NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 07/28/2020
Compliance Code: 5 / Outstanding Penalty

Facility Data

Applicant (Facility's Name): PCS Phosphate Company, Inc. - Aurora

Facility Address:
PCS Phosphate Company, Inc. - Aurora
1530 NC Highway 306 South
Aurora, NC 27806

SIC: 2874 / Phosphatic Fertilizers
NAICS: 325312 / Phosphatic Fertilizer Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0515, 02D .0521, 02D .0524, 02D .1100, 02D .1111, 02D .2100
02Q .0711
NSPS: Subpart IIII
NESHAP: Subpart ZZZZ
PSD: No
PSD Avoidance: No
NC Toxics: Yes
112(r): Yes
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Khalid Alnahdy Environmental Manager (252) 322-8288 1530 NC Hwy 306 South Aurora, NC 27806	Jeremy Pierce Interim General Manager (252) 322-8201 1530 NC Highway 306 South Aurora, NC 27806	Chris Smith Senior Environmental Engineer (252) 322-8263 1530 NC Highway 306 South Aurora, NC 27806

Application Data

Application Number: 0700071.20D
Date Received: 09/03/2020
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part II

Existing Permit Data
Existing Permit Number: 04176/T61
Existing Permit Issue Date: 06/19/2020
Existing Permit Expiration Date: 12/31/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2018	3439.36	431.10	277.50	424.30	803.52	386.10	276.66 [MIBK (methyl isobutyl ketone)]
2017	3139.72	407.90	155.90	527.70	900.13	251.19	154.84 [MIBK (methyl isobutyl ketone)]
2016	5193.68	468.70	175.97	620.80	900.83	267.26	174.59 [MIBK (methyl isobutyl ketone)]
2015	4403.00	636.80	128.90	742.80	915.03	224.03	127.50 [MIBK (methyl isobutyl ketone)]
2014	4072.49	742.55	126.84	780.03	945.44	224.02	125.15 [MIBK (methyl isobutyl ketone)]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 04176/T62
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

PCS Phosphate Company, Inc. – Aurora (PCS) currently holds Title V Permit No. 04176T61 with an expiration date of December 31, 2022 for a phosphoric rock mining and phosphoric acid manufacturing facility located in Aurora, Beaufort County, North Carolina. Air Permit Application No. 0700071.20D was received on September 3, 2020 as a "Part 2"application of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for construction of a hydrogen fluoride (HF) plant at the Aurora facility.

PCS obtained a construction and operation permit on November 22, 2019 for the HF Plant. Per DAQ's "two-step" permitting procedures, a Title V air permit application (i.e., "Part 2" application) is required on or before 12 months after commencing operation. The HF Plant has not yet been constructed; however, PCS is pursuing a Title V operating permit for the process at this time to assist in securing final production contracts and timelines.

The technical review for the Part 1 application is attached to this document.

2. Application Chronology

September 3, 2020 Received permit application.

September 3, 2020 Sent acknowledgment letter indicating the application was complete.

September 3, 2020 E-payment received.

September 10, 2020 Draft permit and permit review forwarded for comment.

September 12, 2020 Comments received from PCS.

September 22, 2020 Comments received from Mark Cuilla, Permitting Supervisor.

3. Permit Modifications/Changes and TVEE Discussion

The table below list changes to the current permit under this modification.

Pages	Section	Description of Changes
Cover and throughout	--	Updated all dates and permit revision numbers.
--	Insignificant Activities	• Removed the Diesel-fired Chiller Emergency Genset (up to 160 ekW) (ID No. I-HF). • Removed the Diesel-fired Emergency Genset (up to 100 ekW) (ID No. I-MCC). • Added a AHF Plant Diesel-fired Emergency Genset (up to 250 ekW) (ID No. I-AHF). • Added a Storage Containment Tank (ID No. IT-4108).

Pages	Section	Description of Changes
10 – 11	Section 1.5	Removed asterisks and footnote indicating emission sources (ID Nos. GW01, GW03-A, GW03-B, LS-1, LB-1, and CT444) and control devices (ID Nos. HFVS-1, HFVS-2, HFPB-1, HFPB-2, 436-180, 438-180, LSBF-1, and LBF-1) are listed as a 15A NCAC 02Q .0501(b)(2) modification.
94	2.1.5.I – Regulations Table	Removed reference to 15A NCAC 02Q .0504. Submittal of Air Permit Application No. 0700071.20D fulfills requirements under 15A NCAC 02Q .0504 for the HF Production Process.
96	2.1.5.I.3	• Removed permit condition for 15A NCAC 02Q .0504. Submittal of Air Permit Application No. 0700071.20D fulfills requirements under 15A NCAC 02Q .0504 for the HF Production Process. • Added "RESERVED" as a place holder.
141 – 149	3.0 – General Conditions	Updated the General Conditions to the most recent revision (V5.5: 08/25/2020).
150	Attachment 1	Updated the list of acronyms.

The following changes were made to the Title V Equipment Editor (TVEE) as part of this permit modification.

- Removed Diesel-fired Chiller Emergency Genset (up to 160 ekW) (ID No. I-HF) as an insignificant activity.
- Removed Diesel-fired Emergency Genset (up to 100 ekW) (ID No. I-MCC) as an insignificant activity.
- Added AHF Plant Diesel-fired Emergency Genset (up to 250 ekW) (ID No. I-AHF) as an insignificant activity.
- Added Storage Containment Tank (ID No. IT-4108) as an insignificant activity.

4. Changes from Part 1 Permit Application

The Part 1 permit application included a diesel-fired chiller emergency genset (up to 160 ekW) (ID No. I-HF) and a diesel-fired emergency genset (up to 100 ekW) (ID No. I-MCC) for the HF Plant. This Part 2 permit application replaces these two emergency generators with a single diesel-fired emergency power generator (ID No. I-AHF) with a rating of up to 250 ekW.

The single generator is subject to New Source Performance Standards (NSPS) as promulgated in 40 CFR Part 60 Subpart IIII, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines." Emissions of particulate matter (PM), nitrogen oxides (NOx), and carbon monoxide (CO) from the single generator were based on emission standards under NSPS Subpart IIII as specified in Part 89, Tier III emission standards. Emissions of sulfur dioxide (SO2) and volatile organic compounds (VOC) were calculated from emission factors in US EPA, AP-42, Section 3.3, Table 3.3-1 for diesel fuel. Operation was assumed to be 500 hours per year for this emergency generator. Based on the estimated emissions, the emergency generator meets the definition of insignificant activity pursuant to 15A NCAC 02D .0503(8) and will be included on the insignificant activities list.

Emissions from this single generator and a comparison of the generator emissions from the Part 1 and Part 2 permit applications are provided in the table below:

Pollutant	Emissions from Generators in Part 1 Application (tpy)			Emissions from AHF Plant Single Generator (I-AHF) (tpy)
	Emergency Genset (I-MCC)	Chiller Emergency Genset (I-HF)	Total Emissions	
PM	2.76E-02	3.31E-02	6.06E-02	6.89E-02
PM10	2.76E-02	3.31E-02	6.06E-02	6.89E-02
PM2.5	2.76E-02	3.31E-02	6.06E-02	6.89E-02
NOx	3.24E-01	4.41E-01	7.65E-01	8.10E-01
SO2	8.59E-02	1.37E-01	2.23E-01	2.15E-01
CO	3.44E-01	5.51E-01	8.96E-01	8.61E-01
VOC	1.04E-01	1.66E-01	2.69E-01	2.59E-01

Notes:

- SO2 emissions from the emergency generators in this table differ than those provided in the permit applications (0700071.19B and 0700071.20D). SO2 emissions in these applications were calculated using an emission factor for a large diesel-fired engine (>600 hp) in US EPA, AP-42, Section 3.4, Table 3.4-1 for diesel fuel. SO2 emissions in this table have been corrected. The engines remain insignificant activities, and the HF Project remains a minor modification under PSD with this correction.
- Emissions from AHF Plant single generator (I-AHF) are calculated as follows:

Generator Input Data

Run Time (hrs/yr)	500
Rated Capacity (ekW)	250

Conversion Factors

Power Factor	0.8
g/lb	453.592
kW/hp	0.7457
lb/ton	2000

Emissions Calculations

Pollutant	Emission Factor	Units	Hourly Emissions (lbs/hr)	Annual Emissions (tons/yr)
PM[1,2]	0.40	g/kW-hr	0.28	6.89E-02
PM_{10}[1,2]	0.40	g/kW-hr	0.28	6.89E-02
$PM_{2.5}$[1,2]	0.40	g/kW-hr	0.28	6.89E-02
NOx[1,3]	4.70	g/kW-hr	3.24	8.10E-01
SO_2[4]	2.05E-03	lb/hp-hr	0.859	2.15E-01
CO[1]	5.00	g/kW-hr	3.44	8.61E-01
VOC[5]	2.47E-03	lb/hp-hr	1.04	2.59E-01

Notes:

1) PM, NOx, and CO factors obtained from Part 89 Tier III emission standards for a rated power of 37<kW<130 used for conservatism.

2) Assumes PM=PM10=PM2.5.

3) Full NMHC+NOx emission standard utilized for conservatism.

4) SO2 factor obtained from AP-42, Section 3.3, Table 3.3-1 for Diesel fuel.

5) VOC factor obtained from AP-42, Section 3.3, Table 3.3-1 for Diesel fuel.

An additional insignificant activity is being added as part of this Part 2 permit application. The emission source described as HF loading and storage (ID No. GW01) includes three HF storage tanks. Only one tank at a time receives product, and the vapor space being displaced either goes to a tank from which loading is occurring or goes to the wet scrubbing systems (ID Nos. HFVS-1, HFPB-1 and HFVS-2, HFVS-2). The 2 in-service storage tanks are periodically recirculated through a brine refrigeration system to keep the temperature around -5°C. The three storage tanks (2 in service, 1 standby) are all enclosed in a Containment Tank (ID No. IT-4108), which is being added under this Part 2 permit application. No emissions are expected from the Storage Containment Tank, and it will be included on the insignificant activities list pursuant to 15A NCAC 02Q .0503(8).

5. Facility-Wide Emissions

Facility-wide potential emissions have been updated since the Part 1 application was submitted. The emissions in the table below reflect totals for the most recent permit modification for the construction of a calcium phosphates manufacturing process (Air Permit Application No. 0700071.20A). Actual emissions from PCS from 2015 to 2019 are reported in the header of this permit review.

Pollutant	Expected Actual Emissions (tpy)	TV Potential Emissions (tpy)
PM (TSP)	2,450	3,495
PM10	832.5	2,050
PM2.5	255	1,422
CO	433.7	1,271
NO_x	468	10,105
SO_2	3,440	8,701
VOC	278	289
CO2e	340,750 metric tons	791,690 metric tons
Notes: Emissions contained in Form D1 of Air Permit Application No. 0700071.20D.		

6. Compliance Status

Robert Bright of the WaRO completed the most recent full compliance evaluation (FCE) for PCS on July 28, 2020. The facility appeared to operate in compliance during the FCE.

The five-year compliance history for PCS is provided below:

- A Notice of Violation/Notice of Recommendation for Enforcement (NOV/NRE) was issued on June 14, 2016. From January 30 through February 11, 2016, PCS conducted mercury emissions testing for calciner 1, calciner 3, and calciner 4 to demonstrate compliance with the limitations in MACT Subpart AA. The results of the tests indicated PCS exceeded the emission limitation of 0.14 mg/dcsm for calciners 1, 3 and 4. PCS and DAQ entered into a Special Order by Consent (SOC 2016-004), which was finalized on November 28, 2016, to address these violations. PCS and DAQ entered into a second SOC (SOC 2019-002) for resolution of all noncompliance issues associated with mercury emissions from the calciners. SOC 2019-002 was finalized on September 5, 2019.

- A Notice of Deficiency was issued on August 16, 2017 for failure to conduct a cylinder gas audit on sulfuric acid plant No 5 during the second quarter of 2017.

- A NOV/NRE was issued on June 24, 2019. On April 4, 5, and 15, 2019, PCS conducted emissions testing on calciner 4 to demonstrate compliance with the fluoride emission limitations in MACT Subpart AA. The results of the tests indicated PCS exceeded the emission limitation of 0.0009 pounds of fluoride / ton P_2O_5 wet feed. On October 9, 2019, the DAQ issued a civil penalty assessment in the amount of $4,218, including costs, for these violations. PCS paid the penalty in full on October 28, 2019.

7. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. No affected states or local agencies are within 50 miles of this facility.

8. Other Regulatory Considerations

- A P.E. seal was not required.
- A zoning consistency determination was not required for this permit modification.
- A permit fee of $988 was submitted as an electronic payment on September 3, 2020.

9. Recommendations

The permit application for PCS Phosphate Company, Inc. – Aurora in Aurora, Beaufort County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 04176T62.

ATTACHMENT 1

Permit Review for Part 1 Permit Application (0700071.19B)

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: November 22, 2019

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 04/30/2019
Compliance Code: 5 / In Physical Compliance

Facility Data

Applicant (Facility's Name): PCS Phosphate Company, Inc. - Aurora

Facility Address:
PCS Phosphate Company, Inc. - Aurora
1530 NC Highway 306 South
Aurora, NC 27806

SIC: 2874 / Phosphatic Fertilizers
NAICS: 325312 / Phosphatic Fertilizer Manufacturing

Facility Classification: Before: Title V **After:**
Fee Classification: Before: Title V **After:**

Permit Applicability (this application only)

SIP: 02D .0515, 02D .0521, 02D .0524, 02D .1100, 02D .1111, 02D .2100
02Q .0711
NSPS: Subpart IIII
NESHAP: Subpart ZZZZ
PSD: No
PSD Avoidance: No
NC Toxics: Yes
112(r): Yes
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Khalid Alnahdy Environmental Manager (252) 322-8288 1530 NC Hwy 306 South Aurora, NC 27806	Mark Johnson General Manager (252) 322-8195 1530 NC Highway 306 South Aurora, NC 27806	Chris Smith Senior Environmental Engineer (252) 322-8263 1530 NC Highway 306 South Aurora, NC 27806

Application Data

Application Number: 0700071.19B
Date Received: 09/18/2019
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 04176/T58
Existing Permit Issue Date: 05/08/2019
Existing Permit Expiration Date: 12/31/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2017	3139.72	407.90	155.90	527.70	900.13	251.19	154.84 [MIBK (methyl isobutyl ketone)]
2016	5193.68	468.70	175.97	620.80	900.83	267.26	174.59 [MIBK (methyl isobutyl ketone)]
2015	4403.00	636.80	128.90	742.80	915.03	224.03	127.50 [MIBK (methyl isobutyl ketone)]
2014	4072.49	742.55	126.84	780.03	945.44	224.02	125.15 [MIBK (methyl isobutyl ketone)]
2013	4802.37	763.29	115.25	793.18	902.23	211.10	113.55 [MIBK (methyl isobutyl ketone)]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 04176/T59
Permit Issue Date: 11/22/2019
Permit Expiration Date: 12/31/2022

1. Purpose of Application

PCS Phosphate Company, Inc. – Aurora (PCS) currently holds Title V Permit No. 04176T58 with an expiration date of December 31, 2022 for a phosphoric rock mining and phosphoric acid manufacturing facility located in Aurora, Beaufort County, North Carolina. Air Permit Application No. 0700071.19B was received on September 18, 2019 as a "Part 1" of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for construction of a hydrogen fluoride (HF) plant at the Aurora facility.

2. Application Chronology

September 18, 2019	Received permit application.
September 20, 2019	Sent acknowledgment letter indicating the application was complete.
October 8, 2019	Betty Gatano forwarded an e-mail to Joe Sullivan, consultant for the facility, questioning emissions of hydrochloric acid (HCl) associated with the proposed project.
October 10, 2019	Joe Sullivan indicated in an e-mail that HCl emissions were originally calculated assuming a control efficiency of 90%. PCS has since verified from the vendor that emissions of HCl are to be controlled to at least 98% control efficiency. Mr. Sullivan provided revised emission calculations.
October 11, 2019	Betty Gatano requested additional clarification on methodology in estimating emissions.
Throughout October	Joe Sullivan provided several e-mail responses to the request for clarification.
October 31, 2019	Nancy Jones of the Air Quality Analysis Branch (AQAB) of DAQ issued a memorandum approving the air modeling submitted in support of the permit application.
November 4, 2019	Betty Gatano observed errors in the emissions used in the air dispersion modeling and sent an e-mail to Joe Sullivan requesting clarification.
November 6, 2019	Joe Sullivan submitted revised air modeling addressing issues raised in the November 4, 2019 e-mail
November 8, 2019	Nancy Jones approved the revised air dispersion modeling via e-mail.
November 12, 2019	Draft permit and permit review forwarded for comment.
November 19, 2019	Received comments from Joe Sullivan.
November 20, 2019	Received comments from Mark Cuilla, Permitting Supervisor.
November 22, 2019	Permit issued.

3. Permit Modifications/Changes and TVEE Discussion

The table below list changes to the current permit under this modification.

Pages	Section	Description of Changes
Cover and throughout	--	Updated all dates and permit revision numbers.
--	Insignificant Activities	• Removed STF Complex Cooling Tower Fan Nos. 1 and 2 (ID No. I-426 and I-427). • Removed STF Plants 1 through 4 (ID Nos. 436-000, 437-000, 438-000, and 439-000). • Added Diesel-fired Chiller Emergency Genset (up to 160 ekW) (ID No. I-HF). • Added Diesel-fired Emergency Genset (up to 100 ekW) (ID No. I-MCC).
10 – 11	Section 1.5	• Removed STF Plants Nos. 1 and 2 (ID Nos. 436-001 and 437-001) and STF Plants Nos. 3 and 4 (ID Nos. 438-000 and 439-000). • Added HF Loading and Storage (ID Nos. GW01) with venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) in series with packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2). • Added HF Train 1 (ID No. GW03-A) with venturi scrubber (ID No. HFVS-1) in series with packed bed scrubber (ID No. HFPB-1) and venturi scrubber (ID No. 436-180) used only during shutdown. • Added HF Train 2 (ID No. GW03-B) with venturi scrubber (ID No. HFVS-2) in series with packed bed scrubber (ID No. HFPB-2) and venturi scrubber (ID No. 438-180) used only during shutdown. • Added additive storage (ID No. LS-1) with fabric filter (ID No. LSBF-1). • Added additive bin (ID No. LB-1) with fabric filter (ID No. LBF-1). • Added cooling tower (ID No. CT444). • Added footnote indicating emission sources (ID Nos. GW01, GW03-A, GW03-B, LS-1, LB-1, and CT444) and control devices (ID Nos. HFVS-1, HFVS-2, HFPB-1, HFPB-2, 436-180, 438-180, LSBF-1, and LBF-1) are listed as a 15A NCAC 02Q .0501(b)(2) modification.
93	2.1.5.H	Removed permit condition for STF Plants Nos. 1 and 2 (ID Nos. 436-001 and 437-001) and STF Plants Nos 3 and 4 (ID Nos. 438-000 and 439-000). This section is now "Reserved."
94 – 96	2.1.5.I	Added permit condition for new HF Production Process, which included the following regulations: • 15A NCAC 02D .0515 • 15A NCAC 02D .0521 • 15A NCAC 02D .1100 • 15A NCAC 02Q.0504 • NCGS-143-215.108 for testing one of the HF Trains.

Pages	Section	Description of Changes
134	2.2 A.2	Added permit condition for compliance with 15A NCAC 02D .2100, "Risk Management Program."
142	2.4	Added Non-Applicability to "NESHAP for Source Categories: Generic Maximum Achievable Control Technology Standards," 40 CFR Part 63 Subpart YY, for the HF Production Process (ID Nos. GW01, GW03-A, GW03-B, LS-1, LB-1, and CT444).
156- 158	Attachment 2 Air Toxics Table	• Removed STF Plant Nos. 1 & 2 Scrubber (EP424). • Removed STF Plant Nos. 3 & 4 Scrubber (EP425). • Added HF Loading and Storage/HF Train 1 (EP440). • Added HF Loading and Storage/HF Train 2 (EP441). • Added HF Train 1 – Shutdown scrubber (EP447). • Added HF Train 2 – Shutdown scrubber (EP448). • Updated emissions from tank farm fugitives (EP616). • Updated total emissions.

The following changes were made to the Title V Equipment Editor (TVEE) as part of this permit modification.

- Removed STF Plants Nos. 1 and 2 (ID Nos. 436-000 and 437-000) and STF Plants Nos. 3 and 4 (ID Nos. 438-000 and 439-000).
- Added HF loading and storage (ID No. GW01) controlled by venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2).
- Added HF Trains 1 and 2 (ID Nos. GW-03A and GW-03B) controlled by venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2).
- Added Additive Storage Silo (ID No. LS-1) controlled by bagfilter (ID No. LSBF-1).
- Added Additive Bin (ID No. LB-1) controlled by bagfilter (ID No. LBF-1).
- Added Cooling Tower (ID No. CT444).
- Added Diesel-fired Chiller Emergency Genset (up to 160 ekW) (ID No. I-HF) as an insignificant activity.
- Added Diesel-fired Emergency Genset (up to 100 ekW) (ID No. I-MCC) as an insignificant activity.
- Removed STF Complex Cooling Tower Fan Nos. 1 and 2 (ID No. I-426 and I-427).
- Removed STF Plants 1 through 4 (ID Nos. 436-000, 437-000, 438-000, and 439-000).

4. HF Production Process

The proposed project at PCS will use a byproduct of the phosphoric acid manufacturing process known as hydrofluorosilic acid (HFSA), sulfuric acid manufactured at the facility, and a small amount of non-hazardous additive to produce HF. In this proprietary process, HFSA decomposes in the presence of sulfuric acid (H_2SO_4), with the HF largely absorbed in the H_2SO_4. The HF will then be distilled in the HF trains (ID Nos. GWO3-A and GWO3-B) to produce anhydrous HF. All of the H_2SO_4 will be recycled back to the phosphoric acid plants. Because the H_2SO_4 is recycled, there is no net increase in sulfuric acid usage at the site. The silicon will be precipitated and removed in the filtration step, which also occurs in the HF trains. A block diagram of HF Production Process is provided in Figure 1.

The existing silica tetrafluoride (STF) manufacturing process is no longer in operation at PCS. Some equipment in the STF plants will be repurposed for HF production. The proposed HF Production Process will also require the addition of an additive truck loading station (ID No. HFAT-1), an additive storage silo (ID No. LS-1) with baghouse (ID No. LSBF-1), and a smaller additive storage bin (ID No. LB-1) with baghouse (ID No. LBF-1). The HFSA and H_2SO_4 will be combined in one of two identical HF trains, which will be each be controlled by new venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFB-1 and HFB-2). HF product will be stored in one of three pressure regulated storage tanks and loaded via railcars (ID No. GW01). HF storage and loadout will be controlled by the venturi scrubbers and packed bed scrubbers on the HF trains. The existing scrubbers in the STF manufacturing process (ID Nos. 436-180 and 438-180) will only be used for emergency venting and shutdown operations of the proposed HF Production Process.

Not shown in Figure 1 is a new cooling tower (ID No. CT444), which will provide cooling to the proposed HF Production Process, and an emergency chiller engine (ID No. I-HF) and motor control center emergency engine (ID No. I-MCC), which will be used in the event of a power outage.

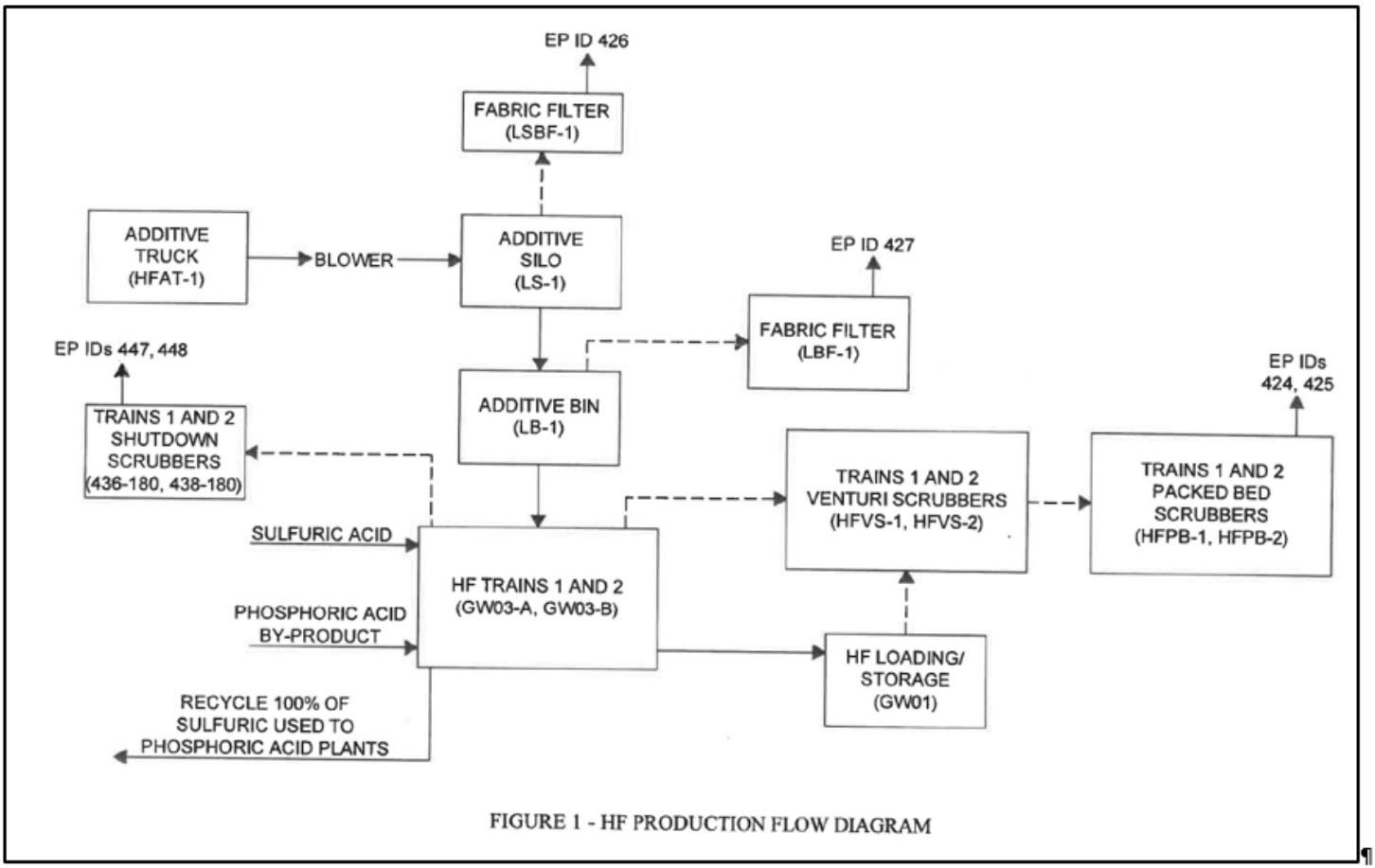

FIGURE 1 - HF PRODUCTION FLOW DIAGRAM

Emissions

PCS is a major source under Prevention of Significant Deterioration (PSD) regulations. Potential emissions associated with the proposed HF Production Process were compared with applicable PSD significant emission rates (SER) to determine if the modification was major under PSD. PCS

assumed no baseline emissions for any emission sources as a worst-case assumption. As shown in the Table 1 below, potential emissions of all PSD pollutants will be less than the SERs, and a PSD analysis is not required for this project.

Table 1: Comparison of Emissions from Proposed HF Production Process to SERs

Pollutant	Emission Sources							Total Emissions (tpy)	PSD SER (tpy)	Below SER
	HF Production Units (tpy)	HF Production Units (shutdown) (tpy)	Additive Silo (tpy)	Additive Storage Bin (tpy)	Cooling Tower (tpy)	Emergency Generator (tpy)	Emergency Chiller (tpy)			
PM	--	--	0.004	0.04	8.8	2.76E-02	3.31E.02	8.9	25	Yes
PM10	--	--	0.004	0.04	5.4	2.76E-02	3.31E.02	5.5	10	Yes
PM2.5	--	--	0.004	0.04	5.4	2.76E-02	3.31E.02	5.5	10	Yes
SO_2	9.1	--	--	--	--	5.09E-04	8.10E-04	9.1	40	Yes
NOx	--	--	--	--	--	0.32	0.44	0.8	40	Yes
CO	--	--	--	--	--	0.34	0.55	0.9	100	Yes
VOC	--	--	--	--	--	0.1	0.17	0.3	40	Yes
F	2	0.011	--	--	--			2.01	3	Yes

Notes:
Fluoride emissions (excluding HF) from HF Production (shutdown) were revised in an e-mail from Joe Sullivan dated 10/17/2019.

An overview of emission calculations associated with the proposed HF Production Process is provided below.

Emissions from HF Production Process
HF and F emissions from the proposed HF Production Process were estimated using an ASPEN-like chemical processing software that calculates mass flow through the HF process taking into account mass inputs, thermal balances, process conditions (temperature and pressure), thermodynamic properties of each substance, and reaction kinetics. The emissions were estimated on an uncontrolled basis with the control efficiency of the scrubber (99.8%) provided by the vendor. The proposed HF Product process has been built at five other locations worldwide, giving PCS a high confidence level that the emissions/material balance information provided by the vendor are accurate. DAQ will include requirements for a stack test in the permit to verify the emissions.

Sulfuric acid used in the HF production process evolves dilute dissolved sulfur dioxide (SO_2) emissions present in the acid. PCS assumed all the dissolved SO_2 was emitted as a worst-case assumption. To estimate emissions, six samples of sulfuric acid produced at PCS were analyzed by MECS Inc. - Clean Technologies during October 2018. SO_2 concentrations in the acid ranged from 4.9 to 6 ppm. Emissions of SO_2 were estimated as follows:

New Sulfuric Acid Consumption for Two HF Trains = 347,204 lb/hr
Maximum Dissolved SO_2 in H_2SO_4 = 6 ppm
Maximum Hourly SO_2 = 347,204 lb/hr * 6 /1E6 =2.08 lb/hr
Maximum Annual SO_2 = 2.08 lb/hr * 8,760 hrs/yr * 1 ton/2,000 lb = 9.12 tpy

Controlled and uncontrolled emission of SO_2 were conservatively assumed to be the same.

Emissions from HF Production Shutdown Scrubbers
The venturi scrubbers (ID Nos. 436-180 and 438-180) are currently used to control emissions from the STF manufacturing process, which is no longer in operation. PCS intends to repurpose these scrubbers for control of the HF Production Process during shutdown.

Emissions for the shutdown scenario provided in the permit application were revised. Originally, the emissions calculated using the ASPEN like model and a control efficiency for the shutdown scrubbers of 99.99987%. This control efficiency was developed during testing at the facility. However, the value was not approved by DAQ during a source test and did not seem reasonable for a venturi scrubber.

Because of the concern over the control efficiency, PCS provided a different approach for estimating emissions from the shutdown scrubbers. Emissions during shutdown were estimated based on engineering testing conducted at PCS. To simulate worst-case emissions during the test, the entire productive capacity of the STF plant was diverted to the scrubber. In other words, the plant was operating at near maximum production rate; however, instead of actually producing product, all of the venting from the process (including streams that are considered “product”) were directed to the scrubber. This approach is a conservative way to estimate an hourly emission rate from the process, since more emissions are directed to the scrubber than under any conceivable operating scenario, including shutdown. Total fluoride emissions as from this test were 0.00222 lb/hr, and emissions of HF and F (minus HF) were calculated as follows:

HF emissions = 0.00222 lb/hr * 0.513 (speciation fraction) * (20 lb/lb mol HF /19 lb/lbmol F = 0.00120 lb/hr
F = 0.0022 lb/hr * 0.487 (speciation fraction) = 0.00142 lb/hr

The speciation fractions for F (minus HF) and HF were based on historical data at PCS for similar systems.

The estimated emissions above represent emissions from one shutdown scrubber and were doubled in Table 1 above to represent both shutdown scrubbers.

Although these emissions were measured from the STF manufacturing operation, they are applicable to the proposed HF production Process. The previous STF process is actually integrated directly into the HF production process and provides the main raw material for HF. The existing STF process equipment associated with the HF process will run as it did before in the past, so the estimates provided before are an accurate representation of emissions during a shutdown.

Emissions from Additive Storage and Handling
PM emissions from the additive storage and handling were based on an outlet grain loading of 0.01 gr/acf for the baghouses. This loading factor is high for modern baghouses, such as these, controlling the additive dust. PM emissions for the additive storage and handling are calculated as specified in the following table.

Emission Source	Flow rate (scfm)	Emission factor (gr/acf)	Uncontrolled Emissions		Controlled Emissions	
			(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)
Additive Silo (ID No. LS-1)	10	0.01	0.086	0.38	8.6E-04	0.0037
Additive Bin (ID No. LB-1)	100	0.01	0.86	3.75	8.6E-03	0.037
Notes: • Precontrolled emissions were calculated assuming 99% control, which is reasonable for fabric filters. • Assume PM=PM10=PM2.5 • Assume 8,760 hours of operation per year						

Even though the precontrolled PM/PM10/PM2.5 emissions for these emission sources are less than five tons per year, these emission sources are not considered insignificant pursuant with 15A NCAC 02Q .0503(8). The assumed control efficiency of 99% was used to estimate the control efficiency, but realistically, a fabric filter can have a higher control efficiency. In fact, fabric filters can have efficiencies as up to 99.9%, according to EPA's Air Pollution Control Technology Fact Sheet for fabric filters. .[1] A higher control efficiency would result in higher before control emissions. Because the actual control efficiency is assumed and not known, the uncontrolled emissions may be higher than provided in the table above. These emission sources are not considered insignificant activities for this reason.

[1] Air Pollution Control Technology Fact Sheet: Fabric Filter - Pulse-Jet Cleaned Type (also referred to as Baghouses), EPA-452/F-03-025, retrieved from https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf

Emissions from Cooling Tower
PM emissions from the cooling tower were calculated from the following equation:

PM = Q x % drift/100 * TDS* density x 60 minutes/hour * 8760 hours/year

Where:
PM = Particulate matter emissions, lbs/yr
Q = Recirculation rate = 40,000 gallons per minute.
% Drift = Drift rate = 0.005%. This rate is typical for new cooling towers.
TDS = Total dissolved solids = 2,000 ppm. The 2,000 ppm value was estimated based on testing of the recirculating cooling tower water at the site in the past and has generally been established as the target discharge level for cooling towers at PCS.
Density = Density of Water = 8.34 lb/gal

PM = (40,000 gpm) * (0.005/100) * 2,000/1E6 *8.34 lb/gallons * 60 min/hr * 8760 hours/yr = 17,534 lb/yr
PM = 8.77 ton/yr

Emissions of PM2.5 and PM10 were estimated as 62% of total PM for a TDS of 2,000 ppm as presented in *Calculating Realistic PM10 Emissions from Cooling Towers*, Figure 1.[2] PM10 and PM2.5 emissions would remain below the SERs, even if emissions emission of PM10 and PM2.5 were assumed equal to PM emissions as a conservative approach.

Emissions from Emergency Engines
The engines are both subject to NSPS and emissions of PM, NOx, and CO were based on emission standards under NSPS Subpart IIII as specified in Part 89, Tier III emission standards. Emissions of sulfur dioxide was calculated, assuming a sulfur content in diesel fuel of 15 ppm (0.0015%) and VOC emissions were determined from the VOC emission factor in US EPA, AP-42, Section 3.3, Table 3.3-1 for diesel fuel. Operation was assumed to be 500 hours per year for emergency engines.

Regulations
The following regulations apply to the proposed HF Production Process.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The additive storage silo (ID No. LS-1) and additive bin (ID No. LB-1) are subject to 02D .0515. Allowable emissions of PM are calculated from the following equations:

  $E = 4.10 \times P^{0.67}$ for units with process weight rate less than 30 tons per hour

  where:
  E = allowable emission rate in pounds per hour calculated to three significant figures
  P = process weight rate in tons per hour

  Allowable emissions are calculated in the following table and compared to potential emissions from these sources. As shown in the table below, compliance is indicated.

[2] Greystone Environmental Consultants, Inc., Abstract No. 216, *Calculating Realistic PM10 Emissions from Cooling Towers*, retrieved from PM from Cooling Towers

Emission Source	Process rate (ton/hr)	Allowable Emissions (lb/hr)	Before control emissions (lb/hr)	Controlled Emissions (lb/hr)
LS-1	10.80	20.19	0.086	8.6E-04
LB-1	0.27	1.71	0.86	8.6E-03

PCS is required to conduct monthly external inspections of the control devices and ductwork and annual internal inspections of the control devices for the emission sources. Compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – The additive storage silo (ID No. LS-1) and additive bin (ID No. LB-1) are manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS will be required to establish normal conditions within the first 30 days of operation of these sources and will be required to conduct monthly visible emission observations to ensure compliance. Compliance is anticipated.

- 15A NCAC 02D .0524, New Source Performance Standards (NSPS) – The new emergency chiller engine (ID No. I-HF) and motor control center emergency engine (ID No. I-MCC) will be subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engine, 40 CFR 60 Subpart IIII (NSPS Subpart IIII). The engines must meet the certification emission standards for new nonroad compression ignition engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007. The emissions standards for these engines are provided in the table below.

Engine	Rated Power (kW)	Modeled Year	NMHC + NOx (g-kW/hr)	CO (g-kW/hr)	PM (g-kW/hr)
Emergency chiller engine (ID No. I-HF) (up to 160 ekW)	$130 \leq kW \leq 225$	2006 (Tier 3)	4.0	3.5	0.2
MCC emergency engine (ID No. I-MCC) (up to 100 ekW)	$75 \leq kW \leq 130$	2007 (Tier 3)	4.0	5.0	0.30

PCS must comply by purchasing an engine certified to the emission standards in 40 CFR 60.4205(b). Compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – Emissions sources associated with the HF Production Process are subject to 02D .1100. PCS submitted revised air dispersion modeling that demonstrated compliance with NC Air Toxics after this permit modification. A discussion of the revised air dispersion modeling is provided below in Section 5.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) – The new emergency chiller engine (ID No. I-HF) and motor control center emergency engine (ID No. I-MCC) will be subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. In accordance with 40 CFR 63.6530(c)(7), a new

compression ignition engine with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions meets the requirements of MACT Subpart ZZZZ by meeting the requirements of NSPS Subpart IIII for compression ignition engines. No further requirements apply for such engines under MACT Subpart ZZZZ. Compliance is anticipated.

- 15A NCAC 02D .2100, Risk Management Program – PCS is currently subject to Section 112(r) of the Clean Air Act requirements and 02D .2100 because it stores regulated substances in quantities above the thresholds in 112(r). The proposed HF Production Process will also be subject to 112(r) because HF in the process will be above the 1,000 pound threshold quantity for anhydrous HF. As such, PCS is required to prepare an updated Risk Management Plan (RMP) and submit it to the EPA no later than the date in which HF is first above the threshold quantity in the process. As indicated in the permit application, a RMP for the proposed project is being completed and will be submitted to the EPA prior to beginning production of HF at the facility. Compliance with 112(r) is anticipated.

  The following condition for 112(r) will be added to the permit as part of this permit modification.

  Section 2.2 A.2

  2. 15A NCAC 02D .2100, RISK MANAGEMENT PROGRAM

  a. The Permittee is subject to Section 112(r) of the Clean Air Act and shall comply with all applicable requirements in 15A NCAC 02D .2100, "Risk Management Program," as promulgated in 40 CFR Part 68.

  Recordkeeping/Reporting [15A NCAC 02Q .0508(f), 15A NCAC 02Q .0508(h)]

  b. The Permittee shall submit an update to the Risk Management Plan (RMP) to EPA pursuant to 40 CFR 68.150 no later than **December 6, 2023**, or as specified in 40 CFR 68.10.
  c. The Permittee shall revise and update the RMP submitted under 40 CFR 68.150 no later than **December 6, 2023** and at least every five years after that date or most recent update as required by 40 CFR 68.190(b)(2) through (b)(7), whichever is later.
  d. When the Permittee submits the Annual Compliance Certification required by General Condition P, the Permittee shall include a statement that the facility is in compliance with all requirements of 15A NCAC 02D .2100, including the registration and submission of the risk management plan.

  The date above (December 6, 2023) reflects the anniversary date based on the most recent submittal of the RMP. The RMP must be updated to account for the proposed HF Production Process.

- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operating Permit – PCS will be required to submit a Title V permit application pursuant to 15A NCAC 02Q .0504 (aka the "Part II" permit application) within 12 months of beginning operation of any the following emission sources:
  - HF Loading and storage (ID No. GW01) with venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2)
  - HF Trains 1 and 2 (ID Nos. GW03-A and GW03-B) with venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2)

- HF Trains 1 and 2 during shutdown (ID Nos. GW03-A and GW03-B) with venturi scrubbers (ID Nos. 436-180 and 438-180)
- Additive storage silo (ID No. LS-1) with fabric filter (ID No. LSBF-1)
- Additive bin (ID No. LB-1) with fabric filter (ID No. LBF-1)
- Cooling tower (ID No. CT444)

5. Revised Air Dispersion Modeling

PCS has previously conducted facility-wide air dispersion modeling for numerous toxic air pollutants (TAPs) to demonstrate compliance with 02D .1100. The proposed HF Production Process will result in an increase of emissions of HF, fluorides (excluding HF), and HCl. The increase in these TAPs constitutes a modification under 15A NCAC 02Q .0706(b), and consequently, the facility was required to update its facility-wide air dispersion modeling for these TAPs as part of this permit application.

Modeled impacts for HF, fluorides (excluding HF), and HCl and the associated averaging periods are shown in the table below as a percentage of the applicable acceptable ambient level (AAL). The air dispersion modeling was reviewed by Nancy Jones of the AQAB, and the results were approved in a memorandum dated October 31, 2019. Discrepancies were noted in the emissions associated with the air modeling, and PCS submitted revised air modeling on November 6, 2019. Nancy Jones approved the air dispersion modeling results in e-mail dated November 6, 2019. As shown in the table below, the modeling analysis demonstrated compliance with NC Air Toxics on a source-by-source basis.

TAP	Averaging Period	Max. Conc. ($\mu g/m^3$)	AAL ($\mu g/m^3$)	% of AAL
Fluoride	24-hour	11.9	16	74 %
	1-hour	49.5	250	20 %
Hydrogen Fluoride	24-hour	11.5	30	38 %
	1-hour	62.1	250	25 %
Hydrogen Chloride	1-hour	245	700	35 %

Notes:

- Emissions of F and HF from the proposed HF production process used in the air dispersion modeling were based on a control efficiency of 99.7% and are higher than presented above in Table 1. The vendor subsequently indicated a control efficiency of 99.8% was achievable, and this control efficiency was used to calculate emissions in Table 1. The emissions use in the air dispersion modeling represent essentially an "optimized" emission rate. Even with optimized emission rates, F emissions remain below the SER under PSD.
- Emissions of HCl from the proposed HF production process used in the air dispersion modeling were based on a control efficiency of 90% and are higher than presented above in Table 1. The vendor subsequently indicated a control efficiency of 98% was achievable, and this control efficiency was used to calculate emissions in Table 1. The emissions used in the air dispersion modeling represent essentially an "optimized" emission rate.

Attachment 1 to this document contains the updated air toxics table that includes emissions sources added as part of this modification and emissions sources subject to MACT standards. Note, the

updated air toxics table included in PCS's air permit does not include emissions sources subject to MACT.

6. NSPS, NESHAPS/MACT, NSR/PSD, 112(r), CAM

NSPS

PCS has numerous emission sources subject to various New Source Performance Standards (NSPS). As noted under Section 4, the new emergency chiller engine (ID No. I-HF) and motor control center emergency engine (ID No. I-MCC) will be subject to NSPS Subpart IIII. PCS must comply by purchasing an engine certified to the emission standards in 40 CFR 60.4205(b). Compliance is anticipated.

NESHAPS/MACT

PCS is a major source of hazardous air pollutants (HAPs) and has numerous emission sources subject to various MACT standards. Applicability to MACTs related to the proposed HF Production Process are discussed in this section.

MACT Subpart ZZZZ

As noted in Section 4 above, the new emergency chiller engine (ID No. I-HF) and motor control center emergency engine (ID No. I-MCC) will be subject to MACT Subpart ZZZZ. Compliance is anticipated. PCS meets the requirements of MACT Subpart ZZZZ for these engines by meeting the requirements of NSPS Subpart IIII. Compliance is anticipated.

MACT Subpart YY

Regulations for several source categories are provided under the "NESHAP for Source Categories: Generic MACT Standards," 40 CFR Part 63 Subpart YY (MACT Subpart YY). HF production from calcium chloride and sulfuric acid is among the source categories included in MACT Subpart YY. Because the proposed project at PCS will use HFSA and not calcium chloride to produce HF, the DAQ has determined the proposed project will not be subject to MACT Subpart YY. The following condition for non-applicability to MACT Subpart YY will be added to Section 2.4 of the permit.

B. 15A NCAC 02D .1111, Maximum Achievable Control Technology, for "NESHAP for Source Categories: Generic Maximum Achievable Control Technology Standards," 40 CFR Part 63 Subpart YY, is applicable to hydrogen fluoride (HF) Production in which HF is produced by reacting calcium fluoride with sulfuric acid. Because the Permittee produces HF by reacting hydrofluorosilicic acid (a byproduct of phosphoric acid manufacturing) with sulfuric acid, the DAQ has determined 40 CFR Part 63 Subpart YY is not applicable to the HF Production Process **(ID Nos. GW01, GW03-A, GW03-B, LS-1, LB-1, and CT444)** at the facility. [40 CFR 63.1100(a) and 40 CFR 63.1103(c)(2)]

PSD

PCS is a major facility under PSD. The prosed HF Production Process is not subject to a PSD review as noted previously in Section 4. This modification does not affect the PSD status of this facility nor does it affect any existing BACT limits. Continued compliance is anticipated.

112(r)

PCS is subject to Section 112(r) of the Clean Air Act requirements because it stores regulated substances in quantities above the thresholds in 112(r). As discussed under Section 4, the proposed HF Production Process will be subject to 112(r), and PCS will submit a revised RMP to the EPA no later than the date in which HF is above the threshold quantity in the process (i.e., 1,000 lbs of anhydrous HF). A permit condition for 112(r) will be added to the permit as part of this permit modification. Continued compliance with 112(r) is anticipated.

Compliance Assurance Monitoring (CAM)

40 CFR Part 64 is applicable to any pollutant-specific emission unit, if the following three conditions are met:

- the unit is subject to any (non-exempt: e.g. pre November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- the unit's precontrol potential emission rate exceeds either 100 tons per year (for criteria pollutants) or 10/25 tons per year (for HAPs).

Several emission sources associated with this project are controlled via add on control devices and are potentially subject to CAM. Precontrolled and controlled emissions from these sources are provided in the table below. Because none of these emission sources are large pollutant-specific emissions units (PSEUs) as defined in CAM, applicability to CAM for these sources should be addressed as part of the TV permit renewal application rather than at this time.

Emission Source	Control Device	Pollutant	Precontrolled Emissions (ton/yr)	Controlled Emissions (ton/yr)
HF Production Units (ID Nos. GW03-A and GW03-B)	Venturi Scrubbers (ID Nos. HFS-1 and HFVS-2) Packed Bed Scrubbers (ID Nos. HFPB-1 and HFPB-2)	HF	14.9	0.03
		Total F (excluding HF)	1,010	2.0
		HCl	459	9.1
HF Production Units (shutdown) (ID Nos. GW03-A and GW03-B)	Shutdown Scrubbers (ID Nos. 436-180 and 438-180)	HF	6.22	0.0124
		Total F (excluding HF)	5.26	0.0105
HF Storage/Loading (ID No. GW01)	Venturi Scrubbers (ID Nos. HFS-1 and HFVS-2) Packed Bed Scrubbers (ID Nos. HFPB-1 and HFPB-2)	HF	52.1	0.10
Additive Silo (ID No. I-LS-1)	Fabric Filter (DI No. LSBF-1)	PM/PM10	0.38	3.75E-03
Additive Bin (ID No. I- LB-1)	Fabric Filter (ID No. LBF-1)	PM/PM10	3.75	3.75E-02

Notes:

- HF and F emissions (excluding HF) from HF Production (shutdown) were revised in an e-mail from Joe Sullivan dated 10/17/2019.
- The before control emissions for the shutdown scrubbers (ID Nos. 436-180 and 438-180) was calculated using a control efficiency of 99.8% rather than 99.99987% as provided in the permit application.

7. Facility Emissions Review

Facility-wide potential emissions after this modification are provided in the table below. Actual emissions from PCS from 2013 to 2017 are reported in the header of this permit review.

Pollutant	TV Potential Emissions (tons/yr)
PM (TSP)	3,457
PM10	2,025
PM2.5	1,400
CO	1,262
NO_x	10,069
SO_2	8,710
VOC	205
GHG	752,972

8. Compliance Status

Robert Bright of the WaRO completed the most recent full compliance evaluation (FCE) for PCS on April 30, 2019. The facility appeared to operate in compliance during the FCE.

The five-year compliance history for PCS is provided below:

- A Notice of Violation/Notice of Recommendation for Enforcement (NOV/NRE) was issued on June 24, 2019. On April 4, 5, and 15, 2019, PCS conducted emissions testing on calciner 4 to demonstrate compliance with the fluoride emission limitations in MACT Subpart AA. The results of the tests indicated PCS exceeded the emission limitation of 0.0009 lbs fluoride / ton P_2O_5 wet feed. The DAQ intends to issue a civil penalty for this violation.
- PCS and DAQ entered into a second Special Order of Consent (SOC) (SOC 2019-002) for resolution of all noncompliance issues associated with mercury emissions from the calciners. SOC 2019-002 was finalized on September 5, 2019.
- A NOV/NRE was issued on June 14, 2016. From January 30 through February 11, 2016, PCS conducted mercury emissions testing for calciner 1, calciner 3, and calciner 4 to demonstrate compliance with the limitations in MACT Subpart AA. The results of the tests indicated PCS exceeded the emission limitation of 0.14 mg/dcsm for calciners 1, 3 and 4. PCS and DAQ entered into a SOC (SOC 2016-004), which was finalized on November 28, 2016, to address these violations.
- A Notice of Deficiency was issued on August 16, 2017 for failure to conduct a cylinder gas audit on sulfuric acid plant No 5 during the second quarter of 2017.

9. Public Notice/EPA and Affected State(s) Review

No public notice is required for a "Part 1" application of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2).

10. Other Regulatory Considerations

- A P.E. seal was required and was included in the permit application.
- A zoning consistency determination is required for this permit modification. However, the area in which PCS is located does not have zoning. As such, a notice was placed in the local paper, and a sign has been placed in front of the facility as required pursuant to 15A NCAC 02Q .0113. The facility provided an affidavit and proof of publication of the legal notice as part of the permit application.
- A permit fee of $970 was submitted with the permit application.

11. Recommendations

The permit application for PCS Phosphate Company, Inc. – Aurora in Aurora, Beaufort County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 04176T59.

Source Name (Source Number)	Ammonia (lb/hr)	Arsenic (lb/yr)	Benzene (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Carbon Disulfide (lb/day)	Chromium VI (lb/day)	Fluoride (no HF) (lb/hr)	Fluoride (no HF) (lb/day)	Formaldehyde (lb/hr)	Hydrogen Chloride (lb/hr)	Hydrogen Fluoride (lb/hr)	Hydrogen Fluoride (lb/day)	Hydrogen Sulfide (lb/hr)	Manganese (lb/day)	Mercury (lb/day)	MIBK (lb/hr)	MIBK (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
SA Plant #5 (103)		3.11E-01		1.49E+00	7.11E-02		1.19E-04			8.70E-01					1.51E+01	9.06E-02			2.84E-01	1.65E+01	3.96E+02
SA Plant # 6 (104)		3.11E-01		1.49E+00	7.11E-02		1.19E-04			8.70E-01					1.51E+01	9.06E-02			2.84E-01	1.74E+01	4.18E+02
SA Plant #7 (105)		3.11E-01		1.49E+00	7.11E-02		1.19E-04			8.70E-01					1.51E+01	9.06E-02			2.84E-01	1.69E+01	4.05E+02
FW Auxiliary Boiler (110)		5.82E+00		2.78E+01	1.33E+00		1.44E-02			4.39E+00					1.39E+01	8.34E-02			2.61E-01	6.76E-02	1.77E+00
SA Plant #5 fugitives (192)																				2.40E-03	6.26E-02
SA Plant #6 fugitives (193)																				2.40E-03	6.26E-02
SA Plant #7 fugitives (194)																				2.40E-03	6.26E-02
Calciner #1 (201)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Calciner #2 (202)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Calciner #3 (203)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Calciner #4 (204)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Calciner #5 (205)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Calciner #6 (206)		1.11E+00	9.33E+02	9.14E-01	1.16E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	2.29E+00	1.26E+01	5.14E-02	1.23E+00		2.67E+00	1.90E+00			3.44E-01	2.68E-01	3.74E+00
Rock Dryer (210)		3.56E+00	4.59E+01	1.58E+02	5.12E+00		1.30E+01	1.67E-01	4.01+00	3.94E+00		2.17E-02	5.22E-01		4.70E+02	3.11E-03			1.96E+01	3.31E-01	8.33E+00
Coal Pulverizer/Dryer (215)		2.22E-02	1.87E+01	1.83E-02	2.33E-01	3.03E+00	2.90E-04	7.38E-04	1.77E-02	4.57E-02	2.51E-01	1.03E-03	2.47E-02		5.35E-02	3.79E-02			6.87E-03	5.37E-03	7.47E-02
Calcine CTS (220)		1.12E-01		6.85E-02	4.57E-02			4.06E-03	9.73E-02						6.61E-02	1.50E-06			3.09E-03		
Calcine CTS (221)		3.54E-01		2.16E-01	1.44E-01			1.28E-02	3.07E-01						2.08E-01	4.72E-06			9.76E-03		
Storage Silo Baghouses (222)		2.59E-01		1.58E-01	1.06E-01			9.36E-03	2.25E-01						1.53E-01	3.46E-06			7.14E-03		
Calcined/Dried Rock Transfer (223)		6.81E-01		4.16E-01	2.78E-01			2.46E-02	5.92E-01						4.02E-01	9.10E-06			1.88E-02		
Mill Concentrator Fugitives (290)								8.70E-04	2.09E-02			6.53E-03	1.57E-01	1.00E+01							
Fugitives from Calciner (291)		6.81E-01		4.16E-01	2.78E-01			2.46E-02	5.92E-01						4.02E-01	9.10E-06			1.88E-02		
DAP No. 3 Plant (302)	1.03E+02	5.77E+00	1.86E+01	3.93E+01	1.29E+01		5.27E+00	1.70E+00	4.08E+01	1.60E+00		1.17E+00	2.81E+01		1.01E+02	1.89E-01			7.39E+01	1.35E+00	3.39E+01
DAP No. 2 Plant (303)	4.91E+01	2.73E+01	1.17E+01	1.71E+02	9.30E+01		3.30E+00	3.48E+00	8.34E+01	1.00E+00		2.40E+00	5.75E+01		1.51E+02	9.09E-02			1.42E+02	8.43E-01	2.12E+01
APP Plant Line 1 (304)	7.9E-01							5.15E-02	1.24E+00			4.93E-02	1.18E+00								
No. 2 and No. 3 Filter Presses (305)								3.17E-02	7.61E-01			3.04E-02	7.30E-01								
APP Plant Line 2 (306)	7.90E-01							5.15E-02	1.24E+00			4.93E-02	1.18E+00								
GTSP Rock Silo (310)		8.88E-01		5.43E-01	3.62E-01			3.21E-02	7.71E-01						5.24E-01	1.19E-05			2.45E-02		
Pilot Plant #2 (316)								1.80E-03	4.32E-02			7.00E-04	1.68E-02	1.00E+01							
Tech Services Pilot Plant (317)	6.25E-02																				
Tech Services Pilot Plant Baghouse (318)		5.35E-01		3.27E-01	2.18E-01			1.93E-02	4.64E-01						3.15E-01	7.14E-06			1.48E-02		
SPA #1 (330)								1.96E-01	4.71E+00			1.88E-01	4.51E+00								
SPA #2 (331)								1.96E-01	4.71E+00			1.88E-01	4.51E+00								

Source Name (Source Number)	Ammonia (lb/hr)	Arsenic (lb/yr)	Benzene (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Carbon Disulfide (lb/day)	Chromium VI (lb/day)	Fluoride (no HF) (lb/hr)	Fluoride (no HF) (lb/day)	Formaldehyde (lb/hr)	Hydrogen Chloride (lb/hr)	Hydrogen Fluoride (lb/hr)	Hydrogen Fluoride (lb/day)	Hydrogen Sulfide (lb/hr)	Manganese (lb/day)	Mercury (lb/day)	MIBK (lb/hr)	MIBK (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
SPA #3/#4 (332)								2.18E-01	5.24E+00			2.09E-01	5.02E+00								
SPA #5 (333)								1.10E-01	2.64E+00			1.06E-01	2.54E+00								
SPA Filter Press No. 1 (335)								7.87E-04	1.89E-02			7.52E-04	1.81E-02								
Repulp Tank #2/#3 (336)								7.87E-04	1.89E-02			7.53E-04	1.81E-02								
Additive storage silo and No. 1 and No. 2 additive weigh feed hoppers (340)		6.04E-02		3.69E-02	2.46E-02										3.56E-02	8.06E-07			1.67E-03		
Additive Storage Silo (341)		1.70E+00		1.04E+00	6.93E-01										1.00E+00	2.27E-05			4.69E-02		
Fertilizer Warehouses Fugitives (390)	1.68E-01							3.35E-01	8.05E+00			3.23E-01	7.75E+00								
Fertilizer Plant Fugitives (391)	7.50E-02							3.35E-01	8.04E+00			2.31E-01	5.53E+00								
Fertilizer Plant Fugitives (392)	7.50E-02							3.35E-01	8.04E+00			2.31E-01	5.53E+00								
PA #1 Scrubber Stack (401)		1.94E-01		1.41E-01	4.87E-01			4.41E-01	1.06E+01			4.22E-01	1.01E+01	3.56E+02	2.11E+00	5.02E-04			1.29E-01		
PA #1 Vacuum Pump Stack (402)								2.47E-03	5.93E-02			2.36E-03	5.67E-02	2.48E+00							
PA #1/#2 Belt Filter Scrubber Stack (403)		9.53E-03		4.25E-02	1.09E-01			2.96E-01	7.10E+00			2.83E-01	6.79E+00	3.50E+00	1.02E+00	2.99E-04			8.58E-02		
PA #2 Crossflow Scrubber (404)		1.94E-01		1.41E-01	4.87E-01			4.93E-01	1.18E+01			4.72E-01	1.13E+01	3.58E+02	2.11E+00	5.02E-04			1.29E-01		
PA #2 Vacuum Pump Stack (405)								2.47E-03	5.93E-02			2.36E-03	5.67E-02	4.22E+00							
PA #3 Crossflow Scrubber (406)		3.11E-01		1.18E-01	3.99E-01			6.38E-01	1.53E+01			6.10E-01	1.46E+01	1.46E+01	1.51E+00	5.41E-04			1.71E-01		
PA #2 Vacuum Pump Stack (407)								2.90E-03	6.95E-02			2.77E-03	6.65E-02	6.00E-02							
PA #3/#4 Belt Filter Scrubber Stack (408)		1.09E-01		7.16E-02	1.00E-01			2.96E-01	7.11E+00			2.83E-01	6.80E+00	2.00E-01	1.64E+00	2.39E-04			1.03E-01		
PA #4 Crossflow Scrubber (409)		3.11E-01		1.18E-01	3.99E-01			5.07E-01	1.22E+01			4.85E-01	1.16E+01	1.46E+01	1.51E+00	5.41E-04			1.71E-01		
PA #4 Vacuum Pump Stack (410)								5.07E-03	1.22E-01			4.85E-03	1.16E-01	5.00E-02							
Tanks 020, 030, 031, 040 (421)								8.29E-02	1.99E+00			5.71E-02	1.37E+00								
Tanks 32-34,60 and GAST (422)								4.98E-02	1.19E+00			3.43E-02	8.24E-01								
PA Tank farm Clarifier Scrubber (423)								4.98E-02	1.19E+00			3.43E-02	8.24E-01								
PA #1 Baghouse (430)		3.88E-01		2.37E-01	1.58E-01			1.78E-02	4.27E-01						2.29E-01	5.18E-06			1.07E-02		
PA #2 Baghouse (431)		3.88E-01		2.37E-01	1.58E-01			1.78E-02	4.27E-01						2.29E-01	5.18E-06			1.07E-02		
PA #4 Baghouse (433)		3.88E-01		2.37E-01	1.58E-01			1.78E-02	4.27E-01						2.29E-01	5.18E-06			1.07E-02		
PA Storage Silo #1 (434)		3.10E-01		1.90E-01	1.27E-01			1.46E-02	3.50E-01						1.83E-01	4.15E-06			8.57E-03		
PA Storage Silo #2 (435)		1.05E-01		1.27E-01	8.45E-02			7.49E-03	1.80E-01						1.22E-01	2.76E-06			5.71E-03		
Calcined Rock CTS Baghouse (437)		2.33E-01		1.42E-01	9.50E-02			1.10E-02	2.64E-01						1.37E-01	3.11E-06			6.43E-03		
HF loading and Storage/HF Train 1 (440)								3.35E-01	8.04E+00		5.24E+00	2.02E-02	4.85E-01								
HF loading and Storage/HF Train 2 (441)								3.35E-01	8.04E+00		5.24E+00	2.02E-02	4.85E-01								
HF Train 1 – Shutdown scrubber (447)								1.42E-03	3.40E-02			1.20E-03	2.88E-02								

Source Name (Source Number)	Ammonia (lb/hr)	Arsenic (lb/yr)	Benzene (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Carbon Disulfide (lb/day)	Chromium VI (lb/day)	Fluoride (no HF) (lb/hr)	Fluoride (no HF) (lb/day)	Formaldehyde (lb/hr)	Hydrogen Chloride (lb/hr)	Hydrogen Fluoride (lb/hr)	Hydrogen Fluoride (lb/day)	Hydrogen Sulfide (lb/hr)	Manganese (lb/day)	Mercury (lb/day)	MIBK (lb/hr)	MIBK (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
HF Train 2 – Shutdown scrubber (448)								1.42E-03	3.40E-02			1.20E-03	2.88E-02								
Defluorinated Acid Scrubber Stack (450)								5.73E-03	1.38E-01			1.43E-03	3.44E-02								
PA Cooling Tower fan #1 (461)								1.09E-03	2.62E-02			1.04E-03	2.51E-02	2.67E+00							
PA Cooling Tower fan #2 (462)								1.09E-03	2.62E-02			1.04E-03	2.51E-02	2.67E+00							
PA Plant Fugitives (491)								1.37E-01	3.29E+00			1.31E-01	3.15E+00	1.50E+01							
PA Tank Farm Fugitives (492)								1.37E-02	3.29E-01			1.31E-02	3.15E-01	1.50E+01							
Scrubber Stack (493)								2.41E-01	5.79E+00			2.31E-01	5.54E+00								
Filter Press No. 1 and Filter Press No. 2 building vent No. 1 (495)								2.12E-02	5.09E-01			2.04E-02	4.90E-01								
Filter Press No. 1 and Filter Press No. 2 building vent No. 2 (497)																					
PAP No. 1 Chiller Stack (501)	1.30E-05							1.18E-05	2.83E-04			1.13E-05	2.70E-04	1.00E+00			1.33E+02	1.35E+03			
PAP Scrubber (502)		6.25E-03		7.17E-03	1.85E-02			9.52E-02	2.28E+00			9.52E-02	2.28E+00	1.00E+00	1.09E-01				7.63E-03		
PAP No. 2 Chiller Stack (503)	2.60E-05							7.77E-03	1.86E-01			7.43E-03	1.78E-01	1.00E+00			1.30E+02	1.32E+03			
PAP No. 2 Scrubber Stack (504)		6.25E-03		7.17E-03	1.85E-02			3.52E-02	8.44E-01			3.36E-02	8.07E-01	1.00E+00	1.09E-01				7.63E-03		
PAP No.2 Train No 4 Scrubber stack (506)		6.25E-03		7.17E-03	1.85E-02			3.52E-02	8.44E-01			3.36E-02	8.07E-01	1.00E+00	1.09E-01				7.63E-03		
PAP No. 1 Cooling Tower 1 - Fan No. 1 (510)								7.52E-02	1.80E+00			7.52E-02	1.80E+00				3.61E+01	3.66E+02			
PAP No. 1 Cooling Tower 1 - Fan No. 2 (511)								7.52E-02	1.80E+00			7.52E-02	1.80E+00								
PAP No. 1 Cooling Tower 2 - Fan No. 1 (512)												7.52E-02	1.80E+00				3.61E+01	3.66E+02			
PAP No. 1 Cooling Tower 2 - Fan No. 2 (513)												7.52E-02	1.80E+00								
PAP No. 2 Cooling Tower 1 - Fan No. 1 (514)								1.84E-02	4.42E-01			1.76E-02	4.22E-01				3.99E+01	4.05E+02			
PAP No. 2 Cooling Tower 1 - Fan No. 2 (515)								1.84E-02	4.42E-01			1.76E-02	4.22E-01								
PAP No. 2 Cooling Tower 2 - Fan No. 1 (516)												7.52E-02	1.80E+00				3.99E+01	4.05E+02			
PAP No. 2 Cooling Tower 2 - Fan No. 2 (517)												7.52E-02	1.80E+00								
PAP No. 2 Cooling Tower 3 - Fan No. 1 (518)								1.84E-02	4.42E-01			1.76E-02	4.22E-01				3.99E+01	4.05E+02			
PAP No. 2 Cooling Tower 3 - Fan No. 2 (519)								1.84E-02	4.42E-01			1.76E-02	4.22E-01								
PAP No. 2 Cooling Tower 4 - Fan No. 1 (520)												7.52E-02	1.80E+00				3.99E+01	4.05E+02			
PAP No. 2 Cooling Tower 4 - Fan No. 2 (521)												7.52E-02	1.80E+00								
PAP No. 1 Plant and Tank Farm Fugitives (590/591)	5.30E-02							1.58E-02	3.79E-01			1.51E-02	3.62E-01				1.33E+02	1.35E+03			
PAP No. 2 Train No. 3 Plant and Tank Farm Fugitives (592/593)	5.30E-02							1.58E-02	3.79E-01			1.51E-02	3.62E-01				1.33E+02	1.35E+03			
PAP loading no. 1 (594)								3.38E-06	8.11E-05												

Source Name (Source Number)	Ammonia (lb/hr)	Arsenic (lb/yr)	Benzene (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Carbon Disulfide (lb/day)	Chromium VI (lb/day)	Fluoride (no HF) (lb/hr)	Fluoride (no HF) (lb/day)	Formaldehyde (lb/hr)	Hydrogen Chloride (lb/hr)	Hydrogen Fluoride (lb/hr)	Hydrogen Fluoride (lb/day)	Hydrogen Sulfide (lb/hr)	Manganese (lb/day)	Mercury (lb/day)	MIBK (lb/hr)	MIBK (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
PAP loading no. 2 (595)								3.38E-06	8.11E-05												
PAP loading no. 3 (596)								3.38E-06	8.11E-05												
PAP loading no. 4 (597)								3.38E-06	8.11E-05												
Ammonia Railroad Unload (601)	2.27E+00																				
Ammonia Railroad Unload (602)	2.27E+00																				
Ammonia Railroad Unload (603)	2.27E+00																				
Ammonia Storage Tanks (604)	2.50E+00																				
Ammonia Storage Tanks (605)	2.50E+00																				
Ammonia Truck Unloading (NH3TRK1)	7.25E-01																				
Ammonia Truck Unloading (NH3TRK2)	7.25E-01																				
Railcar Sulfur Unloading (610)														1.21E+00							
Railcar Sulfur Unloading (611)														1.21E+00							
Railcar Sulfur Unloading (612)														1.21E+00							
Railcar Sulfur Unloading (613)														1.21E+00							
Railcar Sulfur Unloading (614)														1.21E+00							
Railcar Wash Station No. 1 (615)								1.60E-01	3.84E+00			2.12E-02	5.09E-01								
Tank Farm Fugitives (616)	1.38E-01							1.27E-01	3.05E+00			5.96E-02	1.43E+00	1.00E+00			2.16E+02	2.19E+03			
Railcar Wash Station No. 2 (617)								1.60E-02	3.84E-01			2.12E-03	5.09E-02	1.00E+00							
CTS - Grinder Rock Loadout (650)		3.21E-02		2.08E-02	1.76E-02			1.29E-03	3.10E-02						1.34E-02	4.84E-07			9.35E-04		
CTS - Grinder Rock Loadout (651)		3.21E-02		2.08E-02	1.76E-02			1.29E-03	3.10E-02						1.34E-02	4.84E-07			9.35E-04		
Rock Loadout Transfer Station (652)		2.03E+00		1.32E+00	1.11E+00			8.17E-02	1.96E+00						8.49E-01	3.06E-05			5.92E-02		
CTS - Phos Rock Loadout (653)		2.00E+00		1.30E+00	1.10E+00			2.81E-02	6.75E-01						8.36E-01	3.02E-05			5.83E-02		
Chute-Barge Rock Loadout (655)		2.00E+00		1.30E+00	1.10E+00			2.81E-02	6.75E-01						8.36E-01	3.02E-05			5.83E-02		
Chute-Barge Rock Loadout (656)		4.83E+00		3.14E+00	2.64E+00			6.80E-02	1.63E+00						2.02E+00	7.28E-05			1.41E-01		
Truck loading (660)								2.57E-02	6.17E-01			7.39E-03	1.77E-01								
North rail loading (661)								2.57E-02	6.17E-01			7.39E-03	1.77E-01								
Center rail loading (662)								2.57E-02	6.17E-01			7.39E-03	1.77E-01								
South rail loading (663)								8.69E-03	2.09E-01			1.01E-02	2.42E-01								
APP loading no. 1 (664)								3.38E-06	8.11E-05												
APP loading no. 2 (665)								3.38E-06	8.11E-05												
APP loading no. 3 (666)								3.38E-06	8.11E-05												

Source Name (Source Number)	Ammonia (lb/hr)	Arsenic (lb/yr)	Benzene (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Carbon Disulfide (lb/day)	Chromium VI (lb/day)	Fluoride (no HF) (lb/hr)	Fluoride (no HF) (lb/day)	Formaldehyde (lb/hr)	Hydrogen Chloride (lb/hr)	Hydrogen Fluoride (lb/hr)	Hydrogen Fluoride (lb/day)	Hydrogen Sulfide (lb/hr)	Manganese (lb/day)	Mercury (lb/day)	MIBK (lb/hr)	MIBK (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
HFSA loading (667)								8.69E-03	2.09E-01			1.01E-02	2.42E-01								
Phosphoric acid rail loading station (668)								2.57E-02	6.16E-01			7.39E-03	1.77E-01								
Barge slip 1 loading (672)								4.40E-02	1.06E+00			1.27E-02	3.04E-01								
Barge slip 2 loading (673)								8.69E-03	2.09E-01			1.73E-02	4.15E-01								
DFP Kiln (701)		1.27E+02	2.92E+03	3.11E+01	5.80E+02	4.74E+02	1.19E-01	7.94E-01	1.91E+01	2.21E+00	2.21E-01	9.44E-01	2.27E+01		6.11E+00	4.61E-02			4.19E-01	6.57E+00	1.58E+02
Plenum dust handling (713)		2.42E-01		2.03E-01	1.79E-01			1.13E-02	2.71E-01						1.91E-01	5.87E-06			7.69E-03		
Phosphate rock recycle (714)		6.47E-02			9.90E-02			3.86E-04	9.26E-03						6.86E-01	2.22E-06			1.61E-02		
Recycle Bin receiving (715)		2.59E-02			3.96E-02			3.43E-04	8.23E-03						2.76E-01	8.93E-07			6.46E-03		
Product handling (717)		7.90E-02			1.21E-01			2.63E-0.3	6.31E-02						8.36E-01	2.71E-06			1.96E-02		
Product loadout (718)		2.16E-01			3.30E-01			8.10E-04	1.94E-02						2.29E+00	7.40E-06			5.36E-02		
Product Shipping (754)		6.93E-02			1.06E-01			1.32E-03	3.17E-02						7.39E-01	2.39E-06			1.73E-02		
Mine Pit Diesel Generator (801)			8.54E+01																		
Cooling Pond 1 (910)								7.96E-01	1.91E+01			6.44E+00	1.54+02								
Cooling Pond 2 (914)								2.07E-01	4.97E+00			1.67E+00	\4.01E+01								
Cooling Pond 1A (922)								3.68E-01	8.83E+00			2.98E+00	7.15E+01								
Gypsum Stack Pond #5(950A)								6.37E-01	1.53E+01			5.16E+00	1.24E+02								
Gypsum Stack Pond #6 (954A)								5.24E-01	1.26E+01			4.24E+00	1.02E+02								
Gypsum Stack Pond #4 (955A)								6.126E-01	1.48E+01			4.98E+00	1.20E+02								
Mill Pond (957)								8.14E-03	1.95E-01			6.59E-02	1.58E+00								
Recycle Lake (958)								2.89E-01	6.94E+00			2.34E+00	5.62E+01								
Concentrate Pile (990)		1.74E-02		1.13E-02	9.51E-03			6.97E-04	1.67E-02						7.25E-03	2.61E-07			5.05E-04		
Facility Total	**167.56**	**196.93**	**8698**	**449.53**	**774.23**	**1383.03**	**21.79**	**16.97**	**403.44**	**29.54**	**86.55**	**38.50**	**730.09**	**822.10**	**827.44**	**12.13**	**976.8**	**9912**	**240.55**	**61.58**	**1464.9**

Notes:
Yellow highlights = NESHAP/MACT emission sources
Blue highlights = Emission sources updated as part of this modification