add a new scrubber as well as reduce the fluoride loading to one of the existing scrubbers. Operational parameters for the scrubbers are presented in Table 5-4.

Fluoride emissions from the entire PAP are currently limited by Operation Permit No. 0570008-014-AV to 0.0135 lb/ton of P_2O_5 and 10.01 TPY. This limit is based on a BACT determination issued for the PAP on August 27, 1996. Currently, the existing scrubber system is achieving lower fluoride emission rates than required by the operation permit. The results of the last four compliance tests for the facility (tests since the BACT determination was issued) are summarized in Table 5-5. As shown in Table 5-5, actual fluoride emission rates for the existing PAP measured during the compliance tests ranged from 0.0024 lb/ton of P_2O_5 to 0.0105 lb/ton of P_2O_5.

A summary of recent BACT determinations for fluoride emissions from phosphoric acid plants is presented in Table 5-6. The source of the BACT determinations presented in Table 5-6 is EPA's RACT/BACT/LAER Clearinghouse web site. The two most recent and stringent BACT determinations are for the Cargill Bartow PAP and the PAP at Riverview, which is the subject of this application. Note that the BACT determination presented in the RACT/BACT/LAER Clearinghouse document for the PAP at Bartow is incorrectly presented as 0.012 lb of F per ton of P_2O_5. As part of a BACT determination for a previous project modifying the existing PAP at the Bartow facility, FDEP concluded that BACT for a new facility would be 0.012 lb of F per ton of P_2O_5, but BACT for an existing facility with both new and existing sources was 0.0135 lb of F per ton of P_2O_5.

Since there is a finite amount of fluoride in phosphate rock and Cargill is not requesting to increase the hourly rate phosphate rock processed, no increase in fluoride emissions is anticipated. However, given the uncertainties associated with the proposed modification, the benefit to the environment (increased P_2O_5 recovery without an increase in the amount of rock processed and associated F emissions at a substantial capital cost to Cargill), and that no more stringent control alternatives have been implemented than those already in place, Cargill is proposing the current emission limits for the PAP, 0.0135 lb of F per ton of P_2O_5, as BACT. This limit is consistent with the previous BACT limit for the PAP, as well as the most stringent BACT determination to date for the PAP.

5.5 ENHANCED PHOSPHATE PRODUCTS (EPP) PLANT (FORMERLY GTSP PLANT)

5.5.1 EXISTING CONTROL TECHNOLOGY

The existing GTSP plant is currently equipped with two venturi scrubbers and two tailgas scrubbers. The two primary venturi scrubbers are of the same design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor, granulator, cooler, and equipment vents (RGCV scrubber). The other venturi scrubber controls PM emissions from the dryer. Similarly, the two tailgas scrubbers are of the same design and control fluoride emissions from the RGCV and the dryer, respectively.

The RGCV venturi scrubber and RGCV tailgas scrubber are in series, as are the dryer venturi scrubber and dryer tailgas scrubber. Exhaust gases go to a common stack for the EPP plant. Control equipment data for these scrubbers are as follows.

	Venturi Scrubbers		Tailgas Scrubbers	
Parameter	RGCV	Dryer	RGCV	Dryer
Manufacturer/Type	Wellman Power Gas		Wellman Power Gas -- Packed Tower, Up-Flow	
Design Rates:				
Gas Flow Rate	60,000 acfm	100,000 acfm	60,000 acfm	100,000 acfm
Gas-to-Liquid Ratio	80 acf/gal	115 acf/gal	100 acf/gal	90 acf/gal
Efficiency Rating (at design capacity)	90%	90%	99%	99%
Design Pressure Drop	10 to 25" w.g.	10 to 25" w.g.	0.5" w.g.	0.1" w.g.
Scrubbing Liquor Composition	Pondwater	Pondwater	Pondwater	Pondwater

Note: acf/gal = actual cubic feet per gallon.
acfm = actual cubic feet per minute.
" w.g. =inches water gauge.

Currently, the scrubber systems are achieving lower emission rates than required by permit No. 0570008-006-AO. As shown in Table 5-7, emissions from the common stack range from 4.0 to 8.2 lb/hr for PM and 0.43 to 1.56 lb/hr for F. These are equivalent to 0.049 to 0.097 lb of PM per ton of GTSP product, and 0.011 to 0.041 lb of F per ton P_2O_5 input.

5.5.2 BACT ANALYSIS FOR PM/PM_{10}

BACT for PM/PM_{10} for the modified EPP plant is the proposed new RGCV and dryer venturi scrubbers, followed by the existing tailgas scrubbers. Operational parameters for the existing and proposed scrubbers are presented below:

Pollution Control Equipment	Parameter	Operating Rate[a]
RGCV Venturi Scrubber (new)	Flow	750 gpm[b]
	Pressure Drop	10-25 inches H_2O[b]
Dryer Venturi Scrubber (new)	Flow	870 gpm[b]
	Pressure Drop	10-25 inches H_2O[b]
RGCV Tailgas Scrubber (existing)	Flow	830 gpm
	Pressure Drop	0.5 inches H_2O
Dryer Tailgas Scrubber (existing)	Flow	720 gpm
	Pressure Drop	0.1 inches H_2O

[a] Based on 3-hour averaging times.
[b] Design rates; operational parameters will be established after compliance testing.

Note: gpm = gallons per minute.
H_2O = water.

A review of previous BACT determinations for PM emissions from GTSP and ammonium phosphate plants (MAP and DAP) was conducted. The results of this review are presented in Table 5-8. It is noted that determinations issued prior to 1991 are not included in Table 5-8.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the proposed combination of venturi scrubber followed by packed tower tailgas scrubbers, is the best control technology for application on the EPP plant. Previous BACT determinations have resulted in PM emission limits ranging from 0.19 to 0.41 lb of PM per ton of P_2O_5 input. Cargill's proposed PM/PM_{10} emission rate for the EPP plant of 12.0 lb/hr when in GTSP production mode is equivalent to 0.28 lb/ton P_2O_5 input and

0.13 lb/ton EPP produced. For ammoniated phosphates production, the proposed limit is 8.0 lb/hr and 0.08 lb/ton of product. These proposed limits are higher than the previous determinations based on the actual emissions measured from the GTSP plant. A higher limit is justified to provide certainty that the proposed emission level will be achievable on a continuous basis.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales; PSD-FL-241) addressed alternatives for PM/PM_{10} control. The alternatives addressed consisted of a high-energy (>30 in w.c.) venturi scrubber and a medium-energy (15 to 30 in w.c.) venturi scrubber. The IMC plant employs an existing medium-energy venturi scrubbing system. The high costs of adding a high-energy venturi scrubbing system was deemed economically infeasible with incremental cost effectiveness ranging from $50,000 to $75,000 per incremental ton of PM/PM_{10} removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubber was selected as BACT.

Cargill also employs medium-energy wet scrubbers in its MAP plant and a medium energy venturi scrubber. Similar to the above analysis, replacing the existing scrubbers with high-energy venturi scrubbers would not be cost effective. Therefore, the existing medium-energy wet scrubbers (ARCO scrubbers and cooler scrubber) represent BACT for the Cargill EPP plant. Since actual PM/PM_{10} emissions from the EPP plant have been below the allowable emission rate of 21.6 lb/hr, Cargill is proposing to lower the allowable to 12.0 lb/hr, even considering the proposed modifications.

5.5.3 BACT ANALYSIS FOR FLUORIDES

BACT for fluorides for the modified EPP plant are the proposed venturi scrubbers followed by the existing tailgas scrubbers. A review of previous BACT determinations for F emissions from EPP, MAP, and DAP plants was conducted. The results of this review are presented in Table 5-9. It is noted that determinations issued prior to 1991 are not included in Table 5-9.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the currently existing packed tower tailgas scrubbers is the best control technology for application on the EPP plant. Previous BACT determinations resulted in emission limits ranging from 0.0417 to 0.06 lb/ton P_2O_5 input for F. Cargill's proposed fluoride emission rate for the EPP plant is 2.45 lb/hr, equivalent to 0.058 lb/ton P_2O_5 input when making GTSP, and 1.89 lb/hr and 0.041 lb/ton P_2O_5 when making MAP or DAP. The proposed BACT limit for MAP/DAP is equal to the most stringent BACT issued to date for a MAP plant.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales) addressed alternatives for F control. The alternatives included a packed scrubber using either once-through fresh water, neutralized water from a dedicated pond (fresh water makeup), or process cooling pond water. The first option was dismissed due to concern over fresh water usage and plant water balance problems. The second option was dismissed based on economics, with the cost effectiveness estimated at $14,000 per ton of F removed. In Cargill's case, the first two options can be dismissed based on similar considerations. This leaves the third option, using process cooling pond water, as BACT.

5.5.4 BACT ANALYSIS FOR NITROGEN OXIDES

The EPP plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

5.6 ANIMAL FEED PLANT

5.6.1 BACT ANALYSIS FOR PM/PM_{10}

5.6.1.1 Material Handling Sources

The existing animal feed plant uses a combination of baghouses, cyclones, and wet scrubbers to control PM/PM_{10} emissions. Baghouses are used to control all raw material (DE and limestone) handling operations, as well as product loadout operations. Baghouse technology represents the state of the art in control of PM/PM_{10} emissions for material handling sources. Baghouses are highly efficient and allow collected PM to be recovered as product. Although wet PM controls (i.e., scrubbers) could be employed, an additional liquid waste stream would be generated.

The current PM/PM_{10} emission limit for the material handling sources at the existing AFI Plant is 0.012 grains per dry standard cubic feet (gr/dscf), based on FDEP's BACT determination presented in Construction Permit No. 0570008-28-AC issued on June 8, 1999. Given this recent BACT determination by FDEP, that the material handling sources in the previous application are identical or similar to the proposed material handling sources in this application, and that no other technology is capable of achieving lower PM/PM_{10} levels than the proposed baghouse technology, Cargill is proposing an emission limit of 0.012 gr/dscf as BACT for these sources. This is also applicable to the proposed baghouse controlling PM emissions from the AFI milling, classification, and cooling equipment.

5.6.1.2 Process Equipment

PM emissions from the AFI reactor and dryer will be controlled by a new venturi scrubber. The venturi scrubber control is an efficient control device and is the most appropriate technology for gas streams that contain a significant amount of moisture or particulates that are "sticky." The exhaust gas stream from the animal feed dryers has these characteristics. This gas stream is combined with the gas stream from the reactor system prior to being scrubbed.

FDEP determined wet scrubber technology to be BACT in Construction Permit No. 0570008-028-AC issued on June 8, 1999 for modifications to the existing AFI Plant. The permitted PM/PM_{10} emission limits for the existing AFI granulation train are 8 lb/hr and 35.04 TPY. Again, given this recent BACT determination by FDEP for an identical source, Cargill is proposing equivalent control equipment, capable of attaining the same emission rates, as BACT for the modified AFI plant. Historic emissions tests on the AFI plant at Cargill are presented in Table 5-10.

5.6.2 BACT ANALYSIS FOR FLUORIDE

In June 1999, FDEP issued a final Air Construction Permit allowing Cargill to make the modifications necessary to increase production of the existing AFI plant from 580 to 770 TPD of AFI. For that permit, FDEP determined a fluoride emission rate of 0.5 pound per batch per hour (lb/batch-hr) to be BACT. Although Cargill is modifying the existing acid defluorination system with the addition of a fourth acid batch tank and production of defluorinated acid will increase, the hourly fluoride emission rate is not expected to increase above 1.0 lb/hr. The new packed scrubber is expected to provide equivalent or better F control. Given this recent BACT determination by FDEP and the increase in production afforded by the proposed modification, Cargill believes that a fluoride emission limit of 0.5 lb/batch-hr or 1 lb/hr still represents BACT. Historic test data from the AFI plant are presented in Table 5-10.

5.6.3 BACT ANALYSIS FOR NITROGEN OXIDES

The AFI plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

5.7 NO. 5 DAP PLANT

5.7.1 EXISTING CONTROL TECHNOLOGY

The No. 5 DAP plant is currently equipped with three venturi scrubbers and two tailgas scrubbers. The three primary venturi scrubbers are of different but similar design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor and granulator, the second controls the cooler and equipment vents, and the third venturi scrubber controls PM emissions from the dryer. One tailgas scrubber controls fluoride emissions from the reactor, granulator, and cooler, while the second controls emissions from the dryer. Exhaust gases go to a common stack for the No. 5 DAP plant. Operations parameters for these scrubbers are as follows.

Pollution Control Equipment	Parameter	Minimum Limitations[a]
RGCE Tail Gas Scrubber	Pressure Drop	3" H_2O
Dryer Tail Gas Scrubber	Pressure Drop	3" H_2O
Total to RGCE and Dryer	Flow	3,400 gpm
RG Venturi Scrubber	Pressure Drop Flow	8" H_2O 780 gpm
CE Venturi Scrubber	Pressure Drop Flow	6" H_2O 590 gpm
Dryer Venturi Scrubber	Pressure Drop Flow	9" H_2O 580 gpm

[a] Based on 3-hour averaging times.

Currently, the scrubber systems are achieving lower emission rates than required by permit No. 0570008-014-AV. As shown in Table 5-11, emissions from the common stack range from 1.3 to 2.9 lb/hr for PM and 0.47 to 3.02 lb/hr for F. These are equivalent to 0.018 to 0.042 lb of PM per ton of P_2O_5 input, and 0.008 to 0.042 lb of F per ton P_2O_5 input.

5.7.2 BACT ANALYSIS FOR PM/PM_{10}

BACT for PM/PM_{10} for the modified No. 5 DAP plant is the existing venturi scrubbers, followed by the existing tailgas scrubbers.

A review of previous BACT determinations for PM emissions from GTSP and ammoniated phosphate plants (MAP and DAP) was conducted. The results of this review are presented in Table 5-8. It is noted that determinations issued prior to 1991 are not included in Table 5-8.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the proposed combination of venturi scrubber followed by packed tower tailgas scrubbers, is the best control technology for application on the No. 5 DAP plant. Previous BACT determinations have resulted in PM emission limits ranging from 0.19 to 0.41 lb of PM per ton of P_2O_5 input. Cargill's proposed PM/PM_{10} emission rate for the No. 5 DAP plant of 12.8 lb/hr is equivalent to 0.174 lb/ton P_2O_5 input and 0.082 lb/ton of DAP produced. This proposed limit is lower than the previous determinations, based on the actual emissions measured from the EPP plant. The proposed limit is justified to provide certainty that the proposed emission level will be achievable on a continuous basis.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales; PSD-FL-241) addressed alternatives for PM/PM_{10} control. The alternatives addressed consisted of a high-energy (>30 in w.c.) venturi scrubber and a medium-energy (15 to 30 in w.c.) venturi scrubber. The IMC plant employs an existing medium-energy venturi scrubbing system. The high costs of adding a high-energy venturi scrubbing system was deemed economically infeasible with incremental cost effectiveness ranging from $50,000 to $75,000 per incremental ton of PM/PM_{10} removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubber was selected as BACT.

Cargill also employs medium-energy wet scrubbers and a medium-energy venturi scrubbers in its No. 5 DAP plant. Similar to the above analysis, replacing the existing scrubbers with high-energy venturi scrubbers would not be cost effective. Therefore, the existing medium-energy venturi scrubbers represent BACT for the Cargill No. 5 DAP plant. Cargill is proposing to retain the current allowable of 12.8 lb/hr, considering the proposed modifications and process variability.

5.7.3 BACT ANALYSIS FOR FLUORIDES

BACT for fluorides for the modified No. 5 DAP plant are the proposed venturi scrubbers followed by the existing tailgas scrubbers. A review of previous BACT determinations for F emissions from EPP, MAP, and DAP plants was conducted. The results of this review are presented in Table 5-9. It is noted that determinations issued prior to 1991 are not included in Table 5-9.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the currently existing packed tower tailgas scrubbers is the best control technology for application on the No. 5 DAP plant. Previous BACT determinations resulted in emission limits ranging from 0.0417 to 0.06 lb/ton P_2O_5 input for F. Cargill's proposed fluoride emission rate for the No. 5 DAP plant is 3.3 lb/hr, equivalent to 0.045 lb/ton P_2O_5 input. The proposed BACT limit is equal to the most stringent BACT issued to date for a MAP or DAP plant.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales) addressed alternatives for F control. The alternatives included a packed scrubber using either once-through fresh water, neutralized water from a dedicated pond (fresh water makeup), or process cooling pond water. The first option was dismissed due to concern over fresh water usage and plant water balance problems. The second option was dismissed based on economics, with the cost effectiveness estimated at $14,000 per ton of F removed. In Cargill's case, the first two options can be dismissed based on similar considerations. This leaves the third option, using process cooling pond water, as BACT.

5.7.4 BACT ANALYSIS FOR NITROGEN OXIDES

The No. 5 DAP plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

Table 5-1. Summary of Recent Nos. 8 and 9 Plant Emission Tests at Cargill Riverview

Plant/Date	Average Production Rate[a] (tons/hr)	Sulfur Dioxide		Sulfuric Acid Mist	
		avg lb/hr	avg lb/ton	avg lb/hr	lb/ton
No. 8 H_2SO_4 Plant					
8/24/98	94.5	359.6	3.8	4.88	0.052
8/25/99	100.0	311.7	3.1	3.14	0.031
11/10/99	106.7	369.5	3.5	4.23	0.040
No. 9 H_2SO_4 Plant					
12/9/98	131.25	488.5	3.7	5.37	0.041
12/2/99	133.08	472.7	3.6	4.43	0.033

[a] As 100 percent sulfuric acid.

Note: avg = average.
lb/hr = pounds per hour.
lb/ton = pounds per ton.
max = maximum.
H_2SO_4 = sulfuric acid.
SO_2 = sulfur dioxide
tons/hr = tons per hour.

Table 5-2. Summary of BACT Determinations for Sulfur Dioxide Emissions from Sulfuric Acid Plants

Company Name	State	Permit No.	Permit Issue Date	Throughput	Emission Limit	Control Equipment
CARGILL FERTILIZER	FL	0570008-014-AV	4/28/99	2,700 TPD	4 LB/TON (3-hr)	DOUBLE ABSORPTION
					3.5 LB/TON (24-hr)	DOUBLE ABSORPTION
FARMLAND HYDRO, L. P.	FL	1050053-019-AC	7/15/98	250 TPD	401 LB/HR	DOUBLE ABSORPTION SCRUBBER/MIST ELIMINATOR
PINEY POINT PHOSPHATES INC.			2/1/98	2,000 TPD	4 LB/TON (3-hr)	DOUBLE ABSORPTION
					3.5 LB/TON (48-hr)	DOUBLE ABSORPTION
CARGILL FERTILIZER	FL	AC53-271436 / PSD-FL/229	3/7/95	3,200 TPD	4 LB/TON	DOUBLE ABSORPTION CATALYST/MIST ELIMINATORS
SEMINOLE FERTILIZER CORPORATION	FL	FL-PSD-191	12/31/92	2,280 TPD	4 LB/TON H_2SO_4	DOUBLE ABSORPTION, DEMISTER
HESS OIL VIRGIN ISLAND CORP. - HOVIC	VI		12/14/90	225 TPD	4 LB/T ACID PRODUCED	DOUBLE ABSORPTION TOWERS AND CEM

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-3. Summary of BACT Determinations for Sulfuric Acid Mist Emissions from Sulfuric Acid Plants

Company Name	State	Permit No.	Permit Issue Date	Throughput	Emission Limits	Control Equipment
CARGILL FERTILIZER	FL	0570008-014-AV	4/28/99	2,700 TPD	0.15 LB/TON	MIST ELIMINATORS
FARMLAND HYDRO, L. P.	FL	1050053-019-AC	7/15/98	250 TPD	17.2 LB/HR	MIST ELIMINATORS
PINEY POINT PHOSPHATES INC			2/1/98	2,000 TPD	0.15 LB/TON	MIST ELIMINATORS (BROWNIAN DIFFUSION)
CARGILL FERTILIZER	FL	AC53-271436 / PSD-FL/229	3/7/95	3,200 TPD	0.15 LB/TON	MIST ELIMINATORS
SEMINOLE FERTILIZER CORPORATION	FL	FL-PSD-191	12/31/92	2,280 TPD	0.15 LB/TON H_2SO_4	DOUBLE ABSORPTION, DEMISTER
HESS OIL VIRGIN ISLAND CORP. - HOVIC	VI		12/14/90	225 TPD	0.15 LB/T ACID PROD.	MIST ELIMINATOR

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-4. Summary of Operational Parameters for Wet Scrubbers Within the Modified PAP

Scrubber/Make-Model No.	Sources Controlled (Future)	Type	Gas Flow Rate (acfm)	Operating Parameter	Minimum Limitation[a]
Teller Packed Bed	No. 3 Prayon Reactor	Packed Bed	33,000	Flow (sprays) Flow (packing) Pressure Drop	510 GPM 600 GPM 2 inches H_2O
VESCOR Model 2155RL	No. 1 Filter No. 2 Filtrate Tank No. 2 Filter No. 2 Filtrate Tank Gypsum Slurry Tank	Venturi/Packed Bed/ Demister	45,000	Flow (sprays) Flow (packing) Pressure Drop	130 GPM 1,200 GPM 2 inches H_2O
VESCOR Replica	No. 3 Filter West 30 Percent Acid Feed Tank[a] No. 3 Filtrate Tank Gypsum Slurry Tank 45-Percent Phosphoric Acid Tanks (2)[b] Nos. 1-8 Evaporators[a] Nos. 8 and 9 Evaporator Seal Tanks[a] PFS Shipping Tank[a]	Venturi/Demister	53,000	Flow Pressure Drop	1,100 GPM 2 inches H_2O
New Dorrco Scrubber	No. 4 Dorrco Reactor New Dorrco Digester	Multi-Stage Packed Cross-Flow Scrubber	55,000	Flow Pressure Drop	2,800 GPM 2-12 inches H_2O

[a] Based on a 3-hour averaging time, per permit No. 0570008-014-AV.
[b] When maintenance is being performed on the VESCOR replica scrubber, these sources are controlled by the Teller scrubber.

Note: gpm = gallons per minute.

Table 5-5. Summary of Recent Phosphoric Acid Plant Emission Tests at Cargill Riverview

Date	Unit		Average Process Rate ($TPH\ P_2O_5$)	Fluoride	
				avg lb/hr	avg lb/ton P_2O_5[a]
12/18/97	No. 3 Filter		142.0	0.0707	--
	Dorrco		142.0	0.2280	--
	Prayon		142.0	0.0654	--
		Total		0.3641	0.0026
1/7/99	No. 3 Filter		155.4	0.2900	--
	Dorrco		155.4	0.0500	--
	Prayon		155.4	0.0300	--
		Total		0.3700	0.0024
4/29/99	No. 3 Filter		155.1	0.4300	--
	Dorrco		155.1	1.0900	--
	Prayon		155.1	0.1200	--
		Total		1.6400	0.0106
2/24/00	No. 3 Filter		142.0	0.262	--
	Dorrco		142.0	1.143	--
	Prayon		142.0	0.086	--
		Total		1.4910	0.0105

[a] As calculated.

Table 5-6. Summary of BACT Determinations for Fluoride Emissions from Phosphoric Acid Plants

Company	State	Permit No.	Permit Issue Date	Throughput	Emission Limits	Control Equipment
CARGILL FERTILIZER	FL	0570008-004-AC	8/27/96	170 TONS P2O5/HR	0.0135 LB F/TON P_2O_5 (Confined New & Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER USING POND WATER
CARGILL FERTILIZER	FL	AC53-262532 / PSD-FL/224	8/24/95	170 TPH P2O5	0.0135 LB F/TON P_2O_5 (Confined New & Existing Plant)	PACKED SCRUBBER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER
IMC FERTILIZER, INC.	FL	PSD-FL-201	8/2/93	2500 TPD	0.02 LB/TON P_2O_5	CROSSFLOW SCRUBBER

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-7. Summary of Recent GTSP Plant Emission Tests at Cargill Riverview

Date	Average Production Rate (tons GTSP/hr)	Particulate Matter		Average P_2O_5 Input Rate (tons P_2O_5/hr)	Fluoride	
		avg lb/hr	avg lb/ton GTSP		avg lb/hr	avg lb/ton P_2O_5
4/2/98	84.8	8.2	0.097	39.0	0.43	0.011
5/13/99	82.1	4.0	0.049	37.8	1.16	0.031
6/29/00	83.1	7.6	0.092	38.2	1.55	0.041
		Average =	0.079			0.028
		Maximum =	0.097			0.041
		Standard Deviation =	0.026			0.015
		95% Confidence Level =	0.132			0.058

Table 5-8. Summary of BACT Determinations for Particulate Emissions from GTSP, MAP, and DAP Manufacturing Facilities

Company Name	State	Permit Number	Permit Issue Date	Throughput	Emissions Limits	Control Equipment
IMC-AGRICO	FL	PSD-FL-241	1/21/98	80 TPH	0.156 LB/TON P_2O_5	VENTURI/PACKED BED SCRUBBER
IMC-AGRO COMPANY	FL	AC53-230355, AC53-232681,FL204	4/18/94	100 TPH DAP	0.41 LB/TON 100% P_2O_5	VENTURI ACID SCRUBBER
CARGILL FERTILIZER	FL	AC53-246403 / PSD-FL/211	11/28/94	120 TPH 100% P2O5	0.19 LB/TON P_2O_5	VENTURI PRIMARY SCRUBBER/PACKED TOWER SECONDARY
CARGILL FERTILIZER, INC.	FL	PSD-FL-178	10/13/92	73.5 TPH P2O5	0.19 LB/TON P_2O_5	VENTURI SCRUBBER, PACKED TOWER SCRUBBER

Notes: GTSP = Granular Triple Super Phosphate.
MAP = Monoammonium Phosphate.
DAP = Diammonium Phosphate.

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-9. Summary of BACT Determinations for Fluoride Emissions from GTSP, MAP, and DAP Manufacturing Facilities

Company Name	State	Permit Number	Permit Issue Date	Throughput	Emission Limits	Control Equipment
IMC-AGRICO	FL	PSD-FL-241	1/21/98	80 TPH	0.0417 LB/TON P_2O_5	VENTURI SCRUBBER AND PACKED BED SCRUBBER
IMC-AGRO COMPANY	FL	AC53-230355, AC53-232681,FL204	4/18/94	100 TPH DAP	0.0417 LB/TON 100% P_2O_5	VENTURI ACID SCRUBBER
FARMLAND HYDRO, L.P.	FL	AC53-210886/PSD-FL-186	7/28/92	100 TPH	0.06 LBS/T P_2O_5	MULTI STAGE SCRUBBER, ADDITION OF COOLER
C F INDUSTRIES, INC.	FL	AC 29-210979	5/25/92	100 TPH	0.06 LBS/T P_2O_5	TWO STAGE SCRUBBER, ADDITION OF COOLER

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-10. Summary of Recent AFI Plant Emission Tests at Cargill Riverview

Date	Average Process Rate (tons/hr)	Particulate Matter		Fluoride		NO_X	
		lb/hr	lb/ton	lb/hr	lb/ton	lb/hr	lb/ton
7/2/98	21.5	5.85	0.272	--	--	2.24	0.104
10/1/98	--	--	--	0.96	--	--	--
8/24/00	23.0	3.50	0.152	0.16	0.007	--	--
11/13/00	23.6	7.10	0.301	0.17	0.007	--	--

Note: AFI = Animal Feed Ingredient Plant
NO_X = Nitrogen Oxides

Table 5-11. Summary of Recent No. 5 DAP Plant Emission Tests at Cargill Riverview

Plant/Date	Average Production Rate (tons/hr)	Average Process Rate[a] (tons/hr)	PM		Fluoride	
			avg lb/hr	avg lb/ton[a]	avg lb/hr	avg lb/ton[a]
12/23/98	135.1	60.9	2.6	0.040	0.47	0.008
6/25/99	146.9	68.4	2.9	0.042	2.83	0.041
6/13/00	155.2	71.3	1.3	0.018	3.02	0.042

[a] As P_2O_5.

Note: PM = Particulate matter.

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 GENERAL APPROACH

The general modeling approach followed EPA and FDEP modeling guidelines for determining compliance with 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's restricted boundaries.

Generally, if the facility undergoing the modification is within 200 kilometers of a PSD Class I area, then a significant impact analysis is also performed to evaluate the impact due to the project alone at the PSD Class I area. Because the Chassahowitzka National Wilderness Area (CNWA) is a PSD Class I area that is located within 200 km of the proposed project, the maximum predicted impacts at the CNWA are compared to EPA's proposed significant impact levels for PSD Class I areas. These recommended levels have never been promulgated as rules but are the currently accepted criteria for determine whether a proposed project will incur a significant impact on a PSD Class I area.

If the project-only impacts are above the significant impact levels in the vicinity of the facility, then two additional and more detailed air modeling analyses are required. The first analysis demonstrates compliance with federal and Florida ambient air quality standards (AAQS), and the second analysis demonstrates compliance with allowable PSD Class II increments.

If the project-only impacts at the PSD Class I area are above the proposed EPA PSD Class I significant impact levels, then an analysis is performed to demonstrate compliance with allowable PSD Class I impacts at the PSD Class I area. The proposed project's maximum emission increases are evaluated at the PSD Class I area to support the air quality related values (AQRV) analysis, that includes an evaluation of regional haze degradation.

Generally, when using 5-years of meteorological data for the analysis, the highest annual and the highest, second-highest (HSH) short-term concentrations are compared to the applicable AAQS and allowable PSD increments. [Note that for determining compliance with the 24-hour AAQS for particulate matter only, the sixth highest predicted concentration in five years (i.e., H6H), instead of the HSH, is used to compare to the applicable 24-hour AAQS.]

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.

The HSH approach is consistent with air quality standards 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.

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.

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 SIGNIFICANT IMPACT ANALYSIS

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 both in the vicinity of the project and at the PSD Class I area. Based on the screening modeling analysis results in the vicinity of the project, additional modeling refinements are performed, if necessary, to obtain the maximum concentration with a receptor grid spacing of 100 meters (m) or less.

6.3 AAQS AND PSD CLASS II ANALYSES

For each pollutant for which a significant impact is predicted in the vicinity of the project, AAQS and PSD Class II analyses are required. The AAQS analysis is a cumulative source analysis that evaluates whether the post-project concentrations from all sources will comply with the AAQS. All sources include the post-project source configuration at the project site, the impacts from other nearby facility sources, plus a background concentration to account for sources not included in the modeling analysis.

The PSD Class II analysis is a cumulative source analysis that evaluates whether the post-project PSD increment for all increment-affecting sources will comply with the allowable PSD Class II increments. All sources include the post-project PSD increment-affecting sources at the project site, plus the impacts from all nearby PSD increment- affecting sources at other facilities.

6.4 PSD CLASS I ANALYSIS

For each pollutant for which a significant impact is predicted at the PSD Class I area, a PSD Class I analysis is required. The PSD Class I analysis is a cumulative source analysis that evaluates whether the post-project PSD increment for all increment-affecting sources within the impact distance of the PSD Class I area will comply with the allowable PSD Class I increments. All sources include the post-project PSD increment-affecting sources at the project site, plus the impacts from all PSD increment-affecting sources at other facilities that are within impact distances of the PSD Class I area.

6.5 MODEL SELECTION

The Industrial Source Complex Short-term (ISCST3, Version 00101) dispersion model (EPA, 2000) was used to evaluate the pollutant impacts due to the proposed project in areas within 50-km of the proposed facility. This model is maintained by the EPA on its Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of ISCST3 model features is presented in Table 6-1. The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological data (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. These areas are referred to as simple terrain. The model can also be applied in areas where the terrain exceeds the stack heights. These areas are referred to as complex terrain.

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. The ISCST3 model can be executed in the rural or urban land use mode that affects stability dispersion coefficients, wind speed profiles, and mixing heights. Land use can be characterized based on a scheme recommended by EPA (Auer, 1978). If more than 50 percent land use within a 3-km radius around a project is classified as industrial or commercial, or high-density residential, then the urban option should be selected. Otherwise, the rural option is appropriate. Based on the land-use within a 3-km radius of the Cargill plant site (see Figure 2-1), the rural dispersion coefficients were used in the

modeling analysis. Also, since the terrain around the facility is flat to gently rolling, the simple terrain feature of the model was selected.
The ISCST3 model was used to provide maximum concentrations for the annual and 24-, 8-, 3-, and 1-hour averaging times.

For predicting maximum impacts at the CNWA PSD Class I area, the California Puff (CALPUFF) modeling system was used. CALPUFF, Version 5.4 (EPA, 2000), is a Lagrangian puff model that is the recommended by the FDEP, in coordination with the Federal Land Manager (FLM) for the CNWA, for predicting pollutant impacts at PSD Class I areas that are beyond 50 km from a project site. For this project, CALPUFF was used in a refined mode using a CALMET-developed wind field domain covering central Florida. A more detailed discussion of CALPUFF and the CALMET wind field used for the analysis is provided in Appendix E.

6.6 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 the Tampa International Airport in Tampa, Florida, and at Ruskin, Florida, respectively. The 5-year period of meteorological data was from 1991 through 1995. The NWS stations at Tampa and Ruskin are located approximately 18 and 14 km, respectively, to the northwest and south, respectively, of the Cargill Riverview plant site. The surface meteorological data from Tampa are assumed to be representative of the project site because both the project site and the weather station are located in similar climatological areas in west central Florida. They are, therefore, expected to experience similar weather conditions, such as frontal passages and sea-breeze fronts.

Meteorological data used with the CALPUFF model consists of a CALMET-developed wind field. The wind field was initially developed by the FDEP and later expanded on by Golder. A detailed description of the CALMET wind field is provided in Appendix E.

6.7 EMISSION INVENTORY

6.7.1 SIGNIFICANT IMPACT ANALYSIS

The, SO_2, NO_x, PM_{10}, and fluoride emission rate increases and the physical and operational stack parameters for all project-affected sources are summarized in Tables 6-2 to 6-7. These tables are based on emissions and stack parameters presented in Section 2.0.

The current actual short-term SO_2, PM_{10}, and fluoride emissions for all Cargill sources affected by the project are presented in Table 6-2. The basis of the short-term emissions are also provided in Table 6-2. The current annual SO_2, PM_{10}, NO_x, and fluoride emissions for these sources are presented in Table 2-2.

The current actual emissions of SO_2 and NO_x for all Cargill sources affected by the project are presented in Table 6-3, along with stack parameters. The SO_2 and NO_x emission inventory for all future Cargill sources are presented in Table 6-4. The last column of Table 6-4 indicates which future sources are affected by the proposed project. Stack data for the Cargill sources were obtained from the current operating permit and stack test data. SO_2 and NO_x emissions for all Cargill sources were developed using data from the current permit, annual operating report data, and AP-42 emission factors. The fuel oil burning sources at Cargill all are permitted to burn No. 2 fuel oil with a maximum 0.5-percent sulfur. Current actual emissions from the sulfuric acid plants were obtained from stack test data from 1999. Operating data for the Nos. 8 and 9 Sulfuric Acid Plants, the GTSP plant dryer, the AFI plant dryer, and the No. 5 DAP plant were derived by taking the average of the last 2 years of stack test data and prorating it based on the maximum production rate.

The current actual PM_{10} emission inventory for affected Cargill sources is presented in Table 6-5. The future Cargill PM_{10} emission inventory is presented in Table 6-6. The last column of Table 6-6 indicates which future sources are affected by the proposed project. PM_{10} emissions for all Cargill sources were developed using the same method and approach used to develop the SO_2 emissions.

The current (project-affected sources only) and future potential Cargill fluoride emission inventory is presented in Table 6-7. The last column of Table 6-7 indicates which current and future sources are affected by the proposed project. The fluoride emissions for all Cargill sources were also developed using the same methods and approach used to develop the SO_2 emissions.

All sources were modeled at locations that are relative to location of the No. 9 Sulfuric Acid Plant stack. This modeling origin has been used in previous PSD applications for the Cargill Riverview facility.

6.7.2 AAQS AND PSD CLASS II ANALYSES

A listing of background SO_2 and PM_{10} sources and their locations relative to the Cargill Riverview facility is provided in Tables 6-8 and 6-9, respectively. All facilities were evaluated using the North Carolina screening technique. Based on this technique, facilities whose annual (i.e., ton per year) emissions are less than the threshold quantity, Q, are eliminated from the modeling analysis. Q is equal to 20 x (D-SIA), where D is the distance in km from the facility to Cargill-Riverview and SIA is the distance of the proposed project's SO_2 or PM_{10} significant impact area (25 km and 4 km, respectively). The SO_2 facilities that were not eliminated in the screening analysis are available for inclusion in the AAQS and/or PSD Class II analyses.

Summaries of the SO_2 and PM_{10} background source data that were used for the AAQS and/or PSD Class II analyses are presented in Appendix F.

Non-Cargill SO_2 and PM_{10} PSD sources were obtained from FDEP and were supplemented with current and historical information obtained from Golder. Non-Cargill PM_{10} PSD sources were obtained from the Big Bend Transfer Company PSD analysis.

6.7.3 CARGILL RIVERVIEW PSD BASELINE INVENTORY (1974)

Summaries of Cargill's SO_2 and PM_{10} sources for the PSD baseline year (1974) are provided in Table 6-10. These sources were used with Cargill's future sources from Tables 6-4 and 6-6, respectively, to determine the PSD increment consumption after completion of the proposed project.

6.7.4 PSD CLASS I ANALYSIS

The proposed project's impacts were predicted to exceed only the EPA proposed 3-hour SO_2 Class I significant impact levels at the CNWA PSD Class I area. A PSD Class I increment consumption analysis was, therefore, performed for SO_2. An SO_2 background source inventory for the CNWA was obtained from a prior air modeling study for the proposed Shady Hills Generating Station in Pasco County (Golder, 1999). The future and 1974 baseline PSD-affecting sources data for the Cargill Riverview facility, that were included in that inventory, were updated for this project. A summary of the SO_2 background PSD-affecting source data used for the analysis is presented in Appendix F.

6.8 RECEPTOR LOCATIONS

6.8.1 SITE VICINITY

To determine the PM_{10}, SO_2, and NO_x significant impact area for the proposed project, concentrations were predicted using polar grids. The receptor grids were comprised of 36 radials, spaced at 10-degree intervals and began at the plant property and extended out to 20 km for SO_2, NO_x, and fluorides and out to 5 km for PM_{10}. Additional receptors were located out to 25 km to identify the significant impact distance for the 3-hour and 24-hour SO_2 concentrations. An additional 86 Cartesian grid receptors, spaced at 100 m , were used to predict impacts along the fence line areas. A summary of the fence line receptors are presented in Table 6-11. At the off-property areas between the fence line and the innermost ring distance of 2 km, 338 discrete polar receptors were used, spaced at 10-degree intervals and at distances of 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, and 2.0 km from the origin. All receptor locations are relative to the No. 9 Sulfuric Acid Plant stack location, an origin which has been used for this facility since the 1993 PSD report for the No. 9 Sulfuric Acid Plant.

The receptor locations out to 2 km from the facility, along with the future Cargill sources and buildings are shown in Figure 6-1.

Based on the results of the significant impact analyses, a maximum receptor distance of 25 and 4 km were used for SO_2 and PM_{10}, respectively, for the screening grids for the AAQS and PSD Class II analyses.

Because the proposed project was determined to be insignificant for NO_x, further modeling was not performed for that pollutant.

6.8.2 CLASS I AREA

Maximum SO_2, NO_x, PM_{10} and fluoride concentrations were predicted at the CNWA with the CALPUFF model using 13 discrete receptors located along the border of the CNWA PSD Class I area. Impacts for the proposed project only were compared to both the proposed EPA PSD Class I significance levels and the regional haze degradation criteria of 5 percent. The fluoride impacts were used to assess the proposed project's impacts on the CNWA AQRVs. A listing of Class I receptors is provided in Table 6-12.

6.9 BACKGROUND CONCENTRATIONS

To estimate total air quality concentrations in the site vicinity, a background concentration must be added to the AAQS 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 SO_2 background concentrations were determined to be 8, 31, and 121 $\mu g/m^3$ for the annual, 24-hour, and 3-hour averaging periods, respectively. The PM_{10} background concentrations were determined to be 26 and 39 $\mu g/m^3$ for the annual and 24-hour averaging periods, respectively. These background levels were added to model-predicted concentrations to estimate total air quality levels for comparison to AAQS.

6.10 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 proposed project was presented in Section 2.0

(Figure 2-2). A total of 18 building structures were evaluated. 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. A listing of dimensions for each structure is presented in Table 6-13.

6.11 MODEL RESULTS

6.11.1 SIGNIFICANT IMPACT ANALYSIS

A summary of the predicted maximum SO_2, NO_x and PM_{10} concentrations for the proposed facility expansion only for the screening analysis is presented in Table 6-14. The modeling results indicated that maximum predicted concentrations due to the proposed project only would be above the significant impact levels for SO_2 and PM_{10}. It was further determined that the significant impact areas for the proposed project's SO_2 and PM_{10} emissions extends out approximately 25 and 4 km, respectively, for the Cargill facility. As a result, additional modeling analyses were performed for SO_2 and PM_{10} to address compliance with AAQS and PSD increments.

6.11.2 AAQS ANALYSIS

A summary of the maximum annual and H6H 24-hour average PM_{10} and HSH 24-hour average SO_2 concentrations predicted for all sources for the screening analysis is presented in Table 6-15. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-16.

The maximum predicted annual, HSH 24-hour, and HSH 3-hour SO_2 concentrations are 53, 263, and 1,065 $\mu g/m^3$, respectively. These concentrations include ambient non-modeled annual, 24-hour, and 3-hour concentrations of 8, 31, and 121 $\mu g/m^3$, respectively. The maximum predicted annual and HSH 3-hour concentrations are less than the annual and 3-hour AAQS of 60 and 1,300 $\mu g/m^3$, respectively. The HSH 24-hour concentration of 263 $\mu g/m^3$ is predicted to be greater than the 24-hour AAQS of 260 $\mu g/m^3$. However, the project does not have a significant impact at any receptor or during any time period when the AAQS is exceeded.

The maximum predicted annual and H6H 24-hour PM_{10} concentrations are 41 and 115 $\mu g/m^3$, respectively. These concentrations include ambient non-modeled annual and 24-hour background concentrations of 23 and 39 $\mu g/m^3$, respectively. The maximum PM_{10} concentrations are predicted to be less than the AAQS of 50 and 150 $\mu g/m^3$, respectively.

6.11.3 SO_2 AND PM_{10} PSD CLASS II ANALYSIS

Summaries of the maximum SO_2 and PM_{10} PSD increment consumption predicted for all sources for the screening analysis is presented in Table 6-17. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-18.

The maximum predicted annual and HSH 24-hour and 3-hour SO_2 increment consumption concentrations of 8.0, 37.6, and 122 $\mu g/m^3$, respectively, are less than the allowable PSD Class II increments of 20, 91, and 512 $\mu g/m^3$, respectively.

The maximum predicted annual and HSH 24-hour PM_{10} increment consumption concentrations of 0.52 and 15.4 $\mu g/m^3$, respectively, are less than the allowable PSD Class II increments of 17 and 30 $\mu g/m^3$, respectively.

6.11.4 PSD CLASS I ANALYSIS

The maximum SO_2, NO_X, and PM_{10} concentrations predicted for the proposed project only at the CNWA PSD Class I area are compared with the EPA's proposed PSD Class I significance levels in Table 6-19. All maximum predicted impacts were below the significant impact levels except for SO_2. The maximum 3-hour SO_2 impact was 1.03 $\mu g/m^3$, which is slightly above the proposed Class I significant impact level of 1.0 $\mu g/m^3$. Therefore, a full PSD Class I incremental analysis was performed for SO_2.

The maximum 24-hour and 3-hour SO_2 PSD Class I increment consumption, due to all PSD affecting sources, is summarized in Table 6-20. The 24-hour and 3-hour periods are listed where the maximum predicted PSD increment exceeded the allowable PSD Class I increments of 5 and 25 $\mu g/m^3$, respectively. For each receptor and time period that exceeded the allowable PSD Class I increment, the contribution from the proposed project only was determined to be well below the significant impact levels. Therefore, it is concluded that the proposed project does not contribute significantly to any of the modeled PSD Class I violations.

6.11.5 FLUORIDE IMPACTS

Maximum fluoride concentrations due to the proposed project in the site vicinity and the Chassahowitzka Class I area are presented in Tables 6-21 and 7-1, respectively, for the annual, 24-, 8-, 3-, and 1-hour 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.

At the site vicinity, the maximum predicted annual and 24-, 8-, 3-, and 1-hour fluoride concentrations are 1.9, 8.4, 12.9, 18.1, and 39.2 $\mu g/m^3$, respectively. The maximum predicted annual and 24-, 8-, 3-, and 1-hour fluoride concentrations at the CNWA 0.0004, 0.007, 0.012, 0.041, and 0.050 $\mu g/m^3$, respectively.

Table 6-1. Major Features of the ISCST3 Model

ISCST3 Model Features[a]
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
• Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulman and Scire (1980) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple emission sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume, area, and open pit sources
• Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
• Variation of wind speed with height (wind speed-profile exponent law)
• Concentration estimates for 1 hour to annual average times
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISCST3 = Industrial Source Complex Short-Term.

References:

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Table 6-2. Current Actual Short-Term Emissions from All Affected Emissions Units, Cargill Riverview

Source Description	EU ID	Current Actual Pollutant Emission Rate (lb/hr) SO_2	PM	PM_{10}	Fluoride	Basis/Comments
A. Molten Sulfur Storage/Handling Facility		--	--	--	--	
Molten Sulfur Storage--Tank No. 2	064	1.99	2.57	2.57	--	1999/2000 AOR Caculations
Molten Sulfur Storage--Tank No. 3	065	0.13	0.08	0.08	--	1999/2000 AOR Caculations
Molten Sulfur Storage--Pit No. 7	066	a	a	a	--	Not affected by the proposed project
Molten Sulfur Storage--Pit No. 8	067	0.04	0.44	0.44	--	1999/2000 AOR Caculations
Molten Sulfur Storage--Pit No. 9	068	0.04	0.44	0.44	--	1999/2000 AOR Caculations
Molten Sulfur Storage--Ship Unloading	069	c	c	c	--	
Molten Sulfur Storage--Truck Loading Station	074	N/A	N/A	N/A	--	Not constructed
B. No. 8 Sulfuric Acid Plant	005	366.70	--	--	--	1999 stack test; max daily combined production
C. No. 9 Sulfuric Acid Plant	006	474.97	--	--	--	1999 stack test; max daily combined production
D. Nos. 5/7/9 Rock Mills						
Rock Railcar Unloading/Ground Rock Storage	034/102	--	0.05	0.05	--	1997 Stack test max unloading rate
No. 5 Rock Mill	100	b	0.73	0.73	--	1998 stack test
No. 7 Rock Mill	106	b	1.56	1.56	--	Permit allowable
No. 9 Rock Mill	101	b	0.26	0.26	--	1998 stack test
E. Phosphoric Acid Plant	073					
No. 3 Filter		--	--	--	0.262	2000 stack test
Dorrco		--	--	--	1.143	2000 stack test
Prayon		--	--	--	0.086	2000 stack test
F. GTSP Plant	007	b	7.60	7.60	1.55	2000 stack test
GTSP Ground Rock Handling	008	--	0.95	0.95	--	Permit limit
GTSP Storage Building No. 2	070	--	--	--	4.42	Stack test AOR
GTSP Storage Building No. 4	071	--	--	--	4.02	Stack test AOR
GTSP Truck Loadout - Baghouse	072	--	0.15	0.07	--	AOR calculations; See Appendix A
- Fugitives		--	0.41	0.08	--	AOR calculations; See Appendix A
G. AFI Plant No. 1 Common Stack	078	b	7.10	7.10	0.17	2000 stack test
DE Hopper Baghouse	079	--	0.09	0.09	--	Permit allowable
Limestone Silo Baghouse	080	--	0.05	0.05	--	0.002 lb/ton from AOR, max loading rate
AFI Product Loadout - Baghouse	081	--	2.22	2.22	--	Permit allowable
- Fugitives		--	0.24	0.05	--	0.003 lb/ton from Hillsborough County EPC; max loading rate
H. No. 5 DAP Plant	055	--	1.30	1.30	3.02	2000 stack test
H. Material Handling System						
West Bagfilter	051	--	0.7	0.7	--	0.0007 lb/ton from AOR; max loading rate
South Baghouse	052	--	0.7	0.7	--	0.0007 lb/ton from AOR; max loading rate
Vessel Loading- Tower Baghouse	053	--	0.3	0.3	--	Stack tests
Building No 6 Belt to Conveyor No 7	058	--	0.62	0.62	--	Permit allowable
Conveyor No.7 to Conveyor No. 8	059	--	0.62	0.62	--	Permit allowable
Conveyor No.8 to Conveyor No 9	060	--	0.7	0.7	--	0.0007 lb/ton from AOR; max loading rate
AFI Railcar Unloading	--	--	0.38	0.08	--	See Appendix A for emission factors and calculations
East Vessel Loading Facility-Shiphold Chokefeed	061	--	0.003	0.003	--	0.0007 lb/ton from AOR; 99% eff.; max loading rate
Total Current Actual Emission Rates		843.88	30.25	29.35	14.67	

a Not affected by the proposed project.
b Only natural gas burned; insignificant source of SO2 emissions.
c Included in emissions from tanks.

Table 6-3 Stack Parameters and Current Actual SO_2 and NO_x Emission Rates for Affected Cargill Riverview Sources

AIRS Number	Source	ISCST Source ID	Short-Term SO_2 Emissions lb/hr	Short-Term SO_2 Emissions g/sec	Annual Average SO_2 Emissions TPY	Annual Average SO_2 Emissions g/sec	Annual Average NO_x Emissions TPY	Annual Average NO_x Emissions g/sec	Stack/Vent Release Height ft	Stack/Vent Release Height m	Stack/Vent Diameter ft	Stack/Vent Diameter m	Gas Flow Rate acfm	Gas Exit Temperature F	Gas Exit Temperature K	Velocity ft/sec	Velocity m/sec	Discharge Direction (Vert./Horiz.)	Location [a] X Coordinate ft	Location [a] X Coordinate m	Location [a] Y Coordinate ft	Location [a] Y Coordinate m
[b]	Molten Sulfur Handling																					
	Pits 7, 8, and 9[c]	MSPTSC	0 09	0 011	0 09	0 003	--	--	8 0	2.44 [e]	--	--	--	48 8	14.9 [e]	3 7	1 13 [e]	[e]	78	24	-238	-73
	Tanks 2 and 3[d]	MSTKTLC	2 12	0 27	1 46	0 04	--	--	36 0	10 97 [f]	--	--	--	29.1	8 86 [f]	16 7	5 10 [f]	[f]	-650	-198	-380	-116
5	No 8 Sulfuric Acid Plant	NO8SAPC	366 7	46 2	1,251	36.0	44 1	1 27	150	45 72	8 0	2 44	118,938	165	347	39 4	12 02	V	340	104	-90	-27
6	No 9 Sulfuric Acid Plant	NO9SAPC	475 0	59.8	1,526	43.9	51 2	1 47	150	45 72	9 0	2 74	159,602	155	341	41.8	12 74	V	0	0	0	0
	Phosphate Rock Grinding Drying System																					
100	No 5 Rock Mill Dust Collector	RKML5C	[g]	[g]	[g]	[g]	4 80	0 14	91	27 74	2 5	0 76	36,100	166	348	122 6	37.36	V	-1620	-494	510	155
106	No 7 Rock Mill Dust Collector	RKML7C	[g]	[g]	[g]	[g]	1.61	0 05	91	27 74	3 0	0 91	20,000	165	347	47.2	14.39	V	-1638	-499	486	148
101	No 9 Rock Mill Dust Collector	RKML9C	[g]	[g]	[g]	[g]	4 75	0 14	91	27 74	2 5	0 76	31,360	162	345	106.5	32 45	V	-1630	-497	460	140
7	GTSP/AP Manufacturing Plant	GTSPAPC	[g]	[g]	[g]	[g]	18 1	0 52	126	38 40	8 0	2 44	171,700	132	329	51.1	15 58	V	-1730	-527	50	15
78	AFI Defluorination & Granulation Scrubber	AFIPLTC	[g]	[g]	[g]	[g]	5 71	0 16	136	41 45	6 0	1 83	108,400	147	337	63 9	19 48	V	-1230	-375	490	149
55	No 5 DAP Plant	DAPNO5C	[g]	[g]	[g]	[g]	3.91	0 11	133	40 54	7 0	2 13	121,732	132	329	52 7	16 07	V	-1744	-532	-380	-116

[a] Relative to H2SO4 Plant No 9 stack location

[b] AIRS Nos 063, 064, 065, 066, 067, 068, 069, 074

[c] Location represented by centroids of pits

[d] Emissions were combined and represented by the tank closest to property boundary.

[e, f] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual

Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Sigma Z (H/2 15)
[e] Pits	8 0	210	8 0	48 8	3.7
[f] Tanks	36 0	125	36 0	29 1	16.7

[g] Insignificant source of SO_2, only natural gas used currently

Table 6-4. Stack Parameters and Potential SO_2 and NO_x Emission Rates for Future Cargill Riverview Sources

AIRS Number	Source	ISCST Source ID	Short-Term SO_2 Emissions lb/hr	Short-Term SO_2 Emissions g/sec	Annual Average SO_2 Emissions TPY	Annual Average SO_2 Emissions g/sec	Annual Average NO_x Emissions TPY	Annual Average NO_x Emissions g/sec	Stack/Vent Release Height ft	Stack/Vent Release Height m	Stack/Vent Diameter ft	Stack/Vent Diameter m	Gas Flow Rate acfm	Gas Exit Temperature F	Gas Exit Temperature K	Velocity ft/sec	Velocity m/sec	Discharge Direction (Vert./Horiz.)	Location[a] X Coordinate ft	Location[a] X Coordinate m	Location[a] Y Coordinate ft	Location[a] Y Coordinate m	Modeled in Significant Impact Analysis? (Yes/No)
b	Molten Sulfur Handling																						
	Pits 7, 8, and 9[c]	MSPITS	0.13	0.017	0.12	0.003	0.00	0.00	8.00	2.44[d]	–	–[d]	–[d]	48.8	14.69[d]	3.72	1.13[d]	[d]	78	24	-238	-73	Yes
	Tanks 1, 2, and 3/Truck Loading	MSTKTL	3.34	0.421	8.88	0.255	0.00	0.00	33	10.06	0.83	0.25	665	110	316	20.48	6.24	V	-630	-192	-460	-140	Yes
4	No. 7 Sulfuric Acid Plant—24-hr/Annual Average	NO7SAP	466.70	58.803	2,044.0	58.799	70.13	2.02	150	45.72	7.50	2.29	109,924	152	340	41.47	12.64	V	-60	-18	-460	-140	No
	No. 7 Sulfuric Acid Plant—3-hr Average	NO7SAP	533.30	67.195	–	–	–	--															
5	No. 8 Sulfuric Acid Plant—24-hr Annual Average	NO8SAP	393.75	49.612	1,724.6	49.612	59.13	1.70	150	45.72	8.00	2.44	129,400	165	347	42.91	13.08	V	340	104	-90	27	Yes
	No. 8 Sulfuric Acid Plant—3-hr Average	NO8SAP	450.00	56.699	-	–	--	–															
6	No. 9 Sulfuric Acid Plant—24-hr Annual Average	NO9SAP	495.83	62.474	2,171.8	62.474	74.46	2.14	150	45.72	9.00	2.74	171,100	155	341	44.63	13.66	V	0	0	0	0	Yes
	No. 9 Sulfuric Acid Plant—3-hr Average	NO9SAP	566.67	71.399	–	--	--	--															
	Phosphate Rock Grinding/Drying System																						
100	No. 5 Rock Mill Dust Collector	RKMLNO5	6.59	0.830	1.32	0.038	5.69	0.16	91	27.74	2.50	0.76	36,100	166	348	122.57	37.36	V	-1,620	-494	510	155	Yes
106	No. 7 Rock Mill Dust Collector	RKMLNO7	6.59	0.830	1.32	0.038	5.69	0.16	91	27.74	3.00	0.91	20,000	165	347	47.16	14.37	V	-1,638	-499	456	139	Yes
101	No. 9 Rock Mill Dust Collector	RKMLNO9	6.59	0.830	1.32	0.038	5.69	0.16	91	27.74	2.50	0.76	31,360	162	345	106.48	32.45	V	-1,630	-497	460	140	Yes
7	EPP Manufacturing Plant	EPPPLNT	40.54	5.108	6.11	0.233	35.04	1.01	126	38.40	8.00	2.44	237,000	132	329	78.58	23.95	V	-1,730	527	50	15	Yes
	Molten Sulfur Tank[e]	EPPMSTK	0.15	0.019	0.66	0.019	0.00	0.00	29	8.72	0.50	0.15	1	77	298	0.10	0.03	V	-1,730	527	20	6	Yes
	Animal Feed Ingredient Plant																						
	Granulation System Scrubber	AFIGRAN	25.36	3.195	5.07	0.146	21.90	0.63	136	41.45	6.00	1.83	109,400	150	339	64.49	19.66	V	-1,230	-375	460	140	Yes
33	No. 5 DAP Plant	DAPNO5	12.58	1.585	2.52	0.072	17.52	0.50	133	40.54	7.00	2.13	121,732	132	329	52.72	16.07	V	-1,744	-532	-380	-116	Yes
22,23,24	Nos. 3 and 4 MAP Plants and South Cooler	MAPNO34	0.003	0.0004	0.01	0.0004	2.08	0.06	133	40.54	7.00	2.13	165,000	142	334	71.46	21.78	V	1,800	-549	170	-52	No

[a] Relative to H2SO4 Plant No. 9 stack location

[b] AIRS Nos. 063, 064, 065, 066, 067, 068, 069, 074

[c] Location represented by centroids of pits

[d] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual

Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Model Dimensions (ft) Sigma Z (H/2.15)
Pits 7, 8, and 9	8.0	210.0	8.0	48.8	3.72

[e] Assumed velocity, calculated flow rate

Table 6-5 Stack Parameters and Actual PM_{10} Emission Rates for Affected Cargill Riverview Sources

AIRS Number	Source	ISCST Source ID	Short-Term PM_{10} Emissions lb/hr	Short-Term PM_{10} Emissions g/sec	Annual Average PM_{10} Emissions TPY	Annual Average PM_{10} Emissions g/sec	Stack Vent Release Height ft	Stack Vent Release Height m	Stack Vent Diameter ft	Stack Vent Diameter m	Gas Flow Rate acfm	Gas Exit Temperature F	Gas Exit Temperature K	Velocity ft/sec	Velocity m/sec	Discharge Direction[a] (Vert./Horiz.)	Location[b] X Coordinate ft	Location[b] X Coordinate m	Location[b] Y Coordinate ft	Location[b] Y Coordinate m
[c]	Molten Sulfur Handling																			
	Pits 7, 8, and 9[d]	MSPTSC	0.87	0.110	0.66	0.019	8.00	2.44 [f]	--	--	--	48.84	14.89 [f]	3.72	1.13 [f]	[f]	78	24	-238	-73
	Tanks 2 and 3[e]	MSTKTLC	2.65	0.333	1.08	0.031	36.00	10.97 [g]	--	--	--	29.07	8.86 [g]	16.74	5.10 [g]	[g]	-650	-198	-380	-116
	Phosphate Rock Grinding/Drying System																			
100	No. 5 Rock Mill Dust Collector	RKML5C	0.73	0.092	2.29	0.066	91	27.74	2.50	0.76	36,100	166	348	122.6	37.36	V	-1,620	-494	510	155
106	No. 7 Rock Mill Dust Collector	RKML7C	1.56	0.197	0.09	0.003	91	27.74	3.00	0.91	20,000	165	347	47.20	14.39	V	-1,638	-499	486	148
101	No. 9 Rock Mill Dust Collector	RKML9C	0.26	0.033	1.64	0.047	91	27.74	2.50	0.76	31,360	162	345	106.5	32.45	V	-1,630	-497	460	140
102	Ground Rock Silo Dust Collector	GRSILOC	0.05	0.006	0.09	0.003	67	20.42	0.80	0.24	1,200	80	300	39.79	12.13	H	-1,640	-500	526	160
7	GTSP/AP Manufacturing Plant	GTSPAPC	7.60	0.958	16.66	0.479	126	38.40	8.00	2.44	171,700	132	329	51.11	15.58	V	-1,730	-527	50	15
8	GTSP Ground Rock Handling	GTSPRHC	0.95	0.120	3.80	0.109	87	26.52	1.20	0.37	4,400	138	332	64.84	19.76	H	-1,880	-573	50	15
72	GTSP Truck Loading Station Baghouse	GTSPTLC	0.07	0.008	0.004	0.0001	38	11.58	2.70	0.82	2,200	77	298	6.55	2.00	H	-2,450	-747	30	9
	GTSP Truck Loading Station Fugitive	GTSPTFC	0.08	0.010	0.005	0.0001	27.50	8.38 [h]	--	--	--	139.5	42.53 [h]	25.58	7.80 [h]	[h]	-2,450	-747	30	9
	Animal Feed Ingredient Plant																			
78	AFI Defluorination & Granulation Scrubber	AFIPLTC	7.10	0.895	17.46	0.502	136	41.45	6.00	1.83	108,400	147	337	63.90	19.48	V	-1,230	-375	490	149
79	DE Hopper Baghouse	DEHOPBC	0.09	0.011	0.02	0.001	64	19.51	1.50	0.46	600	90	305	5.66	1.72	--	-1,840	-561	760	232
80	Limestone Silo Baghouse	LIMESBC	0.05	0.006	0.06	0.002	85	25.91	1.50	0.46	800	90	305	7.55	2.30	--	-1,090	-332	540	165
81	AFI Product Loadout Baghouse	AFIPLBC	2.22	0.280	0.64	0.018	30	9.14	3.00	0.91	21,100	90	305	49.75	15.16	V	-860	-262	528	161
	AFI Product Loadout Fugitive	AFIPLFC	0.05	0.006	0.04	0.001	50.00	15.24 [i]	--	--	--	63.72	19.42 [i]	46.51	14.18 [i]	[i]	-860	-262	528	161
55	No. 5 DAP Plant	DAPNO5C	1.30	0.164	8.67	0.249	133	40.54	7.00	2.13	121,732	132	329	52.72	16.07	V	-1,744	-532	-380	-116
	Material Handling Conveyor																			
51	West Baghouse	MHWESTC	0.70	0.088	0.64	0.018	30	9.14	3.50	1.07	33,000	80	300	57.17	17.42	V	-950	-290	-1,480	-451
52	South Baghouse	MHSOUTC	0.70	0.088	0.57	0.016	50	15.24	1.50	0.46	4,500	80	300	42.44	12.94	H	-1,030	-314	-1,650	-503
53	Tower East Baghouse	MHTWREC	0.30	0.038	0.45	0.013	30	9.14	2.50	0.76	12,000	80	300	40.74	12.42	H	-910	-277	1,500	-457
58	Building No. 6 Baghouse	MHBLD6C	0.62	0.078	0.32	0.009	30	9.14	1.20	0.37	3,630	80	300	53.49	16.30	H	-1,890	-576	-450	-137
59	Belt 7 to 8 Baghouse	BLT78BC	0.62	0.078	0.64	0.018	45	13.72	1.20	0.37	3,630	80	300	53.49	16.30	H	-1,890	-576	-580	-177
60	Belt 8 to 9 Baghouse	BLT89BC	0.70	0.088	0.64	0.018	75	22.86	1.60	0.49	6,930	80	300	57.44	17.51	H	-1,030	-314	-1,290	-393
	AFI Railcar Unloading	AFIRCUC	0.08	0.010	0.005	0.0001	15.00	4.57 [j]	--	--	--	13.95	4.25 [j]	13.95	4.25 [j]	[j]	-850	-259	-1,350	-411
61	East Vessel Loading Facility-Shiphold Choketeed	EVSHIPC	0.003	0.0004	0.25	0.007	30.00	9.14 [k]	--	--	--	3.49	1.06 [k]	6.98	2.13 [k]	[k]	-890	-271	-1,520	-463

Footnotes

[a] For modeling purposes, horizontal discharges were modeled with a velocity of 0.01 m/s.
[b] Relative to H2SO4 Plant No. 9 stack location
[c] AIRS Nos. 063, 064, 065, 066, 067, 068, 069, 074
[d] Location represented by centroids of pits
[e] Emissions were combined and represented by the tank closest to property boundary
[f, g, h, i, j, k] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual

	Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Model Dimensions (ft) Sigma Z (H/2.15)
[f]	Pits 7, 8, and 9	8.0	210	8	48.8	3.7
[g]	Tanks 2 and 3	36.0	125	36	29.1	16.7
[h]	GTSP Truck Loading Station Fugitive	55.0	600	27.5	139.5	25.6
[i]	AFI Product Loadout Fugitive	100.0	274	50	63.7	46.5
[j]	AFI Railcar Unloading	30.0	60	15	14.0	14.0
[k]	East Vessel Loading Facility-Shiphold/Choketeed	30.0	15	30	3.5	7.0

Table 6-6 Stack Parameters and Potential PM_{10} Emission Rates for Future Cargill Riverview Sources

AIRS Number	Source	ISCST Source ID	Short-Term PM_{10} Emissions		Annual Average PM_{10} Emissions		Stack/Vent Release Height		Stack/Vent Diameter		Gas Flow Rate	Gas Exit Temperature		Velocity		Discharge Direction[a]	Location[b]				Modeled in Significant Impact Analysis?
																	X Coordinate		Y Coordinate		
			lb/hr	g/sec	TPY	g/sec	ft	m	ft	m	acfm	F	K	ft/sec	m/sec	(Vert./Horiz.)	ft	m	ft	m	(Yes/No)
[c]	Molten Sulfur Handling																				
	Pits 7, 8, and 9[d]	MSPITS	1.31	0.165	1.10	0.032	8.00	2.44[e]	--	--	--	48.84	14.89[e]	3.72	1.13[e]	[e]	78	24	-238	-73	Yes
	Tanks 1, 2, and 3 Truck Loading	MSTKTL	0.28	0.036	1.02	0.029	33	10.06	0.83	0.25	665	110	316	20.48	6.24	V	-630	-192	-460	-140	Yes
	Phosphate Rock Grinding Drying System																				
100	No. 5 Rock Mill Dust Collector	RKMLNO5	1.56	0.197	6.85	0.197	91	27.74	2.50	0.76	36,100	166	348	122.57	37.36	V	-1620	-494	510	155	Yes
106	No. 7 Rock Mill Dust Collector	RKMLNO7	1.56	0.197	6.85	0.197	91	27.74	3.00	0.91	20,000	165	347	47.16	14.37	V	-1638	-499	486	148	Yes
101	No. 9 Rock Mill Dust Collector	RKMLNO9	1.56	0.197	6.85	0.197	91	27.74	2.50	0.76	31,360	162	345	106.48	32.45	V	-1630	-497	460	140	Yes
102	Ground Rock Silo Dust Collector	GRKSILO	0.41	0.052	1.78	0.051	67	20.42	0.80	0.24	1,200	80	300	39.79	12.13	H	-1640	-500	526	160	Yes
7	EPP Manufacturing Plant	EPPPLNT	12.00	1.512	52.56	1.512	126	38.40	8.00	2.44	237,000	132	329	76.58	23.95	V	-1730	-527	50	15	Yes
	Molten Sulfur Tank[f]	EPPMSTK	0.19	0.024	0.85	0.024	28	8.72	0.50	0.15	1	77	298	0.10	0.03	V	-1730	-527	20	6	Yes
8	EPP Ground Rock Handling	EPPGRKH	0.95	0.120	4.16	0.120	87	26.52	1.20	0.37	4,400	138	332	64.84	19.76	H	-1880	-573	50	15	Yes
72	EPP Truck Loading Station Baghouse	EPPTLST	0.53	0.067	2.30	0.066	38	11.58	2.67	0.81	2,200	77	298	6.55	2.00	H	-2450	-747	30	9	Yes
	EPP Truck Loading Station Fugitive	EPPTLSF	0.20	0.025	0.40	0.012	27.50	8.38[g]	--	--	--	139.53	42.53[g]	25.58	7.80[g]	[g]	-2450	-747	30	9	Yes
	Animal Feed Ingredient Plant																				
	Granulation System Scrubber	AFIGRAN	8.00	1.008	35.04	1.008	136	41.45	6.00	1.83	109,400	150	339	64.49	19.66	V	-1230	-375	460	140	Yes
79	DE Hopper Baghouse	DEHOPPB	0.05	0.007	0.23	0.007	64	19.51	1.50	0.46	600	90	305	5.66	1.72	--	-1840	-561	760	232	Yes
	Milling, Classification, & Cooling Equipment Baghouse	COOLEQB	5.14	0.648	22.53	0.648	85	25.91	5.00	1.52	56,000	120	322	47.53	14.49	V	-1110	-338	446	136	Yes
80	Limestone Silo Baghouse	LIMESIB	0.32	0.040	1.40	0.040	85	25.91	3.00	0.91	3,500	90	305	8.25	2.52	--	1090	-332	540	165	Yes
81	AFI Product Loadout Baghouse	AFIPRLB	2.06	0.260	9.01	0.259	20	6.10	3.00	0.91	21,100	90	305	49.75	15.16	V	-860	-262	528	161	Yes
	AFI Product Loadout Fugitive	AFIPRLF	0.03	0.003	0.12	0.003	50.00	15.24[h]	--	--	--	63.72	19.42[h]	46.51	14.18[h]	[h]	-860	-262	528	161	Yes
55	No. 5 DAP Plant	DAPNO5	12.80	1.613	56.10	1.614	133	40.54	7.00	2.13	121,732	132	329	52.72	16.07	V	-1744	-532	-380	-116	Yes
22,23,24	Nos. 3 and 4 MAP Plants and South Cooler	MAPNO34	10.00	1.260	42.50	1.223	133	40.54	7.00	2.13	165,000	142	334	71.46	21.78	V	-1800	-549	-170	-52	No
	Material Handling Conveyor																				
51	West Baghouse	MHWESTB	1.16	0.146	4.60	0.132	30	9.14	3.50	1.07	33,000	80	300	57.17	17.42	V	950	-290	-1480	-451	Yes
52	South Baghouse	MHSOUTB	1.16	0.146	4.60	0.132	50	15.24	1.50	0.46	4,500	80	300	42.44	12.94	H	-1030	-314	-1650	-503	Yes
53	Tower East Baghouse	MHTWREB	0.80	0.101	3.20	0.092	30	9.14	2.50	0.76	12,000	80	300	40.74	12.42	H	-910	-277	-1500	-457	Yes
58	Building No. 6 Baghouse	MHBLDG6	0.62	0.078	1.20	0.035	30	9.14	1.16	0.35	3,630	80	300	57.24	17.45	H	-1690	-376	-450	-137	Yes
59	Belt 7 to 8 Baghouse	BLT78BH	0.62	0.078	1.90	0.055	45	13.72	1.16	0.35	3,630	80	300	57.24	17.45	H	-1890	-576	-580	-177	Yes
60	Belt 8 to 9 Baghouse	BLT89BH	1.19	0.150	3.60	0.104	75	22.86	1.57	0.48	6,930	80	300	59.54	18.15	H	1030	-314	-1290	-393	Yes
	AFI Railcar Unloading	AFIRCUL	0.15	0.019	0.06	0.002	15.00	4.57[i]	--	--	--	14.0	4.25[i]	13.95	4.25[i]	[i]	-850	-259	-1350	-411	Yes
61	East Vessel Loading Facility Shiphold Chokefeed	EVSHIPL	0.10	0.013	0.42	0.012	30.00	9.14[i]	--	--	--	3.49	1.06[i]	6.98	2.13[i]	[i]	-890	-271	-1520	-463	Yes

[a] For modeling purposes, horizontal discharges were modeled with a velocity of 0.01 m/s

[b] Relative to H2SO4 Plant No. 9 stack location

[c] AIRS Nos. 063, 064, 065, 066, 067, 068, 069, 074

[d] Location represented by centroids of pits

[e,g,h,i] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual

	Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Sigma Z (H/2.15)
[e]	Pits 7, 8, and 9	8.0	210	8.0	49	3.7
[g]	EPP Truck Loading Station Fugitive	55.0	600	27.5	140	25.6
[h]	AFI Product Loadout Fugitive	100.0	274	50	63.7	46.5
[i]	AFI Railcar Unloading	30.0	60	15	14.0	14.0
[i]	East Vessel Loading Facility-Shiphold Chokefeed	30.0	15	30	3.5	6.98

[f] Assumed velocity, calculated flow rate

Table 6-7 Stack Parameters and Actual and Potential Fluoride Emission Rates for Current and Future Cargill Riverview Sources

AIRS Number	Source	ISCST Model ID	Short Term F Emissions lb/hr	Short Term F Emissions g/sec	Annual Average F Emissions TPY	Annual Average F Emissions g/sec	Stack/Vent Release Height ft	Stack/Vent Release Height m	Stack/Vent Diameter ft	Stack/Vent Diameter m	Gas Flow Rate acfm	Gas Exit Temperature F	Gas Exit Temperature K	Velocity ft/sec	Velocity m/sec	Discharge Direction (Vert./Horiz.)	Location[c] X Coordinate ft	Location[c] X Coordinate m	Location[c] Y Coordinate ft	Location[c] Y Coordinate m	Modeled in Significant Impact Analysis? (Yes/No)
CURRENT SOURCES																					
73	Phosphoric Acid Production Facility																				
	Pravon Reactor/No. 1 Filtration Unit	PAPPRAC	0.09	0.01	0.23	0.01	110	33.53	4.00	1.22	18,300	105	313.71	24.20	7.38	V	-1140	-347	940	287	Yes
	No. 1 Filtration Unit/No. 2 Filtration Unit/Dorrco Reactor	PAPF12C	1.14	0.14	3.01	0.09	110	33.53	4.80	1.46	38,900	115	319.26	35.30	10.76	V	1200	-366	1120	341	Yes
	No. 3 Filtration Unit	PAPF3C	0.26	0.03	0.69	0.02	115	35.05	4.90	1.49	57,100	90	305.37	41.30	12.59	V	-1350	-411	984	300	Yes
7	GTSP/AP Manufacturing Plant	GTSPAPC	1.55	0.20	3.62	0.10	126	38.40	8.00	2.44	171,700	132	328.71	51.11	15.58	V	-1730	-527	50	15	Yes
70,71	Two GTSP Storage Buildings	GTSPSTC	8.44	1.06	38.90	1.12	55	16.76[b]	-	--	--	191	58.12[b]	25.58	7.80[b]	[b]	2680	-817	50	15	Yes
	Animal Feed Ingredient Plant																				
78	AFI Defluorination & Granulation Scrubber	AFIPLTC	0.17	0.02	1.79	0.05	136	41.45	6.00	1.83	108,400	147	337.04	63.90	19.48	V	-1230	-375	490	149	Yes
55	No. 5 DAP Plant	DAPNO5C	3.02	0.38	8.37	0.24	133	40.54	7.00	2.13	121,732	132	328.71	52.72	16.07	V	-1744	-532	-380	116	Yes
FUTURE SOURCES																					
73	Phosphoric Acid Production Facility																				
	Pravon Reactor	PAPPRAY	0.57	0.07	2.51	0.07	110	33.53	4.00	1.22	20,900	105	313.71	27.72	8.45	V	-1140	-347	940	287	Yes
	Nos. 1 and 2 Filtration Units	PAPF12	0.57	0.07	2.51	0.07	110	33.53	4.83	1.47	45,000	115	319.26	40.93	12.48	V	-1200	-366	1120	341	Yes
	Dorrco Reactor and New Digester	PAPDORR	0.57	0.07	2.51	0.07	95	28.96	4.50	1.37	55,000	110	316.48	57.64	17.57	V	-1070	-326	1110	338	Yes
	No. 3 Filtration Unit	PAPF3	0.57	0.07	2.51	0.07	115	35.05	4.92	1.50	57,100	90	305.37	50.06	15.26	V	-1350	-411	984	300	Yes
7	EPP Manufacturing Plant	EPPPLNT	1.89	0.24	8.26	0.24	126	38.40	8.00	2.44	237,000	132	328.71	78.58	23.95	V	-1730	-527	50	15	Yes
70,71	Two EPP Storage Buildings	EPPST24	9.92	1.25	43.46	1.25	55	16.76[b]		-	--	191	58.12[b]	25.58	7.80[b]	[b]	-2680	-817	50	15	Yes
	Animal Feed Ingredient Plant																				
78	Defluorination System Scrubber	AFIDFS	1.00	0.13	4.38	0.13	35	10.67	3.00	0.91	25,400	105	313.71	59.89	18.25	V	-1230	-375	490	149	Yes
55	No. 5 DAP Plant	DAPNO5	3.30	0.42	14.50	0.42	133	40.54	7.00	2.13	121,732	132	328.71	52.72	16.07	V	-1744	-532	-380	-116	Yes
22,23,24	Nos. 3 and 4 MAP Plants and South Cooler	MAPNO34	2.00	0.25	8.50	0.24	133	40.54	7.00	2.13	165,000	142	334.26	71.46	21.78	V	-1800	-549	-170	52	No

Footnotes

[a] Relative to H2SO4 Plant No. 9 stack location

[b] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual

Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Sigma Z (H/2.15)
Two GTSP Storage Buildings	55.0	82.0	55.0	19.1	25.58

Table 6.8. Summary of Facilities with SO_2 Emission Sources Greater Than 10 Tons Per Year in the Vicinity of Cargill Riverview

Facility ID	Facility Name	Facility Location East (km)	Facility Location North (km)	Relative Location[a] X (km)	Relative Location[a] Y (km)	Relative Location[a] Direction (deg.)	Relative Location[a] Distance (km)	SO2 Emissions Rate (TPY)	Emissions Threshold (Q) [(Dist. - SIA) X 25][b]	Included in Modeling Analysis? AAQS	Included in Modeling Analysis? PSD Class
0570040	TECO. GANNON	360.1	3.087.5	-2.8	5.0	331	6	126.940 0	SIA	Yes	Yes
0571209	APAC-FLORIDA. INC	359.9	3.088 1	-3.0	5.6	331	6	57.6	SIA	Yes	Yes
0571242	NATIONAL GYPSUM COMPANY	363.3	3.075.6	0.4	-6.9	177	7	86.1	SIA	Yes	Yes
PRPSD	BIG BEND TRANSFER CO. L L C	361.1	3.076.2	-1.8	-6.3	196	7	15 6	SIA	Yes	Yes
0570039	TAMPA ELECTRIC COMPANY BIG BEND	361 9	3.075.0	-1.0	-7.5	188	8	846.626 0	SIA	Yes	Yes
0570286	TAMPA BAY SHIPBUILDING & REPAIR CO	358.0	3.089.0	-4.9	6.5	323	8	12.0	SIA	Yes	Yes
0570038	TECO, HOOKER	358 0	3.091 0	-4.9	8.5	330	10	13.519.4	SIA	Yes	Yes
0570127	CITY OF TAMPA. MCKAY BAY	360.2	3.092.2	-2.7	9.7	344	10	1.460 9	SIA	Yes	Yes
0570041	FLORIDA HEALTH SCIENCES CTR, INC	356.4	3.091.0	-6.5	8.5	323	11	58.6	SIA	Yes	Yes
0570057	GULF COAST RECYCLING. INC.	364.0	3.093 5	1 1	11.0	6	11	1.015.0	SIA	Yes	Yes
0570261	HILLSBOROUGH RESOURCE RECOVERY FAC	368.2	3.092 7	5.3	10.2	27	11	770 9	SIA	Yes	Yes
0570028	NATIONAL GYPSUM COMPANY	348 8	3.082.7	-14.1	0.2	271	14	347 0	SIA	Yes	Yes
0570003	CF INDUSTRIES. INC	362.8	3.098.4	-0.1	15.9	360	16	15.5	SIA	Yes	Yes
0570089	ST.JOSEPHS HOSPITAL	353.3	3.095.9	-9.6	13.4	324	16	12.3	SIA	Yes	Yes
0570180	FECP/CAST CRETE DIVISION	371.9	3.099 2	9.0	16.7	28	19	15.0	SIA	Yes	Yes
1030011	FLORIDA POWER CORP., BARTOW	342.4	3.082.6	-20.5	0.1	270	21	63,539 2	10	Yes	Yes
0570006	YUENGLING BREWING CO	362 0	3.103.2	-0.9	20.7	358	21	14 5	14	Yes	Yes
0570171	SPEEDLING, INC.	354 1	3.062.2	-8.8	-20.3	203	22	30.7	43	No	No
0570076	DELTA ASPHALT	372 1	3.105 4	9.2	22.9	22	25	82 1	94	No	No
1030013	FLORIDA POWER CORP . BAYBORO	338 8	3.071 3	-24.1	-11.2	245	27	6.848 0	132	Yes	Yes
0570249	ALCOA EXTRUSIONS	385.6	3.097 0	22.7	14.5	57	27	30 2	139	No	No
1030117	PINELLAS CO BOARD OF CO COMMISSIONERS	335 2	3.084 1	-27.7	1.6	273	28	3.044 1	155	Yes	Yes
0810067	ATLAS-TRANSOIL. INC.	349 7	3.058 0	-13.2	-24.5	208	28	99 9	157	No	No
0810002	PINEY POINT PHOSPHATES, INC.	349 7	3.057 3	-13.3	-25.2	208	28	1.319 5	169	Yes	Yes
0810010	FLORIDA POWER & LIGHT MANATEE PLANT	367 3	3.054.2	4.4	-28.3	171	29	83.351 4	174	Yes	Yes
0810001	COASTAL FUELS MARKETING, INC	348 0	3.057 7	-14.9	-24.8	211	29	102 4	178	No	No
0810024	FLORIDA POWER & LIGHT (PMS)	347 5	3.056.6	-15.4	-25.9	211	30	97 3	203	No	No
0570296	INTERNATIONAL PETROLEUM CORP	389.0	3.098.0	26.1	15.5	59	30	111 2	207	No	No
0570370	PARADISE, INC.	388 5	3.099.0	25.6	16.5	57	30	18.6	209	No	No
1030012	FLORIDA POWER CORP . HIGGINS	336 5	3.098.4	-26.4	15.9	301	31	24.803 7	216	Yes	Yes
0570075	CORONET INDUSTRIES, INC.	393 8	3.096.3	30.9	13.8	66	34	1.160 7	277	Yes	Yes
1050059	IMC PHOSPHATES COMPANY (NEW WALES)	396 7	3.079.4	33.8	-3.1	95	34	14.607.8	279	Yes	Yes
1030127	METAL CULVERTS	329.1	3.089.1	-33.8	6.6	281	34	9 1	289	No	No
1050057	IMC PHOSPHATES COMPANY (NICHOLS)	398 4	3.084.2	35.5	1 7	87	36	2.065 7	311	Yes	Yes
1050047	AGRIFOS. L.L.C (NICHOLS)	398.7	3.085.3	35.8	2.8	86	36	2.219.2	318	Yes	Yes

Table 6.8. Summary of Facilities with SO_2 Emission Sources Greater Than 10 Tons Per Year in the Vicinity of Cargill Riverview

Facility ID	Facility Name	Facility Location East (km)	Facility Location North (km)	Relative Location[a] X (km)	Relative Location[a] Y (km)	Relative Location[a] Direction (deg.)	Relative Location[a] Distance (km)	SO2 Emissions Rate (TPY)	Emissions Threshold (Q) [(Dist - SIA) X 25][b]	Included in Modeling Analysis? AAQS	Included in Modeling Analysis? PSD Class
1030026	OVERSTREET PAVING COMPANY, INC	326.2	3,086 9	-36.7	4.4	277	37	34.2	339	No	No
0570438	FLORIDA GAS TRANSMISSION COMPANY	391 9	3,106.6	29.0	24.1	50	38	5.1	354	No	No
1050182	GEOLOGIC RECOVERY SYSTEMS	401.8	3,085.8	38.9	3.3	85	39	99.8	381	No	No
1050056	IMC PHOSPHATES COMPANYN (PRAIRIE)	402.9	3,087 0	40.0	4.5	84	40	419.1	405	Yes	Yes
0570005	CF INDUSTRIES, INC., PLANT CITY PHOS	388.0	3,116 0	25.1	33.5	37	42	7,520.6	437	Yes	Yes
1050233	TECO, POLK POWER	402.5	3,067 4	39.6	-15.2	111	42	2,890.5	447	Yes	Yes
1010027	R.E. PURCELL CONST CO., INC	340.6	3,119 2	-22.3	36.7	329	43	28.0	459	No	No
1010041	APAC - FLORIDA, INC. -TAMPA DIVISIONON	340.7	3,119 5	-22.2	37.0	329	43	157.7	463	No	No
1050048	MULBERRY PHOSPHATES, INC.	406 8	3,085.1	43.9	2.6	87	44	1,705.6	480	Yes	Yes
0810007	TROPICANA PRODUCTS, INC.	346.8	3,040.9	-16.1	-41 6	201	45	242.0	492	No	No
1050097	CUSTOM CHEMICALS CORPORATION	408 0	3,085.5	45 1	3.0	86	45	58 9	504	No	No
1050052	CF INDUSTRIES, INC.	408 3	3,082 5	45 4	0 0	90	45	1,827 0	508	Yes	Yes
1050055	IMC PHOSPHATES COMPANY (S. PIERCE)	407 5	3,071.4	44.6	-11.1	104	46	4,682 6	519	Yes	Yes
1050053	FARMLAND HYDRO, L.P.	409.5	3,080 1	46.6	-2.4	93	47	6,895.9	533	Yes	Yes
1050046	CARGILL FERTILIZER, INC	409.8	3,086 6	46.9	4.1	85	47	6,101 8	542	Yes	Yes
0490015	HARDEE POWER PARTNERS,LTD	404.8	3,057.4	41.9	-25.1	121	49	9,693 7	577	Yes	Yes
1050003	LAKELAND ELECTRIC, LARSON	408.9	3,102 5	46.0	20.0	67	50	12,119.4	603	Yes	Yes
1050146	PAVEX CORPORATION	413.0	3,086 2	50.1	3.7	86	50	75.0	605	No	No
1050100	SHELL EPOXY RESINS LLC	410 7	3,098.9	47.8	16 4	71	51	83.7	611	No	No
1050217	POLK POWER PARTNERS, L P	413.6	3,080 6	50.7	-1.9	92	51	436 9	615	No	No
1050004	LAKELAND ELECTRIC, MCINTOSH	409.0	3,106 2	46.1	23 7	63	52	35,366.8	637	Yes	Yes
1050234	FLORIDA POWER CORP , HINES	414 3	3,073.9	51.4	-8.6	99	52	47.0	643	No	No
1010017	FLORIDA POWER CORP , ANCLOTE	324 4	3,118 7	-38.5	36.2	313	53	118,214.4	657	Yes	Yes
1050223	FLORIDA POWER CORP , TIGER BAY	416 3	3,069.3	53.4	-13.2	104	55	21 3	700	No	No
1050051	U.S. AGRI-CHEMICALS CORPORATION	416 0	3,069.0	53.1	-13.5	104	55	4,405 5	696	Yes	Yes
1050026	ALCOA ALUMINA AND CHEMICALS, L.L C	416 8	3,069.5	53.9	-13.0	104	55	93 3	709	No	No
1050231	ORANGE COGENERATION L.P.	418 7	3,083.0	55.8	0.5	89	56	11.0	716	No	No
1010056	PASCO COUNTY RESOURCE RECOVERY	348.8	3,138 8	-14.1	56 3	346	58	412.5	760	No	No
1050298	POLK COUNTY SOLID WASTE DIVISION	418.9	3,098 5	56.0	16 0	74	58	13.5	765	No	No
1010373	IPS AVON PARK CORP.	347.0	3,139 0	-15.9	56.5	344	59	165 9	774	No	No
0490043	IPS AVON PARK CORPORATION	408 8	3,044.5	45.9	-38.0	130	60	221.2	791	No	No
1010071	PASCO COGEN LIMITED	385 1	3,139.0	22.2	56.5	21	61	21.0	814	No	No
1050221	AUBURNDALE POWER PARTNERS, LP	420.8	3,103 3	57.9	20.8	70	62	598.0	830	No	No
1010028	OVERSTREET PAVING CO	355.9	3,143.7	-7.0	61.2	353	62	113.4	832	No	No
1050023	CUTRALE CITRUS JUICES USA,INC	421.6	3,103 7	58.7	21.2	70	62	1,693 0	848	Yes	Yes

Table 6.8. Summary of Facilities with SO_2 Emission Sources Greater Than 10 Tons Per Year in the Vicinity of Cargill Riverview

Facility ID	Facility Name	Facility Location East (km)	Facility Location North (km)	Relative Location[a] X (km)	Relative Location[a] Y (km)	Relative Location[a] Direction (deg.)	Relative Location[a] Distance (km)	SO2 Emissions Rate (TPY)	Emissions Threshold (Q) [(Dist. - SIA) X 25][b]	Included in Modeling Analysis? AAQS	Included in Modeling Analysis? PSD Class
1050037	SFE CITRUS PROCESSORS, L.P., LTD	421.7	3,104.2	58.8	21.7	70	63	188.8	854	No	No
1050007	OWENS-BROCKWAY GLASS CONTAINER INC	423.4	3,102.8	60.5	20.3	71	64	118.2	876	No	No
1050216	RIDGE GENERATING STATION, L.P.	427.0	3,100.3	64.1	17.8	74	67	284.7	931	No	No
0530357	D.A.B. CONSTRUCTORS INC	358.5	3,151.3	-4.4	68.8	356	69	14.0	980	No	No
1050263	POLK CORRECTIONAL INSTITUTION	423.0	3,118.2	60.1	35.7	59	70	41.9	998	No	No
1050090	FLORIDA DISTILLERS	428.0	3,108.1	65.1	25.6	69	70	17.2	999	No	No

[a] The Proposed Project is located at UTM Coordinates: East 362.9 km; North 3082.5 km

[b] The significant impact area (SIA) determined by modeling equals 25 km

Table 6-9. Screening Analysis for PM Emitting Facilities (>50 TPY) within 100 km of Cargill - Riverview

Facility ID	Facility Name	Site Description/Location	Source Location East (km)	Source Location North (km)	Relative Location[a] X (km)	Relative Location[a] Y (km)	Relative Location[a] Distance (km)	Relative Location[a] Direction (deg.)	PM Emissions Rate (TPY)	Q Emissions Threshold [(Dist. - SIA) X 4]	ded in Modeling Anal AAQS	ded in Modeling Anal PSD Class I
0570024	IMC-AGRICO CO.(PORT SUTTON TERMINAL)	IMC-AGRICO CO (POR	361.48	3087.49	-1.4	5.0	5.2	344	383	24	Yes	No[b]
0571102	FLORIDA CRUSHED STONE COMPANY	FLORIDA CRUSHED ST	359.50	3086.95	-3.4	4.4	5.6	323	89	32	Yes	No[b]
0570040	TAMPA ELECTRIC COMPANY	GANNON	360.10	3087.50	-2.8	5.0	5.7	331	6,267	35	Yes	No[b]
0570252	SOUTHDOWN, INC	SOUTHDOWN, INC.	359.30	3087.10	-3.6	4.6	5.8	322	53	37	Yes	No[b]
0570031	HOLNAM INC	HOLNAM INC	359.50	3087.30	-3.4	4.8	5.9	325	72	38	Yes	No[b]
0570094	IMC-AGRICO CO. (BIG BEND)	IMC-AGRICO CO. (BIG	362.10	3076.10	-0.8	-6.4	6.4	187	76	49	Yes	No[b]
0570033	CSX TRANSPORTATION, INC.	CSX TRANSPORTATION	362.39	3088.99	-0.5	6.5	6.5	356	242	50	Yes	No[b]
0570029	NITRAM, INC.	NITRAM, INC	362.50	3089.00	-0.4	6.5	6.5	356	222	50	Yes	No[b]
PRPSD	BIG BEND TRANSFER CO L.L.C	BIG BEND	361.90	3075.00	-1.0	-7.5	7.6	188	383	71	Yes	No[b]
0571242	NATIONAL GYPSUM COMPANY	APOLLO BEACH PLANT	363.30	3075.60	0.4	-6.9	6.9	177	99	58	Yes	Yes
0570014	EASTERN ASSOCIATION TERMINAL ROCK PORT	EASTERN ASSOCIATIO	360.20	3088.90	-2.7	6.4	6.9	337	266	59	Yes	No[b]
0571100	CHEMICAL LIME COMPANY OF ALABAMA INC	CHEMICAL LIME COMP	358.20	3088.30	-4.7	5.8	7.5	321	67	69	No	No[b]
0570039	TAMPA ELECTRIC COMPANY	BIG BEND STATION	361.90	3075.00	-1.0	-7.5	7.6	188	7,586	71	Yes	Yes
0570018	LAFARGE CORP.	LAFARGE CORP	357.70	3090.60	-5.2	8.1	9.6	327	323	113	Yes	No[b]
0570038	TAMPA ELECTRIC COMPANY	HOOKERS POINT STATI	358.00	3091.00	-4.9	8.5	9.8	330	1,536	116	Yes	No[b]
0570127	CITY OF TAMPA	MCKAY BAY REFUSE-T	360.20	3092.21	-2.7	9.7	10.1	344	172	122	Yes	Yes
0570025	TRADEMARK NITROGEN CORP	TRADEMARK NITROGE	367.30	3092.60	4.4	10.1	11.0	24	1,463	140	Yes	No[b]
0570261	HILLSBOROUGH CTY RESOURCE RECOVERY FAC.	HILLSBOROUGH CTY.	368.20	3092.70	5.3	10.2	11.5	27	92	150	No	No
0570251	CONAGRA	CONAGRA	357.00	3092.50	-5.9	10.0	11.6	329	100	152	No	No
0570028	NATIONAL GYPSUM COMPANY	NATIONAL GYPSUM C	348.83	3082.69	-14.1	0.2	14.1	271	189	201	No	No
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	JOHNSON CONTROLS	359.90	3102.50	-3.0	20.0	20.2	351	127	324	No	No
1030011	FLORIDA POWER CORPORATION	FPC-BARTOW PLANT	342.40	3082.60	-20.5	0.1	20.5	270	2,525	330	Yes	No[b]
1030013	FLORIDA POWER CORPORATION	BAYBORO POWER PLA	338.80	3071.30	-24.1	-11.2	26.6	245	195	452	No	No
1030117	PINELLAS CO. BOARD OF CO COMMISSIONERS	PINELLAS CO. RESOUR	335.20	3084.10	-27.7	1.6	27.7	273	329	475	No	No
	FLORIDA POWER & LIGHT	MANATEE POWER STA	367.20	3054.10	4.3	-28.4	28.7	171	40,765	494	Yes	Yes
1030128	WEST COAST U-CART CONCRETE LIMITED	WEST COAST U-CART C	332.60	3080.10	-30.3	-2.4	30.4	265	57	528	No	No
	IMC - FORT LONESOME	IMC-AGRICO CO	389.60	3067.90	26.7	-14.6	30.4	119	76	529	No	No
1030012	FLORIDA POWER CORPORATION	HIGGINS PLANT	336.50	3098.40	-26.4	15.9	30.8	301	1,260	536	Yes	Yes
0570075	CORONET INDUSTRIES, INC.	CORONET INDUSTRIES	393.80	3096.30	30.9	13.8	33.8	66	570	597	No	No
1050059	IMC-AGRICO CO (NEW WALES)	IMC-AGRICO CO. (NEW	396.70	3079.40	33.8	-3.1	33.9	95	1,500	599	Yes	Yes
1050057	IMC-AGRICO CO.(NICHOLS)	IMC-AGRICO CO (NIC	398.40	3084.20	35.5	1.7	35.5	87	1,514	631	Yes	Yes
1050047	AGRIFOS, L.L.C	AGRIFOS, L.L.C - NICH	398.70	3085.30	35.8	2.8	35.9	86	557	638	No	No
1050034	IMC-AGRICO CO (CFMO)	CENTRAL FLORIDA MI	398.20	3075.70	35.3	-6.8	35.9	101	1,969	639	Yes	Yes
1030026	OVERSTREET PAVING COMPANY	OVERSTREET PAVING	326.20	3086.90	-36.7	4.4	37.0	277	126	659	No	No
1050200	J. H. HULL, INC.	J H HULL, INC	399.10	3070.60	36.2	-11.9	38.1	108	893	682	Yes	Yes
1030244	A-AMERICAN RENT ALL	A-AMERICAN RENT AL	324.10	3079.20	-38.8	-3.3	38.9	265	2,190	699	Yes	Yes
1050056	IMC-AGRICO CO.(PRAIRIE)	IMC-AGRICO CO. (PRAI	402.90	3087.00	40.0	4.5	40.3	84	568	725	No	No
1050015	FLORIDA JUICE PARTNERS, LTD	FLORIDA JUICE PARTN	399.00	3101.80	36.1	19.3	40.9	62	140	739	No	No
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	CF INDUSTRIES, INC., P	388.00	3116.00	25.1	33.5	41.9	37	957	757	Yes	Yes
1050233	TAMPA ELECTRIC COMPANY	POLK POWER STATION	402.45	3067.35	39.6	-15.2	42.4	111	222	767	No	No
1050048	MULBERRY PHOSPHATES, INC.	MULBERRY PHOSPHAT	406.80	3085.10	43.9	2.6	44.0	87	131	800	No	No
	TROPICANA	BRADENTON	346.80	3040.90	-16.1	-41.6	44.6	201	904	812	Yes	Yes

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Table 6-9. Screening Analysis for PM Emitting Facilities (>50 TPY) within 100 km of Cargill - Riverview

Facility ID	Facility Name	Site Description/Location	Source Location East (km)	Source Location North (km)	Relative Location[a] X (km)	Relative Location[a] Y (km)	Relative Location[a] Distance (km)	Relative Location[a] Direction (deg.)	PM Emissions Rate (TPY)	Q Emissions Threshold [(Dist - SIA) X 4]	ded in Modeling Anal AAQS	ded in Modeling Anal PSD Class I
1050052	CF INDUSTRIES, INC	BARTOW PHOSPHATE	408 30	3082.50	45 4	0.0	45.4	90	567	828	No	No
1050055	IMC-AGRICO CO.(SO. PIERCE)	IMC-AGRICO CO. (SOU	407.50	3071.40	44 6	-11.1	46.0	104	777	839	No	No
1050009	FLORIDA TILE INDUSTRIES, INC.	FLORIDA TILE INDUST	405 40	3102.40	42 5	19.9	46.9	65	69	859	No	No
1050046	CARGILL FERTILIZER, INC.	CARGILL FERTILIZER -	409 80	3086 60	46 9	4.1	47.1	85	409	862	No	No
1050053	FARMLAND HYDRO, L P	FARMLAND - GREEN B	410 30	3079 70	47 4	-2.8	47.5	93	410	870	No	No
0490015	HARDEE POWER PARTNERS,LTD	HARDEE POWER STATI	404 80	3057.40	41 9	-25 1	48.8	121	182	897	No	No
1050003	LAKELAND ELECTRIC & WATER UTILITIES	CHARLES LARSEN ME	408 90	3102.50	46 0	20 0	50 2	67	631	923	No	No
1050050	U S AGRI-CHEMICALS CORP.	U S AGRI-CHEMICALS -	413 20	3086.30	50 3	3.8	50.4	86	268	929	No	No
1050004	LAKELAND ELECTRIC & WATER UTILITIES	C.D MCINTOSH, JR. PO	409 00	3106.20	46.1	23.7	51.8	63	3,924	957	Yes	Yes
1050034	IMC-AGRICO CO. -NORALYN MINE	IMC-AGRICO CO. -NO	414 70	3080.30	51 8	-2.2	51.8	92	973	957	Yes	Yes
1050234	FLORIDA POWER CORPORATION	HINES ENERGY COMPL	414 34	3073.91	51.4	-8.6	52.2	99	91	963	No	No
1010017	FLORIDA POWER CORP	ANCLOTE POWER PLA	324 40	3118 70	-38.5	36 2	52.8	313	3,471	977	Yes	Yes
1050051	U.S. AGRI-CHEMICALS CORPORATION	U S. AGRI-CHEMICALS -	416 00	3069.00	53 1	-13.5	54.8	104	137	1,016	No	No
1050223	FLORIDA POWER CORPORATION	TIGER BAY COGENERA	416 30	3069.30	53 4	-13.2	55.0	104	70	1,020	No	No

[a] The proposed Cargill Riverview facility is located at UTM Coordinates: East 362.90 (km), North 3082 50 (km)

[b] Facility does not have any PSD increment consuming or expanding sources

The significant impact area (SIA) determined by modeling equals 4 (km)

Table 6-10. Stack Parameters and Baseline (1974) PM_{10} and SO_2 Emission Rates for Cargill Riverview

Source	ISC ID No.	Short Term Particulate Matter Emissions lb/hr	Short Term Particulate Matter Emissions g/sec	Annual Particulate Matter Emissions TPY	Annual Particulate Matter Emissions g/sec	Short Term SO_2 Emissions lb/hr	Short Term SO_2 Emissions g/sec	Annual SO_2 Emissions TPY	Annual SO_2 Emissions g/sec	Stack/Vent Release Height ft	Stack/Vent Release Height m	Stack/Vent Diameter ft	Stack/Vent Diameter m	Design Gas Flow Rate (acfm)	Gas Exit Temperature F	Gas Exit Temperature K	Velocity ft/sec	Velocity m/sec	Location[a] X Coordinate ft	Location[a] X Coordinate m	Location[a] Y Coordinate ft	Location[a] Y Coordinate m
Ammonia Plant	AMMPLTB	18.40	2.318	74.60	2.146	32.80	4.133	132.80	3.820	60	18.29	8.3	2.53	73,600	600	589	22.73	6.93	2313	-705	-1008	307
Sodium Silicofluoride/Sodium Fluoride Plant	SSFSFPB	6.06	0.764	9.47	0.272	0.20	0.025	0.59	0.017	28	8.53	2.5	0.76	3,430	95	308	11.65	3.55	-1352	-412	55	17
No. 2 and No. 3 Rock Silo Bag Filter	NO23RSB	0.90	0.113	3.94	0.113	–	–	–	–	93	28.35	1.1	0.34	2,780	91	306	48.75	14.86	1352	-412	55	17
Nos. 6, 7 and 8 Rock Mills	NO678RB	8.60	1.084	22.80	0.656	–	–	–	–	95	28.96	2.0	0.61	10,460	91	306	55.49	16.91	1352	-412	55	17
No. 10 KVS Mill	10KVSMB	4.40	0.554	17.00	0.489	0.02	0.003	0.11	0.003	87	26.52	1.7	0.52	8,150	118	321	59.84	18.24	-870	-265	684	209
No. 11 KVS Mill	11KVSMB	6.90	0.869	12.20	0.351	–	–	–	–	70	21.34	1.6	0.49	7,670	126	325	63.58	19.38	-870	-265	684	209
No. 12 KVS Mill	12KVSMB	2.90	0.365	5.88	0.169	0.04	0.005	0.18	0.005	71	21.64	1.6	0.49	8,260	135	330	68.47	20.87	-870	-265	684	209
No. 2 Air Slide North Bag Filter	2ASNBFB	1.21	0.152	2.33	0.067	–	–	–	–	85	25.91	1.0	0.30	2,250	97	309	47.75	14.55	-1076	-328	1158	353
No. 2 Air Slide South Bag Filter	2ASSBFB	0.40	0.050	1.13	0.033	–	–	–	–	96	29.26	0.9	0.27	2,780	115	319	72.83	22.20	-1076	-328	1267	386
No. 3 Air Slide North Bag Filter	3ASNBFB	0.21	0.026	0.60	0.017	–	–	–	–	82	24.99	1.2	0.37	1,090	113	318	16.06	4.90	-1076	328	1158	353
No. 3 Air Slide Center Bag Filter	3ASCBFB	0.96	0.121	1.95	0.056	–	–	–	–	115	35.05	1.2	0.37	1,750	118	321	25.79	7.86	1076	328	1158	353
No. 3 Air Slide South Bag Filter	3ASSBFB	0.84	0.106	3.16	0.091	–	–	–	–	100	30.48	1.2	0.37	1,120	117	320	16.50	5.03	-870	-265	684	209
No. 3 Air Slide Bin Bag Filter	3ASBBFB	1.10	0.139	3.57	0.103	–	–	–	–	108	32.92	1.2	0.37	1,580	122	323	23.28	7.10	-1076	328	1267	386
No. 2 Phosphoric Acid System	PASNO2B	14.80	1.865	30.30	0.872	–	–	–	–	110	33.53	4.0	1.22	32,690	145	336	43.34	13.21	1076	328	1158	353
No. 3 Phosphoric Acid System	PASNO3B	9.20	1.159	20.20	0.581	–	–	–	–	93	28.35	4.0	1.22	17,750	118	321	23.54	7.18	-1076	-328	1267	386
No. 1 Horizontal Filter Scrubber	1HZFSB	6.50	0.819	25.30	0.728	–	–	–	–	59	17.98	4.8	1.45	37,750	86	303	35.50	10.82	-1330	-405	1112	339
No. 2 Horizontal Filter Scrubber	2HZFSB	10.40	1.310	24.50	0.705	–	–	–	–	51	15.54	4.0	1.22	39,100	93	307	51.86	15.81	1330	-405	1112	339
No. 2 Horizontal Filter Vacuum System	2HZFVSB	0.01	0.001	0.04	0.001	–	–	–	–	4.5	1.37	1.1	0.34	960	153	340	16.84	5.13	-1330	-405	1112	339
No. 3 Horizontal Filter Vacuum System	3HZFVSB	0.67	0.084	1.55	0.045	–	–	–	–	4.5	1.37	1.5	0.46	1,730	126	325	16.32	4.97	-1330	-405	1112	339
No. 7 Oil Fired Concentrator	7OFCONB	12.50	1.575	28.90	0.831	41.40	5.216	99.20	2.854	78	23.77	6.0	1.83	29,150	165	347	17.18	5.24	1330	-405	1112	339
No. 8 Oil Fired Concentrator	8OFCONB	16.80	2.117	32.90	0.946	39.70	5.002	92.00	2.647	78	23.77	6.0	1.83	28,400	159	344	16.74	5.10	-1330	-405	1112	339
GTSP Bag Filter	GTSPBFB	0.49	0.062	1.16	0.033	–	–	–	–	88	26.82	1.3	0.40	2,120	153	340	26.62	8.11	-1855	-565	87	27
GTSP Plant	GTSPAPB	19.10	2.407	62.20	1.789	71.40	8.996	229.60	6.605	126	38.40	8.0	2.44	105,400	129	327	34.95	10.65	1730	527	50	15
No. 5 and No. 9 Mills Bag Filter	RKML59B	12.40	1.562	44.70	1.286	0.01	0.001	0.06	0.002	66	20.12	2.0	0.61	10,990	115	319	58.25	17.75	-1625	-495	485	148
No. 3 Triple Reactor Belt	3TRIPLB	11.50	1.457	11.10	0.319	–	–	–	–	65	19.81	4.0	1.22	36,480	77	298	48.38	14.75	1330	-405	703	214
No. 4 Triple Reactor Belt	4TRIPLB	8.59	1.082	9.45	0.272	–	–	–	–	65	19.81	4.0	1.22	38,340	84	302	50.85	15.50	-1330	-405	703	214
No. 3 Continuous Triple Dryer	3CONTDB	18.20	2.293	25.00	0.719	22.80	2.873	32.90	0.946	68	20.73	3.5	1.07	26,440	115	319	45.80	13.96	-1330	-405	703	214
No. 4 Continuous Triple Dryer	4CONTDB	11.60	1.447	15.90	0.457	23.20	2.923	34.80	1.001	68	20.73	3.5	1.07	35,700	134	330	61.84	18.85	1330	-405	703	214
Nos. 2 & 4 Sizing Units	24SIZUB	9.68	1.220	8.14	0.234	–	–	–	–	74	22.56	4.0	1.22	22,420	73	296	29.74	9.06	-1330	-405	703	214
Normal Superphosphate	NORMSPB	2.32	0.292	0.97	0.028	–	–	–	–	73	22.25	2.5	0.76	15,630	104	313	53.07	16.18	1330	-405	703	214
No. 1 Ammonium Phosphate Plant	1AMMPPB	11.70	1.474	37.30	1.073	–	–	–	–	90	27.43	4.0	1.22	38,640	141	334	51.25	15.62	-1776	-541	284	87
No. 2 Ammonium Phosphate Plant	2AMMPPB	16.10	2.029	46.40	1.335	–	–	–	–	90	27.43	3.5	1.07	37,240	132	329	64.51	19.66	1776	541	284	87
No. 3 Ammonium Phosphate Plant	3AMMPPB	12.90	1.625	54.20	1.559	–	–	–	–	90	27.43	3.5	1.07	36,340	144	335	62.95	19.19	1740	-530	366	111
No. 4 Ammonium Phosphate Plant	4AMMPPB	18.90	2.381	26.90	0.774	–	–	–	–	90	27.43	3.5	1.07	34,640	149	338	60.01	18.29	-1740	-530	366	111
North Ammonium Phosphate Cooler	NAMMPCB	64.80	8.165	187.60	5.397	–	–	–	–	55	16.76	4.3	1.31	53,050	144	335	60.88	18.56	1776	541	284	87
South Ammonium Phosphate Cooler	SAMMPCB	67.30	8.480	137.40	3.953	–	–	–	–	55	16.76	4.3	1.31	60,730	125	325	69.70	21.24	-1740	-530	366	111
Molten Sulfur Handling - Pits 7 & 8	MSPTSB	0.88	0.111	[b]	[b]	0.08	0.010	[b]	[b]	8	2.44 [c]	–	–	–	49	14.89 [c]	3.72	1.13 [c]	78	24	-238	-73
Molten Sulfur Handling - Pits 4,5, & 6	PTS456B	1.31	0.165 [d]	[e]	[e]	0.13	0.017 [d]	[e]	[e]	8	2.44 [c]	–	–	–	49	14.89 [c]	3.72	1.13 [c]	340	-104	-300	-91
Molten Sulfur Handling - Tanks	MSTKTLB	2.65	0.334	[f]	[f]	2.12	0.267	[f]	[f]	36	10.97 [g]	–	–	–	29	8.86 [g]	16.74	5.10 [g]	-650	198	390	-116
No. 4 Sulfuric Acid Plant	NO4SAPB	–	–	–	–	282.0	35.531	1,094.0	31.471	80	24.38	4.7	1.43	21,260	194	363	20.42	6.23	-320	98	-180	-55
No. 5 Sulfuric Acid Plant	NO5SAPB	–	–	–	–	480.0	60.479	1,951.0	56.123	74	22.56	5.3	1.62	33,520	189	360	25.32	7.72	-420	-128	-230	-70
No. 6 Sulfuric Acid Plant	NO6SAPB	–	–	–	–	688.0	86.687	2,602.0	74.850	72	21.95	5.9	1.80	51,290	189	360	31.27	9.53	-320	98	-420	128
No. 7 Sulfuric Acid Plant	NO7SAPB	–	–	–	–	1,503.0	189.375	6,102.0	175.533	92	28.04	9.4	2.87	92,830	183	357	22.29	6.80	-60	-18	-460	-140
No. 8 Sulfuric Acid Plant	NO8SAPB	–	–	–	–	1,679.0	211.551	6,462.0	185.889	96	29.26	10.7	3.26	130,420	174	352	24.17	7.37	340	104	-90	-27
Railcar Unloading	RCULLB	1.60	0.202	4.36	0.125	–	–	–	–	15.0	4.57 [h]	–	–	–	14.0	4.25 [h]	13.95	4.25 [h]	-850	259	1350	-411
Vessel/Ship Loading	VESLLB	1.20	0.151	3.27	0.094	–	–	–	–	15.0	4.57 [h]	–	–	–	14.0	4.25 [h]	13.95	4.25 [h]	-890	271	-1520	-463

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

[b] No information available for annual emissions; assumed insignificant.

[c,g,h] Volume source dimensions based on methods presented in accordance with ISCST3 User's Manual.

	Source	Physical Dimensions (ft) Height (H)	Physical Dimensions (ft) Width (W)	Model Dimensions (ft) Height (H or H/2)	Model Dimensions (ft) Sigma Y (W/4.3)	Model Dimensions (ft) Sigma Z (H/2.15)
[c]	Molten Sulfur Handling - Pits 7 & 8	8.0	210	8.0	48.8	3.72
[c]	Molten Sulfur Handling - Pits 4,5, & 6	8.0	210	8.0	48.8	3.72
[g]	Molten Sulfur Handling - Tanks	36.0	125	36.0	29	16.7
[h]	Railcar Unloading	30.0	60	15.0	14.0	14.0
[h]	Vessel/Ship Loading	30.0	60	15.0	14.0	14.0

[d] Emissions for molten sulfur pits 4, 5, and 6 based on current emission rates for pit 7 multiplied by 3.

[e] No information available for annual emissions; assumed insignificant.

[f] No information available for annual emissions; assumed insignificant.

Source: 1974 AOR Submitted by Gardinier, Inc. to the Hillsborough County Environmental Protection Commission (September 24, 1975).

Table 6-11. Cargill Property Boundary Receptors Used in Modeling Analysis

Coordinates [a]		Coordinates [a]		Coordinates [a]	
X (m)	Y (m)	X (m)	Y (m)	X (m)	Y (m)
-277	1732	-1265	-822	-103	1426
-377	1732	-1201	-883	-153	1513
-477	1732	-1104	-858	-202	1600
-577	1732	-1007	-833	-252	1687
-677	1732	-910	-808		
-777	1732	-814	-783		
-877	1732	-717	-759		
-977	1732	-620	-734		
-1077	1732	-523	-709		
-1177	1732	-434	-673		
-1270	1725	-375	-592		
-1266	1625	-317	-511		
-1262	1525	-267	-553		
-1258	1425	-220	-465		
-1255	1325	-206	-382		
-1251	1225	-207	-283		
-1247	1125	-149	-253		
-1243	1025	-149	-353		
-1239	926	-78	-371		
-1235	826	20	-352		
-1232	726	101	-296		
-1228	626	174	-227		
-1224	526	258	-179		
-1213	427	354	-151		
-1180	333	450	-124		
-1147	238	469	-51		
-1114	144	445	46		
-1082	49	422	143		
-1049	-45	399	241		
-1016	-140	375	338		
-983	-234	352	435		
-951	-329	328	532		
-1032	-314	305	630		
-1128	-285	281	727		
-1224	-257	243	818		
-1297	-303	194	905		
-1361	-380	144	992		
-1404	-464	95	1079		
-1404	-564	45	1166		
-1376	-656	-4	1253		
-1321	-739	-54	1340		

[a] Distances are relative to the No. 9 Sulfuric Acid Plant stack location.
Note: m = meter

Table 6-12. Chassahowitzka National Wilderness Area Receptors Used in the Modeling Analysis

Class I Receptor	UTM Coordinates	
	East (km)	North (km)
1	340.3	3,165.70
2	340.3	3,167.70
3	340.3	3,169.80
4	340.7	3,171.90
5	342.0	3,174.00
6	343.0	3,176.20
7	343.7	3,178.30
8	342.4	3,180.60
9	341.1	3,183.40
10	339.0	3,183.40
11	336.5	3,183.40
12	334.0	3,183.40
13	331.5	3,183.40

Table 6-13. Building Dimensions Used in the Modeling Analysis

Structure	Height (ft)	Height (m)	Length (ft)	Length (m)	Width (ft)	Width (m)
Phosphoric Acid Plant						
South Building	100	30.48	95	28.96	60	18.29
North Building	100	30.48	90	27.43	80	24.38
Dry Rock Processing Plant						
Nos. 5/9 Mills Building	35	10.67	75	12.19	47	9.14
Animal Feed Ingredient Plant						
AFI Building	173	52.73	120	36.58	70	21.34
AFI Loadout Silos	100	30.48	274	83.52	37	11.28
Material Storage Area						
Building No. 6	74	22.56	790	240.79	120	36.58
Building No. 5	54.7	16.67	790	240.79	110	33.53
Building No. 4	54.7	16.67	830	252.98	100	30.48
Building No. 2 (Bottom)	62	18.90	830	252.98	100	30.48
Building No. 2 (Top)	70	21.34	410	124.97	120	36.58
GTSP Building	127	38.71	150	45.72	90	27.43
DAP 5 Building Tier A	86.5	26.37	160	48.77	50	15.24
DAP 5 Building Tier B	126.5	38.56	50	15.24	50	15.24
Map 3/4 Building	90	27.43	100	30.48	90	27.43
Docks						
West Building	30	9.14	330	100.58	85	25.91
East Building Tier A	30	9.14	370	112.78	30	9.14
East Building Tier B	45	13.72	30	9.14	30	9.14
Belt 8 to 9 Building	75	22.86	59	17.98	28	8.53
Sulfuric Acid Plant						
Auxiliary Boiler Building	18	5.49	80	24.38	50	15.24

Table 6-14. Maximum Predicted Significant Impacts for the Proposed Project, Cargill Riverview

Pollutant/ Averaging Time	Concentration[a] (ug/m3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)	EPA Significant Impact Level (ug/m^3)
SO_2					
Annual	2.3	251	1,006	91123124	
	2.3	251	1,006	91123124	
	2.5	90	1,000	93123124	1
	2.1	70	1,000	94123124	
	2.5	80	1,000	95123124	
HIGH 24-Hour	57.2	253	1,079	91010424	
	69.7	251	1,006	92101324	
	57.2	251	1,006	93031924	5
	48.8	253	1,079	94012424	
	50.8	220	960	95121024	
HIGH 3-Hour	186	250	1,000	91092706	
	223	250	1,000	92121303	
	197	250	1,000	93121806	25
	198	257	1,011	94012306	
	215	250	1,000	95061003	
PM_{10}					
Annual	7.4	212	601	91123124	
	9.0	205	515	92123124	
	9.3	212	601	93123124	1
	8 9	212	601	94123124	
	9.9	212	601	95123124	
HIGH 24-Hour	6 8	250	2,000	91102224	
	7.0	250	2,000	92022124	
	6.7	230	2,000	93092924	5
	5.8	240	2,000	94021724	
	6.6	200	2,000	95121024	
NO_x[c]					
Annual	1.0	257	1,011	91123124	
	0.9	257	1,011	92123124	
	0.8	251	1,006	93123124	1
	0.8	257	1,011	94123124	
	0.7	257	1,011	95123124	

[a] Based on 5-year meteorological record, Tampa (surface)/ Ruskin (upper air), 1991 to1995

[b] Relative to No. 9 Sulfuric Acid Plant stack.

[c] Refined values.

Note: YYMMDDHH = Year, Month, Day, Hour Enging
High - Highest Concentration

Table 6-15. Maximum Predicted Pollutant Impacts After Completion of the Proposed Project
AAQS Screening Analysis, Cargill Riverview

Pollutant/ Averaging Time	Concentration[a] (ug/m3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
SO_2				
Annual	39.4	90	900	91123124
	42.2	90	1,000	92123124
	44.6	90	1,000	93123124
	41.3	70	900	94123124
	44.0	80	900	95123124
HSH 24-Hour	180.0	150	8,000	91051424
	185.4	100	900	92073024
	210.1	10	6,000	93071724
	172.0	70	600	94090324
	172.0	80	700	95070124
HSH 3-Hour				
	795.8	150	6,000	91081112
	702.9	180	12,000	92070412
	914.9	220	5,000	93041512
	742.6	8.3	1,002	94032412
	767.2	8.3	1,002	95062512
PM10				
Annual	13.6	212	601	91123124
	15.7	205	515	92123124
	16.5	212	601	93123124
	15.8	212	601	94123124
	17.8	212	601	95123124
H6H 24-Hour	60.0	247	601	91121524
	63.9	247	601	92061924
	69.4	247	601	93121224
	73.8	247	601	93112524
	76.3	247	601	92101224

[a] Based on 5-year meteorological record, Tampa (surface)/ Ruskin (upper air), 1991 to1995

[b] Relative to No. 9 sulfuric acid plant stack.

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest
H6H = Highest, Sixth-Highest

Table 6-16. Maximum Predicted Concentrations for All Sources Compared with AAQS - Refined Analysis

Pollutant/ Averaging Time	Concentration (µg/m³) [a]			Receptor Location [b]		Time Period	Florida AAQS
	Total	Modeled Source	Background	Direction (degree)	Distance (m)	(YYMMDDHH)	(µg/m³)
SO_2							
Annual	52.6	44.6	8	90	1,000	93123124	60
HSH 24-Hour	213 [c]	182	31	151	7,800	91051424	260
	263 [d]	232	31	0	5,700	93071724	
HSH 3-Hour	1,065 [c]	944	121	223	4,800	93041512	1,300
PM_{10}							
Annual	40.8	17.8	23	212	601	95123124	50
H6H 24-Hour	115.3	76.3	39	247	601	92101224	150

[a] Based on 5-year meteorological record, Tampa (surface)/ Ruskin (upper air), 1991 to1995

[b] Relative to No. 9 sulfuric acid plant stack.

[c] Refined values

[d] Cargill Riverview sources contributed 0.0 µg/m³ to this exceedance of the AAQS standard.

Note: YYMMDDHH = Year, Month, Day, Hour Ending

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Table 6-17. Maximum Predicted Pollutant Impacts After Completion of the Proposed Project PSD Class II Screening Analysis. Cargill Riverview

Pollutant/ Averaging Time	Concentration [a] (ug/m^3)		Receptor Location [b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
SO_2					
Annual	6.2		160	7,500	91123124
	6 0		170	7,000	92123124
	8.0		160	7,500	93123124
	5.6		160	6,500	94123124
	5.9		350	8,000	95123124
HSH 24-Hour	37.6		320	11,000	91040424
	33.8		320	11,000	92091524
	37 1		211	294	93021324
	32.0		320	11,000	94010124
	34.6		100	11,000	95110624
HSH 3-Hour	112.7		282	1,172	91120721
	114.5		90	12,000	92122324
	113.5		280	1,200	93022003
	116 9		280	1,200	94082103
	122.2		90	12,000	95011203
PM_{10}					
Annual	0 43		170	4,000	91123124
	0.16		20	4,000	92123124
	0.24		170	4,000	93123124
	0.52		100	4,000	94123124
	0 45		100	4,000	95123124
HSH 24-Hour	8 5	c	210 6	294	91022424
	10.4	c	210.6	294	92121324
	15 4	c	210.6	294	93110824
	9.8	c	210 6	294	94032324
	13.1	c	210.6	294	95111924

[a] Based on 5-year meteorological record. Tampa (surface)/ Ruskin (upper air). 1991 to1995

[b] Relative to No. 9 sulfuric acid plant stack.

[c] Refined values

Note: YYMMDDHH = Year. Month. Day. Hour Ending
High = Highest Concentration

Table 6-18. Maximum Predicted Concentrations for All Sources Compared with PSD Class II Increment - Refined Analysis

Pollutant/ Averaging Time	Concentration (ug/m^3)	Receptor Location [b] Direction (degree)	Receptor Location [b] Distance (m)	Time Period (YYMMDDHH)	PSD Increment (ug/m3)
SO_2					
Annual	8 0	160	7,500	93123124	20
HSH 24-Hour	37 6	320	11,000	91040424	91
HSH 3-Hour	122.2	90	12,000	95011203	512
PM_{10}					
Annual	0.52	100	4,000	94123124	17
H2H 24-Hour	15 4 [c]	210 6	294	93110824	30

[a] Based on 5-year meteorological record. Tampa (surface)/ Ruskin (upper air), 1991 to1995

[b] Relative to No. 9 Sulfuric Acid Plant stack.

[c] Refined values

Note: YYMMDDHH = Year, Month, Day, Hour Ending

Table 6-19. Summary of Maximum Pollutant Concentrations Predicted for the Project Only Compared to the EPA Class I Significant Impact Levels and PSD Class I Increments

Pollutant	Averaging Time	Maximum Concentration[a] ($\mu g/m^3$)	EPA Class I Significant Impact Levels ($\mu g/m^3$)	PSD Class I Increments ($\mu g/m^3$)
SO_2	Annual	0.007	0.1	2
	24-Hour	0.179	0.2	5
	3-Hour	1.03	1.0	25
PM_{10}	Annual	0.002	0.2	4
	24-Hour	0.03	0.3	8
NO_x	Annual	0.0004	0.1	2.5

[a] Highest Predicted with CALPUFF model and CALMET Tampa Bay Domain, 1990

Table 6-20. Summary of Maximum 3-Hour and 24-Hour Average SO_2 Concentrations Predicted for PSD Sources at the Chassahowitzka NWA Compared to the Allowable PSD Class I Increments

Averaging Time	Maximum Concentration[a] (μg/m³)	Project's Contribution (μg/m³)	Receptor Location (m) UTM East	UTM North	Period Ending (Julian day/ hour/year)	PSD Class I Increments (μg/m³)	Significant Impact Levels (μg/m³)
24-Hour	5.42	0.0009	334000	3183400	347/23/90	5	0.2
3-Hour	40.0	<0	336500	3183400	347/17/90	25	1.0
	35.0	0.0004	341100	3183400	347/14/90		
	35.0	0.0067	339000	3183400	239/14/90		
	32.4	<0	334000	3183400	347/17/90		
	27.4	<0	334000	3183400	239/14/90		
	27.2	<0	339000	3183400	347/17/90		
	27.0	0.0004	336500	3183400	347/14/90		

[a] Concentrations are highest, second-highest, and highest, third-highest predicted with CALPUFF model and CALMET Tampa Bay Domain, 1990

Table 6-21. Predicted Fluoride Impacts due to the Proposed Project, Cargill Riverview

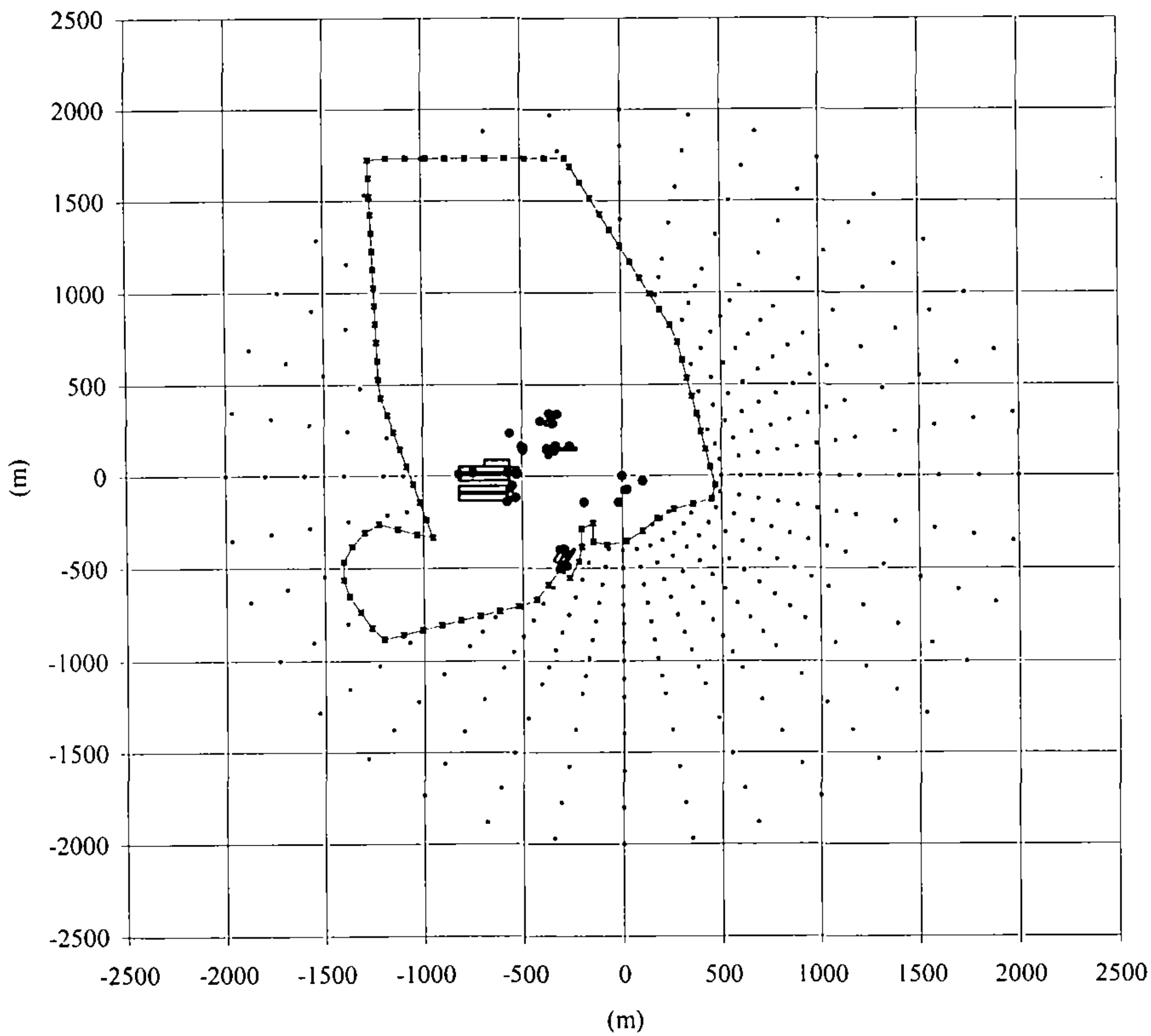
Averaging Time	Concentration[a] (µg/m³)	Receptor Location[b] Direction (degree)	Distance (m)	Time Period (YYMMDDHH)
Fluorides				
Annual	1.9	268	1050	91123124
	1.7	262	1026	92123124
	1.8	262	1026	93123124
	1.9	262	1026	94123124
	1.9	262	1026	95123124
HIGH 24-Hour	6.9	268	1050	91102224
	6.7	262	1026	92121324
	7.9	262	1026	93110224
	7.4	262	1026	94090624
	8.4	262	1026	95111824
HIGH 8-Hour	12.8	262	1026	91063008
	11.0	270	1100	92103108
	12.7	268	1050	93122808
	12.1	268	1050	94072124
	12.9	268	1050	95110608
HIGH 3-Hour	15.7	268	1050	91101509
	17.5	268	1050	92013003
	17.6	268	1050	93100221
	18.1	268	1050	94072121
	14.8	268	1050	95121403
HIGH 1-Hour	27.1	268	1050	91070606
	24.6	268	1050	92071307
	26.1	251	1006	93042906
	26.6	262	1026	94092715
	39.2	273	1083	95071207

[a] Based on 5-year meteorological record, Tampa (surface)/ Ruskin (upper air), 1991 to1995

[b] Relative to No. 9 Sulfuric Acid Plant stack.

Note: YYMMDDHH = Year, Month, Day, Hour Ending
High = Highest Concentration

Figure 6-1. Boundary and Near-Field Receptors, Future Cargill Sources and Building Locations Used in the Air Modeling Analysis



7.0 ADDITIONAL IMPACT ANALYSIS

7.1 INTRODUCTION

Cargill is proposing to modify its existing facility in Riverview, Florida. The facility is subject to the PSD new source review requirements for SO_2, NO_x, SAM, PM_{10}, and F. The additional impact analysis and the Class I area analysis addresses these pollutants.

The analysis addresses the potential impacts on vegetation, soils, and wildlife of the surrounding area and the nearest Class I area due to Cargill's proposed modification. The nearest Class I area is the CNWA, located approximately 86 km north-northwest of the Cargill Riverview plant. In addition, potential impacts upon visibility resulting from the proposal modification are assessed.

The analysis will demonstrate that the increase in impacts due to the proposed increase in emissions is extremely low. Regardless of the existing conditions in the vicinity of the site or in the Class I areas, the proposed project will not cause any significant adverse effects due to the predicted low impacts upon these areas.

7.2 SOIL, VEGETATION, AND AQRV ANALYSIS METHODOLOGY

In the foregoing analysis, the maximum air quality impacts predicted to occur in the vicinity of the Cargill plant and in the Class I area due to the increase in emissions are used. The analysis involved predicting worst-case maximum short- and long-term concentrations of pollutants in the vicinity of the plant and in the Class I areas and comparing the maximum predicted concentrations to lowest observed effect levels for AQRVs or analogous organisms. In conducting the assessment, several assumptions were made as to how pollutants interact with the different matrices, i.e., vegetation, soils, wildlife, and aquatic environment.

A screening approach was used to evaluate potential effects by comparison of the maximum predicted ambient concentrations of air pollutants of concern with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the vicinity of the plant and the Class I area. It was recognized that effects threshold information is not available for all species found in the CNWA, although studies have been performed on a few of the common species and on other similar species which can be used as models.

7.3 IMPACTS TO SOILS AND VEGETATION IN THE VICINITY OF THE CARGILL PLANT

Because the project's impacts on the local air quality are predicted to be less than the significant impact levels for PSD Class II, the project's impacts on soils, vegetation, and wildlife in the project's vicinity are also not expected to be significant. According to the modeling results presented in Section 6.0, the maximum air quality impacts due to the Cargill facility emitting at maximum rate are predicted to be below Class II increments and AAQS for all pollutants, except the 24-hour SO2 AAQS. For the 24-hour SO2 impacts, the Cargill project does not significantly contribute to the exceedance of the AAQS. In addition, no visibility impairment in the vicinity of Cargill is expected since no new emission sources are proposed for this project, other than small PM and F emission sources.

7.3.1 IMPACTS TO SOILS

Soils in the vicinity of the Cargill site consist primarily of tidal lands and poorly drained sands with organic pans. The tidal lands, found along the coast between the tidal swamps and the flatwoods, consist of mucky fine sand to dark-gray fine sand overlying gray fine sand, mixed with broken and whole shells. The poorly drained sands are strongly acidic, requiring liming for agricultural uses. Many of the soils in the region and a large portion of the site have been disturbed and altered by industrial activities.

Since both the underlying substrate and sea spray from the nearby Hillsborough bay are neutral to alkaline, any acidifying effects of NO_x, SO_2, and SAM deposition on soils in the vicinity of the project would be buffered. In addition, liming practices currently used on soils in the vicinity of Cargill by agricultural interests will effectively mitigate the small effects of any increased NO_x, SO_2, and SAM deposition resulting from emissions from the proposed expansion. The PM/PM_{10} emissions are composed primarily of limestone, which is a naturally occurring substance in the area. The additional PM/PM_{10} concentrations resulting from the proposed modification will not affect soils in the vicinity of the Cargill site.

7.3.2 IMPACTS TO VEGETATION

Cut-over pine flatwoods and mixed forest comprise the natural vegetation in the vicinity of the Cargill site. Mangrove trees and salt-tolerant plants are found near the coast. Winter vegetables and pasture greens are cultivated inland from the facility.

Air pollutants occurring at elevated levels have long been known to potentially cause injury to plants. For SO2, acute injury usually develops within a few hours or days of exposure. Symptoms include marginal, flecked, and/or intercostal necrotic areas which appear water-soaked and dullish green initially. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth and possible tissue necrosis (EPA, 1982). Background levels of sulfur dioxide range from 2.5 to 25 $\mu g/m^3$. Phytotoxic symptoms demonstrated by plants can occur as low as 88 $\mu g/m^3$ (U.S. Department of Health, Education, and Welfare, 1971). However, this occurs with the more primitive plants (i.e., mosses, ferns, lichens).

Many studies have been conducted to determine the effects of high concentration, short-term SO_2 exposure on agronomic and natural community plants. Sensitive plants include ragweed, legumes, blackberry, southern pine, red and black oak, white ash, and sumac. These species can be injured by exposure to 3-hour SO_2 concentrations ranging from 790 to 1,570 $\mu g/m^3$. Intermediate sensitivity plants include maples, locust, sweetgum, cherry, elm, and many crop and garden species. These species can be injured by exposure to 3-hour SO_2 concentrations ranging from 1,570 to 2,100 $\mu g/m^3$. Resistant species (potentially injured at concentrations above 2,100 $\mu g/m^3$ for 3 hours) include white oak, potato, cotton, dogwood, and peach (EPA, 1982). A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 $\mu g/m^3$ SO_2 for 8 hours were not visibly damaged. This supports the levels cited by other researchers on the effects of SO_2 on vegetation. It is important to note that because plants possess metabolisms that can convert SO_2 into cellular constituents, they are capable of recovery when exposed to elevated levels of SO_2 for short periods of time.

The maximum annual and 3-hour SO_2 concentrations predicted within 8 km of the Cargill facility (53 and 1,065 μg/m³, respectively) represent levels that are lower than those known to cause damage to the majority of test species.

The maximum predicted 24-hour SO_2 concentration of 263 μg/m³ due to all sources within the project's significant impact area, is just above the AAQS but should not damage sensitive species. It is important to realize that this maximum concentration represents an assumed worst-case scenario, since the impact is based on a combination of worst-case meteorology and all facilities modeled at their maximum allowable emissions. Plants would be exposed to this concentration for a minimal amount of time, if at all. Based on the SO_2 monitors in the area, the maximum measured HSH 24-hour concentration during 1999-2000 is 157 μ g/m³, or only about 60 percent of the maximum modeled 24-hour concentration. This demonstrates the conservatism of the modeling.

Radish and barley are considered good indicators of SO_2 pollution because of their inherent sensitivities to this gas. When these two plants were exposed to 370 and 310 μg/m³ SO_2 for 8 hours, respectively, visible damage occurred (EPA, 1982). By comparison of these levels, it is apparent that the 24-hour total maximum predicted SO_2 concentration is within a range that could potentially damage SO_2-sensitive plants. Again, it is important to realize that this modeled concentration represents a worst-case scenario. Although the concentrations of SO_2 appear to be within a hazardous range for SO_2-sensitive species in the 6- to 7-km area around the facility, concentrations modeled represent worst-case scenarios, which, in reality, are not likely to occur. Actual measured SO_2 concentrations in the area have been 157 μg/m³, HSH 24-hour. These actual levels pose minimal threats to area vegetation.

The increase in SO_2 levels due to the modification only, presented in Table 6-14, are low (2.5 μg/m³, annual average and 70 μg/m³, 24-hr average) and well below any threshold affect level.

Maximum predicted concentrations of PM_{10} in the vicinity of the project site less than 80 percent of the AAQS. Since the AAQS are designed to protect the public welfare, including effects on soils and vegetation, no detrimental effects on soils or vegetation should occur in this area due to PM emissions.

The sensitivity of plants to fluorides varies widely, from 16 $\mu g/m^3$ of fluoride in sensitive plants to 500 $\mu g/m^3$ of fluoride in tolerant plants for 3-hour exposures. As fluoride accumulates in plants, it causes an inhibition of plant metabolism and chlorosis (yellowing of the leaf). With further increases in accumulation of fluoride, the cells die and necrosis is observed. Leaf tips and margins accumulate the highest concentrations of fluoride and are the sites of initial visible injury. Gaseous fluoride is taken up primarily through the stomata of transpiring plants. There is negligible contribution to leaf fluoride content by uptake through the roots (Applied Sciences Associates, Inc., 1978).

The predicted maximum increase in 3-hour, 8-hour, 24-hour, and annual fluoride concentrations in the vicinity of the Cargill plant due to the proposed plant expansion are 18.1, 12.9, 8.4, and 1.9 $\mu g/m^3$, respectively (see Table 6-21). These concentrations are less than those that caused injury to sensitive species, therefore no significant effects are expected to occur as a result of fluoride exposure.

7.4 IMPACTS UPON VISIBILITY IN THE VICINITY OF CARGILL

Only a few minor new emission sources will be created by the proposed Cargill plant expansion. These sources will be controlled by wet scrubbers or baghouses; therefore, a visible emission plume may occur at times. However, Cargill has a number of similar type sources already in operation. All these sources are in compliance with opacity regulations and should remain in compliance after the modification. As a result, no adverse impacts upon visibility are expected.

7.5 IMPACTS DUE TO ASSOCIATED POPULATION GROWTH

There will be a small, temporary increase in the number of workers during the construction period. There will be no significant increase in permanent employment at Cargill as a result of the proposed project. Therefore, there will be no anticipated permanent impacts on air quality caused by associated population growth.

7.6 IMPACTS UPON PSD CLASS I AREAS

7.6.1 IDENTIFICATION OF AQRVS AND METHODOLOGY

The Cargill Riverview facility is located about 86 km from the PSD Class I area of the CNWA. Other PSD Class I areas are located more than 200 km from the Site. An AQRV analysis was conducted to assess the potential risk to AQRVs of the CNWA due to the proposed emissions from the Cargill expansion project. The U.S. Department of the Interior in 1978 administratively defined AQRVs to be:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register, 1978).

Except for visibility, AQRVs were not specifically defined. However, odor, soil, flora, fauna, cultural resources, geological features, water, and climate generally have been identified by land managers as AQRVs. Since specific AQRVs have not been identified for the CNWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found in the CNWA.

Vegetation type AQRVs and their representative species types have been defined by the U.S. Fish and Wildlife as:

- Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass
- Marsh Islands - cabbage palm and eastern red cedar
- Estuarine Habitat - black needlerush, salt marsh cordgrass, and wax myrtle
- Hardwood Swamp - red maple, red bay, sweet bay, and cabbage palm

- Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle, and saw palmetto
- Mangrove Swamp - red, white, and black mangrove

Wildlife AQRVs have been identified as endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles, and mammals.

The maximum pollutant concentrations due to the Cargill expansion project's emissions predicted at the PSD Class I area of the CNWA are presented in Table 7-1. These results are based on using the CALPUFF model (see Appendix E).

Similar to the evaluation performed in Section 7.2, a screening approach was used that compared the maximum ambient concentration of air pollutants of concern due to the project's emissions at the PSD Class I area of the CNWA with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted that specifically addressed the effects of air contaminants on plant species reported to occur in the CNWA. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens, and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. It is recognized that effect threshold information is not available for all species found in the CNWA, although studies have been performed on a few of the common species and on other similar species that can be used as indicators of effects.

7.6.2 IMPACTS TO SOILS

For soils, the potential and hypothesized effects of atmospheric deposition include:

- Increased soil acidification,
- Alteration in cation exchange,
- Loss of base cations, and
- Mobilization of trace metals.

The potential sensitivity of specific soils to atmospheric inputs is related to two factors. First, the physical ability of a soil to conduct water vertically through the soil profile is important in influencing the interaction with deposition. Second, the ability of the soil to resist chemical changes, as measured in terms of pH and soil cation exchange capacity (CEC), is important in determining how a soil responds to atmospheric inputs.

According to the U.S. Department of Agriculture (USDA) Soil Surveys of Citrus and Hernando Counties, nine soil complexes are found in the CNWA. These include Aripeka fine sand, Aripeka-Okeelanta-Lauderhill, Hallendale-Rock outcrop, Homosassa mucky fine sandy loam, Lacooche, Okeelanta mucks, Okeelanta-Lauderdale-Terra Ceia mucks, Rock outcrop-Homosassa-Lacoochee, and Weekiwachee-Durbin mucks (Porter, 1996). The majority of the soil complexes found in the CNWA are inundated by tidal waters, contain a relatively high organic matter content, and have high buffering capacities based on their CEC, base saturation, and bulk density. The regular flooding of these soils by the Gulf of Mexico regulates the pH and any change in acidity in the soil would be buffered by this activity. Therefore, they would be relatively insensitive to atmospheric inputs. However, Terra Ceia, Okeelanta, and Lauderdale freshwater mucks are present along the eastern border of the CNWA, and may be more sensitive to atmospheric sulfur deposition (Porter, 1996). Although not tidally influenced, these freshwater mucks are highly organic and therefore have a relatively high intrinsic buffering capacity.

The relatively low sensitivity of the soils to atmospheric inputs coupled with the extremely low ground-level concentrations of contaminants projected for the CNWA from the proposed project's emissions precludes any significant impact on soils.

7.6.3 IMPACTS TO VEGETATION

In general, the effects of air pollutants on vegetation occur primarily from SO_2, nitrogen dioxide (NO_2), ozone, and PM. Effects from minor air contaminants, such as F, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, CO, and pesticides, have also been reported in the literature. The effects of air pollutants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage, which is considered to be the major pathway of exposure. For purposes of this analysis, it was assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels or air contaminants can be termed acute, physiological, or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms. Chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant. In this assessment, 100 percent of the particular air pollutant in the ambient air was assumed to interact with the vegetation. This is a conservative approach.

The concentrations of the pollutants, duration of exposure and frequency of exposures influence the response of vegetation and wildlife to atmospheric pollutants. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration which occur during certain meteorological conditions interspersed with long periods of extremely low ground-level concentrations. If there are any effects of stack emissions on plants and animals they will be from the short-term, higher doses. A dose is the product of the concentration of the pollutant and duration of the exposure.

7.6.3.1 SO_2

Sulfur is an essential plant nutrient usually taken up as sulfate ions by the roots from the soil solution. When sulfur dioxide in the atmosphere enters the foliage through pores in the leaves, it reacts with water in the leaf interior to form sulfite ions. Sulfite ions are highly toxic. They interact with enzymes, compete with normal metabolites, and interfere with a variety of cellular functions (Horsman and Wellburn, 1976). However, within the leaf, sulfite is oxidized to sulfate ions, which can then be used by the plant as a nutrient. Small amounts of sulfite may be oxidized before they prove harmful.

SO_2 gas at elevated levels has long been known to cause injury to plants. Acute SO_2 injury usually develops within a few hours or days of exposure, and symptoms include marginal, flecked, and/or intercostal necrotic areas that appear water-soaked and dullish green initially. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth, and possible tissue necrosis (EPA, 1982). Background levels of SO_2 in the CNWA average 1.3 $\mu g/m^3$, with a maximum 24-hour average concentration of 14.5 $\mu g/m^3$. Observed SO_2 effect levels for several plant species and plant sensitivity groupings are presented in Tables 7-2 and 7-3, respectively.

Many studies have been conducted to determine the effects of high-concentration, short-term SO_2 exposure on natural community vegetation. Sensitive plants include ragweed, legumes, blackberry, southern pine, and red and black oak. These species are injured by exposure to 3-hour average SO_2 concentrations of 790 to 1,570 $\mu g/m^3$. Intermediate plants include locust and sweetgum. These species are injured by exposure to 3-hour average SO_2 concentrations of 1,570 to 2,100 $\mu g/m^3$. Resistant species (injured at concentrations above 2,100 $\mu g/m^3$ for 3 hours) include white oak and dogwood (EPA, 1982).

A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 $\mu g/m^3$ SO_2 for 8 hours were not visibly damaged. This finding support the levels cited by other researchers on the effects of SO_2 on vegetation. A corroborative study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a cross-section of plants ranging from sensitive to tolerant was visibly injured at 3-hour average SO_2 concentrations of 920 $\mu g/m^3$.

Jack pine seedlings exposed to SO_2 concentrations of 470 to 520 $\mu g/m^3$ for 24 hours demonstrated inhibition of foliar lipid synthesis; however, this inhibition was reversible

(Malhotra and Kahn, 1978). Black oak exposed to 1,310 μg/m³ SO_2 for 24 hours a day for 1 week demonstrated a 48 percent reduction in photosynthesis (Carlson, 1979).

Two lichen species indigenous to Florida exhibited signs of SO_2 damage in the form of decreased biomass gain and photosynthetic rate as well as membrane leakage when exposed to concentrations of 200 to 400 μg/m³ for 6 hours/week for 10 weeks (Hart et al., 1988).

The maximum 24-hour average SO_2 concentration increase that is predicted for the Cargill expansion at the Class I area is 0.177 μg/m³. When added to the average background concentration of 1.3 μg/m³, the total SO_2 impact is 1.6 μg/m³. When added to the maximum 24-hour average background concentration of 14.5 μg/m³ at the CNWA, the maximum worst-case total SO_2 concentration is 14.7 μg/m³, which is much lower than those known to cause damage to test species. The maximum 24-hour average SO_2 concentrations predicted for the project at the Class I area are only 4 to 7 percent of those that caused damage to the most sensitive lichens. The modeled annual incremental increase in SO_2 adds slightly to background levels of this gas and poses only a minimal threat to area vegetation.

7.6.3.2 PM_{10}

Although information pertaining to the effects of particulate matter on plants is scarce, some research results are available. In a study conducted by Mandoli and Dubey (1988), ten species of native Indian plants were exposed to levels of particulate matter that ranged from 210 to 366 μg/m³ for an 8-hour averaging period. Damage in the form of a higher leaf area/dry weight ratio was observed at varying degrees for most plants tested. Concentrations of particulate matter lower than 163 μg/m³ did not appear to be injurious to the tested plants.

By comparison of these published toxicity values for particulate matter exposure with modeled concentrations, the possibility of plant damage in the CNWA can be determined. The maximum PM_{10} concentrations predicted by the Cargill expansion in the Class I area are 0.057 and 0.03 μg/m³ for 8- and 24-hour averaging times, respectively (see Table 7-1). The 24-hour average background PM_{10} concentration reported for CNWA is 21 μg/m³. The

8-hour average background was estimated by multiplying the 24-hour average concentration by three. This produced a conservative 8-hour average background concentration of 63 μg/m^3. When added to the maximum 8-hour average PM_{10} concentrations of 0.057 μg/m^3 predicted by the project in the CNWA, the maximum total 8-hour average concentration of 63.1 μg/m^3 is well below the lower threshold value that reportedly affects plant foliage. As a result, no effects to vegetative AQRVs are expected from the project's emissions.

7.6.3.3 <u>NO_2</u>

NO_2 can injure plant tissue with symptoms usually appearing as irregular white to brown collapsed lesions between the leaf veins and near the margins. Conversely, non-injurious levels of NO_2 can be absorbed by plants, enzymatically transformed into ammonia, and incorporated into plant constituents such as amino acids (Matsumaru *et al.*, 1979).

Plant damage can occur through either acute (short-term, high concentration) or chronic (long-term, relatively low concentration) exposure. For plants that have been determined to be more sensitive to NO_2 exposure than others, acute (1, 4, 8 hours) exposure caused 5 percent predicted foliar injury at concentrations ranging from 3,800 to 15,000 μg/m^3 (Heck and Tingey, 1979). Chronic exposure of selected plants (some considered NO_2-sensitive) to NO_2 concentrations of 2,000 to 4,000 μg/m^3 for 213 to 1,900 hours caused reductions in yield of up to 37 percent and some chlorosis (Zahn, 1975).

The 8-hour average NO_2 concentration for the Cargill expansion in the Class I area is predicted to be 0.038 μg/m^3. This concentration is less than 0.001 percent of the levels that cause foliar injury in acute exposure scenarios. By comparison of published toxicity values for NO_2 exposure to long-term (annual averaging time) modeled concentrations, the possibility of plant damage in the Class I areas can be examined for chronic exposure situations. For a chronic exposure, the maximum annual average NO_2 concentration due to the project in the Class I area is 0.0004 μg/m^3. This value is less than 0.0001 percent of the levels that caused minimal yield loss and chlorosis in plant tissue. Average and maximum background 24-hour average concentrations of NO_2 reported in the CNWA are 0.006 and 0.104 μg/m^3, respectively.

Although it has been shown that simultaneous exposure to SO_2 and NO_2 results in synergistic plant injury (Ashenden and Williams, 1980), the magnitude of this response is generally only 3 to 4 times greater than either gas alone and usually occurs at unnaturally high levels of each gas. Therefore, the concentrations within the wilderness areas are still far below the levels that potentially cause plant injury for either acute or chronic exposure.

7.6.3.4 Sulfuric Acid Mist

Acidic precipitation or acid rain is coupled to SO_2 emissions mainly formed during the burning of fossil fuels. This pollutant is oxidized in the atmosphere and dissolves in rain forming sulfuric acid mist which falls as acidic precipitation (Ravera, 1989). Although concentration data are not available, sulfuric acid mist has been reported to yield necrotic spotting on the upper surfaces of leaves (Middleton *et al.*, 1950).

No significant adverse effects on vegetation are expected from the project's emissions because SO_2 concentrations, which lead directly to the formation of sulfuric acid mist concentrations, are predicted to be well below levels which have been documented as negatively affecting vegetation. During the last decade, much attention has been focused on acid rain. Acidic deposition is an ecosystem-level problem that affects vegetation because of some alterations of soil conditions such as increased leaching of essential base cations or elevated concentrations of aluminum in the soil water (Goldstein *et al.*, 1985). Although effects of acid rain in eastern North America have been well published and publicized, detrimental effects of acid rain on Florida vegetation are lacking documentation.

7.6.3.5 Fluoride

Fluoride is an inhibitor of plant metabolism. As fluoride accumulates in plants, it causes an inhibition of plant metabolism and chlorosis (a yellowing of the leaf). With further increases in accumulation of fluoride, the cells die and necrosis is observed. Leaf tips and margins accumulate the highest concentrations of fluoride and are the sites of initial visible injury.

Gaseous fluoride is taken up primarily through the stomata of transpiring plants. There is negligible contribution to leaf fluoride content by uptake through the roots (Applied Sciences Associates, Inc., 1978).

Plant sensitivities can range from 16 $\mu g/m^3$ of fluoride in sensitive plants to 500 $\mu g/m^3$ of fluoride in tolerant plants for 3-hour exposures. The lowest observed effect levels for sensitive plants are reported to be as follows (Applied Sciences Associates, Inc., 1978):

$<50\ \mu g/m^3$ for 1-hour exposures

$<16\ \mu g/m^3$ for 3-hour exposures

$<1.6\ \mu g/m^3$ for 24-hour exposures

Gladiolus is considered the plant species most sensitive to flouride. Visible symptoms are reported to occur when gladiolus have been exposed to concentrations $>0.5\ \mu g/m^3$ for 5 to 10 days. More tolerant fruit tree species and conifers displayed symptoms at around 1 $\mu g/m^3$ at 10-day exposures (Treshow and Anderson, 1989).

The predicted maximum F concentrations in the CNWA due to the Cargill expansion are 0.050 and 0.007 $\mu g/m^3$ for 1-hr and 24-hr averaging times, respectively (Table 7-1). These concentrations are less than 1 percent of those that cause injury to the most sensitive plant species. No significant adverse effects are predicted to occur to the vegetative AQRVs of CNWA. Since the predicted annual concentration is very low, no measurable accumulation of fluoride will occur in vegetation that would be the prime forage of wildlife. Therefore, no significant adverse effects to wildlife AQRVs will occur.

7.6.3.6 Summary

In summary, the phytotoxic effects from the Cargill expansion project's emissions are minimal. It is important to note that the elements were conservatively modeled with the assumption that 100 percent was available for plant uptake. This is rarely the case in a natural ecosystem.

7.6.4 IMPACTS TO WILDLIFE

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the NAAQS. This occurs in non-attainment areas, e.g., Los Angeles Basin. Risks to wildlife also may occur for wildlife living in the vicinity of an emission source that experiences frequent upsets or episodic conditions resulting from malfunctioning equipment, unique meteorological conditions, or startup operations (Newman and Schreiber, 1988). Under these conditions, chronic effects (e.g., particulate contamination) and acute effects (e.g., injury to health) have been observed (Newman, 1981).

A wide range of physiological and ecological effects to fauna has been reported for gaseous and particulate pollutants (Newman, 1981; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the secondary ambient air quality standards. Physiological and behavioral effects have been observed in experimental animals at or below these standards. For impacts on wildlife, the lowest threshold values of SO_2, NO_2, and particulates which are reported to cause physiological changes are shown in Table 7-4. These values are up to orders of magnitude larger than maximum concentrations predicted for the Cargill expansion for the Class I area. No effects on wildlife AQRVs from SO_2, NO_2, and particulates are expected. The proposed project's contribution to cumulative impacts is negligible.

7.7 IMPACTS UPON VISIBILITY

7.7.1 INTRODUCTION

A change in visibility is characterized by either a change in the visual range, defined as the greatest distance that a large dark object can be seen, or by a change in the light-extinction coefficient (b_{ext}). The b_{ext} is the attenuation of light per unit distance due to the scattering and absorption by gases and particles in the atmosphere. A change in the extinction coefficient produces a perceived visual change that is measured by a visibility index called the deciview. The deciview (dv) is defined as:

$$dv = 10 \ln (1 + b_{exts} / b_{extb})$$

where: b_{exts} is the extinction coefficient calculated for the source, and
b_{extb} is the background extinction coefficient

The source extinction coefficient is determined from NO_x, SO_2, and PM_{10} emission's increase from the proposed project. The background extinction coefficient s for each area evaluated are based on existing ambient monitoring data. Based on predicted sulfate (SO_4), nitric oxide (NO_3), and PM_{10} concentrations, the increase in the project's emissions were compared to a 5-percent change in light extinction of the background levels. This is equivalent to a change in deciview of 0.5.

7.7.2 ANALYSIS METHODOLOGY

Following the recommendations of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II report, a level II refined analysis was performed using the CALPUFF long-range transport model, along with a CALMET wind field developed by the FDEP. A more detail description of the CALPUFF model and the CALMET wind field used for this project is provided in Appendix E. The CALPUFF postprocessor model CALPOST was used to summarize the maximum concentrations of SO_4, NO_3, and PM_{10} that were predicted with the CALPUFF model.

CALPUFF used in a manner recommended by the IWAQM Phase 2 Summary Report (EPA, December 1998). A summary of the parameter settings that were used in the CALPUFF model is presented in Table A-1 along with the IWAQM Phase 2 recommended parameter settings. The recommended parameter settings are presented in Appendix B of the IWAQM Phase II Summary Report.

The following CALPUFF settings/values were implemented in the Level II refined analysis:

- Use of six pollutant species of SO_2, SO_4, NO_x, HNO_3, NO_3, and PM_{10}.
- Use of MESOPUFF II scheme for chemical transformation with CALPUFF default background concentrations
- Include both dry and wet deposition and plume depletion
- Use Agricultural, unirrigated land use; minimum mixing height of 50 m

- Use transitional plume rise, stack-tip downwash, and partial plume penetration
- Use puff plume element dispersion, PG /MP coefficients, rural mode, and ISC building downwash scheme
- Use of partial plume path adjustment terrain effects
- Use highest predicted 24-hour species concentrations in 1990, the year of the CALMET wind field, for comparison to the maximum percent change in extinction

7.7.3 EMISSION INVENTORY

Based on recommendations of the FLAG Phase I Summary Report (12/00), the regional haze analysis considered only the maximum 24-hour increase in emissions due to the proposed Cargill modification. The emission rates and source parameters for the affected sources are presented in Chapter 6.0.

7.7.4 BUILDING WAKE EFFECTS

The air modeling analysis included the same building structure dimensions to account for the effects of building-induced downwash as was used in the ISCST3 modeling analysis. Dimensions for all significant building structures were processed with the Building Profile Input Program (BPIP), Version 95086, and were included in the CALPUFF model.

7.7.5 RECEPTOR LOCATIONS

Receptors for the refined analysis included 13 discrete receptors located at the Chassahowitzka PSD Class I area. Because the area's terrain is flat, all receptors were assumed to be at zero elevation.

7.7.6 BACKGROUND EXTINCTION COEFFICENTS AND RELATIVE HUMIDITY

The regional haze analysis was performed using the latest regulatory guidance as provided in the Federal Land Manager's Air Quality Related Values Workgroup (FLAG) Phase I report. Using the hourly meteorological and relative humidity data used with the CALPUFF model, the daily change is background extinction is computed. The hygroscopic and dry non-hygroscopic components used for calculating the daily background extinction coefficients for the CNWA were obtained from the FLAG report. For this analysis, the hygroscopic and dry non-hygroscopic values were 0.9 and 8.5 inverse millimeters (Mm^{-1}), respectively.

7.7.7 METEOROLOGICAL DATA

A CALMET wind field for the Tampa Bay domain was used for the analysis. The year of data is 1990. A detailed description of the data used to develop the wind field is presented in Appendix E.

7.7.8 CHEMICAL TRANSFORMATION

The air modeling analysis included all chemical transformation processes that occur for the emitted species.

7.7.9 RESULTS

The maximum predicted 24-hour change in background extinction coefficient is 2.01 percent or 0.201 deciview. As this percentage is below the criteria value of 5 percent, it is concluded that the proposed project will not adversely impact the background visibility levels at the CNWA PSD Class I area.

Table 7-1. Maximum Predicted Concentrations Due To Project Only at the Class I Area of the Chassahowitzka NWA

	Concentrations[a] (μg/m^3) for Averaging Times				
Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
Sulfur Dioxide (SO_2)	0.007	0.179	0.367	10.160	1.489
Nitrogen Dioxide (NO_2)	0.0004	0.014	0.038	0.091	0.122
Particulates (PM_{10})	0.002	0.030	0.057	0.151	0.183
Fluorides (F)	0.0004	0.007	0.012	0.041	0.050

[a] Highest Predicted with CALPUFF model and CALMET Tampa Bay Domain, 1990.

Table 7-2. SO_2 Effect Levels for Various Plant Species

Plant Species	Observed Effect Level ($\mu g/m^3$)	Exposure (Time)	Reference
Sensitive to tolerant	920 (20 percent displayed visible injury)	3 hours	McLaughlin and Lee, 1974
Lichens	200-400	6 hr/wk for 10 weeks	Hart *et al.*, 1988
Cypress, slash pine, live oak, mangrove	1,300	8 hours	Woltz and Howe, 1981
Jack pine seedlings	470-520	24 hours	Malhotra and Kahn, 1978
Black oak	1,310	Continuously for 1 week	Carlson, 1979

Table 7-3. Sensitivity Groupings of Vegetation Based on Visible Injury at Different SO_2 Exposures[a]

Sensitivity Grouping	SO_2 Concentration 1-Hour	SO_2 Concentration 3-Hour	Plants
Sensitive	1,310 - 2,620 μG/m³ (0.5 - 1.0 ppm)	790 - 1,570 μG/m³ (0.3 - 0.6 ppm)	Ragweeds Legumes Blackberry Southern pines Red and black oaks White ash Sumacs
Intermediate	2,620 - 5,240 μG/m³ (1.0 - 2.0 ppm)	1,570 - 2,100 μG/m³ (0.6 - 0.8 ppm)	Maples Locust Sweetgum Cherry Elms Tuliptree Many crop and garden species
Resistant	>5,240 μG/m³ (>2.0 ppm)	>2,100 μG/m³ (>0.8 ppm)	White oaks Potato Upland cotton Corn Dogwood Peach

[a] Based on observations over a 20-year period of visible injury occurring on over 120 species growing in the vicinities of coal-fired power plants in the southeastern United States.

Source: EPA, 1982a.

Table 7-4. Examples of Reported Wildlife Effects of Air Pollutants at Concentrations Below National Secondary Ambient Air Quality Standards

Pollutant	Reported Effect	Concentration ($\mu g/m^3$)	Exposure
Sulfur Dioxide[a]	Respiratory stress in guinea pigs	427 to 854	1 hour
	Respiratory stress in rats	267	7 hours/day; 5 days/ week for 10 weeks
	Decreased abundance in deer mice	13 to 157	Continually for 5 months
Nitrogen Dioxide[b,c]	Respiratory stress in mice	1,917	3 hours
	Respiratory stress in guinea pigs	96 to 958	8 hours/day for 122 days
Particulates[a]	Respiratory stress, reduced respiratory disease defenses	120 PbO_3	Continually for 2 months
	Decreased respiratory disease defenses in rats, same with hamsters	100 $NiCl_2$	2 hours

Source: [a]Newman and Schreiber, 1988.
[b]Gardner and Graham, 1976.
[c]Trzeciak et al., 1977.

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APPENDIX A

BASIS OF CURRENT ACTUAL EMISSIONS (ACTUAL)

Table A-1. Actual Emissions for 2000--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility										
Molten Sulfur Storage--Tank No. 1		a	a	a	a	a	a	a	a	a
Molten Sulfur Storage--Tank No. 2	064	0.56	--		0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.03	--	--	0.26	0.26	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 8	067	0.03	--	--	0.22	0.22	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.23	0.23	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.38	--	--	0.49	0.49	0.27	0.18	--	--
Molten Sulfur Storage--Truck Loading Stn	074	a	a	a	a	a	a	a	a	a
Total		**1.59**	--	--	**1.84**	**1.84**	**1.13**	**0.76**	--	--
B. No. 8 Sulfuric Acid Plant	005	1,377.40	47.23	--	--	--	--	--	15.74	--
C. No. 9 Sulfuric Acid Plant	006	1,480.10	49.34	--	--	--	--	--	13.57	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	4.48	3.77	1.78	1.78	0.25	--	--	--
No. 9 Rock Mill	101	0.03	4.63	3.89	0.61	0.61	0.26	--	--	--
No. 7 Rock Mill	106	0.02	3.21	2.70	0.18	0.18	0.18	--	--	--
Ground Rock Handling Storage System	034/102	--	--	--	0.09	0.09	--	--	--	--
Total		**0.08**	**12.32**	**10.36**	**2.66**	**2.66**	**0.68**	--	--	--
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	4.66
F. GTSP Plant	007	0.09	14.82	12.45	20.84	20.84	0.82	--	--	4.27
GTSP Ground Rock Handling	008	--	--	--	3.83	3.83	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	20.41
GTSP Storage Building No. 4	071	--	--	--	--	--	--	--	--	20.41
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.01	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.03	0.01	--	--	--	--
Total		**0.09**	**14.82**	**12.45**	**24.71**	**24.68**	**0.82**	--	--	**45.09**
G. AFI Plant No. 1	078	0.04	6.02	5.05	17.77	17.77	0.33	--	--	1.93
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.66	0.66	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.20	0.04	--	--	--	--
Total		**0.04**	**6.02**	**5.05**	**18.71**	**18.55**	**0.33**	--	--	**1.93**
H. No. 5 DAP Plant	055	0.03	4.37	3.67	8.37	8.37	0.24	--	--	8.04
I. Material Handling System										
West Baghouse Filter	051	--	--	--	0.63	0.63	--	--	--	--
South Baghouse	052	--	--	--	0.58	0.58	--	--	--	--
Vessel Ldng. System--Twr. Baghouse Exhaust[e]	053	--	--	--	0.44	0.44	--	--	--	--
Building No. 6 Belt to Conveyor No. 7	058	--	--	--	0.31	0.31	--	--	--	--
Conveyor No.7 to Conveyor No. 8	059	--	--	--	0.63	0.63	--	--	--	--
Conveyor No 8 to Conveyor No. 9	060	--	--	--	0.63	0.63	--	--	--	--
Railcar Unloading of AFI Product		--	--	--	0.02	0.00	--	--	--	--
E. Vessel Ldg. Facility-Shiphold/Chokefeed	061	--	--	--	0.25	0.25	--	--	--	--
Total		--	--	--	**3.48**	**3.46**	--	--	--	--
Total Actual Emission Rates--2000		**2,859.32**	**134.10**	**31.53**	**59.77**	**59.56**	**3.20**	**0.76**	**29.31**	**59.72**

[a] Emission unit did not operate for this year.
[b] See Tables A-3 and A-4 for emission calculations.
[c] Emissions from the 1999 AOR.
[d] Based on stack test, see Appendix C.
[e] See Appendix A for emission calculation.

Table A-2. Actual Emissions for 1999--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility [b]										
Molten Sulfur Storage--Tank No. 1		a	a	a	a	a	a	a	a	a
Molten Sulfur Storage--Tank No. 2	064	0.57	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.57	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.02	--	--	0.17	0.17	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 8	067	0.02	--	--	0.20	0.20	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.24	0.24	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.31	--	--	0.40	0.40	0.22	0.15	--	--
Molten Sulfur Storage--Truck Loading Stn.	074	a	a	a	a	a	a	a	a	a
Total		**1.51**	--	--	**1.64**	**1.64**	**1.08**	**0.72**	--	--
B. No. 8 Sulfuric Acid Plant [c]	005	1,124.09	40.88	--	--	--	--	--	13.63	--
C. No. 9 Sulfuric Acid Plant [c]	006	1,571.54	53.12	--	--	--	--	--	13.28	--
D. Rock Mills [c]		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	5.12	4.30	2.80	2.80	0.28	--	--	--
No. 9 Rock Mill	101	0.03	4.86	4.08	2.66	2.66	0.27	--	--	--
No. 7 Rock Mill	106	a	a	a	a	a	a	a	a	a
Ground Rock Handling Storage System	034/102	--	--	--	0.08	0.08	--	--	--	--
Total		**0.06**	**9.98**	**8.38**	**5.55**	**5.55**	**0.55**	--	--	--
E. Phosphoric Acid Plant [c]	073	--	--	--	--	--	--	--	--	3.18
F. GTSP Plant [c]	007	0.13	21.28	17.87	12.49	12.49	1.17	--	--	2.97
GTSP Ground Rock Handling	008	--	--	--	3.77	3.77	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	19.37
GTSP Storage Building No. 4	071	--	--	--	--	--	--	--	--	17.61
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.00	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.02	0.00	--	--	--	--
Total		**0.13**	**21.28**	**17.87**	**16.28**	**16.26**	**1.17**	**0.00**	**0.00**	**39.95**
G. AFI Plant No. 1 [c]	078	0.03	5.41	4.54	17.15	17.15	0.30	--	--	1.64
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.62	0.62	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.19	0.04	--	--	--	--
Total		**0.03**	**5.41**	**4.54**	**18.03**	**17.88**	**0.30**	--	--	**1.64**
H. No. 5 DAP Plant [c]	055	0.02	3.45	2.90	8.96	8.96	0.19	--	--	8.70
I. Material Handling System		--	--	--	--	--	--	--	--	--
West Baghouse Filter [c]	051	--	--	--	0.65	0.65	--	--	--	--
South Baghouse [c]	052	--	--	--	0.57	0.57	--	--	--	--
Vessel Ldng. System--Twr Baghouse Exhaust [d]	053	--	--	--	0.46	0.46	--	--	--	--
Building No. 6 Belt to Conveyor No. 7 [c]	058	--	--	--	0.34	0.34	--	--	--	--
Conveyor No.7 to Conveyor No. 8 [c]	059	--	--	--	0.65	0.65	--	--	--	--
Conveyor No.8 to Conveyor No. 9 [c]	060	--	--	--	0.65	0.65	--	--	--	--
Railcar Unloading of AFI Product [e]		--	--	--	0.03	0.01	--	--	--	--
E. Vessel Ldg. Facility-Shiphold/Chokefeed [e]	061	--	--	--	0.24	0.24	--	--	--	--
Total		--	--	--	**3.59**	**3.57**	--	--	--	--
Total Actual Emission Rates--1999		**2,697.38**	**134.12**	**33.70**	**54.06**	**53.87**	**3.28**	**0.72**	**26.91**	**53.47**

[a] Emission unit did not operate for this year.
[b] See Tables A-3 and A-4 for emission calculations.
[c] Emissions from the 1999 AOR
[d] Based on stack test, see Appendix C
[e] See Appendix A for emission calculation.

Table A 3 Current Actual Emissions For 1999 From the Molten Sulfur Handling System, Cargill Riverview

		Existing Tank No 2				Existing Tank No 3				Pit 7			Pit 8			Pit 9		
Parameters	Units	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions
SULFUR FLOW RATES																		
Maximum loading rate	TPH	2.240	336	0		2 240	336	0		336	0		336	0		336	0	
Annual loading rate	TPY	345 763	346 116	0		345 763	346 116	0		184 081	0		225,212	0		292 687	0	
VENTILATION RATES																		
Loading/Unloading	dscfm	454	0	0		454	0	0		95	0		95	0		95	0	
Natural Ventilation through vents	dscfm	0	30	30		0	30	30		5	5		5	5		5	5	
Total Ventilation	dscfm	454	30	30		454	30	30		100	5		100	5		100	5	
TRANSFER TIMES																		
Loading/Unloading	hr/yr	154	1 030	–		154	1 030	–		548	–		670	–		871	–	
Idle	hr/yr	–	–	7 576		–	–	7 576		–	9,212		–	8,090		–	7 889	
Operating	hr/yr	–	–	–		–	–	–		–	–		–	–		–	–	
EMISSION FACTORS																		
Sulfur particulate	grains/dscf	0 66	0 29	0 29		0 66	0 29	0 29		0 51	0 29		0 51	0 29		0 51	0 29	
TRS (as H_2S)	lb/dscf	3 50E-05	3 50E-05	3 50E-05		3 50E-05	3 50E-05	3 50E-05		3 50E-06	3 50E-06		3 50E-06	3 50E-06		3 50E-06	3 50E-06	
SO_2	lb/dscf	7 30E-05	7 30E-05	7 30E-05		7 30E-05	7 30E-05	7 30E-05		7 30E-06	7 30E-06		7 30E-06	7 30E-06		7 30E-06	7 30E-06	
VOC	lb/dscf	5 20E-05	5 20E-05	5 20E-05		5 20E-05	5 20E 05	5 20E 05		5 20E 06	5 20E-06		5 20E-06	5 20E 06		5 20E 06	5 20E-06	
EMISSION RATES					Maximum Hourly and Annual Emission Rates				Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates
Sulfur Particulate	lb/hr	2 568	0 075	0 075	2 568	2 568	0 075	0 075	2 568	0 437	0 012	0 437	0 437	0 012	0 437	0 437	0 012	0 437
	TPY	0 198	0 038	0 282	0 519	0 198	0 038	0 282	0 519	0 120	0 051	0 171	0 147	0 050	0 197	0 190	0 049	0 239
TRS (as H_2S)	lb/hr	0 953	0 063	0 063	0 953	0 953	0 063	0 053	0 953	0 021	0 001	0 021	0 021	0 001	0 021	0 021	0 001	0 021
	TPY	0 074	0 032	0 239	0 345	0 074	0 032	0 239	0 345	0 006	0 004	0 010	0 007	0 004	0 011	0 009	0 004	0 013
Sulfur Dioxide	lb/hr	1 989	0 131	0 131	1 989	1 989	0 131	0 131	1 989	0 044	0 002	0 044	0 044	0 002	0 044	0 044	0 002	0 044
	TPY	0 153	0 068	0 498	0 719	0 153	0 068	0 498	0 719	0 012	0 009	0 021	0 015	0 009	0 024	0 019	0 009	0 028
Volatile Organic Compounds	lb/hr	1 416	0 094	0 094	1 416	1 416	0 094	0 094	1 416	0 031	0 002	0 031	0 031	0 002	0 031	0 031	0 002	0 031
	TPY	0 109	0 048	0 355	0 512	0 109	0 048	0 355	0 512	0 009	0 006	0 015	0 010	0 006	0 017	0 014	0 006	0 020

Notes.
Total Sulfur Transferred to Tanks by Ship = 691 525 tons/yr
Total Sulfur Transferred from Tanks to Pits = 692 232 tons/yr
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table A-4 Current Actual Emissions For 2000 From the Molten Sulfur Handling System, Cargill Riverview

		Existing Tank No 2				Existing Tank No 3				Pit 7			Pit 8			Pit 9		
Parameters	Units	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions
SULFUR FLOW RATES																		
Maximum loading rate	TPH	2,240	336	0		2,240	336	0		336	0		336	0		336	0	
Annual loading rate	TPY	427,316	430,182	0		427,316	430,182	0		328,346	0		260,200	0		271,818	0	
VENTILATION RATES																		
Loading/Unloading	dscfm	454	0	0		454	0	0		95	0		95	0		95	0	
Natural Ventilation through vents	dscfm	0	30	30		0	30	30		5	5		5	5		5	5	
Total Ventilation	dscfm	454	30	30		454	30	30		100	5		100	5		100	5	
TRANSFER TIMES																		
Loading/Unloading	hr/yr	191	1,280	–		191	1 280	–		977	–		774	–		809	–	
Idle	hr/yr	..	–	7,289		–	–	7,289		–	7 783		–	7,966		–	7,951	
Operating	hr/yr	–	–	–		–	–	–		–	–		–	–		–	–	
EMISSION FACTORS																		
Sulfur particulate	grains/dscf	0 66	0 29	0 29		0 66	0 29	0 29		0.51	0 29		0.51	0 29		0 51	0 29	
TRS (as H_2S)	lb/dscf	3 50E-05	3 50E-05	3 50E-05		3.50E-05	3 50E-05	3 50E-05		3 50E-06	3 50E-06		3 50E-06	3 50E-06		3.50E-06	3.50E-06	
SO_2	lb/dscf	7 30E-05	7 30E-05	7.30E-05		7.30E-05	7.30E-05	7 30E-05		7 30E-06	7 30E-06		7 30E-06	7 30E-06		7 30E-06	7 30E-06	
VOC	lb/dscf	5 20E-05	5 20E-05	5.20E-05		5 20E-05	5 20E-05	5 20E-05		5 20E-06	5 20E-06		5.20E-06	5 20E-06		5 20E-06	5 20E-06	
EMISSION RATES					Maximum Hourly and Annual Emission Rates				Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates
Sulfur Particulate	lb/hr	2 568	0 075	0 075	2 568	2 568	0 075	0 075	2 568	0 437	0 012	0 437	0 437	0 012	0 437	0 437	0 012	0 437
	TPY	0 245	0 048	0 272	0 564	0 245	0 048	0 272	0.564	0 214	0 048	0 262	0 169	0 050	0 219	0 177	0 049	0 226
TRS (as H_2S)	lb/hr	0 953	0 063	0 063	0 953	0 953	0 063	0 063	0 953	0 021	0 001	0 021	0 021	0 001	0.021	0 021	0 001	0 021
	TPY	0 091	0 040	0 230	0 361	0 091	0 040	0 230	0.361	0.010	0 004	0 014	0 008	0 004	0 012	0 008	0 004	0 013
Sulfur Dioxide	lb/hr	1 989	0 131	0 131	1 989	1 989	0 131	0 131	1 989	0 044	0 002	0 044	0 044	0 002	0.044	0 044	0 002	0 044
	TPY	0 190	0 084	0 479	0 753	0 190	0 084	0 479	0 753	0 021	0 009	0 030	0 017	0 009	0 026	0 018	0 009	0 026
Volatile Organic Compounds	lb/hr	1 416	0.094	0 094	1 416	1 416	0 094	0 094	1 416	0 031	0 002	0 031	0 031	0 002	0 031	0 031	0 002	0 031
	TPY	0 135	0 060	0 341	0 536	0 135	0 060	0 341	0 536	0 015	0 006	0 021	0 012	0 006	0 018	0 013	0 006	0 019

Notes:
Total Sulfur Transferred from Tanks to Ships = 854,631 tons/yr
Total Sulfur Transferred from Tanks to Pits = 851,156 tons/yr
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table A-5. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No. 5 Rock Mill

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	6,899
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0 0130
Annual Natural Gas Usage	10^6scf/yr	N/A	89 69

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0 00	0.00	–	–	–	–
Natural gas	0.6 lb/10^6ft^3	–	–	0.008	0.03	–	–
Worse-Case Combination of Fuels		–	–	–	–	0 01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0 00	0.00	–	–	–	–
Natural gas	100 lb/10^6ft^3	–	–	1 300	4.48	–	–
Worse-Case Combination of Fuels		–	–	–	–	1 30	4.48
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0 00	0.00	–	–	–	–
Natural gas	84 lb/10^6ft^3	–	–	1.092	3.77	–	–
Worse-Case Combination of Fuels		–	–	–	–	1.09	3.77
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.00	0 00	–	–	–	–
Natural gas	5.5 lb/10^6ft^3[e]	–	–	0 072	0.247	–	–
Worse-Case Combination of Fuels		–	–	–	–	0 07	0 25

Footnotes:
Particulate matter emissions rates are included in Table A-1.
[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.
[b] Based on the heat content of natural gas of 1,000 Btu/scf.
[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998
[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.
[e] Based on methane comprised of 52% total VOC.

Table A-6. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No 7 Rock Mill

Parameter	Units	No Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	4,940
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	64 22

Pollutant	AP-42 Emissions Factor[c]	No 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 •(S)lb/10^3gal[d]	0 00	0.00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0 008	0 02	--	--
Worse-Case Combination of Fuels		--	--	--	--	0 01	0.02
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1 300	3.21	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.30	3.21
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0 00	0 00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1.092	2.70	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.09	2.70
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0 00	0 00	--	--	--	--
Natural gas	5 5 lb/10^6ft^3[e]	--	--	0.072	0 177	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.18

Footnotes:
Particulate matter emissions rates through are included in Table A-1.
[a] Based on the heat content of fuel oil of 140,000 Btu/gallon
[b] Based on the heat content of natural gas of 1,000 Btu/scf
[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998 Emission factors for natural gas are based on AP-42, Section 1.4, July 1998
[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.
[e] Based on methane comprised of 52% total VOC.

Table A-7. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No 9 Rock Mill

Parameter	Units	No Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	7,127
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0 5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	92.65

Pollutant	AP-42 Emissions Factor[c]	No 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0 00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.008	0.03	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1 300	4 63	--	--
Worse-Case Combination of Fuels		--	--	--	--	1 30	4.63
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0 00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1 092	3 89	--	--
Worse-Case Combination of Fuels		--	--	--	--	1 09	3 89
Volatile Organic Compounds							
Fuel oil	0 2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5 5 lb/10^6ft^3[e]	--	--	0 072	0.255	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0 25

Footnotes:
Particulate matter emissions rates through are included in Table A-1
[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.
[b] Based on the heat content of natural gas of 1,000 Btu/scf.
[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998 Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.
[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0 5%.
[e] Based on methane comprised of 52% total VOC

Table A-8. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the GTSP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	6,802
Maximum Heat Input Rate	10^6Btu/hr	80	80
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0 5	N/A
Hourly Natural Gas Usage[b]	scf/hr	N/A	43,588
Annual Natural Gas Usage	10^6scf/yr	N/A	296 48

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0 00	--	--	--	--
Natural gas	0 6 lb/10^6ft^3	--	--	0 026	0.09	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.03	0.09
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0 00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	4 359	14.82	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.36	14.82
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0 00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	3.661	12.45	--	--
Worse-Case Combination of Fuels		--	--	--	--	3.66	12.45
Volatile Organic Compounds							
Fuel oil	0 2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5 5 lb/10^6ft^3[e]	--	--	0.240	0.82	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.24	0.82

Footnotes:
Particulate matter emissions through the common plant stack are included in Table A-1.
[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.
[b] Based on the heat content of natural gas of 1,000 Btu/scf
[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998 Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.
[d] S denotes the weight-percent of Sulfur in fuel oil, Maximum sulfur content = 0.5%
[e] Based on methane comprised of 52% total VOC.

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION—CURRENT ACTUAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
PM AND PM_{10} 2000 ACTUAL EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION

Baghouse

Process Throughput of GTSP: 74.8 TPH, 13,014 TPY
Baghouse Efficiency: 99%

PM Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.18 lbs/ton GTSP x (1-0.99) = 0.0018 lbs/ton GTSP

PM Emission Rate (TPY) = 0.0018 lbs/ton GTSP x 13,014 tons GTSP/yr x 1 ton/2,000 lb
= 0.0117 TPY

PM_{10} Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.08 lbs/ton GTSP x (1-0.99) = 0.0008 lbs/ton

PM_{10} Emission Rate (TPY) = 0.0008 lbs/ton GTSP x 13,014 tons GTSP/yr x 1 ton/2,000 lb
= 0.0052 TPY

Maximum Hourly = 74.8 TPH x 0.0018 lb/ton = 0.13 lb/hr

Fugitive Dust

Screens:

Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.9) x (1-0.8)
= 0.0748 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.9) x (1-0.8) x 1ton/2,000 lb
= 0.0065 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.0748 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0150 lb/hr

PM_{10} Emission Rate (TPY) = 0.0065 x 0.20 PM_{10}/lb PM
= 0.0013 TPY

Surge Bin:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.9) x (1-0.8)
= 0.0748 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.9) x (1-0.8) x 1ton/2,000 lb
= 0.0065 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.0748 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0150 lb/hr

PM_{10} Emission Rate (TPY) = 0.0065 x 0.20 PM_{10}/lb PM
= 0.0013 TPY

Truck Loading:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 70%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.7) x (1-0.8)
= 0.2244 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.7) x (1-0.8) x 1ton/2,000 lb
= 0.0195 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.2244 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0449 lb/hr

PM_{10} Emission Rate (TPY) = 0.0195 x 0.20 PM_{10}/lb PM
= 0.0039 TPY

Total Fugitive Emissions:

PM Emission Rate (lb/hr)	= Screens + Surge Bin + Truck Loading = 0.0748 lb/hr + 0.0748 lb/hr + 0.2244 lb/hr = 0.374 lb/hr
PM Emission Rate (TPY)	= Screens + Surge Bin + Truck Loading = 0.0065 TPY + 0.0065 TPY + 0.0195 TPY = 0.0325 TPY
PM_{10} Emission Rate (lb/hr)	= Screens + Surge Bin + Truck Loading = 0.0150 lb/hr + 0.0150 lb/hr + 0.0449 lb/hr = 0.0749 lb/hr
PM_{10} Emission Rate (TPY)	= Screens + Surge Bin + Truck Loading = 0.0013 TPY + 0.0013 TPY + 0.0039 TPY = 0.0065 TPY

CARGILL FERTILIZER INC. - RIVERVIEW
PM AND PM_{10} 1999 ACTUAL EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION

Baghouse

Maximum P_2O_5 produced = 91 TPH x 0.46 = 41.86 TPH P_2O_5

Annual P_2O_5 Produced: 3220 tons

Baghouse Efficiency: 99%

PM Emission Factor Calculation (from AP-42 8.5.2-1)

= 0.18 lbs/ton GTSP x 1 ton GTSP/0.46 tons P_2O_5 = 0.3913

= 0.3913 lbs/ton P_2O_5 x (1-0.99) = 0.003913 lbs/ton

PM Emission Rate (TPY) = 0.004 lbs/ton P_2O_5 x 3220 tons P_2O_5/yr x 1 ton/2,000 lb

= 0.00644 TPY

PM_{10} Emission Factor Calculation (from AP-42 8.5.2-1)

= 0.08 lbs/ton GTSP x 1 ton GTSP/0.46 tons P_2O_5 = 0.17391

= 0.17391 lbs/ton P_2O_5 x (1-0.99) = 0.0017391 lbs/ton

PM_{10} Emission Rate (TPY) = 0.002 lbs/ton P_2O_5 x 3220 tons P_2O_5/yr x 1 ton/2,000 lb

= 0.00322 TPY

Maximum hourly = 41.86 TPH P_2O_5 x 0.3913 lb/ton P_2O_5 x (1-0.99) = 0.16 lb/hr

Fugitive Dust

Screens:

Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled

Number of Transfer Points: 1

Capture and Control Efficiency of Enclosures: 90%

Control Efficiency of Oiling: 80%

Process Throughput of GTSP: 91 TPH, 7000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.9) x (1-0.8)

= 0.091 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7000 TPY x (1-0.9) x (1-0.8) x 1 ton/2,000 lb

= 0.0035 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.091 lb/hr x 0.20 lb PM_{10}/lb PM

= 0.0182 lb/hr

PM_{10} Emission Rate (TPY) = 0.0035 x 0.20 PM_{10}/lb PM

= 0.0007 TPY

Surge Bin:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 91 TPH, 7,000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.9) x (1-0.8)
= 0.091 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7,000 TPY x (1-0.9) x (1-0.8) x 1 ton/2,000 lb
= 0.0035 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.091 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0182 lb/hr

PM_{10} Emission Rate (TPY) = 0.0035 x 0.20 PM_{10}/lb PM
= 0.0007 TPY

Truck Loading:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 70%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 91 TPH, 7,000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.7) x (1-0.8)
= 0.273 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7,000 TPY x (1-0.7) x (1-0.8) x 1 ton/2,000 lb
= 0.0105 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.273 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0546 lb/hr

PM_{10} Emission Rate (TPY) = 0.0105 x 0.20 PM_{10}/lb PM
= 0.0021 TPY

Total Fugitive Emissions:

PM Emission Rate (lb/hr)	= Screens + Surge Bin + Truck Loading = 0.091 lb/hr + 0.091 lb/hr + 0.273 lb/hr = 0.455 lb/hr
PM Emission Rate (TPY)	= Screens + Surge Bin + Truck Loading = 0.0035 TPY + 0.0035 TPY + 0.0105 TPY = 0.0175 TPY
PM_{10} Emission Rate (lb/hr)	= Screens + Surge Bin + Truck Loading = 0.0182 lb/hr + 0.0182 lb/hr + 0.0546 lb/hr = 0.091 lb/hr
PM_{10} Emission Rate (TPY)	= Screens + Surge Bin + Truck Loading = 0.0007 TPY + 0.0007 TPY + 0.0021 TPY = 0.0035 TPY

Table A-9. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the AFI Plant

Parameter	Units	No Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	2,407
Maximum Heat Input Rate	10^6Btu/hr	50	50
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0500
Annual Natural Gas Usage	10^6scf/yr	N/A	120.352

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.000	0.000	--	--	--	--
Natural gas	0 6 lb/10^6ft^3	--	--	0.030	0.036	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.03	0.04
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	5.000	6.018	--	--
Worse-Case Combination of Fuels		--	--	--	--	5 00	6.02
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.000	0 000	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	4.200	5.055	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.20	5 05
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0 000	0.000	--	--	--	--
Natural gas	5 5 lb/10^6ft^3[e]	--	--	0.275	0.331	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.28	0 33

Footnotes:
Particulate matter emissions rates through the common plant stack are included in Table 2.3
[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.
[b] Based on the heat content of natural gas of 1,000 Btu/scf.
[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.
[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0 5%.
[e] Based on methane comprised of 52% total VOC.

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE AFI RAILCAR UNLOADING STATION—CURRENT ACTUAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
POTENTIAL FUTURE PM AND PM_{10} EMISSION RATE CALCULATIONS
FOR THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 500 TPH, 394,200 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 500 TPH x (1-0.9)
= 5.0 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 394,200 TPY x (1-0.9)
x 1 ton/2,000 lb
= 1.97 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 5.0 lb/hr x 0.20 lb PM_{10}/lb PM
= 1.0 lb/hr

PM_{10} Emission Rate (TPY) = 1.97 TPY x 0.20 lb PM_{10}/lb PM
= 0.39 TPY

CARGILL FERTILIZER INC. - RIVERVIEW
2000 PM AND PM_{10} EMISSION RATE CALCULATIONS
FOR THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 250 TPH, 31,896 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 250 TPH x (1-0.9)
= 2.5 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 31,896 TPY x (1-0.9) x 1 ton/2,000 lb
= 0.16 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 2.5 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.5 lb/hr

PM_{10} Emission Rate (TPY) = 0.16 TPY x 0.20 lb PM_{10}/lb PM
= 0.03 TPY

CARGILL FERTILIZER INC. - RIVERVIEW
1999 PM AND PM_{10} EMISSION RATE CALCULATIONS FOR
THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 250 TPH, 36,424 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 250 TPH x (1-0.9)
= 2.5 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 36,424 TPY x (1-0.9)
x 1 ton/2,000 lb
= 0.18 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 2.5 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.5 lb/hr

PM_{10} Emission Rate (TPY) = 0.18 TPY x 0.20 lb PM_{10}/lb PM
= 0.04 TPY

Table A-10. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the No 5 DAP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	7,498
Maximum Heat Input Rate	10^6Btu/hr	0	40
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0 31	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0 012
Annual Natural Gas Usage	10^6scf/yr	N/A	87.339

Pollutant	AP-42 Emissions Factor[c]	No 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.000	0 000	--	--	--	--
Natural gas	0 6 lb/10^6ft^3	--	--	0 007	0 026	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0 000	0 000	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1 165	4 367	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.16	4 37
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0 000	0 000	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	0.978	3 668	--	--
Worse-Case Combination of Fuels		--	--	--	--	0 98	3.67
Volatile Organic Compounds							
Fuel oil	0 2 lb/10^3gal	0 000	0 000	--	--	--	--
Natural gas	5 5 lb/10^6ft^3[e]	--	--	0.064	0.240	--	--
Worse-Case Combination of Fuels		--	--	--	--	0 06	0.24

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon

[b] Based on the heat content of natural gas of 1,000 Btu/scf

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998 Emission factors for natural gas are based on AP-42, Section 1 4, July 1998

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0 31%.

[e] Based on methane comprised of 52% total VOC.

APPENDIX B

BASIS OF POTENTIAL EMISSIONS FOR OTHER AFFECTED SOURCES (FUTURE)

Table B-1. Summary of Emission Rate Calculations for the New Molten Sulfur Storage Tank at GTSP

		New Molten Sulfur Tank				
Parameters	Units	Tank Loading from H_2SO_4 Plants	Unloading Into GTSP Plant	Storage/ Idle	Total Emissions (TPY)	Max Emissions (lb/hr)
SULFUR FLOW RATES						
Maximum loading rate	TPH	15	15	0		
Annual loading rate	TPY	131,400	131,400	0		
VENTILATION RATES						
Loading/Unloading	dscfm	4	0	0		
Natural Ventilation through vents	dscfm	30	30	30		
Total Ventilation	dscfm	34	30	30		
TRANSFER TIMES						
Loading/Unloading	hr/yr	8,760	8,760	--		
Idle	hr/yr	--	--	0		
UNCONTROLLED EMISSION FACTORS						
Sulfur particulate	grains/dscf	0.66	0.29	0.29		
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05		
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05		
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05		
CONTROL EFFICIENCY						
Sulfur particulate	%	0	0	0		
TRS (as H_2S)	%	0	0	0		
SO_2	%	0	0	0		
VOC	%	0	0	0		
EMISSION RATES					Annual Emission Rate (TPY)	Maximum Hourly Emission Rate (lb/hr)
Sulfur Particulate	lb/hr	0.19	0.075	0.075	--	0.19
	TPY	0.854	0.327	0.00	0.85	--
TRS (as H_2S)	lb/hr	0.07	0.063	0.063	--	0.07
	TPY	0.317	0.276	0.00	0.32	--
Sulfur Dioxide	lb/hr	0.15	0.13	0.13	--	0.15
	TPY	0.661	0.576	0.00	0.66	--
Volatile Organic Compounds	lb/hr	0.11	0.094	0.094	--	0.11
	TPY	0.471	0.410	0.00	0.47	--

Notes:
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table B.2 Summary of Emission Rate Calculations for the Future Molten Sulfur Handling System

Parameters	Units	Rebuilt Tank No. 1: Loading from Ship(d)	Rebuilt Tank No. 1: Tank No. 2 or 3 Loading from Ship(e)	Rebuilt Tank No. 1: Unloading Into Pit(f)	Rebuilt Tank No. 1: Storage Idle(g)	Rebuilt Tank No. 1: Maximum and Total Emissions	Existing Tank No. 2: Loading from Ship(d)	Existing Tank No. 2: Tank No. 1 or 3 Loading from Ship(e)	Existing Tank No. 2: Unloading Into Pit(f)	Existing Tank No. 2: Storage Idle(g)	Existing Tank No. 2: Maximum and Total Emissions
SULFUR FLOW RATES											
Maximum loading rate	TPH	2,240	0	336	0		2,240	0	336	0	
Annual loading rate	TPY	502,929	0	492,361	0		502,929	0	492,361	0	
VENTILATION RATES											
Loading/Unloading	dscfm	454	0	151	151		454	0	151	151	
Natural Ventilation through vents	dscfm	0	30	30	30		0	30	30	30	
TRANSFER TIMES											
Loading/Unloading	hr/yr	358	--	1,465	--		358	--	1,465	--	
Idle	hr/yr	--	717	--	6,219		--	717	--	6,219	
Operating	hr/yr	--	--	--	--		--	--	--	--	
EMISSION FACTORS											
Sulfur particulate(a)	grains/dscf	0.03	0.29	0.29	0.29		0.03	0.29	0.29	0.29	
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05	3.50E-05		3.50E-05	3.50E-05	3.50E-05	3.50E-05	
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05	7.30E-05		7.30E-05	7.30E-05	7.30E-05	7.30E-05	
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05	5.20E-05		5.20E-05	5.20E-05	5.20E-05	5.20E-05	
CONTROL EFFICIENCY											
Sulfur particulate	%	(b)	0	0	0		(b)	0	0	0	
TRS (as H_2S)	%	0	0	0	0		0	0	0	0	
SO_2	%	0	0	0	0		0	0	0	0	
VOC	%	0	0	0	0		0	0	0	0	
EMISSION RATES						Maximum Hourly and Annual Emission Rates					Maximum Hourly and Annual Emission Rates
Sulfur Particulate	lb/hr	0.117	0.075	0.075	0.075	0.117	0.117	0.075	0.075	0.075	0.117
	TPY	0.021	0.027	0.055	0.232	0.334	0.021	0.027	0.055	0.232	0.334
TRS (as H_2S)	lb/hr	0.953	0.063	0.317	0.317	0.953	0.953	0.063	0.317	0.317	0.953
	TPY	0.171	0.023	0.232	0.986	1.412	0.171	0.023	0.232	0.986	1.412
Sulfur Dioxide	lb/hr	1.989	0.131	0.661	0.661	1.989	1.989	0.131	0.661	0.661	1.989
	TPY	0.356	0.047	0.485	2.057	2.945	0.356	0.047	0.485	2.057	2.945
Volatile Organic Compounds	lb/hr	1.416	0.094	0.471	0.471	1.416	1.416	0.094	0.471	0.471	1.416
	TPY	0.254	0.034	0.345	1.465	2.095	0.254	0.034	0.345	1.465	2.095

Parameters	Units	Existing Tank No. 3: Loading from Ship(d)	Existing Tank No. 3: Tank No. 1 or 2 Loading from Ship(e)	Existing Tank No. 3: Unloading Into Pit(f)	Existing Tank No. 3: Storage Idle(g)	Existing Tank No. 3: Maximum and Total Emissions	Pit 7: Loading	Pit 7: Unloading/Idle	Pit 7: Maximum and Total Emissions	Pit 8: Loading	Pit 8: Unloading/Idle	Pit 8: Maximum and Total Emissions	Pit 9: Loading	Pit 9: Unloading/Idle	Pit 9: Maximum and Total Emissions	Truck Loading Station: Loading	Total All Sources: Maximum and Total Emissions
SULFUR FLOW RATES																	
Maximum loading rate	TPH	2,240	0	336	0		336	0		336	0		336	0		336	
Annual loading rate	TPY	502,929	0	492,361	0		492,361	0		492,361	0		492,361	0		550,000	
VENTILATION RATES																	
Loading/Unloading	dscfm	454	0	151	151		100	0		100	0		100	0		65	
Natural Ventilation through vents	dscfm	0	30	30	30		0	5		0	5		0	5		0	
TRANSFER TIMES																	
Loading/Unloading	hr/yr	358	--	1,465	--		1,465	--		1,465	--		1,465	--		2,381	
Idle	hr/yr	--	717	--	6,219		--	7,295		--	7,295		--	7,295		--	
Operating	hr/yr	--	--	--	--		--	--		--	--		--	--		--	
EMISSION FACTORS																	
Sulfur particulate(a)	grains/dscf	0.03	0.29	0.29	0.29		0.31	0.29		0.31	0.29		0.31	0.29		0.03	
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05	3.50E-05		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05	7.30E-05		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05	5.20E-05		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	
CONTROL EFFICIENCY																	
Sulfur particulate	%	(b)	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		(b)	
TRS (as H_2S)	%	0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
SO_2	%	0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
VOC	%	0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
EMISSION RATES						Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates		Maximum Hourly and Annual Emission Rates (h)
Sulfur Particulate	lb/hr	0.117	0.075	0.075	0.075	0.117	0.437	0.012	0.437	0.437	0.012	0.437	0.437	0.012	0.437	0.017	1.595
	TPY	0.021	0.027	0.055	0.232	0.334	0.320	0.045	0.366	0.320	0.045	0.366	0.320	0.045	0.366	0.021	2.120
TRS (as H_2S)	lb/hr	0.953	0.063	0.317	0.317	0.953	0.021	0.001	0.021	0.021	0.001	0.021	0.021	0.001	0.021	0.014	1.665
	TPY	0.171	0.023	0.232	0.986	1.412	0.015	0.004	0.019	0.015	0.004	0.019	0.015	0.004	0.019	0.017	4.310
Sulfur Dioxide	lb/hr	1.989	0.131	0.661	0.661	1.989	0.044	0.002	0.044	0.044	0.002	0.044	0.044	0.002	0.044	0.030	3.472
	TPY	0.356	0.047	0.485	2.057	2.945	0.032	0.005	0.040	0.032	0.008	0.040	0.032	0.005	0.040	0.035	5.990
Volatile Organic Compounds	lb/hr	1.416	0.094	0.471	0.471	1.416	0.031	0.002	0.031	0.031	0.002	0.031	0.031	0.002	0.031	0.021	2.474
	TPY	0.254	0.034	0.345	1.465	2.095	0.023	0.006	0.029	0.023	0.006	0.029	0.023	0.006	0.029	0.025	6.404

Note:
Total Sulfur Throughput = 2,408,453 tons/yr
Total Sulfur to Each Pit = 492,361 tons/yr (equivalent to current permit limit of 446,661 tonnes per year)
Total Sulfur to Truck Loading Station = 550,000 tons/yr
Total Sulfur to GTSP Plant = 15 TPH = 131,400 TPY
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Footnote
(a) Emission factor resulting in highest emission rate (worst case) depending on exhaust flow rate of given operation.
(b) Emission rate based on an controlled grain loading of 0.03 grains per dscf.
(c) Scrubber does not control emissions from this source.
(d) Operational scenario occurring when molten sulfur is loaded from a ship to a tank.
(e) Operational scenario occurring when molten sulfur is being loaded to either of the other tanks and the given tank is vented naturally.
(f) Operational scenario occurring when a tank is unloading to the pit and emissions may or may not be controlled by the scrubber. Worst-case PM emissions occur when the tank is naturally ventilated. Therefore, an exhaust flow rate of 30 dscfm was used to calculate PM emissions. Worst-case emissions rates for other pollutants occur when the scrubber is operating. Therefore, an exhaust flow rate of a third of the scrubber capacity designated to the tanks (151 dscfm) was used to calculate emissions for these pollutants.
(g) Operational scenario occurring when the tank is at idle and may or may not be controlled by the scrubber. Worst-case PM emissions occur when the tank is naturally ventilated. Therefore, an exhaust flow rate of 30 dscfm was used to calculate PM emissions. Worst-case emissions rates for other pollutants occur when the scrubber is operating. Therefore an exhaust flow rate of a third of the scrubber capacity designated to the tanks (151 dscfm) was used to calculate emissions for these pollutants.
(h) Maximum hourly emissions reflect worst-case of shiploading into one tank, with the remaining tanks unloading into pit or at idle, plus truck loading station operating.

Table B-3. Future Maximum PM/PM_{10} Emissions From Nos. 5, 7, and 9 Rock Mills

Source	EU ID	Control Type	Design Capacity (dscfm)	Operating Hours	PM/PM_{10} Emissions Basis	lb/hr	TPY	Reference
No. 5 Mill Dust Collector	100	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
No. 9 Mill Dust Collector	101	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
Ground Rock Silo Dust Collector	034/102	Baghouse	2,376	8,760	0.02 gr/dscf	0.41	1.78	Nos. 5, 7, 9 Application
No. 7 Mill Dust Collector	106	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
					Totals =	5.10	22.34	

Note: acfm = actual cubic feet per minute
dscfm = dry standard cubic feet per minute
gr/dscf = grains per dry standard cubic foot

Table B-4. Maximum Potential Emission Rates Due to Fuel Combustion, Nos. 5, 7, and 9 Rock Mills (each)

Parameter	Units	No Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr yr	400	8,760
Maximum Heat Input Rate	10^6Btu hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal hr	0.093	N/A
Annual Fuel Oil Usage	10^3gal yr	37.14	N/A
Maximum Sulfur Content	Weight %	0 5	N A
Hourly Natural Gas Usage[b]	10^6scf hr	N/A	0 0130
Annual Natural Gas Usage	10^6scf yr	N/A	113 88

Pollutant	AP-42 Emissions Factor[c]	No 2 Fuel Oil Hourly Emisson Rate (lb hr)	No 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb 10^3gal[d]	6.593	1.319	--	--	--	--
Natural gas	0 6 lb 10^6ft^3	--	--	0 008	0.034	--	--
Worse-Case Combination of Fuels		--	--	--	--	6 59	1 32
Nitrogen Oxides							
Fuel oil	20 lb 10^3gal	1.857	0.371	--	--	--	--
Natural gas	100 lb 10^6ft^3	--	--	1 300	5.694	--	--
Worse-Case Combination of Fuels		--	--	--	--	1 86	5.69
Carbon Monoxide							
Fuel oil	5 lb 10^3gal	0.464	0.093	--	--	--	--
Natural gas	84 lb 10^6ft^3	--	--	1.092	4 783	--	--
Worse-Case Combination of Fuels		--	--	--	--	1 09	4.78
Volatile Organic Compounds							
Fuel oil	0.2 lb 10^3gal	0.019	0.004	--	--	--	--
Natural gas	5.5 lb 10^6ft[e]	--	--	0 072	0.313	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.31

Footnotes:

Particulate matter emissions rates for each rock mill are included in Table B-2.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1 3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

GTSP Ground Rock Handling (EU008)

Future potential based on Title V Permit (Permit No. 0570008-014-AV).

PM Emissions: 0.95 lb/hr: 4.16 TPY

PM_{10} Emissions assumed to be the same as PM emissions.

APPENDIX C

TOWER EAST BAGHOUSE STACK TEST DATA

PERFORMANCE TEST SAMPLING

of the

VESSEL LOADING FACILITY

East Bag Filter

March, 1978

Sampled by: Environmental Laboratory
Chemical Department
Gardinier, Inc.
Tampa, Florida

Process Description

This system unloads dry materials from railcars and re-loads the material onto ocean-going vessels.

Transfer of material is accomplished by elevators and conveyor belting. Material is dumped from railcars into an elevator pit, carried from the pit to a series of transfer conveyor belts and delivered to the vessel to be loaded.

Emissions are controlled by three Flex-Kleen bag filters. Points controlled are the car unloading unit, conveyor belt transfer point, and ships-hold loading area.

Up to 800 tons/hour of phosphate rock and/or phosphate products can be handled.

PARTICULATE SOURCE TEST RESULTS

Company Name: Gardinier, Inc. - U. S. Phosphoric Products

Company Conducting Test: Gardinier, Inc. - U. S. Phosphoric Products

Source Identification: Vessel Loading Facility - East Bag Filter

Date: March 13 and 14, 1978

Run	Molecular Weight	ACF	ACFM	SCFM	% H_2O	T_s °R	Percent Isokinetic	Grains/SCF	Emissions Lbs./Hr.	Allowable Lbs./Hr.
#1	28.967	42.145	12,691	11,967	2.77	546	100	2.40×10^{-3}	0.247	
#2	28.967	40.513	12,725	11,997	2.77	546	95	2.11×10^{-3}	0.217	
#3	28.967	44.923	13,517	12,795	2.76	543	100	1.38×10^{-3}	0.151	
#4										
Mean	28.967	42.527	12,978	12,253	2.77	545	98	1.96×10^{-3}	0.205	

Standard Conditions = Dry, 528 °R, 29.92 in. Hg.

Dry Molecular Weight of gas assumed to be 28.967 when gas composition data not available.

RECERTIFICATION

of the

VESSEL LOADING FACILITY

East Bag Filter

(Permit No. A029-6547)

April 6, 1983

Sampled by: Environmental Laboratory
Chemical Department
Gardinier, Inc.
Tampa, Florida

PROCESS DESCRIPTION

This system unloads dry materials from rail cars and re-loads the material onto ocean-going vessels.

Transfer of material is accomplished by elevators and conveyor belting. Material is dumped from rail cars into an elevator pit, carried from the pit to a series of transfer conveyor belts, and delivered to the vessel to be loaded.

Emissions are controlled by three Flex-Kleen bag filters. Points controlled are the car unloading unit, conveyor belt transfer point, and ship's hold loading area.

Up to 800 tons/hour of phosphate rock can be handled.

Particulate SOURCE TEST RESULTS

Company Name: Gardinier, Inc. - U. S. Phosphoric Products

Company Conducting Test: Gardinier, Inc. - U. S. Phosphoric Products

Source Identification: Vessel Loading Facility, East Bag Filter

Date: 4/6/83

Run	Molecular Weight	ACF	ACFM	SCFM	% H_2O	T_s °F	Percent Isokinetic	Grains/SCF	Emissions Lbs./Hr.	Allowable Lbs./Hr.
#1	29	40.082	9,015	8,578	2.4	84	103	$5.98x10^{-3}$	0.44	
#2	29	38.512	8,611	8,033	2.0	96	104	$6.23x10^{-3}$	0.43	
#3	29	38.302	8,984	8,218	2.3	104	100	$4.11x10^{-3}$	0.29	
#4										
Mean	29	38.965	8,870	8,276	2.2	95	102	$5.44x10^{-3}$	0.39	2.1

Standard Conditions = Dry, 68°F, 29.92 in. Hg.

Dry Molecular Weight of gas assumed to be 28.967 when gas composition data not available.

APPENDIX D

1974 BASELINE AOR DATA

GARDINIER INC.

U.S. Phosphoric Products

Post Office Box 3269 • Tampa, Florida 33601 • Telephone 813-677-9111 • TWX 810-876-0648 • Telex 52565 • Cable-Gardinphos

September 24, 1975

Mr. Arturo McDonald
Hillsborough County Environmental Protection Commission
Stovall Building
385 Morgan
Tampa, Florida 33601

Dear Mr. McDonald:

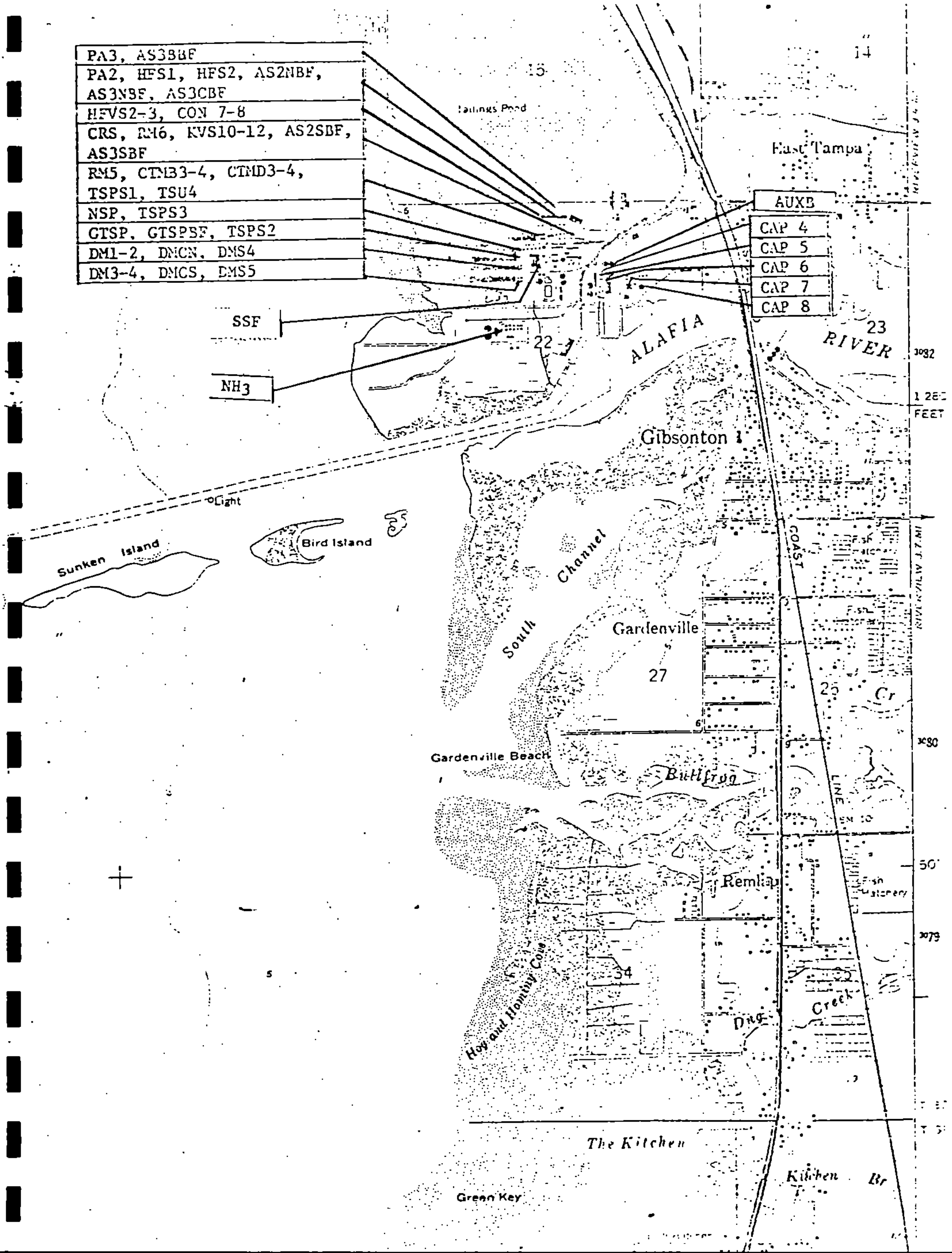
In accordance with your letter of August 21, 1975, the attached is our "Air Pollutant Emissions Report" (Form 158-1275) completed for the year 1974.

Please let me know if you have any questions concerning this data.

Very truly yours,

J. C. Gabriel
Manager, Environmental Control

JCG:rw
Enclosure
cc: Mr. Graf
Mr. Boswell



PA3, AS3BBF
PA2, HFS1, HFS2, AS2NBF, AS3NBF, AS3CBF
HFVS2-3, CON 7-8
CRS, RM6, KVS10-12, AS2SBF, AS3SBF
RM5, CTMB3-4, CTMD3-4, TSPS1, TSU4
NSP, TSPS3
GTSP, GTSPBF, TSPS2
DM1-2, DMCN, DMS4
DM3-4, DMCS, DMS5
SSF
NH3
AUXB
CAP 4
CAP 5
CAP 6
CAP 7
CAP 8
East Tampa
ALAFIA
RIVER
Gibsonton
Sunken Island
Bird Island
South Channel
Gardenville
Gardenville Beach
Bullfrog
Remlap
Hog and Hominy Cove
Bullfrog Creek
The Kitchen
Green Key
Kitchen
COAST LINE
Fish Hatchery

Date [redacted] Submitted: [redacted]

[redacted] OMB NUMBER 158-R75

AIR POLLUTANT EMISSIONS REPORT

SECTION I - GENERAL INFORMATION

For Official Use Only:

Date Sent: ____

Date Returned: ____

UTM Grid Coordinates: ____

SIC No.: ____

Source ID: ____

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products

Plant, institution, or establishment address: P.O. Box 3269, Tampa, Florida 33601
(Street or Box Number) (City) (State) (Zip)

Person to contact regarding this report: Mr. J. C. Gabriel Title: Manager, Environmental Control Telephone: 813-677-9111

Mailing address: P.O. Box 3269, Tampa, Florida 33601
(Street or Box Number) (City) (State) (Zip)

Approximate number of employees at plant, institution, or establishment location: ☐ Less than 100 ☒ 100 or more.

Elevation of plant, institution, or establishment in relationship to mean sea level: 6 - 8 feet above mean sea level, - feet below mean sea level.

Information is representative of calendar year: 1974

Land area at plant location: 637 acres. Enclose a sketch of layout if there is more than one building.

Plant location: (give nearest cross streets, describe by landmarks or enclose a map, engineering drawing, or sketch) West of Intersection of U.S. Highway 41, and Riverview Drive, East Tampa, Florida (see map attached).

☐ Air pollutants of the type indicated in the instructions for the completion of this report, i.e., ____ are not emitted at this plant, institution or establishment. Therefore, no other Sections of the report need be completed.

____ (Signed) ____ (Title)

Please return all sections of this report to: Environmental Protection Commission, Air Engineering Dept., 305 N. Morgan St., 6th Floor Tampa, Florida 33602

Additional forms may be obtained from the above address.

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

AIR POLLUTANT EMISSIONS REPORT

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND POWER

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products

Normal operating schedule for fuel use: 24 Hours per day 7 Days per week 52 Weeks per year 8,760 Hours per year.

Dates of annually occurring shutdowns of operations: Varies . Additional operating information enclosed ☐.

Source Code[a,e]	Number of Combustion Sources[b,e] (Boilers)	Size of Unit (Input)[c,e] 10^6BTU/hr.	Type of Unit[d,e]	Installation Date[e]	Percent Excess Air Used In Combustion (Design)[e]	Power Output Megawatts[e,f]
CTMD	2	27	Gun Type Burner	1952	Unknown	N/A
GTSP	1	40	Gun Type Burner	1952	Unknown	N/A
CON	2	60	Gun Type Burner	1961	Unknown	N/A
SSF	1	2.3	Gun Type Burner	1956	Unknown	N/A
DM	4	7.1	Gun Type Burner	1958 - 1967	Unknown	N/A
RM5	1	Unknown	Gun Type Burner	1953 - 1955	Unknown	N/A

a. List a separate code number to represent each source (e.g., II-a, II-b, II-c, etc.), then enter the same code number and the required data on the continuation of this Section on Page 3, and in Sections V and VI.

b. Multiple sources may be grouped if units are similar in size and type, burn the same fuel, or are vented to the same stack.

c. Nameplate data are sufficient (give rated or maximum capacity, whichever is greater).

d. Hand-fired, underfeed, overfeed, traveling-grate or spreader stoker; cyclone furnace; pulverized, wet or dry bottom with or without fly ash reinjection; rotary or gun type oil burner; etc.

e. List separately future equipment and expected date of installation.

f. Power generation only.

Da[redacted]por[redacted]mit[redacted] ENVIRONMENTAL PROTECTION AGENCY [redacted] FORM APPROVED [redacted]

AIR POLLUTANT EMISSIONS REPORT

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND POWER

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products

Normal operating schedule for fuel use: 24 Hours per day 7 Days per week 52 Weeks per year 8,760 Hours per year.

Dates of annually occurring shutdowns of operations: Varies. Additional operating information enclosed ☐.

Source[a,e] Code	Number of Combustion Sources[b,e] (Boilers)	Size of Unit (Input)[c,e] 10^6BTU/hr.	Type of Unit[d,e]	Installation Date[e]	Percent Excess Air Used In Combustion (Design)[e]	Power Output Megawatts[e,f]
KVS10	1	0.9	Gun Type Burner	1962	Unknown	N/A
KVS12	1	3.0	Gun Type Burner	1968	Unknown	N/A
N43	1	202	Gun Type Burner	1961	Unknown	N/A
AUXB	1	130	Gun Type Burner	1974	Unknown	N/A

a. List a separate code number to represent each source (e.g., II-a, II-b, II-c, etc.), then enter the same code number and the required data on the continuation of this Section on Page 3, and in Sections V and VI.

b. Multiple sources may be grouped if units are similar in size and type, burn the same fuel, or are vented to the same stack.

c. Nameplate data are sufficient (give rated or maximum capacity, whichever is greater).

d. Hand-fired, underfeed, overfeed, traveling-grate or spreader stoker; cyclone furnace; pulverized, wet or dry bottom with or without fly ash reinjection; rotary or gun type oil burner; etc.

e. List separately future equipment and expected date of installation.

f. Power generation only.

AIR POLLUTANT EMISSIONS REPORT

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND POWER (continued)

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Chemical Complex

Source Code a	Type of Fuel b	Annual Consumption c: Quantity d	Percent Distribution by Season: Spring March/May	Summer June/Aug.	Fall Sept./Nov.	Winter Dec./Febr.	Hourly Consumption d: Maximum	Average	Percent Used for Space Heat	Approx. Heat Content BTU/Quan. e	Approx. Percent Sulfur f	Percent Ash (Solid Fuel Only) e,f	Delivered Cost of Fuel $/Quantity	Future Use g
CTMD	No. 6 Oil	426.3 M Gal	26	25	18	31	-	146 GPH	0	150,000 BTU/Gal	2.0	N/A	$0.26 per Gal	-
CTMD	Nat. Gas	6.36 MMCF	8	8	64	20	-	21.430 CFH	0	1020 BTU/SCF	Neg	N/A	$.05631per Therm	-
GTSP	No. 6 Oil	1454 MGal	25	25	25	25	-	226 GPH	0	150,000 BTU/Gal	2.0	N/A	$0.26 per Gal	-
GTSP	Nat Gas	2.9 MMCF	18	6	50	26	-	33,250 CFH	0	1,020 BTU/SCF	Neg	N/A	$.0563per Therm	-
CON	No. 6 Oil	1487 M Gal	21	25	27	27	-	177 GPH	0	150,000 BTU/Gal	2.0	N/A	$0.26 per Gal	-
CON	Nat. Gas	24.21 MMCF	15	12	61	12	-	26.050 CFH	0	1,020 BUT/SCF	Neg	N/A	$.0563 per Therm	-
SSF	No. 2 Oil	43,260 Gal	25	23	28	26	-	6.6 GPH	0	142,000 BTU/Gal	2.0	N/A	$0.26 per Gal	-

a. List code numbers corresponding to each source referred to on page 2, (e.g., II-a, II-b, II-c, etc.), then enter required data on this page, and for the same code number sources in Sections V and VI.

b. Coke, bituminous coal, anthracite coal, lignite; No. 1, 2, 4, 5 and 6 fuel oil; natural gas; LPG; refinery or coke oven gas; residual coke; wood; bark; sludge; etc. (Note: Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type.)

c. Fuel data are to be reported on an "as burned" basis.

d. Solid fuel, tons; liquid fuel, gallons; gaseous fuel, 1000 cubic feet.

e. If unknown, please give name and address of fuel supplier.

f. Sulfur and ash content for each fuel should be a weighted average.

g. Estimated percent increase or decrease in fuel usage (by fuel type) per year for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately on page 2 and the expected fuel use on this page.

AIR POLLUTANT EMISSIONS REPORT

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND POWER (continued)

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code a	Type of Fuel b	Annual Consumption c: Quantity d	Percent Distribution by Season: Spring March/May	Summer June/Aug.	Fall Sept./Nov.	Winter Dec./Febr.	Hourly Consumption d: Maximum	Average	Percent Used for Space Heat	Heat Content BTU/Quan. c	Percent Sulfur c,f	Percent Ash (Solid Fuel Only) c,f	Delivered Cost of Fuel $/Quantity	Future Use g
DM	Nat Gas	33.39 MMCF	24	24	27	25	-	5,280 CFH	0	1,020 BTU/SCF	Neg	N/A	$.0563/ Therm	-
RM5	No. 2 Oil	Est 5,800Gal	28	23	23	26	-	1.1 GPH	0	142,000 BTU/Gal	0.1	N/A	$0.26/Gal	-
KVS10	No. 2 Oil	8,050 Gal	28	26	21	25	-	0.9 GPH	0	142,000 BTU/Gal	0.1	N/A	$0.26/Gal	-
KVS12	No. 2 Oil	Est 27,000Gal	27	24	24	25	-	3.1 GPH	0	142,000 BTU/Gal	0.1	N/A	$0.26/Gal	-
NH3	No. 2 Oil	9,781 M Gal	28	30	20	22	-	1,206 GPH	0	142,000 BTU/Gal	0.1	N/A	$0.26/Gal	-
NH3	Nat Gas	3,091 MMCF	25	23	26	26	-	381 MCFH	0	1,020 BTU/SCF	Neg	N/A	$.0563/ Therm	-
AUXB	No. 2 Oil	627.1 M Gal	0	12	62	26	-	915 GPH	0	142,000 BTU/Gal	0.1	N/A	$0.26/Gal	-

a. List code numbers corresponding to each source referred to on page 2, (e.g., II-a, II-b, II-c, etc.), then enter required data on this page, and for the same code number sources in Sections V and VI.
b. Coke, bituminous coal, anthracite coal, lignite; No. 1, 2, 4, 5 and 6 fuel oil; natural gas; LPG; refinery or coke oven gas; residual coke; wood; bark; sludge; etc. (Note: Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type.)
c. Fuel data are to be reported on an "as burned" basis.
d. Solid fuel, tons; liquid fuel, gallons; gaseous fuel, 1000 cubic feet.
e. If unknown, please give name and address of fuel supplier.
f. Sulfur and ash content for each fuel should be a weighted average.
g. Estimated percent increase or decrease in fuel usage (by fuel type) per year for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately on page 2 and the expected fuel use on this page.

Dal[redacted]ort [redacted]itt[redacted] SE[redacted]

AIR POLLUTANT EMISSIONS REPORT

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND POWER (continued)

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Fuel[b]	Annual Consumption[c]					Hourly Consumption[d]		Percent Used for Space Heat	Heat Content BTU/Quan.[e]	Percent Sulfur[e,f]	Percent Ash (Solid Fuel Only)[e,f]	Delivered Cost of Fuel $/Quantity	Future Use[g]
		Quantity[d]	Percent Distribution by Season											
			Spring March/May	Summer June/Aug.	Fall Sept./Nov.	Winter Dec./Febr.	Maximum	Average						
AUXB	Nat Gas	16.7 MMCF	64	0	0	36	-	12.74 MGF1+	0	1,020 BTU/SCF	Neg	N/A	$.0563 Therm	-

a. List code numbers corresponding to each source referred to on page 2, (e.g., II-a, II-b, II-c, etc.), then enter required data on this page, and for the same code number sources in Sections V and VI.

b. Coke, bituminous coal, anthracite coal, lignite; No. 1, 2, 4, 5 and 6 fuel oil; natural gas; LPG; refinery or coke oven gas; residual coke; wood; bark; sludge; etc. (Note: Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type.)

c. Fuel data are to be reported on an "as burned" basis.

d. Solid fuel, tons; liquid fuel, gallons; gaseous fuel, 1000 cubic feet.

e. If unknown, please give name and address of fuel supplier.

f. Sulfur and ash content for each fuel should be a weighted average.

g. Estimated percent increase or decrease in fuel usage (by fuel type) per year for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately on page 2 and the expected fuel use on this page.

AIR POLLUTANT EMISSIONS REPORT

SECTION III - COMBUSTIBLE SOLID AND LIQUID WASTES DISPOSAL

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products

Combustible solid and liquid wastes disposed of ☐ on site, ☒ off site, ☐ both on and off site. If off site, location of disposal site and/or name of hauler: United Sanitation Services (If disposal of solid and liquid wastes is partly or wholly on site, complete remainder of this page and Sections IV, V and VI; otherwise, skip to Section IV.)

Normal on-site combustion operating schedule: ____ Hours per day ____ Days per week ____ Weeks per year ____ Hours per year.

Seasonal and/or peak operation period: (Specify) ____

Dates of annually occurring shutdowns of operations: ____. Additional operating information enclosed ☐.

Source Code[a]	Waste Material			Method of Disposal[d]	Installation Date	Hourly Burning Rate, lbs.		Auxiliary Fuel Used[e]	Percent Excess Air Used in Combustion (Design)	Future Disposal[f]
	Type[b]	Amount Per Year[c]	Percent Combustible			Average	Maximum			

a. List a separate code number to represent each source (e.g., III-a, III-b, III-c, etc.), then enter required data on this page and for the same code number sources in Section V and VI.
b. Rubbish, garbage, mixed garbage and rubbish, waste paper, wood chips or sawdust, etc.
c. Tons, pounds, or gallons/year.
d. Open burning dump; incinerator, single chamber; etc. (See instructions for examples and use appropriate identification numbers; other non-listed methods, specify.)
e. Indicate whether auxiliary fuel is used in incinerators and pit burning, and the amount.
f. Estimated increase or decrease in combustible solid and liquid wastes disposal rate for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately.

Date Report Submitted:______

FORM APPROVED
OMB NUMBER

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

SECTION IV - PROCESS/OPERATIONS EMISSIONS

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Normal operating schedule: 24 Hours per day 7 Days per week 52 Weeks per year 8.760 Hours per year.

Seasonal and/or peak operation period: No seasonal variation

Dates of annually occurring shutdowns of operations: Varies . Additional operating information enclosed ☐.

Source Codes[a]	Processes or Operations Releasing Pollutants to the Atmosphere[b,c,d]	Date Installation Went on Line	Raw Materials Used for Processes or Operations[e,f]				Products of Processes or Operations[g,f]				Intermittent Operation Only: Average Hours/week[h]	Future Increase or Decrease in Process Rate[i]
			Type	Quantity			Type	Annual Average[f]	Quantity			
				Annual Average[f]	Hourly Process Rate, lbs. Design	Maximum			Hourly Process Rate, lbs. Design	Maximum		
5 RM	305 019 02	1953 1955	Phos Rock	44.9TPH	50 TPH	-	Phos Rock	44.9 TPH	50 TPH	-	N/A	-
(1)	301 029 01	1952	Rock Acid	35.1TPH 67.1TPH	37.5 TPH 69.1 TPH	-	ROP Triple	92.2 TPH	92.0 TPH	-	N/A	-
(2)	301 029 02	1972	Rock Acid	20.6TPH 32.2TPH	20.3 TPH 31.4 TPH	-	Gran Triple	54.8 TPH	65.0 TPH (3)	-	N/A	-
(4)	301 028 02	1930	Rock H_2SO_4	13.7TPH 8.2TPH	16.3 TPH 9.7 TPH	-	Super Phosphate	22.6TPH	25.2 TPH	-	N/A	-
TSU4	301 030 99(5)	1954	ROP Triple	69.5TPH	86 TPH	-	ROP Triple	69.5 TPH	86 TPH	-	N/A	-

a. List a separate code number to represent each source (e.g., IV-a, IV-b, IV-c, etc.) then enter required data on this page and for the same code number sources in Sections V and VI.
b. Multiple sources may be grouped if similar in size and type.
c. Sulfuric acid-contact; aluminum smelting-crucible furnace; cement manufacturing-dry process; etc. (See instruction for examples and use appropriate identification numbers; other non-listed processes and operations, specify.)
d. The pollutants to be covered in this report are listed in the accompanying instructions.
e. Sulfur burned; pig, foundry returns, or scrap aluminum melted; limestone, cement rock, clay, iron ore used; etc.
f. Pounds, tons, gallons, barrels, etc.
g. Sulfuric acid produced; aluminum ingots produced; cement produced; etc.
h. For intermittent processes, indicate average number of hours per week of operation so that estimates of yearly emissions may be obtained.
i. Estimated percent increase or decrease in process rate on a total plant basis for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately.

(1) Includes CTMB3-4, LTMD3-4, CTMBLDG, TSPS1, TSPS2
(2) Includes GTSP, GTSPBF, TSPS2
(3) Includes capacity to granulate 15 TPH ROP Triple Superphosphate
(4) Includes NSP, TSPS3
(5) ROP Triple Superphosphate screening and milling unit

Date Form Submitted:

ENVIRONMENTAL PROTECTION AGENCY

AIR POLLUTANT EMISSIONS REPORT

FORM APPROVED
OMB NUMBER 158 R73

SECTION IV - PROCESS/OPERATIONS EMISSIONS

lant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Normal operating schedule: 24 Hours per day 7 Days per week 52 Weeks per year 8,760 Hours per year.

easonal and/or peak operation period: Bi seasonal variation

Dates of annually occurring shutdowns of operations: Varies. Additional operating information enclosed ☐.

Source Codes	Processes or Operations Releasing Pollutants to the Atmosphere	Date Installation Went on Line	Raw Materials Used for Processes or Operations				Products of Processes or Operations				Intermittent Operation Only: Average Hours/week	Future Increase or Decrease in Process Rate
			Type	Quantity: Annual Average	Quantity: Hourly Process Rate, lbs. Design	Quantity: Hourly Process Rate, lbs. Maximum	Type	Annual Average	Quantity: Hourly Process Rate, lbs. Design	Quantity: Hourly Process Rate, lbs. Maximum		
SSF	301 999 99 (1)	1941	NACL H_2SiF_6	2.63 2.0 TPH	3 TPH 2.3 TPH	-	Na_2SiF_6	2.16 TPH	2.42 TPH	-	N/A	-
(2)	301 030 02	1958 1967	NH_3 Acid	15.5TPH 65.6TPH	15.4 TPH 65.6 TPH	-	AMM Phosphate	71.9TPH	72 TPH	-	N/A	-
NH_3	301 002 01	1961	Nat Gas	346MCFH	390 MCFH	-	NH_3	15.8 TPH	17.3 TPH	-	N/A	-

. List a separate code number to represent each source (e.g., IV-a, IV-b, IV-c, etc.) then enter required data on this page and for the same code number sources in Sections V and VI.

. Multiple sources may be grouped if similar in size and type.

. Sulfuric acid-contact; aluminum smelting-crucible furnace; cement manufacturing-dry process; etc. (See instruction for examples and use appropriate identification numbers; other non-listed processes and operations, specify.)

. The pollutants to be covered in this report are listed in the accompanying instructions.

. Sulfur burned; pig, foundry returns, or scrap aluminum melted; limestone, cement rock, clay, iron ore used; etc.

. Pounds, tons, gallons, barrels, etc.

. Sulfuric acid produced; aluminum ingots produced; cement produced; etc.

. For intermittent processes, indicate average number of hours per week of operation so that estimates of yearly emissions may be obtained.

. Estimated percent increase or decrease in process rate on a total plant basis for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately.

1) Sodium Silicofluoride Manufacturing

(2) Includes DM1, DM2, DM3, DM4, DMCN, DMCS, DMS4, DMS5

Date Form Submitted: ______

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

FORM APPROVED
OMB NUMBER 158 R73

SECTION IV - PROCESS/OPERATIONS EMISSIONS

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Normal operating schedule: 24 Hours per day 7 Days per week 52 Weeks per year 8,760 Hours per year.

Seasonal and/or peak operation period: No seasonal variation

Dates of annually occurring shutdowns of operations: Varies . Additional operating information enclosed ☐.

Source Code[a]	Processes or Operations Releasing Pollutants to the Atmosphere[b,c,d]	Date Installation Went on Line	Raw Materials[e] Used for Processes or Operations				Products[g] of Processes or Operations				Intermittent Operation Only: Average Hours/week[h]	Future[i] Increase or Decrease in Process Rate
			Type	Quantity			Type	Annual Average[f]	Quantity			
				Annual Average[f]	Hourly Process Rate, lbs.				Hourly Process Rate, lbs.			
					Design	Maximum			Design	Maximum		
CRS	305 019 03	1954 1966	Phos Rock	202 TPH	256 TPH	-	Phos Rock	202 TPH	256 TPH	-	N/A	-
(1)	305 019 02	1954 1968	Phos Rock	202 TPH	256 TPH	-	Phos Rock	202 TPH	256 TPH	-	N/A	-
(2)	301 016 02	1960	Phos Rock	9.12TPH	105 TPH	-	Acid as P205	26.7TPH	30.7 TPH	-	N/A	-
PA3	301 016 02	1966	Phos Rock	140.8TPH	140 TPH	-	Acid as P205	39.2TPH	41.0TPH	-	N/A	-
CON 7 - 8	(3) 301 016 99	1960	Acid P205	11.3TPH	13.3 TPH	-	Acid as P205	11.3TPH	13.3TPH	-	N/A	-

a. List a separate code number to represent each source (e.g., IV-a, IV-b, IV-c, etc.) then enter required data on this page and for the same code number sources in Sections V and VI.
b. Multiple sources may be grouped if similar in size and type.
c. Sulfuric acid-contact; aluminum smelting-crucible furnace; cement manufacturing-dry process; etc. (See instruction for examples and use appropriate identification numbers; other non-listed processes and operations, specify.)
d. The pollutants to be covered in this report are listed in the accompanying instructions.
e. Sulfur burned; pig, foundry returns, or scrap aluminum melted; limestone, cement rock, clay, iron ore used; etc.
f. Pounds, tons, gallons, barrels, etc.
g. Sulfuric acid produced; aluminum ingots produced; cement produced; etc.
h. For intermittent processes, indicate average number of hours per week of operation so that estimates of yearly emissions may be obtained.
i. Estimated percent increase or decrease in process rate on a total plant basis for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately.

(1) Includes RM6, KVS10-12, ASZNBF, AS2SBF, A535BF, AS3CBF, AS3NBF, AS3BBF
(2) Includes PA2, HFVS2, HFVS3, HFSI, 4FS2
(3) Direct fired wetted-wall phosphoric acid concentrators

Da[redacted]epo[redacted]bmitted:[redacted] [redacted] [redacted] [redacted] E[redacted]IR[redacted]ME[redacted]L [redacted]TE[redacted]ON[redacted]GE[redacted] [redacted] [redacted] [redacted]M A[redacted]ED [redacted] [redacted]

OMB NUM[redacted]ER 158-R73

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e]		Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI G
				Design Percent	Operating Percent			
CAP4	043	1947	SO_2	98.0	98.0	450	27,800	0
	Packed Mist Eliminator	1947	Acid Mist	(1)	(2)	200	20,500	0
CAP5	043	1951	SO_2	98.0	98.0	400	37,300	0
	Packed Mist Eliminator	1951	Acid Mist	(1)	(2)	200	28,700	0
CAP6	043	1955	SO_2	98.0	98.0	400	51,400	0
	Packed Mist Eliminator	1955	Acid Mist	(1)	(2)	200	37,200	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Design efficiency not known.

(2) Efficiency not known as only exit loadings are measured

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

Da[redacted] Report [redacted]mitted:[redacted] E[redacted]R[redacted]EN[redacted]L [redacted]TE[redacted]ON[redacted]GEN[redacted] [redacted]M AP[redacted]ED [redacted]

OMB NUMBER 158-R78

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e] Design Percent	Efficiency[e] Operating Percent	Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI G
CAP7	043	1961	SO_2	98.0	98.0	400	104,000	0
	Packed Mist Eliminator	1961	Acid Mist	(1)	(2)	200	76,200	0
CAP8	043	1966	SO_2	98.0	98.0	500	123,700	0
	014	1966	Acid Mist	(1)	(2)	200	87,700	0
CRS	018	1968	Particulate	Approx. 99	(2)	100	2,800	0
RM6	018	1954	Particulate	Approx. 99	(2)	95	10,600	0
KVS10	018	1962	Particulate	Approx. 99	(2)	130	8,600	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Design efficiency not known.

(2) Efficiency not known as only exit loadings are measured.

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

Da[redacted]mitted: [redacted] E[redacted]RO[redacted]EN[redacted]L [redacted]TE[redacted]ON[redacted]EN[redacted] [redacted] AP[redacted]ED [redacted]

OMB NUMBER 158-R7[illegible]

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., US Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e]		Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI G
				Design Percent	Operating Percent			
KVS11	018	1965	Particulate	Approx. 99	(1)	138	7,000	0
KVS12	018	1968	Particulate	Approx. 99	(1)	166	8,300	0
AS2NBF	018	1954	Particulate	Approx. 99	(1)	96	1,600	0
AS23BF	018	1954	Particulate	Approx. 99	(1)	122	1,600	0
AS3BBF	018	1965	Particulate	Approx. 99	(1)	132	1,500	0
AS3NBF	018	1965	Particulate	Approx. 99	(1)	105	800	0
AS3CBF	018	1965	Particulate	Approx. 99	(1)	110	1,700	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Efficiency not known as only exit loadings are measured.

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e]		Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI G
				Design Percent	Operating Percent			
AS3SBF	018	1965	Particulate	Approx. 99	(1)	116	1,700	0
RM5	018	1953	Particulate	Approx. 99	(1)	138	12,000	0
GTSPBF	018	1972	Particulate	Approx. 99	(1)	128	1,700	0
DMCN DMCS	009	1971	Particulate	(2)	Approx. 75	110 - 130	60,000	0
PA2	052	1961	Fluoride & Particulate	60 - 90	Approx. 99	120	28,000	0
PA3	050	1965	Fluoride & Particulate	(3)	Approx. 99	112	21,000	0
HFVS2	013 Barometric Scrubber	1947	Fluoride & Particulate	(3)	(1)	100	800	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Efficiency not known as only exit loadings are determined.
(2) Varies with particulate size.
(3) Design efficiency not known.

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

Dat[redacted]port[redacted]itte[redacted] E[redacted]RO[redacted]EN[redacted] P[redacted]E[redacted]ON[redacted]EN[redacted] APP[redacted]D [redacted]

OMB NUMBER 158-R75

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e]		Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI G
				Design Percent	Operating Percent			
HFVSB	013 Barometric Scrubber	1947	Fluoride & Particulate	(1)	(2)	100	1,200	0
HFS1	052	1961	Fluoride & Particulate	60 - 90	Approx. 99	80	33,000	0
HFS2	052	1961	Fluoride & Particulate	60 - 90	Approx. 99	90	30,000	0
CON7-8	052	1961	Fluoride, SO_x & Particulate	(1)	(3)	180	26,000	0
	053	1961	Fluoride, SO_x & Particulate	(1)	Approx. 99	160	24,000	0
DMI-4	052	1958 - 61	Fluoride & Particulate	60 - 90	95 - 97	140	39,000	0
CTMB3-4	052	1961	Fluoride & Particulate	60 - 90	Approx. 88	90	32,000	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Design efficiency not known
(2) Efficiency not known as only exit loadings are measured
(3) Not measured

NOTE: Please read reverse side of this page. Use additional sheets if necessary. Retain last copy.

Date Report Submitted: ____________

ENVIRONMENTAL PROTECTION AGENCY

FORM APPROVED
OMB NUMBER [illegible]

AIR POLLUTANT EMISSIONS REPORT

SECTION V - AIR CLEANING EQUIPMENT

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

Source Code[a]	Type of Air Cleaning Equipment[b,c]	Installation Date[c]	Pollutant Removed[c,d]	Efficiency[e]		Inlet Gas Temperature, °F Estimated	Inlet Gas Flow Rate,[f] CFM Estimated	Exit Gas Pressure, PSI
				Design Percent	Operating Percent			
CTMD3-4	052	1961	Fluoride & Particulate	60 - 90	90 - 95	100	30,000	0
TSU4	052	Unk	Fluoride & Particulate	(1)	Approx. 88	100	21,000	0
GTSP	053 Two in Parallel	1972	Fluoride & Particulate	(1)	(2)	200	--	0
	050	1972	Fluoride & Particulate	(1)	Approx. 99	130	103,000	0
NSP	052	1961	Fluoride & Particulate	60 - 90	Approx. 99	100	15,000	0
SSF	052	1970	Fluoride & Particulate	(1)	83	160	16,000	0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Wet scrubber, electrostatic precipitator, fabric filter, etc. (See instructions for examples and use appropriate identification numbers; other non-listed type, specify.)

c. Please list future equipment separately.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give efficiency in terms of pollutant removed.

f. At actual flow conditions.

(1) Design efficiency not known

(2) Not Measured

Date Form Submitted: ______ **ENVIRONMENTAL PROTECTION AGENCY** FORM APPROVED OMB NUMBER [illegible]

AIR POLLUTANT EMISSIONS REPORT

SECTION IV - PROCESS/OPERATIONS EMISSIONS

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Chemical Complex

Normal operating schedule: 24 Hours per day 7 Days per week 52 Weeks per year 8,760 Hours per year.

Seasonal and/or peak operation period: No seasonal variation.

Dates of annually occurring shutdowns of operations: varies. Additional operating information enclosed ☐.

Source Code[a]	Processes or Operations Releasing Pollutants to the Atmosphere[b,c,d]	Date Installation Went on Line	Raw Materials[e] Used for Processes or Operations: Type	Raw Materials: Quantity: Annual Average[f]	Raw Materials: Hourly Process Rate, lbs.: Design	Raw Materials: Hourly Process Rate, lbs.: Maximum	Products[g] of Processes or Operations: Type	Products: Quantity: Annual Average[f]	Products: Hourly Process Rate, lbs.: Design	Products: Hourly Process Rate, lbs.: Maximum	Intermittent Operation Only: Average Hours/week[h]	Future[i] Increase or Decrease in Process Rate
CAP4	301 023 08	1947	Sulfur	3.22TPH	3.80 TPH	-	Sulfuric Acid	9.65 TPH	11.4 TPH	-	N/A	-
CAP5	301 023 08	1951	Sulfur	5.73TPH	6.60 TPH	-	Sulfuric Acid	17.19TPH	19.8 TPH	-	N/A	-
CAP6	301 023 08	1955	Sulfur	7.91TPH	9.03 TPH	-	Sulfuric Acid	23.74TPH	27.1 TPH	-	N/A	-
CAP7	301 023 08	1961	Sulfur	17.93TPH	19.4 TPH	-	Sulfuric Acid	53.82TPH	58.3 TPH	-	N/A	-
CAP8	301 023 08	1966	Sulfur	19.92TPH	21.8 TPH	-	Sulfuric Acid	59.80TPH	65.4 TPH	-	N/A	-

a. List a separate code number to represent each source (e.g., IV-a, IV-b, IV-c, etc.) then enter required data on this page and for the same code number sources in Sections V and VI.
b. Multiple sources may be grouped if similar in size and type.
c. Sulfuric acid-contact; aluminum smelting-crucible furnace; cement manufacturing-dry process; etc. (See instruction for examples and use appropriate identification numbers; other non-listed processes and operations, specify.)
d. The pollutants to be covered in this report are listed in the accompanying instructions.
e. Sulfur burned; pig, foundry returns, or scrap aluminum melted; limestone, cement rock, clay, iron ore used; etc.
f. Pounds, tons, gallons, barrels, etc.
g. Sulfuric acid produced; aluminum ingots produced; cement produced; etc.
h. For intermittent processes, indicate average number of hours per week of operation so that estimates of yearly emissions may be obtained.
i. Estimated percent increase or decrease in process rate on a total plant basis for the five years after the calendar year for which this report is completed. If increase is due to new equipment, please list this equipment separately.

Date Report Submitted: ______________

ENVIRONMENTAL PROTECTION AGENCY

FORM APPROVED
OMB NUMBER 158-R75

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F Approximate	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity: Tons Per Year	Quantity: Lbs. Per Hour Average	Quantity: Lbs. Per Hour Maximum
CAP4	80	4.7	20.0	194	19,770	21,260	Sulfur Dioxide	1,094	266	282
							Acid Mist	17.3	4.20	5.34
CAP5	74	53 (5.3)	21.1	189	31,660	33,520	Sulfur Dioxide	1,951	462	480
							Acid Mist	23.2	5.5	7.10
CAP6	72	5.9	22.9	189	48,140	51,290	Sulfur Dioxide	2,602	657	688
							Acid Mist	37.2	9.4	11.0

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

Date Report Submitted: ______________

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

0118
FORM APPROVED
OMB NUMBER 158-R78

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity Tons Per Year	Quantity Lbs. Per Hour Average	Quantity Lbs. Per Hour Maximum
CAP7	92	9.4	18.3	183	82,990	92,830	Sulfur Dioxide	6,102	1,481	1,503
							Acid Mist	70.4	17.1	27.1
CAP8	96	10.7	16.3	174	124,620	130,420	Sulfur Dioxide	6,462	1,612	1,679
							Acid Mist	88.2	22	29.2
CRS (1)	93	1.1	48.8	91	2,780	-(1)	Particulate	3.94	0.9	0.9
RM6	95	2.0	55.5	91	10,460	10,460	Particulate	22.8	5.2	8.6
KVS10	87	1.7	59.8	118	8,150	-(1)	Particulate	17.0	4.4	4.4(1)

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

(1) 1973, One test only

Date Report Submitted: ______________ ENVIRONMENTAL PROTECTION AGENCY 01 FORM APPROVED OMB NUMBER [illegible]

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
					Average	Maximum		Tons Per Year	Lbs. Per Hour Average	Lbs. Per Hour Maximum
KVS11	70	1.6	61.0	126	7,360	7,670	Particulate	12.2	3.6	6.9
KVS12	71	1.6	56.4	135	6,810	8,260	Particulate	5.88	1.6	2.9
AS2NBF	85	1.0	34.2	97	1,610	2.250	Particulate	2.33	0.6	1.21
AS2SBF	96	0.9	65.2	115	2,490	2,780	Particulate	1.13	0.29	0.40
AS3BBF	108	1.2	23.0	122	1,560	1,580	Particulate	3.57	0.95	1.10
AS3NRF	82	1.2	9.1	113	620	1,090	Particulate	0.60	0.16	0.21
AS3CBF	115	1.2	23.1	118	1,570	1,750	Particulate	1.95	0.52	0.96

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

ate Report Submitted: ____________

ENVIRONMENTAL PROTECTION AGENCY

FORM APPROVED
OMB NUMBER 158-R75

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

lant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
								Tons Per Year	Lbs. Per Hour	
					Average	Maximum			Average	Maximum
AS3SBF	100	1.2	16.5	117	1,120	- (1)	Particulate	3.16	0.84	- (1)
RM5	66	2.0	57.3	115	10,800	10,980	Particulate	44.7	10.2	12.4
GTSPBF	88	113 (1.3)	21.8	153	1,740	2,120	Particulate	1.16	0.36	0.49
DMCN	55	4.3	55.5	144	48,340	53,050	Water Soluble Fluoride (F)	4.12	1.24	1.55
							Particulate	187.6	56.4	64.8
DMCS	55	4.3	56.2	125	48,990	60,730	Water Soluble Fluoride (F)	3.05	0.99	1.83
							Particulate	137.4	44.6	67.3

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.
b. Values should be representative of average flow conditions for hours of operation.
c. At actual flow conditions.
d. The pollutants to be covered in this survey are specified in the accompanying instructions.
e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.
(1) One test only

ate Report Submitted: ____________

FORM APPROVED
OMB NUMBER 158-R75

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

lant, institution, or establishment name: Gardinier Inc., US Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity Tons Per Year	Quantity Lbs. Per Hour Average	Quantity Lbs. Per Hour Maximum
PA2	110	4.0	38.2	145	28,800	32,680	Water Soluble Fluoride (F)	2.53	0.65	1.05
							Particulate	30.3	7.8	14.8
PA3	93	4.0	19.5	118	14,740	17,750	Water Soluble Fluoride (F)	0.30	0.08	0.12
							Particulate	20.2	5.4	9.2
HFVS2	4.5	1.1	16.8	153	960	- (1)	Water Soluble Fluoride (F)	0.08	0.02	0.02 (1)
							Particulate	0.04	0.01	0.01 (1)

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

(1) One test only

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

ant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
					Average	Maximum		Tons Per Year	Lbs. Per Hour Average	Lbs. Per Hour Maximum
HFVS3	4.5	1.5	16.3	126	1,730	1,730	Water Soluble Fluoride (F)	0.04	0.01	0.02
							Particulate	1.55	0.4	0.67
HFS2	59	4.75	35.5	86	37,750	- (2)	Water Soluble Fluoride (F)	1.28	0.33	0.33
							Particulate	25.3	6.5	6.5
HFS3	51	4.0	48.4	93	36,470	39,100	Water Soluble Fluoride (F)	0.85	0.22	0.29
							Particulate	24.5	6.3	10.4

. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

. Values should be representative of average flow conditions for hours of operation.

. At actual flow conditions.

. The pollutants to be covered in this survey are specified in the accompanying instructions.

. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

1) Varies with ambient conditions
2) One test only

ate Report Submitted: [redacted]

OMB NUMBER 158-R78

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

lant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS.e			
Source Code.a	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,b ft./sec.	Exit Gas Temperature,b °F	Exit Gas Flow Rate, CFM.c		Pollutant.d	Quantity		
								Tons Per Year	Lbs. Per Hour	
					Average	Maximum			Average	Maximum
CON7	78	6.0	17.2	165	29,150	- (1)	Water Soluble Fluoride (F)	2.39	1.0	1.0 (1)
							Particulate	28.9	12.5	12.5 (1)
							SO_x as SO_2	99.2	41.3	41.4 (2)
CON8	78	6.0	16.7	159	28,400	28,400	Water Soluble Fluoride (F)	2.83	1.22	1.49
							Particulate	32.9	14.2	16.8
							SO_x as SO_2	92.0	39.7	39.7 (2)

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

(1) One test only

(2) Estimated from sulfur in fuel

Date Report Submitted: ____________

ENVIRONMENTAL PROTECTION AGENCY

AIR POLLUTANT EMISSIONS REPORT

01

FORM APPROVED
OMB NUMBER 158-R78

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity: Tons Per Year	Quantity: Lbs. Per Hour Average	Quantity: Lbs. Per Hour Maximum
DM4	90	3.5	57.2	149	33.050	34,640	Water Soluble Fluoride (F)	2.02	0.69	0.96
							Particulate	26.9	9.2	18.9
DMS4	(Storage Building)			(1)	(1)	(1)	Water Soluble Fluorine (F)	1.3	0.29	0.29
DMS5	(Storage Building)			(1)	(1)	(1)	Water Soluble Fluorine (F)	0.52	0.12	0.12
CTMB3	65	40 (4.0)	40.8	77	30,250	36,480	Water Soluble Fluorine (f)	1.23	0.77	1.33
							Particulate	11.1	6.97	11.8

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

(1) Varies with ambient conditions

Date Report Submitted: ____________

FORM APPROVED
OMB NUMBER 158-R75

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
					Average	Maximum		Tons Per Year	Lbs. Per Hour	
									Average	Maximum
CTMB4	65	4.0	48.7	84	36,690	38,340	Water Soluble Fluoride (F)	1.19	0.73	0.91
- -							Particulate	9.45	5.81	8.59
CTMD3	68	3.5	38.6	115	22,230	26,440	Water Soluble Fluoride (F)	2.28	1.43	2.31
							Particulate SO_x as SO_2	25.0 32.9	15.7 22.8	18.2 -
CTMD4	68	3.5	56.4	134	32,520	35,700	Water Soluble Fluoride (F)	3.22	1.98	2.68
							Particulate	15.9	9.8	11.8
							SO_x as SO_2	34.8	23.2	-

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

Date Report Submitted: ____________ [redacted]

OMB NUMBER 158-R73

AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
					Average	Maximum		Tons Per Year	Lbs. Per Hour Average	Lbs. Per Hour Maximum
TSU4	74	4.0	26.4	73	19,970	22,420	Water Soluble Fluoride (F)	0.44	0.24	0.39
							Particulate	8.14	4.41	9.68
NSP	73	2.5	12.4	104	14,560	15,630	Water Soluble Fluoride (F)	0.36	0.56	0.56
							Particulate	0.97	1.49	2.32
SSF	28	2.5	9.7	95	2,860	3,430	Water Soluble Fluoride (F)	0.88	0.27	0.31
							Particulate	9.47	2.9	6.06
							SO_x as SO_2	0.59	0.2	-

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

Date Report Submitted: ____________

FE:0118
FORM APPROVED
OMB NUMBER 158-R74

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity: Tons Per Year	Quantity: Lbs. Per Hour Average	Quantity: Lbs. Per Hour Maximum
TSPS3	(Storage Building)			(1)	(1)	(1)	Water Soluble Fluoride (F)	3.81	0.87	0.87
GTSP	126	8.0	33.1	129	99,950	105,400	Water Soluble Fluoride (F)	4.07	1.25	1.50
							Particulate	62.2	19.1 (2)	19.1
							SO_x as SO_2	229.6	71.4 (3)	-
KVS10							SO_x as SO_2	0.11	0.02	-
KVS12							SO_x as SO_2	Estimated 0.18	0.04	-
RM5							SO_x as SO_2	Estimated 0.06	0.01	-

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

(1) Varies with ambient conditions

(2) One test only

(3) Calculated from sulfur content of fuel

Date Report Submitted: ____________

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

FORM APPROVED
OMB NUMBER 158-R78

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c]		Pollutant[d]	Quantity		
								Tons Per Year	Lbs. Per Hour	
					Average	Maximum			Average	Maximum
DMI	90	4.0	49.6	141	37,400	38,640	Water Soluble Fluoride (F)	2.06	0.62	0.62
							Particulate	37.3	11.2	11.7
DM2	90	3.5	63.6	132	36,520	37,240	Water Soluble Fluoride	2.45	0.74	0.97
							Particulate	46.4	14.0	16.1
DM3	90	3.5	61.3	144	35.410	36.340	Water Soluble Fluoride (F)	2.74	0.89	0.96
							Particulate	54.2	17.6	12.9

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.

b. Values should be representative of average flow conditions for hours of operation.

c. At actual flow conditions.

d. The pollutants to be covered in this survey are specified in the accompanying instructions.

e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.

Date Report Submitted: ____________

FORM APPROVED
OMB NUMBER 158-R74

ENVIRONMENTAL PROTECTION AGENCY
AIR POLLUTANT EMISSIONS REPORT

SECTION VI - STACK AND POLLUTANT EMISSIONS DATA

Plant, institution, or establishment name: Gardinier Inc., U.S. Phosphoric Products, East Tampa Phosphate Chemical Complex

STACK DATA							ESTIMATE OF POLLUTANT EMISSIONS[e]			
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top, ft.	Exit Gas Velocity,[b] ft./sec.	Exit Gas Temperature,[b] °F	Exit Gas Flow Rate, CFM[c] Average	Exit Gas Flow Rate, CFM[c] Maximum	Pollutant[d]	Quantity Tons Per Year	Quantity Lbs. Per Hour Average	Quantity Lbs. Per Hour Maximum
NH_3	60	8.3	22.5	600 Est.	73,800	-	SO_x as SO_2	132.8	32.8 Est	-
							Particuldte	74.6	18.4 Est	-
AUXB	20	4.5	39.6	397 Est	37,820	-	SO_x as SO_2	8.5	20.8 Est	-
							Particulate	.48	1.18 Est	-
TSPS1	(Storage Building)			(1)	(1)	(1)	Water Soluble Fluoride (F)	6.13	1.4	1.4
TSPS2	(Storage Building)			(1)	(1)	(1)	Water Soluble Fluoride (F)	2.23	0.51	0.51

a. List code numbers corresponding to each emissions source reported in Sections II, III, and IV.
b. Values should be representative of average flow conditions for hours of operation.
c. At actual flow conditions.
d. The pollutants to be covered in this survey are specified in the accompanying instructions.
e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.
(1) Varies with ambient conditions.

CARGILL FERTILIZER INC. - RIVERVIEW
1974 BASELINE PM AND PM_{10} EMISSION RATE CALCULATIONS
FOR THE RAILCAR UNLOADING STATION AND SHIP LOADING FACILITY

Fugitive Dust from Railcar Unloading and Ship Loading

Uncontrolled Emission Factor: 0.05 lb/ton of GTSP and DAP handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 7
Capture and Control Efficiency of Enclosures: 90% (Enclosures)
Process Throughput of GTSP and DAP: 400 TPH, 2,179,488 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 7 transfer points x 400 TPH x (1-0.9)
= 14.0 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 7 transfer points x 2,179,488 TPY x (1-0.9) x 1 ton/2,000 lb
= 38.14 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 14.0 lb/hr x 0.20 lb PM_{10}/lb PM
= 2.8 lb/hr

PM_{10} Emission Rate (TPY) = 38.14 TPY x 0.20 lb PM_{10}/lb PM
= 7.63 TPY

APPENDIX E

CALPUFF MODEL DESCRIPTION AND METHODOLOGY

CALPUFF MODEL DESCRIPTION AND METHODOLOGY

E.1 INTRODUCTION

As part of the new source review requirements under Prevention of Significant Deterioration (PSD) regulations, new sources are required to address air quality impacts at PSD Class I areas. As part of the PSD analysis report submitted to the Florida Department of Environmental Protection (DEP), the air quality impacts due to the potential emissions of the proposed Cargill Riverview modification are required to be addressed at the PSD Class I area of the Chassahowitzka National Wildlife Area (NWA). The Chassahowitzka NWA is located approximately 86 km north-northwest of the facility site and is the nearest Class I area to the facility.

The evaluation of air quality impacts are not only concerned with determining compliance with PSD Class I increments but also assessing a source's impact on Air Quality Related Values (AQRVs), such as regional haze. Further, compliance with PSD Class I increments can be evaluated by determining if the source's impacts are less than the proposed U.S. Environmental Protection Agency (EPA) Class I significant impact levels. The significant impact levels are threshold levels that are used to determine the type of air impact analyses needed for the facility. If the new source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with Class I increments.

Currently there are several air quality modeling approaches recommended by the Interagency Workgroup on Air Quality Models (IWAQM) to perform these analyses. The IWAQM consists of EPA and Federal Land Managers (FLM) of Class I areas who are responsible for ensuring that AQRVs are not adversely impacted by new and existing sources. These recommendations have been summarized in two documents:

- *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998), referred to as the IWAQM Phase 2 report.

- *Federal Land Managers' Air Quality Related Values Workgroup (FLAG), Phase I Report,* USFS, NPS, USFWS (12/00), referred to as the FLAG document.

For the Proposed Project, air quality analyses were performed that assess the facility's impacts in the PSD Class I area of the Chassahowitzka NWA using the refined modeling approach from the IWAQM Phase 2 report for:

- Significant impact analysis
- SO_2 PSD Class I increment analysis; and
- Regional haze analysis

The refined analysis approach was used instead of the screening analysis approach since the air quality impacts are based on generally more realistic assumptions, include more detailed meteorological data, and are estimated at locations at the Class I area.

E.2 GENERAL AIR MODELING APPROACH

The general modeling approach was based on using the long-range transport model, California Puff model (CALPUFF, Version 5.4). At distances beyond 50 km, the ISCST3 model is considered to overpredict air quality impacts, because it is a steady-state model. At those distances, the CALPUFF model is recommended for use. Recently, the FLM have requested that air quality impacts, such as for regional haze, for a source located more than 50 km from a Class I area be predicted using the CALPUFF model. The Florida DEP has also recommended that the CALPUFF model be used to assess if the source has a significant impact at a Class I area located beyond 50 km from the source. As a result, a significant impact and regional haze analyses were performed using the CALPUFF model to assess the facility's impacts at the Chassahowitzka NWA.

The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the IWAQM Phase 2 Summary Report and the FLAG documents.

A regional haze analysis was performed to determine the affect that the facility's emissions will have on background regional haze levels at the Chassahowitzka NWA. In the regional haze analysis, the change in visual range, as calculated by a deciview change, was estimated for the facility in accordance with the IWAQM recommendations. Based on those recommendations, the CALPUFF model is used to predict the maximum 24-hour average sulfate (SO_4), nitrate (NO_3), and fine particulate (PM_{10}) concentrations as well as ammonium sulfate $[(NH_4)_2SO_4]$ and ammonium nitrate (NH_4NO_3) concentrations. The change in visibility due to a source, estimated as a percentage, is then calculated based on the change from background data.

The following sections present the methods and assumptions used to assess the refined significant impact and regional haze analyses performed for the Proposed Project. The results of these analyses are presented in Sections 6.0 and 7.0 of the PSD report.

E.3 MODEL SELECTION AND SETTINGS

The California Puff (CALPUFF, version 5.4) air modeling system was used to model to assess the Proposed Project's impacts at the PSD Class I area for comparison to the PSD Class I significant impact levels and to the regional haze visibility criteria. CALPUFF is a non-steady state Lagrangian Gaussian puff long-range transport model that includes algorithms for building downwash effects as well as chemical transformations (important for visibility controlling pollutants), and wet/dry deposition. The CALPUFF meteorological and geophysical data preprocessor (CALMET, Version 5.2), a preprocessor to CALPUFF, is a diagnostic meteorological model that produces a three-dimensional field of wind and temperature and a two-dimensional field of other meteorological parameters. CALMET was designed to process raw meteorological, terrain and land-use databases to be used in the air modeling analysis. The CALPUFF modeling system uses a number of FORTRAN preprocessor programs that extract data from large databases and converts the data into formats suitable for input to CALMET. The processed data produced from CALMET was input to CALPUFF to assess the pollutant specific impact. Both CALMET and CALPUFF were used in a manner that is recommended by the IWAQM Phase 2 and FLAG reports.

E.3.1 CALPUFF MODEL APPROACHES AND SETTINGS

The IWAQM has recommended approaches for performing a Phase 2 refined modeling analyses that are presented in Table E-1. These approaches involve use of meteorological data, selection of receptors and dispersion conditions, and processing of model output.

The specific settings used in the CALPUFF model are presented in Table E-2.

E.3.2 EMISSION INVENTORY AND BUILDING WAKE EFFECTS

The CALPUFF model included the facility's emission, stack, and operating data as well as building dimensions to account for the effects of building-induced downwash on the emission sources. Dimensions for all significant building structures were processed with the Building Profile Input Program (BPIP), Version 95086, and were included in the CALPUFF model input. The PSD Analysis Report presents a listing of the facility's emissions and structures included in the analysis.

E.4 RECEPTOR LOCATIONS

For the refined analyses, pollutant concentrations were predicted in an array of 13 discrete receptors located at the CNWR area. These receptors are the same as those used in the PSD Class I analysis performed for the PSD Analysis Report.

E.5 METEOROLOGICAL DATA

E.5.1 REFINED ANALYSIS

CALMET was used to develop the gridded parameter fields required for the refined modeling analyses. The follow sections discuss the specific data used and processed in the CALMET model.

E.5.2 CALMET SETTINGS

The CALMET settings contained in Table E-3 were used for the refined modeling analysis. With the exception of hourly precipitation data files, all input data files needed for CALMET were developed by the FDEP staff.

E.5.3 MODELING DOMAIN

A rectangular modeling domain extending 350 km in the east-west (x) direction and 280 km in the north-south (y) direction was used for the refined modeling analysis. The southwest corner of the domain is the origin and is located at 27 degrees north latitude and 83.5 degrees west longitude. This location is in the Gulf of Mexico approximately 110 km west of Venice, Florida. For the processing of meteorological and geophysical data, the domain contains 70 grid cells in the x-direction and 56 grid cells in the y-direction. The domain grid resolution is 5 km. The air modeling analysis was performed in the UTM coordinate system.

E.5.4 MESOSCALE MODEL – GENERATION 4 (MM4) DATA

Pennsylvania State University in conjunction with the NCAR Assessment Laboratory developed the MM4 data set, a prognostic wind field or "guess" field, for the United States. The hourly meteorological variables used to create this data set (wind, temperature, dew point depression, and geopotential height for eight standard levels and up to 15 significant levels) are extensive and only allow for one data base set for the year 1990. The analysis used the MM4 data to initialize the CALMET wind field. The MM4 data have a horizontal spacing of 80 km and are used to simulate atmospheric variables within the modeling domain.

The MM4 subset domain was provided by FDEP and consisted of a 8 x 6- cell rectangle, with 80 km grid resolution, extending from the MM4 grid points (49,10) to (56, 15). These data were processed to create a MM4.DAT file, for input to the CALMET model.

The MM4 data set used in the CALMET, although advanced, lacks the fine detail of specific temporal and spatial meteorological variables and geophysical data. These variables were processed into the appropriate format and introduced into the CALMET model through the additional data files obtained from the following sources.

E.5.5 SURFACE DATA STATIONS AND PROCESSING

The surface station data processed for the CALPUFF analyses consisted of data from five NWS stations or Federal Aviation Administration (FAA) Flight Service stations for Gainesville, Tampa, Daytona Beach, Vero Beach, Fort Myers and Orlando. A summary of the surface station information and locations are presented in Table E-4. The surface station parameters include wind speed, wind direction, cloud ceiling height, opaque cloud cover, dry bulb temperature, relative humidity, station pressure, and a precipitation code that is based on current weather conditions. The surface station data were processed by FDEP into a SURF.DAT file format for CALMET input.

Because the modeling domain extends largely over water, C-Man station data from Venice was obtained. These data were processed by Florida DEP into an over-water surface station format (i.e., SEA*.DAT) for input to CALMET. The over-water station data include wind direction, wind speed and air temperature.

E.5.6 UPPER AIR DATA STATIONS AND PROCESSING

The analysis included three upper air NWS stations located in Ruskin, Apalachicola, and West Palm Beach. Data for each station were obtained from the Florida DEP in a format for CALMET input.

The data and locations for the upper air stations are presented in Table E-4.

E.5.7 PRECIPITATION DATA STATIONS AND PROCESSING

Precipitation data were processed from a network of hourly precipitation data files collected from primary and secondary NWS precipitation-recording stations located within the latitude and longitudinal limits of the modeling domain. Data for 14 stations were obtained in NCDC TD-3240 variable format and converted into a fixed-length format. The utility programs PXTRACT and PMERGE were then used to process the data into the format for the PRECIP.DAT file that is used by CALMET. A listing of the precipitation stations used for the modeling analysis is presented in Table E-5.

E.5.8 GEOPHYSICAL DATA PROCESSING

The land-use and terrain information data were developed by the FDEP for the modeling domain and were provided in a GEO.DAT file format for input to CALMET. Terrain elevations for each grid cell of the modeling domain were obtained from Digital Elevation Model (DEM) files obtained from US Geographical Survey (USGS). The DEM data was extracted for the modeling domain grid using the utility extraction program LCELEV. Land-use data were obtained from the USGS GIS.DAT which is based on the ARM3 data. The resolution of the GIS.DAT file is one-eighth of a degree in the east-west direction and one-twelfth of a degree in the north-south direction. Land-use values for the domain grid were obtained with the utility program CAL-LAND. Other parameters processed for the modeling domain by CAL-LAND include surface roughness, surface Albedo, Bowen ratio, soil heat flux, and leaf index field. The land-use parameter values were based on annual averaged values.

Table E-1. Refined Modeling Analyses Recommendations[a]

Model Input/Output	Description
Meteorology	Use CALMET (minimum 6 to 10 layers in the vertical; top layer must extend above the maximum mixing depth expected); horizontal domain extends 50 to 80 km beyond outer receptors and sources being modeled; terrain elevation and land-use data is resolved for the situation.
Receptors	Within Class I area(s) of concern; obtain regulatory concurrence on coverage.
Dispersion	1. CALPUFF with default dispersion settings. 2. Use MESOPUFF II chemistry with wet and dry deposition. 3. Define background values for ozone and ammonia for area.
Processing	1. For PSD increments: use highest, second highest 3-hour and 24-hour average SO_2 concentrations; highest, second highest 24-hour average PM_{10} concentrations; and highest annual average SO_2, PM_{10} and NO_x concentrations. 2. For haze: process, on a 24-hour basis, compute the source extinction from the maximum increase in emissions of SO_2, NO_x and PM_{10}; compute the daily relative humidity factor [f(RH)], provided from an external disk file; and compute the maximum percent change in extinction using the FLM supplied background extinction data in the FLAG document. 3. For significant impact analysis: use highest annual and highest short-term averaging time concentrations for SO_2, PM_{10},NO_x,,and FL

[a] IWAQM Phase II report (12/98) and FLAG document (12/00)

Table E-2. CALPUFF Model Settings

Parameter	Setting
Pollutant Species	SO_2, SO_4, NO_x, HNO_3, and NO_3, PM_{10}, and FL
Chemical Transformation	MESOPUFF II scheme
Deposition	Include both dry and wet deposition, plume depletion
Meteorological/Land Use Input	CALMET
Plume Rise	Transitional, Stack-tip downwash, Partial plume penetration
Dispersion	Puff plume element, PG /MP coefficients, rural mode, ISC building downwash scheme
Terrain Effects	Partial plume path adjustment
Output	Create binary concentration file including output species for SO_4, NO_3, PM_{10} SO_2, and NO_x
Model Processing	For haze: highest predicted 24-hour extinction change (%) for the year For significant impact analysis: highest predicted annual and highest short-term averaging time concentrations for SO_2, NO_x, and PM_{10}.
Background Values [a]	Ozone: 80 ppb; Ammonia: 10 ppb

[a] Recommended values by the Florida DEP.

Table E-3. CALMET Settings

Parameter	Setting
Horizontal Grid Dimensions	350 by 280 km, 5 km grid resolution
Vertical Grid	9 layers
Weather Station Data Inputs	6 surface, 3 upper air, 27 precipitation stations
Wind model options	Diagnostic wind model, no kinematic effects
Prognostic wind field model	MM4 data, 80 km resolution, 8 x 6 grid, used for wind field initialization
Output	Binary hourly gridded meteorological data file for CALPUFF input

Table E-4. Surface and Upper Air Stations Used in the CALPUFF Analysis

Station Name	Station Symbol	WBAN Number	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	UTM Coordinates Zone	Anemometer Height (m)
Surface Stations						
Tampa	TPA	12842	349.20	3094.25	17	6.7
Daytona Beach	DAB	12834	495.14	3228.05	17	9.1
Orlando	ORL	12815	468.96	3146.88	17	10.1
Gainesville	GNV	12816	377.40	3284.12	17	6.7
Vero Beach	VER	12843	557.52	3058.36	17	6.7
Fort Myers	FMY	12835	413.65	2940.38	17	6.1
Upper Air Stations						
Ruskin	TBW	12842	349.20	3094.28	17	NA
West Palm Beach	PBI	12844	587.87	2951.42	17	NA
Apalachicola	AQQ	12832	110.00[a]	3296.00	16	NA

[a] Equivalent coordinate for Zone 17; Zone 16 coordinate is 690.22 km.

Table E-5. Hourly Precipitation Stations Used in the CALPUFF Analysis

Station Name	Station Number	UTM Coordinate Easting (km)	UTM Coordinate Northing (km)	UTM Coordinate Zone
Belle Glade Hrcn Gt 4	80616	528.190	2953.034	17
Branford	80975	315.606	3315.955	17
Brooksville 7 SSW	81048	358.029	3149.545	17
Canal Point Gate 5	81271	536.428	2971.514	17
Daytona Beach WSO AP	82158	494.165	3227.413	17
Deland 1 SSE	82229	470.780	3209.660	17
Fort Myers FAA/AP	83186	413.992	2940.710	17
Gainesville 11 WNW	83322	355.411	3284.205	17
Inglis 3 E	84273	342.631	3211.652	17
Lakeland	84797	409.871	3099.178	17
Lisbon	85076	423.594	3193.256	17
Lynne	85237	409.255	3230.295	17
Marineland	85391	479.193	3282.030	17
Melbourne WSO	85612	534.381	3109.967	17
Moore Haven Lock 1	85895	491.608	2967.803	17
Orlando Wso Mccoy	86628	468.169	3145.102	17
Ortona Lock 2	86657	470.174	2962.267	17
Parrish	86880	366.986	3054.394	17
Port Mayaca S L Canal	87293	538.044	2984.440	17
Saint Leo	87851	376.483	3135.086	17
St Lucie New Lock 1	87859	571.042	2999.353	17
St Petersburg	87886	339.608	3071.991	17
Tampa Wscmo AP	88788	348.478	3093.670	17
Venice	89176	357.593	2998.178	17
Venus	89184	467.266	3001.224	17
Vero Beach 4 W	89219	554.268	3056.498	17
West Palm Beach Int AP	89525	589.611	2951.627	17

APPENDIX F

SO_2 AND PM_{10} AAQS, PSD INVENTORY

Appendix F-1. Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name EU ID Emission Unit Description	ISCST3 ID Name		Relative Location East (m)	North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline[a]	Modeled in AAQS	Modeled in Class II
0570040	TECO GANNON																	
	1 UNIT #1 STEAM GENERATOR	TECOGN1	d	-2800	5000	315	96.0	10.0	3.05	276.53	409	124.4	37.9	2,137	269.3	B	Yes	No
	2 125MW BOILER	TECOGN2	d	-2800	5000	315	96.0	10.0	3.05	298.67	421	126.3	38.5	2,137	269.3	B	Yes	No
	3 UNIT #3 BOILER	TECOGN3	d	-2800	5000	315	96.0	10.6	3.23	271.49	406	113.5	34.6	2,718	342.5	B	Yes	No
	4 UNIT#4-BOILER	TECOGN4	d	-2800	5000	315	96.0	10.0	3.05	289.13	416	97.1	29.6	3,189	401.8	B	Yes	No
	5 UNIT #5 BOILER	TECOGN5	d	-2800	5000	315	96.0	14.6	4.45	292.73	418	166.5	50.7	3,883	489.3	B	Yes	No
	6 UNIT #6 BOILER WITH ESP	TECOGN6	d	-2800	5000	315	96.0	17.6	5.36	260.33	400	109.2	33.3	6,457	813.6	B	Yes	No
	7 14 MW GAS TURBINE	TECOGN7	d	-2800	5000	35	10.7	11.0	3.35	1010	816	92.6	28.2	10.96	1.4	B	Yes	No
0571209	APAC-FLORIDA, INC																	
	1 Hot mix asphalt plant	APAC1		-3040	5590	31	9.4	3.8	1.16	300	422	88.2	26.9	19.20	2.42	C	Yes	Yes
0571242	NATIONAL GYPSUM, APOLLO BEACH																	
	1 Imp Mill #1	NATGYP1		400	-6900	98	29.9	3.8	1.14	350	450	28.2	8.6	5.28	0.67	C	Yes	Yes
	Imp Mill #2	NATGYP2		400	-6900	98	29.9	3.8	1.14	350	450	28.2	8.6	5.28	0.67	C	Yes	Yes
	Imp Mill #3	NATGYP3		400	-6900	98	29.9	3.8	1.14	350	450	28.2	8.6	5.28	0.67	C	Yes	Yes
	Imp Mill #4	NATGYP4		400	-6900	98	29.9	3.8	1.14	350	450	28.2	8.6	5.28	0.67	C	Yes	Yes
	Kiln	NATGYP5		400	-6900	54	16.5	13.4	4.08	384	469	58.2	17.7	33.22	4.19	C	Yes	Yes
	BIG BEND TRANSFER CO L.L.C.																	
	Melter/ Molton Scrubber stack	BBTCCMBO		-1800	-6300	95	29.0	2.2	0.66	97	309	57.0	17.4	0.01	0.002	C	Yes	Yes
	Fossil Fuel Steam Generator 2	BBTCPKBL		-1800	-6300	106	32.3	4.0	1.22	350	450	29.7	9.1	3.56	0.45	C	Yes	Yes
0570039	TAMPA ELECTRIC COMPANY BIG BEND																	
	1,2 1 & 2 Gen 3-Hour Emissions	TECOBB12		-1000	-7500	490	149.4	24.0	7.32	300	422	116.0	35.4	42,000	5,292	B	Yes	No
	3 3 Gen 3-Hour Emissions	TECOBB3		-1000	-7500	499	152.1	24.0	7.32	292	418	51.2	15.6	21,000	2,646	B	Yes	Yes
	1,2 1 & 2 Gen 24-Hour Emissions	TECOBB12		-1000	-7500	490	149.4	24.0	7.32	300	422	116.0	35.4	32,937	4,150	B	Yes	No
	3 3 Gen 24-Hour Emissions	TECOBB3		-1000	-7500	499	152.1	24.0	7.32	292	418	51.2	15.6	17,063	2,150	B	Yes	Yes
	4 UNIT #4 BOILER W/ESP	TECOBB4		-1000	-7500	499	152.1	24.0	7.32	156	342	59.0	18.0	3,576	451	C	Yes	Yes
	5 Gas Turbine No 2	TECOBB5		-1000	-7500	75	22.9	14.0	4.27	928	771	61.0	18.6	314	40	B	Yes	No
	6 Gas Turbine No 3	TECOBB6		-1000	-7500	75	22.9	14.0	4.27	928	771	61.0	18.6	314	40	B	Yes	No
	7 GAS TURBINE #1	TECOBB7		-1000	-7500	35	10.7	11.0	3.36	1010	816	91.9	28.0	90	11	B	Yes	No
	1,2 Steam Generators 1 & 2 Baseline	TCBB12B		-1000	-7500	490	149.4	24.0	7.32	300	422	94.0	28.7	-2436	-306.94	E	No	Yes
	3 Steam Generator 3 Baseline	TCBB3B		-1000	-7500	490	149.4	24.0	7.32	292	418	47.0	14.3	-1218	-153.47	E	No	Yes
0570286	TAMPA BAY SHIPBUILDING & REPAIR CO.																	
	5 DIESEL COMPRESSORS	TBSHIP5		-4900	6500	10	3.0	0.5	0.15	350	450	148.5	45.3	2.74	0.35	C	Yes	Yes
0570038	TECO HOOKERS POINT STATION																	
	1 Boiler #1	TECOHK1	d	-4900	8500	280	85.3	11.3	3.44	356	453	82.0	25.0	327.80	41.30	B	Yes	No

Appendix F-1 Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name / EU ID Emission Unit Description	ISCST3 ID Name	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Stack Diameter (ft)	Stack Diameter (m)	Stack Temperature (F)	Stack Temperature (K)	Stack Velocity (ft/s)	Stack Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline[a]	Modeled in AAQS	Modeled in Class II
	2 Boiler #2	TECOHK2 [c]	-4900	8500	280	85.3	11.3	3.44	356	453	82.0	25.0	327.80	41.30	B	Yes	No
	3 Boiler #3	TECOHK3 [d]	-4900	8500	280	85.3	12.0	3.66	341	445	62.7	19.1	452.10	56.96	B	Yes	No
	4 Boiler #4	TECOHK4 [d]	-4900	8500	280	85.3	12.0	3.66	341	445	62.7	19.1	452.10	56.96	B	Yes	No
	5 Boiler #5	TECOHK5 [d]	-4900	8500	280	85.3	11.3	3.44	356	453	82.0	25.0	671.00	84.55	B	Yes	No
	6 Boiler #6	TECOHK6 [d]	-4900	8500	280	85.3	9.4	2.87	329	438	75.2	22.9	855.80	107.83	B	Yes	No
0570127	MCKAY BAY REFUSE-TO-ENERGY FACILITY																
	1 UNIT #1	MCKAY1 [d]	-2700	9710	160	48.8	5.7	1.74	450	505	41.0	12.5	42.50	5.36	C	Yes	Yes
	2 UNIT #2	MCKAY2 [d]	-2700	9710	160	48.8	5.7	1.74	450	505	41.0	12.5	42.50	5.36	C	Yes	Yes
	3 UNIT #3	MCKAY3 [d]	-2700	9710	160	48.8	5.7	1.74	450	505	41.0	12.5	42.50	5.36	C	Yes	Yes
	4 UNIT #4	MCKAY4 [d]	-2700	9710	160	48.8	5.7	1.74	450	505	41.0	12.5	42.50	5.36	C	Yes	Yes
	103 Aux Unit No 1	MCKY103 [d]	-2700	9710	201	61.3	4.2	1.28	289	416	73.3	22.3	40.87	5.15	C	Yes	Yes
	104 Aux Unit No 2	MCKY104 [d]	-2700	9710	201	61.3	4.2	1.28	289	416	73.3	22.3	40.87	5.15	C	Yes	Yes
	105 Aux Unit No 3	MCKY105 [d]	-2700	9710	201	61.3	4.2	1.28	289	416	73.3	22.3	40.87	5.15	C	Yes	Yes
	106 Aux Unit No 4	MCKY106 [d]	-2700	9710	201	61.3	4.2	1.28	289	416	73.3	22.3	40.87	5.15	C	Yes	Yes
0570041	FLORIDA HEALTH SCIENCES CTR, INC																
	2 TWO BOILERS	FLHLTH2 [b]	-6500	8500	90	27.4	6.0	1.83	80	300	0.1	0.0	13.39	1.69	C	Yes	Yes
0570057	GULF COAST RECYCLING, INC.																
	1 BLAST FURNACE	GULFRCY1	1100	11000	150	45.7	3.0	0.91	160	344	54.8	16.7	374.00	47.12	B	Yes	Yes
0570261	HILLSBOROUGH CTY RESOURCE RECOVERY FAC																
	1 Aux Unit #1	HILLSRC1 [d]	5300	10200	220	67.1	5.1	1.55	290	416	72.5	22.1	58.67	7.39	C	Yes	Yes
	2 Aux Unit #2	HILLSRC2 [d]	5300	10200	220	67.1	5.1	1.55	290	416	72.5	22.1	58.67	7.39	C	Yes	Yes
	3 Aux Unit #3	HILLSRC3 [d]	5300	10200	220	67.1	5.1	1.55	290	416	72.5	22.1	58.67	7.39	C	Yes	Yes
0570028	NATIONAL GYPSUM COMPANY																
	21 #1 BAGHOUSE	NATGYP21	-14070	190	42	12.8	1.1	0.34	350	450	59.0	18.0	0.01	0.001	C	Yes	Yes
	24 #4 BAGHOUSE	NATGYP24	-14070	190	42	12.8	1.1	0.34	350	450	61.0	18.6	0.01	0.001	C	Yes	Yes
	28 NO 5 CALCIDYNE UNIT	NATGYP28	-14070	190	42	12.8	1.1	0.34	350	450	71.0	21.6	5.07	0.64	C	Yes	Yes
	29 NO 6 CALCIDYNE UNIT	NATGYP29	-14070	190	42	12.8	1.1	0.34	350	450	71.0	21.6	5.07	0.64	C	Yes	Yes
	30 NO 7 CALCIDYNE UNIT	NATGYP30	-14070	190	42	12.8	1.1	0.34	350	450	71.0	21.6	2.11	0.27	C	Yes	Yes
	31 NO 8 CALCIDYNE UNIT	NATGYP31	-14070	190	42	12.8	1.1	0.34	350	450	71.0	21.6	5.07	0.64	C	Yes	Yes
	34 WALLBOARD KILN NO 2	NATGYP34	-14070	190	47	14.3	2.5	0.76	309	427	67.0	20.4	27.30	3.44	C	Yes	Yes
	36 ROCK DRYER & CRUSHER	NATGYP36	-14070	190	64	19.5	3.5	1.07	185	358	40.0	12.2	9.12	1.15	C	Yes	Yes
	47 KILN DRYER, PLANT NO 1	NATGYP47	-14070	190	35	10.7	2.8	0.85	300	422	64.0	19.5	27.00	3.40	C	Yes	Yes
	102 Impact Mill #1	NATGP102	-14070	190	90	27.4	3.9	1.19	200	366	44.7	13.6	0.72	0.09	C	Yes	Yes
	103 Impact Mill #2	NATGP103	-14070	190	90	27.4	3.0	0.91	200	366	75.5	23.0	0.72	0.09	C	Yes	Yes

Appendix F-1. Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name / EU ID Emission Unit Description	ISCST3 ID Name	Relative Location East (m)	North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline [a]	Modeled in AAQS	Modeled in Class II
	104 Impact Mill #3	NATGP104	-14070	190	90	27.4	3.0	0.91	200	366	75.5	23.0	0.72	0.09	C	Yes	Yes
0570003	CF INDUSTRIES, INC.																
	1 CLEAVER BROOKS 500 HP BOILER	CFIBL1	-100	15900	25	7.6	2.5	0.76	500	533	28.0	8.5	4.35	0.55	C	Yes	Yes
0570089	ST.JOSEPHS HOSPITAL																
	2 WASTE INCINERATOR	STJO2	-9600	13400	40	12.2	1.7	0.51	135	330	45.7	13.9	1.80	0.23	C	Yes	Yes
	3 COGENERATION PLANT #1	STJO3	-9600	13400	30	9.1	1.0	0.30	375	464	42.0	12.8	1.00	0.13	C	Yes	Yes
0570180	FECP/CAST CRETE DIVISION																
	3 200HP BOILER	FEPD3	9000	16700	20	6.1	1.0	0.30	240	389	31.0	9.4	3.43	0.43	C	Yes	Yes
1030011	FPC-BARTOW PLANT																
	1 No 1 Unit	FPCBART1 [d]	-20500	100	300	91.4	9.0	2.74	312	429	119.0	36.3	3,355.00	422.73	B	Yes	No
	2 No 1 Unit	FPCBART2 [d]	-20500	100	300	91.4	9.0	2.74	305	425	102.0	31.1	3,622.00	456.37	B	Yes	No
	3 No 1 Unit	FPCBART3 [d]	-20500	100	300	91.4	11.0	3.35	275	408	113.0	34.4	6,080.00	766.08	B	Yes	No
	4 Boiler	FPCBART4 [d]	-20500	100	30	9.1	3.0	0.91	515	541	17.0	5.2	7.80	0.98	B	Yes	No
	5 GT Peaking Unit #P-1	FPCBART5 [d]	-20500	100	45	13.7	17.9	5.46	930	772	69.1	21.1	360.57	45.43	B	Yes	No
	6 GT Peaking Unit #P-2	FPCBART6 [d]	-20500	100	45	13.7	17.9	5.46	930	772	69.1	21.1	360.57	45.43	B	Yes	No
	7 GT Peaking Unit #P-3	FPCBART7 [d]	-20500	100	45	13.7	17.9	5.46	930	772	69.1	21.1	360.57	45.43	B	Yes	No
	8 GT Peaking Unit #P-4	FPCBART8 [d]	-20500	100	45	13.7	17.9	5.46	930	772	69.1	21.1	360.57	45.43	B	Yes	No
0570006	YUENGLING BREWING CO																
	1 2 Natural gas boilers	YNGBREW1	-900	20700	90	27.4	6.5	1.98	275	408	7.0	2.1	9.00	1.13	C	Yes	Yes
1030013	FPC - BAYBORO POWER PLANT																
	1 CT Peaking Unit # 1	FPCBAY1 [d]	-21100	-11200	40	12.2	22.9	6.98	900	755	21.0	6.4	390.90	49.25	B	Yes	No
	2 CT Peaking Unit # 2	FPCBAY2 [d]	-24100	-11200	40	12.2	22.9	6.98	900	755	21.0	6.4	390.90	49.25	B	Yes	No
	3 CT Peaking Unit # 3	FPCBAY3 [d]	-24100	-11200	40	12.2	22.9	6.98	900	755	21.0	6.4	390.90	49.25	B	Yes	No
	4 CT Peaking Unit # 4	FPCBAY4 [d]	-24100	-11200	40	12.2	22.9	6.98	900	755	21.0	6.4	390.90	49.25	B	Yes	No
1030117	PINELLAS CO RESOURCE RECOVERY FACILITY																
	1 Aux Unit #1	PINRCY1 [d]	-27700	1600	161	49.1	7.8	2.38	449	505	88.0	26.8	170.00	21.42	C	Yes	Yes
	3 Aux Unit #3	PINRCY3 [d]	-27700	1600	165	50.3	9.0	2.74	450	505	90.0	27.4	525.00	66.15	C	Yes	Yes
0810002	PINEY POINT PHOSPHATES, INC.																
	1 SAP 1	PINPT1 [d]	-13250	-25160	200	61.0	7.8	2.38	147	337	33.5	10.2	291.70	36.75	B	Yes	No
	11 BOILER	PINPT11 [d]	-13250	-25160	30	9.1	4.0	1.22	550	561	25.2	7.7	9.60	1.21	B	Yes	No

Appendix F-1. Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name / EU ID Emission Unit Description	ISCST3 ID Name		Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline [a]	Modeled in AAQS	Modeled in Class II
0810010	FLORIDA POWER & LIGHT MANATEE PLANT																	
	1 GENERATOR 1	FPLMAN1	d	4350	-28350	475	152	26.2	7.99	325	436	82.5	25.1	9,515.0	1,198.9	B	Yes	No
	2 GENERATOR 2	FPLMAN2	d	4350	-28350	475	152	26.2	7.99	325	436	82.5	25.1	9,515.0	1,198.9	B	Yes	No
1030012	FPC - HIGGINS PLANT																	
	1 FFFSG-SG 1	FPCHIG1	d	-26400	15900	174	53.0	12.5	3.81	312	429	27.0	8.2	1,507.0	189.9	B	Yes	No
	2 FFFSG-SG 2	FPCHIG2	d	-26400	15900	174	53.0	12.5	3.81	310	428	27.0	8.2	1,438.3	181.2	B	Yes	No
	3 FFFSG-SG 3	FPCHIG3	d	-26400	15900	174	53.0	12.5	3.81	301	423	24.0	7.3	1,507.0	189.9	B	Yes	No
	4 CTP 1	FPCHIG4	d	-26400	15900	55	16.8	15.1	4.60	850	728	93.1	28.4	286.30	36.07	B	Yes	No
	5 CTP 2	FPCHIG5	d	-26400	15900	56	17.1	15.1	4.60	850	728	93.1	28.4	286.30	36.07	B	Yes	No
	6 CTP 3	FPCHIG6	d	-26400	15900	55	16.8	15.1	4.60	850	728	93.1	28.4	319.10	40.21	B	Yes	No
	7 CTP 4	FPCHIG7	d	-26400	15900	55	16.8	15.1	4.60	850	728	93.1	28.4	319.10	40.21	B	Yes	No
0570075	CORONET INDUSTRIES, INC																	
	3 DEFLUORINATING KILN #2	CORN3	d	30900	13800	152	46.3	5.8	1.77	110	316	64.0	19.5	188.42	23.74	B	Yes	No
	19 BOILER DEFLUOR PLANT	CORN19	d	30900	13800	25	7.6	1.3	0.40	450	505	50.0	15.2	4.26	0.54	B	Yes	No
	20 BOILER DEFLUOR. PLANT	CORN20	d	30900	13800	20	6.1	1.2	0.37	630	605	66.0	20.1	2.13	0.27	B	Yes	No
	22 FLUID BED REACTOR #1	CORN22	d	30900	13800	152	46.3	5.8	1.77	110	316	64.0	19.5	68.48	8.63	B	Yes	No
	24 FLUID BED REACTOR #2	CORN24	d	30900	13800	152	46.3	5.8	1.77	110	316	64.0	19.5	68.48	8.63	B	Yes	No
1050059	IMC PHOSPHATES COMPANY (NEW WALES)																	
	2 SAP No 1	IMCWAL2		33800	-3100	200	61.0	8.5	2.59	170	350	50.0	15.2	483.30	60.90	C	Yes	Yes
	3 SAP No 2	IMCWAL3		33800	-3100	200	61.0	8.5	2.59	170	350	50.0	15.2	483.30	60.90	C	Yes	Yes
	4 SAP No 3	IMCWAL4		33800	-3100	200	61.0	8.5	2.59	170	350	50.0	15.2	483.30	60.90	C	Yes	Yes
	9 DAP Plant No 1	IMCWAL9		33800	-3100	133	40.5	7.0	2.13	105	314	49.0	14.9	74.60	9.40	C	Yes	Yes
	13 Auxiliary Boiler	IMCWAL13		33800	-3100	85	25.9	3.0	0.91	555	564	193.3	58.9	569.00	71.69	C	Yes	Yes
	27 AFI Plant	IMCWAL27		33800	-3100	172	52.4	8.0	2.44	130	328	66.3	20.2	18.30	2.31	C	Yes	Yes
	36 Kilns, Dryer, Blending Op	IMCWAL36		33800	-3100	172	52.4	4.5	1.37	105	314	52.0	15.8	192.00	24.19	C	Yes	Yes
	42 SAP No 4	IMCWAL42		33800	-3100	199	60.7	8.5	2.59	170	350	50.0	15.2	483.30	60.90	C	Yes	Yes
	44 SAP No 5	IMCWAL44		33800	-3100	199	60.7	8.5	2.59	170	350	50.0	15.2	483.30	60.90	C	Yes	Yes
	45 DAP Plant No 2 - East Train	IMCWAL45		33800	-3100	171	52.1	6.0	1.83	110	316	58.0	17.7	22.00	2.77	C	Yes	Yes
	46 DAP Plant No 2 - West Train	IMCWAL46		33800	-3100	171	52.1	6.0	1.83	110	316	58.0	17.7	22.00	2.77	C	Yes	Yes
	60 Molten Storage Tank	IMCWAL60		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.50	0.06	C	Yes	Yes
	62 Molten Storage Tank	IMCWAL62		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.50	0.06	C	Yes	Yes
	63 Unloading Sulfur Pit	IMCWAL63		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.30	0.04	C	Yes	Yes
	64 Unloading Sulfur Pit	IMCWAL64		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.10	0.01	C	Yes	Yes
	65 Unloading Sulfur Pit	IMCWAL65		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.30	0.04	C	Yes	Yes
	66 Sulfur Transfer Pit	IMCWAL66		33800	-3100	40	12.2	2.0	0.61	240	389	0.4	0.1	0.10	0.01	C	Yes	Yes
	68 Unloading Sulfur Pit	IMCWAL68	b	33800	-3100	25	7.6	0.1	0.03	90	305	0.1	0.0	0.30	0.04	C	Yes	Yes

Appendix F-1. Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name EU ID Emission Unit Description	ISCST3 ID Name		Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline[a]	Modeled in AAQS	Modeled in Class II
	69 Unloading Sulfur Pit	IMCWAL69	b	33800	-3100	25	7.6	0.1	0.03	90	305	0.1	0.0	0.10	0.01	C	Yes	Yes
	74 Multifos C Kiln	IMCWAL74		33800	-3100	172	52.4	4.5	1.37	105	314	70.2	21.4	8.70	1.10	C	Yes	Yes
	78 GRANULAR MAP PLANT	IMCWAL78		33800	-3100	133	40.5	6.0	1.83	145	336	109.6	33.4	13.72	1.73	C	Yes	Yes
	Expanding Source	IMCWAL0		33800	-3100	69	21.0	7.0	2.13	165	347	61.0	18.6	-3100.00	-390.60	E	No	Yes
	Expanding Source	IMCWAL1		33800	-3100	200	61.0	8.5	2.59	170	350	42.9	13.1	-3100.00	-390.60	E	No	Yes
1050047	AGRIFOS, L L C - NICHOLS																	
	1 ROCK DRYER NO 1	AGRINK1		35800	2800	80	24.4	7.5	2.29	160	344	41.0	12.5	255.52	32.20	C	Yes	Yes
	2 ROCK DRYER NO 2	AGRINK2		35800	2800	80	24.4	7.5	2.29	160	344	41.0	12.5	251.00	31.63	C	Yes	Yes
1050057	IMC-AGRICO CO. (NICHOLS)	(CONSERVE)																
	5 SAP NO 1 PSD	AGRNK5		35500	1700	150	45.7	7.5	2.29	170	350	33.0	10.1	416.80	52.52	C	Yes	Yes
	12 Phosphate Rock Dryer	AGRNK12		35500	1700	81	24.7	7.5	2.29	130	328	12.0	3.7	26.49	3.34	C	Yes	Yes
	15 North Auxiliary Boiler	AGRNK15		35500	1700	27	8.2	2.0	0.61	500	533	45.0	13.7	25.74	3.24	C	Yes	Yes
	16 South Auxiliary Boiler	AGRNK16		35500	1700	39	11.9	3.2	0.98	500	533	29.0	8.8	2.59	0.33	C	Yes	Yes
	Expanding Source	AGRNK1	c	35500	1700	100	30.5	5.9	1.80	95	308	62.0	18.9	-121.00	-15.25	E	No	Yes
	Expanding Source	AGRNK2	c	35500	1700	80	24.4	5.0	1.52	151	339	42.3	12.9	-30.20	-3.81	E	No	Yes
1050056	IMC-AGRICO CO. (PRAIRIE)																	
	4 LIMEROCK DRYER	IMCPRI4		40000	4500	70	21.3	4.4	1.34	184	358	51.0	15.5	95.68	12.06	C	Yes	Yes
0570005	CF INDUSTRIES, INC , PLANT CITY PHOS																	
	1 BOILER	CFIPL1		25100	33500	25	7.6	3.5	1.07	550	561	58.0	17.7	158.50	19.97	C	Yes	Yes
	2 A H2SO4 DEMISTER	CFIPL2		25100	33500	110	33.5	5.0	1.52	110	316	64.0	19.5	350.00	44.10	C	Yes	Yes
	3 B H2SO4 DEMISTER	CFIPL3		25100	33500	110	33.5	5.0	1.52	110	316	64.0	19.5	350.00	44.10	C	Yes	Yes
	7 "C" SAP	CFIPL7		25100	33500	199	60.7	8.0	2.44	175	353	53.0	16.2	433.00	50.40	C	Yes	Yes
	8 "D" SAP	CFIPL8		25100	33500	199	60.7	8.0	2.44	148	338	31.0	9.4	433.00	39.94	C	Yes	Yes
	10 "A" DAP PLANT	CFIPL10		25100	33500	94	28.7	10.0	3.05	128	326	26.0	7.9	23.50	2.96	C	Yes	Yes
	11 "Z" DAP/MAP GRAN	CFIPL11		25100	33500	180	54.9	9.2	2.80	137	331	43.0	13.1	104.60	13.18	C	Yes	Yes
	12 "X" DAP/MAP/GTSP GRAN	CFIPL12		25100	33500	180	54.9	9.2	2.80	105	314	26.0	7.9	104.60	13.18	C	Yes	Yes
	22 MOLTEN SULFUR STORE	CFIPL22		25100	33500	8	2.4	0.9	0.27	212	373	5.0	1.5	0.90	0.11	C	Yes	Yes
	23 MOLTEN SULFUR STORE A	CFIPL23		25100	33500	12	3.7	0.3	0.09	212	373	5.0	1.5	0.10	0.01	C	Yes	Yes
	24 MOLTEN SULFUR STORE B	CFIPL24		25100	33500	12	3.7	0.3	0.09	212	373	5.0	1.5	1.24	0.16	C	Yes	Yes
1050233	TECO POLK POWER STATION																	
	1 Combined cycle CT	TECOPK1	d	39550	-15150	150	45.7	19.0	5.79	340	444	75.8	23.1	518.00	65.27	C	Yes	Yes
	3 120 MMBtu/HR AuxBlr	TECOPK3	d	39550	-15150	75	22.9	3.7	1.13	375	464	0.0	0.0	96.00	12.10	C	Yes	Yes
	4 Sulfuric Acid Plant	TECOPK4	d	39550	-15150	199	60.7	2.5	0.76	180	355	60.0	18.3	35.60	4.49	C	Yes	Yes

Appendix F-1 Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	EU ID	Facility Name / Emission Unit Description	ISCST3 ID Name	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline[a]	Modeled in AAQS	Modeled in Class II
	9	Simple Cycle CT	TECOPK9 [d]	39550	-15150	114	34.7	29.0	8.84	1117	876	60.2	18.3	9.20	1.16	C	Yes	Yes
	10	Simple Cycle CT	TECOPK10 [d]	39550	-15150	114	34.7	29.0	8.84	1117	876	60.2	18.3	9.20	1.16	C	Yes	Yes
1050048		MULBERRY PHOSPHATES, INC.																
	2	SAP 2	MULPHS2	43900	2600	200	61.0	7.0	2.13	200	366	32.0	9.8	283.33	35.70	B	Yes	No
	5	MAP/DAP PLANT	MULPHS5	43900	2600	102	31.1	8.8	2.68	110	316	26.0	7.9	73.79	9.30	B	Yes	No
	9	BOILER	MULPHS9	43900	2600	45	13.7	3.7	1.13	80	300	8.0	2.4	102.44	12.91	B	Yes	No
	1	Expanding Source	MULPHSX [d]	43900	2600	168	51.2	7.0	2.13	181	356	37.5	11.4	-257.59	-32.46	E	No	Yes
1050052		CF INDUSTRIES, INC., BARTOW																
	6	SAP NO.6	CFIBAR6	45400	0.00	206	62.8	7.0	2.13	140	333	21.0	6.4	400.00	50.40	C	Yes	Yes
	21	BOILER NO 1	CFIBAR21	45400	0.00	36	11.0	2.5	0.76	600	589	44.0	13.4	16.80	2.12	C	Yes	Yes
	1	Expanding Source	CFIBARX1 [c]	45400	0.00	100	30.5	4.5	1.37	170	350	40.0	12.2	-483	-61	E	No	Yes
	2	Expanding Source	CFIBARX2 [c]	45400	0.00	100	30.5	5.5	1.68	170	350	34.0	10.4	-875	-110	E	No	Yes
	3	Expanding Source	CFIBARX3 [c]	45400	0.00	100	30.5	9.0	2.74	196	364	14.0	4.3	-850	-107	E	No	Yes
	4	Expanding Source	CFIBARX4 [c]	45400	0.00	100	30.5	7.0	2.13	185	358	26.0	7.9	-1,388	-175	E	No	Yes
1050055		IMC-AGRICO CO. (SOUTH PIERCE)																
	1	Auxiliary Boiler	IMCSPR1	44600	-11100	35	10.7	4.8	1.46	430	494	51.0	15.5	63.5	8.00	C	Yes	Yes
	4	SAP No 10	IMCSPR4	44600	-11100	144	43.9	9.0	2.74	170	350	41.1	12.5	450.0	56.70	C	Yes	Yes
	5	SAP No 11	IMCSPR5	44600	-11100	144	43.9	9.0	2.74	170	350	41.1	12.5	450.0	56.70	C	Yes	Yes
		Combined Expanding Sources	IMCPIER6 [e]	44600	-11100	144	43.9	5.2	1.58	170	350	86.6	26.4	-600.0	-75.6	E	No	Yes
1050053		FARMLAND HYDRO, L.P., GREEN BAY																
	3	SAP #3	FARM3	46600	-2400	100	30.5	7.5	2.29	170	350	28.0	8.5	350.00	44.10	C	Yes	Yes
	4	SAP #4	FARM4	46600	-2400	100	30.5	7.5	2.29	180	355	39.6	12.1	350.00	44.10	C	Yes	Yes
	5	SAP #5	FARM5	46600	-2400	150	45.7	8.0	2.44	180	355	44.1	13.4	466.70	58.80	C	Yes	Yes
	29	MAP/DAP PLANT	FARM29	46600	-2400	129	39.3	7.5	2.29	108	315	43.0	13.1	0.03	0.004	C	Yes	Yes
	34	MOLTEN SULFUR PIT	FARM34	46600	-2400	10	3.0	0.8	0.24	200	366	54.0	16.5	0.70	0.09	C	Yes	Yes
	38	No 6 SAP	FARM38	46600	-2400	150	45.7	9.0	2.74	180	355	34.8	10.6	401.00	50.53	C	Yes	Yes
	12	Expanding Source	FARMX [e]	46600	-2400	100	30.5	4.5	1.37	100	311	66.2	20.2	-667	-83.98	E	No	Yes
1050046		CARGILL FERTILIZER - BARTOW																
	1	NO.3 FERTILIZER PLANT	CARBAR1	46900	4100	142	43.3	1.5	0.46	159	344	79.2	24.1	76.90	9.69	C	Yes	Yes
	12	No 4 SAP	CARBAR12	46900	4100	200	61.0	6.8	2.07	180	355	61.0	18.6	433.30	54.60	C	Yes	Yes
	21	NO 4 FERTILIZER PLANT	CARBAR21	46900	4100	26	7.9	11.0	3.35	1500	1089	42.1	12.8	102.53	12.92	C	Yes	Yes
	32	No 6 SAP	CARBAR32	46900	4100	200	61.0	6.8	2.07	180	355	61.0	18.6	433.30	54.60	C	Yes	Yes
	33	No 5 SAP	CARBAR33	46900	4100	200	61.0	6.8	2.07	180	355	61.0	18.6	433.30	54.60	C	Yes	Yes
	51	Boiler	CARBAR51	46900	4100	31	9.4	3.5	1.07	410	483	20.0	6.1	165.17	20.81	C	Yes	Yes

Appendix F-1 Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name / EU ID Emission Unit Description	ISCST3 ID Name	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline*	Modeled in AAQS	Modeled in Class II
0490015	HARDEE POWER STATION																
	1 CT 1A W/HRSG	HARDE1	41900	-25100	90	27 4	14 5	4 42	236	386	77.5	23.6	734 40	92 53	C	Yes	Yes
	2 CT 2A W/HRSG	HARDE2	41900	-25100	90	27 4	14 5	4 42	245	391	75.8	23.1	734 40	92 53	C	Yes	Yes
	3 Simple cycle CT 2A	HARDE3	41900	-25100	75	22 9	17 9	5 46	986	803	94 3	28 7	734 40	92 53	C	Yes	Yes
	5 Unit 2B - 75 MW gas turbine	HARDE5	41900	-25100	85	25.9	14 8	4 51	999	810	142 0	43 3	5.30	0 67	C	Yes	Yes
1050003	LAKELAND ELECTRIC, LARSEN POWER PLANT																
	3 Steam Generator # 6	LARS3	46000	20000	165	50 3	10 0	3 05	340	444	21 0	6.4	841 20	105 99	B	Yes	No
	4 Steam Generator # 7	LARS4	46000	20000	165	50 3	10 0	3 05	340	444	22.0	6.7	1,643 00	207 02	B	Yes	No
	5 Peaking Gas Turbine # 3	LARS5	46000	20000	31	9 4	11 8	3 60	800	700	101 0	30 8	106 20	13 38	B	Yes	No
	6 Peaking Gas Turbine # 2	LARS6	46000	20000	31	9 4	11 8	3 60	800	700	101 0	30 8	106 20	13 38	B	Yes	No
	7 Peaking Gas Turbine # 1	LARS7	46000	20000	31	9	11.8	3.60	800	700	101	30.8	106 2	13 38	B	Yes	No
	8 Combined Cycle CT	LARS8	46000	20000	155	47.2	16 0	4 88	481	523	85 7	26 1	211 40	26 64	C	Yes	Yes
1050004	LAKELAND ELECTRIC, MCINTOSH POWER PLANT																
	1 McIntosh Unit 1	MCINT1	46100	23700	150	45 7	9 0	2 74	277	409	81 2	24 7	2,612.50	329 18	B	Yes	No
	2 McIntosh Unit 2	MCINT2	46100	23700	20	6 1	2 6	0 79	715	653	77 0	23 5	14 30	1 80	B	Yes	No
	3 McIntosh Unit 3	MCINT3	46100	23700	20	6 1	2 6	0 79	715	653	77 0	23 5	14.30	1 80	B	Yes	No
	4 Gas Turbine Peaking Unit 1	MCINT4	46100	23700	35	10 7	13.5	4 11	900	755	79 5	24 2	164.70	20 75	B	Yes	No
	5 McIntosh Unit 2	MCINT5	46100	23700	157	47 9	10 5	3.20	277	409	73 2	22 3	892.00	112 39	B	Yes	No
	6 McIntosh Unit 3	MCINT6	46100	23700	250	76 2	18 0	5 49	167	348	82.6	25.2	4,368 00	550 37	C	Yes	Yes
	28 CT UNIT 5	MCINT28	46100	23700	85	25 9	28 0	8 53	1095	864	82 7	25 2	126 70	15.96	C	Yes	Yes
1010017	FPC ANCLOTE POWER PLANT																
	1 TURBINE GEN UNIT NO 1	FPCANC1	-38500	36200	499	152 1	24 0	7 32	320	433	62 0	18 9	13,652 10	1,720 16	B	Yes	No
	2 TURBINE GEN UNIT NO 2	FPCANC2	-38500	36200	499	152 1	24 0	7 32	320	433	62 0	18 9	6,145 45	774 33	B	Yes	No
1050051	U.S AGRI-CHEMICALS - FT MEADE																
	6 AUXILIARY BOILER	USAGFM6	53100	-13500	70	21.3	3 7	1 13	400	478	49	14 9	51 00	6 43	C	Yes	Yes
	16 SAP #1	USAGFM16	53100	-13500	175	53 3	8 5	2 59	180	355	32	9 8	500 00	63 00	C	Yes	Yes
	17 SAP #2	USAGFM17	53100	-13500	175	53 3	8 5	2 59	180	355	32	9 8	500 00	63.00	C	Yes	Yes
	28 MOLTEN SULFUR TANK	USAGFM28	53100	-13500	6	1 8	0 3	0 09	270	405	344	104 9	0 49	0 06	C	Yes	Yes
	29 MOLTEN SULFUR TANK	USAGFM29	53100	-13500	6	1 8	0 3	0 09	260	400	157	47 9	0.23	0 03	C	Yes	Yes
	Expanding Source	USAGFM0	53100	-13500	95	29	9 9	3 02	106	314	23	6 9	-625.4	-78.80	E	No	Yes
	Expanding Source	USAGFM1	53100	-13500	93	28	5.0	1 52	134	330	58	17.6	-145 0	-18.27	E	No	Yes
1050023	CUTRALE CITRUS JUICES USA,INC																
	1 CITRUS FEED MILL DRYER	CUTR1	58700	21200	93	28 3	3 5	1 07	140	333	55 0	16 8	186 00	23.44	B	Yes	No

Appendix F-1 Summary of SO_2 Sources Included in the Air Modeling Analysis

Facility ID	Facility Name EU ID	Emission Unit Description	ISCST3 ID Name	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)	PSD Consuming Expanding or Baseline[a]	Modeled in AAQS	Modeled in Class II
	3	PEEL DRYER	CUTR3	58700	21200	100	30.5	3.2	0.98	161	345	49.0	14.9	186.00	23.44	C	Yes	Yes
	8	COGEN #1	CUTR8	58700	21200	40	12.2	4.0	1.22	323	435	60.0	18.3	170.80	21.52	C	Yes	Yes
	9	COGEN #2	CUTR9	58700	21200	40	12.2	4.0	1.22	330	439	66.0	20.1	26.00	3.28	C	Yes	Yes

[a] C = PSD increment consuming source

E = PSD increment expanding source

B = baseline source

[b] Velocity of 1 ft/s assumed

[c] Information from Table 6-6, CCA - Frostproof PSD application, Golder Associates.

[d] PSD status from Tables D-1& E-1, Cargill Riverview report, Golder Associates

0810007 TROPICANA PRODUCTS, INC.

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility / Emission Unit Description	Unit No.	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Stack Diameter (ft)	Stack Diameter (m)	Stack Temperature (F)	Stack Temperature (K)	Stack Velocity (ft/s)	Stack Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
0570024	IMC-AGRICO CO (PORT SUTTON TERMINAL)														
	PHOSPHATE ROCK DRYER WITH WET CYCLONIC SCRUBBER	1	IMCSUT1	-1,420	4,990	65	19.812	8.00	2.4	150	339	41	12.5	43.80	5.52
	RAILCAR UNLOADING FACILITY W/o CYCLONE & WET SCRUBBER	2	IMCSUT2	1,420	4,990	65	19.812	6.00	1.8	79	299	58	17.7	25.70	3.24
	SHIPLOADER - OBA CHOKED FEEDER LOADER SPROUT W/BAGHOUSE	3	IMCSUT3	-1,420	4,990	45	13.716	1.50	0.5	90	305	113	34.4	3.09	0.39
	C17 CONVEYOR TRANSFER POINT E	4	IMCSUT4	-1,420	4,990	7	2.1336	1.10	0.3	120	322	105	32.0	1.54	0.19
	C12 CONVEYOR TRANSFER POINT A	5	IMCSUT5	-1,420	4,990	32	9.7536	1.70	0.5	120	322	51	15.5	1.80	0.23
	C30 CONVEYOR TRANSFER POINT C	6	IMCSUT6	-1,420	4,990	18	5.4864	1.10	0.3	120	322	105	32.0	1.54	0.19
	C18 CONVEYOR TRANSFER POINT D	7	IMCSUT7	-1,420	4,990	39	11.8872	1.10	0.3	120	322	105	32.0	1.54	0.19
	AIT HANDLING	8	IMCSUT8	-1,420	4,990	97	29.5656	1.13	0.3	130	328	59.5	18.1	0.90	0.11
	C19 CONVEYOR TRANSFER POINT G	9	IMCSUT9	-1,420	4,990	101	30.7848	1.30	0.4	120	322	43	13.1	1.05	0.13
	DRY ROCK STORAGE SILOS WITH SCRUBBER	12	IMCSUT12	1,420	4,990	10	3.048	2.00	0.6	100	311	132	40.2	5.94	0.75
0571102	FLORIDA CRUSHED STONE COMPANY														
	Kiln Exhaust	1	FLTON1	3,400	4,450	168	51.2064	4	1.2	320	433	92.8	28.3	10.60	1.34
	SN 1, WH 1, SH-3, BC-4 AND BC 5	2	FLTON2	-3,400	4,450	60	18.288	4	1.2	68	293	6.6	2.0	1.29	0.16
	BN-3, VF 9, AND VF-10	3	FLTON3	-3,400	4,450	140	42.672	4	1.2	68	293	4	1.2	0.77	0.10
	SS-5	8	FLTON4	-3,400	4,450	180	54.864	4	1.2	68	293	4	1.2	0.77	0.10
	TRUCK LOADING 1 AS-1, AS-2, AND LS-1	9	FLTON8	-3,400	4,450	20	6.096	4	1.2	68	293	4	1.2	0.77	0.10
	TRUCK LOADING 2 AS 3 AND LS-2	10	FLTON9	-3,400	4,450	20	6.096	4	1.2	68	293	4	1.2	0.77	0.10
	MILL SEPARATOR, WB-1, FK-1, AND RM-1	11	FLTON10 FLTON11	-3,400	4,450	50	15.24	4	1.2	100	311	6.6	2.0	1.21	0.15
0570040	TECO - GANNON STATION														
	UNIT #1 STEAM GENERATOR	1	TECOGN1	-2800	5000	315	96.012	10.00	3.0	277	409	124	37.9	126.0	15.88
	125MW BABCOCK&WILCOX CORP WET BOTTOM CYCLONIC FIRING TYPE BL	2	TECOGN2	-2800	5000	315	96.012	10.00	3.0	299	421	126	38.5	126.0	15.88
	UNIT #3 - B&W WET BOTTOM COAL FIRED BOILER	3	TECOGN3	-2800	5000	315	96.012	10.60	3.2	273	406	114	34.6	160.0	20.16
	UNIT#4- B&W WET BOT CYCLONIC FIR'G COAL FIR BOLR, EAST STACK	4	TECOGN4	-2800	5000	315	96.012	10.00	3.0	289	416	97	29.6	188.0	23.69
	UNIT #5 COAL FIRED BOILER	5	TECOGN5	-2800	5000	315	96.012	14.60	4.5	293	418	166	50.7	228.0	28.73
	UNIT #6 - COAL FIRED BOILER WITH ESP	6	TECOGN6	-2800	5000	315	96.012	17.60	5.4	260	400	109	33.3	380.0	47.88
	14 MW GAS FIRED TURBINE	7	TECOGN7	-2800	5000	35	10.668	11.00	3.4	1010	816	93	28.2	122.0	15.37
	ECONOMIZER ASH SILO	9	TECOGN8	-2800	5000	72	21.9456	0.70	0.2	350	450	35	10.7	0.14	0.02
	FLYASH SILO NO. 1 FOR UNITS 5 & 6	10	TECOGN9	-2800	5000	107	32.6136	1.00	0.3	350	450	99	30.2	1.20	0.15
	FLY ASH SILO NO. 2 UNITS 1-4	11	TECOGN11	-2800	5000	104	31.6992	2.00	0.6	350	450	59	18.0	2.90	0.37
	UNIT 1 COAL BUNKER W/ROTO-CLONE	13	TECOGN13	-2800	5000	175	53.34	1.70	0.5	78	299	70	21.3	0.19	0.02
	UNIT 2 COAL BUNKER W/ROTO-CLONE	14	TECOGN14	-2800	5000	175	53.34	1.70	0.5	78	299	70	21.3	0.19	0.02
	UNIT 3 COAL BUNKER W/ROTO CLONE	15	TECOGN15	-2800	5000	177	53.9496	2.00	0.6	78	299	50	15.2	0.19	0.02
	UNIT 4 COAL BUNKER W/ROTO CLONE	16	TECOGN16	-2800	5000	175	53.34	1.70	0.5	78	299	70	21.3	0.19	0.02
	UNIT 5 COAL BUNKER W/ROTO CLONE	17	TECOGN17	-2800	5000	174	53.0352	1.20	0.4	78	299	79	24.1	0.19	0.02
	UNIT 6 COAL BUNKER W/ROTO CLONE	18	TECOGN18	2800	5000	175	53.34	1.70	0.5	78	299	70	21.3	0.19	0.02
0570252	SOUTHDOWN, INC														
	VESSEL UNLOADING WITH FULLER MODEL 96-S-5000 BAGHOUSE	1	SDOWN1	-3,600	4,600	122	37.1856	0.5	0.2	77	298	353	107.6	6.47	0.82
	TRUCK LOADING 'A' WITH FULLER MODEL 36 J 8 BAGHOUSE	2	SDOWN2	-3,600	4,600	50	15.24	0.5	0.2	100	311	220.7	67.3	0.62	0.08
	VESSEL UNLOADING WITH FULLER MODEL 96 S 5000 BAGHOUSE	3	SDOWN3	-3,600	4,600	122	37.1856	0.5	0.2	77	298	353	107.6	4.57	0.58
	TRUCK LOADING 'B' WITH FULLER MODEL 36 J-5 BAGHOUSE	4	SDOWN4	-3,600	4,600	50	15.24	0.5	0.2	100	311	152.8	46.6	0.43	0.05
0570031	HOLNAM INC														
	NORBLO BAGHOUSE "A" FOR SHIP UNLOADING OF PORTLAND CEMENT	1	HOLN1	-3,400	4,800	145	44.196	1.2	0.4	77	298	70	21.3	1.21	0.15
	NORBLO BAGHOUSE "B" FOR SHIP UNLOADING OF PORTLAND CEMENT	2	HOLN2	3,400	4,800	145	44.196	1.2	0.4	77	298	70	21.3	1.21	0.15
	BAGHOUSE "C" FOR SHIP UNLOADING OF PORTLAND&TRUCK UNLOAD 5&	3	HOLN3	-3,400	4,800	145	44.196	1.2	0.4	77	298	70	21.3	1.21	0.15
	NORBLO BAGHOUSE "D" FOR SHIP UNLOADING OF PORTLAND CEMENT	4	HOLN4	-3,400	4,800	145	44.196	2.3	0.7	77	298	60	18.3	1.51	0.19
	NORTH SIDE CEMENT TRUCK LOADING G-6	6	HOLN6	-3,400	4,800	149	45.4152	1.2	0.4	86	303	35	10.7	0.62	0.08
	SOUTH SIDE BULK TRUCK LOADING 5 F	7	HOLN7	-3,400	4,800	149	45.4152	1.2	0.4	86	303	35	10.7	0.62	0.08
	N MASONRY CEMENT SACKING WITH BAGHOUSE,13-M	9	HOLN9	-3,400	4,800	46	14.0208	1.4	0.4	77	298	69	21.0	1.60	0.20
	PACKING OF S&M MORTAR SACKS, 10 K	10	HOLN10	-3,400	4,800	66	20.1168	1.5	0.5	77	298	69	21.0	1.90	0.24
	TYPE I CEMENT SILOS # 1, 2, 4, 5, & 6	14	HOLN14	-3,400	4,800	145	44.196	2.3	0.7	77	298	50.1	15.3	1.31	0.17
	MASONRY CEMENT SILOS # 3 & 10	15	HOLN15	-3,400	4,800	145	44.196	2.3	0.7	77	298	50.1	15.3	1.31	0.17
	FLYASH CEMENT SILO # 7	16	HOLN16	-3,400	4,800	145	44.196	2.3	0.7	77	298	50.1	15.3	1.31	0.17
	SLAG CEMENT SILO # 8	17	HOLN17	-3,400	4,800	145	44.196	2.3	0.7	77	298	50.1	15.3	1.31	0.17
	TYPE I CEMENT SILO # 9 & 10	18	HOLN18	-3,400	4,800	145	44.196	2.3	0.7	77	298	50.1	15.3	1.31	0.17
0570094	IMC-AGRICO CO. - BIG BEND TERMINAL														

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility Emission Unit Description	Unit No	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	SHIPPING TERMINAL INCOMING/TRANSFER POINT #1 W/DUST COLLECTOR	1	IMCBB1	-800	-6,400	36	10.9728	1.50	0.5	77	298	42	12.8	3.15	0.40
	SHIPPING TERMINAL OUTGOING TRANSFER PT. #2 W/DUST COLLECTOR	2	IMCBB2	800	-6,400	25	7.62	1.30	0.4	77	298	34	10.4	1.52	0.19
	SHIPPING TERMINAL OUTGOING TRANSFER POINT #3 W/ DUST COLLECT	3	IMCBB3	800	-6,400	25	7.62	1.30	0.4	77	298	34	10.4	1.52	0.19
	SHIPPING TERMINAL GANTRY AND SHIPLOADING W/DUST COLLECTOR	4	IMCBB4	-800	-6,400	30	9.144	2.20	0.7	77	298	87	26.5	3.33	0.42
0570033	CSX TRANSPORTATION, INC														
	ROTARY RAIL CAR DUMPER W/ BGHS #1	1	CSX1	510	6,490	45	13.716	7.80	2.4	77	298	43	13.1	30.80	3.88
	TRANSFER PT BELT 5 & 7 TO BELT 8 CONTROLLED BY BAGHOUSE #4	2	CSX2	510	6,490	3	0.9144	0.50	0.2	77	298	636	193.9	3.60	0.45
	ROTARY RAILCAR DUMPER #2 CONTROLLED BY MIKRO PULSAIRE BGHS #	3	CSX3	-510	6,490	40	12.192	6.70	2.0	77	298	47	14.3	35.87	4.52
	TRANSFER PT #3 TO 4A & #6 CONVEYOR BELTS W/ BGHS 2A	4	CSX4	510	6,490	40	12.192	2.20	0.7	77	298	63	19.2	3.73	0.47
	TRANSFER PT #4A TO #5 CONVEYOR BELT CONTROLLED BY BGHS 3A	5	CSX5	510	6,490	40	12.192	1.80	0.5	77	298	59	18.0	2.34	0.29
	TRANSFER PT #3 TO #5 CONVEYOR BELT W/BAGHOUSE #2B	6	CSX6	510	6,490	4	1.2192	0.50	0.2	77	298	360	109.7	1.10	0.14
	TRANSFER PT. # 4 TO # 6 CONVEYOR BELT W/ BGHS #3	7	CSX7	510	6,490	3	0.9144	0.50	0.2	77	298	275	83.8	0.80	0.10
	TRANSFER PT #6 TO #7 CONVEYOR BELT W/ BAGHOUSE #5	8	CSX8	510	6,490	3	0.9144	0.50	0.2	77	298	275	83.8	0.80	0.10
	TRANSFER PT #8 TO #9 CONVEYOR BELT W/BAGHOUSE #6	9	CSX9	-510	6,490	36	10.9728	3.30	1.0	77	298	37	11.3	3.93	0.50
	7ELT TO GANTRY TRANSFER POINT CONTROLLED BY BAGHOUSE #7	10	CSX10	510	6,490	54	16.4592	6.00	1.8	77	298	12	3.7	0.27	0.03
	LOADING OF SHIPHOLD AT CSX	11	CSX11	510	6,490	60	18.288	9.00	2.7	78	299	0.003	0.0	12.58	1.59
0570029	NITRAM, INC														
	B & W PACKAGE BOILER, GAS FIRED	3	NITRM3	400	6,500	90	27.432	4.50	1.4	260	400	35	10.7	7.50	0.95
	FW PACKAGE BOILER, GAS FIRED	4	NITRM4	400	6,500	30	9.144	4.50	1.4	450	505	35	10.7	5.00	0.63
	AMMONIUM NITRATE PRILL TOWER NO. 2	6	NITRM6	400	6,500	173	52.7304	15.00	4.6	100	311	19	5.8	26.00	3.28
	KAOLIN CLAY HANDLING AND STORAGE W/ FLEX KLEEN BAGHOUSE	8	NITRM8	-400	6,500	36	10.9728	1.90	0.6	77	298	47	14.3	0.60	0.08
	COATED NH4NO3 STG AND LOADOUT W/ RESEARCH COTRELL BAGHOUSE	9	NITRM9	-400	6,500	39	11.8872	1.90	0.6	77	298	14	4.3	2.10	0.26
	MGO SILO W/GRIFFIN ENVIRONMENTAL BAGHOUSE (SILO #1)	10	NITRM10	-400	6,500	63	19.2024	0.30	0.1	77	298	106	32.3	0.12	0.02
	MGO DAY TANK W/GRIFFIN ENVIRONMENTAL BAGHOUSE (SILO #2)	11	NITRM11	-400	6,500	35	10.668	0.30	0.1	77	298	129	39.3	0.14	0.02
	PRILL ROTARY DRUMS W/ WET CYCLONES AND PEABODY SCRUBBER	12	NITRM12	-400	6,500	35	10.668	5.00	1.5	101	311	35	10.7	9.23	1.16
	GAS FIRED HURST PACKAGE BOILER	13	NITRM13	-400	6,500	9	2.7432	1.70	0.5	260	400	24	7.3	0.03	0.00
	BIG BEND TRANSFER, CO. L.L.C														
	SHIP UNLOADER SCRUBBER	1	BBTC1	-1,800	-6,300	83	25.2984	2.43	0.7	100	311	58.2	17.7	0.02	0.00
	CONVEYOR TRANSFER POINT STACK	2	BBTC2	-1,800	-6,300	20	6.096	0.87	0.3	80	300	42.6	13.0	0.08	0.01
	STORAGE BUILDING SCRUBBER STACC	3	BBTC3	-1,800	-6,300	106	32.3088	3.67	1.1	88	304	55.3	16.9	0.01	0.00
	MELTER/MOLTEN SCRUBBER STACK	4	BBTC4	1,800	-6,300	95	28.956	2.17	0.7	97	309	57.0	17.4	2.94	0.37
	PACKAGE BOILER STACK	5	BBTC5	1,800	-6,300	106	32.3088	4.00	1.2	350	450	29.7	9.1	0.50	0.06
	LIME SILO BAGHOUSE STACK	6	BBTC6	1,800	-6,300	80	24.384	1.00	0.3	110	316	0.033	0.0	0.11	0.01
	DIATOMACEOUS EARTH SILO STACK	7	BBTC7	-1,800	-6,300	80	24.384	1.00	0.3	110	316	0.033	0.0	0.11	0.01
0571242	NATIONAL GYPSUM														
	IMP MILLS NOS. 1 - 4	1 - 4	NATGYP14	400	-6,900	98	29.8704	3.75	1.1	350	450	58	17.7	15.40	1.94
	KILN	5	NATGYP5	400	6,900	54	16.4592	13.40	4.1	384	469	58	17.7	2.34	0.29
	STUCCO HANDLING	6	NATGYP6	400	-6,900	50	15.24	1.67	0.5	200	366	50	15.2	0.001	0.0001
	STUCCO SILO	7	NATGYP7	400	-6,900	59	17.9832	2.00	0.6	250	394	26	7.9	0.001	0.000
	RISER MAKER	8	NATGYP8	400	-6,900	59	17.9832	2.00	0.6	80	300	9.4	2.9	0.0003	0.00004
	BET NOS. 1 & 2	9	NATGYP9	400	-6,900	59	17.9832	2.00	0.6	80	300	28	8.5	0.002	0.000
	STARCH SILO	10	NATGYP10	400	-6,900	73	22.2504	1.00	0.3	80	300	17	5.2	0.0001	0.00002
0570014	EASTERN ASSOCIATION TERMINAL ROCK PORT														
	PHOS ROCK SHIP LOADER BAGHOUSE SYSTEM	1	ETERM1	-2,700	6,400	55	16.764	4.20	1.3	77	298	62	18.9	12.03	1.52
	STORAGE BUILDING ELEVATOR BAGHOUSE-SOUTH END	2	ETERM2	2,700	6,400	70	21.336	0.50	0.2	77	298	25	7.6	0.07	0.01
	RAILCAR UNLOADING SYSTEM WITH BAGHOUSE A	3	ETERM3	-2,700	6,400	14	4.2672	2.00	0.6	78	299	636	193.9	19.89	2.51
	1F2 MIKRO PULSAIRE B CONVEYOR TRANSFER POINT (6- #7 TO #9 OR #	4	ETERM4	-2,700	6,400	11	3.3528	1.60	0.5	78	299	93	28.3	2.46	0.31
	645820 MIKRO PULSAIRE BAGHOUSE D ON OUTGOING TRANS. PT.	6	ETERM6	-2,700	6,400	11	3.3528	1.10	0.3	77	298	78	23.8	1.04	0.13
	645820 MIKRO PULSAIRE BAGHOUSE C ON OUT GOING TRNS. PT	9	ETERM9	2,700	6,400	11	3.3528	1.10	0.3	78	299	78	23.8	1.04	0.13
	STORAGE BUILDING BAGHOUSE #1, SE	11	ETERM11	-2,700	6,400	15	4.572	2.50	0.8	77	298	268	81.7	18.28	2.30
	STORAGE BUILDING BAGHOUSE #2,SW	12	ETERM12	2,700	6,400	15	4.572	2.50	0.8	77	298	268	81.7	18.28	2.30
	STORAGE BUILDING BAGHOUSE #3,NW	13	ETERM13	2,700	6,400	15	4.572	2.50	0.8	77	298	268	81.7	18.28	2.30
	STORAGE BUILDING BAGHOUSE #4,NE	14	ETERM14	-2,700	6,400	15	4.572	2.50	0.8	77	298	268	81.7	18.28	2.30
	BELT 9 TRANSFER POINT TO BELT 4	16	ETERM16	-2,700	6,400	11	3.3528	1.10	0.3	77	298	78	23.8	1.04	0.13
	BELT 5 TRANSFER POINT TO BELT 6	17	ETERM17	-2,700	6,400	11	3.3528	1.10	0.3	78	299	78	23.8	1.04	0.13

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility / Emission Unit Description	Unit No	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
0571100	CHEMICAL LIME COMPANY OF ALABAMA INC														
	CONVEYORS TO STORAGE BINS	1	CHEMLIM1	-4,700	5,800	90	27.432	1.1	0.3	77	298	26.3	8.0	0.26	0.03
	TRUCK LOADING	2	CHEMLIM2	-4,700	5,800	30	9.144	1.1	0.3	77	298	26.3	8.0	0.26	0.03
	CRUSHING/SCREENING	3	CHEMLIM3	-4,700	5,800	17	5.1816	4.2	1.3	77	298	36.1	11.0	5.14	0.65
	DOME STORAGE BUILDING	4	CHEMLIM4	-4,700	5,800	75	22.86	1.5	0.5	77	298	23.6	7.2	0.43	0.05
	BARGE UNLOADING HOPPER	5	CHEMLIM5	-4,700	5,800	17	5.1816	4.7	1.4	77	298	48	14.6	8.57	1.08
	BARGE UNLOADING CONVEYOR	6	CHEMLIM6	-4,700	5,800	75	22.86	1.5	0.5	77	298	23.6	7.2	0.43	0.05
	LIME SLURRY BATCH	7	CHEMLIM7	-4,700	5,800	12	3.6576		0.0	200	366		0.0	0.08	0.01
	RAILCAR UNLOADING HOPPER/CONVEYOR SYSTEM	8	CHEMLIM8	-4,700	5,800	25	7.62	1.1	0.3	77	298	26.3	8.0	0.26	0.03
0570039	TECO - BIG BEND STATION														
	UNIT #1 COAL FIRED BOILER W/RESEARCH-COTRELL ESP	1	TECOBB1	-1,000	-7,500	490	149.352	24.00	7.3	300	422	116	35.4	404	50.90
	UNIT #2 RILEY-STOKER COAL FIRED BOILER W/ ESP	2	TECOBB2	-1,000	7,500	490	149.352	24.00	7.3	300	422	116	35.4	400	50.40
	UNIT #3 RILEY-STOKER COAL-FIRED BOILER W/ ESP	3	TECOBB3	-1,000	7,500	499	152.095	24.00	7.3	292	418	51.2	15.6	412	51.91
	UNIT #4 COAL-FIRED BOILER W/ BELCO ESP - PSD-FL-040	4	TECOBB4	-1,000	-7,500	499	152.095	24.00	7.3	156	342	59	18.0	130	16.38
	BIG BEND STATION COMBUST. TURBINE #2 - FIRED BY NO. 2 FUEL O	5	TECOBB5	-1,000	-7,500	75	22.86	14.00	4.3	928	771	61	18.6	33.0	4.16
	GAS TURBINE #3 - WESTINGHOUSE TURBINE FIRED BY NO. 2 FUEL OI	6	TECOBB6	-1,000	-7,500	75	22.86	14.00	4.3	928	771	61	18.6	33.0	4.16
	GAS TURBINE #1 FIRED BY #2 FUEL OIL	7	TECOBB7	-1,000	-7,500	35	10.668	11.04	3.4	1010	816	91.9	28.0	33.0	4.16
	BIG BEND STATION UNIT NO. 1 & NO. 2 FLY ASH SILO WITH BAGHOU	8	TECOBB8	1,000	7,500	102	31.0896	2.50	0.8	250	394	52	15.8	5.16	0.65
	FLY-ASH SILO FOR UNIT #3	9	TECOBB9	-1,000	-7,500	113	34.4424	0.90	0.3	250	394	406	123.7	3.00	0.38
	LIMESTONE SILO A W/ 2 BAGHOUSES. 1 IS 100% BACK UP P	12	TECOBB12	1,000	7,500	101	30.7848	0.50	0.2	150	339	46	14.0	0.05	0.01
	LIMESTONE SILO B W/ 2 BAGHOUSES. 1 IS 100% BACK UP P	13	TECOBB13	1,000	7,500	101	30.7848	0.50	0.2	150	339	46	14.0	0.05	0.01
	FLYASH SILO FOR UNIT #4 P	14	TECOBB14	-1,000	-7,500	139	42.3672	1.60	0.5	140	333	59	18.0	0.20	0.03
	UNIT 1 COAL BUNKER W/ROTO-CLONE	15	TECOBB15	-1,000	-7,500	179	54.5592	1.70	0.5	78	299	69	21.0	0.48	0.06
	UNIT 2 COAL BUNKER W/ROTO-CLONE	16	TECOBB16	-1,000	-7,500	179	54.5592	1.70	0.5	78	299	69	21.0	0.48	0.06
	UNIT 3 COAL BUNKER W/ROTO-CLONE	17	TECOBB17	-1,000	-7,500	179	54.5592	1.70	0.5	78	299	69	21.0	0.48	0.06
0570018	LAFARGE CORP														
	GRAY CEMENT SILOS #1,2,3,4,5,6,	1	LAFRG1	-5,200	8,100	98	29.8704	1.60	0.5	77	298	39	11.9	1.23	0.15
	GREY CEMENT STPORAGE SILOS #1,2,3,4,5,6	2	LAFRG2	-5,200	8,100	98	29.8704	1.60	0.5	77	298	39	11.9	1.23	0.15
	MASONRY CEMENT SILOS #7,8,9,10,13,14,15 & 16 & TWO RAIL/TRK S	3	LAFRG3	5,200	8,100	102	31.0896	1.90	0.6	77	298	64	19.5	2.80	0.35
	WHITE STORAGE SILOS #11,12,17,18,I&J	5	LAFRG5	5,200	8,100	100	30.48	2.50	0.8	77	298	40	12.2	3.10	0.39
	BULK CEMENT STORAGE SILOS # 21 & 26	6	LAFRG6	-5,200	8,100	147	44.8056	1.70	0.5	77	298	44	13.4	1.54	0.19
	BULK CEMENT STORAGE SILO# 20,23 & 24	7	LAFRG7	-5,200	8,100	147	44.8056	1.70	0.5	77	298	44	13.4	1.54	0.19
	BULK STORAGE SILOS # 19,22,25 & WEST TRK STN	8	LAFRG8	-5,200	8,100	147	44.8056	1.70	0.5	77	298	44	13.4	1.54	0.19
	EAST TRUCK LOADING STN	9	LAFRG9	-5,200	8,100	171	52.1208	1.10	0.3	77	298	84	25.6	1.23	0.15
	CEMENT FROM SILOS TO RAILCARS AND TRUCKS	11	LAFRG11	-5,200	8,100	47	14.3256	1.30	0.4	77	298	62	18.9	1.30	0.16
	8 CLINKER/CEMENT STORAGE SILOS # 7A,7B,7C,8A,8B,9A,9B,10B	12	LAFRG12	-5,200	8,100	83	25.2984	2.30	0.7	77	298	80	24.4	5.14	0.65
	FINISH MILL #8- TWO SEPARATORS	13	LAFRG13	5,200	8,100	83	25.2984	3.40	1.0	77	298	62	18.9	8.74	1.10
	FINISH MILL #9 RAW MATERIAL SCREENING	16	LAFRG16	-5,200	8,100	83	25.2984	3.40	1.0	77	298	62	18.9	8.74	1.10
	FINISH MILL #9 ELEVATOR AND DRAG LINE	17	LAFRG17	-5,200	8,100	90	27.432	1.10	0.3	77	298	87	26.5	3.34	0.42
	FINISH MILL#9 RAW MATERIAL GRINDING	18	LAFRG18	-5,200	8,100	16	4.8768	2.40	0.7	77	298	55	16.8	3.86	0.49
	FINISH MILL #10- SCREENING OF GROUND RAW MATERIAL	19	LAFRG19	5,200	8,100	83	25.2984	3.40	1.0	77	298	62	18.9	8.74	1.10
	FINISH MILL #10B- ELEVATOR AND DRAG LINE	20	LAFRG20	5,200	8,100	57	17.3736	2.20	0.7	77	298	56	17.1	3.34	0.42
	FINISH MILL #10- RAW MATERIAL GRINDING	21	LAFRG21	5,200	8,100	30	9.144	2.40	0.7	77	298	55	16.8	3.86	0.49
	GREY CEMENT PACKER SYSTEM	23	LAFRG23	-5,200	8,100	49	14.9352	2.20	0.7	77	298	35	10.7	2.06	0.26
	GREY CEMENT PACKAGING SYSTEM	24	LAFRG24	-5,200	8,100	49	14.9352	2.20	0.7	77	298	35	10.7	2.06	0.26
	WHITE CEMENT PACKAGING SYSTEM	25	LAFRG25	-5,200	8,100	72	21.9456	0.80	0.2	77	298	265	80.8	2.06	0.26
	DUST COLLECTOR #27 - CLINKER UNLOADING FROM SHIP	27	LAFRG27	-5,200	8,100	20	6.096	2.20	0.7	100	311	78	23.8	4.63	0.58
	CLINKER UNLOADING TRANSFER POINT 28	28	LAFRG28	-5,200	8,100	115	35.052	1.90	0.6	100	311	70	21.3	3.09	0.39
	THREE MASONRY CEMENT PACKER -SCREENING & STORAGE	31	LAFRG31	-5,200	8,100	49	14.9352	2.00	0.6	77	298	63	19.2	3.09	0.39
	MASONRY CEMENT PACKAGING- STORAGE, CONVEYING & PACKERS	32	LAFRG32	-5,200	8,100	73	22.2504	1.90	0.6	77	298	76	23.2	3.09	0.39
	VACUUM UNLOADING SYSTEM W/DUST COLLECTION SYSTEMS	42	LAFRG42	-5,200	8,100	174	53.0352	1.50	0.5	77	298	75	22.9	2.05	0.26
	VACUUM UNLOADING SYSTEM W/DUST COLLECTION SYSTEMS	43	LAFRG43	-5,200	8,100	174	53.0352	1.50	0.5	77	298	94	28.7	2.33	0.29
	VACUUM UNLOADING SYSTEM W/DUST COLLECTION SYSTEMS	44	LAFRG44	-5,200	8,100	60	18.288	1.00	0.3	77	298	112	34.1	1.36	0.17
	VACUUM UNLOADING SYSTEM W/DUST COLLECTION SYSTEMS	45	LAFRG45	-5,200	8,100	60	18.288	1.00	0.3	77	298	112	34.1	1.36	0.17
	VACUUM UNLOADING SYSTEM W/DUST COLLECTION SYSTEMS	50	LAFRG50	-5,200	8,100	123	37.4904	1.00	0.3	77	298	84	25.6	1.03	0.13
0570038	TECO - HOOKERS POINT STATION														
	BOILER #1 298 MMBTU/HR (PHASE II ACID RAIN UNIT)	1	TECOHOK1	-4,900	8,500	280	85.344	11.30	3.4	356	453	82	25.0	37.30	4.70
	BOILER #2 298 MMBTU/HR (PHASE II ACID RAIN UNIT)	2	TECOHOK2	-4,900	8,500	280	85.344	11.30	3.4	356	453	82	25.0	37.30	4.70

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility / Emission Unit Description	Unit No	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	BOILER #3 411 MMBTU/HR (PHASE II ACID RAIN UNIT)	3	TECOHOK3	-4,900	8,500	280	85.344	12.00	3.7	341	445	62.7	19.1	51.40	6.48
	BOILER #4 411 MMBTU/HR (PHASE II ACID RAIN UNIT)	4	TECOHOK4	-4,900	8,500	280	85.344	12.00	3.7	341	445	62.7	19.1	51.40	6.48
	BOILER #5 610 MMBTU/HR (PHASE II ACID RAIN UNIT)	5	TECOHOK5	-4,900	8,500	280	85.344	11.30	3.4	356	453	82	25.0	76.30	9.61
	BOILER #6 778 MMBTU/HR (PHASE II ACID RAIN UNIT)	6	TECOHOK6	-4,900	8,500	280	85.344	9.40	2.9	329	438	75.2	22.9	97.30	12.26
0570127	CITY OF TAMPA MCKAY BAY RRF														
	UNIT #1 - THE WEST MOST UNIT.	1	MCK1	-2,700	9,710	160	48.768	5.7	1.7	450	505	41	12.5	7.00	0.88
	UNIT #2 - SECOND WEST MOST UNIT BURNS MUNICIPAL WASTE ONLY	2	MCK2	-2,700	9,710	160	48.768	5.7	1.7	450	505	41	12.5	7.00	0.88
	UNIT #3 - 3RD WESTMOST UNIT - BURNS MUNICIPAL WASTE	3	MCK3	-2,700	9,710	160	48.768	5.7	1.7	450	505	41	12.5	7.00	0.88
	UNIT #4 EAST MOST UNIT BURNS MUNICIPAL WASTE	4	MCK4	-2,700	9,710	160	48.768	5.7	1.7	450	505	41	12.5	7.00	0.88
	FLYASH SILO IN REFUSE TO ENERGY FACILITY	5	MCK5	2,700	9,710	57	17.3736	2	0.6	200	366	11	3.4	0.36	0.05
	MUNICIPAL WASTE COMBUSTOR & AUXILIARY BURNERS - UNIT NO 1	103	MCK103	-2,700	9,710	201	61.2648	4.2	1.3	289	416	73.3	22.3	2.76	0.35
	MUNICIPAL WASTE COMBUSTOR & AUXILIARY BURNERS - UNIT NO 2	104	MCK104	-2,700	9,710	201	61.2648	4.2	1.3	289	416	73.3	22.3	2.76	0.35
	MUNICIPAL WASTE COMBUSTOR & AUXILIARY BURNERS - UNIT NO 3	105	MCK105	-2,700	9,710	201	61.2648	4.2	1.3	289	416	73.3	22.3	2.76	0.35
	MUNICIPAL WASTE COMBUSTOR & AUXILIARY BURNERS - UNIT NO 4	106	MCK106	2,700	9,710	201	61.2648	4.2	1.3	289	416	73.3	22.3	2.76	0.35
0570025	TRADEMARK NITROGEN CORP														
	125 TPD NITRIC ACID PLANT W/ 2 ABSORPTION TOWERS IN SERIES	1	TRADE1	4,400	10,100	50	15.24	1.70	0.5	350	450	17.9	5.5	334.00	42.08
0570028	NATIONAL GYPSUM COMPANY														
	BOARD PLANT #1 STUCCO STORAGE SILO	8	INATGY8	-14,070	190	54	16.4592	0.8	0.2	170	350	59	18.0	0.12	0.02
	STUCCO SCREW CONVEYOR SYSTEM CONTROLLED BY BAGHOUSES S-26 WE	9	INATGY9	-14,070	190	54	16.4592	1	0.3	170	350	22	6.7	0.14	0.02
	DRY ROCK TRANSPORT AND STORAGE SILO	13	INATGY13	-14,070	190	63	19.2024	1.1	0.3	110	316	66	20.1	0.90	0.11
	RAYMOND MILL #1 AND ASSOCIATED CONVEYOR S-1 AND FEED BIN	14	INATGY14	14,070	190	75	22.86	1.1	0.3	110	316	76	23.2	1.11	0.14
	#1 CALCIDYNE (8 TPH)-W/FLEX KLEEN MODEL 84RA96 BAGHOUSE	21	INATGY21	-14,070	190	42	12.8016	1.1	0.3	350	450	59	18.0	0.57	0.07
	#2 CALCIDYNE (8 TPH), USING A FLEX KLEEN MODEL 84RA96 BAGHOU	22	INATGY22	-14,070	190	42	12.8016	1.1	0.3	350	450	62	18.9	0.59	0.07
	#3 CALCIDYNE UNIT	23	INATGY23	-14,070	190	42	12.8016	1.1	0.3	350	450	50	15.2	0.68	0.09
	#4 CALCIDYNE UNIT WITH FLEX-KLEEN MODEL 84RA96 BAGHOUSE	24	INATGY24	-14,070	190	42	12.8016	1.1	0.3	350	450	61	18.6	0.66	0.08
	RAYMOND MILL #2, FEED BIN, LAND PLASTER BIN ELEVATOR	25	INATGY25	-14,070	190	67	20.4216	1.4	0.4	110	316	35	10.7	0.85	0.11
	B P LAND PLASTER SYSTEM(SCREW CONVEYORS/ELEVATORS)	26	INATGY26	-14,070	190	76	23.1648	1.2	0.4	77	298	68	20.7	0.65	0.08
	#2 BOARD LINE/PIN MIXER SCRUBBER	27	INATGY27	14,070	190	24	7.3152	1.2	0.4	127	326	11	3.4	0.45	0.06
	NO 5 CALCIDYNE UNIT	28	INATGY28	14,070	190	42	12.8016	1.1	0.3	350	450	71	21.6	0.46	0.06
	NO. 6 CALCIDYNE UNIT	29	INATGY29	-14,070	190	42	12.8016	1.1	0.3	350	450	71	21.6	0.46	0.06
	NO 7 CALCIDYNE UNIT	30	INATGY30	-14,070	190	42	12.8016	1.1	0.3	350	450	71	21.6	0.46	0.06
	NO 8 CALCIDYNE UNIT	31	INATGY31	14,070	190	42	12.8016	1.1	0.3	350	450	71	21.6	0.46	0.06
	HOT STUCCO #1 CONTROLLED BY BAGHOUSE	32	INATGY32	-14,070	190	60	18.288	0.9	0.3	350	450	58	17.7	0.30	0.04
	HOT STUCCO #4 CONTROLLED BY BAGHOUSE	33	INATGY33	-14,070	190	24	7.3152	0.9	0.3	170	350	72	21.9	0.56	0.07
	WALLBOARD KILN NO 2 GAS FIRED #2 F OIL W/ 35%S AS BACKUP	34	INATGY34	-14,070	190	47	14.3256	2.5	0.8	309	427	67	20.4	1.10	0.14
	#1 BOARD END TRIM CONTROLLED BY BAGHOUSE	35	INATGY35	-14,070	190	60	18.288	1	0.3	77	298	70	21.3	0.57	0.07
	ROCK DRYER & CRUSHER wINSULATED RAY JET BAGHOUSE	36	INATGY36	-14,070	190	64	19.5072	3.5	1.1	185	358	40	12.2	2.83	0.36
	RAYMOND MILL NO 3 CONTROLLED BY BAGHOUSE	37	INATGY37	14,070	190	57	17.3736	1.2	0.4	130	328	48	14.6	0.51	0.06
	PIN MIXING/SCOURING & CHAMFERING #1 PB CONTROLLED BY CYCLONE	38	INATGY38	-14,070	190	46	14.0208	1.2	0.4	77	298	33	10.1	0.57	0.07
	HOT STUCCO #2 CONTROLLED BY BAGHOUSE	39	INATGY39	-14,070	190	40	12.192	0.9	0.3	170	350	33	10.1	0.18	0.02
	HOT STUCCO #3 TRANSPORT(AIR SLIDE CONVEYORS & BUCKET ELEVATO	40	INATGY40	-14,070	190	24	7.3152	1.3	0.4	77	298	28	8.5	0.05	0.01
	#2 BOARD PLANT STUCCO SILO CONTROLLED BY BAGHOUSE	41	INATGY41	-14,070	190	52	15.8496	0.3	0.1	77	298	94	28.7	0.07	0.01
	#2 BOARD END OF TRIM CONTROLLED BY BAGHOUSE	42	INATGY42	14,070	190	60	18.288	1	0.3	77	298	70	21.3	0.57	0.07
	STUCCO SCREW CONVEYOR SYSTEM CONTROLLED BY BAGHOUSES S-26 EA	45	INATGY45	-14,070	190	54	16.4592	1	0.3	170	350	22	6.7	0.14	0.02
	DRY WASTE CHOPPER W/ 4800 ACFM FLEXKLEEN BAGHOUSE 84-WRB-80-	46	INATGY46	-14,070	190	10	3.048	1.3	0.4	70	294	60	18.3	0.09	0.01
	TEN DECK KILN DRYER IN BOARD PLANT NO 1	47	INATGY47	-14,070	190	35	10.668	2.8	0.9	300	422	64	19.5	1.07	0.13
	STUCCO COOLING ELEVATOR #1	49	INATGY49	14,070	190	68	20.7264	1	0.3	170	350	67	20.4	0.62	0.08
	POLYSTYRENE TRANSPORT SYSTEM AND FEED HOPPER	55	INATGY55	-14,070	190	40	12.192	0.4	0.1	77	298	47	14.3	0.09	0.01
	DRY MIXER WITH BAGHOUSE	56	INATGY56	-14,070	190	45	13.716	0.6	0.2	77	298	41	12.5	0.18	0.02
	DRY MATERIAL BAGGING SYSTEM AND LIMESTONE HOLDING BIN	58	INATGY58	-14,070	190	45	13.716	1.5	0.5	77	298	48	14.6	1.30	0.16
	LIMESTONE HOLDING BIN PNEUMATIC UNLOADING SYSTEM	59	INATGY59	-14,070	190	45	13.716	0.8	0.2	77	298	50	15.2	0.40	0.05
	STUCCO TRANSPORT WITH BAGHOUSE OPERATION	61	INATGY61	-14,070	190	72	21.9456	1.2	0.4	100	311	56	17.1	0.93	0.12
	CONVEYOR BELT SYSTEM, BELTS B6 AND B7, AND SCREEN	65	INATGY65	-14,070	190	45	13.716	1.3	0.4	130	328	59	18.0	0.58	0.07
	IMPACT MILL #1	102	INATG102	-14,070	190	90	27.432	3.9	1.2	200	366	44.7	13.6	3.74	0.47
	IMPACT MILL #2	103	INATG103	-14,070	190	90	27.432	3	0.9	200	366	75.5	23.0	3.74	0.47
	IMPACT MILL #3	104	INATG104	14,070	190	90	27.432	3	0.9	200	366	75.5	23.0	3.74	0.47
1050011	FPC - BARTOW PLANT														

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility Emission Unit Description	Unit No.	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	BARTOW PLANT UNIT #1, 300 FT STACK	1	FPCBAR1	20,500	100	300	91.44	9.00	2.7	312	429	119	36.3	122.00	15.37
	BARTOW PLT BOILER #2 TEST ANNUALLY 300 FT STACK	2	FPCBAR2	-20,500	100	300	91.44	9.00	2.7	305	425	102	31.1	131.70	16.59
	BARTOW PLANT BOILER #3 TEST ANNUALLY 300 FT STACK	3	FPCBAR3	20,500	100	300	91.44	11.00	3.4	275	408	113	34.4	221.10	27.86
	INDUSTRIAL BOILER-BARTOW/ANCLOTE OIL PIPELINE HEATER-15.5MMB	4	FPCBAR4	-20,500	100	30	9.144	3.00	0.9	515	541	17	5.2	0.22	0.03
	GAS TURBINE PEAKING UNIT # P-1	5	FPCBAR5	-20,500	100	45	13.716	17.30	5.3	930	772	73	22.3	25.40	3.20
	GAS TURBINE PEAKING UNIT # P-2	6	FPCBAR6	20,500	100	45	13.716	17.30	5.3	930	772	73	22.3	25.40	3.20
	GAS TURBINE PEAKING UNIT # P-3	7	FPCBAR7	-20,500	100	45	13.716	17.30	5.3	930	772	73	22.3	25.40	3.20
	GAS TURBINE PEAKING UNIT #P-4	8	FPCBAR8	-20,500	100	45	13.716	17.30	5.3	930	772	73	22.3	25.40	3.20
	FLYASH SYSTEM	9	FPCBAR9	-20,500	100	25	7.62	0.90	0.3	77	298	1.3	0.4	0.10	0.01
	FLORIDA POWER & LIGHT - MANATEE														
	COMBINED FACILITY		FPLMAN1	4,300	28,400	475	144.78	26.2	8.0	307	426	77.5	23.6	1730	217.98
1030012	FPC - HIGGINS PLANT														
	FFFSG SG 1 (PHASE II, ACID RAIN UNIT)	1	FPCHIG1	26,400	15,900	174	53.0352	12.50	3.8	312	429	27	8.2	54.80	6.90
	FFFSG-SG 2 (PHASE II, ACID RAIN UNIT)	2	FPCHIG2	-26,400	15,900	174	53.0352	12.50	3.8	310	428	27	8.2	52.30	6.59
	FFFSG-SG 3 (PHASE II, ACID RAIN UNIT)	3	FPCHIG3	-26,400	15,900	174	53.0352	12.50	3.8	301	423	24	7.3	54.80	6.90
	COMBUSTION TURBINE PEAKING UNIT CTP 1	4	FPCHIG4	26,400	15,900	55	16.764	15.10	4.6	850	728	93.1	28.4	20.16	2.54
	COMBUSTION TURBINE PEAKING UNIT CTP 2	5	FPCHIG5	-26,400	15,900	56	17.0688	15.10	4.6	850	728	93.1	28.4	20.16	2.54
	COMBUSTION TURBINE PEAKING UNIT-CTP 3	6	FPCHIG6	-26,400	15,900	55	16.764	15.10	4.6	850	728	93.1	28.4	22.47	2.83
	COMBUSTION TURBINE PEAKING UNIT-CTP 4	7	FPCHIG7	26,400	15,900	55	16.764	15.10	4.6	850	728	93.1	28.4	22.47	2.83
1050059	IMC-AGRICO CO (NEW WALES)														
	SULFURIC ACID PLANT #1 W/MIST ELIMINATOR	2	IMCWAL2	33,800	-3,100	200	60.96	8.50	2.6	170	350	50	15.2	12.50	1.58
	SULFURIC ACID PLANT #2 W/BRINKS HV MIST ELIMINATOR	3	IMCWAL3	33,800	-3,100	200	60.96	8.50	2.6	170	350	50	15.2	4.80	0.60
	SULFURIC ACID PLANT #3 W/BRINKS MIST ELIMINATOR	4	IMCWAL4	33,800	3,100	200	60.96	8.50	2.6	170	350	50	15.2	4.80	0.60
	PHOSPHATE ROCK RAILCAR UNLOADING (80 TPH MAXIMUM RATE)	5	IMCWAL5	33,800	3,100	40	12.192	3.00	0.9	108	315	58	17.7	6.40	0.81
	GROUND ROCK SILO W/PNEUMATIC 80 TPH LOAD RATE	6	IMCWAL6	33,800	3,100	110	33.528	1.40	0.4	110	316	45	13.7	1.30	0.16
	DAP PLANT NO. 1 W/3 TELLER VENTURI SCRUBBERS,	9	IMCWAL9	33,800	-3,100	133	40.5384	7.00	2.1	105	314	49	14.9	28.60	3.60
	GTSP PLANT (65 TPH) W/TELLER PACKED BED SCRUBBER	10	IMCWAL10	33,800	-3,100	133	40.5384	6.00	1.8	125	325	83.1	25.3	33.75	4.25
	MAP PRILL TOWER W/VENTURI SCRUBBER AND CYCLONIC DEMISTER	11	IMCWAL11	33,800	3,100	120	36.576	4.00	1.2	155	341	57	17.4	15.00	1.89
	GTSP STORAGE (65 TPH) W/ FUME SCRUBBER	12	IMCWAL12	33,800	3,100	133	40.5384	6.00	1.8	108	315	61	18.6	28.70	3.62
	ANIMAL FEED SHIPPING/TRUCK LOADOUT (200 TPH), WITH BAGHOUSE	15	IMCWAL15	33,800	-3,100	65	19.812	1.00	0.3	105	314	169	51.5	1.08	0.14
	GROUND PHOSPHATE ROCK BIN AT GTSP PLANT	21	IMCWAL21	33,800	-3,100	82	24.9936	1.00	0.3	105	314	53	16.2	4.80	0.60
	ANIMAL FEED STORAGE SILOS (3) -"A"SIDE	23	IMCWAL23	33,800	-3,100	114	34.7472	1.00	0.3	105	314	33	10.1	4.75	0.60
	ANIMAL FEED STORAGE/SHIPPING/RAILCAR LOADOUT	24	IMCWAL24	33,800	-3,100	103	31.3944	1.00	0.3	105	314	140	42.7	3.60	0.45
	ANIMAL FEED - (2) LIMESTONE SILOS	25	IMCWAL25	33,800	-3,100	119	36.2712	1.00	0.3	105	314	127	38.7	3.60	0.45
	ANIMAL FEED - SILICA STORAGE BIN	26	IMCWAL26	33,800	-3,100	18	5.4864	1.00	0.3	105	314	31	9.4	1.60	0.20
	ANIMAL FEED INGREDIENT GRANULATION PLANT	27	IMCWAL27	33,800	3,100	172	52.4256	8.00	2.4	130	328	66.3	20.2	36.80	4.64
	ANIMAL FEED STORAGE SILOS (3) - "B SIDE"	28	IMCWAL28	33,800	3,100	114	34.7472	1.00	0.3	105	314	33	10.1	4.75	0.60
	#1 FERTILIZER RAIL/TRUCK SHIPPING	29	IMCWAL29	33,800	-3,100	133	40.5384	3.00	0.9	90	305	42.4	12.9	4.70	0.59
	MULTIFOS SODA ASH CONVEYING SYSTEM W/BAGHOUSE	31	IMCWAL31	33,800	-3,100	108	32.9184	0.80	0.2	80	300	31	9.4	3.60	0.45
	MULTIFOS "A" KILN COOLER W/BAGHOUSE	32	IMCWAL32	33,800	-3,100	86	26.2128	1.50	0.5	220	378	258	78.6	7.70	0.97
	MULTIFOS "B" KILN COOLER W/BAGHOUSE	33	IMCWAL33	33,800	-3,100	86	26.2128	1.50	0.5	274	408	225	68.6	7.70	0.97
	MULTIFOS PLANT MILLING & SIZING SYSTEM WEST BAGHOUSE	34	IMCWAL34	33,800	3,100	71	21.6408	1.70	0.5	125	325	87	26.5	0.93	0.12
	MULTIFOS MILLING & SIZING SYSTEM EAST BAGHOUSE	35	IMCWAL35	33,800	-3,100	71	21.6408	1.00	0.3	100	311	253	77.1	0.93	0.12
	MULTIFOS PRODUCTION 1 DRYER 2 KILNS (A/B) FOR MULTIFOS PLANT	36	IMCWAL36	33,800	3,100	172	52.4256	4.50	1.4	105	314	52	15.8	29.83	3.76
	MAP/DAP #2 TRUCK LOADOUT	37	IMCWAL37	33,800	3,100	107	32.6136	1.80	0.5	100	311	68	20.7	3.60	0.45
	MULTIFOS MILLING & SIZING SYST SURGE BIN BAGHOUSE	38	IMCWAL38	33,800	-3,100	65	19.812	1.10	0.3	100	311	79	24.1	7.50	0.95
	GTSP TRUCK LOADOUT FACILITY W/BAGHOUSE	41	IMCWAL41	33,800	-3,100	104	31.6992	1.50	0.5	100	311	179	54.6	5.00	0.63
	MAP/DAP NO. 2 RAIL LOADOUT	43	IMCWAL43	33,800	3,100	104	31.6992	1.60	0.5	105	314	70	21.3	3.60	0.45
	DAP PLANT II - EAST TRAIN	45	IMCWAL45	33,800	-3,100	171	52.1208	6.00	1.8	110	316	58	17.7	6.40	0.81
	DAP PLANT II - WEST TRAIN	46	IMCWAL46	33,800	3,100	171	52.1208	6.00	1.8	110	316	58	17.7	6.40	0.81
	DAP II WEST PRODUCT COOLER	47	IMCWAL47	33,800	3,100	147	44.8056	4.30	1.3	175	353	68.9	21.0	4.22	0.53
	URANIUM RECOVERY ACID CLEANUP SCRUBBER	48	IMCWAL48	33,800	3,100	60	18.288	3.50	1.1	80	300	31.2	9.5	1.00	0.13
	URANIUM REFINERY W/BAGHOUSE	50	IMCWAL51	33,800	-3,100	100	30.48	1.80	0.5	102	312	37	11.3	1.50	0.19
	URANIUM RECOVERY - CLAY STORAGE BIN	51	IMCWAL52	33,800	-3,100	86	26.2128	0.70	0.2	80	300	54	16.5	1.50	0.19
	ANIMAL FEED - LIMESTONE FEED BIN	52	IMCWAL53	33,800	-3,100	114	34.7472	1.00	0.3	105	314	33	10.1	4.75	0.60
	DAP PLANT #1 PRODUCT COOLER	54	IMCWAL54	33,800	3,100	107	32.6136	3.50	1.1	150	339	77	23.5	7.70	0.97
	MAP PLANT COOLER	55	IMCWAL55	33,800	3,100	25	7.62	4.30	1.3	140	333	34	10.4	5.14	0.65
	DAP II EAST PRODUCT COOLER	56	IMCWAL56	33,800	3,100	170	51.816	5.00	1.5	110	316	64.5	19.7	6.06	0.76

Appendix F-2. Inventory of PM Point Sources Included In the AAQS Air Modeling Analysis

Facility ID	Facility / Emission Unit Description	Unit No.	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	GTSP RAILCAR LOADOUT FACILITY W/ BAGHOUSE	59	IMCWAL59	33,800	-3,100	104	31.6992	1.50	0.5	100	311	68.9	21.0	5.00	0.63
	5000 TON MOLTEN SULFUR STORAGE TANK (TANK #3)	62	IMCWAL62	33,800	3,100	40	12.192	2.00	0.6	240	389	4.2	1.3	0.60	0.08
	1500 TON TRUCK UNLOADING PIT, SULFUR PIT CANNON	63	IMCWAL63	33,800	-3,100	40	12.192	2.00	0.6	240	389	4.2	1.3	0.20	0.03
	350 TON TRUCK UNLOADING PIT, SULFUR PIT CANNON	64	IMCWAL64	33,800	-3,100	40	12.192	2.00	0.6	240	389	4.2	1.3	0.10	0.01
	MOLTEN SULFUR STORAGE - RAILCAR UNLOADING PIT	65	IMCWAL65	33,800	-3,100	40	12.192	2.00	0.6	240	389	4.2	1.3	0.20	0.03
	200 TON MOLTEN SULFUR TRANSFER PIT.	66	IMCWAL66	33,800	3,100	40	12.192	2.00	0.6	240	389	4.2	1.3	0.10	0.01
	1500 TON TRUCK UNLOADING PIT, SULFUR PIT FRONT VENT	67	IMCWAL67	33,800	3,100	25	7.62	0.10	0.0	90	305	0.003	0.0	0.20	0.03
	1500 TON TRUCK UNLOADING PIT, SULFUR PIT REAR VENT	68	IMCWAL68	33,800	-3,100	25	7.62	0.10	0.0	90	305	0.003	0.0	0.20	0.03
	350 TON TRUCK UNLOADING PIT, SULFUR PIT VENT.	69	IMCWAL69	33,800	-3,100	25	7.62	0.10	0.0	90	305	0.003	0.0	0.10	0.01
	LIMESTONE STORAGE SILO WITH BAGHOUSE	70	IMCWAL70	33,800	3,100	110	33.528	0.75	0.2	110	316	113.2	34.5	0.70	0.09
	KILN C SCRUBBER STACK - MULTIFOS PLANT	74	IMCWAL74	33,800	3,100	172	52.4256	4.50	1.4	105	314	70.2	21.4	14.30	1.80
	MULTIFOS KILN C COOLER BAGHOUSE	75	IMCWAL75	33,800	3,100	86	26.2128	3.00	0.9	250	394	106.1	32.3	1.90	0.24
	MULTIFOS KILN C MILLING & SIZING BAGHOUSE	76	IMCWAL76	33,800	3,100	90	27.432	1.50	0.5	130	328	113.2	34.5	1.90	0.24
1050057	IMC AGRICO CO (NICHOLS)														
	PHOSPHORIC ACID PLANT	1	IMCNIC1	35,500	1,700	42	12.8016	4.00	1.2	100	311	34	10.4	39.00	4.91
	DAP COOLER USING VENTURI SCRUBBER WITH CYCLONIC MIST SEPARAT	2	IMCNIC2	35,500	1,700	52	15.8496	2.50	0.8	120	322	66	20.1	11.00	1.39
	DAP PLANT DRYER	3	IMCNIC3	35,500	1,700	80	24.384	3.50	1.1	130	328	78	23.8	11.00	1.39
	DAP PLT SCRUBBER 4A SERVES REACTOR/GRANULATOR	4	IMCNIC4	35,500	1,700	72	21.9456	3.20	1.0	190	361	101	30.8	11.00	1.39
	SULFURIC ACID PLANT NO. 1 DOUBLE ABSORPTION (2000 TPD) (PSD)	5	IMCNIC5	35,500	1,700	150	45.72	7.50	2.3	170	350	33	10.1	229.70	28.89
	NORTH BALL MILL	9	IMCNIC9	35,500	1,700	207	63.0936	1.40	0.4	135	330	69	21.0	5.00	0.63
	SOUTH BALL MILL	10	IMCNIC10	35,500	1,700	207	63.0936	1.40	0.4	135	330	69	21.0	5.00	0.63
	PHOSPHATE ROCK DRYER W/ WET SCRUBBER	12	IMCNIC12	35,500	1,700	81	24.6888	7.50	2.3	130	328	12	3.7	35.24	4.44
	LEFFEL SCOTCH MARINE PACKAGE BOILER (NORTH STANDBY BOILER)	15	IMCNIC15	35,500	1,700	27	8.2296	2.00	0.6	500	533	45	13.7	0.36	0.05
	BABCOCK-WILCOX PACKAGE BOILER TOTAL EMISSIONS ON PT 14	16	IMCNIC16	35,500	1,700	39	11.8872	3.20	1.0	500	533	29	8.8	0.72	0.09
	DRY PHOSPHATE ROCK STORAGE BIN -- NORTH	19	IMCNIC19	35,500	1,700	207	63.0936	0.90	0.3	140	333	168	51.2	11.00	1.39
	MOLTEN SULFUR STORAGE & HANDLING - SOUTH STORAGE TANK	21	IMCNIC21	35,500	1,700	6	1.8288	0.75	0.2	77	298	11.2	3.4	0.40	0.05
1050034	IMC-AGRICO CO. (CFMO)														
	RAYMOND MILLS 1 AND 2 GRINDERS W/SCRUBBERS @ KINGSFORD MINE	2	IMCFMO2	35,300	-6,800	60	18.288	2.5	0.8	110	316	64	19.5	33.50	4.22
	RAYMOND MILL NO 3 GRINDER W/SCRUBBER @ KINGSFORD MINE	3	IMCFMO3	35,300	-6,800	58	17.6784	1.9	0.6	100	311	49	14.9	30.00	3.78
	PHOS RK DRYER W/SCRUBBER @ KINGSFORD MINE	4	IMCFMO4	35,300	-6,800	70	21.336	7	2.1	165	347	47	14.3	44.20	5.57
	PHOS ROCK TRANSFER AND STORAGE SILOS W/SCRUBBER @ KINGSFORD	5	IMCFMO5	35,300	-6,800	106	32.3088	2.5	0.8	95	308	67	20.4	20.00	2.52
	UNGROUND PHOSPHATE ROCK RR CAR LOAD OUT @ KINGSFORD MINE	6	IMCFMO6	35,300	-6,800	35	10.668	2.5	0.8	75	297	33	10.1	20.00	2.52
	BOILER @ FOUR CORNERS MINE	8	IMCFMO8	35,300	-6,800	26	7.9248	0.95	0.3	400	478	23.5	7.2	0.06	0.01
	MAGNETITE STORAGE BIN @ FOUR CORNERS MINE (009)	9	IMCFMO9	35,300	6,800	122	37.1856	0.6	0.2	77	298	29.5	9.0	0.13	0.02
	FERROSILICON STORAGE BIN @ FOUR CORNERS MINE	10	IMCFMO10	35,300	-6,800	122	37.1856	0.6	0.2	77	298	22.4	6.8	1.37	0.17
	PHOSPHATE ROCK DRYER NO. 1 @ NORALYN MINE (011)	11	IMCFMO11	35,300	6,800	76	23.1648	6.5	2.0	250	394	56.8	17.3	42.20	5.32
	PHOSPHATE ROCK DRYER NO. 2 EAST @ NORALYN MINE (012)	12	IMCFMO12	35,300	-6,800	55	16.764	9.3	2.8	155	341	29	8.8	45.10	5.68
	PHOSPHATE ROCK STORAGE SILOS 1, 2, 3, & 12 @ NORALYN MINE (0	13	IMCFMO13	35,300	-6,800	150	45.72	3.5	1.1	100	311	52	15.8	35.00	4.41
	BALL MILL TRANSFERS (C108) @ NORALYN MINE (014)	14	IMCFMO14	35,300	-6,800	24	7.3152	2	0.6	110	316	26.5	8.1	15.00	1.89
	BALL MILL TRANSFERS (C109) @ NORALYN MINE (015)	15	IMCFMO15	35,300	-6,800	24	7.3152	2	0.6	110	316	26.5	8.1	10.00	1.26
	BALL MILL NO. 3 @ NORALYN MINE (016)	16	IMCFMO16	35,300	-6,800	25	7.62	1.5	0.5	75	297	37.7	11.5	10.00	1.26
	BALL MILL NO. 4 @ NORALYN MINE (017)	17	IMCFMO17	35,300	-6,800	27	8.2296	2	0.6	75	297	15.9	4.8	10.00	1.26
	NO. 3 BALL MILL RAILCAR LOADOUTS @ NORALYN MINE (018)	18	IMCFMO18	35,300	-6,800	25	7.62	1.5	0.5	77	298	37.7	11.5	10.00	1.26
	NO. 4 BALL MILL RAILCAR LOADOUTS @ NORALYN MINE (019)	19	IMCFMO19	35,300	-6,800	29	8.8392	1.8	0.5	77	298	19.7	6.0	10.00	1.26
	A TRACK RAILCAR PHOSPHATE ROCK LOADOUT SYSTEM @ NORALYN MINE	20	IMCFMO20	35,300	-6,800	27	8.2296	2	0.6	85	303	53.1	16.2	15.00	1.89
	B TRACK RAILCAR PHOSPHATE ROCK LOADOUT SYSTEM @ NORALYN MINE	21	IMCFMO21	35,300	-6,800	27	8.2296	1.9	0.6	81	300	71.8	21.9	15.00	1.89
	T7 & T8 (TRANSFER POINTS TO CONVEYORS C31 & C33) @ NORALYN (	22	IMCFMO22	35,300	-6,800	40	12.192	1.5	0.5	100	311	47.2	14.4	10.00	1.26
	MATERIAL TRANSFER SOURCES (C20 PIT TRANSFER AREA) @ NORALYN	23	IMCFMO23	35,300	-6,800	43	13.1064	2	0.6	86	303	26.5	8.1	15.00	1.89
	DRY PHOSPHATE ROCK TRANSFER SYSTEM @ NORALYN MINE (024)	24	IMCFMO24	35,300	-6,800	135	41.148	2.8	0.9	60	289	55	16.8	15.00	1.89
	SODA ASH MIX TANK & TRANSFER SYSTEM @ LONESOME MINE (025)	25	IMCFMO25	35,300	-6,800	35	10.668	0.5	0.2	77	298	103.6	31.6	16.00	2.02
1050200	J H HULL, INC														
	PHOSPHATE ROCK DRYER	1	HULL1	36,200	-11,900	35.0	10.668	2.00	0.6	77	298	10.5	3.2	3.00	0.38
1030244	A-AMERICAN RENT ALL														
	CONCRETE BATCHING PLANT	1	AAMER1	-38,800	-3,300	5.0	1.524	2.00	0.6	90	305	10.5	3.2	500	63.00
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP														
	GRAHAM SCOTCH MARINE TYPE BOILER	1	CFPL1	25,100	33,500	25	7.62	3.50	1.1	550	561	58	17.7	0.24	0.03

Appendix F-2. Inventory of PM Point Sources Included in the AAQS Air Modeling Analysis

Facility ID	Facility / Emission Unit Description	Unit No.	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Height (ft)	Stack Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	B PHOS ACID PLANT WITH SCRUBBER	9	CFIPL9	25,100	33,500	119	36.2712	4.00	1.2	106	314	44	13.4	31.05	3.91
	A DORR OLIVER DAP PLANT W/ VENTURI & PACKED BED SCRUBBER	10	CFIPL10	25,100	33,500	94	28.6512	10.00	3.0	128	326	26	7.9	32.66	4.12
	Z DORR-OLIVER DAP PLANT WITH VENTURI SCRUBBER AND PACKED B	11	CFIPL11	25,100	33,500	180	54.864	9.20	2.8	137	331	43	13.1	35.56	4.48
	X GTSP/DAP/MAP PLANT WITH SCRUBBERS	12	CFIPL12	25,100	33,500	180	54.864	9.20	2.8	105	314	26	7.9	32.60	4.11
	Y GTSP/DAP/MAP PLANT WITH SCRUBBERS	13	CFIPL13	25,100	33,500	180	54.864	9.20	2.8	77	298	9.9	3.0	15.30	1.93
	STORAGE BLDG A SHARES SCRUBBER W/ BLDG B (PT 18)&B SHIPPIN	14	CFIPL14	25,100	33,500	115	35.052	9.20	2.8	80	300	36	11.0	37.50	4.73
	A SHIPPING MATERIALS HANDLING OF DAP & GT SP	15	CFIPL15	25,100	33,500	90	27.432	1.70	0.5	77	298	62	18.9	5.00	0.63
	SIZING/SCREENING OPERATION IN BLDG "B"(EQUIPPED WITH BAGHOUS	18	CFIPL18	25,100	33,500	33	10.0584	3.30	1.0	78	299	19	5.8	5.00	0.63
	TRUCK LOADING STATION AT "B" SHIPPING.	19	CFIPL19	25,100	33,500	115	35.052	9.20	2.8	80	300	35	10.7	0.50	0.06
	2600 TON MOLTEN SULFUR STORAGE TANK	22	CFIPL22	25,100	33,500	8	2.4384	0.90	0.3	212	373	5	1.5	0.20	0.03
	TRUCK PIT A, 679 TONS MOLTEN SULFUR STORAGE	23	CFIPL23	25,100	33,500	12	3.6576	0.30	0.1	212	373	5	1.5	0.10	0.01
	MOLTEN SULFUR STORAGE & HANDLING SYSTEM	24	CFIPL24	25,100	33,500	12	3.6576	0.30	0.1	212	373	5	1.5	0.54	0.07
	URANIUM RECOVERY MODULE, ACID CLEAN UP SCRUBBER	32	CFIPL32	25,100	33,500	60	18.288	4.00	1.2	118	321	46.4	14.1	3.00	0.38
	CLAY UNLOADING OPERATION WITH BAGHOUSE	34	CFIPL34	25,100	33,500	85	25.908	0.50	0.2	77	298	38	11.6	21.12	2.67
081007	TROPICANA														
	UNIT 3	3	TROP3	-16,100	-41,600	95	28.956	3	0.9	140	333	3	0.9	95.2	12.00
	UNIT8	8	TROP8	16,100	-41,600	50	15.24	10.6	3.2	90	305	1	0.3	111.2	14.01
105004	LAKELAND ELECTRIC - MCINTOSH														
	MCINTOSH UNIT 1- FFFSG (PHASE II ACID RAIN UNIT)	1	MCINT1	46,100	23,700	150	45.72	9	2.7	277	409	81.2	24.7	95.0	11.97
	DIESEL ENGINE PEAKING UNIT 2	2	MCINT2	46,100	23,700	20	6.096	2.6	0.8	715	653	77	23.5	1.74	0.22
	DIESEL ENGINE PEAKING UNIT 3	3	MCINT3	46,100	23,700	20	6.096	2.6	0.8	715	653	77	23.5	1.74	0.22
	GAS TURBINE PEAKING UNIT 1	4	MCINT4	46,100	23,700	35	10.668	13.5	4.1	900	755	79.5	24.2	12.16	1.53
	MCINTOSH UNIT 2 FFFSG (PHASE II ACID RAIN UNIT)	5	MCINT5	46,100	23,700	157	47.8536	10.5	3.2	277	409	73.2	22.3	112	14.05
	MCINTOSH UNIT 3 FFFSG (PHASE II ACID RAIN UNIT)	6	MCINT6	46,100	23,700	250	76.2	18	5.5	167	348	82.6	25.2	273	34.40
	250 MW COMBUSTION TURBINE (SIMPLE CYCLE OPERATION) UNIT 5	28	MCINT28	46,100	23,700	85	25.908	28	8.5	1095	864	82.7	25.2	140	17.59
101017	FLORIDA POWER CORP., ANCLOTE POWER PLANT														
	STEAM TURBINE GENERATOR ANCLOTE UNIT NO 1, 540MW,4964.4MMB	1	FPCANC1	-38,500	36,200	499	152.095	24	7.3	320	433	62	18.9	621	78.18
	525 MW #6 OIL FIRED STEAM GENERATOR, 4850 MMBTU/HR	2	FPCANC2	-38,500	36,200	499	152.095	24	7.3	320	433	62	18.9	606	76.39

Appendix F-3. Summary of PM Sources Included in the PSD Class II Increment Air Modeling Analysis

Facility ID	Facility	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
	BIG BEND TRANSFER CO.													
		BBTC1	-1800	-6300	0 83	25.3	2.43	0.74	100	310.9	58.2	17.74	0 023	0.002898
		BBTC2	-1800	-6300	0 20	6.096	0.83	0.25	80	299.8	42.6	12.98	0.075	0.00945
		BBTC3	-1800	-6300	0 106	32.31	3.67	1.12	88	304.3	55.3	16.86	0.01	0.00126
		BBTC4	-1800	-6300	0 95	28.96	2.17	0.66	97	309.3	57	17.37	2.94	0.37044
		BBTC5	-1800	-6300	0 106	32.31	4	1.22	350	449.8	29.7	9.053	0.5	0.063
		BBTC6	-1800	-6300	0 80	24.38	1	0.3	110	316.5	0.033	0.01	0.11	0.01386
		BBTC7	-1800	-6300	0 80	24.38	1	0.3	110	316.5	0.033	0.01	0.11	0.01386
		NATGYP14	400	-6900	0 98	29.87	3.75	1.14	350	449.8	58.0	17.68	15.4	1.9404
		NATGYP5	400	-6900	0 54	16.46	13.4	4.08	384	468.7	58.2	17.75	2.34	0.29484
		NATGYP6	400	-6900	0 50	15.24	1.67	0.51	200	366.5	50.0	15.24	0.0009	0.0001134
		NATGYP7	400	-6900	0 59	17.98	2	0.61	250	394.3	26.0	7.925	0.0006	0.0000756
		NATGYP8	400	-6900	0 59	17.98	2	0.61	80	299.8	9.4	2.865	0.0003	0.0000378
		NATGYP9	400	-6900	0 59	17.98	2	0.61	80	299.8	28.0	8.534	0.0018	0.0002268
		NATGYP10	400	-6900	0 73	22.25	1	0.3	80	299.8	17.0	5.182	0.00014	0.00001764
570039	TECO BIG BEND													
		TECOBB3	-1000	-7500	0 499	152.1	24	7.32	292	417.6	51.2	15.61	412	51.912
570127	CITY OF TAMPA MCCAY BAY REFUGE-TO-ENERGY													
		MCK1	-2700	9710	0 160	48.77	5.7	1.74	450	505.4	41	12.5	7.0	0.882
		MCK2	-2700	9710	0 160	48.77	5.7	1.74	450	505.4	41	12.5	7.0	0.882
		MCK3	-2700	9710	0 160	48.77	5.7	1.74	450	505.4	41	12.5	7.0	0.882
		MCK4	-2700	9710	0 160	48.77	5.7	1.74	450	505.4	41	12.5	7.0	0.882
		MCK5	-2700	9710	0 57	17.37	2	0.61	200	366.5	11	3.353	0.36	0.04536
		MCK103	-2700	9710	0 201	61.26	4.2	1.28	289	415.9	73.3	22.34	2.76	0.34776
		MCK104	-2700	9710	0 201	61.26	4.2	1.28	289	415.9	73.3	22.34	2.76	0.34776
		MCK105	-2700	9710	0 201	61.26	4.2	1.28	289	415.9	73.3	22.34	2.76	0.34776
		MCK106	-2700	9710	0 201	61.26	4.2	1.28	289	415.9	73.3	22.34	2.76	0.34776

Appendix F-3. Summary of PM Sources Included in the PSD Class II Increment Air Modeling Analysis

Facility ID	Facility	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
0810010	FPL MANATEE													
		FPLMAN1	4300	-28400	475	144.8	26.2	7.99	307	425.9	77.5	23.62	1730	217.98
1050059	IMC-AGRICO CO.(NEW WALES)													
		IMCWAL2	33,800	-3,100	200.0	60.96	8.50	2.6	170	350	50	15.2	12.50	1.58
		IMCWAL3	33,800	-3,100	200.0	60.96	8.50	2.6	170	350	50	15.2	4.80	0.60
		IMCWAL4	33,800	-3,100	200.0	60.96	8.50	2.6	170	350	50	15.2	4.80	0.60
		IMCWAL5	33,800	-3,100	40.0	12.19	3.00	0.9	108	315	58	17.7	6.40	0.81
		IMCWAL6	33,800	-3,100	110.0	33.53	1.40	0.4	110	316	45	13.7	1.30	0.16
		IMCWAL9	33,800	-3,100	133.0	40.54	7.00	2.1	105	314	49	14.9	28.60	3.60
		IMCWAL10	33,800	-3,100	133.0	40.54	6.00	1.8	125	325	83.1	25.3	33.75	4.25
		IMCWAL11	33,800	-3,100	120.0	36.58	4.00	1.2	155	341	57	17.4	15.00	1.89
		IMCWAL12	33,800	-3,100	133.0	40.54	6.00	1.8	108	315	61	18.6	28.70	3.62
		IMCWAL15	33,800	-3,100	65.0	19.81	1.00	0.3	105	314	169	51.5	1.08	0.14
		IMCWAL21	33,800	-3,100	82.0	24.99	1.00	0.3	105	314	53	16.2	4.80	0.60
		IMCWAL23	33,800	-3,100	114.0	34.75	1.00	0.3	105	314	33	10.1	4.75	0.60
		IMCWAL24	33,800	-3,100	103.0	31.39	1.00	0.3	105	314	140	42.7	3.60	0.45
		IMCWAL25	33,800	-3,100	119.0	36.27	1.00	0.3	105	314	127	38.7	3.60	0.45
		IMCWAL26	33,800	-3,100	18.0	5.486	1.00	0.3	105	314	31	9.4	1.60	0.20
		IMCWAL27	33,800	-3,100	172.0	52.43	8.00	2.4	130	328	66.3	20.2	36.80	4.64
		IMCWAL28	33,800	-3,100	114.0	34.75	1.00	0.3	105	314	33	10.1	4.75	0.60
		IMCWAL29	33,800	-3,100	133.0	40.54	3.00	0.9	90	305	42.4	12.9	4.70	0.59
		IMCWAL31	33,800	-3,100	108.0	32.92	0.80	0.2	80	300	31	9.4	3.60	0.45
		IMCWAL32	33,800	-3,100	86.0	26.21	1.50	0.5	220	378	258	78.6	7.70	0.97
		IMCWAL33	33,800	-3,100	86.0	26.21	1.50	0.5	274	408	225	68.6	7.70	0.97
		IMCWAL34	33,800	-3,100	71.0	21.64	1.70	0.5	125	325	87	26.5	0.93	0.12
		IMCWAL35	33,800	-3,100	71.0	21.64	1.00	0.3	100	311	253	77.1	0.93	0.12
		IMCWAL36	33,800	-3,100	172.0	52.43	4.50	1.4	105	314	52	15.8	29.83	3.76
		IMCWAL37	33,800	-3,100	107.0	32.61	1.80	0.5	100	311	68	20.7	3.60	0.45
		IMCWAL38	33,800	-3,100	65.0	19.81	1.10	0.3	100	311	79	24.1	7.50	0.95
		IMCWAL41	33,800	-3,100	104.0	31.7	1.50	0.5	100	311	179	54.6	5.00	0.63

Appendix F-3. Summary of PM Sources Included in the PSD Class II Increment Air Modeling Analysis

Facility ID	Facility	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
		IMCWAL43	33,800	-3,100	104.0	31.7	1.60	0.5	105	314	70	21.3	3.60	0.45
		IMCWAL45	33,800	-3,100	171.0	52.12	6.00	1.8	110	316	58	17.7	6.40	0.81
		IMCWAL46	33,800	-3,100	171.0	52.12	6.00	1.8	110	316	58	17.7	6.40	0.81
		IMCWAL47	33,800	-3,100	147.0	44.81	4.30	1.3	175	353	68.9	21.0	4.22	0.53
		IMCWAL48	33,800	-3,100	60.0	18.29	3.50	1.1	80	300	31.2	9.5	1.00	0.13
		IMCWAL51	33,800	-3,100	100.0	30.48	1.80	0.5	102	312	37	11.3	1.50	0.19
		IMCWAL52	33,800	-3,100	86.0	26.21	0.70	0.2	80	300	54	16.5	1.50	0.19
		IMCWAL53	33,800	-3,100	114.0	34.75	1.00	0.3	105	314	33	10.1	4.75	0.60
		IMCWAL54	33,800	-3,100	107.0	32.61	3.50	1.1	150	339	77	23.5	7.70	0.97
		IMCWAL55	33,800	-3,100	25.0	7.62	4.30	1.3	140	333	34	10.4	5.14	0.65
		IMCWAL56	33,800	-3,100	170.0	51.82	5.00	1.5	110	316	64.5	19.7	6.06	0.76
		IMCWAL59	33,800	-3,100	104.0	31.7	1.50	0.5	100	311	68.9	21.0	5.00	0.63
		IMCWAL62	33,800	-3,100	40.0	12.19	2.00	0.6	240	389	4.2	1.3	0.60	0.08
		IMCWAL63	33,800	-3,100	40.0	12.19	2.00	0.6	240	389	4.2	1.3	0.20	0.03
		IMCWAL64	33,800	-3,100	40.0	12.19	2.00	0.6	240	389	4.2	1.3	0.10	0.01
		IMCWAL65	33,800	-3,100	40.0	12.19	2.00	0.6	240	389	4.2	1.3	0.20	0.03
		IMCWAL66	33,800	-3,100	40.0	12.19	2.00	0.6	240	389	4.2	1.3	0.10	0.01
		IMCWAL67	33,800	-3,100	25.0	7.62	0.10	0.0	90	305	0.003	0.0	0.20	0.03
		IMCWAL68	33,800	-3,100	25.0	7.62	0.10	0.0	90	305	0.003	0.0	0.20	0.03
		IMCWAL69	33,800	-3,100	25.0	7.62	0.10	0.0	90	305	0.003	0.0	0.10	0.01
		IMCWAL70	33,800	-3,100	110.0	33.53	0.75	0.2	110	316	113.2	34.5	0.70	0.09
		IMCWAL74	33,800	-3,100	172.0	52.43	4.50	1.4	105	314	70.2	21.4	14.30	1.80
		IMCWAL75	33,800	-3,100	86.0	26.21	3.00	0.9	250	394	106.1	32.3	1.90	0.24
		IMCWAL76	33,800	-3,100	90.0	27.43	1.50	0.5	130	328	113.2	34.5	1.90	0.24
1050057	IMC NICHOLS (FORMERLY CONSERVE)													
		8CONS	35,500	1,700	150	45.72	7.5	2.3	170	350	33.8	10.3	229.4	28.91
		9CONS	35,500	1,700	42	12.8	4.0	1.2	100	311	34.8	10.6	39.0	4.92
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP													
		CFIPL1	25,100	33,500	25.0	7.62	3.5	1.1	550	561	58	17.7	0.24	0.03
		CFIPL9	25,100	33,500	119.0	36.27	4.0	1.2	106	314	44	13.4	31.05	3.91

Appendix F-3. Summary of PM Sources Included in the PSD Class II Increment Air Modeling Analysis

Facility ID	Facility	ISCST Source ID	Relative Location East (m)	Relative Location North (m)	Stack Parameters Height (ft)	Height (m)	Diameter (ft)	Diameter (m)	Temperature (F)	Temperature (K)	Velocity (ft/s)	Velocity (m/s)	Emission Rate (lb/hr)	Emission Rate (g/s)
		CFIPL10	25,100	33,500	94.0	28.65	10.0	3.0	128	326	26	7.9	32.66	4.12
		CFIPL11	25,100	33,500	180.0	54.86	9.2	2.8	137	331	43	13.1	35.56	4.48
		CFIPL12	25,100	33,500	180.0	54.86	9.2	2.8	105	314	26	7.9	32.60	4.11
		CFIPL13	25,100	33,500	180.0	54.86	9.2	2.8	77	298	9.9	3.0	15.30	1.93
		CFIPL14	25,100	33,500	115.0	35.05	9.2	2.8	80	300	36	11.0	37.50	4.73
		CFIPL15	25,100	33,500	90.0	27.43	1.7	0.5	77	298	62	18.9	5.00	0.63
		CFIPL18	25,100	33,500	33.0	10.06	3.3	1.0	78	299	19	5.8	5.00	0.63
		CFIPL19	25,100	33,500	115.0	35.05	9.2	2.8	80	300	35	10.7	0.50	0.06
		CFIPL22	25,100	33,500	8.0	2.438	0.9	0.3	212	373	5	1.5	0.20	0.03
		CFIPL23	25,100	33,500	12.0	3.658	0.3	0.1	212	373	5	1.5	0.10	0.01
		CFIPL24	25,100	33,500	12.0	3.658	0.3	0.1	212	373	5	1.5	0.54	0.07
		CFIPL32	25,100	33,500	60.0	18.29	4.0	1.2	118	321	46.4	14.1	3.00	0.38
		CFIPL34	25,100	33,500	85.0	25.91	0.5	0.2	77	298	38	11.6	21.17	2.67
0810007	TROPICANA													
		TROPNC3	-16,100	-41,600	95	29	3.0	0.9	140	333	70.7	21.6	95.2	11.99
		TROPNC8	-16,100	-41,600	50	15.2	1.0	0.3	90	305	10.6	3.2	111.2	14.01
1050004	CITY OF LAKELAND MCINTOSH													
		MCINT6	46,100	23,700	250	76.2	18.0	5.49	167	348	83	25.2	255	32.1048 C
		MCINT28	46,100	23,700	85	25.91	28.0	8.53	1,095	864	83	25.2	140	17.5896
1050034	IMC-AGRICO NORALYN MINE													
		15IMCF	51,800	-2,200	38	11.58	1.9	0.6	140	333	23.5	7.2	222.2	28

Table F-4 Summary of Modeling Parameters for the SO_2 PSD Class I Modeling Analysis at the Chassahowitzka National Wilderness Area

APIS Number	Facility Name	Facility Location (km) UTM E	UTM N	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diam (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum SO_2 Emissions (lb/hr)	(TPY)	(g/s)
	IPS - Shady Hills	347 2	3,138 8	IPSPASCO		60	18 3	22 0	6 71	122 4	37 3	1,076	853	304.5	1,334 0	38 37
40TPA530046	Cargill Fertilizer Bartow	409 8	3,087.0	CGBRTC3	12,32,33	200	61 0	6 8	2 06	62 0	18 9	179	355	1,141 0	4,997 7	143 77
40TPA530052	C.F. Industries Bartow	408 4	3,082 4	CFBON05	05	206.04	62 8	7 0	2 13	35.7	10 9	190	361	400 0	1,752 0	50 4
	Bonnie Mine Rd	408 4	3,082 4	CFBON06	06	206.04	62 8	7 0	2 13	23.9	7.28	206	370	400 0	1,752 0	50 4
		408 4	3,082 4	CFBONAB		220	67 1	8 5	2.59	32.4	9.87	172	351	333 3	1,460.0	42
		408 4	3,082 4	CFBONAC		119	36.4	7.0	2.13	52 9	16 1	151	339	31 5	138.0	3 97
		408 4	3,082 4	CFBON1		100 03	30 5	4 5	1.37	40.0	12.2	170	350	483 3	2,117 0	60 9
		408 4	3,082 4	CFBON2		100 03	30.5	5.5	1.68	34 0	10 4	170	350	875 0	·3,832.5	·110 25
		408 4	3,082 4	CFBON3		100 03	30 5	9 0	2.74	14.0	4 3	196	364	850 0	·3,723 0	107 1
		408 4	3,082 4	CFBON4		100 03	30 5	7 0	2.13	26.0	7 9	185	358	1,387 5	·6,077.4	174 83
						206	62 8	7 0	2 13	35.0	10.7	185	358	·1,800 0	7,884 0	226.8
						206	62.8	7 0	2 13	34 0	10 4	187	359	1,350 0	·5,913.0	·170 1
		408 4	3,082.4	CFBON56		206	62 8	7 0	2 13	34 0	10.4	187	359	·3,150.0	13,797 0	·396.9
	CLM/Pacific Chloride	361.8	3,088.3	CLMPACCL		98 4	30 0	2 0	0 6096	65.6	20 0	215	375	166 8	730 7	21 02
	Estech/Swift Polk	411 5	3,074.2	ESTDRY1		60 0	18 3	9 7	2 95	27 8	8 47	151	339	·190.0	832 2	23 94
		411 5	3,074 2	ESTDRY2		61.5	18 8	9.7	2 95	16 6	5 06	152	340	181 0	·792 6	22 8
		411 5	3,074 2	ESTSAP		101	30 8	7.0	2 13	12 8	3 90	185	358	·737 1	3,228 3	·92 87
40TPA530053	Farmland Industries	410 3	3,079 5	FARMLC2	03,04	100	30.5	7 5	2 286	39 4	12 0	179	355	701 3	3,071 6	88 36
	Green Bay Plant	410.3	3,079.5	FARML05	05	150	45.7	8 0	2.44	44 0	13 4	179	355	466 7	2,044.0	58 8
		410 3	3,079 5	FARML12		100	30 5	4 5	1 37	66 2	20.2	100	311	·666.5	2,919 3	83.98
40TPA270021	FL Crushed Stone Kiln 1	360 0	3,162 5	FCS1		320	97 5	21 3	6 48	54 6	16 6	323	435	806.3	3,531 8	101.6
	FPC Polk County Site					113	34 4	13 5	4 1148	133 0	40 5	260	400	98.0	429 3	12.35
						113	34 4	13 5	4 1	133 0	40 5	260	400	98.0	429 3	12 35
		414 3	3,073 9	FPCPKC2		113	34 4	13 5	4 1	133 0	40 5	260	400			24 7
NA	General Portland Cement #4	358 0	3,090 6	GPCEM4B		118	36 0	9 0	2 74	57 8	17 6	450	505			·62 99
NA	General Portland Cement #5	358 0	3,090 6	GPCEM5B		149	45 4	12 5	3 81	19 0	5 80	430	494			69 3
40HIL290261	Hillsborough County RRF	368 2	3,092 7	HILRFC3		220	67 1	11 5	3 51	55 0	16 8	430	494			22 2
40TPA530057	IMC Agrico/Conserve	398 4	3,084 2	IANIC05	05	150	45 7	7 5	2 2866	33.8	10 3	174	352	333 3	1,459 9	42 0
	Nichols	398.4	3,084.2	IANIC		100	30.5	5.9	1.8	62 0	18 9	95	308			15 2
		398.4	3,084 2	IANICDRY		80	24.4	5 0	1.52	42.3	12.9	151	339			3 88
40TPA530059	IMC Agrico New Wales				02	200	61 0	8 5	2 6	50.2	15.3	170	350	1,500 0	6,570 0	189
					42	199	60.7	8 5	2 6	50.2	15.3	170	350	1,000 0	4,380 0	126
		396.6	3,078.9	IAWALC2	02,42	199	60 7	8 5	2.6	50.2	15 3	170	350			315
		396 6	3,078.9	IAWAL27	27	172	52 4	7.9	2.3994	43.0	13 1	127	326	1.6	7.0	0 20
		396.6	3,078 9	IAWAL44	44	120	36.6	6.0	1 83	66 1	20 2	115	319	44 0	192 6	5 54

Table F-4 Summary of Modeling Parameters for the SO_2 PSD Class I Modeling Analysis at the Chassahowitzka National Wilderness Area

APIS Number	Facility Name	Facility Location (km) UTM E	UTM N	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diam (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum SO_2 Emissions (lb/hr)	(TPY)	(g/s)
		396.6	3,078 9	IAWAL46	46	172	52.4	4 6	1 3996	51 8	15 8	106	314	38 1	166 9	4 8
		396 6	3,078 9	IAWALDY		69 0	21 0	7 0	2 13	61 0	18 6	165	347			-34.3
		396 6	3,078 9	IAWAL		200	61 0	8 5	2.6	46 9	14 3	170	350			146
NA	IMC Agrico Pierce	404.1	3,079 0	IAPRC12		80.0	24.4	5 0	1 52	42 5	12 9	151	339			-24 3
		404 1	3,079 0	IAPRC34		80 0	24 4	8 0	2.43	61 7	18 8	151	339			-23.0
40TPA530055	IMC Agrico S. Pierce				04	145	44.2	9 0	2.74	48 5	14 8	170	350	500.0	2,190 0	63 0
					05	145	44.2	9 0	2 74	48 5	14 8	170	350	500 0	2,190 0	63 0
		407.5	3,071 3	IASOUC2	04,05	145	44.2	9 0	2 74	48 5	14 8	170	350			126
		407 5	3,071 3	IASOUC2B		150	45 7	5 2	1 6	86 6	26 4	170	350			-75 6
		407.5	3,071 3	IASOU10	10	125	38 1	10 2	3.1	47 9	14 6	130	328	35 0	153 3	4.41
40TPA530080	Imperial Phosphates (Brewer)	404 8	3,069 5	IMPRLX		90	27.4	7 5	2.29	50 0	15 3	151	339			19 3
40TPA530003	Lakeland City Power Larsen	409.2	3,102 8	LAKLRAA		100	30 5	19 0	5.79	92 6	28 2	950	783	231.0	1,011 9	29 11
40TPA530004	Lakeland City Power McIntosh	408 5	3,105.8	LAKMC06	06	250	76 2	16 0	4 88	107.0	32.6	170	350	3,888 0	17,029 4	500 1
40TPA530060	Mobil Electrophos Division	405 6	3,079 4	MOBELE1		24 0	7 3	3 0	0 91	10 6	3 2	376	464			6 53
		405 6	3,079.4	MOBELE2		20 0	6 1	3 0	0 91	25.3	7 7	376	464			-10 05
		405 6	3,079 4	MOBELE3		60 0	18 3	6 0	1 83	22 3	6 8	170	350			21 81
		405 6	3,079 4	MOBELE4		84 0	25 6	7 0	2 13	22 9	7 0	91	306			7 11
		405.6	3,079 4	MOBELE5		60 0	18 3	2 3	0 7	75 0	22 9	120	322			3.17
		405 6	3,079 4	MOBELE6		96.0	29.3	7 0	2 13	28 0	8.5	106	314			47 25
40TPA530047	Mobil Mining & Minerals Nichols	398 4	3,085 3	MBNIC04	04	85 0	25 9	7 5	2 2866	52 8	16 1	150	339	19.4	85 0	2.44
		398 4	3,085.3	MBNIC1		93 2	28 4	3 6	1 09	63 1	19 2	152	340			-13 9
		398 4	3,085.3	MBNIC2		13 0	4 0	2 6	0.8	5 9	1 8	480	522			0 87
40HIL290102	Mobil Mining Big Four Mine (AMAX)	394.9	3,069 8	MBL#401	01	100	30 5	6 0	1 82	23 8	7 3	142	334	129 8	568 4	16 35
		394 9	3,069 8	MBL#4AA		24 8	7 6	1 3	0 41	26 9	8 2	449	505	4.8	20 9	0.6
40TPA530048	Mulberry Phosphates (Royster)	406 8	3,085.1	MLPHS02	02	200	61 0	7.0	2.1341	32 5	9 9	200	366	283 3	1,240 9	35 7
		406 8	3,085.1	MULPHS1		167	51 0	7 0	2 13	32 5	9 9	181	356			-258
40PNL520117	Pinellas Co. RRF	335 2	3,084 1	PINEL03	03	161	49 1	9 0	2 7393	88 0	26 8	450	505			66.2
--	Seminole Electric Hardee 3	405 0	3,057 7	HARDEE3		90 0	27.4	19 0	5 7885	46 2	14.1	285	414			27 4
40PNL520042	Stauffer Shutdown	325 6	3,116 7	STAUFR1		24.0	7.3	3 0	0 91	10 6	3.2	376	464			4 86
		325 6	3,116.7	STAUFR2		60 0	18 3	2 3	0 7	75 0	22.9	120	322			1 50
		325 6	3,116 7	STAUFR3		161	49.0	3 9	1 2	11 8	3 6	143	335			50 93
		325 6	3,116.7	STAUFR4		84 0	25 6	7 0	2 13	22 9	7 0	91	306			7 36
		325 6	3,116.7	STAUFR5		84 0	25 6	3 0	0 91	22 9	7 0	120	322			0 45
	Tampa City McKay Bay WTE	360 0	3,091 9	MCKAYC4	01 04	150	45.7	4 3	1.3	69 9	21 3	440	500			21 44
40HIL290039	TECO Big Bend	361 9	3,075 0	TECBB04	04	499	152.1	24.0	7 3152	78 3	23 9	156	342	3,550 8	15,552 5	447 4
	(24-HR)	361 9	3,075 0	TECBB03		490	149 4	24.0	7.32	47.0	14 3	293	418			1218
	(24 HR)	361 9	3 075 0	TECBB12		490	149 4	24.0	7.32	94.0	28 7	300	422			2436

Table F-4 Summary of Modeling Parameters for the SO_2 PSD Class I Modeling Analysis at the Chassahowitzka National Wilderness Area

APIS Number	Facility Name	Facility Location (km) UTM E	UTM N	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diam (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum SO_2 Emissions (lb/hr)	(TPY)	(g/s)
NA	TECO - Polk Power Station	402.5	3,067 4	TECPKAA	-	20.0	6 1	3 0	0.9	43.0	13 1	500	533	2 6	11.5	0 33
		402 5	3,067 4	TECPKAB	--	150	45.7	19.0	5.8	55.1	16 8	260	400	394.2	1,726 6	49 7
		402 5	3,067 4	TECPKAC	--	199	60.7	3 5	1 0668	30.0	9.1	1400	1033	62.1	272 0	7 82
40TPA250015	TPS - Hardee Power Station	404 8	3,057 3	HRDEX01	01	90 0	27 4	14 5	4.42	80 0	24 4	253	396	734.4	3,216 5	92 53
		404 8	3,057 3	HRDEX02	02	90 0	27 4	14 5	4.42	80 0	24 4	253	396	734.4	3,216 5	92 53
		404.8	3,057 3	HRDEX03	03	75 1	22 9	16 0	4.88	103 0	31 4	953	785	734.4	3,216 5	92 53
														2,203 1	9,649.6	
40TPA530051	US AgriChem Fort Meade				16	175	53 3	8 5	2.59	32 9	10 0	180	355	367.0	1,607 4	46 24
					17	175	53 3	8 5	2 59	32 9	10 0	180	355	367.0	1,607 4	46 24
		416 0	3,069 0	UAFTMC2	16,17	175	53 3	8 5	2 59	32 9	10 0	180	355			92 48
	H2SO4 X	416.0	3,069 0	UAFTMX		95 0	29 0	9 9	3 02	22 2	6 8	106	314			-78.8
	GTSP	416 0	3,069 0	UAFTMGT		93 0	28 3	5 0	1 52	57.7	17 6	134	330			18 3
40TPA530050	US Agri Chem Bartow	413 2	3,086.3	UAGBAR1		51.8	15.8	6 0	1.83	32 8	10 0	138	332			-3.41
		413 2	3,086 3	UAGBAR2		95.0	29 0	7 0	2 12	24.6	7 5	89	305			42.0
40TPA270024	Asphalt Pavers 3	359.9	3,162 4	ASPHALT3		40 0	12.2	4 5	1 37	34 7	10.6	219	377			2 25
40TPA270015	Asphalt Pavers 4	361.4	3,168 4	ASPHALT4		28 0	8 5	3.5	1 08	35 9	11.0	184	357			2 25
40TPA530221	Auburndale Cogeneration	420 8	3,103 3	AUBURN		160	48 8	18 0	5.5	46 9	14 3	280	411			6 40
NA	Borden Hillsborough	394 6	3,069 6	BORDHIL		100	30 5	6 0	1 82	48 5	14 8	160	344			6 48
NA	Borden Polk	414 5	3,109 0	BORDPLK		56.0	17 1	7 7	2 34	27.1	8 3	140	333			5 29
40HIL290005	CF Industries Zephyrhills															
	-	388 0	3,116 0	CFZEP1		110	33.5	4 9	1 5	64 0	19 5	109	316			88 2
	Proposed D					198	60 4	8 0	2 44	58.3	17 8	176	353			54 6
	Proposed C					198	60 4	8 0	2.44	58 3	17 8	176	353			54 6
		388 0	3 116 0	CFZEP		198	60 4	8 0	2.44	58 3	17 8	176	353			109 2
	Baseline C					198	60 4	8 0	2 44	53 8	16 4	176	353			50 4
	Baseline D					198	60 4	8 0	2 44	53 8	16 4	176	353			-50 4
		388 0	3,116 0	CFZEPB		198	60 4	8.0	2 44	53 8	16 4	176	353			-100 8
	--	388.0	3,116 0	CFZEP2		61 7	18 8	5.0	1 52	61 7	18 8	109	316			-105
40TPA510066	Couch Const Zephyrhills (Asphalt)	390.3	3,129 4	COUCHZEP		20 0	6 1	4.5	1 38	68 9	21 0	300	422			3 54
40TPA510041	Couch Const-Odessa (Asphalt)	340 7	3,119 5	COUCHODE		30 0	9 1	4 6	1 4	73.2	22.3	325	436			7 25
	Dris Paving (Asphalt)	340.6	3,119 2	DRIS		40 0	12.2	10 0	3 05	21 2	6 5	151	339			0 23

Table F-4. Summary of Modeling Parameters for the SO_2 PSD Class I Modeling Analysis at the Chassahowitzka National Wilderness Area

APIS Number	Facility Name	Facility Location (km) UTM E	UTM N	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diam (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum SO_2 Emissions (lb/hr)	(TPY)	(g/s)
NA	Dolime															
	Dryers	404 8	3,069 5	DOLIMEDR		90 0	27 4	5 0	1 52	67 8	20 7	140	333			5 68
	Boilers	404 8	3,069 5	DOLIMEBL		90.0	27 4	2.0	0 61	23 8	7 3	430	494			4 52
NA	Evans Packing	383 3	3,135 8	EVANS		40 4	12 3	1 3	0 4	30.2	9 2	379	466			0 20
40TPA270017	E R Jahna (Lime Dryer)	386 7	3,155.8	ERJAHNA		35 0	10 7	6 0	1 83	29 5	9 0	129	327			0 82
NA	FDOC Boiler #3	382 2	3.166 1	FDOC		30.0	9 1	2.0	0 61	15 0	4 6	401	478			2 99
40TPA270010	FL Mining and Materials Kiln	356 2	3.169 9	FMM		105	32.0	14 0	4 27	32 5	9 9	250	394			1 45
40TPA090004	FPC - Crystal River															
	Crystal River 1	334 2	3,204.5	CRYRIV1B		499	152 0	15 0	4 57	138.1	42 1	300	422			314
	Crystal River 2	334 2	3.204 5	CRYRIV2B		502	153 0	16.0	4 88	138.1	42 1	300	422			1859
	Crystal River 4					585	178 2	25 5	7 77	68.9	21.0	253	396			1008 8
	Crystal River 5					585	178 2	25 5	7 77	68.9	21.0	253	396			1008 8
		334.2	3,204.5	CRYRIV45		585	178 2	25 5	7 77	68 9	21.0	253	396			2017 6
30ORL640028	FPC Debary	467 5	3,197 2	DEBARY		50 0	15 2	13 8	4.21	184 4	56 2	1016	820			466 4
30ORL490014	FPC Intercession City															
	07 4 CTs 7EA	446 3	3,126 0	FPCIN07		50.0	15 2	13.8	4 21	184 4	56 2	1016	820			124 4
	08 2 CTs 7FA	446.3	3,126 0	FPCIN08		50.0	15 2	23 1	7 04	105 2	32 1	1126	881			110 4
NA	Hospital Corp of America															
	Boiler #1					36 0	11.0	1 0	0 31	13 1	4 0	500	533			0 08
	Boiler #2					36 0	11.0	1 0	0.31	13 1	4 0	500	533			0 08
		333 4	3,141 0	HCOA12		36 0	11.0	1 0	0.31	13 1	4.0	500	533			0.16
NA	Kissimmee Utilities	447 7	3,127 9	KISSUT		40 0	12.2	10.0	3.05	95 5	29 1	718	654			29 4
30ORL490001	Kissimmee Utilites Exist	460 1	3,129.3	KISSEX		60 0	18 3	12 0	3.66	124 7	38 0	300	422			32.1
NA	Lake Cogen	434 0	3,198.8	LAKECOGN		100	30 5	11 0	3.35	56 2	17 1	232	384			5.04
NA	Mulberry Cogeneration															
	CT	413 6	3,080 6	MULCNAA		125	38 1	15.0	4.57	61 9	18 9	219	377			12.7
	Duct Burner	413 6	3.080 6	MULCNAB		125	38.1	6.5	1.98	30 5	9 3	300	422			0 65
NA	New Pt Richey Hospital															
	Boiler #1					36 0	11 0	1 0	0 31	12 7	3.9	520	544			0 06
	Boiler #2					36 0	11 0	1 0	0.31	12.7	3.9	520	544			0 03
		331 2	3,124 5	NEWPTR12		36 0	11 0	1 0	0 31	12 7	3 9	520	544			0 09
NA	Oman Construction	359.8	3,164.9	OMAN		25 0	7 6	6 0	1 83	20.6	6 3	165	347			2 09
30ORL480137	Orlando Utilities Commission Stanton															
	Unit 1	483.5	3,150 6	OUC1		550	167 6	19 0	5 8	70 9	21 6	127	326			601
	Unit 2 (24-hour)	483.5	3,150 6	OUC2		550	167 6	19 0	5 8	77.1	23 5	124	324			91 8

Table F-4. Summary of Modeling Parameters for the SO_2 PSD Class I Modeling Analysis at the Chassahowitzka National Wilderness Area

APIS Number	Facility Name	Facility Location (km)		ISCST ID	APIS Src #	Stack Height		Stack Diam.		Exit Velocity		Temperature		Maximum SO_2 Emissions		
		UTM E	UTM N			(ft)	(m)	(ft)	(m)	(ft/s)	(m/s)	(°F)	(K)	(lb/hr)	(TPY)	(g/s)
40TPA510028	Overstreet Paving	355.9	3,143.7	OVERST		30	9.1	4.3	1.3	52.5	16.0	275	408			3.67
40TPA510056	Pasco Cty RRF	347.1	3,139.2	PASCORRF		275	83.8	10.0	3.05	51.0	15.5	250	394			14.1
NA	Pasco Cogen	385.6	3,139.0	PASCOGN		100	30.5	11.0	3.35	56.2	17.1	232	384			5.04
30ORL48109	Reedy Creek Energy Services EPCOT															
	Generator 1					17.0	5.2	1.8	0.55	144.8	44.1	650	617			1.83
	Generator 2					17.0	5.2	1.8	0.55	144.8	44.1	650	617			1.83
		442.0	3,139.0	EPCOT12		17.0	5.2	1.8	0.55	144.8	44.1	650	617			3.66
30ORL480110	Reedy Creek Energy Services	443.1	3,144.3	REEDY		65.0	19.8	11.2	3.41	51.0	15.6	285	414			0.15
NA	Ridge Cogeneration	416.7	3,100.4	RIDGE		325	99.1	10.0	3.05	47.6	14.5	170	350			13.8

Note: Stacks at the same facility with the same diameter and height and similar velocity and temperature were combined to a single stack. The velocity and temperature for the combined stack are set equal to the lowest velocity and temperature among the individual stacks being combined.

APPENDIX G

BPIP INPUT AND OUTPUT FILES

```
'BPIP Future, Cargill Riverview, Origin NO. 9 SAP   3/01/2001'
'ST'
'FEET' .3048
'UTMN' 0.00
18
'PHOSSOTH BLD'  1 0.0
4 100
-1225   990
-1225   1085
-1165   1085
-1165   990
'PHOSNRTH BLD' 1 0.0
4 100
-1260   910
-1260   990
-1170   990
-1170   910
'5/9DRYROCK BLD' 1 0.0
4 35
-1641   443
-1641   518
-1594   518
-1594   443
'AFI Bld' 1 0.0
4 173
-1245   453
-1175   453
-1175   333
-1245   333
'AFPLOAD' 1 0.0
4 100
-742    462
-1016   462
-1016   499
-742    499
'NO.6 BLD' 1 0.0
4   74
-1890   -310
-2680   -310
-2680   -430
-1890   -430
'NO.5 BLD' 1 0.0
4   54.7
-1890   -170
-2680   -170
-2680   -280
-1890   -280
'NO.4 BLD' 1 0.0
4   54.7
-1850   20
-2680   20
-2680   -80
-1850   -80
'NO.2 BLD' 1 0.0
4   62.0
-1850   160
-2680   160
-2680   60
-1850   60
'NO.2TOP BLD' 1 0.0
4   70.1
-1850   160
-2260   160
-2260   280
-1850   280
'GTSP BLD' 1 0.0
4   127
-1700   150
-1850   150
-1850   60
-1700   60
'AUXBLR BLD' 1 0.0
4    18
30      -210
-20     -210
-20     -290
30      -290
```

```
'DAP5A BLD' 1 0.0pp
4   86.5
-1730   -380
-1890   -380
-1890   -430
-1730   -430
'DAP5B BLD' 1 0.0
4   126.5
-1730   -380
-1780   -380
-1780   -430
-1730   -430
'MAP3/4 BLD' 1 0.0
4   90.
-1800   -180
-1890   -180
-1890   -280
-1800   -280
'EMATA BLD' 1 0.0
4   30.
-1000   -1610
-974    -1625
-989.   -1651
-1015   -1636
'EMATB BLD' 1 0.0
4   50.
-1000   -1610
-815    -1290
-789    -1305
-974    -1625
'8/9 BLD' 1 0.0
4 75
-1022   -1300
-1073   -1270
-1061   -1245
-1010   -1275
30
'AFIDFS'      0.0   35     -1230   490
'AFIGRAN'     0.0   136    -1230   460
'AFIPRLB'     0.0   20     -860    528
'BLT78BH'     0.0   45     -1890   -580
'BLT89BH'     0.0   75     -1030   -1290
'COOLEQB'     0.0   85     -1110   446
'DAPNO5'      0.0   133    -1744   -380
'DEHOPPB'     0.0   64     -1840   760
'EPPGRKH'     0.0   87     -1880   50
'EPPMSTK'     0.0   28.6   -1730   20
'EPPPLNT'     0.0   126    -1730   50
'EPPTLST'     0.0   38     -2450   30
'GRKSILO'     0.0   67     -1640   526
'LIMESIB'     0.0   85     -1090   540
'MAPNO34'     0.0   133    -1800   -170
'MHBLDG6'     0.0   30     -1890   -450
'MHSOUTB'     0.0   50     -1030   -1650
'MHTWREB'     0.0   30     -910    -1500
'MHWESTB'     0.0   30     -950    -1480
'MSTKL'       0.0   33     -630    -460
'NO7SAP'      0.0   150    -60     -460
'NO8SAP'      0.0   150    340     -90
'NO9SAP'      0.0   150    0       0
'PAPDORR'     0.0   110    -1070   1110
'PAPF12'      0.0   110    -1200   1120
'PAPF3'       0.0   115    -1350   984
'PAPPRAY'     0.0   110    -1140   940
'RKMLNO5'     0.0   91     -1620   510
'RKMLNO7'     0.0   91     -1638   486
'RKMLNO9'     0.0   91     -1630   460
0
```

```
'BPIP Current, Cargill Riverview, Origin NO. 9 SAP  3/01/2001'
'ST'
'FEET' .3048
'UTMN' 0.00
18
'PHOSSOTH BLD'  1 0.0
4 100
-1225   990
-1225   1085
-1165   1085
-1165   990
'PHOSNRTH BLD' 1 0.0
4 100
-1260   910
-1260   990
-1170   990
-1170   910
'5/9DRYROCK BLD' 1 0.0
4 35
-1641   443
-1641   518
-1594   518
-1594   443
'AFI Bld' 1 0.0
4 173
-1245   453
-1175   453
-1175   333
-1245   333
'AFPLOAD' 1 0.0
4 100
-742    462
-1016   462
-1016   499
-742    499
'NO.6 BLD' 1 0.0
4   74
-1890   -310
-2680   -310
-2680   -430
-1890   -430
'NO.5 BLD' 1 0.0
4   54.7
-1890   -170
-2680   -170
-2680   -280
-1890   -280
'NO.4 BLD' 1 0.0
4   54.7
-1850   20
-2680   20
-2680   -80
-1850   -80
'NO.2 BLD' 1 0.0
4   62.0
-1850   160
-2680   160
-2680   60
-1850   60
'NO.2TOP BLD' 1 0.0
4   70.1
-1850   160
-2260   160
-2260   280
-1850   280
'GTSP BLD' 1 0.0
4   127
-1700   150
-1850   150
-1850   60
-1700   60
'AUXBLR BLD' 1 0.0
4    18
30      -210
-20     -210
-20     -290
30      -290
```

```
'DAP5A BLD' 1 0.0pp
4   86.5
-1730   -380
-1890   -380
-1890   -430
-1730   -430
'DAP5B BLD' 1 0.0
4   126.5
-1730   -380
-1780   -380
-1780   -430
-1730   -430
'MAP3/4 BLD' 1 0.0
4   90.
-1800   -180
-1890   -180
-1890   -280
-1800   -280
'EMATA BLD' 1 0.0
4   30.
-1000   -1610
-974    -1625
-989    -1651
-1015   -1636
'EMATB BLD' 1 0.0
4   50.
-1000   -1610
-815    -1290
-789    -1305
-974    -1625
'8/9 BLD' 1 0.0
4 75
-1022   -1300
-1073   -1270
-1061   -1245
-1010   -1275
23
'AFIPLBC'     0.0   20    -860    528
'AFIPLTC'     0.0   35    -1230   490
'BLT78BC'     0.0   45    -1890   -580
'BLT89BC'     0.0   75    -1030   -1290
'DAPNO5C'     0.0   133   -1744   -380
'DEHOPBC'     0.0   64    -1840   760
'GRSILOC'     0.0   67    -1640   526
'GTSPAPC'     0.0   126   -1730   50
'GTSPRHC'     0.0   87    -1880   50
'GTSPTLC'     0.0   38    -2450   30
'LIMESBC'     0.0   85    -1090   540
'MHSOUTC'     0.0   50    -1030   -1650
'MHTWREC'     0.0   30    -910    -1500
'MHWESTC'     0.0   30    -950    -1480
'MHBLD6C'     0.0   30    -1890   -450
'NO8SAPC'     0.0   150   340     -90
'NO9SAPC'     0.0   150   0       0
'PAPF12C'     0.0   110   -1200   1120
'PAPF3C'      0.0   115   -1350   984
'PAPPRAC'     0.0   110   -1140   940
'RKML5C'      0.0   91    -1620   510
'RKML7C'      0.0   91    -1638   486
'RKML9C'      0.0   91    -1630   460
0
```

```
'BPIP Baseline, Cargill Riverview  Origin NO. 9 SAP 3/2/01'
'ST'
'FEET' .3048
'UTMN' 0.00
14
'PHOSSOTH BLD'  1 0.0
4 100
-1225   990
-1225   1085
-1165   1085
-1165   990
'PHOSNRTH BLD' 1 0.0
4 100
-1260   910
-1260   990
-1170   990
-1170   910
'5/9DRYROCK BLD' 1 0.0
4 35
-1641   443
-1641   518
-1594   518
-1594   443
'NO.6 BLD' 1 0.0
4   74
-1890   -310
-2680   -310
-2680   -430
-1890   -430
'NO.5 BLD' 1 0.0
4   54.7
-1890   -170
-2680   -170
-2680   -280
-1890   -280
'NO.4 BLD' 1 0.0
4   54.7
-1850   20
-2680   20
-2680   -80
-1850   -80
'NO.2 BLD' 1 0.0
4   62.0
-1850   160
-2680   160
-2680   60
-1850   60
'NO.2TOP BLD' 1 0.0
4   70.1
-1850   160
-2260   160
-2260   280
-1850   280
'GTSP BLD' 1 0.0
4   127
-1700   150
-1850   150
-1850   60
-1700   60
'AUXBLR BLD' 1 0.0
4     18
30      -210
-20     -210
-20     -290
30      -290
'MAP3/4 BLD' 1 0.0
4   90.
-1800   -180
-1890   -180
-1890   -280
-1800   -280
'WMAT BLD' 1 0.0
4   30.
-1140   -1500
-975    -1214
-902    -1257
-1067   -1543
```

```
'EMATA BLD' 1 0.0pp
4   30.
-1000   -1610
-974    -1625
-989    -1651
-1015   -1636
'EMATB BLD' 1 0.0
4   50.
-1000   -1610
-815    -1290
-789    -1305
-974    -1625
41
'10KVSMB'     0.0    87     -870     684
'11KVSMB'     0.0    70     -870     684
'12KVSMB'     0.0    71     -870     684
'1AMMPPB'     0.0    90     -1776    284
'1HZFSB'      0.0    59     -1330    1112
'24SIZUB'     0.0    74     -1330    703
'2AMMPPB'     0.0    90     -1776    284
'2ASNBFB'     0.0    85     -1076    1158
'2ASSBFB'     0.0    96     -1076    1267
'2HZFSB'      0.0    51     -1330    1112
'2HZFVSB'     0.0    4.5    -1330    1112
'3AMMPPB'     0.0    90     -1740    366
'3ARCBFB'     0.0    115    -1076    1158
'3ASBBFB'     0.0    108    -1076    1267
'3ASNBFB'     0.0    82     -1076    1158
'3ASSBFB'     0.0    100    -870     684
'3CONTDB'     0.0    68     -1330    703
'3HZFVSB'     0.0    4.5    -1330    1112
'3TRIPLB'     0.0    65     -1330    703
'4AMMPPB'     0.0    90     -1740    366
'4CONTDB'     0.0    68     -1330    703
'4TRIPLB'     0.0    65     -1330    703
'7OFCONB'     0.0    78     -1330    1112
'8OFCONB'     0.0    78     -1330    1112
'AMMPLTB'     0.0    60     -2313    -1008
'GTSPAPB'     0.0    126    -1730    50
'GTSPBFB'     0.0    88     -1855    87
'NAMMPCB'     0.0    55     -1776    284
'NO23RSB'     0.0    93     -1352    55
'NO4SAPB'     0.0    80     -320     -180
'NO5SAPB'     0.0    74     -420     -230
'NO678RB'     0.0    95     -1352    55
'NO6SAPB'     0.0    72     -320     -420
'NO7SAPB'     0.0    92     -60      -460
'NO8SAPB'     0.0    96     340      -90
'NORMSPB'     0.0    73     -1330    703
'PASNO2B'     0.0    110    -1076    1158
'PASNO3B'     0.0    93     -1076    1267
'RKML59B'     0.0    66     -1625    485
'SAMMPCB'     0.0    55     -1740    366
'SSFSFPB'     0.0    28     -1352    55
0
```

DATE : 03/07/01
TIME : 14:07:49
BPIP Future, Cargill Riverview, Origin NO. 9 SAP 3/01/2001

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BPIP PROCESSING INFORMATION:
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The ST flag has been set for processing for an ISCST2 run.

Inputs entered in FEET will be converted to meters using a conversion factor of 0.3048. Output will be in meters.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

BPIP Future, Cargill Riverview, Origin NO. 9 SAP 3/01/2001

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
AFIDFS	10.67	0.00	116.11	116.11
AFIGRAN	41.45	0.00	116.25	116.25
AFIPRLB	6.10	0.00	116.25	116.25
BLT78BH	13.72	0.00	70.89	70.89
BLT89BH	22.86	0.00	53.69	65.00
COOLEQB	25.91	0.00	116.25	116.25
DAPNO5	40.54	0.00	96.77	96.77
DEHOPPB	19.51	0.00	116.25	116.25
EPPGRKH	26.52	0.00	96.77	96.77
EPPMSTK	8.72	0.00	116.25	116.25
EPPPLNT	38.40	0.00	116.25	116.25
EPPTLST	11.58	0.00	56.39	65.00
GRKSILO	20.42	0.00	116.07	116.07
LIMESIB	25.91	0.00	116.25	116.25
MAPNO34	40.54	0.00	96.77	96.77
MHBLDG6	9.14	0.00	96.77	96.77
MHSOUTB	15.24	0.00	38.10	65.00
MHTWREB	9.14	0.00	48.24	65.00
MHWESTB	9.14	0.00	49.83	65.00
MSTKL	10.06	N/A	0.00	65.00
NO7SAP	45.72	N/A	0.00	65.00
NO8SAP	45.72	N/A	0.00	65.00
NO9SAP	45.72	N/A	0.00	65.00
PAPDORR	33.53	0.00	76.20	76.20
PAPF12	33.53	0.00	76.20	76.20
PAPF3	35.05	0.00	76.20	76.20
PAPPRAY	33.53	0.00	76.20	76.20
RKMLNO5	27.74	0.00	116.00	116.00
RKMLNO7	27.74	0.00	115.46	115.46
RKMLNO9	27.74	0.00	114.86	114.86

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

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                                  BPIP (Dated: 95086)
 DATE : 03/07/01
 TIME : 14:07:49

 BPIP Future, Cargill Riverview, Origin NO. 9 SAP   3/01/2001

 BPIP output is in meters


SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIDFS     52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDWID AFIDFS     27.36   32.56   36.77   39.85   41.73   42.25
SO BUILDWID AFIDFS     41.67   39.73   36.58   39.73   41.67   42.25
SO BUILDWID AFIDFS     41.73   39.85   36.77   32.56   27.36   21.34
SO BUILDWID AFIDFS     27.36   32.56   36.77   39.85   41.73   42.25
SO BUILDWID AFIDFS     41.67   39.73   36.58   39.73   41.67   42.25
SO BUILDWID AFIDFS     41.73   39.85   36.77   32.56   27.36   21.34

SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDHGT AFIGRAN    52.73   52.73   52.73   52.73   52.73   52.73
SO BUILDWID AFIGRAN    27.36   32.56   36.77   39.85   41.73   42.34
SO BUILDWID AFIGRAN    41.67   39.73   36.58   39.73   41.67   42.34
SO BUILDWID AFIGRAN    41.73   39.85   36.77   32.56   27.36   21.34
SO BUILDWID AFIGRAN    27.36   32.56   36.77   39.85   41.73   42.34
SO BUILDWID AFIGRAN    41.67   39.73   36.58   39.73   41.67   42.34
SO BUILDWID AFIGRAN    41.73   39.85   36.77   32.56   27.36   21.34

SO BUILDHGT AFIPRLB    30.48   30.48   30.48   30.48   52.73   52.73
SO BUILDHGT AFIPRLB    52.73   52.73    0.00   30.48   30.48   30.48
SO BUILDHGT AFIPRLB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT AFIPRLB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT AFIPRLB    30.48   30.48    0.00   30.48   30.48   30.48
SO BUILDHGT AFIPRLB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDWID AFIPRLB    84.20   82.34   77.97   71.23   41.73   42.34
SO BUILDWID AFIPRLB    41.67   39.73    0.00   25.61   39.16   51.52
SO BUILDWID AFIPRLB    36.31   36.69   35.95   82.34   84.20   83.52
SO BUILDWID AFIPRLB    84.20   82.34   77.97   71.23   62.32   51.52
SO BUILDWID AFIPRLB    39.16   25.61    0.00   25.61   39.16   51.52
SO BUILDWID AFIPRLB    62.32   71.23   77.97   82.34   84.20   83.52

SO BUILDHGT BLT78BH    26.37   26.37   26.37   26.37   26.37    0.00
SO BUILDHGT BLT78BH     0.00    0.00    0.00   22.56   22.56   22.56
SO BUILDHGT BLT78BH    22.56   22.56   22.56   22.56   26.37   27.43
SO BUILDHGT BLT78BH    27.43   27.43   38.56   38.56   38.56    0.00
SO BUILDHGT BLT78BH     0.00    0.00    0.00   22.56   22.56   22.56
SO BUILDHGT BLT78BH    22.56   22.56   22.56   22.56   26.37   26.37
SO BUILDWID BLT78BH    50.67   51.04   49.85   47.15   43.02    0.00
SO BUILDWID BLT78BH     0.00    0.00    0.00   77.83  116.73  152.07
SO BUILDWID BLT78BH   182.80  207.97  226.82  238.78   50.67   27.43
SO BUILDWID BLT78BH    32.31   36.20   20.82   21.47   21.47    0.00
SO BUILDWID BLT78BH     0.00    0.00    0.00   77.83  116.73  152.07
SO BUILDWID BLT78BH   182.80  207.97  226.82  238.78   50.67   48.77

SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   22.86
SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   22.86
SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   22.86
SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   22.86
SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   15.24
SO BUILDHGT BLT89BH    22.86   22.86   22.86   22.86   22.86   22.86
SO BUILDWID BLT89BH    19.18   18.57   18.68   19.88   20.48   20.46
SO BUILDWID BLT89BH    19.82   18.57   16.76   14.45   11.69    8.57
```

SO	BUILDWID	BLT89BH	11.18	13.73	15.87	17.52	18.65	19.20
SO	BUILDWID	BLT89BH	19.18	18.57	18.68	19.88	20.48	20.46
SO	BUILDWID	BLT89BH	19.82	18.57	16.76	14.45	11.69	112.67
SO	BUILDWID	BLT89BH	11.18	13.73	15.87	17.52	18.65	19.20
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	30.48	30.48	0.00
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	COOLEQB	52.73	52.73	52.73	0.00	0.00	0.00
SO	BUILDWID	COOLEQB	27.36	32.56	36.77	39.85	41.73	42.34
SO	BUILDWID	COOLEQB	41.67	39.73	36.58	39.73	41.67	42.34
SO	BUILDWID	COOLEQB	41.73	39.85	36.77	34.12	31.25	0.00
SO	BUILDWID	COOLEQB	27.36	32.56	36.77	39.85	41.73	42.34
SO	BUILDWID	COOLEQB	41.67	39.73	36.58	39.73	41.67	42.34
SO	BUILDWID	COOLEQB	41.73	39.85	36.77	0.00	0.00	0.00
SO	BUILDHGT	DAPNO5	26.37	38.56	38.56	38.56	38.56	38.56
SO	BUILDHGT	DAPNO5	38.56	38.56	38.56	38.56	27.43	38.56
SO	BUILDHGT	DAPNO5	38.56	38.56	38.56	38.71	38.71	38.71
SO	BUILDHGT	DAPNO5	38.71	38.56	38.56	38.56	38.56	38.56
SO	BUILDHGT	DAPNO5	38.56	38.56	38.56	38.56	27.43	38.56
SO	BUILDHGT	DAPNO5	38.56	38.56	38.56	27.43	27.43	26.37
SO	BUILDWID	DAPNO5	50.67	19.53	20.82	21.47	21.47	20.82
SO	BUILDWID	DAPNO5	19.53	17.65	15.24	17.65	38.02	20.82
SO	BUILDWID	DAPNO5	21.47	21.47	20.82	52.35	49.79	45.72
SO	BUILDWID	DAPNO5	49.79	19.53	20.82	21.47	21.47	20.82
SO	BUILDWID	DAPNO5	19.53	17.65	15.24	17.65	38.02	20.82
SO	BUILDWID	DAPNO5	21.47	21.47	20.82	36.20	32.31	48.77
SO	BUILDHGT	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPPB	0.00	0.00	0.00	0.00	52.73	52.73
SO	BUILDHGT	DEHOPPB	52.73	0.00	0.00	0.00	38.71	38.71
SO	BUILDWID	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPPB	0.00	0.00	0.00	0.00	41.67	42.34
SO	BUILDWID	DEHOPPB	41.73	0.00	0.00	0.00	49.79	45.72
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPGRKH	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	EPPGRKH	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	EPPGRKH	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	EPPGRKH	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID	EPPGRKH	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	EPPGRKH	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	EPPGRKH	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	52.73	52.73
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	EPPMSTK	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	EPPMSTK	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	EPPMSTK	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	EPPMSTK	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID	EPPMSTK	49.79	52.35	53.31	52.66	41.73	42.34
SO	BUILDWID	EPPMSTK	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	EPPMSTK	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDHGT	EPPPLNT	38.71	38.71	38.71	38.71	38.71	38.71

SO BUILDHGT EPPPLNT	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT EPPPLNT	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT EPPPLNT	38.71	38.71	38.71	38.71	52.73	52.73
SO BUILDHGT EPPPLNT	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT EPPPLNT	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID EPPPLNT	49.79	52.35	53.31	52.66	50.40	46.62
SO BUILDWID EPPPLNT	41.41	34.95	27.43	34.95	41.41	46.62
SO BUILDWID EPPPLNT	50.40	52.66	53.31	52.35	49.79	45.72
SO BUILDWID EPPPLNT	49.79	52.35	53.31	52.66	41.73	42.34
SO BUILDWID EPPPLNT	41.41	34.95	27.43	34.95	41.41	46.62
SO BUILDWID EPPPLNT	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT EPPTLST	22.56	22.56	22.56	18.90	18.90	18.90
SO BUILDHGT EPPTLST	18.90	18.90	18.90	18.90	22.56	22.56
SO BUILDHGT EPPTLST	22.56	22.56	18.90	18.90	18.90	18.90
SO BUILDHGT EPPTLST	22.56	22.56	22.56	21.37	21.37	21.37
SO BUILDHGT EPPTLST	21.37	21.37	21.37	18.90	22.56	22.56
SO BUILDHGT EPPTLST	22.56	22.56	22.56	22.56	22.56	22.56
SO BUILDWID EPPTLST	243.49	238.78	226.82	213.39	185.96	152.89
SO BUILDWID EPPTLST	115.17	73.95	30.48	73.95	163.34	152.07
SO BUILDWID EPPTLST	182.80	207.97	234.33	248.15	254.43	252.98
SO BUILDWID EPPTLST	262.56	238.78	226.82	119.24	108.35	94.16
SO BUILDWID EPPTLST	77.11	57.72	67.06	73.95	163.34	152.07
SO BUILDWID EPPTLST	182.80	207.97	226.82	238.78	243.49	240.79

SO BUILDHGT GRKSILO	38.71	38.71	38.71	21.37	21.37	21.37
SO BUILDHGT GRKSILO	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT GRKSILO	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT GRKSILO	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT GRKSILO	10.67	10.67	10.67	52.73	52.73	52.73
SO BUILDHGT GRKSILO	10.67	10.67	10.67	10.67	10.67	38.71
SO BUILDWID GRKSILO	49.79	52.35	53.31	119.24	108.35	94.16
SO BUILDWID GRKSILO	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID GRKSILO	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID GRKSILO	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID GRKSILO	26.38	25.00	22.86	39.73	41.67	42.23
SO BUILDWID GRKSILO	26.72	25.67	23.84	21.28	18.08	45.72

SO BUILDHGT LIMESIB	0.00	52.73	52.73	52.73	52.73	52.73
SO BUILDHGT LIMESIB	52.73	52.73	0.00	30.48	30.48	30.48
SO BUILDHGT LIMESIB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT LIMESIB	0.00	52.73	52.73	52.73	52.73	52.73
SO BUILDHGT LIMESIB	52.73	52.73	0.00	30.48	30.48	30.48
SO BUILDHGT LIMESIB	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDWID LIMESIB	0.00	32.56	36.77	39.85	41.73	42.34
SO BUILDWID LIMESIB	41.67	39.73	0.00	25.61	39.16	51.52
SO BUILDWID LIMESIB	62.32	71.23	35.95	34.12	31.25	0.00
SO BUILDWID LIMESIB	0.00	32.56	36.77	39.85	41.73	42.34
SO BUILDWID LIMESIB	41.67	39.73	0.00	25.61	39.16	51.52
SO BUILDWID LIMESIB	62.32	71.23	77.97	82.34	0.00	0.00

SO BUILDHGT MAPNO34	38.71	38.71	38.71	27.43	27.43	27.43
SO BUILDHGT MAPNO34	27.43	27.43	27.43	27.43	27.43	27.43
SO BUILDHGT MAPNO34	27.43	27.43	27.43	38.71	38.71	38.71
SO BUILDHGT MAPNO34	38.71	38.71	38.71	27.43	27.43	27.43
SO BUILDHGT MAPNO34	27.43	27.43	27.43	27.43	27.43	27.43
SO BUILDHGT MAPNO34	27.43	27.43	27.43	38.71	38.71	38.71
SO BUILDWID MAPNO34	49.79	52.35	53.31	40.61	40.98	40.11
SO BUILDWID MAPNO34	38.02	34.78	30.48	34.78	38.02	40.11
SO BUILDWID MAPNO34	40.98	40.61	39.00	52.35	49.79	45.72
SO BUILDWID MAPNO34	49.79	52.35	53.31	40.61	40.98	40.11
SO BUILDWID MAPNO34	38.02	34.78	30.48	34.78	38.02	40.11
SO BUILDWID MAPNO34	40.98	40.61	39.00	52.35	49.79	45.72

SO BUILDHGT MHBLDG6	27.43	27.43	27.43	27.43	38.56	38.56
SO BUILDHGT MHBLDG6	38.56	38.56	22.56	26.37	26.37	26.37
SO BUILDHGT MHBLDG6	26.37	26.37	26.37	26.37	27.43	38.71
SO BUILDHGT MHBLDG6	38.71	38.71	27.43	27.43	38.56	38.56
SO BUILDHGT MHBLDG6	38.56	38.56	38.56	26.37	26.37	26.37
SO BUILDHGT MHBLDG6	26.37	26.37	26.37	26.37	27.43	27.43
SO BUILDWID MHBLDG6	32.31	36.20	39.00	40.61	21.47	20.82
SO BUILDWID MHBLDG6	19.53	17.65	36.58	23.48	31.00	37.58

SO BUILDWID MHBLDG6	43.02	47.15	49.85	51.04	32.31	45.72
SO BUILDWID MHBLDG6	49.79	52.35	39.00	40.61	21.47	20.82
SO BUILDWID MHBLDG6	19.53	17.65	15.24	23.48	31.00	37.58
SO BUILDWID MHBLDG6	43.02	47.15	49.85	51.04	32.31	27.43
SO BUILDHGT MHSOUTB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHSOUTB	15.24	15.24	15.24	9.14	9.14	0.00
SO BUILDHGT MHSOUTB	0.00	0.00	0.00	0.00	0.00	9.14
SO BUILDHGT MHSOUTB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHSOUTB	15.24	15.24	15.24	9.14	9.14	0.00
SO BUILDHGT MHSOUTB	0.00	0.00	0.00	0.00	0.00	9.14
SO BUILDWID MHSOUTB	47.19	28.64	9.21	28.51	47.07	64.20
SO BUILDWID MHSOUTB	79.37	92.14	102.11	11.72	10.60	0.00
SO BUILDWID MHSOUTB	0.00	0.00	0.00	0.00	0.00	12.50
SO BUILDWID MHSOUTB	47.19	28.64	9.21	28.51	47.07	64.20
SO BUILDWID MHSOUTB	79.37	92.14	102.11	11.72	10.60	0.00
SO BUILDWID MHSOUTB	0.00	0.00	0.00	0.00	0.00	12.50
SO BUILDHGT MHTWREB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHTWREB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHTWREB	15.24	15.24	22.86	22.86	15.24	15.24
SO BUILDHGT MHTWREB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHTWREB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHTWREB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDWID MHTWREB	47.19	28.64	9.21	28.51	47.07	64.20
SO BUILDWID MHTWREB	79.37	92.14	102.11	108.97	112.53	112.67
SO BUILDWID MHTWREB	112.55	109.02	15.87	16.92	79.48	64.31
SO BUILDWID MHTWREB	47.19	28.64	9.21	28.51	47.07	64.20
SO BUILDWID MHTWREB	79.37	92.14	102.11	108.97	112.53	112.67
SO BUILDWID MHTWREB	112.55	109.02	102.18	92.23	79.48	64.31
SO BUILDHGT MHWESTB	15.24	15.24	0.00	15.24	15.24	15.24
SO BUILDHGT MHWESTB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHWESTB	15.24	15.24	22.86	22.86	22.86	15.24
SO BUILDHGT MHWESTB	15.24	15.24	0.00	15.24	15.24	15.24
SO BUILDHGT MHWESTB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDHGT MHWESTB	15.24	15.24	15.24	15.24	15.24	15.24
SO BUILDWID MHWESTB	47.19	28.64	0.00	28.51	47.07	64.20
SO BUILDWID MHWESTB	79.37	92.14	102.11	108.97	112.53	112.67
SO BUILDWID MHWESTB	112.55	109.02	15.87	17.52	17.98	64.31
SO BUILDWID MHWESTB	47.19	28.64	0.00	28.51	47.07	64.20
SO BUILDWID MHWESTB	79.37	92.14	102.11	108.97	112.53	112.67
SO BUILDWID MHWESTB	112.55	109.02	102.18	92.23	79.48	64.31
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID MSTKL	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO8SAP	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	NO9SAP	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	PAPDORR	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPDORR	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT	PAPDORR	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	PAPDORR	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPDORR	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT	PAPDORR	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	PAPDORR	0.00	34.12	35.95	32.62	33.94	34.22
SO BUILDWID	PAPDORR	32.30	31.69	53.34	31.69	0.00	0.00
SO BUILDWID	PAPDORR	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	PAPDORR	0.00	34.12	35.95	32.62	33.94	34.22
SO BUILDWID	PAPDORR	32.30	31.69	53.34	31.69	0.00	0.00
SO BUILDWID	PAPDORR	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF12	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDWID	PAPF12	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID	PAPF12	33.46	31.69	53.34	31.69	33.46	34.22
SO BUILDWID	PAPF12	33.94	32.62	35.95	34.12	31.25	28.96
SO BUILDWID	PAPF12	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID	PAPF12	33.46	31.69	53.34	31.69	33.46	34.22
SO BUILDWID	PAPF12	33.94	32.62	35.95	34.12	31.25	28.96

SO BUILDHGT	PAPF3	0.00	0.00	0.00	30.48	30.48	30.48
SO BUILDHGT	PAPF3	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF3	30.48	30.48	30.48	0.00	0.00	0.00
SO BUILDHGT	PAPF3	0.00	0.00	0.00	30.48	30.48	30.48
SO BUILDHGT	PAPF3	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPF3	30.48	30.48	30.48	0.00	0.00	0.00
SO BUILDWID	PAPF3	0.00	0.00	0.00	32.62	33.94	34.22
SO BUILDWID	PAPF3	32.30	31.69	53.34	31.69	32.30	34.83
SO BUILDWID	PAPF3	36.31	36.69	35.95	0.00	0.00	0.00
SO BUILDWID	PAPF3	0.00	0.00	0.00	32.62	33.94	34.22
SO BUILDWID	PAPF3	32.30	31.69	53.34	31.69	32.30	34.83
SO BUILDWID	PAPF3	36.31	36.69	35.95	0.00	0.00	0.00

SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	PAPPRAY	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDWID	PAPPRAY	31.25	34.12	35.95	36.69	36.31	34.83
SO BUILDWID	PAPPRAY	32.30	55.44	53.34	31.69	32.30	34.22

SO BUILDWID PAPPRAY	33.94	32.62	35.95	34.12	31.25	28.96
SO BUILDWID PAPPRAY	31.25	34.12	35.95	36.69	36.31	34.83
SO BUILDWID PAPPRAY	32.30	55.44	53.34	31.69	32.30	34.22
SO BUILDWID PAPPRAY	33.94	32.62	35.95	34.12	31.25	28.96
SO BUILDHGT RKMLNO5	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT RKMLNO5	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO5	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO5	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO5	10.67	10.67	52.73	52.73	52.73	52.73
SO BUILDHGT RKMLNO5	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDWID RKMLNO5	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID RKMLNO5	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKMLNO5	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKMLNO5	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKMLNO5	26.38	25.00	36.58	39.73	41.67	42.18
SO BUILDWID RKMLNO5	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDHGT RKMLNO7	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT RKMLNO7	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO7	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO7	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO7	10.67	10.67	52.73	52.73	52.73	52.73
SO BUILDHGT RKMLNO7	10.67	10.67	10.67	10.67	10.67	38.71
SO BUILDWID RKMLNO7	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID RKMLNO7	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKMLNO7	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKMLNO7	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKMLNO7	26.38	25.00	36.58	39.73	41.67	41.82
SO BUILDWID RKMLNO7	26.72	25.67	23.84	21.28	18.08	45.72
SO BUILDHGT RKMLNO9	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT RKMLNO9	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO9	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO9	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKMLNO9	10.67	10.67	52.73	52.73	52.73	10.67
SO BUILDHGT RKMLNO9	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDWID RKMLNO9	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID RKMLNO9	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKMLNO9	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKMLNO9	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKMLNO9	26.38	25.00	36.58	39.73	41.42	26.96
SO BUILDWID RKMLNO9	26.72	25.67	23.84	21.28	18.08	14.33

3/9/01 5:30PM

BPIP Current, Cargill Riverview, Origin NO. 9 SAP 3/01/2001

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BPIP PROCESSING INFORMATION:
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The ST flag has been set for processing for an ISCST2 run.

Inputs entered in FEET will be converted to meters using a conversion factor of 0.3048. Output will be in meters.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

BPIP Current, Cargill Riverview, Origin NO. 9 SAP 3/01/2001

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
AFIPLBC	6.10	0.00	116.25	116.25
AFIPLTC	10.67	0.00	116.11	116.11
BLT78BC	13.72	0.00	70.89	70.89
BLT89BC	22.86	0.00	53.69	65.00
DAPNO5C	40.54	0.00	96.77	96.77
DEHOPBC	19.51	0.00	116.25	116.25
GRSILOC	20.42	0.00	116.07	116.07
GTSPAPC	38.40	0.00	116.25	116.25
GTSPRHC	26.52	0.00	96.77	96.77
GTSPTLC	11.58	0.00	56.39	65.00
LIMESBC	25.91	0.00	116.25	116.25
MHSOUTC	15.24	0.00	38.10	65.00
MHTWREC	9.14	0.00	48.24	65.00
MHWESTC	9.14	0.00	49.83	65.00
MHBLD6C	9.14	0.00	96.77	96.77
NO8SAPC	45.72	N/A	0.00	65.00
NO9SAPC	45.72	N/A	0.00	65.00
PAPF12C	33.53	0.00	76.20	76.20
PAPF3C	35.05	0.00	76.20	76.20
PAPPRAC	33.53	0.00	76.20	76.20
RKML5C	27.74	0.00	116.00	116.00
RKML7C	27.74	0.00	115.46	115.46
RKML9C	27.74	0.00	114.86	114.86

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

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 BPIP Current, Cargill Riverview, Origin NO. 9 SAP  3/01/2001

 BPIP output is in meters

SO BUILDHGT AFIPLBC     30.48    30.48    30.48    30.48    52.73    52.73
SO BUILDHGT AFIPLBC     52.73    52.73     0.00    30.48    30.48    30.48
SO BUILDHGT AFIPLBC     30.48    30.48    30.48    30.48    30.48    30.48
SO BUILDHGT AFIPLBC     30.48    30.48    30.48    30.48    30.48    30.48
SO BUILDHGT AFIPLBC     30.48    30.48     0.00    30.48    30.48    30.48
SO BUILDHGT AFIPLBC     30.48    30.48    30.48    30.48    30.48    30.48
SO BUILDWID AFIPLBC     84.20    82.34    77.97    71.23    41.73    42.34
SO BUILDWID AFIPLBC     41.67    39.73     0.00    25.61    39.16    51.52
SO BUILDWID AFIPLBC     36.31    36.69    35.95    82.34    84.20    83.52
SO BUILDWID AFIPLBC     84.20    82.34    77.97    71.23    62.32    51.52
SO BUILDWID AFIPLBC     39.16    25.61     0.00    25.61    39.16    51.52
SO BUILDWID AFIPLBC     62.32    71.23    77.97    82.34    84.20    83.52

SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDHGT AFIPLTC     52.73    52.73    52.73    52.73    52.73    52.73
SO BUILDWID AFIPLTC     27.36    32.56    36.77    39.85    41.73    42.25
SO BUILDWID AFIPLTC     41.67    39.73    36.58    39.73    41.67    42.25
SO BUILDWID AFIPLTC     41.73    39.85    36.77    32.56    27.36    21.34
SO BUILDWID AFIPLTC     27.36    32.56    36.77    39.85    41.73    42.25
SO BUILDWID AFIPLTC     41.67    39.73    36.58    39.73    41.67    42.25
SO BUILDWID AFIPLTC     41.73    39.85    36.77    32.56    27.36    21.34

SO BUILDHGT BLT78BC     26.37    26.37    26.37    26.37    26.37     0.00
SO BUILDHGT BLT78BC      0.00     0.00     0.00    22.56    22.56    22.56
SO BUILDHGT BLT78BC     22.56    22.56    22.56    22.56    26.37    27.43
SO BUILDHGT BLT78BC     27.43    27.43    38.56    38.56    38.56     0.00
SO BUILDHGT BLT78BC      0.00     0.00     0.00    22.56    22.56    22.56
SO BUILDHGT BLT78BC     22.56    22.56    22.56    22.56    26.37    26.37
SO BUILDWID BLT78BC     50.67    51.04    49.85    47.15    43.02     0.00
SO BUILDWID BLT78BC      0.00     0.00     0.00    77.83   116.73   152.07
SO BUILDWID BLT78BC    182.80   207.97   226.82   238.78    50.67    27.43
SO BUILDWID BLT78BC     32.31    36.20    20.82    21.47    21.47     0.00
SO BUILDWID BLT78BC      0.00     0.00     0.00    77.83   116.73   152.07
SO BUILDWID BLT78BC    182.80   207.97   226.82   238.78    50.67    48.77

SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    22.86
SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    22.86
SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    22.86
SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    22.86
SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    15.24
SO BUILDHGT BLT89BC     22.86    22.86    22.86    22.86    22.86    22.86
SO BUILDWID BLT89BC     19.18    18.57    18.68    19.88    20.48    20.46
SO BUILDWID BLT89BC     19.82    18.57    16.76    14.45    11.69     8.57
SO BUILDWID BLT89BC     11.18    13.73    15.87    17.52    18.65    19.20
SO BUILDWID BLT89BC     19.18    18.57    18.68    19.88    20.48    20.46
SO BUILDWID BLT89BC     19.82    18.57    16.76    14.45    11.69   112.67
SO BUILDWID BLT89BC     11.18    13.73    15.87    17.52    18.65    19.20

SO BUILDHGT DAPNO5C     26.37    38.56    38.56    38.56    38.56    38.56
SO BUILDHGT DAPNO5C     38.56    38.56    38.56    38.56    27.43    38.56
SO BUILDHGT DAPNO5C     38.56    38.56    38.56    38.71    38.71    38.71
SO BUILDHGT DAPNO5C     38.71    38.56    38.56    38.56    38.56    38.56
SO BUILDHGT DAPNO5C     38.56    38.56    38.56    38.56    27.43    38.56
SO BUILDHGT DAPNO5C     38.56    38.56    38.56    27.43    27.43    26.37
SO BUILDWID DAPNO5C     50.67    19.53    20.82    21.47    21.47    20.82
SO BUILDWID DAPNO5C     19.53    17.65    15.24    17.65    38.02    20.82
SO BUILDWID DAPNO5C     21.47    21.47    20.82    52.35    49.79    45.72
SO BUILDWID DAPNO5C     49.79    19.53    20.82    21.47    21.47    20.82
SO BUILDWID DAPNO5C     19.53    17.65    15.24    17.65    38.02    20.82
SO BUILDWID DAPNO5C     21.47    21.47    20.82    36.20    32.31    48.77

SO BUILDHGT DEHOPBC      0.00     0.00     0.00     0.00     0.00     0.00
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SO	BUILDHGT	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	DEHOPBC	0.00	0.00	0.00	0.00	52.73	52.73
SO	BUILDHGT	DEHOPBC	52.73	0.00	0.00	0.00	38.71	38.71
SO	BUILDWID	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPBC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	DEHOPBC	0.00	0.00	0.00	0.00	41.67	42.34
SO	BUILDWID	DEHOPBC	41.73	0.00	0.00	0.00	49.79	45.72
SO	BUILDHGT	GRSILOC	38.71	38.71	38.71	21.37	21.37	21.37
SO	BUILDHGT	GRSILOC	21.37	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	GRSILOC	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	GRSILOC	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	GRSILOC	10.67	10.67	10.67	52.73	52.73	52.73
SO	BUILDHGT	GRSILOC	10.67	10.67	10.67	10.67	10.67	38.71
SO	BUILDWID	GRSILOC	49.79	52.35	53.31	119.24	108.35	94.16
SO	BUILDWID	GRSILOC	77.11	25.00	22.86	25.00	26.38	26.96
SO	BUILDWID	GRSILOC	26.72	25.67	23.84	21.28	18.08	14.33
SO	BUILDWID	GRSILOC	18.08	21.28	23.84	25.67	26.72	26.96
SO	BUILDWID	GRSILOC	26.38	25.00	22.86	39.73	41.67	42.23
SO	BUILDWID	GRSILOC	26.72	25.67	23.84	21.28	18.08	45.72
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	52.73	52.73
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPAPC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	GTSPAPC	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	GTSPAPC	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	GTSPAPC	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID	GTSPAPC	49.79	52.35	53.31	52.66	41.73	42.34
SO	BUILDWID	GTSPAPC	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	GTSPAPC	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	GTSPRHC	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	GTSPRHC	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	GTSPRHC	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	GTSPRHC	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID	GTSPRHC	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID	GTSPRHC	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID	GTSPRHC	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDHGT	GTSPTLC	22.56	22.56	22.56	18.90	18.90	18.90
SO	BUILDHGT	GTSPTLC	18.90	18.90	18.90	18.90	22.56	22.56
SO	BUILDHGT	GTSPTLC	22.56	22.56	18.90	18.90	18.90	18.90
SO	BUILDHGT	GTSPTLC	22.56	22.56	22.56	21.37	21.37	21.37
SO	BUILDHGT	GTSPTLC	21.37	21.37	21.37	18.90	22.56	22.56
SO	BUILDHGT	GTSPTLC	22.56	22.56	22.56	22.56	22.56	22.56
SO	BUILDWID	GTSPTLC	243.49	238.78	226.82	213.39	185.96	152.89
SO	BUILDWID	GTSPTLC	115.17	73.95	30.48	73.95	163.34	152.07
SO	BUILDWID	GTSPTLC	182.80	207.97	234.33	248.15	254.43	252.98
SO	BUILDWID	GTSPTLC	262.56	238.78	226.82	119.24	108.35	94.16
SO	BUILDWID	GTSPTLC	77.11	57.72	67.06	73.95	163.34	152.07
SO	BUILDWID	GTSPTLC	182.80	207.97	226.82	238.78	243.49	240.79
SO	BUILDHGT	LIMESBC	0.00	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	LIMESBC	52.73	52.73	0.00	30.48	30.48	30.48
SO	BUILDHGT	LIMESBC	30.48	30.48	30.48	30.48	30.48	0.00
SO	BUILDHGT	LIMESBC	0.00	52.73	52.73	52.73	52.73	52.73
SO	BUILDHGT	LIMESBC	52.73	52.73	0.00	30.48	30.48	30.48
SO	BUILDHGT	LIMESBC	30.48	30.48	30.48	30.48	0.00	0.00
SO	BUILDWID	LIMESBC	0.00	32.56	36.77	39.85	41.73	42.34
SO	BUILDWID	LIMESBC	41.67	39.73	0.00	25.61	39.16	51.52

SO	BUILDWID	LIMESBC	62.32	71.23	35.95	34.12	31.25	0.00
SO	BUILDWID	LIMESBC	0.00	32.56	36.77	39.85	41.73	42.34
SO	BUILDWID	LIMESBC	41.67	39.73	0.00	25.61	39.16	51.52
SO	BUILDWID	LIMESBC	62.32	71.23	77.97	82.34	0.00	0.00
SO	BUILDHGT	MHSOUTC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHSOUTC	15.24	15.24	15.24	9.14	9.14	0.00
SO	BUILDHGT	MHSOUTC	0.00	0.00	0.00	0.00	0.00	9.14
SO	BUILDHGT	MHSOUTC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHSOUTC	15.24	15.24	15.24	9.14	9.14	0.00
SO	BUILDHGT	MHSOUTC	0.00	0.00	0.00	0.00	0.00	9.14
SO	BUILDWID	MHSOUTC	47.19	28.64	9.21	28.51	47.07	64.20
SO	BUILDWID	MHSOUTC	79.37	92.14	102.11	11.72	10.60	0.00
SO	BUILDWID	MHSOUTC	0.00	0.00	0.00	0.00	0.00	12.50
SO	BUILDWID	MHSOUTC	47.19	28.64	9.21	28.51	47.07	64.20
SO	BUILDWID	MHSOUTC	79.37	92.14	102.11	11.72	10.60	0.00
SO	BUILDWID	MHSOUTC	0.00	0.00	0.00	0.00	0.00	12.50
SO	BUILDHGT	MHTWREC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHTWREC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHTWREC	15.24	15.24	22.86	22.86	15.24	15.24
SO	BUILDHGT	MHTWREC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHTWREC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHTWREC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDWID	MHTWREC	47.19	28.64	9.21	28.51	47.07	64.20
SO	BUILDWID	MHTWREC	79.37	92.14	102.11	108.97	112.53	112.67
SO	BUILDWID	MHTWREC	112.55	109.02	15.87	16.92	79.48	64.31
SO	BUILDWID	MHTWREC	47.19	28.64	9.21	28.51	47.07	64.20
SO	BUILDWID	MHTWREC	79.37	92.14	102.11	108.97	112.53	112.67
SO	BUILDWID	MHTWREC	112.55	109.02	102.18	92.23	79.48	64.31
SO	BUILDHGT	MHWESTC	15.24	15.24	0.00	15.24	15.24	15.24
SO	BUILDHGT	MHWESTC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHWESTC	15.24	15.24	22.86	22.86	22.86	15.24
SO	BUILDHGT	MHWESTC	15.24	15.24	0.00	15.24	15.24	15.24
SO	BUILDHGT	MHWESTC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDHGT	MHWESTC	15.24	15.24	15.24	15.24	15.24	15.24
SO	BUILDWID	MHWESTC	47.19	28.64	0.00	28.51	47.07	64.20
SO	BUILDWID	MHWESTC	79.37	92.14	102.11	108.97	112.53	112.67
SO	BUILDWID	MHWESTC	112.55	109.02	15.87	17.52	17.98	64.31
SO	BUILDWID	MHWESTC	47.19	28.64	0.00	28.51	47.07	64.20
SO	BUILDWID	MHWESTC	79.37	92.14	102.11	108.97	112.53	112.67
SO	BUILDWID	MHWESTC	112.55	109.02	102.18	92.23	79.48	64.31
SO	BUILDHGT	MHBLD6C	27.43	27.43	27.43	27.43	38.56	38.56
SO	BUILDHGT	MHBLD6C	38.56	38.56	22.56	26.37	26.37	26.37
SO	BUILDHGT	MHBLD6C	26.37	26.37	26.37	26.37	27.43	38.71
SO	BUILDHGT	MHBLD6C	38.71	38.71	27.43	27.43	38.56	38.56
SO	BUILDHGT	MHBLD6C	38.56	38.56	38.56	26.37	26.37	26.37
SO	BUILDHGT	MHBLD6C	26.37	26.37	26.37	26.37	27.43	27.43
SO	BUILDWID	MHBLD6C	32.31	36.20	39.00	40.61	21.47	20.82
SO	BUILDWID	MHBLD6C	19.53	17.65	36.58	23.48	31.00	37.58
SO	BUILDWID	MHBLD6C	43.02	47.15	49.85	51.04	32.31	45.72
SO	BUILDWID	MHBLD6C	49.79	52.35	39.00	40.61	21.47	20.82
SO	BUILDWID	MHBLD6C	19.53	17.65	15.24	23.48	31.00	37.58
SO	BUILDWID	MHBLD6C	43.02	47.15	49.85	51.04	32.31	27.43
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO8SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	NO9SAPC	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF12C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDWID	PAPF12C	31.25	34.12	35.95	32.62	33.94	34.22
SO	BUILDWID	PAPF12C	33.46	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID	PAPF12C	33.94	32.62	35.95	34.12	31.25	28.96
SO	BUILDWID	PAPF12C	31.25	34.12	35.95	32.62	33.94	34.22
SO	BUILDWID	PAPF12C	33.46	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID	PAPF12C	33.94	32.62	35.95	34.12	31.25	28.96

SO	BUILDHGT	PAPF3C	0.00	0.00	0.00	30.48	30.48	30.48
SO	BUILDHGT	PAPF3C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF3C	30.48	30.48	30.48	0.00	0.00	0.00
SO	BUILDHGT	PAPF3C	0.00	0.00	0.00	30.48	30.48	30.48
SO	BUILDHGT	PAPF3C	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPF3C	30.48	30.48	30.48	0.00	0.00	0.00
SO	BUILDWID	PAPF3C	0.00	0.00	0.00	32.62	33.94	34.22
SO	BUILDWID	PAPF3C	32.30	31.69	53.34	31.69	32.30	34.83
SO	BUILDWID	PAPF3C	36.31	36.69	35.95	0.00	0.00	0.00
SO	BUILDWID	PAPF3C	0.00	0.00	0.00	32.62	33.94	34.22
SO	BUILDWID	PAPF3C	32.30	31.69	53.34	31.69	32.30	34.83
SO	BUILDWID	PAPF3C	36.31	36.69	35.95	0.00	0.00	0.00

SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT	PAPPRAC	30.48	30.48	30.48	30.48	30.48	30.48
SO	BUILDWID	PAPPRAC	31.25	34.12	35.95	36.69	36.31	34.83
SO	BUILDWID	PAPPRAC	32.30	55.44	53.34	31.69	32.30	34.22
SO	BUILDWID	PAPPRAC	33.94	32.62	35.95	34.12	31.25	28.96
SO	BUILDWID	PAPPRAC	31.25	34.12	35.95	36.69	36.31	34.83
SO	BUILDWID	PAPPRAC	32.30	55.44	53.34	31.69	32.30	34.22
SO	BUILDWID	PAPPRAC	33.94	32.62	35.95	34.12	31.25	28.96

SO	BUILDHGT	RKML5C	38.71	38.71	38.71	38.71	21.37	21.37
SO	BUILDHGT	RKML5C	21.37	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML5C	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML5C	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML5C	10.67	10.67	52.73	52.73	52.73	52.73
SO	BUILDHGT	RKML5C	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDWID	RKML5C	49.79	52.35	53.31	52.66	108.35	94.16
SO	BUILDWID	RKML5C	77.11	25.00	22.86	25.00	26.38	26.96
SO	BUILDWID	RKML5C	26.72	25.67	23.84	21.28	18.08	14.33
SO	BUILDWID	RKML5C	18.08	21.28	23.84	25.67	26.72	26.96
SO	BUILDWID	RKML5C	26.38	25.00	36.58	39.73	41.67	42.18
SO	BUILDWID	RKML5C	26.72	25.67	23.84	21.28	18.08	14.33

SO	BUILDHGT	RKML7C	38.71	38.71	38.71	38.71	21.37	21.37
SO	BUILDHGT	RKML7C	21.37	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML7C	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML7C	10.67	10.67	10.67	10.67	10.67	10.67
SO	BUILDHGT	RKML7C	10.67	10.67	52.73	52.73	52.73	52.73
SO	BUILDHGT	RKML7C	10.67	10.67	10.67	10.67	10.67	38.71
SO	BUILDWID	RKML7C	49.79	52.35	53.31	52.66	108.35	94.16
SO	BUILDWID	RKML7C	77.11	25.00	22.86	25.00	26.38	26.96

SO BUILDWID RKML7C	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKML7C	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKML7C	26.38	25.00	36.58	39.73	41.67	41.82
SO BUILDWID RKML7C	26.72	25.67	23.84	21.28	18.08	45.72

SO BUILDHGT RKML9C	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT RKML9C	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML9C	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML9C	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML9C	10.67	10.67	52.73	52.73	52.73	10.67
SO BUILDHGT RKML9C	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDWID RKML9C	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID RKML9C	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKML9C	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKML9C	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKML9C	26.38	25.00	36.58	39.73	41.42	26.96
SO BUILDWID RKML9C	26.72	25.67	23.84	21.28	18.08	14.33

DATE : 03/02/01
TIME : 10:47:07
BPIP Baseline, Cargill Riverview Origin NO. 9 SAP 3/2/01

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BPIP PROCESSING INFORMATION:
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The ST flag has been set for processing for an ISCST2 run.

Inputs entered in FEET will be converted to meters using a conversion factor of 0.3048. Output will be in meters.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

BPIP Baseline, Cargill Riverview Origin NO. 9 SAP 3/2/01

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
10KVSMB	26.52	0.00	76.20	76.20
11KVSMB	21.34	0.00	76.20	76.20
12KVSMB	21.64	0.00	76.20	76.20
1AMMPPB	27.43	0.00	96.77	96.77
1HZFSB	17.98	0.00	76.20	76.20
24SIZUB	22.56	0.00	76.20	76.20
2AMMPPB	27.43	0.00	96.77	96.77
2ASNBFB	25.91	0.00	76.20	76.20
2ASSBFB	29.26	0.00	76.20	76.20
2HZFSB	15.54	0.00	76.20	76.20
2HZFVSB	1.37	0.00	76.20	76.20
3AMMPPB	27.43	0.00	96.77	96.77
3ARCBFB	35.05	0.00	76.20	76.20
3ASBBFB	32.92	0.00	76.20	76.20
3ASNBFB	24.99	0.00	76.20	76.20
3ASSBFB	30.48	0.00	76.20	76.20
3CONTDB	20.73	0.00	76.20	76.20
3HZFVSB	1.37	0.00	76.20	76.20
3TRIPLB	19.81	0.00	76.20	76.20
4AMMPPB	27.43	0.00	96.77	96.77
4CONTDB	20.73	0.00	76.20	76.20
4TRIPLB	19.81	0.00	76.20	76.20
7OFCONB	23.77	0.00	76.20	76.20
8OFCONB	23.77	0.00	76.20	76.20
AMMPLTB	18.29	N/A	0.00	65.00
GTSPAPB	38.40	0.00	96.77	96.77
GTSPBFB	26.82	0.00	96.77	96.77
NAMMPCB	16.76	0.00	96.77	96.77
NO23RSB	28.35	0.00	96.45	96.45
NO4SAPB	24.38	N/A	0.00	65.00
NO5SAPB	22.56	N/A	0.00	65.00
NO678RB	28.96	0.00	96.45	96.45
NO6SAPB	21.95	N/A	0.00	65.00
NO7SAPB	28.04	N/A	0.00	65.00
NO8SAPB	29.26	N/A	0.00	65.00
NORMSPB	22.25	0.00	76.20	76.20
PASNO2B	33.53	0.00	76.20	76.20
PASNO3B	28.35	0.00	76.20	76.20
RKML59B	20.12	0.00	96.77	96.77
SAMMPCB	16.76	0.00	96.77	96.77
SSFSFPB	8.53	0.00	96.45	96.45

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for

additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 95086)

DATE : 03/02/01
TIME : 10:47:07

BPIP Baseline, Cargill Riverview Origin NO. 9 SAP 3/2/01

BPIP output is in meters

SO	BUILDHGT	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	10KVSMB	0.00	0.00	0.00	0.00	0.00	30.48
SO	BUILDHGT	10KVSMB	30.48	30.48	0.00	0.00	0.00	0.00
SO	BUILDHGT	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	10KVSMB	0.00	0.00	0.00	0.00	0.00	34.83
SO	BUILDWID	10KVSMB	33.94	32.62	0.00	0.00	0.00	0.00
SO	BUILDWID	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	10KVSMB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	11KVSMB	0.00	0.00	0.00	0.00	0.00	30.48
SO	BUILDHGT	11KVSMB	30.48	30.48	0.00	0.00	0.00	0.00
SO	BUILDHGT	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	11KVSMB	0.00	0.00	0.00	0.00	0.00	34.83
SO	BUILDWID	11KVSMB	33.94	32.62	0.00	0.00	0.00	0.00
SO	BUILDWID	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	11KVSMB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	12KVSMB	0.00	0.00	0.00	0.00	0.00	30.48
SO	BUILDHGT	12KVSMB	30.48	30.48	0.00	0.00	0.00	0.00
SO	BUILDHGT	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	12KVSMB	0.00	0.00	0.00	0.00	0.00	34.83
SO	BUILDWID	12KVSMB	33.94	32.62	0.00	0.00	0.00	0.00
SO	BUILDWID	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	12KVSMB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	1AMMPPB	38.71	38.71	38.71	38.71	38.71	21.37
SO	BUILDHGT	1AMMPPB	21.37	21.37	21.37	21.37	21.37	0.00
SO	BUILDHGT	1AMMPPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	1AMMPPB	38.71	38.71	38.71	38.71	38.71	21.37
SO	BUILDHGT	1AMMPPB	21.37	21.37	21.37	21.37	21.37	0.00
SO	BUILDHGT	1AMMPPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	1AMMPPB	49.79	52.35	53.31	52.66	50.40	94.16
SO	BUILDWID	1AMMPPB	77.11	57.72	36.58	57.72	77.11	0.00
SO	BUILDWID	1AMMPPB	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID	1AMMPPB	49.79	52.35	53.31	52.66	50.40	94.16
SO	BUILDWID	1AMMPPB	77.11	57.72	36.58	57.72	77.11	0.00

SO BUILDWID 1AMMPPB	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT 1HZFSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 1HZFSB	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT 1HZFSB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT 1HZFSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 1HZFSB	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT 1HZFSB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDWID 1HZFSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 1HZFSB	0.00	31.69	53.34	31.69	33.46	34.22
SO BUILDWID 1HZFSB	33.94	32.62	35.95	34.12	31.25	0.00
SO BUILDWID 1HZFSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 1HZFSB	0.00	31.69	53.34	31.69	33.46	34.22
SO BUILDWID 1HZFSB	33.94	32.62	35.95	34.12	31.25	0.00

SO BUILDHGT 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 24SIZUB	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 24SIZUB	31.25	34.12	35.95	36.69	0.00	0.00
SO BUILDWID 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 24SIZUB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT 2AMMPPB	38.71	38.71	38.71	38.71	38.71	21.37
SO BUILDHGT 2AMMPPB	21.37	21.37	21.37	21.37	21.37	0.00
SO BUILDHGT 2AMMPPB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT 2AMMPPB	38.71	38.71	38.71	38.71	38.71	21.37
SO BUILDHGT 2AMMPPB	21.37	21.37	21.37	21.37	21.37	0.00
SO BUILDHGT 2AMMPPB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID 2AMMPPB	49.79	52.35	53.31	52.66	50.40	94.16
SO BUILDWID 2AMMPPB	77.11	57.72	36.58	57.72	77.11	0.00
SO BUILDWID 2AMMPPB	50.40	52.66	53.31	52.35	49.79	45.72
SO BUILDWID 2AMMPPB	49.79	52.35	53.31	52.66	50.40	94.16
SO BUILDWID 2AMMPPB	77.11	57.72	36.58	57.72	77.11	0.00
SO BUILDWID 2AMMPPB	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT 2ASNBFB	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT 2ASNBFB	30.48	30.48	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASNBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASNBFB	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT 2ASNBFB	30.48	30.48	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASNBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASNBFB	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID 2ASNBFB	33.46	31.69	0.00	0.00	0.00	0.00
SO BUILDWID 2ASNBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASNBFB	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID 2ASNBFB	33.46	31.69	0.00	0.00	0.00	0.00
SO BUILDWID 2ASNBFB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT 2ASSBFB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASSBFB	30.48	0.00	0.00	30.48	30.48	0.00
SO BUILDHGT 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASSBFB	31.25	34.12	35.95	32.62	33.94	0.00
SO BUILDWID 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASSBFB	31.25	0.00	0.00	32.62	33.94	0.00
SO BUILDWID 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID 2ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT 2HZFSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT 2HZFSB	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT 2HZFSB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT 2HZFSB	0.00	0.00	0.00	0.00	0.00	0.00

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SO BUILDHGT 2HZFSB      0.00   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 2HZFSB     30.48   30.48   30.48   30.48   30.48    0.00
SO BUILDWID 2HZFSB      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 2HZFSB      0.00   31.69   53.34   31.69   33.46   34.22
SO BUILDWID 2HZFSB     33.94   32.62   35.95   34.12   31.25    0.00
SO BUILDWID 2HZFSB      0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 2HZFSB      0.00   31.69   53.34   31.69   33.46   34.22
SO BUILDWID 2HZFSB     33.94   32.62   35.95   34.12   31.25    0.00

SO BUILDHGT 2HZFVSB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 2HZFVSB     0.00   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 2HZFVSB    30.48   30.48   30.48   30.48   30.48    0.00
SO BUILDHGT 2HZFVSB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 2HZFVSB     0.00   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 2HZFVSB    30.48   30.48   30.48   30.48   30.48    0.00
SO BUILDWID 2HZFVSB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 2HZFVSB     0.00   31.69   53.34   31.69   33.46   34.22
SO BUILDWID 2HZFVSB    33.94   32.62   35.95   34.12   31.25    0.00
SO BUILDWID 2HZFVSB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 2HZFVSB     0.00   31.69   53.34   31.69   33.46   34.22
SO BUILDWID 2HZFVSB    33.94   32.62   35.95   34.12   31.25    0.00

SO BUILDHGT 3AMMPPB    38.71   38.71   38.71   38.71   21.37   21.37
SO BUILDHGT 3AMMPPB    21.37   21.37    0.00    0.00    0.00    0.00
SO BUILDHGT 3AMMPPB     0.00    0.00    0.00   38.71   38.71   38.71
SO BUILDHGT 3AMMPPB    38.71   38.71   38.71   38.71   21.37   21.37
SO BUILDHGT 3AMMPPB    21.37   21.37    0.00    0.00    0.00    0.00
SO BUILDHGT 3AMMPPB     0.00    0.00    0.00   38.71   38.71   38.71
SO BUILDWID 3AMMPPB    49.79   52.35   53.31   52.66  108.35   94.16
SO BUILDWID 3AMMPPB    77.11   57.72    0.00    0.00    0.00    0.00
SO BUILDWID 3AMMPPB     0.00    0.00    0.00   52.35   49.79   45.72
SO BUILDWID 3AMMPPB    49.79   52.35   53.31   52.66  108.35   94.16
SO BUILDWID 3AMMPPB    77.11   57.72    0.00    0.00    0.00    0.00
SO BUILDWID 3AMMPPB     0.00    0.00    0.00   52.35   49.79   45.72

SO BUILDHGT 3ARCBFB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 3ARCBFB    30.48   30.48    0.00    0.00    0.00    0.00
SO BUILDHGT 3ARCBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 3ARCBFB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 3ARCBFB    30.48   30.48    0.00    0.00    0.00    0.00
SO BUILDHGT 3ARCBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ARCBFB    31.25   34.12   35.95   32.62   33.94   34.22
SO BUILDWID 3ARCBFB    33.46   31.69    0.00    0.00    0.00    0.00
SO BUILDWID 3ARCBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ARCBFB    31.25   34.12   35.95   32.62   33.94   34.22
SO BUILDWID 3ARCBFB    33.46   31.69    0.00    0.00    0.00    0.00
SO BUILDWID 3ARCBFB     0.00    0.00    0.00    0.00    0.00    0.00

SO BUILDHGT 3ASBBFB    30.48   30.48   30.48   30.48   30.48    0.00
SO BUILDHGT 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASBBFB    30.48    0.00    0.00   30.48   30.48    0.00
SO BUILDHGT 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASBBFB    31.25   34.12   35.95   32.62   33.94    0.00
SO BUILDWID 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASBBFB    31.25    0.00    0.00   32.62   33.94    0.00
SO BUILDWID 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASBBFB     0.00    0.00    0.00    0.00    0.00    0.00

SO BUILDHGT 3ASNBFB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 3ASNBFB    30.48   30.48    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASNBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASNBFB    30.48   30.48   30.48   30.48   30.48   30.48
SO BUILDHGT 3ASNBFB    30.48   30.48    0.00    0.00    0.00    0.00
SO BUILDHGT 3ASNBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASNBFB    31.25   34.12   35.95   32.62   33.94   34.22
SO BUILDWID 3ASNBFB    33.46   31.69    0.00    0.00    0.00    0.00
SO BUILDWID 3ASNBFB     0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID 3ASNBFB    31.25   34.12   35.95   32.62   33.94   34.22
SO BUILDWID 3ASNBFB    33.46   31.69    0.00    0.00    0.00    0.00
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SO BUILDWID	3ASNBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3ASSBFB	0.00	0.00	0.00	0.00	0.00	30.48
SO BUILDHGT	3ASSBFB	30.48	30.48	0.00	0.00	0.00	0.00
SO BUILDHGT	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3ASSBFB	0.00	0.00	0.00	0.00	0.00	34.83
SO BUILDWID	3ASSBFB	33.94	32.62	0.00	0.00	0.00	0.00
SO BUILDWID	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3ASSBFB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3CONTDB	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3CONTDB	31.25	34.12	35.95	36.69	0.00	0.00
SO BUILDWID	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3HZFVSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3HZFVSB	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	3HZFVSB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT	3HZFVSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3HZFVSB	0.00	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT	3HZFVSB	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDWID	3HZFVSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3HZFVSB	0.00	31.69	53.34	31.69	33.46	34.22
SO BUILDWID	3HZFVSB	33.94	32.62	35.95	34.12	31.25	0.00
SO BUILDWID	3HZFVSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3HZFVSB	0.00	31.69	53.34	31.69	33.46	34.22
SO BUILDWID	3HZFVSB	33.94	32.62	35.95	34.12	31.25	0.00
SO BUILDHGT	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3TRIPLB	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3TRIPLB	31.25	34.12	35.95	36.69	0.00	0.00
SO BUILDWID	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	3TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	4AMMPPB	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT	4AMMPPB	21.37	21.37	0.00	0.00	0.00	0.00
SO BUILDHGT	4AMMPPB	0.00	0.00	0.00	38.71	38.71	38.71
SO BUILDHGT	4AMMPPB	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT	4AMMPPB	21.37	21.37	0.00	0.00	0.00	0.00
SO BUILDHGT	4AMMPPB	0.00	0.00	0.00	38.71	38.71	38.71
SO BUILDWID	4AMMPPB	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID	4AMMPPB	77.11	57.72	0.00	0.00	0.00	0.00
SO BUILDWID	4AMMPPB	0.00	0.00	0.00	52.35	49.79	45.72
SO BUILDWID	4AMMPPB	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID	4AMMPPB	77.11	57.72	0.00	0.00	0.00	0.00
SO BUILDWID	4AMMPPB	0.00	0.00	0.00	52.35	49.79	45.72
SO BUILDHGT	4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	4CONTDB	30.48	30.48	30.48	30.48	0.00	0.00

SO	BUILDHGT 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4CONTDB	31.25	34.12	35.95	36.69	0.00	0.00
SO	BUILDWID 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4CONTDB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 4TRIPLB	30.48	30.48	30.48	30.48	0.00	0.00
SO	BUILDHGT 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4TRIPLB	31.25	34.12	35.95	36.69	0.00	0.00
SO	BUILDWID 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 4TRIPLB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT 7OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 7OFCONB	0.00	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT 7OFCONB	30.48	30.48	30.48	30.48	30.48	0.00
SO	BUILDHGT 7OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 7OFCONB	0.00	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT 7OFCONB	30.48	30.48	30.48	30.48	30.48	0.00
SO	BUILDWID 7OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 7OFCONB	0.00	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID 7OFCONB	33.94	32.62	35.95	34.12	31.25	0.00
SO	BUILDWID 7OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 7OFCONB	0.00	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID 7OFCONB	33.94	32.62	35.95	34.12	31.25	0.00

SO	BUILDHGT 8OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 8OFCONB	0.00	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT 8OFCONB	30.48	30.48	30.48	30.48	30.48	0.00
SO	BUILDHGT 8OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT 8OFCONB	0.00	30.48	30.48	30.48	30.48	30.48
SO	BUILDHGT 8OFCONB	30.48	30.48	30.48	30.48	30.48	0.00
SO	BUILDWID 8OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 8OFCONB	0.00	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID 8OFCONB	33.94	32.62	35.95	34.12	31.25	0.00
SO	BUILDWID 8OFCONB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID 8OFCONB	0.00	31.69	53.34	31.69	33.46	34.22
SO	BUILDWID 8OFCONB	33.94	32.62	35.95	34.12	31.25	0.00

SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID AMMPLTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT GTSPAPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID GTSPAPB	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID GTSPAPB	41.41	34.95	27.43	34.95	41.41	46.62
SO	BUILDWID GTSPAPB	50.40	52.66	53.31	52.35	49.79	45.72
SO	BUILDWID GTSPAPB	49.79	52.35	53.31	52.66	50.40	46.62
SO	BUILDWID GTSPAPB	41.41	34.95	27.43	34.95	41.41	46.62

SO BUILDWID GTSPAPB	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT GTSPBFB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID GTSPBFB	49.79	52.35	53.31	52.66	50.40	46.62
SO BUILDWID GTSPBFB	41.41	34.95	27.43	34.95	41.41	46.62
SO BUILDWID GTSPBFB	50.40	52.66	53.31	52.35	49.79	45.72
SO BUILDWID GTSPBFB	49.79	52.35	53.31	52.66	50.40	46.62
SO BUILDWID GTSPBFB	41.41	34.95	27.43	34.95	41.41	46.62
SO BUILDWID GTSPBFB	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT NAMMPCB	38.71	38.71	38.71	38.71	38.71	21.37
SO BUILDHGT NAMMPCB	21.37	21.37	21.37	21.37	21.37	0.00
SO BUILDHGT NAMMPCB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT NAMMPCB	38.71	38.71	38.71	38.71	38.71	21.37
SO BUILDHGT NAMMPCB	21.37	21.37	21.37	21.37	21.37	0.00
SO BUILDHGT NAMMPCB	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID NAMMPCB	49.79	52.35	53.31	52.66	50.40	94.16
SO BUILDWID NAMMPCB	77.11	57.72	36.58	57.72	77.11	0.00
SO BUILDWID NAMMPCB	50.40	52.66	53.31	52.35	49.79	45.72
SO BUILDWID NAMMPCB	49.79	52.35	53.31	52.66	50.40	94.16
SO BUILDWID NAMMPCB	77.11	57.72	36.58	57.72	77.11	0.00
SO BUILDWID NAMMPCB	50.40	52.66	53.31	52.35	49.79	45.72

SO BUILDHGT NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO23RSB	0.00	0.00	38.71	38.71	38.71	0.00
SO BUILDHGT NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO23RSB	0.00	0.00	27.43	34.95	38.49	0.00
SO BUILDWID NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO23RSB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO4SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO5SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO678RB	0.00	0.00	38.71	38.71	38.71	0.00
SO BUILDHGT NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO678RB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO678RB	0.00	0.00	27.43	34.95	38.49	0.00
SO BUILDWID NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO678RB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO678RB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO6SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO7SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NO8SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NORMSPB	30.48	30.48	30.48	30.48	0.00	0.00
SO BUILDHGT NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NORMSPB	31.25	34.12	35.95	36.69	0.00	0.00
SO BUILDWID NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID NORMSPB	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT PASNO2B	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT PASNO2B	30.48	30.48	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO2B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO2B	30.48	30.48	30.48	30.48	30.48	30.48
SO BUILDHGT PASNO2B	30.48	30.48	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO2B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO2B	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID PASNO2B	33.46	31.69	0.00	0.00	0.00	0.00
SO BUILDWID PASNO2B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO2B	31.25	34.12	35.95	32.62	33.94	34.22
SO BUILDWID PASNO2B	33.46	31.69	0.00	0.00	0.00	0.00

SO BUILDWID PASNO2B	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT PASNO3B	30.48	30.48	30.48	30.48	30.48	0.00
SO BUILDHGT PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO3B	30.48	0.00	0.00	30.48	30.48	0.00
SO BUILDHGT PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO3B	31.25	34.12	35.95	32.62	33.94	0.00
SO BUILDWID PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO3B	31.25	0.00	0.00	32.62	33.94	0.00
SO BUILDWID PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID PASNO3B	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT RKML59B	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT RKML59B	21.37	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML59B	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML59B	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML59B	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDHGT RKML59B	10.67	10.67	10.67	10.67	10.67	10.67
SO BUILDWID RKML59B	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID RKML59B	77.11	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKML59B	26.72	25.67	23.84	21.28	18.08	14.33
SO BUILDWID RKML59B	18.08	21.28	23.84	25.67	26.72	26.96
SO BUILDWID RKML59B	26.38	25.00	22.86	25.00	26.38	26.96
SO BUILDWID RKML59B	26.72	25.67	23.84	21.28	18.08	14.33

SO BUILDHGT SAMMPCB	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT SAMMPCB	21.37	21.37	0.00	0.00	0.00	0.00
SO BUILDHGT SAMMPCB	0.00	0.00	0.00	38.71	38.71	38.71
SO BUILDHGT SAMMPCB	38.71	38.71	38.71	38.71	21.37	21.37
SO BUILDHGT SAMMPCB	21.37	21.37	0.00	0.00	0.00	0.00
SO BUILDHGT SAMMPCB	0.00	0.00	0.00	38.71	38.71	38.71
SO BUILDWID SAMMPCB	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID SAMMPCB	77.11	57.72	0.00	0.00	0.00	0.00
SO BUILDWID SAMMPCB	0.00	0.00	0.00	52.35	49.79	45.72
SO BUILDWID SAMMPCB	49.79	52.35	53.31	52.66	108.35	94.16
SO BUILDWID SAMMPCB	77.11	57.72	0.00	0.00	0.00	0.00
SO BUILDWID SAMMPCB	0.00	0.00	0.00	52.35	49.79	45.72

SO BUILDHGT SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT SSFSFPB	0.00	0.00	38.71	38.71	38.71	0.00
SO BUILDHGT SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID SSFSFPB	0.00	0.00	27.43	34.95	38.49	0.00
SO BUILDWID SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID SSFSFPB	0.00	0.00	0.00	0.00	0.00	0.00