FAXed to Clere
6/2/95

Farmland Hydro L.P.
Scaling Factor for Annual ASI Analysis
02-Jun-95

No 3 Sulfuric Acid Plant

Year	Hours of Operation
1991	8488
1992	8362
Average =	8425

No 4 Sulfuric Acid Plant

Year	Hours of Operation
1992	8398
1993	8544
Average =	8471

Average of No 3 & 4 sulfuric Acid Plants
(8425 + 8471)/ 2 = 8448

Scaling Based on 1 year (8760 hours) of Operation

8448/8760 = 0.964384 96%

2.0 ACTUAL EMISSION RATE CALCULATIONS

2.1 No. 3 SULFURIC ACID PLANT

Operating hours for the past five years:

YEAR	PLANT OPERATING HOURS
1990	8337
1991	8488*
1992	8362*
1993	8276
1994	Not available
Average	8425*

* Representative years

SO_2 = (236.3 + 77.7)/2 lbs/hr = 157
x 8425 hrs/yr x ton/2000 lbs
= 661.4 TPY

SAM = (6.9 + 3.8)/2 lbs/hr = 5.35
x 8425 hrs/yr x ton/2000 lbs
= 22.5 TPY

NOx emissions based on the nominal permitted production rate and a NOx emission factor used previously by FDEP of 0.12 lb/ton:

NOx = 67.5 tons/hr x 0.12 lb/ton
= 8.1 lbs/hr
x 8425 hrs/yr x ton/2000 lbs
= 34.1 TPY

2.2 No. 4 SULFURIC ACID PLANT

Operating hours for the past five years:

YEAR	PLANT OPERATING HOURS
1990	7977
1991	8349
1992	8398*
1993	8544*
1994	Not available
Average	8471*

* Representative years

SO_2 = (140.2 + 108.3)/2 lbs/hr = 124.25
x 8471 hrs/yr x ton/2000 lbs
= 695.7 TPY

SAM = (7.9 + 6.3)/2 lbs/hr
x 8471 hrs/yr x ton/2000 lbs
= 19.5 TPY

NOx emissions based on the nominal permitted production rate and a NOx emission factor used previously by FDEP of 0.12 lb/ton:

NOx = 67.5 tons/hr x 0.12 lb/ton
= 8.1 lbs/hr
x 8471 hrs/yr x ton/2000 lbs
= 34.3 TPY

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

Project 123-94-05

FAX

To: CLEVE HOLLADAY
DARM

Fax #: 904 922-6979

From: MARK KOLETZKE

Date: JUNE 2 '95 **Sent by:**

Fax Phone: 904-377-7158 **Voice Phone:** 904-377-5822

The text being transmitted consists of 3 pages PLUS this one.

REMARKS:

HI CLEVE:

THESE ARE THE OPERATING HOURS USED TO CALCULATE THE 96% SCALING FACTOR FOR #3 & #4 H2SO4 PLANT

THE LAST TWO PAGES ARE FROM A LETTER DATED FEB 14 95 (PERMIT APPLICATION)

ILL CALL LATER TO CHECK THAT EVERYTHING AROUND OKAY/ MARK

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

KA 123-94-05

May 10, 1995

Mr. A. A. Linero
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Farmland Hydro, L.P.
Sulfuric Acid Production Increase
AC 53-265755 and PSD-FL-225

Dear Mr. Linero:

This is a follow up to your letter dated March 22, 1995, requesting additional information on the above referenced project. Responses to the questions raised by FDEP are presented below along with responses to the issues raised by the Fish and Wildlife Service.

1. Building downwash impacts and impacts from the molten sulfur system were not included in the air quality modeling analysis. Please evaluate these impacts and do any additional modeling that is necessary to complete this analysis.

RESPONSE:

The modeling for Farmland's proposed project has been updated to include building wake effects and the molten sulfur system. The results of the modeling indicate that building wake effects do influence the maximum predicted impacts. The modeling output is provided on disk. A summary of the revised modeling results is presented in Attachment 1.

2. In order for a modeling analysis to show attainment of AAQS, you must add a representative background concentration to the modeled concentrations. You did not include this concentration in your analysis. This background concentration should be representative of the overall air quality entering the region and of any sources which were not explicitly modeled (i.e., natural and unidentified sources). Normally, this concentration is a non zero value and is based on air quality monitoring data collected in the vicinity of a proposed project or source. In order to minimize doubling counting of modeled source impacts, we have chosen a background concentration value from the SO_2 monitor located in Mulberry. This suggested value is 9 $\mu g/m^3$ for all averaging times and is based on the annual average obtained from 1994 data collected at this monitor. You should add this value to the modeled concentrations for all averaging times.

RESPONSE:

It should be noted that the ambient air impact analysis already accounts for the ambient air SO_2 concentration contributions from significant SO_2 emitting facilities in the vicinity of the project. It is our opinion that adding a SO_2 background concentration to the maximum predicted ambient air quality impacts leads to extensive double counting of impacts from the largest nearby facilities. However, in order to expedite the permit application processing for the proposed project, a background ambient air concentration of 9 micrograms per cubic meter, suggested by FDEP, is included in the ambient air impact analysis. The resulting maximum predicted SO_2 ambient air concentrations are presented in Table 3 (attached).

3. The annual area of significant impact modeling should be based on the difference between the proposed emissions and the actual annual hourly emissions. Please redo the annual area of significant impact modeling using the correct inputs. If the area of significant impact becomes larger because of the corrected results, please redo any modeling impacted by the correction.

RESPONSE:

After extensive discussions with EPA and FDEP staff, the emission rates representing the actual emissions for the existing sulfuric acid plants were used in the modeling, in accordance with Table 9-1 in the Guidelines on Air Quality Models (Revised), EPA-450/2-78-027R, to determine the net ambient air impacts from the proposed project. As prescribed by the modeling guidelines, an operating factor was determined to reflect the most recent two years of operation. It should be noted that the ultimate outcome of the revised modeling is no different than that of the previously submitted modeling analysis.

4. The National Park Service has requested a regional haze visibility analysis. Please submit a regional haze analysis and follow the guidance found in the EPA document Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report: Interim Recommendation for Modeling Long Range Transport and Impacts on Regional Visibility (EPA-454/R-93-015, April 1993). This analysis should consider the proposed increases in SO_2, H_2SO_4, and PM-10 emissions. A visual range of 65 km should be used in the analysis. This visual range is derived from data collected from the IMPROVE (Interagency Monitoring of Protected Visual Environments) fine particle sampler at Chassahowitzka National Wildlife Refuge and represents the 10 percent cleanest days at the refuge. Technical assistance in performing this analysis may be obtained from John Notar of the National Park Service's Air Quality Division in Denver, Colorado. His phone number is 303-969-2071.

RESPONSE:

The regional haze visibility analysis requested by the National Park Service is presented in Attachment 2. The emissions of sulfur dioxide and sulfuric acid mist were included in the analysis as requested by FDEP. There are no PM10 emissions from the sulfuric acid plants. The results of the analysis indicate that the proposed project is not expected to have a significant impact on the regional haze.

Other issues raised by the Fish and Wildlife Service:

5. The proposed emissions increases for the increase in sulfuric acid production are based on allowable (permitted) emission rates instead of actual emission rates. As you know, net emission increases must be based on actual, not allowable emissions. We ask that Farmland's proposed increases be revised accordingly.

RESPONSE:

The application does compare current actual emissions to proposed potential emissions. The applicant has an active request to FDEP and EPA to allow the comparison of either current vs. proposed "actuals" (as suggested by the NPS) or current vs. proposed "potentials". This approach would certainly make the evaluation equitable. However, both agencies indicated that such an approach may be possible only after the EPA introduces the much anticipated New Source Review Reform.

6. We do not agree that the proposed corresponding emission levels represent BACT. Test information provided in Farmland's application indicates that emission rates lower than the NSPS are achievable. In addition, other sulfuric acid facilities, including the IMC and Agrico facilities in Florida, have consistently demonstrated that levels lower than the NSPS are feasible. BACT for the General Chemical facility was recently set below the NSPS. We understand that past actual emission levels may not be achievable at the higher production rates; therefore, it is appropriate to obtain data over a reasonable amount of time to determine the BACT emission rate. We request that you set BACT for this facility at actual achievable emission rates as demonstrated during compliance tests or over a reasonable amount of operating time.

RESPONSE:

This particular issue has been discussed in great detail with the NPS, EPA, and FDEP staff over the last few years. The EPA has determined in the most recent review of the NSPS for sulfuric acid plants that a more

stringent standard is not justified. There is a wide consensus on the part of the regulatory agencies and the industry on this issue. The reason for the consensus is that neither the process design (sulfur dioxide emission control) nor add on control equipment (sulfuric acid mist emission control) have changed significantly in the recent past.

It is generally recognized that the sulfur dioxide emissions can be expected to be low just after plant turnaround (a maintenance cycle which is typically every 18 months), and much higher closer to a turnaround. The gradual deterioration of the catalyst used in the process contributes to higher emissions. The high cost associated with turnarounds (catalyst cost/labor cost/cost due to loss of production) makes it impractical to conduct frequent plant shut downs to replace the catalyst. This aspect of sulfuric acid production was noted by EPA in the review of the NSPS.

It should be noted that setting emission limits based on performance testing is not appropriate because that approach fails to address the variability in the emission rates over time. Also, a statistical determination of the emission limit based on a series of performance tests over time, to provide a 95th percentile confidence level, would likely yeild an emission rate in excess of the NSPS.

Imposing progressively lower emission limits on facilities subject to BACT may be valid for industries where emissions are controlled by add-on equipment or manufacturing processes which are subject to rapid or evolutionary changes. However, that rationale is not valid for the sulfuric acid manufacturing process. In discussions with suppliers of sulfuric acid plant equipment (Monsanto) and regulatory agencies (FDEP and EPA), the BACT for a double absorption sulfuric acid plant is 4 pounds of sulfur dioxide per ton acid; and, 0.15 pound acid mist per ton of acid.

Based on the above discussion, it is appropriate for FDEP to set BACT limits at the emission levels proposed; an evaluation supported by both the EPA and the NPS in the recent past.

7. We are concerned that the modeling analysis predicts numerous exceedances of the PSD Class I 3-hour and 24-hour SO_2 increments. We have expressed concern to you in the past regarding the short-term SO_2 increments, but as yet this issue has not been resolved. We agree with you that a more refined modeling analysis is required to determine the status of SO_2 increment consumption at Chassahowitzka WAS and urge that this analysis be undertaken as soon as possible.

Post-it® Fax Note 7671	Date 6/7/95	# of pages ▶ 9
To Ellen Porter	From Cleve Holladay	
Co./Dept. NPS	Co. Fla DEP	
Phone # 303-969-2617	Phone # 904-488-1344	
Fax # 303-969-2822	Fax #	

Mr. A. A. Linero
Florida Department of
Environmental Protection

RESPONSE:

It is our undestanding from discussions with the NPS staff that this comment is directed to FDEP regarding on going efforts by the Department to generally refine the ambient air impacts protocol and emission inventories. The proposed project is expected to be approved upon FDEP's verification of the air impacts resulting from the proposed modification.

8. We would like to note that nonvascular species, such as lichens, are far more sensitive to SO_2 exposure than vascular plants. Certain lichen species are affected by SO_2 concentrations as low as 13 micrograms per cubic meter. We are currently compiling a list of lichen species at Chassahowitzka WA and will provide this information to you and to permit applicants as soon as it is available.

RESPONSE:

The referenced evaluation will certainly be conducted for future projects after the information is available from the NPS.

ADDITIONAL ISSUES

In addition to the proposed project as described in the permit application, Farmland recently decided to install a new 7500 ton molten sulfur storage tank at the existing facility. In discussions with FDEP staff, it was decided that although the installation of the new molten sulfur tank was not associated with the request for increase in sulfuric acid production rates, it would be appropriate to include it as part of the source modification request. Accordingly, information regarding the proposed tank and updated information on the molten sulfur system is presented in Attachment 3.

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

cc: J. Reynolds
C. Holladay
NPS
EPA
L. Novak
J. Kissel

JBK:PAR:wa
Enc.

c: Charles Jenkins, Farmland

KOOGLER & ASSOCIATES

ATTACHMENT 1

SUMMARY OF REVISED AMBIENT AIR IMPACT ANALYSIS

TABLE 1

AIR QUALITY MODELING PARAMETERS
FOR SULFUR DIOXIDE

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

Source ID	SO_2 (g/s)	Ht (m)	Dia (m)	Vel (mps)	Temp (°K)
Existing					
3 SAP(1)	-33.58(2)	30.48	2.29	9.27	355
4 SAP	-33.58(2)	30.48	2.29	9.27	355
5 SAP	-50.40(2)	45.72	2.44	11.50	355
Sulfur Exist.	- 0.39	12.19	0.61	2.67	366
Proposed					
3 SAP	44.10	30.48	2.29	12.02	355
4 SAP	44.10	30.48	2.29	12.02	355
5 SAP	58.80	45.72	2.44	13.42	355
Sulfur Exist	0.39	12.19	0.61	2.67	366
Sulfur New	0.16	12.19	0.61	2.67	366

NOTES:

(1) SAP - Sulfuric Acid Plant.

(2) Emission rates of -32.23 g/s (for Plants 3 & 4), and -48.38 g/s (for Plant 5) were used for the annual period.

(3) Building wake effects were included in the modeling.

TABLE 2

SUMMARY OF SULFUR DIOXIDE SIGNIFICANT IMPACT ANALYSIS

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

MET DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)* (1)					
	CLASS II AREA			CLASS I AREA		
	ANNUAL	3-HOUR	24-HOUR	ANNUAL	3-HOUR	24-HOUR
1987	1.32	56.1	20.2	0.03	3.71	0.71
1988	1.37	58.0	21.4	0.05	3.53	0.60
1989	1.42	53.0	17.1	0.06	5.48	0.82
1990	1.38	66.7	19.6	0.03	3.27	0.67
1991	1.48	57.7	19.6	0.03	2.71	0.56
Sig. Impact (Rule 62-212, FAC and NPS Guidelines)	1.0	25.0	5.0	0.025	0.48	0.07

NOTE:

(1) The impact represents the highest-high impact.

(2) The impacts are based on the net increase in sulfur dioxide emissions from the proposed project.

KOOGLER & ASSOCIATES

TABLE 3

SUMMARY OF CLASS II AREA SULFUR DIOXIDE IMPACTS ANALYSIS

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

MET. DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)					
	PSD INCREMENT			AAQS		
	ANNUAL(1)	3-HOUR(2)	24-HOUR(2)	ANNUAL(1)	3-HOUR(2)	24 HOUR(2)
1987	0	163.3	40.8	49.6	761.3	244.0
1988	0	143.6	37.3	43.6	693.8	238.4
1989	0	147.0	35.1	43.3	672.6	235.1
1990	0	180.0	43.7	49.8	652.5	244.9
1991	0	148.8	39.1	48.7	627.9	230.5
MAXIMUM IMPACT	0	180.0	43.7	58.8(3)	770.3(3)	253.9(3)
INCREMENT & STD. (Rule 62-212 & 275, FAC)	20	512	91	60	1300	260

NOTE:

(1) The impact represents the highest-high impact.

(2) The impact represents the highest second-high impact.

(3) This predicted maximum impact includes a background concentration of 9.0 micrograms per cubic meter, to account for the ambient air impact of natural and unmodeled sources of sulfur dioxide emissions.

KOOGLER & ASSOCIATES

TABLE 4

SUMMARY OF CLASS I AREA SULFUR DIOXIDE IMPACTS ANALYSIS

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)		
	ANNUAL(1)	3-HOUR(2)	24-HOUR(2)
1987	0	30.51 (3)	6.27 (3)
1988	0	34.74 (3)	5.60 (3)
1989	0	26.99 (3)	6.21 (3)
1990	0	22.92	5.63 (3)
1991	0	25.45 (3)	4.24
ALLOWABLE PSD INCREMENT (FAC RULE 62-275)	2	25	5

NOTES:

(1) The impact represents the highest-high impact.

(2) The impact represents the highest second-high impact.

(3) Farmland's maximum contribution to impacts above the allowable Class I PSD increments, is zero (see impact contribution analysis provided on disk).

KOOGLER & ASSOCIATES

ATTACHMENT 2

REGIONAL HAZE VISIBILITY ANALYSIS

REGIONAL HAZE ANALYSIS

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

CALCULATION BASIS:

1. Highest Class I area sulfur dioxide 24-hr impact	0.82
2. Highest Class I area sulfuric acid mist 24-hr impact	0.03012
3. Highest Class I area PM10 24-hr impact	0
4. Background visibility	65
5. Wind speed	2.792143
6. Max distance to Class I area (m)	130296.6
7. Relative humidity factor (RH)	3.5

CALCULATIONS:

Class I	Receptors	
-70030	86045	110941.2
-70030	88045	112499.4
-70030	90145	114150.4
-69630	92245	115574.6
-68330	94345	116490.2
-67330	96545	117704.1
-66630	98645	119039.5
-67930	100945	121673.2
-69230	103745	124723
-71330	103745	125900.7
-73830	103745	127333.8
-76330	103745	128799.4
-78830	103745	130296.6
	min dist	110941.2
	max dist	130296.6

Hour	Conversion	
	SO2	SO4
1	0.233	0.00699
2	0.22601	0.00678
3	0.21923	0.006577
4	0.212653	0.00638
5	0.206273	0.006188
6	0.200085	0.006003
7	0.194082	0.005822
8	0.18826	0.005648
9	0.182612	0.005478
10	0.177134	0.005314
11	0.17182	0.005155
12	0.166665	0.005
12.96	0.166665	0.0098
average conversion	SO4 =	0.081135
	=	35%

b(ext)a = 3.912/Background visibility,	0.0602
SO4(so2) = SO2 impact * 96/64,	1.2300
SO4(am) = 0.15/4 * SO2 impact * 96/98,	0.0301
NH4SO4 = 1.375 * (SO4(so2) + (SO4(am)),	1.7327
Transport time = Travel distance / wind speed,	12.9626
Conversion = Total conversion at 3% per hr / Total impact,	0.6033
b(ext)s = 0.003 * RH * NH4SO4 + PM10,	0.0063
dv, deciview change = 10 * ln(1+ b(ext)s / b(ext)a)),	**1.0**

REGIONAL HAZE ANALYSIS - Continued

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

	Meteorological Data		
Yr/Mo/Dy	wd (deg)	ws (m/s)	temp (K)
8910 6 1	320	2.57	298.7
8910 6 2	321	2.06	297
8910 6 3	305	2.06	295.9
8910 6 4	311	1.54	295.4
8910 6 5	320	2.06	295.4
8910 6 6	312	2.06	294.8
8910 6 7	291	2.06	294.8
8910 6 8	305	1.54	298.2
8910 6 9	331	3.09	299.8
8910 610	354	3.09	301.5
8910 611	326	5.14	302.6
8910 612	343	3.6	303.7
8910 613	4	3.6	304.8
8910 614	332	2.57	304.8
8910 615	332	3.09	305.4
8910 616	323	2.57	304.8
8910 617	88	3.09	304.3
8910 618	59	2.57	302.6
8910 619	45	2.57	301.5
8910 620	107	2.57	299.8
8910 621	213	1.54	298.7
8910 622	199	2.06	298.2
8910 623	226	2.06	298.2
8910 624	232	2.06	297.6
	average	2.792143	

ATTACHMENT 3

UPDATED INFORMATION ON MOLTEN SULFUR SYSTEM

Farmland Hydro, L.P., proposes to install a new 7500 ton molten sulfur storage tank at the existing Green Bay Complex. Farmland's existing molten sulfur system consists of a truck unloading pit; a rail unloading pit; a supply pit for sulfuric acid plants 3 and 4; a supply pit for sulfuric acid plant 5; two 2500 ton storage tanks; and, a 6000 ton storage tank. The new 7500 ton tank will provide storage capacity to accomodate irregularity in the molten sulfur brought in by rail. There will be no increase in the proposed sulfur feed rates to the sulfuric acid plants. However, there will be a provision for truck loadout from the existing truck pit. This unloading/loadout provision reflects higher potential system throughput rates of 4,100 tpd and about 1,500,000 tpy. The proposed equipment layout map and the process flow diagram are presented in Figures 1 and 2, respectively.

The new tank dimensions and venting configuration will be almost identical to the 6000 ton tank, except for a bigger diameter:

Wall height = 32.5 ft
Diameter = 74 ft
Vents = one 24-inch center vent; eight 10-inch rim vents.

Emission Changes

The original emission calculations submitted to FDEP established that estimated emissions from the molten sulfur system are determined by the pollutant concentration and ventilation rate. Given that the new tank will have the same pollutant concentrations and ventilation rates as the 6000 ton tank, the hourly emission rates will be the same for the two tanks. Using the methodology suggested by FDEP, the annual emissions can be estimated using the existing 6000 ton tank emission rate and a ratio of 7500/6000:

ESTIMATED NEW TANK EMISSIONS:

PM = 1.22 tpy x 7500/6000 = 1.5 tpy

TRS/H_2S = 1.14 tpy x 7500/6000 = 1.4 tpy

SO_2 = 3.10 tpy x 7500/6000 = 3.9 tpy

VOC = 2.22 tpy x 7500/6000 = 2.8 tpy

Using FDEP's suggested calculation method, the combined total estimated emissions from the molten sulfur system, as proposed, can be determined using existing emission rate and a ratio of proposed to existing throughput rates 1,500,000/670,000 (or 2.24):

TOTAL SULFUR SYSTEM ESTIMATED EMISSIONS :

PM = 7.71 tpy x 2.24 = 17.3 tpy

TRS/H_2S = 9.45 tpy x 2.24 = 21.2 tpy

SO_2 = 14.22 tpy x 2.24 = 31.9 tpy

VOC = 14.02 tpy x 2.24 = 31.4 tpy

The net emissions increase from the proposed project can be updated as follows:

Net Emission Change = Proposed Emissions - Actual Emissions

POLLUTANT	ESTIMATED EMISSIONS (TPY)					
	No.3	No.4	No.5	S.S.	TOTAL	NET
SO2 (1)	661.4	695.7	803.5	14.22	2174.8	
(2)	1533.0	1533.0	2044.0	31.9	5141.9	2967.1*
SAM (1)	22.5	19.5	34.4	-	76.4	
(2)	57.5	57.5	76.7	-	191.7	115.3*
NOx (1)	34.1	34.3	46.2	-	114.6	
(2)	46.0	46.0	61.3	-	153.3	38.7
PM (1)	-	-	-	7.71	7.7	
(2)	-	-	-	17.3	17.3	9.6
H_2S (1)	-	-	-	9.45	9.5	
(2)	-	-	-	21.2	21.2	11.7*
VOC (1)	-	-	-	14.02	14.0	
(2)	-	-	-	31.4	31.4	17.4

NOTE: (1) Represents estimated actual emissions and (2) represents proposed emissions.

The above analysis indicates that the estimated net emissions increase in H_2S resulting from the proposed project is significant (exceeds 10 tpy). Accordingly, the emissions of H_2S are subject to PSD review. As there are no ambient air quality standards for H_2S, the PSD review essentially requires a control technology analysis.

As in the case of SO_2 emissions from the molten sulfur system, there have been no add-on control technologies required or recommended by EPA or FDEP for molten sulfur systems as the emissions of air pollutants are fairly low.

The emission limits for the molten sulfur system reflecting BACT will be in accordance with Rule 62-296.411, FAC, limiting visible emissions to 20% opacity and maintaining proper operation practices.

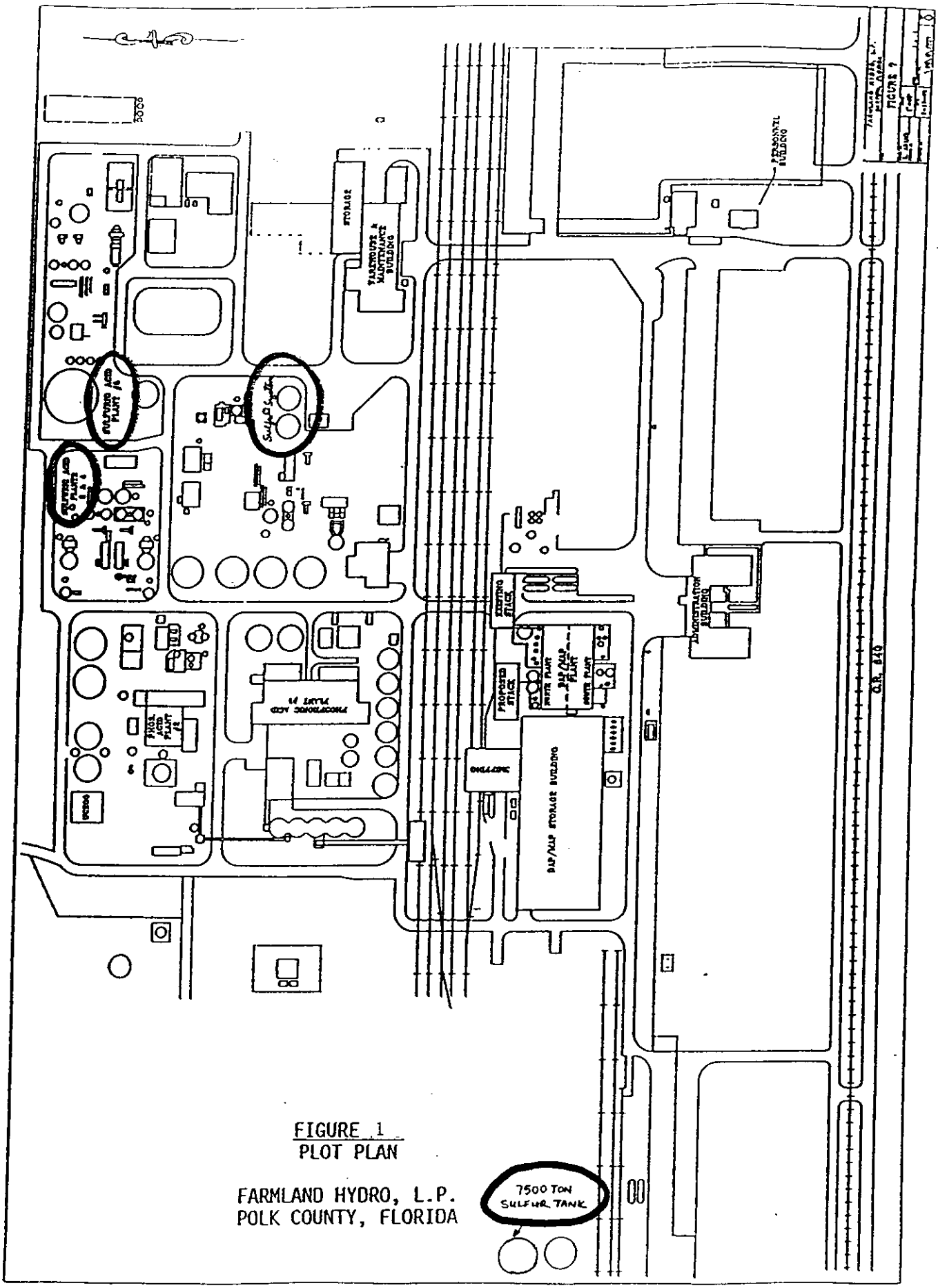
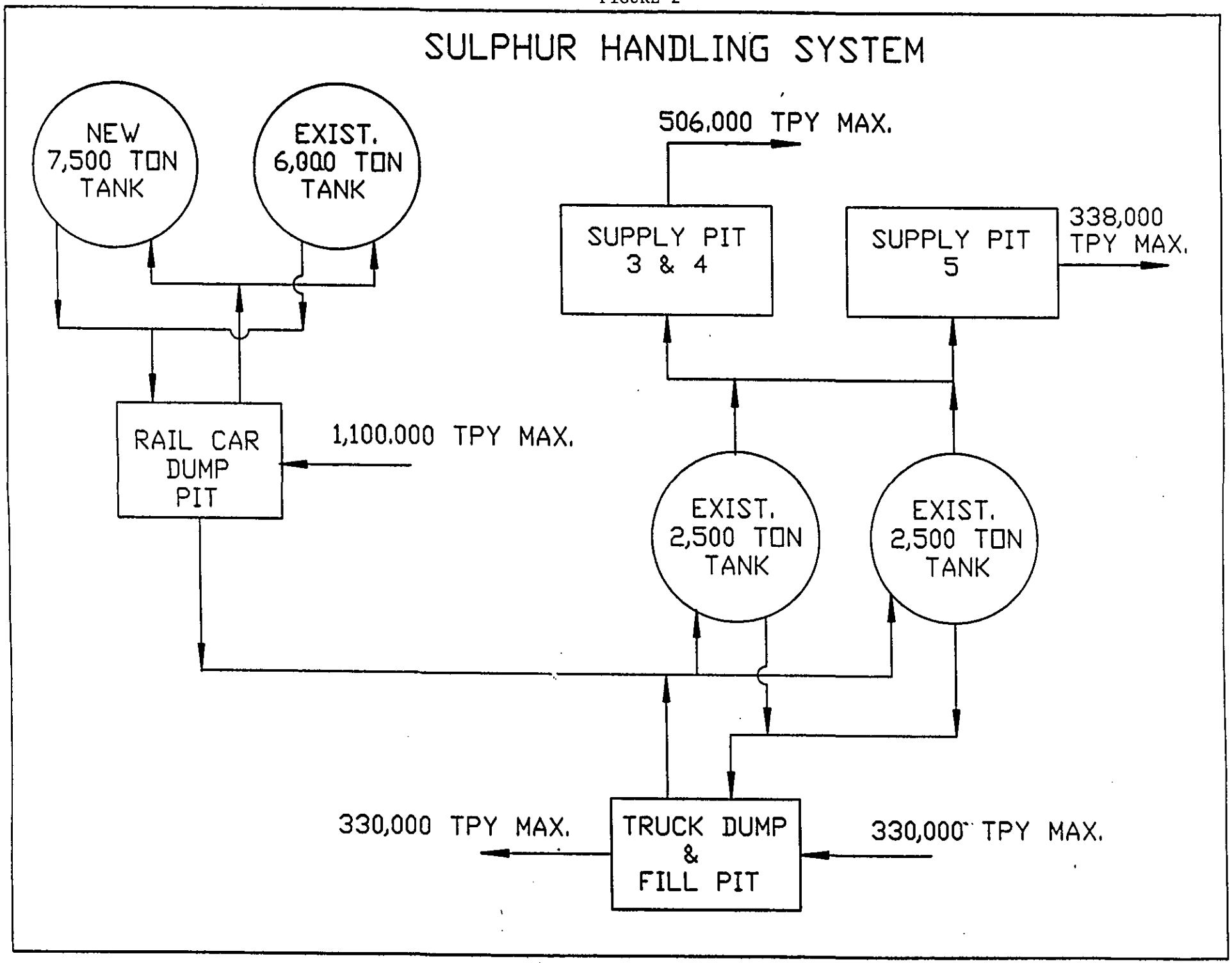


FIGURE 1
PLOT PLAN

FARMLAND HYDRO, L.P.
POLK COUNTY, FLORIDA

FIGURE 2


SULPHUR HANDLING SYSTEM
NEW 7,500 TON TANK
EXIST. 6,000 TON TANK
506,000 TPY MAX.
SUPPLY PIT 3 & 4
SUPPLY PIT 5
338,000 TPY MAX.
RAIL CAR DUMP PIT
1,100,000 TPY MAX.
EXIST. 2,500 TON TANK
EXIST. 2,500 TON TANK
330,000 TPY MAX.
TRUCK DUMP & FILL PIT
330,000 TPY MAX.

THIS DISK CONTAINS SO2 PSD ANALYSIS FILES IN ASCII FORMAT.
THE FOLLOWING ARE ISCST2 OUTPUT FILES FOR FARMLAND HYDRO IN POLK COUNTY, FL.

FOR PSD AND NAAQS SO2 MODELING, THE SELF EXTRACTING ARCHIVE FILES:

c1fmonly.exe	83456	Class 1 Farmland only
farm-asi.exe	103688	Area of Significant impact
psd-c1.exe	95184	Class I PSD with inventory
psd2faqs.exe	445295	Class II PSD and FAAQS with inventory
psdc1evt.exe	151897	Events from Class I PSD with inventory
maxis.exe	21345	Class I Maxifile from PSD with inventory
class1ev.wk1	39604	Class I PSD events worksheet

TO UNARCHIVE THIS FILE COPY IT TO A HARD DISK DRIVE AND TYPE THE FILE NAME.

Class 1 Farmland only:
C1FRM87A.OUT Annual modeling period for 1987.
C1FRM87S.OUT 3 & 24 hour modeling periods for 1987.
C1FRM88A.OUT Annual modeling period for 1988.
C1FRM88S.OUT 3 & 24 hour modeling periods for 1988.
C1FRM89A.OUT Annual modeling period for 1989.
C1FRM89S.OUT 3 & 24 hour modeling periods for 1989.
C1FRM90A.OUT Annual modeling period for 1990.
C1FRM90S.OUT 3 & 24 hour modeling periods for 1990.
C1FRM91A.OUT Annual modeling period for 1991.
C1FRM91S.OUT 3 & 24 hour modeling periods for 1991.

Area of Significant impact:
FMASI87A.OUT Annual modeling period for 1987.
FMASI87S.OUT 3 & 24 hour modeling periods for 1987.
FMASI88A.OUT Annual modeling period for 1988.
FMASI88S.OUT 3 & 24 hour modeling periods for 1988.
FMASI89A.OUT Annual modeling period for 1989.
FMASI89S.OUT 3 & 24 hour modeling periods for 1989.
FMASI90A.OUT Annual modeling period for 1990.
FMASI90S.OUT 3 & 24 hour modeling periods for 1990.
FMASI91A.OUT Annual modeling period for 1991.
FMASI91S.OUT 3 & 24 hour modeling periods for 1991.

Class I PSD with inventory:
PSD1-87.OUT 1987 modeling.
PSD1-88.OUT 1988 modeling.
PSD1-89.OUT 1989 modeling.
PSD1-90.OUT 1990 modeling.
PSD1-91.OUT 1991 modeling.

Events from Class I PSD with inventory:
EVNTCI87.OUT 1987 modeling.
EVNTCI88.OUT 1988 modeling.
EVNTCI89.OUT 1989 modeling.
EVNTCI90.OUT 1990 modeling.
EVNTCI91.OUT 1991 modeling.

Class I Maxifile outputs from Class I PSD with inventory:
3-ACI-87.PRN 3 hour output for 1987
24ACI-87.PRN 24 hour output for 1987
3-ACI-88.PRN 3 hour output for 1988
24ACI-88.PRN 24 hour output for 1988
3-ACI-89.PRN 3 hour output for 1989
24ACI-89.PRN 24 hour output for 1989
3-ACI-90.PRN 3 hour output for 1990
24ACI-90.PRN 24 hour output for 1990
3-ACI-91.PRN 3 hour output for 1991

24ACI-91.PRN 24 hour output for 1991

Class II PSD with inventory:
PSD2-87.OUT 1987 modeling.
PSD2-88.OUT 1988 modeling.
PSD2-89.OUT 1989 modeling.
PSD2-90.OUT 1990 modeling.
PSD2-91.OUT 1991 modeling.

FAAQS with inventory:
FAQS-87.OUT 1987 modeling.
FAQS-88.OUT 1988 modeling.
FAQS-89.OUT 1989 modeling.
FAQS-90.OUT 1990 modeling.
FAQS-91.OUT 1991 modeling.

IF THERE ARE ANY QUESTIONS OR IF ADDITIONAL FILES
ARE REQUIRED PLEASE CALL ME.

MARK KOLETZKE
KOOGLER AND ASSOCIATES
(904) 377-5822

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

MAR 2 9 1995

IN REPLY REFER TO:

RECEIVED
APR 05 1995
Bureau of
Air Regulation

Mr. Clair H. Fancy
Chief, Bureau of Air Regulation
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Dear Mr. Fancy:

We have reviewed the Prevention of Significant Deterioration (PSD) application for the proposed increase in sulfuric acid production at the Farmland Hydro, L.P. (Farmland), Green Bay Complex. The facility is located 110 km southeast of Chassahowitzka Wilderness Area (WA), a Class I air quality area, administered by the Fish and Wildlife Service. The proposed modification will result in significant increases in emissions of sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_4). The following table summarizes these increases.

POLLUTANT	EMISSIONS (TPY)			
	Permitted	Actual	Proposed	Net Increase
SO_2	4118	2175	5128	2953
H_2SO_4 Mist	164	76	192	115

The proposed emissions increases for the increase in sulfuric acid production are based on allowable (permitted) emission rates instead of actual emission rates. As you know, net emission increases must be based on actual, not allowable emissions. We ask that Farmland's proposed increases be revised accordingly.

Best Available Control Technology

We agree that double absorption and fiber mist eliminators represent Best Available Control Technology (BACT) for this facility. However, we do not agree that the proposed corresponding emission levels represent BACT. The proposed emission levels are equivalent to the New Source Performance Standards (NSPS) for sulfuric acid plants, which have not been reviewed by the Environmental Protection Agency (EPA) for 10

years. We believe that in cases where information is available to show that the Best Demonstrated Technology (as defined in the NSPS) can achieve levels beyond the NSPS limits, BACT should be set at the lower levels. This eliminates the trend of stagnating, inflated BACT determinations which are based solely on the NSPS and not on actual demonstrated emission levels. Test information provided in Farmland's application indicates that emission rates lower than the NSPS are achievable. In addition, other sulfuric acid facilities, including the IMC and Agrico facilities in Florida, have consistently demonstrated that levels lower than the NSPS are feasible. BACT for the General Chemical facility was recently set below the NSPS. We understand that past actual emission levels may not be achievable at the higher production rates; therefore, it is appropriate to obtain data over a reasonable amount of time to determine the BACT emission rate. We request that you set BACT for this facility at actual achievable emission rates as demonstrated during compliance tests or over a reasonable amount of operating time.

Air Quality Modeling Analysis

Farmland's air quality impact analysis is complete except for a regional haze visibility analysis. We ask that the applicant submit to us a regional haze analysis as per the guidance found in the EPA document Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report: Interim Recommendation for Modeling Long Range Transport and Impacts on Regional Visibility (EPA-454/R-93-015, April 1993). This analysis should consider the proposed increases in SO_2, H_2SO_4, and PM-10 emissions. A visual range of 65 km should be used in the analysis. This visual range is derived from data collected from the Interagency Monitoring of Protected Visual Environments fine particle sampler at Chassahowitzka National Wildlife Refuge and represents the 10 percent cleanest days at the refuge. Technical assistance to the applicant for this analysis is available from our Air Quality Branch.

We are concerned that the modeling analysis predicts numerous exceedances of the PSD Class I 3-hour and 24-hour SO_2 increments. We have expressed concern to you in the past regarding the short-term SO_2 increments, but as yet this issue has not been resolved. We agree with you that a more refined modeling analysis is required to determine the status of SO_2 increment consumption at Chassahowitzka WA and urge that this analysis be undertaken as soon as possible.

Air Quality Related Values Analysis

Farmland predicted that SO_2 and H_2SO_4 emissions would not adversely affect vegetation at Chassahowitzka WA, and refer to exposure studies on vascular plant species to support their

conclusion. We would like to note that nonvascular species, such as lichens, are far more sensitive to SO_2 exposure than vascular plants. Certain lichen species are affected by SO_2 concentrations as low as 13 micrograms per cubic meter. We are currently compiling a list of lichen species at Chassahowitzka WA and will provide this information to you and to permit applicants as soon as it is available.

We ask that you require Farmland to address our concerns and allow us sufficient time to review their regional haze analysis. Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at telephone number 303/969-2617.

Sincerely yours,

Judy Jones

for Noreen K. Clough
Regional Director

cc: Q. Reynolds
C. Holladay
Q. Kissel, SW Dist
Q. Harper, EPA
Q. Koogler, K+A

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

March 22, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles Jenkins
Environmental Services
Farmland Hydro, L.P.
County Road 640 West
Bartow, Florida 33830

Subject: Permit No. AC53-265755 & PSD-FL-225

Dear Mr. Jenkins:

The Department has reviewed your application for a construction permit to modify sulfuric acid plants 3, 4 and 5. We need more information in order to continue processing this application. Please complete the application by providing the information requested below.

AIR QUALITY REVIEW

1. Building downwash impacts and impacts from the molten sulfur system were not included in the air quality modeling analysis. Please evaluate these impacts and do any additional modeling that is necessary to complete this analysis.

2. In order for a modeling analysis to show attainment of the AAQS, you must add a representative background concentration to the modeled concentrations. You did not include this concentration in your analysis. This background concentration should be representative of the overall air quality entering the region and of any sources which were not explicitly modeled (i.e., natural and unidentified sources). Normally, this concentration is a non zero value and is based on air quality monitoring data collected in the vicinity of a proposed project or source. In order to minimize double counting of modeled source impacts, we have chosen a background concentration value from the SO_2 monitor located in Mulberry. This suggested value is 9 ug/m^3 for all averaging times and is based on the annual average obtained from 1994 data collected at this monitor. You should add this value to the modeled concentrations for all averaging times.

3. The annual area of significant impact modeling should be based on the difference between the proposed emissions and the actual annual hourly emissions. Please redo the annual area of significant impact modeling using the correct inputs. If the area of significant impact becomes larger because of the corrected results, please redo any modeling impacted by the correction.

4. The National Park Service has requested a regional haze visibility analysis. Please submit a regional haze analysis and follow the guidance found in the EPA document Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report: Interim Recommendation for Modeling Long Range Transport and Impacts on Regional Visibility (EPA-454/R-93-015, April 1993). This analysis should consider the proposed increases in SO_2, H_2SO_4, and PM-10 emissions. A visual range of 65 km should be used in the analysis. This visual range is derived from data collected from the IMPROVE (Interagency Monitoring of Protected Visual Environments) fine particle sampler at Chassahowitzka National Wildlife Refuge and represents the ten percent cleanest days at the refuge. Technical assistance in performing this analysis may be obtained from John Notar of the National Park Service's Air Quality Division in Denver, Colorado. His phone number is 303-969-2071

If you have any questions, please call Cleve Holladay, meteorologist, at 904-488-1344, or write to me at the above address.

Sincerely,

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

AL/ch

cc: Pradeep Raval, Koogler and Associates
John J. Taylor, SWD
also: J. Bunyak
J. Harper
L. Novak
Cleve Holladay
John Reynolds

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Consult postmaster for fee.

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Charles Jenkins
Environmental Services
Farmland Hydro, LP
County Rd 640 W
Bartow, Fl 33830

4a. Article Number
Z 751 860 030

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Linda Thompson

6. Signature (Agent)

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3/24/95

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TOTAL Postage & Fees	$
Postmark or Date 3-23-95	

AC 53-265755
PSD-FL-225

PS Form **3800**, March 1993

Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

February 22, 1995

Ms. Linda Novak
Polk County Air Quality Program
P. O. Box 39
Bartow, FL 33830

RE: Farmland Hydro L. P.
Nos. 3, 4 and 5 Sulfuric Acid Plants
Polk County, PSD-FL-225

Dear Ms. Novak:

Enclosed for your review and comment is the above referenced PSD application. Please forward your comments to the Department's Bureau of Air Regulation as soon as possible. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact John Reynolds or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia G. Adams

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

CHF/pa

Enclosures

cc: John Reynolds

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 22, 1995

Mr. John Bunyak, Chief
Policy, Planning and Permit Review Branch
National Park Service-Air Quality Division
P. O. Box 25287
Denver, CO 80225

RE: Farmland Hydro L. P.
Nos. 3, 4 and 5 Sulfuric Acid Plants
Polk County, PSD-FL-225

Dear Mr. Bunyak:

Enclosed for your review and comment is the above referenced PSD application. Please forward your comments to the Department's Bureau of Air Regulation as soon as possible. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact John Reynolds or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia H. Adams

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

CHF/pa

Enclosures

cc: John Reynolds

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 22, 1995

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

RE: Farmland Hydro L. P.
Nos. 3, 4 and 5 Sulfuric Acid Plants
Polk County, PSD-FL-225

Dear Ms. Harper:

Enclosed for your review and comment is the above referenced PSD application. Please forward your comments to the Department's Bureau of Air Regulation as soon as possible. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact John Reynolds or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia H. Adams

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

CHF/pa

Enclosures

cc: John Reynolds