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: 06/28/2022
Compliance Code: 3 / Compliance - inspection

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: Numerous
NSPS: NSPS Dc, NSPS H, NSPS Y, NSPS IIII, NSPS JJJJ
NESHAP: MACT AA, MACT BB, MACT ZZZZ, MACT DDDDD
PSD: Yes
PSD Avoidance: No
NC Toxics: Yes
112(r): Yes
Other: Title V Renewal

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Khalid Alnahdy Env. & Tech. Services Manager (252) 322-8288 1530 NC Hwy 306 South Aurora, NC 27806	William Ponton General Manager (252) 322-8195 1530 NC Highway 306 South Aurora, NC 27806	Chris Smith Env. Engineering Supervisor (252) 322-8263 1530 NC Highway 306 South Aurora, NC 27806

Application Data

Application Number: 0700071.17B, 0700071.18C, 0700071.21D, 0700071.22C, 0700071.22D
Date Received: 03/28/2017, 10/31/2018, 10/14/2021, 06/24/2022, 07/28/2022
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 04176/T67
Existing Permit Issue Date: 08/22/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2020	2240.91	550.33	123.28	410.46	854.43	229.97	122.27 [MIBK (methyl isobutyl ketone)]
2019	2307.21	457.20	160.20	390.70	818.98	268.66	159.36 [MIBK (methyl isobutyl ketone)]
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)]

Review Engineer: Betty Gatano

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

Comments / Recommendations:
Issue 04176/T68
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

PCS Phosphate Company, Inc. – Aurora (PCS) currently holds Title V Permit No. 04176T67 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. The permit application for a permit renewal without modification was received on March 28, 2017, or at least nine months prior to the previous expiration date of December 31, 2017. Therefore, the air permit shall not expire until the renewal permit has been issued or denied, per the application shield in General Condition 3.K. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied. An addendum to the application for TV permit renewal was submitted on April 11, 2021.

PCS also submitted the following permit applications, and these will be consolidated as part of this permit renewal:

- Permit Application No. 0700071.18C – The 502(b)(10) notification was received on October 31, 2018 to replace a bagfilter (ID No. 429-014) with a functionally equivalent baghouse.

- Permit Application No. 0700071.21D – This application is the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for replacement of the vaporizer/granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in the Diammonium Phosphate Plant No. 2 (ep303). The application was received on October 14, 2021.

- Permit Application No. 0700071.22C – This application is a permit renewal without modification received on June 24, 2022, or at least six months prior to current permit expiration date of December 31, 2022. This application renews all parts of the permit modified or added since submittal of permit application No. 0700071.17B for permit renewal submitted on March 28, 2017. Because this second permit renewal application was submitted in a timely manner, the air permit shall not expire until the renewal permit has been issued or denied, per the application shield in General Condition 3.K.

- Permit Application No. 0700071.22D – This application is the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for maintenance and equipment replacement for Phosphate Rock Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056). The application was received on July 28, 2022.

2. Facility Description

PCS is the world's largest fertilizer manufacturer. The Aurora facility is the largest integrated phosphate mine and chemical facility in the world. The facility operates a large number of processes for the production of fertilizer from the raw materials (e.g., phosphate rock from the mine) to intermediate products (e.g., sulfuric acid) to the finished products (e.g., diammonium phosphate). In addition, the facility manufactures and sells phosphoric acid and fluorosilicic acid, among other products. PCS employs approximately 1,050 persons. The current operation consisting of active mine and manufacturing plant occupy about 20,000 acres out of a total plant site of 50,000 acres.

3. History/Background/Application Chronology

<u>Permit History since Last Permit Renewal</u>

January 9, 2013	Title V permit renewed. Air Permit No. 04176T47 was issued on January 9, 2013 with a permit expiration date of December 31, 2017.

May 28, 2013	Air Permit No. 04176T48 was issued as a minor modification under 15A NCAC 02Q .0515 to construct and operate a new reclamation area (ID No. R-10) and add an existing 45 boiler hp (25 kW) LPG-fired 4SRB emergency generator engine to the Title V air quality permit.
March 6, 2014	Air Permit No. 04176T49 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(c)(2) to construct and operate existing and new equipment to produce various grades of phosphoric acid. Specifically, the application dealt with the increased production of low magnesium superphosphoric acid (LOMAG utilizing green acid) and the increased production and relocation of defluorinated phosphoric acid (DFMGAA utilizing amber acid).
December 19, 2014	Air Permit No. 04176T50 was issued as an administrative amendment to incorporate a change in the ventilation system design associated with the dry additive handling system and to revise allowable toxic air pollutant (TAP) emission rates.
January 16, 2015	Air Permit No. 04176T51 was issued as an administrative amendment to correct typographical errors in the previous permit as per regulation 15A NCAC 2Q .0514(a)(1).
July 6, 2015	Air Permit No. 04176T52 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(c)(2) to add new reclamation area (ID No. R-11).
September 24, 2015	Air Permit No. 04176T53 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(c)(2). In February 2015, PCS entered into a Consent Decree (CD)[1] jointly with PCS Nitrogen Fertilizer, L.P. and with the US EPA to meet certain emissions and compliance objectives under specified timetables. This application was submitted to address modifications to the Nos. 5, 6 and 7 Sulfuric Acid Plants designed to meet the scheduled CD deadlines.
November 28, 2016	Special Order by Consent (SOC) 2016-004 became effective. This SOC addressed exceedances of the mercury emission limits in to Maximum Achievable Control Technology (MACT) Subpart AA by the Calciners Nos. 1, 3, and 4 during the initial performance test.
December 15, 2017	Air Permit No. 04176T54 was issued. This permitting action addressed the following permit applications: • Permit Application No. 0700071.15B – This permit application, received on June 2, 2015, was for a 502(b)(10) change involving the redesign and replacement of the transfer equipment associated with the phosphate rock transfer house (ID No. 429-150, EP437) between 70-1 conveyor and 70-2 conveyor. • Permit Application No. 0700071.15D – This permit application, received August 11, 2015, was the second step of the two-step significant modification submitted under 15A NCAC 2Q .0501(c)(2) for the construction of the low magnesium superphosphoric acid using green acid (LOMAG) and defluorinated phosphoric acid using amber acid (DFMGAA) processes. • Permit Application No. 0700071.16A – This permit application, received on September 6, 2016, was for a 502(b)(10) change involving ducting emissions

[1] Consent Decree Civil Action No. 14-707-BAJ-SCR. February 26, 2015.

from the existing Nos. 2 and 3 Press Product Tanks (ID Nos. 453-112 453-409) to existing scrubbers (ID Nos. 451-807 and 451-407, respectively).

- Permit Application No. 0700071.16B – This permit application, received on November 30, 2016, was a one-step significant modification under 15A NCAC 02Q .0501(c)(1) to clarify the testing requirements for the Auxiliary Boiler and to request a relaxation of testing requirements for the Phosphate Rock Calciners, Phosphoric Acid Plant Vacuum Pumps, and the Phosphate Rock Dryer.
- Permit Application No. 0700071.16C – This permit application, received December 22, 2016, was the second step of a two-step significant modification under 15A NCAC 02Q .0501(c)(2) to address modifications to the Nos. 5, 6 and 7 Sulfuric Acid Plants designed to meet CD deadlines.
- Permit Application No. 0700071.17A – This permit application, received February 8, 2017, was a minor modification under 15A NCAC 02Q .0515 for the replacement of two existing wet scrubbing systems on two of the superphosphoric acid (SPA) plants with scrubbers of equivalent design and routing two low-flow rate exhaust streams from the downstream LOMAG production process to the scrubbing systems.

January 2, 2018

Air Permit No. 04176T55 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(c)(2) to add a new ammonium polyphosphate (APP), a new SPA plant, and supporting equipment. Because the permit had not been renewed, the expiration date was modified and the following statement was added to the permit, "This permit shall expire on the earlier of December 31, 2022 or the renewal of Permit No. 04176T53 has been issued or denied."

In an e-mail on January 10, 2022, Chris Smith of PCS indicated the equipment associated with this project has not been constructed and the application for the second step of the two-step significant modification is not yet due.

March 26, 2018

Air Permit No. 04176T56 was issued as a minor modification under 15A NCAC 02Q .0515 to revise liquid flow rates to two wet spray towers with demister pads (ID Nos. S1092 and S1292) based on recent emission source testing.

October 23, 2018

Air Permit No. 04176T57 was issued as a state-only modification. The application addressed the following changes:

- Production of a low calcium acid product in existing LOMAG equipment.
- Addition of existing loading operations to the air quality modeling.
- Increase in emissions from a wet scrubber in the purified phosphoric acid (PPA) plant based on stack testing.

May 08, 2019

Air Permit No. 04176T58 was issued as a minor modification under 15A NCAC 02Q .0515. The application addressed the following changes:

- Implement a DFMGAA Purification Project.
- Remove emission sources subject to MACT standards from requirements under NC Air Toxics.

June 3, 2019

DAQ issued a response to Applicability Determination Application No. 3425 indicating a permit modification was not required for the project to increase phosphoric acid (P_2O_5) recovery from evaporators at PCS.

June 17, 2019	DAQ issued a response to Applicability Determination Application No. 3433 indicating a permit modification was not required for the addition of three new mining reclamation areas (ID Nos. I-R12 through I-R14) at PCS.
September 5, 2019	SOC 2019-002 became effective. PCS and DAQ entered into a second SOC for resolution of all noncompliance issues associated with mercury emissions from the calciners. This SOC superseded SOC 2016-004 and addressed continued exceedances of the mercury emission limits in MACT Subpart AA. On November 3, 2020, the US EPA finalized an amendment to the 2015 NESHAP for Phosphoric Acid Manufacturing, 40 CFR Part 63 Subpart AA. The amendment revised the mercury MACT floor for existing calciners from 0.14 milligrams per dry standard cubic meter (mg/dscm) at 3-percent oxygen to 0.23 mg/dscm at 3-percent oxygen. This rule amendment resolved the noncompliance issues regarding mercury emissions from the calciners.
November 22, 2019	Air Permit No. 04176T59 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2)[2] for construction of a hydrogen fluoride (HF) plant.
April 3, 2020	Air Permit No. 04176T60 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for replacement of the vaporizer/ granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in the Diammonium Phosphate (DAP) Plant No. 2 (ep303).
June 19, 2020	Air Permit No. 04176T61 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) to repurpose the current DFP plant to produce various calcium phosphate feed products (aka calcium phosphates).
November 10, 2020	Air Permit No. 04176T62 was issued as the second step of the of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for construction of a HF Production Process at the Aurora facility.
April 1, 2021	Air Permit No. 04176T63 was issued as state-only modification for a new acid filtration process at the facility.
October 22, 2021	Air Permit No. 04176T64 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for maintenance and equipment replacement for Phosphate Rock Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056).
December 22, 2021	Air Permit No. 04176T65 was issued as a state-only modification to optimize HF emissions from the HF Production Process at the Aurora facility.
March 3, 2022	Air Permit No. 04176T66 was issued as a minor modification under 15A NCAC 02Q .0515 to add No. 2 fuel oil and natural gas as fuels permitted to be burned in the calciners (ID Nos. 339-051 through 339-056) located in the Mill Area and in the dryers (ID Nos. 505-104 and 511-032) in the diammonium (DAP) /

[2] Regulation 15A NCAC 02Q .0501 was updated on April 1, 2018. Prior to this date, a two-step significant modification was referenced under 15A NCAC 02Q .0501(c)(2). After this date, a two-step significant modification is referenced under 15A NCAC 02Q .0501(b)(2).

	monoammonium (MAP) phosphate plants in the Fertilizer Production Area at the facility.
August 22, 2022	Air Permit No. 04176T67 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for a Sulfuric Acid Project that will allow the facility to either purchase or ship offsite sulfuric acid to increase profitability.

Application Chronology

March 28, 2017	Received application No. 0700071.17B for permit renewal. Permit application initially assigned to Heather Sands.
March 31, 2017	Sent acknowledgment letter indicating the application for permit renewal was complete.
April 17, 2017	Received comments on permit application from Robert Bright of the Washington Regional Office (WaRO).
June 5, 2018	Permit application reassigned to Betty Gatano.
June 21, 2018	Betty Gatano participated on a site visit to PCS with Robert Bright.
October 31, 2018	Permit Application No. 0700071.18C was received. This permit application was a 502(b)(10) change to replace a bagfilter (ID No. 429-014) with a functionally equivalent baghouse.
November 1, 2018	Brian Bland of DAQ issued a 502(b)(10) acknowledgement letter for replacement of baghouse (ID No. 429-014).
2019 – 2020	Throughout 2019 and 2020, Betty Gatano worked on the draft permit and permit application for the TV permit renewal.
September 22, 2020	Betty Gatano provided Joe Sullivan, consultant for the facility, a list of questions relating to the PCS permit renewal.
November 3, 2020	The US EPA finalized an amendment to the NESHAP for Phosphoric Acid Manufacturing, 40 CFR Part 63 Subpart AA. The amendment revised the mercury MACT floor for existing calciners from 0.14 milligrams per dry standard cubic meter (mg/dscm) at 3-percent oxygen to 0.23 mg/dscm at 3-percent oxygen.
January 25, 2021	Draft permit and permit review forwarded for review. Note the CAM analysis remained under development in this draft.
April 11, 2021	Comments received from PCS. The facility also submitted an addendum to the application for TV permit renewal.
October 14, 2021	Application No. 0700071.21D received as the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for replacement of the vaporizer/ granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in the DAP Plant No. 2 (ep303). The permit application was initially assigned to Connie Horne.

October 15, 2021	Sent acknowledgment letter indicating Application No. 0700071.21D was complete, provided e-payment was received within 10 days.
October 17, 2021	E-payment for Application No. 0700071.21D received.
January 5, 2022	Application No. 0700071.21D reassigned to Betty Gatano.
January 11, 2022	Betty Gatano sent questions to Chris Smith of PCS regarding Compliance Assurance Monitoring (CAM).
February 2, 2022	Response to questions about CAM received.
March 23, 2022	Chris Smith provided information on emissions from the horizontal lime slaker units (ID Nos. I-HSU-1 and I-HSU-2) in an e-mail.
April 10, 2022	Additional information on CAM received.
April 19, 2022	PCS requested in an e-mail to add avoidance conditions for the HF Production Process. The email states in part: "It was not PCS's intention to trigger 112(g) or PSD with the addition of the HF production process. As indicated in our application and subsequent follow-up correspondence, potential emissions (after controls) of fluorides (excluding HF) are less than the respective PSD significant emission rate of 3 tpy. Similarly, potential emissions of HCl and HF (after control) are less than the HAP major source threshold of 10 tpy, each. Accordingly, it is our understanding that the DAQ will be taking the opportunity to place emission limits of less than the respective major source threshold triggers for each pollutant into our air quality operating permit during the Title V renewal process, which is agreeable to PCS (Nutrien)."
May 3, 2022	PCS submitted the required C form and other information for replacement bagfilter (ID No. 429-014) referenced in the 502(b)(10) notification received on October 31, 2018.
May 4, 2022	Draft permit and permit review forwarded for review.
May 25, 2022	Rahul Thaker submitted comments as the permit reviewer.
June 24, 2022	Application No. 0700071.22C received as a TV permit renewal.
July 8, 2022	Sent acknowledgment letter indicating the application for permit renewal was complete.
July 28, 2022	Application No. 0700071.22D received as the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for for maintenance and equipment replacement for Phosphate Rock Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056). The permit application was initially assigned to Connie Horne.
July 29, 2022	Sent acknowledgment letter indicating Application No. 0700071.22D was complete, provided e-payment was received within 10 days.

August 17, 2022	E-payment for Application No. 0700071.22D received, and permit application deemed complete.
September 9, 2022	PCS submitted comments on the draft permit, including changes to the CAM conditions in the draft permit. PCS also submitted a request to designate several permitted emission sources as insignificant activities.
September 13, 2022	PCS submitted revised comments on the draft permit.
September 2022	Betty Gatano and Joe Sullivan of PCS had numerous phone calls and exchanged numerous e-mails regarding the draft permit throughout the month of October.
September 22, 2022	PCS and DAQ staff meet to discuss the facility's proposed changes to CAM and their request to designate several permitted emission sources as insignificant activities.
October 3, 2022	Revised draft permit forwarded to PCS for review.
October 2022	Betty Gatano and Joe Sullivan of PCS had numerous phone calls and exchanged numerous e-mails regarding the draft permit throughout the month of October.
October 10, 2022	PCS submitted additional comments on the revised draft permit.
October 20, 2022	Application No. 0700071.22D reassigned to Betty Gatano.
October 24, 2022	Second revised draft permit forwarded to PCS for review.
October 27, 2022	PCS submitted additional comments on the second revised draft permit.
November 4, 2022	Final draft permit and permit review forwarded for comments.

4. Permit Modifications/Changes

Because of its length, the table of changes is provided in Attachment 1 to this document.

5. Second Step Application for Replacement of Equipment in DAP Plant No. 2

Air Permit No. 04176T60 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for replacement of the vaporizer/ granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in DAP Plant No. 2 (ep 303).

The permit application (0700071.21D) for the second step of the of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for this project was received on October 14, 2021. The Rule states:

> (b) *With the exception in Paragraph (c) of this Rule, the owner or operator of an existing facility, new facility, or modification of an existing facility (except for minor modifications under Rule .0515), including significant modifications that would not contravene or conflict with a condition in the existing permit, subject to the requirements of this Section shall not begin construction without first obtaining:*

(1) …, or
(2) a construction and operation permit following the procedures under Rule .0504 and filing a complete application within 12 months after commencing operation to modify the construction and operation permit to meet the requirements of this Section.

As indicated in permit Application No. 0700071.21D, replacement of the granulator (ID No. 505-103) occurred in November 2020. Therefore, the second step application was received within within the 12-month period after commencing operation, as required. No changes in the project were noted in the application.

The technical review for the first step application (0700071.20C) is provided in Attachment 2 to this document.

6. Second Step Application for the Calciner Project

Air Permit No. 04176T64 was issued as the first step of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for maintenance and equipment replacement for Phosphate Rock Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056).

The permit application (0700071.22D) for the second step of the of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for this project was received on July 28, 2022. The Rule states:

(b) *With the exception in Paragraph (c) of this Rule, the owner or operator of an existing facility, new facility, or modification of an existing facility (except for minor modifications under Rule .0515), including significant modifications that would not contravene or conflict with a condition in the existing permit, subject to the requirements of this Section shall not begin construction without first obtaining:*

(1) …, or
(2) a construction and operation permit following the procedures under Rule .0504 and filing a complete application within 12 months after commencing operation to modify the construction and operation permit to meet the requirements of this Section.

As indicated in permit Application No. 0700071.22D, PCS completed maintenance and functionally equivalent replacements of Phosphate Rock Calciners Nos. 1-6 (ID Nos. 339-051 through 339-056) on November 23, 2021. This second step application was received on July 28, 2022, within the 12-month period after commencing operation, as required.

The technical review for the first step application (0700071.21B) is provided in Attachment 3 to this document.

7. Insignificant Activities

Lime Slaker Units
In the addendum to the TV permit renewal application submitted on April 11, 2021, PCS requested to add two horizontal lime slaker units (ID Nos. I-HSU-1 and I-HSU-2) as insignificant activities as part of the TV renewal. These units will hydrate lime prior to use as a neutralization agent in the beneficiation unit upstream of the calciners and phosphoric acid plants. The rotary shakers are powered using electric motors, and the only emissions from the units are minor emissions of particulate matter (PM) from the addition of lime to the units.

Emissions were calculated using emission factors in Table 11.12-2 in US EPA AP-42[3], for cement mixing emission factors. Cement is analogous to lime so this approach was acceptable. Controlled emission factors were selected because the lime is added to the slackers via subsurface loading. Emissions from these units meet the definition of insignificant activities pursuant to 15A NCAC 02Q .0503(8), as shown in the table below. These units will be added to the insignificant activities list as part of this TV permit renewal.

Pollutant	Emission factor (lb/ton)	Emissions	
		lb/hr	Tpy
PM	0.0184	0.23	1.01
PM_{10}	0.0055	0.07	0.30
$PM_{2.5}$	0.0055	0.07	0.30

Notes:
- PM_{10} was assumed to equal $PM_{2.5}$ as a worst-case assumption.
- Throughput is 150 tons per day (tpd) per unit, or 300 tpd total. The emission calculations for these units in the permit application contained an error, as the throughput was reported in units of "tons per hour."
- Operating hours were assumed to be 8,760 hours per year as a conservative estimate.

The PM emissions for the horizontal lime slaker units presented in the table above differ slightly than those reported in the addendum to the permit application. First, an incorrect emission factor was used for PM in the addendum. Secondly, the emission calculations in the addendum were based on 300 tpd throughput per unit. Chris Smith of PCS confirmed in an e-mail on March 23, 2022 that the correct throughput is 150 tpd per unit and 300 tpd total. These mistakes have been corrected in the table above.

Conveyors

On September 9, 2022, PCS submitted a request to designate several conveyors as insignificant activities. PCS indicated these conveyors are housed in metal buildings (aka transfer housing), and within the housing, the drop points on these conveyors are also enclosed. The list of affected sources are provided below.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description	Emission Point (ep)
Belt39 to Belt70.1	Calcined rock CTS	339-821	Enclosed transfer point	220
339-809-464	Calcined/dried rock CTS	N/A	Enclosures	223
F650	CTS - Grinder Rock Loadout	N/A	Enclosure	650
F651	CTS - Grinder Rock Loadout	N/A	Enclosure	651

Notes:
The ID numbers and emission points above are based on the the current permit (04176T67).

DAQ agreed with PCS's request as no emissions are expected from PM sources enclosed within a building. These emission sources will be moved to the insignificant activities list with the following footnote, "These

[3] U.S. EPA AP-42, Volume 1, Fifth Addition, Chapter 11.12: Concrete Batching.

sources are contained within metal transfer housing, and no emissions are expected from these activities," added for clarity.

Additive Silos

On September 9, 2022, PCS submitted a request to designate several additive silos and weigh hoppers as insignificant activities. Emissions from these sources occur with the silos are being filled. As indicated in the the request, emissions from these sources were originally estimated assuming silo filling at 8,760 hours per year. PCS indicated this assumption was inappropriate and recalculated emissions based hours of filling per year. DAQ disagreed with this approach because it assumed an operating limit (hours of filing annually) that could not be practicably enforceable for insignificant activities.

PCS revised the emission calculations and instead based emissions on maximum throughput of the silos. An example calculation is provided below:

> *PM emissions from Additive Storage Silo (ID No. 453-485)*
> Maximum Unloading Rate = 225 lb//hr = 0.1125 ton/hr (as reported in App. No. 0700071.14A)
> Design fill rate = 20 ton/hr (as reported in App. No. 0700071.14A)
> Maximum throughput = 0.1125 tons/hr * 8760 hr/yr = 985.5 ton/yr unloaded into the process
> Maximum hours of filling = 985.5 ton/yr / 20 tons/hr = 49.275 hours per year of filling
>
> Air flow of bagfilter = 600 actual cubic feet per minute (ft^3/min)
> Grain loading of filter = 0.0357 grains per cubic feet (gr/ft^3)
> Emission rate = 600 ft^3/min * 60 min/hr * 0.0357 gr/ft^3 * (1 pound/7000 grains) = 0.184 lb/hr
>
> Annual PM emissions = 0.184 lb/hr * 49.275 hr/yr * (ton/2000 lbs) = 0.0045 tpy
>
> Uncontrolled PM emissions assuming 99% control by the bagfilter
> **Uncontrolled PM emissions = 0.0045 tpy (1-0.99) = 0.45 tpy**

DAQ concurs with these revised methodology for calculating emissions from the additive silos and weigh hoppers.

The results of the revised emission calculations are provided in the table below. Based on the revised emissions, additive storage silo #1 (ID No. 453-485) and associated weigh feed hoppers (ID Nos. 453-489 and 453-490) and additive additive weigh hopper # 4 (ID No. 426-244) are insignificant activities pursuant to 15A NCAC 02Q .0503(8), with uncontrolled emissions of PM less than 5 tons per year. The silo and weigh hoppers will be moved to the insignificant activities list. The uncontrolled PM emissions from the additive storage silos # 2 and #3 (ID Nos. 458-468 and 426-240) exceed 5 tons per year, and these sources are not insignificant activities. However, their uncontrolled emissions of PM are less than 100 tons per year, and CAM is no longer applicable for these additive silos. Reference to CAM will be removed from the permit for these sources.

Emission Source ID	Emission Source Description	Air Flow (acfm)	Uncontrolled Emissions (gr/acf)	Maximum Unloading (lb/hr)	Maximum Unloading (hr/yr)	Designed Throughput (ton/yr)	Design Filling Rate (ton/hr)	Maximum Filling (hr/yr)	Uncontrolled Emissions (tpy)
453-485	Additive #1 Storage Silo	600		225	8760	985.5	20	49.275	0.452
453-489	Additive #1 Weigh Feed Hopper	2.7		NA	8760	NA	NA	8760	0.362
453-490	Additive #1 Weigh Feed Hopper	2.7		NA	8760	NA	NA	8760	0.362
--	Total uncontrolled emissions from Additive #1 Storage Silo 453-485 (including return air from feed hoppers)								1.18
453-468	Additive #2 Storage Silo	1000		1500	8760	6570	17.3	380	5.81
426-240	Additive #4 Storage Silo	600		3500	8760	15330	20	767	7.04
426-244	Additive #4 Weigh Feed Hopper	5.4		NA	8760	NA	NA	8760	0.724

Notes:

- For the silos, the potential to emit is based on 8,760 hrs/yr of unloading at design capacity. Silos only emit during silo filling (pneumatic transfer from tank truck).
- The weigh hoppers have an intermittent pulse transfer, and the average air flow rate through each transfer cycle used for calculations.
- The uncontrolled emissions were back calculated using a conservative outlet emission rate of 0.0357 gr/acf and 99% control efficiency.

8. 502(b)(10) Notification

Permit Application No. 0700071.18C was received as a 502(b)(10) notification on October 31, 2018 to replace a bagfilter (ID No. 429-014) with a functionally equivalent baghouse. The bagfilter controls PM emissions from the phosphate rock storage silo No. 1 (ID No. 429-152) and three transfer points (ID Nos. 429-001, 429-004, and 429-151) in the Phosphoric Acid Production Area. The header pipe and rotary feeder will also be replaced. Both of these are functionally equivalent to existing parts and allow the baghouse to function properly. On November 1, 2018, the DAQ issued a 502(b)(10) acknowledgement letter for replacement of baghouse (ID No. 429-014).

The table below compares the existing baghouse with its proposed replacement. As shown in the table, the replacement baghouse is nearly identical to the originally permitted baghouse and is deemed acceptable. No further permitting action is required.

Parameter	Baghouse as originally permitted	Replacement baghouse
Max inlet air flow (acfm)	4,250	4,250
Total surface area (ft^2)	763	778
Max operating temperature (^oF)	220	220
Filter material	16 oz singed felt polyester	16 oz singed felt polyester
Type of cleaning	Air pulse	Air pulse
Notes: • Information for original baghouse obtained Form C from permit application dated 2001. • Information for replacement baghouse submitted via e-mail on May 3, 2022. • No PE seal was required for this baghouse because the air flow rate is less than 10,000 acfm for a PM emission source in accordance with 15A NCAC 02Q .0112(b)(4).		

9. Applicable Regulations

PCS is subject to the regulations listed below on a source-by-source basis as specified in Section 2.1 of the permit.

Regulations that are applicable to multiple emission sources and those that are applicable facility-wide are discussed below in Sections 9 through 12.

A. Sulfuric Acid Production Area (Section 2.1.1)

Sulfuric Acid Plants Nos. 5, 6, and 7 (ID Nos. S-5, S-6, and S-7) with associated controls, ep103, ep104, and ep105[4]

PCS operates three plants used to produce sulfuric acid, which is subsequently used in the production of phosphoric acid and other products at the facility. Sulfuric acid production occurs in three steps:

1) Molten sulfur is oxidized (combusted) to create sulfur dioxide;
2) Sulfur dioxide is converted to sulfur trioxide in the presence of a catalyst; and,
3) Sulfur trioxide is contacted with a dilute sulfuric acid solution. The sulfur trioxide is absorbed into the solution to form additional sulfuric acid.

Conversion of sulfur dioxide to sulfur trioxide proceeds in four separate passes across the catalyst. The process includes two absorption towers where gas is contacted with dilute sulfuric acid to remove sulfur

[4] Because of the size of process and the number of associated emission sources, processes are often identified with an emission point (ep) rather than the individual emission sources. Therefore, "ep" numbers are used throughout this review document and the permit as alternative to identification numbers.

trioxide. The sulfuric acid used to absorb the sulfur trioxide is constantly diluted to a strength of 95 percent and a side stream of product is taken off at the drying tower pump tank. The double absorption process provides control of sulfur dioxide (SO_2) from the sulfuric acid plants. PM and sulfuric acid mist are controlled via vertical tube mist eliminator systems on each plant.

The following regulations apply to the sulfuric acid plants:

- 15A NCAC 02D .0517, Emissions from Plants Producing Sulfuric Acid - PCS complies with this regulation by meeting the testing, monitoring, recordkeeping, and reporting requirements under "Standards of Performance for Sulfuric Acid Plants," 40 CFR Part 60 Subpart H, as discussed below. No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0519, Nitrogen Oxide Emissions from Sulfuric Acid Manufacturing Plants – PCS demonstrated compliance with this regulation by conducting a performance test on either Sulfuric Acid Plant 5 or 6 once every five-year permit cycle and on Sulfuric Acid Plant 7 annually. The permit will be modified to indicate no monitoring, recordkeeping, or reporting (MRR) is required for compliance with 02D .0519. Continued compliance is anticipated.

- 15A NCAC 02D .0524, New Source Performance Standards (NSPS) – All three plants were constructed after August 17, 1971 and are subject to "Standards of Performance for Sulfuric Acid Plants," 40 CFR Part 60 Subpart H (NSPS Subpart H), per 40 CFR 60.80(b). The facility must meet emission limits for SO_2, sulfuric acid mist, and visible emissions (VE) under NSPS Subpart H. In addition to MRR requirements, compliance is demonstrated by annual testing of sulfuric acid and installation and operation of continuous emission monitoring systems (CEMS) for SO_2 emissions. PCS must also follow procedures for hot or cold startups under NSPS Subpart H. These procedures were added to Air Permit No. 04176R20 as "Best Operational Startup Practices for Sulfuric Acid Plants," at the request of the facility.

  Requirements under NSPS Subpart H were updated as part of Air Permit No. 04176T54 to reflect the use of performance testing under the Consent Decree (CD) (see below for more details), to refer to the monitoring under the CD, and to revise the allowance for excess emissions during startup to state that the Permittee is not authorized to emit emissions during startup in excess of the long-term SO_2 limits.

  Continued compliance with NSPS Subpart H is anticipated.

- 15A NCAC 02D .0530, Prevention of Significant Deterioration (PSD) – Sulfuric Acid Plant 7 (ID No. S-7) was added to Air Permit No. 04176T37 issued on January 4, 2008. The modification was a PSD major modification, for significant emissions of sulfuric acid mist and nitrogen oxides (NO_X), and Best Available Control Technology (BACT) emission limits were established for these pollutants. PCS must conduct inspection and maintenance of the vertical mist vertical tube mist eliminator to ensure compliance and must also conduct source testing annually to demonstrate compliance. The results of the most recent testing are shown below. Continued compliance is anticipated.

Pollutant	Test Date	Test Results	Emissions Limit	Regulation	Compliance
NO_X	04/21/2021	0.146 lb/ton 100% H_2SO_4	0.6 lb/ton 100% H_2SO_4	02D .0530	Yes
H_2SO_4 mist	04/28/2021	0.043 lb/ton 100% H_2SO_4	0.075 lb/ton 100% H_2SO_4		Yes

Notes:
- The test results for NO_X emissions were approved by Brent Hall of the Stationary Source Compliance Branch (SSCB) in a memorandum on July 17, 2021.
- The test results for emissions of H_2SO_4 mist were approved by Taylor Fort of the SSCB in a memorandum on August 25, 2021.

- 15A NCAC 02D .0530(u) – In February 2015, PCS entered into a CD jointly with PCS Nitrogen Fertilizer, L.P. and the US EPA to comply with certain permitting and compliance requirements. PCS submitted a permit application for first step of a two-step modification on June 16, 2015 (Application No. 0700071.15C) to modify to the Nos. 5, 6, and 7 Sulfuric Acid Plants to improve sulfur dioxide and sulfuric acid mist emissions in response to the CD. These changes impacted emissions of SO_2, PM, PM_{10}, $PM_{2.5}$, NO_X, H_2SO_4, and CO_2e from each of the sulfuric acid plants.

  PCS used PAE to demonstrate the modifications to the sulfuric acid plants were not a major modification under PSD, in accordance with 15A NCAC 02D .0530(u). The PAE from these modifications were first included in Air Permit 04176T53 issued on September 24, 2015. Because the sulfuric acid plant project did not affect the design capacity or potential to emit of the units, emission tracking is only required for five years. PCS must track emissions of the following pollutants and report the results annually.

Pollutant	Projected Actual Emissions from Nos. 5, 6, and 7 Sulfuric Acid Plants, combined* (tons per year)
SO_2	5,101
PM	175
PM_{10}	175
$PM_{2.5}$	175
NO_X	250
SAM	175

  No changes to this permit condition are required as part of this permit renewal, and continued compliance is anticipated.

- 15A NCAC 02D .0530(u) – PCS must track emissions from the sulfuric acid plants for the Ammonium Polyphosphate (APP) expansion project as specified in Air Permit Application No. 0700071.17C. Please see Section 11.A below for a discussion of 02D .0530(u) requirements associated with this project.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Emissions of sulfuric acid mist from sulfuric acid plants Nos. 5, 6, and 7 (ID Nos. S-5, S-6, and S-7) are controlled by vertical tube mist eliminators (ID Nos. 415-934, 406-129, and 407-258, respectively) installed on the plants' final absorbing towers. These emission sources are subject to CAM. The CAM condition will be updated to allow PCS to conduct either daily VE observations or daily pressure drop readings across the control devices. Recordkeeping and reporting requirements for CAM will be added, and the permit condition will be reformatted as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- Consent Decree Civil Action No. 14-707-BAJ-SCR (aka the Consent Decree or CD) – In February 2015, PCS entered into a consent decree jointly with PCS Nitrogen Fertilizer, L.P. and the US EPA to comply with certain permitting and compliance requirements. As part of the consent decree, PCS is required to meet long term and short emission limits for SO_2, emission limits for sulfuric acid mist, and other compliance objectives under specified timetables. Requirements under the CD were added to Air Permit No. 04176T54 issued on December 15, 2017. The requirements are contained in Section 2.4 of the permit. Continued compliance is anticipated.

Auxiliary Boiler – No. 2 fuel oil-fired (ID No. BW), ep110

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers – The boiler (ID No. ES-001-01) is subject to this rule. Allowable PM emissions are determined from the equation, $E = 1.090(Q)^{-0.2594}$, where E equals the allowable emission limit for PM in pounds per million Btu (lb/MMBtu) and Q equals the maximum heat input in million Btu per hour (MMBtu/hr).

  The auxiliary boiler was added to Air Permit No. 04176R20 issued on December 11, 2002, and the emission limit under 02D .0503 for the boiler was established at that time. The allowable PM emission limit for the auxiliary boiler is provided in the following table. Note that Boiler No. 111 (125 MMBtu/hr) has since been removed from the facility. As stated under 02D .0503(e), "the removal of a fuel burning indirect heat exchanger shall not change the allowable emission limit of any fuel burning indirect heat exchanger whose allowable emission limit has previously been established."

Emission Source	Heat Input of the Emission Sources (MMBtu/hr)	Maximum Heat Input (MMBtu/hr)	Emission limit (lb/MMBtu)
Auxiliary Boiler (ID No. BW)	99.65	224.56	0.27
Boiler (ID No. 111)	125		

  The emission factor for No. 2 fuel oil is 0.024 lb/MMBtu based on an emission factor for PM of 3.3 pounds per 10^3 gallons and a fuel heating value of 140,000 Btu/gallon, as specified in DAQ's "Fuel Oil Combustion Emission Calculator Revision G" (11/05/2012). No MRR is required to ensure compliance for this rule due to the emission factor for fuel oil (0.024 lb/MMBtu) being much less than the allowable PM limit (0.27 lb/MMBtu). No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0524, NSPS – The auxiliary boiler is subject to NSPS for "Small Industrial, Commercial, Institutional Steam Generating Units," 40 CFR Part 60, Subpart Dc. This subpart applies to boilers that are constructed, modified, or reconstructed after June 9, 1989 and have a maximum design heat input capacity > 10 MMBtu/hr and < 100 MMBtu/hr. The auxiliary boiler was added to Air Permit No. 04176R20 issued on December 11, 2002 and is 99.65 lb/MMBtu, and thus meets the applicability of NSPS Subpart Dc. The requirements for boilers subject to NSPS Subpart Dc vary based on the size of the boiler and fuel type fired. Because this boiler does not fire on wood or coal, it is not subject to the particulate matter standards under this rule. Emission standards for SO_2 and visible emission standards as discussed below:

  - Sulfur Dioxide: The maximum sulfur content of any fuel oil received and fired in the boiler shall not exceed 0.5 percent by weight. To demonstrate compliance with this standard, PCS must record monthly fuel usage and retain copies of each fuel supplier certification, including the sulfur content of the oil (in percent by weight). The facility is also required to submit a semiannual report summarizing the monitoring activities (January 30th and July 30th).

    Note: Previous versions of the permit included requirements under 15A NCAC 02D .0516, Sulfur Dioxide for Combustion Sources. This rule does not apply to this boiler in accordance with 0D .0516(b), which states, "A source subject to an emission standard for sulfur dioxide in Rules .0524, .0527, .1110, .1111, .1205, .1206, .1210, or .1211 of this Subchapter shall meet the standard in that particular rule instead of the standard in Paragraph (a) of this Rule." Requirements for 02D .0516 were removed from the permit as part of Air Permit No. 04176T54.

- Visible Emissions: Under NSPS Subpart Dc, a boiler with a maximum heat input capacity of greater than or equal to 30 MMBtu/hr shall not have VE more than 20 percent opacity when averaged over a six-minute period, except for one six-minute period per hour of not more than 27 percent opacity. Oil-fired boilers subject to NSPS Subpart Dc must conduct Method 9 VE observations at least once every 12 calendar months as per 40 CFR 63.47c (a) following the initial compliance test. The visible emission monitoring schedule when firing on oil is determined by the actual VE observed during previous testing. Alternative monitoring using EPA Method 22 is allowed if the maximum 6-minute opacity is less than 10 percent during the most recent performance test.

The permit condition was updated with the most current version of NSPS Subpart Dc, and continued compliance is anticipated.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The auxiliary boiler became subject to the "NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63 Subpart DDDDD (aka MACT Subpart DDDDD or Boiler MACT) beginning May 20, 2019. This boiler is considered an existing boiler under MACT Subpart DDDDD because PCS commenced construction of the boiler or process heater on or before June 4, 2010. The boiler falls in the subcategory of "units designed to burn light liquid fuel."

  PCS must conduct a one-time energy assessment, an initial tune-up, and subsequent annual tune-ups for the auxiliary boiler. The energy assessment and initial tune-up must be completed by May 20, 2019. The one-time energy assessment was completed on May 20, 2019, and the initial tune up was completed on March 4, 2019. PCS also had to conduct an initial performance date within 180 days after the compliance date. The initial compliance test occurred on March 4 through 6, 2019, and the results of the initial performance tests are shown below.

Pollutant	Test Results	Emission Limit	Standard	Compliance
Total Selective Metals (TSM)	1.7E-5 lb/MMBtu	6.2E-5 lb/MMBtu	MACT Subpart DDDDD	Yes
Mercury	3.5E-7 lb/MMBtu	2.0E-6 lb/MMBtu		Yes
HCl	0.0004 lb/MMBtu	0.0011 lb/MMBtu		Yes
CO	5.3 ppm@3% O2	130 ppm@3% O2		Yes
Notes: The test results were approved by Shannon Vogel of the SSCB in a memorandum on October 9, 2019.				

  Pursuant to 40 CFR 63.7515(h), no subsequent compliance tests are required for this boiler because it is in the "unit designed to burn light liquid" subcategory and combusts ultra-low sulfur liquid fuel. The boiler also has continuous oxygen trim system to maintain the optimum air to fuel ratio for the boiler. As such, tune-ups are required every five years rather than biannually, in accordance with 40 CFR 63.7540(a)(10).

  The current permit (04176T67) contains a statement regarding the initial compliance date of MACT Subpart DDDDD but does not include a specific permit condition for this MACT nor any requirements needed to ensure compliance. A permit condition specifying the applicable requirements for the auxiliary boiler under MACT Subpart DDDDD will be added to the permit as part of this permit renewal Continued compliance is anticipated.

- 15A NCAC 02Q .0317, Avoidance Conditions – PCS has accepted a limit in emissions of SO_2 and NO_X from the boiler to avoid 15A NCAC 02D .0530, PSD. Emissions are limited to 40 ton per 12-month period of each of these pollutants. No changes to permit are required other than minor updates to most current permitting language. Continued compliance is anticipated.

The current permit (04176T67) contains a permit condition for 15A NCAC 02D .1109, Case-by-Case MACT for the auxiliary boiler, and this permit condition will be removed from the permit as part of this permit renewal. On May 20, 2019, the boiler became subject to MACT Subpart DDDDD and is no longer subject to the Case-by-Case boiler MACT.

Sulfuric Acid Plant Fugitive Emissions (ID Nos. S-5F, S-6F, and S-7F), ep192, ep193, and ep194

The current permit (04176T67) lists these fugitive emission sources in Section 2.1.9.B (Miscellaneous Sources). These emission sources will be moved to Section 2.1.1 C as part of this permit renewal because they are part of the Sulfuric Acid Plant Area.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

B. Mill Area (Section 2.1.2)

Phosphate Rock Calciners (ID Nos.339-051 through 339-056) with associated controls, ep201 through ep206

Phosphate rock from the ore mines is first sent to beneficiation units to separate sand and clay. A portion of the wet beneficiated phosphate rock is calcined to remove organics. PCS operates six vertical fluidized bed calciners, each with a nominal operating rate of 105.1 tons per hour. Each calciner is controlled via two duplex cyclones, in series with a fixed-throat wet scrubber and a wet electrostatic participator. The beneficiated rock is calcined at temperatures generally between 800 and 825°C (1480 and 1520°F) for use in green phosphoric acid production, which is used for producing SPA and as a raw material for purified phosphoric acid manufacturing.

The following regulations apply to the calciners:

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards – The calciners are subject to emission limits for PM_{10} and SO_2. The permit will be modified to indicate no fuel oil certification is required for No. 2 fuel oil fired in the calciners. No other changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – Calciner Nos. 1, 2, 3, and 4 (ID Nos. 339-051 through 339-054) were manufactured on or before July 1, 1971 and must not have VE of more than 40 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(c). Calciner Nos. 5 and 6 (ID Nos. 339-055 and 339-056) were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0530(u) – PCS submitted a permit application on July 6, 2021 as a first step application of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for maintenance and equipment replacement for Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056).

  PCS used projected actual emissions (PAE) to demonstrate that the "Calciner Project" was not a major modification under PSD, in accordance with 15A NCAC 02D .0530(u). Because the modifications did

not affect the design capacity or potential to emit of the units, emission tracking is only required for five years. Please see the permit review for Air Permit No. 04176T64 for more details regarding this modification.[5]

Pollutant	Potential Actual Emissions (tpy)
PM (filterable)	122.4
PM_{10}	169.7
$PM_{2.5}$	68.8
SO_2	89.2
NO_X	539.3
CO	720.8

No change to the permit conditions is required, and continued compliance is anticipated.

- 15A NCAC 02D .0543, Best Available Retrofit Technology (BART) – These emission sources are subject to 02D .0543. Please see Section 12 below for further discussion.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The permit includes concentration limits for the used oil/used oil sludge/used glycols burned in the calciners for compliance with NC Air Toxics. This condition will remain in the permit to ensure compliance with NC Air Toxics. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The permit includes concentration limits for the used oil/used oil sludge/used glycols burned in the calciners for compliance with NC Air Toxics. This condition will remain in the permit to ensure compliance with NC Air Toxics. Continued compliance is anticipated.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The calciners are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. This rule was revised on August 19, 2015 in conjunction with the residual risk and technology review (RTR), and the permit condition will be updated to reflect the revisions as part of this permit renewal.

  Among other changes to MACT Subpart AA, emission limits for mercury, PM, and total fluorides from the calciners were included in the August 2015 updates. MACT Subpart AA requires that no calciner emit gases containing the following:
  - Total particulate matter in excess of 0.181 grams per dry standard cubic meter (g/dscm).
  - Total fluorides in excess of 9.0E-04 lb/ton of rock feed.
  - Mercury in excess of 0.23 mg/dscm corrected to 3 percent oxygen.

  PCS ensures compliance with these limits by monitoring the secondary voltage of the WESPs and the pressure drop and flow rate of the venturi scrubbers on the calciners.

  Annual testing is also required, and during the annual testing, PCS demonstrated compliance with the emission standards for total fluoride and PM but was unable to demonstrate compliance with the new emission standard for mercury. PCS and DAQ entered into two SOCs for resolution of noncompliance issues associated with mercury emissions from the calciners. The most recent SOC 2019-002, which superseded the first SOC, was finalized on September 5, 2019.

[5] Permit review for Air Permit No. 04176T64 (Betty Gatano, 10/22/2021).

On November 3, 2020, the US EPA finalized an amendment to the 2015 MACT Subpart AA, to revise the mercury MACT floor for existing calciners from 0.14 milligrams per dry standard cubic meter (mg/dscm) at 3-percent oxygen to 0.23 mg/dscm at 3-percent oxygen. This final rule amendment action effectively resolved SOC 2019-002. On March 25, 2021, DAQ issued a letter to PCS approving the final data collection report showing the facility can comply with the revised limit without add-on control to resolve the outstanding violations. The March letter also closed out SOC 2019-002.

In testing subsequent to the rule change, PCS tested in compliance with the revised mercury limit, with the most recent source tests shown in the table below.

Emission Source	Test Date	Test Result	Emission Limit	Compliance
Calciner No. 1 (ep201)	10/23/2020	0.183 mg/dscm@3%O_2	0.14 mg/dscm@3%O_2	No*
Calciner No. 2 (ep202)	12/03/2020	0.147 mg/dscm@3%O_2	0.23 mg/dscm@3%O_2	Yes
Calciner No. 3 (ep203)	06/14/ 2020	0.163 mg/dscm@3%O_2	0.14 mg/dscm@3%O_2	No*
Calciner No. 4 (ep204)	08/10/2021	0.152 mg/dscm@3%O_2	0.23 mg/dscm@3%O_2	Yes
Calciner No. 5 (ep205)	05/25/2021	0.137 mg/dscm@3%O_2	0.23 mg/dscm@3%O_2	Yes
Calciner No. 6 (ep206)	05/12 – 13/2021	0.180 mg/dscm@3%O_2	0.23 mg/dscm@3%O_2	Yes

Notes:
*The test results demonstrated compliance with the proposed revision to the mercury standard, which had not been finalized at the time of testing.

- The test results for Calciner No. 1 were approved by Taylor Fort of the SSCB in a memorandum on February 24, 2021.
- The test results for Calciner No. 2 were approved by Taylor Fort of the SSCB in a memorandum on March 15, 2021.
- The test results for Calciner No. 3 were approved by Taylor Fort of the SSCB in a memorandum on November 2, 2020.
- The test results for Calciner No. 4 were approved by Taylor Fort of the SSCB in a memorandum on November 22, 2021.
- The test results for Calciner No. 5 were approved by Taylor Fort of the SSCB in a memorandum on August 27, 2021.
- The test results for Calciner No. 6 were approved by Taylor Fort of the SSCB in a memorandum on August 27, 2021.

The revised mercury values will be incorporated into the permit as part of this renewal, and continued compliance is anticipated.

Please see Section 10.A below for a more discussion of MACT Subpart AA and the changes made as part of this permit renewal.

Phosphate Rock Dryer (ID No. 332-120) controlled by a duplex cyclone (ID No. 332-370a) and venturi type wet scrubber (ID No. 332-370b), ep210

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards – PCS conducts testing once per permit cycle to demonstrate compliance with SO_2 limits. Continued compliance is anticipated.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PCS demonstrates compliance with this rule by testing annually and maintaining pressure drop and liquid flow rate across the venturi scrubber (ID No. 332-370b). No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources – PCS demonstrates compliance with this rule by testing as required under 15A NCAC 02D .0501(c). No MRR is required for compliance. No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – The rock dryer was manufactured on or before July 1, 1971 and must not have VE of more than 40 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(c). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring (CAM) – The phosphate rock dryer was not previously subject to CAM because it was subject to MACT Subpart AA. As discussed below, the April 2015 revisions to the rule modified the definition of applicable rock dryers. This emission source is no longer subject to MACT Subpart AA and became subject to CAM as of the effective date of the MACT rule revisions. The rock dryer complies with CAM by monitoring the pressure drop and liquid flow rate across the venturi scrubber (ID No. 332-370b). A CAM condition will be added to the permit as part of this permit renewal. Compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

The phosphate rock dryer was previously subject to MACT Subpart AA. This rule was revised on August 19, 2015 in conjunction with the RTR. As part of the revisions, the definition of the "phosphoric acid manufacturing plant" in the rule was clarified to indicate only rock dryers associated with phosphoric acid manufacturing are subject to MACT Subpart AA. Because the rock dryer is not used in the phosphoric acid manufacturing process at PCS, it is no longer subject to MACT Subpart AA. This change was made as part of Air Permit No. 04176T58. A non-applicability statement indicating the phosphate rock dryer is not subject to MACT Subpart AA will be added to Section 2.5 of the permit as part of this permit renewal.

Coal/coke pulverizer and thermal dryer system (ID No. 341-300) controlled by a single cyclone (ID No. 341-310) and two parallel bagfilters (ID Nos. 341-331 and 341-332), ep215

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards - No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0524, NSPS – The coal/coke pulverizer and thermal dryer system are subject to the "Standards of Performance for Coal Preparation and Processing Plants," 40 CFR 60 Subpart Y. This source was constructed, reconstructed or modified after October 27, 1974, and on or before April 28,

2008 and is subject to emission limits in 40 CFR 60.252(a) for thermal dryers. The following emission limits apply to the thermal dryer (ID No. 341-300):

- Gases from the thermal dryer shall not contain more than 0.031 grains per dscf of PM.
- VE shall not be more than 20 percent opacity when averaged over a six-minute period.

To ensure compliance, PCS must monitor the temperature of the gas stream at the exit of the thermal dryer on a continuous basis in accordance with 40 CFR 60.256(a). The facility also conducts monthly external and annual internal inspections of the bagfilters to ensure compliance with the PM emission limit. As part of the renewal, DAQ will add requirements for monthly visible emission observations to ensure compliance with the opacity standard under this rule. Continued compliance is anticipated.

NSPS Subpart Y was updated on October 8, 2009 to require PM emission testing and VE testing for thermal dryers constructed after April 28, 2008. However, these testing requirements are not applicable to thermal dryers constructed on or before April 28, 2008.

This emission source is not subject to 15 NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes, because it is subject to a PM emission limit under NSPS Subpart Y. Rule 15A NCAC 2D .0515 is applicable to any industrial process for which no other emission control standards are applicable.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Emissions of PM from the pulverizer and dryer system (ID No. 341-300) are controlled by a single cyclone (ID No. 341-310) and two parallel bagfilters (ID Nos. 341-331 and 341-332). The CAM condition will be updated to allow PCS to conduct either daily VE observations or daily pressure drop readings across the control devices. Recordkeeping and reporting requirements for CAM will be added, and the permit condition will be reformatted as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Particulate matter emission sources and associated controls related to coal handling, conveying, and storage as specified in Section 2.1.2 D, ep294a through ep294f

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – These emission sources are subject to 02D .0515. Although these emission sources are also subject to NSPS Subpart Y as noted below, this NSPS only requires an opacity standard for "coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal' constructed, reconstructed or modified before April 28, 2008, in accordance with 40 CFR 60.254(a). No PM emission standard is specified under NSPS Subpart Y for these types of sources. Thus, the coal handling, conveying, and storing sources are subject to 02D .0515, which is applicable to any industrial process for which no other PM emission control standards apply.

  The current permit (04176T67) does not include a 02D .0515 condition for these emission sources, and a permit condition will be added as part of this permit renewal.

  For the coal/coke storage silos (ID Nos. 341-200 and 341-201) controlled by filtered bin vents (ID Nos. CD341-200 and CD341-201), the permit condition will require monthly external and annual inspections of the bin vent filters. Compliance is anticipated.

  For the conveyors, crushers, and unloaders (ID Nos. 341-100, 341-110, 341-111, 341-112, 341-120, 341-140, 341-130, and 341-230), the new permit condition will indicate that the wet suppression and associated monitoring required under NSPS Subpart Y is sufficient to ensure compliance with 02D .0515. Compliance is anticipated.

- 15A NCAC 02D .0524, NSPS – These PM emission sources are subject to the "Standards of Performance for Coal Preparation and Processing Plants," 40 CFR 60 Subpart Y. These sources were constructed, reconstructed or modified after October 27, 1974, and on or before April 28, 2008 and are subject the visible emission limit in 40 CFR 60.254(a) "coal processing and conveying equipment, coal storage systems, transfer and loading systems, and open storage piles." These emission sources must not discharge into the atmosphere gases that exhibit 20 percent opacity or greater.

  The current permit (04176T67) requires wet suppression for all emission sources specified in Section 2.1.2 D. This statement will be clarified to specify that wet suppression is required only on the conveyors, crushers, and unloaders (ID Nos. 341-100, 341-110, 341-111, 341-112, 341-120, 341-140, 341-130, and 341-230) to ensure compliance. A new requirement will be added to the permit indicating that the monthly external and annual inspections of the bin vent filters (ID Nos. CD341-200 and CD341-201) on the coal/coke storage silos (ID Nos. 341 200 and 341 201) required under 02D .0515 is sufficient for compliance with NSPS Subpart Y. Compliance is anticipated.

  NSPS Subpart Y does not require reporting for emission sources constructed, reconstructed or modified before April 28, 2008. A requirement for reporting for Title V purposes under 15A NCAC 02Q .0508(f) will be added to this permit condition as part of the permit renewal.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Other particulate emission sources and control devices in the Mill Area as contained in Sections 2.1.2 E and 2.1.2 F of the permit, ep221, ep222, and ep224

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – These following emission sources are subject to 02D .0515: Compliance is demonstrated as follows:
  - Calcined rock conveyor transfer station (ID Nos. Belt 55 to 70.1) controlled by fabric filter (ID No. 339-680)
  - calcined rock transfer station (ID No. Belt 21or Belt 22 to Belt 23 or Belt 24) controlled by fabric filter (ID No. 333-180 or 333-190)
  - Polymer storage bin (ID No. 224) controlled by fabric filter (ID No. 320-215-478).

  PCS demonstrates compliance with this rule by conducting monthly external and annual inspections of the bagfilters. No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – The table below outlines the emission limits and requirements under 02D .0521 for PM emission sources listed in Sections 2.1.2 E and 2.1.2 F. Continued compliance is anticipated.

Emission Source	Limits/Standards	Requirement
Calcined rock conveyor transfer station (ID Nos. Belt 55 to 70.1) Calcined rock transfer station (ID No. Belt 21or Belt 22 to Belt 23 or Belt 24)	20 percent opacity	No VE observations are required. The Permittee conducts inspection and maintenance of the associated control devices and enclosures as required under 02D .0515 to ensure compliance with 02D .0521
Polymer storage bin	40 percent opacity	

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Calcined/dried rock CTS (ID Nos. Belt25 and Belt26 to Belt27) controlled by enclosures, ep227

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – These PM emission sources are contained within enclosures, and the permit requires monthly external and annual internal inspections to ensure compliance. Continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions — These emission sources were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .0543, BART – These emission sources are subject to 02D .0543. Please see Section 12 below for further discussion.

The current permit (04176T67) lists these emission sources in Section 2.1.8.A (Shipping Operations). These emission sources will be moved to Section 2.1.2 G as part of this permit renewal because they are part of the Mill Area. The current permit also indicates the emission point for these emission sources are ep652. The emission point for these sources will be changed to ep227 as part of this permit renewal.

Fugitive Emission Sources in the Mill Area (ID Nos. F290 and F291), ep290 and ep291

The current permit (04176T67) lists these fugitive emission sources in Section 2.1.9 B (Miscellaneous Sources). These emission sources will be moved to Section 2.1.2 H as part of this permit renewal because they are part of the Mill Area.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .0543, BART – Fugitive emissions from the calciner plant area (ID No. F291) are subject to 02D .0543. Please see Section 12 below for further discussion.

C. Fertilizer Production Area (Section 2.1.3)

Diammonium phosphate is produced by reacting an aqueous solution of phosphoric acid with ammonia to prepare a partially reacted slurry of MAP and DAP. The slurry is pumped to a reactor where further ammonia is added to yield a DAP product. The DAP product leaving the granulator-reactor is transferred to a dryer. The granular product is then cooled in a cooler and separated by size via screening. Oversized granules can be milled to produce the desired size of granular DAP.

Section 2.1.3 of the current permit (04176T67) includes requirements for PCS when producing granular triple superphosphate (GTSP). The facility no longer produces GTSP and all references to and requirements for GTSP production will be removed as part of this permit renewal.

DAP/MAP Plant No. 2 (ID Nos. 505-104, 505-107, 505-114, 505-110, 505-143, 505-111, 505-103, 505-121) and associated controls, ep303

- 15A NCAC 02D .0507, Particulates from Chemical Fertilizer Manufacturing – No MRR is required for compliance with 02D .0507. Instead, MRR requirements for demonstrating compliance with MACT Subpart BB for these emission source are sufficient to demonstrate compliance with this rule. Continued compliance is anticipated.

- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources – The dryer (ID No. 505-104) is subject to 02D .0516. The permit will be updated to indicate no monitoring or recordkeeping is required when firing natural gas or No. 2 fuel oil in the dryer. The permit will also be clarified to indicate fuel certification is required only for residual oil. Continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – These emission sources were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD – The BACT condition for DAP Plant No. 2 was added to Air Permit No. 04176T28 issued on June 17, 2005. The purpose of the permit was to add purified phosphoric acid plant No. 2 train No. 4 (PAP No. 2 Train No. 4) and to modify the existing phosphoric acid No. 3 plant, as well as the DAP plants. As part of that permit, PSD avoidance restrictions on the DAP Plant No. 2 were removed, and a BACT analysis was conducted. The BACT emission limits for the DAP Plant 2 are provided in the table below.

Emission Source	Pollutant	Control Method	BACT Emission Limit
DAP/MAP Plant No. 2	Nitrogen oxides	Conventional combustion	14.7 pounds per hour
	VOC	Good engineering practices	N/A
	Sulfur dioxide	Scrubbing with process ammonia	15 pounds per hour
	Total fluorides	Venturi and packed bed scrubbers	0.058 pounds per ton of equivalent P_2O_5 feed
	TSP/PM_{10}	Venturi and packed bed scrubbers	64.1 pounds per hour

PCS monitors and records the mass flow rate of phosphorus bearing material to the process, the pressure drop across each wet scrubber, and flow rate of scrubbing liquid to each scrubber to ensure compliance with BACT emission limits. PCS must also test fluoride and PM emissions annually and NO_X and SO_2 emissions every five years to ensure compliance with the BACT emission limits. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Pollutant	Test Date	Test Result	BACT Emission Limit	Compliance
Total Fluorides	07/30/2021	0.009 lb/ton P_2O_5 Feed	0.058 lb/ton P_2O_5 Feed	Yes
Total PM	11/7/2017	11.37 lb/hr	64.1 lb/hr	Yes
SO_2	08/09/2018	11.5 lb/hr	15.0 lb/hr	Yes
NO_X		2.8 lb/hr	14.7 lb/hr	Yes

Notes:
- Phosphoric acid = P_2O_5
- The total fluoride test results were approved by Taylor Ford of the SSCB in a memorandum on November 2, 2021.

Pollutant	Test Date	Test Result	BACT Emission Limit	Compliance
• The total PM test results were approved by Jim Hammond of the SSCB in a memorandum on April 26, 2018. • The SO_2 and NO_X test results were approved by Brent Hall of the SSCB in a memorandum on September 24, 2018.				

- 15A NCAC 02D .0530(u) – PCS must track emissions from DAP Plant 2 for equipment replacement project as specified in Air Permit Application No. 0700071.20C. Please see Section 11.B below for a discussion of 02D .0530(u) requirements associated with this project.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring – Emissions of PM_{10} and total fluorides from the DAP/MAP Plant No. 2 are controlled as specified in Section 1.3 of the permit. Under CAM, PCS must monitor pressure drop and flow rates in the various scrubbers used to control emissions for PM_{10} and fluorides. Scrubber descriptions and identification numbers will be updated to be consistent with those in Section 1.3, recordkeeping and reporting requirements will be added to the permit condition, and the permit condition will be reformatted as part of this permit renewal. PCS also requested to harmonize the parametric monitoring under CAM with those in MACT Subpart BB. DAQ agreed but by making this change, operating outside the parametric ranges represents an exceedance rather than an excursion. DAQ will add a noncompliance statement to the CAM condition as a result of this change. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The feed rate of equivalent phosphoric acid (P_2O_5) to the DAP/ MAP Plant No. 2 is limited to 2,562 tons per calendar day when producing MAP or DAP to ensure compliance with NC Air Toxics. Although the DAP/ MAP Plant No. 2 is subject to MACT Subpart BB and is exempt from NC Air Toxics pursuant to 15A NCAC 02Q .0702(b)(27), this permit condition will remain . Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – DAP Plant No. 2 is subject to "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB. This rule was revised on August 19, 2015, with reconsiderations finalized on September 28, 2017. The condition will be updated to reflect the revisions as part of this permit renewal. Please see Section 10.B below for a discussion of MACT Subpart BB and the changes made as part of this permit renewal. Continued compliance is anticipated.

The current permit (04176T67) requires PCS to submit a TV permit application within 12 months of operation of the granulator (ID No. 505-103) or packed tower tail gas scrubber with saddle-type packing and demister pads (ID No. 505-148) after replacement. This requirement was fulfilled with the submittal of Application No. 0700071.21D on October 14, 2021. This permit condition will be removed from the permit as part of this TV permit renewal.

DAP / MAP Plant No. 3 (ID Nos. 511-085, 511-086, 511-070, 511-032, 511-025, 511-008, 511-009, 511-010, 511-011, 511-016, 511-017, 511-038, 511-039, 511-041, 511-093, 511-094, 511-095, 511-096), ep302

- 15A NCAC 02D .0507, Particulates from Chemical Fertilizer Manufacturing – No MRR is required for compliance with 02D .0507. Instead, MRR requirements for demonstrating compliance with MACT Subpart AA for these emission source are sufficient to demonstrate compliance with this rule. Continued compliance is anticipated.

- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources – The dryer (ID No. 505-104) is subject to 02D .0516. The permit will be updated to indicate no monitoring or recordkeeping is required when firing natural gas or No. 2 fuel oil in the dryer. The permit will also be clarified to indicate fuel certification is required only for residual oil. Continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – These emission sources were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD – The BACT condition for DAP Plant No. 3 was added to Air Permit No. 04176T28 issued on June 17, 2005. The purpose of the permit was to add purified phosphoric acid plant No. 2 train No. 4 (PAP No. 2 Train No. 4) and to modify the existing phosphoric acid No. 3 plant as well as the DAP plants. As part of the permit, PSD avoidance restriction for fluorides on DAP Plant 3 were removed, and a BACT analyses was conducted. The BACT emission limit for DAP Plant 3 is provided in the table below.

Pollutant	BACT	BACT Emission Limit
Total fluorides	Dual mole scrubbing	0.058 pounds per ton of equivalent P_2O_5 feed

PCS monitors and records the mass flow rate of phosphorus bearing material to the process, the pressure drop across each wet scrubber, and flow rate of scrubbing liquid to each scrubber to ensure compliance with the BACT emission limit. PCS must also test fluoride emissions annually to ensure compliance with the BACT emission limit. The most recent testing is provided in the table below. Compliance with the BACT emission limit is demonstrated.

Pollutant	Test Date	Test Result	BACT Emission Limit	Compliance
Total Fluorides	07/30/2020	0.0008 lb/ton P_2O_5 Feed	0.058 lb/ton P_2O_5 Feed	Yes

Notes:
- Phosphoric acid = P_2O_5
- The total fluoride test results were approved by Taylor Ford of the SSCB in a memorandum on December 2, 2020.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Emissions of PM_{10} and total fluorides from the DAP /MAP Plant No. 3 are controlled as specified in Section 1.3 of the permit. Under CAM, PCS must monitor pressure drop across the various scrubbers used to control emissions for PM_{10} and fluorides. Scrubber descriptions and ID numbers will be updated to be consistent with those in Section 1.3, recordkeeping and reporting requirements will be added to the permit condition, and the permit condition will be reformatted as part of this permit renewal. PCS also requested to harmonize the parametric monitoring under CAM with those in MACT Subpart BB. DAQ agreed but by making this change, operating outside the parametric ranges represents an exceedance rather than an excursion. DAQ will add a noncompliance statement to the CAM condition as a result of this change. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The following limits apply to ensure compliance with NC Air Toxics.
  - The equivalent P_2O_5 feed rate shall not exceed 1,188 tons per calendar day when producing MAP.
  - The equivalent P_2O_5 feed rate shall not exceed 1,188 tons per calendar day when producing DAP.
  - The equivalent P_2O_5 feed rate shall not exceed 840 tons per calendar day when producing PAPR.

  Although the DAP/ MAP Plant No. 3 is subject to MACT Subpart BB and is exempt from NC Air Toxics pursuant to 15A NCAC 02Q .0702(b)(27), this permit condition will remain. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – DAP Plant No. 3 is subject to "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB. This rule was revised on August 19, 2015, with reconsiderations finalized on September 28, 2017. The condition will be updated to reflect the revisions as part of this permit renewal. Please see Section 10.B below for a discussion of MACT Subpart BB and the changes made as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02Q .0317, Avoidance Conditions – PCS has accepted PSD avoidance limits for PM_{10} and SO_2 emissions from the DAP plant No. 3. Emissions of SO_2 are limited to 226.2 tons per consecutive 12-month period, and emissions of PM_{10} are limited to 72.0 tons per consecutive 12-month period. No changes to permit are required other than minor updates to most current permitting language.

Ammonium Polyphosphate Plant (ID No. APP-1) as specified in 2.1.3.C, ep304
Ammonium Polyphosphate Plant – Line 2 (ID No. 454-200) as specified in 2.1.3.D, ep306

Production of APP involves two major processing steps. In the first step, the P_2O_5 content of merchant grade feed acid is concentrated to approximately 70 percent P_2O_5 by weight in evaporators and is then directed through aging tanks and filter presses to remove solids and impurities. The product of this process is a low magnesium superphosphoric acid called LOMAG. In the second step of APP production, the concentrated P_2O_5 in the LOMAG and liquid ammonia are fed to a pipe reactor. A highly exothermic reaction occurs in the reactor to form APP, which is also referred to as "POLY11." Reactants are routed to a hotwell, from which the reactants are cycled through various jacketed heat exchangers for cooling. The product is then sent through a filtration system, and permeate from this system is collected and stored as the final APP product and shipped off-site via railcars.[6]

The current permit (04176T67) indicates APP Line 1 (ID No. APP-1) is subject to both 02D .0515 and 02D .0521, even though no particulate emissions have been reported in the annual emission inventories from this emission source. Further, when APP Line 2 was added to Air Permit No. 04176T55, no PM emissions were included in the anticipated emissions from this source. Because no PM emission are expected from the APP production process, references to these regulations will be removed as requirements for APP Line 1 as part of this permit renewal.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. PCS is also limited to an the equivalent P_2O_5 feed rate to APP Line 1 and APP Line 2 of no more than 550 tons per calendar day, each, to ensure compliance with NC Air Toxics. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .0530(u) –The APP Expansion Project as specified in Air Permit Application No. 0700071.17C included construction of APP Line 2 (ID No. 454-200). Emissions from this source and APP Line 1 (ID No. APP-1) are subject to emission tracking under 02D .0530(u). Please see Section 11.A below for a discussion of 02D .0530(u) requirements associated with APP expansion project.

- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation permit – PCS is required to submit a TV permit application within 12 months of commencing operation of any equipment associated with APP plant – Line 2 (ID Nos. 454-200, 451-1100 and 451-1200, 453-750, 453-800, 558-300, 454-240, 454-280, and 454-300). To date, these emission sources have not been constructed, and this requirement will remain in the permit.

Fertilizer Warehouse Fugitives: Warehouse No. 3 (ID No. DAP3WH3), ep390

[6] Description of APP process from permit review for Air Permit No. 04176T38 issued on March 31, 2008 (Fern Paterson, 03/31/08).

The current permit (04176T67) lists this fugitive emission source in Section 2.1.4.E (Superphosphoric Acid Area) of the permit. This emission source will be moved to Section 2.1.3.D as part of this permit renewal because the warehouse is part of the Fertilizer Production Area.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .0530(u) –PCS must track fugitive emissions from Warehouse No. 3 for the equipment replacement project as specified in Air Permit Application No. 0700071.20C. Please see Section 11.B below for a discussion of 02D .0530(u) requirements associated with this project.

The current permit (04176T67) indicates Warehouse No. 3 is subject to MACT Subpart BB for storage of GTSP in accordance with 40 CFR 63.620(b)(3). This product is no longer produced at PCS, and all reference to GTSP will be removed from the permit as part of this renewal. Therefore, Warehouse No. 3 is no longer subject to MACT Subpart BB.

Other Sources in the Fertilizer Production Area listed in Section 2.1.3.E, ep316, ep317, ep318, ep390, ep391, and ep392

The current permit (04176T67) lists these emission sources in Section 2.1.9.B (Miscellaneous Sources) of the permit. These emission sources will be moved to Section 2.1.3.E as part of this permit renewal because they are part of the Fertilizer Production Area.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .0530(u) – PCS must track fugitive emissions from the fertilizer plant fugitives (ID Nos. F391 and F392) for the equipment replacement project as specified in Air Permit Application No. 0700071.20C. Please see Section 11.B below for a discussion of 02D .0530(u) requirements associated with this project.

D. Superphosphoric Acid Production Area (Section 2.1.4)

Superphosphoric Acid (SPA) is made by dehydrating water from phosphoric acid. In this process, P_2O_5 is concentrated to approximately 70 percent P_2O_5 by weight in evaporators and is then directed through aging tanks and filter presses to remove solids and impurities. The SPA can be sold as product (e.g., low magnesium SPA called LOMAG) or can be used in the production of ammonium polyphosphate (APP) in the two APP plants. PCS uses venturi scrubbers to control emissions of HF and fluorides (excluding HF) (F) from its SPA plants.

No. 2 Filter Press (ID No. FPR-2) and No. 3 Filter Press (ID No. FPR-3), ep305

- 15A NCAC 02D .0530, PSD – This BACT condition was included in the initial Title V permit. BACT is applicable to No. 3 Filter Press only and is no controls.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Superphosphoric Acid Plant No. 1 (ID Nos. 451-418 and 451-409) and No. 2 Press Product Tank (ID No. 453-112) equipped with a venturi type wet scrubber, ep330
Superphosphoric Acid Plant No. 2 (ID Nos. 451-701 and 451-809) and No. 3 Press Product Tank (ID No.

453-409) equipped with a venturi type wet scrubber (ID No. 451-807), ep331

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards – PCS demonstrates compliance with this regulation with annual compliance testing. No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PM emissions from this source are negligible, and No MRR is required for compliance with 02D .0515. Continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – PM emissions from this source are negligible, and VE is not anticipated. No MRR is required for compliance with 02D .0521. Continued compliance is anticipated.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – SPA Plants 1 and 2 are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. This rule was revised on August 19, 2015, and on September 28, 2017, EPA published final amendments of Subpart AA (82 FR 45199). Per the final amendments for Subpart AA, beginning on August 19, 2018, PCS was required to include emissions from oxidation reactors, (i.e., the Nos. 2 and 3 Press Product Tanks (ID Nos. 453-112 and 453-409)), when determining compliance with the total fluorides limit for the SPA process lines. This requirement was included in the permit condition for MACT Subpart AA.

  Please see Section 8 below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0543, BART – SPA Plants Nos. 1 and 2 are subject to 02D .0543. Please see Section 12 below for further discussion.

Superphosphoric acid plant No. 3 (ID Nos. 451-316 and 451-308) and superphosphoric acid plant No. 4 (ID Nos. 451-916 and 451-940) equipped with a wet venturi type scrubber (ID No. 451-315), ep332

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PM emissions from this source are negligible, and No MRR is required for compliance with 02D .0515. Continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – PM emissions from this source are negligible, and VE is not anticipated. No MRR is required for compliance with 02D .0521. Continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD - The following BACT emission limit for SO_2 emissions from SPA Plants 3 and 4 was added to Air Permit No. 04176T28 issued on June 17, 2005.

Pollutant	BACT	BACT Emission Limit
SO_2	Wet Scrubbing	400 lb/day combined

PCS monitors and records the mass flow rate of phosphorus bearing material to the process, the pressure drop across each wet scrubber, and flow rate of scrubbing liquid to each scrubber to ensure compliance. PCS must also test SO_2 emissions annually to ensure compliance with the BACT emission limits. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Pollutant	Test Date	Test Result	BACT Emission Limit	Compliance
SO_2	10/26/2021	12.05 lb/day	400 lb/day combined	Yes
Notes: The SO_2 test results were approved by Taylor Fort of the SSCB in a memorandum on February 28, 2022.				

- 15A NCAC 02D .0530(u) – Sulfuric acid plants Nos. 3 and 4 are subject to emission tracking under 02D .0530(u), as part of the APP expansion project as specified in Air Permit Application No. 0700071.17C. Please see Section 11.B below for a discussion of 02D .0530(u) requirements associated with APP expansion project.

- 15A NCAC 02D .1111, MACT – SPA Plants 3 and 4 are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

- 15A NCAC 02D .0543, BART – SPA Plants Nos. 3 and 4 are subject to 02D .0543. Please see Section 12 below for further discussion.

Additive Storage Silo (ID No. 453-468) controlled by a bagfilter (ID No. 453-470), ep341

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PCS demonstrates compliance with this rule by conducting monthly external and annual inspections of the bagfilter (ID No. 453-470). No changes to the permit are required and continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – The additive storage silo (ID No. 453-468) was manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

PCS uses a bagfilter (ID No. 453-470) to control PM emissions from the additive storage silo (ID No. 453-468), and the current permit (04176T67) contains CAM conditions for the silo. PCS has requested to remove these requirements. As discussed in Section 7 above, PCS revised the emission calculations for the silos based on maximum throughput. With this approach, the precontrolled emissions of PM from the additive silo is 5.81 tons per year. This value is below the CAM threshold of 100 tpy for criteria pollutants. Therefore, this emission source is not subject to CAM, and the CAM permit condition will be removed as part of this permit renewal.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Superphosphoric acid plant No. 5 (ID Nos. 451-1100 and 451-1200) equipped with a venturi type wet scrubber (ID No. 451-1300),ep333

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – As noted in the permit review for the permitting of SPA Plant No. 5, PM emissions from this source are negligible.[7] No MRR is required for compliance with 02D .0515 for this emission source.

[7] Permit review for Air Permit No. 04176T55 (Betty Gatano, 01/02/2018).

- 15A NCAC 02D .0521, Control of Visible Emissions – As noted in the permit review for the permitting of SPA Plant No. 5, PM emissions from this source are negligible, and VE is not anticipated. No MRR is required for compliance with 02D .0521 for this emission source.

- 15A NCAC 02D .0530(u) – APP expansion project as specified in Air Permit Application No. 0700071.17C included construction of sulfuric acid plant No. 5. Once operational, emissions from this plant are subject to emission tracking under 02D .0530(u). Please see Section 11.B below for a discussion of 02D .0530(u) requirements associated with APP expansion project.

- 15A NCAC 02D .1111, MACT – SPA Plant No. 5 was added to the permit as part of Air Permit No. 04176T55 and is subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. The SPA Plant No. 5 will be constructed after August 19, 2015 and is, therefore, a considered new emission source under MACT Subpart AA.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation permit – SPA Plant No. 5 was added to the permit as part of the modification to add the APP – Line 2. As noted above, PCS is required to submit a TV permit application within 12 months of commencing operation of any equipment associated with APP plant – Line 2 (ID Nos. 454-200, 451-1100 and 451-1200, 453-750, 453-800, 558-300, 454-240, 454-280, and 454-300). SPA Plant No. 5 has not yet been constructed, and this permit condition will remain in the permit.

No. 1 filter press repulp tank (ID No. 453-1), ep335, and No. 2 and No. 3 filter presses repulp tank (ID No. 453-406), ep336

The current permit (04176T67) lists these emission sources in Section 2.1.9.B (Miscellaneous Sources). These emission sources will be moved to Section 2.1.4.F as part of this permit renewal because they are part of the SPA Plant Area.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

E. Phosphoric Acid Production Area (Section 2.1.5)

PCS produces phosphoric acid by contacting processed (calcined and/or sized) calcium phosphate rock with sulfuric acid. Calcined rock is used to produce green acid and uncalcined rock is used to produce amber acid. The calcium is converted to calcium sulfate and the phosphate is converted to phosphoric acid. Uncalcined rock contains organic matter that is charred by the sulfuric acid, which results in the amber color. The process is known as the wet process and PCS operates four of these wet process conversion trains. Each train involves rock digestion, described above, filtration, and concentration. Digestion takes place in a nine-compartment reactor train and the slurry is flash cooled before filtration in a vacuum-assisted tilting pan filter. Emissions from these processes are collected and sent to a scrubber. The solids in the filtrate (26 percent phosphoric acid) are settled out before it is sent to the concentrators where water is evaporated to concentrate the acid. The concentrated acid is then sent to the clarifiers to remove fluorosilicates, iron, and soluble gypsum (calcium sulfate). The two evaporators are equipped with fluoride recovery units to produce a salable product (hydrofluorosilicic acid) and the clarifier is be equipped with a venturi scrubber.

Phosphoric Acid Train Nos. 1, 2, 3, and 4 and associated equipment and controls as delineated in Section 2.1.5.A, ep401 through ep410,

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards - PCS demonstrates compliance with this rule by testing on train annually as required under 15A NCAC 02D .0501(c). No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD – The BACT condition for the phosphoric acid trains was added to Air Permit No. 04176T28 issued on June 17, 2005. The BACT emission limits for the phosphoric acid plants are provided in the table below.

Emission Source	Pollutant	BACT	BACT Emission Limit
PA Train No. 1 (ep 401, ep 402, ep 403)	Total Fluorides	Crossflow packed scrubber	0.020 pound per ton P_2O_5 feed
PA Train No. 1 (ep 401)	Sulfur dioxide	Crossflow packed scrubber	486 pounds per day
PA Train No. 2 (ep 404)	Sulfur dioxide	Crossflow packed scrubber	486 pounds per day
PA Train No. 2 (ep 403, ep 404, ep 405)	Total Fluorides	Crossflow packed scrubber	0.020 pounds per ton P_2O_5 feed
PA Train No. 3 (ep 406, ep 407, ep 408)	Total Fluorides	Crossflow packed scrubber	0.020 pounds per ton P_2O_5 feed
PA Train No. 3 (ep 406)	Hydrogen sulfide	Crossflow packed scrubber	435 pounds per day
PA Train No. 3 (ep 406)	Sulfur dioxide	Crossflow packed scrubber	960 pounds per day
PA Train No. 4 (ep 408, ep 409, ep 410)	Total Fluorides	Crossflow packed scrubber	0.020 pounds per ton P_2O_5 feed
PA Train No. 4 (ep 409)	Hydrogen sulfide	Crossflow packed scrubber	510 pounds per day
PA Train No. 4 (ep 409)	Sulfur dioxide	Crossflow packed scrubber	960 pounds per day

The current permit (04176T67) indicates the BACT emission limit for SO_2 from PA Trains 3 and 4 is 961 pounds per day. This value appears to be a mistake. PCS conducted revised air modeling for Air Permit No. 04176T39 issued on June 16, 2008 for compliance with 02D .0501(c), and the modeled rate for SO_2 from these emission sources equated to 961 pounds per day. However, the permit review associated with Air Permit No. 04176T39 stated the following:

> *"While the modeled emission rates [961 lb/day] for these sources were higher than the currently permitted allowable emission rates [960 lb/day], the permitted emission rates are BACT limits established through PSD permitting and cannot be increased without a full PSD review pursuant to 15A NCAC 2D .0530."*

The limit appears to have been inadvertently increased to 961 lb/day despite the caveat noted above at the last permit renewal under Air Permit No. 04176T47 issued on January 9, 2013. The limit will be corrected as part of this permit renewal.

PCS ensures compliance by following monitoring and recordkeeping as required under MACT Subpart AA for these sources. PCS must also test SO_2 emissions annually from one of the four PA trains and test

hydrogen sulfide (H_2S) emissions every five years from either Train No. 3 or No. 2. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Emission Source	Pollutant	Test Date	Test Result	BACT Emission Limit	Compliance
PA Train 3 (ep 406)	SO_2	03/21/2021	283 lb/day	961 lb/day	Yes
PA Train No. 4 (ep 409)	H_2S	02/20/2020	150 lb/day	510 lb/day	Yes

Notes:
- The test results for SO_2 were approved by Taylor Fort of the SSCB in a memorandum on February 14, 2022.
- The test results for H_2S were approved by Gregg O'Neal of the SSCB in a memorandum on September 21, 2020.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Emissions of SO_2 and H_2S from Phosphoric Acid Train Nos. 1 through 4 are controlled as specified in Section 1.5 of the permit. Under CAM, PCS must monitor pressure drop across the various scrubbers used to control emissions for SO_2 and H_2S. Scrubber descriptions and identification numbers will be updated to be consistent with those in Section 1.5, recordkeeping and reporting requirements will be added to the permit condition, and the permit condition will be reformatted as part of this permit renewal. PCS also requested to harmonize the parametric monitoring under CAM with those in MACT Subpart BB. DAQ agreed but by making this change, operating outside the parametric ranges represents an exceedance rather than an excursion. DAQ will add a noncompliance statement to the CAM condition as a result of this change. Continued compliance is anticipated.

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The phosphoric acid trains are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. Under this rule, total fluorides emissions from the phosphoric acid trains are limited to of 0.020 lb/ton of equivalent P_2O_5 feed. PCS ensures compliance by testing each phosphoric acid (ep 401 through ep409) annually. PCS must also continuously monitor the liquid flowrate on the crossflow scrubbers (ID Nos. 421-225, 422-225, 423-225, and 424-225) and the pressure drop across the cyclonic scrubbers (ID Nos. 443-061 and 442-061).

  PCS previously requested an exception to the annual testing noted above for the belt filter vacuum pumps (ID Nos. 441-015, 442-015, 443-015, and 444-015). Within each phosphoric acid train, PCS Phosphate operates three uncontrolled sources (1) a belt filter filtrate separator; (2) spray tower separator; and (3) belt filter vacuum pump. In all four trains, emissions from the belt filter filtrate separator and the spray tower separator are routed through the vacuum pump vent, where they are emitted to the atmosphere. During the annual testing for the Subpart AA compliance, the vacuum pump emissions ranged from 0.116 to 1.55 percent of the total train emissions. Therefore, the emissions from the vacuum pump vent were 0.08 percent to 1 percent of the MACT limit and indicate a large margin of compliance.

  DAQ granted this reduced testing frequency for the the belt filter vacuum pumps (ID Nos. 441-015, 442-015, 443-015, and 444-015) in Air Permit No. 04176T54 issued on December 15, 2017. PCS will continue to conduct annual performance testing of all phosphoric acid train emission points, with the exception of the vacuum pumps vent, which will be tested on a reduced frequency.

  MACT Subpart AA was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Please see Section 10.A below for a discussion of MACT Subpart AA, and the changes made as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02Q .0317, Avoidance Conditions, for PSD avoidance – PCS has accepted PSD avoidance limits for total sulfuric acid emissions (TSR) from all four phosphoric acid trains. TSR emissions from all trains are limited to 2027.61 tons per consecutive 12-month period, and TSR emissions from trains 1, 2, and 4 are limited to 1,728.3 tons per consecutive 12-month period when processing calcined rock. PCS conducts testing once per permit term to demonstrate compliance. PCA also calculates the production rates and TRS emissions monthly and reports them semiannually. No changes to permit are required other than minor updates to most current permitting language. Continued compliance is anticipated.

- 15A NCAC 02Q .0317, Avoidance Conditions, for avoidance of NC Air Toxics - PCS has accepted two permit conditions to avoid applicability to NC Air Toxics. These avoidance conditions were added under Air Permit No. 04176T58 issued on May 9, 2019, with the following justification provided in the permit review.

  > Sections 2.1.5 A.5 and A.6 of [Air Permit No. 04176T57] contain operational limits for Phosphoric Acid Train Nos. 1 through 4 to ensure compliance with NC Air Toxics. With the removal of air toxics requirements for emission sources subject to NESHAP/MACT, operational limits for compliance with NC Air Toxics are no longer valid. However, these limits will remain in the permit as avoidance limits for NC Air Toxics, in accordance with 15A NCAC 02Q .0317(a)(8). These avoidance limits provide further assurance that removing the Phosphoric Acid Train Nos. 1 through 4 from NC Air Toxics "does not present a risk to human health."

  No changes to the permit are required as part of the permit renewal, and continued compliance is anticipated.

- 15A NCAC 02D .0543, BART – Emission sources associated with emission points 401, 404, 406, and 409 are subject to 02D .0543. Please see Section 12 below for further discussion.

Miscellaneous Tanks associated with the Phosphoric Acid Production Area in Section 2.1.5.B, ep421, ep422, ep450, ep492, ep423

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Phosphate rock jet conveyors reactor train Nos. 1 and 2 (ID Nos. 429-002 and 421-115 and 429-005 and 422-115) in Section 2.1.5.C, ep430 and ep431
Phosphate rock storage silo No. 1 (ID No. 429-152) and three transfer points (ID Nos. 429-001, 429-004, and 429-151) in Section 2.1.5.D, ep434
Phosphate Rock Transfer House (ID No. 429-150) in Section 2.1.5.E, ep437

- 15A NCAC 02D .0521, Control of Visible Emissions – Emission sources in Sections 2.1.5.C through E were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD – The BACT conditions for these emission sources were included in the initial Title V permit 04176T28 issued on June 17, 2005 and are provided in the table below.

Emission Source	Pollutant	BACT	Emission Limit
PA No. 1 Rock Transfer Point conveyor GS-103 and PA Train 1 transfer point (ep 430)	Total Fluorides	enclosure and fabric filtration	1.78×10^{-2} pound per hour
	PM_{10}	enclosure and fabric filtration	10.7 pounds per day
PA No. 2 Rock Transfer Point conveyor GS-203 and PA Train 2 transfer point (ep 431)	Total Fluorides	enclosure and fabric filtration	1.78×10^{-2} pound per hour
	PM_{10}	enclosure and fabric filtration	10.7 pounds per day
PA Rock Transfer Points conveyor 70-1 and 70-2 transfer point (ep 434)	Total Fluorides	enclosure and fabric filtration	1.46×10^{-2} pound per hour
	PM_{10}	enclosure and fabric filtration	8.74 pounds per day
PA Rock Transfer Point conveyor 70-2 transfer point (ep 437)	Total Fluorides	enclosure and fabric filtration	1.10×10^{-2} pound per hour
	PM_{10}	enclosure and fabric filtration	6.58 pounds per day

PCS ensures compliance by conducting monthly visible inspections of the control devices and annual internal inspections for structural integrity. No changes the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring – PM_{10} emissions from emission sources in Sections 2.1.3.C through E are controlled by bagfilters. These emission sources are subject to CAM. The CAM conditions will be updated to allow PCS to conduct either daily VE observations or daily pressure drop readings across the control devices. Recordkeeping and reporting requirements for CAM will be added, and the permit condition will be reformatted as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Diatomaceous Earth Silo (ID No. 426-154) controlled with a bagfilter (ID No. 426-161), ep451, and Additive Storage Silo (ID No. 426-240) controlled with a bagfilter (ID No. 426-242), ep494

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PCS demonstrates compliance with this rule by conducting monthly external and annual inspections of the bagfilters (ID Nos. 426-161 and 426-242). No changes to the permit are required, and continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – These emission sources were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Only the diatomaceous earth silo (ID No. 426 154), which uses a bagfilter (ID No. 426-161) to control PM_{10} emissions, is subject to CAM. The CAM condition will be updated to allow PCS to conduct either daily VE observations or daily pressure drop readings across the control devices. Recordkeeping and reporting requirements for CAM will be

added, and the permit condition will be reformatted as part of this permit renewal. Continued compliance is anticipated.

Phosphoric Acid Recirculation Water Cooling Tower Fans (ID Nos. ES461 and ES462), ep461 and ep462

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling towers are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

HF Production Process as delineated in Section 2.1.5.H, ep426, ep427, ep428, ep440, and ep441

PCS produces HF using 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 is then distilled in the HF trains (ID Nos. GWO3-A and GWO3-B) to produce anhydrous HF.

The HF Production Process has been construction, and operation is expected in May or June of 2022.

When the HF Production Process was permitted,[8] potential emissions of HAPs were determined after the controls (ID Nos. HFVS-1, HFPB-1, HFVS-2 and HFPB-2). This approach for determining potential emission is allowed as specified in the definition of potential to emit in 40 CFR 63.2, which states:

> *Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is enforceable by the Administrator.

Potential emissions of HAPs from the HF Production Process are less than 10 tons per year of any one HAP or 25 tons per year of any combination of HAPs. The current permit (04176T67) requires PCS to verify potential emissions of HAPs from the process by conducting source testing within 180 days of beginning operation of the HF Production Process. A condition for avoidance of the 112(g) Case-by-Case MACT will be also added to the permit as part of the TV permit renewal. See discussion below under 15A NCAC 02Q .0317 for more details.

PCS also used potential emissions to determine if the modification to add the HF Production Process was a major modification under PSD. Potential emissions from the HF Production Process were compared with applicable PSD significant emission rates (SER). PCS assumed no baseline emissions for any emission sources as a worst-case assumption. Potential emissions of regulated NSR pollutants were less than the SERs. For fluorides, potential emissions or potential to emit from the HF Production Process were determined after the controls . A PSD avoidance condition for fluoride emissions will be added to the permit as part of the TV permit renewal. See discussion below under 15A NCAC 02Q .0317 for more details.

[8] Permit review for Air Permit No. 04176T59 (Betty Gatano, 11/22/2019).

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The additive storage silo (ID No. LS-1) with associated fabric filter (ID No. LSBF-1) and the additive bin (ID No. LB-1) with associated fabric filter (ID No. LBF-1) are subject to 02D .0515. 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 VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS is required to establish normal conditions within the first 30 days of operation of these sources and to conduct monthly visible emission observations to ensure compliance. Compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02Q .0317, Avoidance Conditions – Avoidance conditions for the following regulations will be added to the permit as part of this TV permit renewal:

    - 15A NCAC 02D .1112, 112(g) Case-by-Case Maximum Achievable Control Technology – The permit will include an avoidance condition to limit HAP emissions to less than 10 tons per year of any one HAP and less than 25 tons per year for all HAPs combined. PCS will be required to operate with controls and to conduct source testing to quantify the emissions of hydrogen fluoride, fluoride (excluding hydrogen fluoride), and hydrogen chloride from either HF Train 1 or 2 (ep440 or ep441) within 180 days of beginning operation of the HF Production Process. PCS will also be required calculate HAP emissions monthly, and report emissions semiannually to ensure compliance with the HAP avoidance limit. Compliance is anticipated.

    - 15A NCAC 02D .0530, Prevention of Significant Deterioration – The permit will include an avoidance condition to limit emissions of fluoride to less than 3 tons per year. PCS will be required to operate with controls and to calculate fluoride emissions monthly, and report emissions semiannually to ensure compliance with this avoidance limit. Compliance is anticipated.

EPA has established regulations for several source categories as part of 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 HF Production Process at PCS is not subject to MACT Subpart YY. A non-applicability statement indicating this process is not subject to MACT Subpart AA is included in Section 2.5 of the permit.

Phosphate rock storage silo (ID No. 429-157) and four transfer points (ID Nos. 429-158, 429-009, 429-181, 429-183), ep435

The current permit (04176T67) lists these emission sources in Section 2.1.8.A (Shipping Operations) of the permit. These emission sources will be moved to Section 2.1.5.I as part of this permit renewal because they are part of the Phosphoric Acid Production Area.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PCS demonstrates compliance with this rule by conducting monthly external and annual inspections of the bagfilter (ID No. 429-164). No changes to the permit are required, and continued compliance is anticipated.
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- 15A NCAC 02D .0521, Control of Visible Emissions – These emission sources were manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). PCS conducts monthly visible emission observations to ensure compliance. The permit condition will be updated to reflect the most current permitting language as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring – PM and PM_{10} emissions from these emission sources are controlled with a bagfilter. These emission sources are subject to CAM. The CAM condition will be updated to allow PCS to conduct either daily VE observations or daily pressure drop readings across the control devices. Recordkeeping and reporting requirements for CAM will be added, and the permit condition will be reformatted as part of this permit renewal. Continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 13 below for a discussion of NC Air Toxics

Process Vessels Nos. 1 and 2 Product Tank (ID Nos. 426-208, 426-232, and 426-200), ep439
Filter press No. 1 and filter press No. 2 building vent No. 1 (ID No. 426-220), ep495
Filter press No. 1 and filter press No. 2 building vent No. 2 (ID No. 426-226), ep497

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

F. Purified Phosphoric Acid (PPA) Production Area (Section 2.1.6)

This plant purifies phosphoric acid by solvent extraction with methyl isobutyl ketone to produce the following:
- a low alkali, high-purity phosphoric acid suitable for use in technical and food grade manufacturing;
- a high alkali phosphoric acid suitable for manufacturing technical grade derivatives; and
- a raffinate, which is used in manufacturing fertilizers at the Aurora site.

The cooling towers are necessary to provide cooling water used in the solvent recovery phase of the operation.

In the addendum to the TV permit renewal, PCS requested to replace the term "raffinate" with "fertilizer grade acid." Because the term "raffinate" is specifically used in the emission limitations in MACT Subpart AA, this change was not made.

Emission sources in Purified Phosphoric Acid Plant No. 1, Trains 1 and 2 as delineated in Section 2.1.6.A, ep501

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – These emission sources are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. PCS ensures compliance by monitoring the temperature at the chiller outlet and measuring the concentration of methyl isobutyl ketone (MIBK) in the acid stream and the raffinate stream daily.

  MACT Subpart AA for the purified acid plants also requires PCS to follow leak detection and repair (LDAR) requirements in 40 CFR 63, Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks, in accordance with 40 CFR 63.602(f).

  MACT Subpart AA was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Under the updated rules, SSM provisions are no longer

applicable to PPA plants, and this requirement will be removed from the permit as part of the permit renewal. Please see Section 10.A below for a discussion of MACT Subpart AA and the other changes made as part of this permit renewal. Continued compliance is anticipated.

Purified Acid Plant No. 1, Trains 1 and 2 – three acid defluorination columns with concentrators (ID Nos. ID S88/T70, S288/T100, S118/T270), ep502

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

Purified Acid Plant No. 1, Trains 1 and 2 – Direct Cooling Tower (ID No. E180 (CT-1)) and Indirect Cooling Tower (ID No. E181 (CT-2)), ep510/511 and ep512/513

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling towers are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

Emission sources in Purified Acid Plant No. 2, Train 3 as delineated in Section 2.1.6.D, ep503

- 15A NCAC 02D .0530, PSD – The BACT emission limits for the chillers in the Purified Acid Plant No. 2, Train 3 were included in the initial Title V permit and are provided in the table below.

Emission Source	Pollutant	BACT	Emission Limit
Purified Acid Plant No. 2, Train 3 Chiller Stack (ep503)	VOC	Chiller	Maintain a daily average chiller stack exit gas stream temperature less than or equal to 50 °F
	Total Fluorides	Chiller	1.52×10^{-2} pounds per hour

PCS ensures compliance by measuring the stack gas exit temperature of each chiller stack and measuring the concentration of the methyl isobutyl ketone in each product acid steam and fertilizer grade acid stream daily. PCS must also test total fluoride emissions from the chiller stack every five years. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Emission Point	Pollutant	Emissions	BACT Emission Limit	Regulation	Compliance
ep503	Total Fluorides	1.45 E-07 lb/hr	1.52 E-02 lb/hr	02D .0530 BACT	Yes
Notes: • Testing was performed May 9 through 11, 2017. • The test results were approved by Brent Hall of the SSCB in a memorandum on June 11, 2017.					

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – These emission sources are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. PCS ensures compliance by monitoring the temperature at the chiller outlet and measuring the concentration of methyl isobutyl ketone (MIBK) in the acid stream and the raffinate stream daily.

MACT Subpart AA for PPA plants also requires PCS to follow leak detection and repair (LDAR) requirements in 40 CFR 63, Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks, in accordance with 40 CFR 63.602(f).

MACT Subpart AA was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Under the updated rules, SSM provisions are no longer applicable to PPA plants, and this requirement will be removed from the permit as part of the permit renewal. Please see Section 10.A below for a discussion of MACT Subpart AA and the other changes made as part of this permit renewal. Continued compliance is anticipated.

Purified Acid Plant No. 2, Train 3 – two acid defluorination column/concentrators (ID Nos. S1088/T1070 and S1118/T1100) controlled via a wet spray tower with a demister pad (ID Nos. S1092 and S1122, respectively), ep504

- 15A NCAC 02D .0530, PSD – The BACT emission limit for the concentrators in Purified Acid Plant No. 2, Train 3 was included in the initial Title V permit and is provided in the table below.

Emission Source	Pollutant	Control Method	BACT Emission Limit
Purified Acid Plant No. 2, Plant 3 Two acid defluorination column/concentrators (ep504)	Total Fluorides	Scrubber (wet spray tower)	0.0688 pounds per hour

PCS ensures compliance by measuring the liquid injection rate for the wet spray towers controlling the concentrators. PCS must also test total fluoride emissions from the chiller stack every five years. The most recent testing is provided in the table below. Compliance with the BACT emission limit is demonstrated.

Emission Point	Emissions	BACT Emission Limit	Regulation	Compliance
ep504	2.42 E-03 lb/hr	6.88 E-02 lb/hr	02D .0530 BACT	Yes
Notes: • Testing was performed May 9 through 11, 2017. • The test results were approved by Brent Hall of the SSCB in a memorandum on June 11, 2017.				

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

PCS uses a bagfilter wet spray tower (ID Nos. S1092) to control total fluorides from the acid defluorination column/concentrators (ID Nos. S1088/T1070 and S1118/T1100), and the current permit (04176T67) contains CAM conditions for these emission sources. PCS has requested to remove these requirements because the precontrolled emissions of total fluorides are less than major source levels. The BACT emission limit for total fluorides is 0.0688 lb/hr or 0.30 ton/yr. The control efficiency of the spray tower absorber (ID No. S1092) is estimated at 99%. With this efficiency, the resulting precontrolled emissions of total fluorides are estimated at 30 tons per year. This value is below the CAM threshold of 100 tpy for criteria pollutants. Therefore, this emission source is not subject to CAM, and the CAM permit condition will be removed as part of this permit renewal.

Purified Acid Plant No. 2, Train 3 –Direct Cooling Tower No. 1 (ID No. E1180), ep514/515

- 15A NCAC 02D .0530, PSD – The BACT emission limits for this cooling tower were included in the initial Title V permit and are provided in the table below. No MRR is required for compliance with these BACT emission limits.

Emission Source	Pollutant	Control Method	BACT Emission Limit
PAP No. 2 Cooling Tower No. 1	PM_{10}	Drift Elimination System	0.11 pounds per hour
	Total Fluorides	Drift Elimination System	0.072 pounds per hour

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling tower is subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

Purified Acid Plant No. 2, Train 3 –Indirect Cooling Tower No. 3 (ID No. E1181), ep516/517

- 15A NCAC 02D .0530, PSD – The BACT emission limit for this indirect cooling tower was revised as part of Air Permit No. 04176T37 issued on January 4, 2008. The BACT emission limit for this cooling tower is provided in the table below. No MRR is required for compliance with this BACT emission limit.

Emission Source	Pollutant	Control Method	BACT Emission Limit
PAP No. 2 Cooling Tower No. 3	PM_{10}	Drift Elimination System	0.072 pounds per hour

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling tower is subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

Emission sources in Purified Acid Plant No. 2 Train No. 4 as delineated in Section 2.1.6.H, ep503

- 15A NCAC 02D .0530, PSD – The BACT emission limits for the chillers in the Purified Acid Plant No. 2, Train 3 were included in the initial Title V permit and are provided in the table below.

Emission Source	Pollutant	Control Method	BACT Emission Limit
Purified Acid Plant No. 2, Train 4 Chiller Stack (ep503)	VOC	Chiller	Maintain a daily average chiller stack exit gas stream temperature less than or equal to 50 °F
	Total Fluorides	Chiller	1.52×10^{-2} pounds per hour

PCS ensures compliance by measuring the stack gas exit temperature of each chiller stack and measuring the concentration of the methyl isobutyl ketone in each product acid steam and fertilizer grade acid stream daily. PCS must also test total fluoride emissions from the chiller stack every five years. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Emission Point	Pollutant	Emissions	BACT Emission Limit	Regulation	Compliance
ep503	Total fluorides	1.45 E-07 lb/hr	1.52 E-02 lb/hr	2D .0530 BACT	Yes
Notes: • Testing was performed May 9 through 11, 2017. • The test results were approved by Brent Hall of the SSCB in a memorandum on June 11, 2017.					

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – These emission sources are subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. PCS ensures compliance by monitoring the temperature at the chiller outlet and measuring the concentration of methyl isobutyl ketone (MIBK) in the acid stream and the raffinate stream daily.

  MACT Subpart AA for the purified acid plants also requires PCS to follow leak detection and repair (LDAR) requirements in 40 CFR 63, Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks, in accordance with 40 CFR 63.602(f).

  MACT Subpart AA was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Under the updated rules, SSM provisions are no longer applicable to PPA plants, and this requirement will be removed from the permit as part of the permit renewal. Please see Section 10.A below for a discussion of MACT Subpart AA and the other changes made as part of this permit renewal. Continued compliance is anticipated.

Purified Acid Plant No. 2, Train No. 4 - Acid Defluorination Column/Concentrator (ID No. S1288/T1270) , controlled with wet spray tower with demister pad (ID No. S1292), ep506

- 15A NCAC 02D .0530, PSD – The BACT emission limit for the concentrator in Purified Acid Plant No. 2, Train 4 was included in the initial Title V permit and is provided in the table below.

Emission Source	Pollutant	Control Method	BACT Emission Limit
Purified Acid Plant No. 2, Plant 4 Acid defluorination column/concentrator (ep506)	Total Fluorides	Scrubber (wet spray tower)	0.0688 pounds per hour

PCS ensures compliance by measuring the liquid injection rate for the wet spray tower controlling the concentrator. PCS must also test total fluoride emissions from the concentrator every five years. The most recent testing is provided in the table below. Compliance with the BACT emission limits is demonstrated.

Emission Point	Pollutant	Emissions	BACT Emission Limit	Regulation	Compliance
ep506	Total fluorides	1.14 E-03 lb/hr	6.88 E-02 lb/hr	02D .0530 BACT	Yes
Notes: • Testing was performed May 9 through 11, 2017. • The test results were approved by Brent Hall of the SSCB in a memorandum on June 11, 2017.					

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

PCS uses a bagfilter wet spray tower (ID Nos. S1292) to control total fluorides from the acid defluorination column/concentrator (ID No. S1288/T1270), and the current permit (04176T67) contains CAM conditions for these emission sources. PCS has requested to remove these requirements because the precontrolled emissions of total fluorides are less than major source levels. The BACT emission limit for total fluorides is 0.0688 lb/hr or 0.30 ton/yr. The control efficiency of the spray tower absorber (ID No. S1292) is estimated at 99%. With this efficiency, the resulting precontrolled emissions of total fluorides are estimated at 30 tons per year. This value is below the CAM threshold of 100 tpy for criteria pollutants. Therefore, this emission source is not subject to CAM, and the CAM permit condition will be removed as part of this permit renewal.

Purified Acid Plant No. 2 Train No. 4 – Direct Cooling Tower No. 3 (ID No. 1380), ep518/519

- 15A NCAC 02D .0530, PSD – The BACT emission limits for this cooling tower were included in the initial Title V permit and are provided in the table below. No MRR is required for compliance with these BACT emission limits.

Emission Source	Pollutant	BACT	BACT Emission Limit
PAP No. 2 Cooling Tower No. 3	PM_{10}	Drift Elimination System	0.0367 pounds per hour
	Total Fluorides	Drift Elimination System	0.072 pounds per hour

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling tower is subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

Purified Acid Plant No. 2 Train No. 4 – Indirect Cooling Tower No. 4 (ID No. 1381), ep520/521

- 15A NCAC 02D .0530, PSD – The BACT emission limit for this indirect cooling tower was revised as part of Air Permit No. 04176T37 issued on January 4, 2008. The BACT emission limit for this cooling

tower is provided in the table below. No MRR is required for compliance with these BACT emission limits.

Emission Source	Pollutant	BACT	BACT Emission Limit
PAP No. 2 Cooling Tower No. 4	PM_{10}	Drift Elimination System	0.072 pounds per hour

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The cooling tower is subject to "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. As required by the MACT, PCS must not not introduce any liquid effluent from any absorber installed to control emissions from process equipment into any evaporative cooling tower. PCS must also certify annually that this requirement has been met. This rule was revised on August 19, 2015 and the condition will be updated to reflect the revisions as part of this permit renewal. Continued compliance is anticipated.

  Please see Section 10.A below for a discussion of MACT Subpart AA and the changes made as part of this permit renewal.

Purified Acid Plant Tank Farm, ep590 through ep593

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

The current permit (04176T67) lists these emission sources in Section 2.1.9.B (Miscellaneous Sources). These emission sources will be moved to Section 2.1.6.L as part of this permit renewal because they are part of the Purified Acid Plant.

G. Calcium Phosphate Production Area (Section 2.1.7)

The DFP plant was replaced with Calcium Phosphate Production Area as part of Air Permit No. 04176T61 issued on June 19, 2020.

The calcium phosphate process begins with milled limestone being shipped to PCS via rail cars and stored in silos until needed. The milled limestone will be fed by screw conveyor where it will be combined with 54 percent phosphoric acid in the pug mill, along with recycled material from subsequent processing steps, to produce wet calcium phosphate. Due to the inherently low emissions from these operations, exhaust from the operation is uncontrolled. Wet calcium phosphate will be transferred to a dryer and delumper for processing. The dried product will then go through a series of screening/conveying operations, followed by additional product conveying operations and final screening operations prior to product loadout. Product will be offloaded using the bagging and tote filling equipment relocated from the Morehead City facility or the truck/railcar loadout equipment formerly used in the DFP process.

Emission sources in the Calcium Phosphate Production Area as Delineated in Section 2.1.7.A, ep759, ep760, ep761, ep762, ep765, ep774, ep777, ep717, ep783, ep718, ep754

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – PCS demonstrates compliance with this rule by conducting monthly external and annual inspections of the bagfilters (ID Nos. 381.106, 381.110, 381.120, 381.130, and 381.150) and dust collectors (ID Nos. 3871.385, 381.390, 381.490, 381.435, 381.440, and 381.585).

  For the dryer and delumper, PCS demonstrates compliance by maintaining pressure drop and liquid flow rate across the venturi scrubber (ID No. 381.165). PCS must conduct testing on the dryer and delumper

to establish the minimum daily average pressure drop and liquid injection rate for the venturi scrubber for compliance with 02D .0515, within 180 days of commencing operation.

No changes to the permit are required, and compliance is anticipated.

- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources – The ultra-low sulfur diesel-fired dryer (ID No. 381.215) is subject to this rule. PCS will use ultra-low sulfur diesel (ULSD) in the dryer, and no MRR is required because of its low sulfur content of this fuel. ULSD is inherently low enough in sulfur that compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – The new Calcium Phosphate Process will be manufactured after July 1, 1971 and must not have VE 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 conduct monthly visible emission observations from emission points to ensure compliance. The permit condition will also require PCS to establish "normal" VE upon startup of the applicable emission sources. Compliance is anticipated.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutant – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 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 emission sources associated with the Calcium Phosphate Project. Construction on Calcium Phosphate Project has not commenced, and the TV permit application is not due at this time. Therefore, this requirement will remain in the permit.

H. Shipping Operations (Section 2.1.8)

This section of the permit was revised as part of this permit renewal to include only emission sources contained in Section 1.8, Shipping Operations. Section 2.1.8.A of the current permit (04176T67) includes numerous transfer operations, load outs, and a phosphate rock storage silo, which are not listed under the Shipping Operations under Section 1.8. As noted throughout this permit review, these emission sources will be moved to the appropriate section of the permit as part of the permit renewal.

Shipping operations including rail car unloading, wash stations, and tank farm as delineated in Section 2.1.8.A, ep610 through ep614, ep615, ep616, ep660, ep661, ep662, ep663, ep666, ep667, ep668, ep672 and ep673

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation permit – PCS is required to submit a TV permit application within 12 months of commencing operation of any equipment associated with APP plant – Line 2 (including tanks comprising ep616). To date, these emission sources have not been constructed, and this requirement will remain in the permit.

- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation permit – The sulfur unloading operations (ep610 through ep614) were included as part of the Sulfuric Acid Project addressed under Air Permit No. 04176T67 on August 22, 2022. SPA Plant No. 5 was added to the permit as part of the modification to add the APP – Line 2. PCS is required to submit a TV permit application within 12

months of within one year from the date of beginning operation of this source (ID No. I-SAL) included in the Sulfuric Acid Project.

I Miscellaneous Sources (Section 2.1.9)

This section of the permit was revised as part of this part of this permit renewal to include only emission sources contained in Section 1.9, Miscellaneous Sources.

Diesel-fired emergency engine for backup power at DPW water pumps in mine (ID No. 404-814), ep801

- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources The diesel fired emergency engine (ID No. 404-814) is subject to this rule. No MRR is required when firing diesel fuel in the engine because of the low sulfur content of the fuels. These fuels are inherently low enough in sulfur that continued compliance is anticipated.

- 15A NCAC 02D .0521, Control of Visible Emissions – This engine was manufactured after July 1, 1971 and must not have VE of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). No MRR is required for compliance with 02D .0521 for this engine.

- 15A NCAC 02D .1111, MACT – This engine is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. It is a diesel-fired emergency engine with a rating of 1,961 bhp (1,360 kW) and was constructed before December 19, 2002. In accordance with 40 CFR 63.6590(a)(1)(i), this engine is considered an existing source under MACT Subpart ZZZZ. As an existing source greater than 500 hp located at a major source of HAPs, the engine does not have to meet any requirements of MACT Subpart ZZZZ or of Subpart A, including initial notification requirements, pursuant to 40 CFR 63.6590(b)(3)(iii). The permit will be updated under this renewal to add a permit condition indicating the engine does not have to meet any requirements under MACT Subpart ZZZZ.

- 15A NCAC 02Q .0317, Avoidance Conditions – PCS has accepted an avoidance limit for PSD for the diesel-fired emergency engine (ID No. 404-814). To ensure compliance with the emission limit of 40 tons per consecutive 12-month period for NO_X, total fuel usage is limited to 446,000 gallons of diesel per consecutive 12-month period. PCS records the annual fuel usage to ensure compliance. No changes to the permit are required, and continued compliance is anticipated.

The following engines were previously included in Section 2.1.9 of the permit. In the permit application addendum, PCS requested that these engines be moved to the insignificant activities list as part of this permit modification because they meet the emissions exemptions under 15A NCAC 02Q .0503(8).

- Diesel-fired emergency engine for backup power at wastewater treatment plant (107 bhp; 80 kW) (ID No. I-130-458)
- Diesel-fired emergency engine for backup power at main lift station pumps (40 bhp; 30 kW) (ID No. I-130-457)
- LPG-fired 4SRB emergency engine for backup power at radio tower (94 bhp; 70kW) (ID No. I-190-400-484)
- LPG-fired 4SRB emergency engine for backup power for the No. 7 Sulfuric Acid Plant turbine lube oil pump (45 bhp; 25kW) (ID No. I-407-401)
- Diesel-fired fire pump engine – PAP plant (375 bhp; 280 kW) (ID No. I-624-231-484)
- Diesel-fired fire pump engine – PAP plant (53 bhp; 40 kW) (ID No. I-624-293-484)

- Diesel-fired emergency engine for ammonia emergency deluge system (227 bhp; 170 kW) (ID No. I-555-218-484)

These engines are also subject to MACT ZZZZ, NSPS IIII, and NSPS JJJJ. Continued compliance with MACT and NSPS is anticipated.

- 15A NCAC 02D .0524, NSPS – The compression ignition engine (ID No. I-555-218-484) is subject to NSPS IIII and spark ignition engines (ID Nos. I-190-400-484 and I-407-401) are subject to NSPS Subpart JJJJ. The table below provides an overview of the requirements for the engines under these regulations. The permit conditions will be updated to the most current language as necessary as part of this permit renewal.

Engine ID Nos.	Applicability	Overview of Requirements
I-555-218-484	40 CFR 60 Subpart IIII.	• Install a non-resettable hour meter on the engines • Use ultra-low sulfur diesel fuel • Keep records of engine manufacturer data indicating compliance with emission standards (ID No. 555-218-484). • Recordkeeping and reporting requirements
I-190-400-484 I-407-401	40 CFR 60 Subpart JJJJ.	• Purchase an engine certified to the required emission standards • Install and configure the engine according to the manufacturer's emission-related specifications; • Install a non-resettable hour meter on the engines • Recordkeeping and reporting requirements

- 15A NCAC 02D .1111, MACT – These engines are subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. The table below provides an overview of the requirements for the engines under this regulation. The permit conditions will be updated to the most current language as necessary as part of this permit renewal.

Engine ID Nos.	Applicability	Overview of Requirements
I-130-458 I-130-457 I-624-231-484 I-624-293-484	Existing emergency engine less than 500 bhp located at a major source of HAPs	• Install a non-resettable hour meter on the engine • Change oil and filter every 500 hours of operation or annually • Inspect all hoses and belts every 500 hours of operation or annually and replace if necessary • Inspect air cleaner every 1,000 hours of operation or annually • Operate no more than 100 hours for maintenance and readiness testing • Recordkeeping and reporting requirements.
I-555-218-484	New, emergency compression ignition RICE less than 500 bhp located at a major source of HAPs	These engines meet the requirements of MACT Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII.
I-190-400-484 I-407-401	New, emergency 4SRB spark ignition RICE less than 500 bhp located at a major source of HAPs	These engines meet the requirements of MACT Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart JJJJ.

Cooling Pond Nos. 1, 2, and 1A (ID Nos. CP No. 1, CP No. 2, and CP No. 1A), ep910, ep914, ep922
Mill Pond (ID No. 957), ep957
Recycle Lake (ID No. 958), ep958

As noted throughout this permit review, numerous emission sources were previously listed in Section 2.1.9.B (Miscellaneous Sources) of the permit, but these emission source will be moved to more appropriate areas of the permit as part of this permit renewal.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – The NC Air Toxics is state-enforceable only and applicable facility-wide. Only the mill pond and recycle lake are subject to NC Air Toxics because the cooling ponds are subject to a MACT AA. Please see Section 15 below for a discussion of NC Air Toxics.

- 15A NCAC 02D .1111, MACT – PCS is subject to MACT Subpart AA. This rule was revised on August 19, 2015 in conjunction with the RTR. The cooling ponds (ID Nos. CP No. 1, CP No. 2, and CP No. 1A) were not previously subject to any MACT but became subject with the promulgation of the revised rule. PCS was required to prepare, and operate in accordance with, a gypsum dewatering stack and cooling pond management plan that contains the information specified in 40 CFR 63.602(e) beginning on August 19, 2016. This requirement will be added to the revised permit condition for MACT Subpart AA. Continued compliance is anticipated.

Gypsum stack ponds Nos. 4 to 6 (ID Nos. GYP Ponds No. 4, 5, and 6) ep955A, ep950A, and ep954A

- 15A NCAC 02D .1110, National Emission Standards for Hazardous Air Pollutants —These emission sources are subject to "National Emission Standards for Radon Emissions from Phosphogypsum Stacks," 40 CFR Part 61, Subpart R. The facility must meet testing and recordkeeping requirements under this NESHAP.

- 15A NCAC 02D .1111, MACT – PCS is subject to MACT Subpart AA. This rule was revised on August 19, 2015 in conjunction with the RTR. The Gypsum stack ponds Nos. 4 to 6 (ID Nos. GYP

Ponds No. 4, 5, and 6) were not previously subject to any MACT but became subject with the promulgation of the revised rule. PCS was required to prepare, and operate in accordance with, a gypsum dewatering stack and cooling pond management plan that contains the information specified in 40 CFR 63.602(e) beginning on August 19, 2016. This requirement will be added to the revised permit condition for MACT Subpart AA. Continued compliance is anticipated.

PCS operates three existing reclamation areas (ID Nos. I-R-l through I-R-11) and three new reclamation areas (ID Nos. I-R12 through I-R-14) that are also subject to NESHAP Subpart R. The only emissions from these areas are trace radionuclides present in phosphogypsum and the fines. Because no emissions apart from radionuclides are expected from the proposed reclamation areas, these areas meet the definition of insignificant activities under 15A NCAC 02Q .0503(8) and will be added to the insignificant activities list as part of this TV permit renewal. PCS must ensure that these areas continue to comply with NESHAP Subpart R, as applicable.

10. Multiple Emissions Sources Subject to MACT

A. MACT Subpart AA

The following emission sources are subject to MACT Subpart AA

- Phosphate rock calciners (ep201 through ep206)
- Wet-process phosphoric acid lines (ep401 through ep410)
- SPA process lines (ep330 through ep333)
- Purified phosphoric acid plants (ep501 and ep503)
- Evaporative Cooling Towers (ep510/511, ep514/515, ep518/519, ep512/513, ep520/521, ep461 and ep462)
- Cooling ponds (ep910, ep14, and ep922)
- Gypsum stack ponds Nos. 4 to 6 (ep955A, ep950A, and ep954A)

These emission sources are subject to the "NESHAP from Phosphoric Acid Manufacturing Plants," 40 CFR 63 Subpart AA. This regulation was modified as part of EPA's RTR, which was finalized on August 19, 2015. The revisions clarified applicability and monitoring requirements to accommodate process equipment and technology changes; removed exemptions for startup, shutdown, and malfunction (SSM), adopted work practice standards for periods of startup and shutdown; and revised recordkeeping and reporting requirements for periods of SSM. The rule was further modified with amendments finalized on September 19, 2017 to revise compliance dates and add and clarify control options. Additional amendments were finalized on November 3, 2020 modifying the mercury MACT floor for existing calciners.

The revised rule included the following modifications that impact emission sources at PCS:

- Established emission limits for mercury and total fluoride emissions from phosphate rock calciners at phosphoric acid plants.
  - Mercury emission limits of 0.014 mg/dcsm at 3-percent oxygen for new sources and 0.14 mg/dcsm at 3-percent oxygen for existing sources
  - Total fluoride emission limits for both new and existing sources is 9.0 x 10-4 lb/ton of rock feed
- Required facilities to monitor liquid-to-gas ratio in low energy absorbers (i.e., pressure drops < 5 inches of water). As alternate monitoring for these adsorbers, PCS has requested to monitor influent liquid water flow and to establish G_{max} through the scrubber manufacturer's design for minimum L/G ratio for all venturi type wet scrubbers. DAQ approved this request in a letter dated October 26, 2017.[9]

[9] Permit review for Air Permit No. 04176T55 (Betty Gatano, 01/28/2018).

- Required facilities to include emissions from oxidation reactors, (i.e., the Nos. 2 and 3 Press Product Tanks (ID Nos. 453-112 and 453-409), when determining compliance with the total fluorides limit for the SPA process lines;
- Required facilities to develop and follow a gypsum dewatering stack and cooling pond management plans to control HF emissions; and
- Clarified the applicability of emission sources to the MACT. Specifically, for PCS, the revised rule clarified that phosphate rock dryers must be a part of the phosphoric acid production process to be applicable. Because the rock dryer is not used in the phosphoric acid manufacturing process at PCS, it is longer subject to MACT Subpart AA.

B. MACT Subpart BB

DAP / MAP Plants No. 2 and 3 (ep303 and ep302, respectively) are subject to the "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB. This regulation was modified as part of EPA's RTR review, which was finalized on August 19, 2015. The revisions clarified applicability and monitoring requirements to accommodate process equipment and technology changes; removed exemptions for SSM, adopted work practice standards for periods of startup and shutdown; and revised recordkeeping and reporting requirements for periods of SSM. The rule was further modified with amendments finalized on September 19, 2017 to revise compliance dates and add and clarify control options.

11. Multiple Emission Sources Subject to 02D .0530(u)

A. Modification for APP Line 2 and SPA Plant No. 5 Addition (Section 2.2 B)

PCS submitted a permit application for the first step of a two-step modification on July 25, 2017 (Application No. 0700071.17C) to add a new APP plant, a new SPA plant, and supporting equipment.

PCS used PAE to demonstrate the modification to add APP Line 2 and SPA Plant No. 5 was not a major modification under PSD, in accordance with 15A NCAC 02D .0530(u). Because the modifications did not affect the design capacity or potential to emit of the units, emission tracking is only required for five years. Please see the permit review for Air Permit No. 04176T55 for more details.[10]

Pollutant	Projected Actual Emissions (Tons per Year)
$PM/PM_{10}/PM_{2.5}$	2.82
SO_2	17.22
Fluorides (other than HF)	1.55

PCS has not yet begun construction of the APP Line 2 or Sulfuric Acid Plant 5, and the second step permit application (i.e., TV permit application) is not required at this time. Emission tracking for this permit condition will begin upon operation of this sources. No changes to this permit condition are required as part of this permit renewal.

In the addendum to the TV permit renewal application submitted on April 11, 2021, PCS requested to remove this condition from the permit. Since the condition was incorporated in the permit, requirements under 15A NCAC 02D .0530(u) have been revised such that projects having emissions increases of less than 50 percent of the applicable SERs do not trigger PSD tracking requirements. PCS provided calculations demonstrating the emissions increases for all pollutants are below the 50 percent threshold. Although the

[10] Permit review for Air Permit No. 04176T55 (Betty Gatano, 01/02/2018).

emission increases meet requirements of the current rule, changes to the rule do not apply retroactively and tracking requirements under 15A NCAC 02D .0530(u) still apply to this project. The tracking requirements will remain in the permit.

B. Replacement of Equipment in DAP Plant No. 2 (Section 2.2 C)

PCS submitted a permit application for the first step of a two-step modification on February 4, 2020 (Application No. 0700071.20C) for replacement of the vaporizer/ granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in DAP Plant No. 2.

PCS used PAE to demonstrate the replacement of these emission sources was not a major modification under PSD, in accordance with 15A NCAC 02D .0530(u). Because the modifications did not affect the design capacity or potential to emit of the units, emission tracking is only required for five years. Please see the permit review for Air Permit No. 04176T60 for more details.[11]

Pollutant	Projected Actual Emissions (tpy)
SO_2	43.6
NO_X	16.74
PM	53.83
PM_{10}	39.96
$PM_{2.5}$	33.34
Lead	4.71E-03
Fluorides (excluding HF)	5.4

Emission tracking for this permit condition will begin upon operation of this sources. No changes to this permit condition are required as part of this permit renewal.

In the addendum to the TV permit renewal application submitted on April 11, 2021, PCS requested to remove tracking of NO_X, lead, and fluoride from this permit condition. Since the condition was incorporated in the permit, requirements under 15A NCAC 02D .0530(u) have been revised such that projects having emissions increases of less than 50 percent of the applicable SERs do not trigger PSD tracking requirements. PCS provided calculations demonstrating the emissions increases for these pollutants are below the 50 percent threshold. Although the emission increases meet requirements of the current rule, changes to the rule do not apply retroactively and tracking requirements under 15A NCAC 02D .0530(u) still apply to this project. The tracking requirements will remain in the permit.

C. Removal of 02D .0530(u) Permit Condition for Application No. 0700071.14A

PCS submitted a permit application for first step of a two-step modification on January 3, 2014 (Application No. 0700071.14A) to allow for increased production of low magnesium superphosphoric acid (LOMAG utilizing green acid) and the increased production and relocation of defluorinated phosphoric acid (DFMGAA utilizing amber acid).

PCS used PAE to demonstrate the modifications to increase production of LOMAG and DFMGAA were not a major modification under PSD, in accordance with 15A NCAC 02D .0530(u). Emissions of SO_2 and NOx, were based upon process throughputs (production rates, heat input rates, etc.) for sulfuric acid plants and calciners that were less than the rated capacities for each of these emission units. Therefore, projected emissions for SO_2 and NOx were included in the permit in the permit to assure compliance.

[11] Permit review for Air Permit No. 04176T60 (Betty Gatano, 04/03/2020).

Requirements under 15A NCAC 02D .0530(u) for the LOMAG and DFMGAA project are included in Section 2.2 C of the current permit permit (04176T67).

The requirement to track and report emissions for a period of five years was completed for calendar year 2020 and submitted to DAQ earlier this year. This permit condition will be removed for the permit as part of this Title V renewal application.

12. Multiple Emission Sources Subject to BART (Section 2.3)

The requirements for Best Available Retrofit Technology (BART) are set forth in 15A NCAC 2D .0543 "Best Available Retrofit Technology." This rule, currently state-only enforceable, implements the BART provisions of 40 CFR 51.308(e) for emission sources that may cause or contribute to any visibility impairment in a mandatory Class I federal areas as determined using 40 CFR 51, Subpart P. "BART-eligible" sources are those sources built between 1962 and 1977 that have the potential to emit more than 250 tons per year of one or more visibility-impairing compounds including SO_2, NO_X, PM, and VOCs, and that fall within 26 industrial source categories (including Phosphate Rock Processing Plants).

PCS Phosphate submitted a BART evaluation permit application to DAQ on November 28, 2006. DAQ reviewed the evaluation and made the determination that BART for the affected emission sources at PCS is no additional controls. The list of BART affected sources was added to the permit as part of Air Permit No. 04176T36 issued December 17, 2007. The following emission sources will be removed from the list of BART affect emission sources as part of this permit renewal because they have been demolished.

Emission Source ID No.	Emission Source Description	Emission Point (ep)
F653	CTS - Phosphate Rock Transfer Station	653
F655	Chute-Barge Rock Loadout	655
F656	Chute-Train Rock Loadout	656

The current permit (04176T67) indicates the emission point IDs for the calcined/dried rock CTS (ID Nos. Belt41 to Belt39, Belt27 to Belt41, Belt25 and Belt26) are 650, 651, and 652. The emission point IDs for these sources will be changed to 225, 226, and 227 in Section 2.3 as part of this permit renewal.

13. Permit Shield for Non-Applicable Requirements (Section 2.5)

The permit contains three non-applicability conditions as outlined below:

- The X07 superheater project is not subject to PSD as specified in Applicability Determination No. 1976. This condition was added to the permit with the issuance of Air Permit No. 04176T47 on January 9, 2013. This non-applicability permit condition will be updated and clarified as part of this renewal.

- The HF Production Process is not subject to MACT Subpart YY because PCS produces HF by reacting hydrofluorosilicic acid (a byproduct of phosphoric acid manufacturing) with sulfuric acid. This condition was added to the permit with the issuance of Air Permit No. 04176T59 on November 22, 2019. No change to this condition was required.

- The phosphate rock dryer (ID No. 332-120) is not subject to MACT Subpart AA because it is not used in the phosphoric acid manufacturing process at the facility. This non-applicability permit condition will be added as part of this permit renewal.

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

NSPS

PCS Phosphate is subject to the following NSPS. An overview of the requirements for each NSPS listed below is provided in Section 8 above for each applicable emission source.

- NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Dc
- NSPS for Sulfuric Acid Plants, 40 CFR 60 Subpart H
- NSPS for Coal Preparation and Processing Plants, 40 CFR 60 Subpart Y
- NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII
- NSPS for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart JJJJ

NESHAPS/MACT

PCS is a major source of HAPs and is subject to the following MACTs. An overview of the requirements for each MACT listed below is provided in Section 8 above for each applicable emission source.

- National Emission Standards for Radon Emissions from Phosphogypsum Stacks, 40 CFR 61 Subpart R
- NESHAP from Phosphoric Acid Manufacturing Plants, 40 CFR 63 Subpart AA
- NESHAP for Phosphate Fertilizer Production Plants, 40 CFR 63 Subpart BB
- NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ
- NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63 Subpart DDDDD

PSD

Phosphate rock processing plants are considered "chemical process plants," which are one of the 28 listed source categories considered major sources under PSD if they have the potential to emit 100 tons per 12-month period or more of any NSR regulated pollutant. PCS is a major facility under PSD. Several emission sources at PCS have undergone BACT determinations, as discussed in Section 8 above for each applicable emission source. Projects subject to tracking under 02D .0530(u) are discussed above in Section 10. This TV permit renewal does not affect the PCS status of this facility.

112(r)

The facility is subject to Section 112(r) of the Clean Air Act requirements because it stores anhydrous ammonia in quantities above the thresholds in the Rule. PCS submitted an updated Risk Management Plan (RMP) to the EPA on December 6, 2018 as required under 112(r).

On November 22, 2019, PCS was issued Air Permit No. 04176T59 to add a proposed HF Production Process. The proposed process will be subject to 112(r) because anhydrous hydrogen fluoride (AHF) in the process will be above the 1,000 pound threshold quantity. As such, PCS is required to prepare an updated RMP that includes AHF in the proposed process.

PCS must submit the updated RMP plan to the EPA no later than, December 6, 2023 (the anniversary date of the current RMP) or the date in which AHF is first above the threshold quantity in the process, which ever date is earlier.

CAM

A Compliance Assurance Monitoring (CAM), applicability analysis for all emission sources equipped with add-on control devices was conducted for the TV permit renewal review. Pursuant to 40 CFR 64.2, the provisions of the CAM rule are applicable to emission units that meet all of the following criteria:

- Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;
- Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100 percent of

the amount (in tpy) required for a source to be classified as a major source (i.e., 100 tpy of any criteria pollutant or 10 tpy of any HAP or 25 tpy of any combined HAP); and

- Criteria #3: The unit is not exempt under 40 CFR 64.2(b).

The following table summarizes CAM applicability at the PCS. The table only includes emissions sources that are equipped with add-on control devices. Uncontrolled sources are not included in the following table.

Also, any emission source, except large pollutant specific emission units as defined under 40 CFR 64.5(a), added or modified after submittal of the TV permit renewal on March 28, 2017 is not required to undergo a CAM review at this time. A CAM applicability analysis and CAM plan for such sources are due at the next TV permit renewal. These sources are not listed in the following table.

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
Sulfuric Acid Area					
S-5 **S-6** **S-7**	**Yes (H_2SO_4)**	**Yes**	**No**	**Yes – Vertical Tube Mist Eliminators**	**CAM condition updated to require daily VE observations**
Mill Area					
339-051	Yes (PM_{10})	No	--	No	
339-052	Yes (PM_{10})	No	--	No	
339-053	Yes (PM_{10})	No	--	No	
339-054	Yes (PM_{10})	No	--	No	
339-055	Yes (PM_{10})	No	--	No	
339-056	Yes (PM_{10})	No	--	No	
332-120	Yes (PM_{10})	Yes	No	No	
	For SO_2 emissions CAM is not applicable because control is not required to comply with the standard. under 15A NCAC 2D .0516.	--	--	No	
341-300	**Yes (PM_{10})**	**Yes**	**No**	**Yes – Cyclone and Two Bagfilters**	**CAM condition updated to require daily VE observations**
Belt55 to Belt70.1 Belt21 to Belt23 or Belt24 Belt22 to Belt23 or Belt24	Yes (PM_{10})	No	--	No	
224	Yes (PM_{10})	No	--	No	
341-200 341-201	Yes	No	NA	No	Source would be an insignificant activity with no controls.

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
Fertilizer Production Area					
DAP/MAP 2 Plant (505-104, 505-123A, 505-107, 505-114, 505-110, 505-143, 505-111, 505-103, 505-121)	**Yes (PM_{10})**	**Yes**	**No**	**Yes – Venturi and Packed Bed Scrubbers**	**CAM condition updated to require daily VE observations**
	Yes (Fluorides)	**Yes**	**No**		
	NOTE: SO_2 is scrubbed by ammonia that is inherent to the process. CAM does not apply.	--	--		
DAP/MAP 3 Plant (511-085, 511-086, 511-070, 511-032, 511-025, process sizing and handling equipment)	**Yes (PM_{10})**	**Yes**	**No**	**Yes – Saturation Chambers, Cyclones, and Cyclonic Scrubbers.**	**CAM condition updated to reflect most current permitting language**
	Yes (Fluorides)	**Yes**	**No**		
PA Pilot No. 2	Yes (Fluorides)	No	--	No	
318	Yes (PM_{10})	No	--	No	
Superphosphoric Acid Production Area					
451-418 and 451-409 453-112	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	No	--	No	
451-701 and 451-809 453-409	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	No	--	No	
451-316, 451-308, 451-916, 451-940	Yes (Fluorides*) *SO_2 is also controlled by the scrubber. However, no control is required to meet the 400 lb/day limit.	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
453-485	Yes (PM_{10})	No	No	No	As noted under Section 7 above, precontrolled emissions less than criterial level

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
453-489 453-490	Yes (PM_{10})	No	--		Emission sources controlled via same bagfilter, but precontrolled emissions from these sources less than 100 tpy.
453-468	Yes (PM_{10})	No	No	No	As noted under Section y above, precontrolled emissions less than criterial level
Phosphoric Acid Production Area					
421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 421-225A	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	**Yes**	**No**	**Yes – Packed-Bed Scrubber**	**CAM condition updated to reflect most current permitting language**
	Yes (H_2S)	**Yes**	**No**		
441-031 441-034, 442-034	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, 422-330, 422-225A	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	**Yes**	**No**	**Yes – Packed-Bed Scrubber**	**CAM condition updated to reflect most current permitting language**
	Yes (H_2S)	**Yes**	**No**		
423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	**Yes**	**No**	**Yes – Packed-Bed Scrubber**	**CAM condition updated to reflect most current permitting language**
	Yes (H_2S)	**Yes**	**No**		

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
443-034, 444-031, 444-034	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, 424-330	Yes (Fluorides)	Yes	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
	Yes (SO_2)	**Yes**	**No**	**Yes – Packed-Bed Scrubber**	**CAM condition updated to reflect most current permitting language**
	Yes (H_2S)	**Yes**	**No**		
433-188 (020), 433-101 (030), 433-010 (031), 433-050 (040)	Yes (Fluorides*) *Control is only required to comply with a state-enforceable toxics limit. Therefore, CAM does not apply.	--	--	No	
433-020 (032), 433-030 (033), 433-120 (034), 433-100 (060)					
433-140					
433-127					
429-002, 421-115, 429-005, 422-115	**Yes (PM10)**	**Yes**	**No**	**Yes - Bagfilter**	**CAM condition updated to require daily VE observations**
	Yes (Fluorides)	No	--	No	
	Yes (Fluorides)	No	--	No	
429-152, 429-001, 429-004, 429-151	**Yes (PM10)**	**Yes**	**No**	**Yes - Bagfilter**	**CAM condition updated to require daily VE observations**
	Yes (Fluorides)	No	--	No	
429-157, 429-158, 429-009, 429-181, 429-183	**Yes (PM_{10})**	**Yes**	**No**	**Yes - Bagfilter**	**CAM condition updated to require daily VE observations**
	Yes (Fluorides)	No	--	No	
429-150	**Yes (PM_{10})**	**Yes**	**No**	**Yes - Bagfilter**	**CAM condition updated to require daily VE observations**
	Yes (Fluorides)	No	--	No	

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
426-156, 433-158	Yes (Fluorides*) *Control is only required to comply with a state-enforceable toxics limit. Therefore, CAM does not apply.	--	--	No	
426-154	**Yes (PM_{10})**	**Yes**	**No**	**Yes - Bagfilter**	**CAM condition updated to require daily VE observations**
LS-1	Yes (PM_{10})	No	--	No	
LB-1	Yes (PM_{10})	No	--	No	
426-208, 426-232, 426-200	Yes (Fluorides*) *Control is only required to comply with a state-enforceable toxics limit. Therefore, CAM does not apply.	--	--	No	
426-240	Yes (PM_{10})	No	NA	No	
426-244	Yes (PM_{10})	No	NA	No	
Purified Production Area					
T24, T224, T324, T346, C10, C20, C210, C220, T7, T12, T13, T212, T213, T1, T201, T40, T240, T57, T54, T44, T244, T34, T8, T15, T215, T315, T58, S53, S43, S243, S253, S33, S5, S4, S42, S242, S32, S52, S54, S324	Yes (Methyl Isobutyl Ketone)	--	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
S88, T70, S118, T270, S288, T100	Yes (Fluorides*) *Control is only required to comply with a state-enforceable toxics limit. Therefore, CAM does not apply.	--	--	No	

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?	Comments
T1024, T1324, T1346, C1010, C1020, T1007, T1012, T1013, T1212, T1001, T1040, T1057, T1054, T1044, T1034, T1008, T1015, T1215, T1315, T1058, S1043, S1053, S1253, S1033, S1005, S1004, S1042, S1032, S1052, S1054, S1324	Yes (Methyl Isobutyl Ketone)	--	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
S1088, T1070, S1118, T1100	Yes (Fluorides)	No	No	No	As noted under Section 9.F above, precontrolled emissions less than criterial level.
T1524, T1224, T1546, C1210, C1220, T1201, T1207, T1213, T1240, T2057, T1244, T1415, T1515, T1208, T1258, T1546, S1243, S1205, S1242, S1204	Yes (Methyl Isobutyl Ketone)	--	Yes Emission source is subject to 40 CFR Part 63, Subpart AA	No	
S1288, T1270	Yes (Fluorides)	No	No	No	As noted under Section 9.F above, precontrolled emissions less than criterial level.
Calcium Phosphate Production Area					
381.105	Yes (PM_{10})	No	--	No	
381.115	Yes (PM_{10})	No	--	No	
381.125	Yes (PM_{10})	No	--	No	
381.135	Yes (PM_{10})	No	--	No	
381.145	Yes (PM_{10})	No	--	No	
381.215 381.240	Yes (PM_{10})	No	--	No	

15. Facility Wide Air Toxics

PCS has previously conducted facility-wide air modeling for numerous TAPs, and modeled emission limits for these TAPs are incorporated in Attachment 1 (new permit format) to the permit. The TAPs table in the permit does not include NESHAP/MACT emission sources, which were removed as part of Air Permit No.

04176T58 issued on May 5, 2019. For that modification, DAQ reviewed previous air dispersion modeling that demonstrated compliance with NC Air Toxics to ensure the removal of the NESHAP/MACT emission sources does not "present an unacceptable risk to human health."

The table below summarizes the results for the air dispersion modeling used to establish the permitted TAP emission limits for PCS.

TAP	Averaging Period	AAL (µg/m3)	% of AAL	Date of Review Memo	Updated in Permit
Ammonia	1-hour	2700	82.50%	12/7/17	Permit T55 issued on 01/02/2018
Arsenic	Annual	2.10E-02	98%	05/05/2020	Permit T61 issued on 06/19/2020
Benzene	Annual	1.20E-01	2.30%	2/24/2010	Permit T44 issued 10/06/2010
Beryllium	Annual	4.10E-03	98%	05/05/2020	Permit T61 issued on 06/19/2020
Cadmium	Annual	5.50E-03	98%	05/05/2020	Permit T61 issued on 06/19/2020
Carbon Disulfide	24-hour	186	<0.1%	2/24/2010	Permit T44 issued 10/06/2010
Chromium VI (soluble chromate compounds)	24-hour	0.62	25.60%	2/24/10	Permit T44 issued 10/06/2010
Fluoride	24-hour	16	81%	03/26/2021	Permit T63 issued 04/01/2021
	1-hour	250	20%		
Formaldehyde	1-hour	150	98%	05/05/2020	Permit T61 issued on 06/19/2020
Hydrogen Chloride	1-hour	700	17.90%	2/24/10	Permit T44 issued 10/06/2010
Hydrogen Fluoride	24-hour	30	98.5 %	12/06/21	Permit T65 issued 12/22/2021
	1-hour	250	58.2%		
Hydrogen Sulfide	24-hour		--		Modeling has not been updated in the last 10 years.
Manganese	24-hour	31	98%	05/05/2020	Permit T61 issued on 06/19/2020
Mercury	24-hour	0.60	98%	05/05/2020	Permit T61 issued on 06/19/2020
Methyl isobutyl ketone	24-hour	2,560	2.2%	2/24/10	Permit T44 issued 10/06/2010
	1-hour	30,000	0.9%		
Nickel	24-hour	6	98%	05/05/2020	Permit T61 issued on 06/19/2020
Sulfuric Acid	24-hour	12	86.70%	2/24/10	Permit T44 issued 10/06/2010
	1-hour	100	82.70%		

Notes:

- Matt Porter of the Air Quality Analysis Branch (AQAB) reviewed the air dispersion modeling for ammonia and approved the results in a memorandum dated 12/07/2017.
- Emissions rates for arsenic, beryllium, cadmium, formaldehyde, manganese, mercury, and nickel were optimized so that modeling results equal 98% of the respective toxic pollutant AALs. Mark Yoder of the AQAB reviewed the air dispersion modeling for these TAPS and approved the results in a memorandum dated 05/05/20202.
- Nancy Jones of the AQAB reviewed the air dispersion modeling for fluoride and approved the results in a memorandum dated 03/06/2021.
- Nancy Jones of the AQAB reviewed the air dispersion modeling for hydrogen fluoride and approved the results in a memorandum dated 12/06/2021.
- Tom Anderson of the AQAB reviewed the air dispersion modeling for benzene, carbon disulfide, chromium, hydrogen chloride, methyl isobutyl ketone, and sulfuric acid, and approved the results in a memorandum dated 02/04/2010.

Attachment 4 to this permit review contains the modeled emission limits for all emission sources, including those subject to MACT/NESHAP. Attachment 4 memorializes the modeled emission rates for all emissions sources for future reference.

16. Facility Emissions Review

Facility-wide potential emissions are provided in the table below. Actual emissions from PCS from 2016 to 2020 are reported in the header of this permit review.

Pollutant	Expected Actual Emissions (tpy)	TV Potential Emissions (tpy)
PM (TSP)	2,042	3,502
PM_{10}	803	2,060
$PM_{2.5}$	228	1,428
CO	425	1,263
NO_X	431	10,086
SO_2	3,440	8,745
VOC	278	289
CO_2e	302,052 metric tons	752,972 metric tons
Notes: Emissions contained in Form D1 of Permit Application No. 0700071.20C.		

17. Compliance Status

Robert Bright of the WaRO completed the most recent full compliance evaluation (FCE) for PCS on June 22, 2022. 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 No. 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 per ton P_2O_5 wet feed. A civil penalty in the amount of $4,218, including costs, was assessed on October 9, 2019 for this violation. The penalty was paid in full on October 28, 2019.
- PCS and DAQ entered into a Special Order by 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. On March 25, 2021, the DAQ issued a letter to PCS indicating the facility had met all the requirement of SOC 2019-002. The letter closed the SOC.
- A NOV/NRE was issued on June 14, 2016. From January 30 through February 11, 2016, PCS conducted mercury emissions testing for Calciner Nos. 1, 3, and 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.

18. Facility Comments on Draft Permit

PCS submitted comments on the various iterations of draft permits via e-mails dated September 13, 2022, October 10, 2022, and October 27, 2022. Response to these comments are provided in this section. The comments in this section do not represent all of the comments from PCS but those considered most substantive.

1. Changes to MACT Subpart AA and MACT Subpart BB conditions – In the first draft of the TV permit renewal, MACT Subpart AA permit conditions were combined for all applicable emission sources and moved to Section 2.2 B to reduce redundancy in the permit. Similarly, MACT Subpart BB permit conditions were combined for all applicable emission sources and moved to Section 2.2 C. PCS indicated this reformatting was problematic and requested to return the MACT Subpart AA and MACT Subpart BB conditions to Section 2.1 as in the current permit (04176T67).

   Response
   DAQ concurs and made this change.

2. Second indicator for CAM – The current permit (04176T67) requires PCS to conduct monthly VE observations for CAM for the following emission sources:

   - Sulfuric acid plants Nos. 5, 6, and 7 (ID Nos. S-5, S-6, and S-7)
   - Coal/coke pulverizer and thermal dryer system (ID No. 341-300)
   - Two phosphate rock jet conveyors on reactor train No. 1 (ID Nos. 429-002 and 421-115)
   - Two phosphate rock jet conveyors on reactor train No. 2 (ID Nos. 429-005 and 422-115)
   - Phosphate rock storage silo No. 1 (ID No. 429-152)
   - Three transfer points (ID Nos. 429-001, 429-004, and 429-151)
   - Phosphate rock transfer house (ID No. 429-150)
   - Diatomaceous earth silo (ID No. 426-154)
   - Phosphate rock storage silo (ID No. 429-157)
   - Four transfer points (ID Nos. 429-158, 429-009, 429-181, 429-183)

   This requirement is being changed to daily VE observations as part of this Title V permit renewal. PCS requested to add pressure drop across the control device as second indicator under CAM to allow flexibility when VE observations could not be made.

   Response
   DAQ concurs, and daily pressure drop readings were added as a second indicator. The revised draft permit indicates PCS can use either indicator (daily VE observation or pressure drop) for CAM but cannot use both during the same day.

3. Harmonizing CAM parametric monitoring with MACT – The current permit (04176T67) requires PCS to monitor pressure drop and/or flow rate of the control devices for CAM for the following emission sources:

   - Diammonium/Monoammonium Phosphate Plant No. 2, ep303
   - Diammonium /Monoammonium Phosphate Plant No. 3, ep302
   - Phosphoric Acid Train Nos. 1 through 4

   PCS requested to harmonize the parametric monitoring under CAM with that in the underlying MACT Subparts.

Response
DAQ concurs. By making this change, operating outside the parametric ranges represents an exceedance rather than an excursion. DAQ added a noncompliance statement to the CAM condition as a result of this change.

4. Other modifications to CAM for MACT emissions sources – For the emission sources listed in No. 3 above, PCS requested to modify language in CAM to indicate the QA/QC procedures in the site-specific monitoring plan required under MACT Subpart AA or MACT Subpart BB are equivalent with the Quality Assurance Plan (QAP) under 15A NCAC 02D .0613. PCS also requested to allow the summary and excess emission reports under the MACT to suffice for reporting under CAM.

   Response
   DAQ concurs with these requests. DAQ reviewed the requirements under the MACT and determined the QA/QC procedures are equivalent to the requirements for the QAP under 15A NCAC 02D .0613. DAQ also allowed the reporting requirements for MACT to be used for CAM, provided the following "gap filling" measures are included in the reports:
   - The summary and excess emission reports under MACT must include the number of excursions or exceedance that occurred during the reporting period, and
   - A description of any corrective actions taken must be included with the summary report under MACT when the total duration of control system exceedances is less than 1 percent of the total operating time or the continuous monitoring system downtime is less than 5 percent of the total operating time.

   Reporting requirement under CAM were updated to specify these requirement for the emission sources noted in No. 3 above.

5. Conveyor belts as insignificant activities – PCS indicated these conveyor belts (ID Nos. Belt39 to Belt70.1, Belt41 to Belt339, Belt 27 to Belt 41, and 339-809-464) with enclosures are insignificant activities. The transfer points for these emission sources are enclosed, and the conveyors themselves are contained within metal transfer housing. As such no PM emission are expected from these sources. PCS requested these sources be moved to the insignificant activities list.

   Response
   DAQ concurs, and these emission sources were moved to the insignificant activities list and a footnote was added to the insignificant activities list indicating no emissions are expected from these sources. All permit conditions for these sources were removed or modified as appropriate. See section 7 above for more detail.

6. Additive silos as insignificant activities – PCS indicated the following additive silos and weigh hoppers controlled by baghouses are insignificant activities. PCS requested these sources be moved to the insignificant activities list.

   - Additive #1 Storage Silo (ID No. 453-485)
   - Additive #1 Weigh Feed Hopper (ID No. 453-489)
   - Additive #1 Weigh Feed Hopper (ID No. 453-490)
   - Additive #2 Storage Silo (ID No. 453-468)
   - Additive #4 Storage Silo (ID No. 426-240)
   - Additive #4 Weigh Feed Hopper (ID No. 426-244)

Response
DAQ initially disagreed with this request because of the methodology used to calculate emissions. PCS subsequently revised the emission calculations and based the potential emissions on the maximum throughputs of these sources. With the updated emission calculations, additive storage silo #1 (ID No. 453-485) and associated weigh feed hoppers (ID Nos. 453-489 and 453-490) and additive additive weigh hopper # 4 (ID No. 426-244) are insignificant activities pursuant to 15A NCAC 02Q .0503(8), with uncontrolled emissions of PM less than 5 tons per year. The silo and weigh hoppers were moved to the insignificant activities list and the associated permit conditions removed from the permit. The uncontrolled PM emissions from the additive storage silos # 2 and #3 (ID Nos. 458-468 and 426-240) exceed 5 tons per year, and these sources are not insignificant activities. These emission sources remain in the permit. See Section 7 above for more detail.

7. Clarification of requirements under NSPS Subpart Y – The coal/coke pulverizer and thermal dryer system (ID No. 341-300) is subject to NSPS Subpart Y. The rule limits emissions gases discharged into the atmosphere from the thermal dryer to no more than 0.031 grains per dscf of particulate matter and visible emissions of not more than 20 percent opacity.

   The first draft permit, like the current permit (04176T67), stated, "The Permittee shall measure the temperature of the gas stream at the exit of the thermal dryer on a continuous basis (CMS). The calibration and calculation methods shall be as described in 40 CFR Part 60.253 and approved by the division before use. The Permittee shall record in a logbook (written or electronic format) the results of the CMS."

   PCS requested clarification of the term "CMS," because it is not used in the regulation. PCS recommended requiring that only the annual certification be recorded.

   Response
   DAQ disagrees with this recommendation. DAQ clarified the monitoring and recordkeeping requirements for the temperature monitoring device in the permit. DAQ also acknowledges that the permit condition for NSPS Subpart Y in the current permit (04176T67) does not ensure compliance with the opacity standard. DAQ added monthly VE observations to the permit to make compliance with the opacity limit practically enforceable[12].

8. Clarification of requirements for SPA plants - PCS requested to remove requirements for 15A NCAC 02D .0515 and 15A NCAC 02D .0521 for SPA Plant No. 5 for consistency with SPA Plants No. 3 and No. 4. In Permit Application No. 0700071.17C, PCS reported 0.248 ton/yr of PM_{10} emissions expected from SPA Plant No. 5. Because PM_{10} is expected from this emission source and no other PM rules are applicable, it is subject to 02D .0515 and 02D .0521. The SPA Plant No. 5 and these associated requirements were first added to the permit under Air Permit No. 04176T55, with no MRR required to demonstrate compliance.

   Response
   DAQ disagrees with this request and did not remove these requirements for SPA Plant No. 5. Further, DAQ added the same requirements for SPA Plants Nos. 3 and 4 because these sources emit PM_{10} as indicated in Permit Application No 0700071.17C. No MRR is required to demonstrate compliance.

[12] The EPA guidelines on "practical enforceability" considerations are contained in a January 25, 1995 memorandum from EPA's Office of Enforcement and Compliance Assurance (OECA) entitled "Guidance on Enforceability Requirements for Limiting Potential to Emit Through SIP and Section 112 Rules and General Permits." Practicable enforceable conditions include "the method to determine compliance including appropriate monitoring, record keeping and reporting." (https://www.epa.gov/sites/default/files/2015-07/documents/potoem.pdf)

9. Clarification of BACT emission limit for PA Trains 3 and 4 – The current permit (04176T67) indicates the SO_2 emissions limit under 15A NCAC 02D .0501(c) and 15A NCAC 02D .0530 are 961 pounds SO_2 per calendar day. These values were changed to 960 pounds SO_2 per calendar day in the first draft permit. PCS requested to return the emission limits for both 15A NCAC 02D .0501(c) and 15A NCAC 02D .0530 to 961 pounds SO_2 per calendar day.

   Response
   DAQ mistakenly modified the SO_2 emissions limit under 15A NCAC 02D .0501(c) in the first draft permit, and the emission limit was corrected to 961 pounds SO_2 per calendar day.

   As noted in Section 9.E above, the BACT emission limit for these emission sources is 960 pounds of SO_2 per day calendar day, and no change to the draft permit is needed for the BACT emission limit.

10. Modification of HAP avoidance condition - PCS requested to remove reference to the 25 tons per year combined HAPs for 112(g) avoidance for HF Production.

    Response
    DAQ disagrees and did not make this change. Removing the reference to 25 tons per year combined HAP is confusing. Engineers and DAQ staff in the future will review this condition and ask why this requirement is missing from the avoidance condition. For clarity, DAQ will keep this requirement in the permit.

11. Adding MACT Subpart AA requirements for gypsum ponds – The draft permit inadvertently omitted MACT Subpart AA requirements for the gypsum stack ponds (ID Nos. GYP Pond No. 4, GYP Pond No. 5, and GYP Pond No. 6). PCS requested these requirements be added.

    Response
    DAQ concurs and made this change.

12. Risk Management Plan dates - PCS requested to update Risk Management Plan submittal dates

    Response
    DAQ concurs and made this change.

13. Clarification of CAM applicability for the ep506 and ep504 - PCS indicated the two acid defluorination column/concentrators (ID Nos. S1088/T1070 and S1118/T1100) (ep504) and the acid Defluorination Column/Concentrator (ID No. S1288/T1270) (ep506) are not subject to CAM and requested CAM requirements be removed for these emission sources.

    Response
    DAQ concurs with PCS request and removed CAM requirements from these emission sources.

    Pursuant to 15A NCAC 02D .0614, the provisions of the CAM rule are applicable to emission units that meet all of the following criteria:
    - Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;
    - Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100 percent of the amount (in tpy) required for a source to be classified as a major source (i.e., 100 tpy of any criteria pollutant or 10 tpy of any HAP or 25 tpy of any combined HAP); and
    - Criteria #3: The unit is not exempt under 15A NCAC 02Q .0614(b).

Emission sources ep504 and ep506 are subject a BACT emission limit for total fluorides. The sources use control devices to meet the BACT emission limit. However, the pre-controlled emissions of total fluorides from these sources are less than 100 tpy as discussed above in Section 9.E above.

14. Noncompliance statements in 15A NCAC 02D .521 – PCS noted an issue with the noncompliance statement in the 15A NCAC 02D .0521 conditions throughout the first draft permit.

    Response
    DAQ concurs and the language was corrected throughout permit to correspond with the shell language.

19. 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 is provided to the public under 02Q .0521 above. No states or local agencies are affected entities within 50 miles of the facility.

20. Other Regulatory Considerations

- No P.E. seal is required for these applications.
- No zoning consistency determination is required for these applications.
- An application fee is required for the second step significant modifications, App Nos. 0700071.21D and 0700071.22D. The fee for App. No. 0700071.21D was received via e-payment on October 17, 2021, and the fee for App. No. 0700071.21D was received via e-payment on August 17, 2022 No fee was required for the other applications.

21. 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. 04176T68.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
Cover and throughout	--	Cover and throughout	--	Updated all dates and permit revision numbers.
4	Section 1.1	4	Section 1.1	Removed Case-by-Case MACT label and added MACT DDDDD label for auxiliary boiler (ID No. BW)
5 – 6	Section 1.2	5 – 6	Section 1.2	• Removed "exhausted to" throughout control device description for consistency. • Moved Calcined rock CTS (ep220) and Calcined rock CTS Baghouse (ep223) to list of insignificant activities. • Added the calcined/dried rock CTS (ep227). This emissions source was previously named Rock Loadout Transfer Station the ep652 and was listed under Section 1.8. • Removed footnote stating emission source (ID No. 332-120) and control devices (ID Nos. 332-370a and 332-370b) are listed as a minor modification per 15A NCAC 02Q .0515.
7 – 9	Section 1.3	7 – 9	Section 1.3	• Added reference to Monoammonium Phosphate to section titles. • Moved the technical services pilot plant (ep317) from the insignificant activities list. • Removed GTSP phosphate rock silo (ID No. 511-045) and associated bagfilter (ID No. 511-035). The Permittee no longer produces GTSP. • Removed MACT BB label from warehouse No. 3 (ID No. DAP3WH3) as this emission source is no longer applicable to MACT BB. • Removed footnote requiring a TV permit application for emission source (ID No. 505-103) and control device (ID No. 505-148). This requirement was fulfilled with the submittal of application no. 0700071.21D.
10	Section 1.4	10	Section 1.4	Moved the additive storage silo, No. 1 additive weigh feed hopper, and No. 2 additive weigh feed hopper controlled with a common bagfilter (ep340) to the insignificant activities list.
11 – 15	Section 1.5	11 – 15	Section 1.5	• Removed control devices (ID Nos. 436-180 and 438-180) for shut down of HF Trains (ID Nos. GW03-A and GW03-B). Emissions during shutdown are vented through the venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2) on these emission sources. • Moved the additive weigh feed hopper controlled via a fabric filter (ep496) to list of insignificant activities.
16 – 19	Section 1.6	16 – 19	Section 1.6	• Replaced the term "still" with "solvent purification unit" throughout section (ID Nos. S4, S1004, and S1204). • Removed footnote stating emission sources (ID No. S1092 and S1292) are listed as a minor modification per 15A NCAC 02Q .0515.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
20	Section 1.7	20	Section 1.7	Removed references to "in parallel" and "in series" to control devices. This description is contained in Section 2.7.
21 – 22	Section 1.8	21 – 22	Section 1.8	Removed CTS grinder loadouts and transfer stations (ID Nos. F650 through F653) and chute barge and train rock loadouts (ID Nos. F655 and F656).
23	Section 1.9	23	Section 1.9	• Moved reclaim areas (ID Nos. R1 to R11) to insignificant activities list. • Moved the following emergency engines to the insignificant activities list: o Diesel-fired emergency engine for backup power at wastewater treatment plant (ID No. 130-458) o Diesel-fired emergency engine for backup power at main lift station pumps (ID No. 130-457) o Diesel-fired fire pump engine – PAP plant (ID No. 624-231-484) o Diesel-fired fire pump engine – PAP plant (ID No. 624-293-484) o Diesel-fired emergency engine for ammonia emergency deluge system (ID No. 555-218-484) o LPG-fired 4SRB emergency engine for backup power at radio tower (ID No. 190-400-484) o LPG-fired 4SRB emergency engine for backup power for the No. 7 Sulfuric Acid Plant turbine lube oil pump (ID No. 407-401). • Removed the following emergency engines (ID Nos. 365-160-523 and 365-136-484). • Removed footnote stating, "The Permittee was required to prepare and operate in accordance with a gypsum dewatering stack and cooling pond management plan that contains the information specified 40 CFR 63.602€ beginning on August 19, 2016." This requirement was added to the permit.
--	Throughout permit	--	Throughout permit	• Reformatted emission sources to specify the control device (if applicable) after the emission source and to cite the emission point (ep) at the end of the description. • Changed testing requirements from "once every five years" to "once every permit term" for consistency. • Changed "foreman" to "supervisor." • Removed reference to "permanently" recording operating parameters, except for situations where this language is used in MACT conditions. • Replaced references to 15A NCAC 02Q .0308(a) with 15A N02Q .0508(f), where appropriate.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
24 – 25	2.1.1 A Regulations Table	24 – 25	2.1.1 A Regulations Table	• Removed reference to 15 NCAC 02D .0317, "Avoidance Conditions," for PSD. This requirement is not applicable after 01/01/2020. • Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met.
25 – 26	2.1.1 A.1	--	--	• Removed 15A NCAC 02D .0317 avoidance for PSD. This regulation is no longer applicable after 01/01/2020. • Renumbered permit accordingly.
--	--	26	2.1.1 A.2.d	Added condition stating no monitoring, reporting, or recordkeeping is required for compliance with 02D .0519.
27	2.1.1 A.4.f	26	2.1.1 A.3.f	Removed date (02/26/2015) allowing the facility to use testing under consent decree for compliance with NSPS Subpart H. .
28	2.1.1 A.4.g.ii	27	2.1.1 A.3.g.ii	Updated language for converting monitoring data to applicable units for SO_2.
28	2.1.1 A.4.i	--	--	• Removed schedule for updating monitoring data. • Renumbered permit accordingly.
28	2.1.1 A.4.j	27	2.1.1 A.3.i	Removed "ductwork" to better clarify what is required to be inspected and maintained.
28	2.1.1 A.4.l	27	2.1.1 A.3.k	Updated the noncompliance statement for monitoring visible emissions.
29	2.1.1 A.4.t.i	28	2.1.1 A.3.r.i	Clarified the outlet temperature of the first two catalyst masses must be a minimum of 700°F.
29	2.1.1 A.4.n	28	2.1.1 A.3.t	Moved reporting requirement at the end of the condition for consistent formatting.
136 – 137	2.2 D	29 – 30	2.1.1 A.5	Moved permit condition for 15A NCAC 02D .0530(u) for the Sulfuric Acid Plant Modification Project pursuant to application 0700071.15C to Section 2.1.1. The tracking requirements are applicable only to the sulfuric acid plants (ID Nos. S-5, S-6, and S-7).
31	2.1.1 A.6	30 – 32	2.1.1 A.6	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.
34	2.1.1 B Regulations Table	34	2.1.1 B Regulations Table	• Modified the PM allowable limit to two significant figures, which is how it is cited in the rule. • Removed reference to "Case-by-Case MACT." • Added reference to MACT Subpart DDDDD.
34	2.1.1.B.1.a	34	2.1.1.B.1.a	Modified the PM allowable limit to two significant figures, which is how it is cited in the rule.
34 – 37	2.1.1 B.2	34 – 37	2.1.1 B.2	Updated NSPS Subpart Dc permit condition for boiler (ID No. BW) to reflect most current permitting language.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
--	--	37 – 40	2.1.1 B.3	• Added condition for MACT Subpart DDDDD for the auxiliary boiler (ID No. BW). The Permittee became subject to MACT Subpart DDDDD beginning May 20, 2019. • Renumbered the permit accordingly.
38	2.1.1 B.4	--	--	Removed permit condition for 15A NCAC 02D .1109, Case-by-Case MACT, as this requirement is no longer applicable.
--	--	41	2.1.1 C	Added section for fugitive emissions from the sulfuric acid plants (ID Nos. S-5F, S-6F, and S-7F).
39	2.1.2 A Regulations Table	42	2.1.2 A Regulations Table	Added updated emission limits for the calciners under MACT Subpart AA.
40	2.1.2 A.1.f	43	2.1.2 A.1.f	Revised permit condition under 15A NCAC 02D .501(c) to indicate fuel-oil certification is not required for No. 2 fuel oil.
42	2.1.2 A.3.d	43	2.1.2 A.2.d	Updated monitoring language for 15A NCAC 02D .0521 with most the recent version.
41 – 42	2.1.2 A.2	46 – 50	2.1.2 A.5	Updated the MACT Subpart AA permit condition for the calciners. Changes include the following: • Updated the formatting; • Added emission limits for total fluorides and mercury; • Added a general duty clause; • Added requirement to install venturi scrubbers for control of total fluorides and mercury; • Added startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
47	2.1.2 B.4.c	53	2.1.2 B.4.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
--	--	54 – 55	2.1.2 B.5	Added CAM requirements for the phosphate rock dryer (ID No. 332-120).
48	2.1.2 C Regulations Table	56	2.1.2 C Regulations Table	Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met.
48	2.1.2 C.1.e	56	2.1.2 C.2.e	Clarified monitoring and recordkeeping requirements for monitoring the temperature under NSPS Subpart Y.
--	--	57	2.1.2 C.2.g and h	Added monitoring and recordkeeping for visible emission observations for compliance with the opacity limit in NSPS Subpart Y.
49	2.1.1 C.3	57 – 59	2.1.1 C.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
--	--	60 – 61	2.1.2 D.1	• Added permit condition for 15A NCAC 02D .0515. These emission sources are subject to this regulation but no requirements were included in the permit. • Renumbered permit accordingly.
--	--	62	2.1.2 D.2	Added reporting requirement for NSPS Subpart Y.
51 – 52	2.1.2 E	--	--	• Removed permit condition for Calcined rock CTS (ep220) and Calcined rock CTS Baghouse (ep223). These emission sources have been moved to list of insignificant activities. • Renumbered permit, accordingly,
53	2.1.2 F.2.c and d	63	2.1.2 E.2.c	Reformatted permit condition and added a noncompliance statement for 15A NCAC 02D .0521.
54	2.1.2 G.2.c	64	2.1.2 F.2.c	Reformatted permit condition and added a noncompliance statement for 15A NCAC 02D .0521.
118 – 120	2.1.8 A	64 – 65	2.1.2 G	Moved calcined/dried rock CTS (ep227) to new Section 2.2.1.2.G because this source is associated with the Mill Area.
--	--	66	2.1.2 H	Added permit condition for fugitive emission sources in the Mill Area.
55	2.1.3 A Regulations Table	67	2.1.3 A Regulations Table	Removed reference to 15A NCAC 02Q .0504 for emission source (ID No. 505-103) and control device (ID No. 505-148). This requirement was fulfilled with the submittal of application no. 0700071.21D.
57	2.1.3 A.3.c and d	68	2.1.3 A.2.d and e	Revised permit condition for 15A NCAC 02D .0516 to indicate fuel sulfur content and fuel-oil certification is only required for residual oil.
57 -58	2.1.3 A.4	68 – 69	2.1.3 A.3	• Added noncompliance statements. • Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
59 – 60	2.1.3 A.7	70 – 71	2.1.3 A.5	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Harmonized parametric monitoring under CAM with that under MACT Subpart BB. • Added recordkeeping and reporting requirements for CAM.
59	2.1.3 A.6	71	2.1.3 A.6	Added avoidance condition for 15A NCAC 02D .1100 because DAP/MAP Plant 2 (ep303) is subject to MACT Subpart BB and exempt from NC Air Toxics pursuant to 15A NCAC 02Q .0702(b)(27).
55 – 57	2.1.3 A.1	71 – 754	2.1.3 A.7	Updated the MACT Subpart BB permit condition for DAP/MAP Plant 2 (ep303). Changes include the following: • Updated the formatting; • Added a general duty clause; • Modified startup, shutdown, and malfunction provisions; and • Updated reporting requirements.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
60	2.1.3 A.8	--	--	Removed permit condition requiring a TV permit application for emission source (ID No. 505-103) and control device (ID No. 505-148). This requirement was fulfilled with the submittal of application no. 0700071.21D.
60	2.1.3 B Regulations Table	75	2.1.3 B Regulations Table	Removed reference to GTSP, which is no longer produced at the facility.
63	2.1.3 B.3.c and d	76	2.1.3 B.2.d and e	Revised permit condition for 15A NCAC 02D .0516 to indicate fuel sulfur content and fuel-oil certification is only required for residual oil.
63	2.1.3 B.4.c	76	2.1.3 B.3.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
65	2.1.3 B.8	77 - 79	2.1.3 B.5	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Harmonized parametric monitoring under CAM with that under MACT Subpart BB. • Added recordkeeping and reporting requirements for CAM.
65	2.1.3 B.7	79	2.1.3 B.6	Added avoidance condition for 15A NCAC 02D .1100 because DAP/MAP Plant 3 (ep302) is subject to MACT Subpart BB and exempt from NC Air Toxics pursuant to 15A NCAC 02Q .0702(b)(27).
60 – 62	2.1.3 B.1	79 – 82	2.1.3 B.7	Updated the MACT Subpart BB permit condition for DAP/MAP Plant 3 (ep302). Changes include the following: • Updated the formatting; • Added a general duty clause; • Modified startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
66	2.1.3 C Regulations Table	84	2.1.3 C Regulations Table	Removed reference to15 NCAC 02D. 0521 and 15 NCAC 02D .0515. No particulate matter (PM) emissions are expected from this emission source (ep304).
66	2.1.3 C.1	--	--	Removed permit condition for 15 NCAC 02D. 0521. No PM emissions are expected from this emission source (ep304).
66 – 67	2.1.3 C.2	--	--	Removed permit condition for 15 NCAC 02D .0515. No PM emissions are expected from this emission source (ep304).
67 – 69	2.1.3 D	--	--	• Removed condition GTSP rock storage silo (ID No. 511-0415). GTSP no longer produced at the facility. • Renumbered permit accordingly.
77 – 78	2.1.4 E	85	2.1.3 E	• Moved fertilizer warehouse (ID No. DAP3wh3) to this section because it is located in the Mill Area and not the SPA Area. • Removed applicability to MACT Subpart BB. The Permittee no longer produces GTSP, and it is no longer stored in the warehouse.
	--	86	2.1.3 F	Added permit condition for emission sources not noted elsewhere in the Fertilizer Production Area.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
70	2.1.4 A Regulations Table	87	2.1.4 A Regulations Table	Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met.
70	2.1.4 B Regulations Table	87	2.1.4 B Regulations Table	Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met.
70 – 72	2.1.4 B.1	88 – 91	2.1.4 B.4	Updated the MACT Subpart AA permit condition for SPA Plants 1 and 2 (ep330 and ep331). Changes include the following: • Updated the formatting; • Added a general duty clause; • Modified the monitoring requirements to allow for monitoring the minimum influent liquid-to-gas ratio (L/G ratio); • Modified startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
72 – 74	2.1.4 C.1	93 – 96	2.1.4 C.4	Updated the MACT Subpart AA permit condition for SPA Plants 3 and 4 (ep332). Changes include the following: • Updated the formatting; • Added a general duty clause; • Modified the monitoring requirements to allow for monitoring the minimum influent liquid-to-gas ratio (L/G ratio); • Modified startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
75	2.1.4 D Regulations Table	97	2.1.4 D Regulations Table	• Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met. • Moved the additive storage silo, No. 1 additive weigh feed hopper, and No. 2 additive weigh feed hopper controlled with a common bagfilter (ep340) to the insignificant activities list. • Removed reference to CAM requirements for 453-468. Potential emissions recalculated and no longer subject to CAM.
76	2.1.4 D.2	97 – 98	2.1.4 D.2	Removed requirements for the additive storage silo, No. 1 additive weigh feed hopper, and No. 2 additive weigh feed hopper controlled with a common bagfilter (ep340) , as these emission sources have been moved to the insignificant activities list.
76 – 77	2.1.4 D.3	--	--	Removed CAM condition. Potential emissions recalculated and no longer subject to CAM.
77 -78	2.1.4 E.	--	--	Moved fertilizer warehouse (ID No. DAP3wh3) from this section because it is located in the Mill Area and not the SPA Area.
79 – 82	2.1.4 F.3	99 – 102	2.1.4 E.3	Updated the MACT Subpart AA permit condition for SPA Plant 5 (ep333). Changes include the following: • Updated the formatting; • Added startup, shutdown, and malfunction provisions; and • Updated reporting requirements.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
	--	103	2.1.4 F	Added permit condition for emission sources not noted elsewhere in the SPA Plant Area.
83	2.1.5 A Regulations Table	105	2.1.5 A Regulations Table	• Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met. • Corrected SO_2 emission limit for BACT.
84	2.1.5 A.3.a	109	2.1.5 A.2.a.	Corrected SO_2 emission limit for BACT from PA Trains 3 and 4 (ep406 and ep409) to 960 pounds per day, each.
90	2.1.5 A.7	107 – 108	2.1.5 A.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Harmonized parametric monitoring under CAM with that under MACT Subpart AA. • Added recordkeeping and reporting requirements for CAM.
85 – 86	2.1.5 A.1	108 – 112	2.1.5 A.4	Updated the MACT Subpart AA permit condition for Phosphoric acid trains 1 through 4 (ep401 through ep409). Changes include the following: • Updated the formatting; • Added a general duty clause; • Modified the monitoring requirements to allow for monitoring the minimum influent liquid-to-gas ratio (L/G ratio) for the crossflow scrubber (ID Nos. 421-225, 422-225, 423-225, and 424-225); • Modified startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
88	2.1.5 A.4.b	112	2.1.5 A.5.b	Changed "TRS" to "H_2S" in testing section.
92	2.1.5 C.2.c	116	2.1.5 C.1.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
92 – 93	2.1.5 C.3	117 – 119	2.1.5 C.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.
94	2.1.5 D.2.c	120	2.1.5 D.1.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
94 -95	2.1.5 D.3	121 – 123	2.1.5 D.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
96	2.1.5 E.2.c	124	2.1.5 E.1.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
96	2.1.5 E.3	125 – 127	2.1.5 E.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.
97	2.1.5 F Regulations Table	128	2.1.5 F Regulations Table	• Removed reference to 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as this tracking requirement has been met. • Moved the additive weigh feed hopper controlled via a fabric filter (ep496) to list of insignificant activities.
98	2.1.5 F.2.c	129	2.1.5 F.2.c	Updated monitoring language for 15A NCAC 02D .0521 with most recent version.
98	2.1.5 F.3	129 – 131	2.1.5 F.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. • Added recordkeeping and reporting requirements for CAM.
99	2.1.5 G.1	131	2.1.5 G.1	Updated the MACT Subpart AA permit condition for cooling towers (ep461 and ep462). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.
99	2.1.5 H	--	--	Removed "Reserved" place holder and renumbered permit accordingly.
99	2.1.5 I	132	2.1.5 H	• Moved the HF Production to this section with the removal of the "Reserved" place holder. • Removed shutdown scenarios for HF Trains (ID Nos. GW03-A and GW03-B). Emissions during shutdown are vented through the venturi scrubbers (ID Nos. HFVS-1 and HFVS-2) and packed bed scrubbers (ID Nos. HFPB-1 and HFPB-2).
99	2.1.5 I Regulations Table	132	2.1.5 H Regulations Table	Added reference to 15A NCAC 02Q .0317 avoidance for 15A NCAC 02D .1112 and 02D .0530.
--	--	134 – 135	2.1.5 H.3	Added permit condition for 15A NCAC 02Q .0317 avoidance for 15A NCAC 02D .1112.
--	--	135	2.1.5.H.4	Added permit condition for 15A NCAC 02Q .0317 avoidance for 15A NCAC 02D .0530.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
118 – 120	2.1.8 A	136 – 139	2.1.5 I	Moved emission sources associated with ep435 to this section because these emission sources are located in the Phosphoric Acid Production Area.
119 – 120	2.1.8 A.3	137 - 139	2.1.5 I.3	• Formatted permit condition for CAM so that condition is consistent with template. • Removed reference to March 10, 2013 as startup of CAM requirements. • Changed monthly VE observations to daily VE observations. • Added a pressure drop across the control devise as an indicator under CAM. Added recordkeeping and reporting requirements for CAM.
--	--	139	2.1.5 J	Added permit condition for emission sources not noted elsewhere in the Phosphoric Acid Production Area.
102 – 103	2.1.6 A.1	140 – 142	2.1.6 A.1	Updated the MACT Subpart AA permit condition for Purified Acid Plant No. 1, Trains 1 and 2 (ep501). Changes include the following: • Updated the formatting; • Added a general duty clause; • Removed startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
104	2.1.6.C.1	143	2.1.6 C.1	Updated the MACT Subpart AA permit condition for cooling towers (ep510/511 and 512/513). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.
105 – 106	2.1.6 D.1	145 – 147	2.1.6 D.2	Updated the MACT Subpart AA permit condition for Purified Acid Plant No. 2, Train 3 (ep503). Changes include the following: • Updated the formatting; • Added a general duty clause; • Removed startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
107	2.1.6 E – Regulations Table	147	2.1.6 E – Regulations Table	Removed reference to CAM because the two acid defluorination column/concentrators (ID Nos. S1088/T1070 and S1118/T1100) are not subject to CAM.
107 – 108	2.1.6 E.2	--	--	Removed permit condition for CAM because the two acid defluorination column/concentrators (ID Nos. S1088/T1070 and S1118/T1100) are not subject to CAM.
108	2.1.6 F.1	149 – 150	2.1.6 F.2	Updated the MACT Subpart AA permit condition for cooling tower (ep514/515). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
109	2.1.6 G.1	150 – 151	2.1.6 G.2	Updated the MACT Subpart AA permit condition for cooling tower (ep516/517). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.
109 – 110	2.1.6 H Regulations Table	152	2.1.6 H Regulations Table	• Removed reference to 15A NCAC 02D .1100 from regulations table. Purified Acid Plant No. 2, Train No. 4 is a subject to MACT Subpart BB and is exempt from NC Air Toxics. • Removed reference to 2.2 C.2. This section of the permit does not exist.
110 – 111	2.1.6 H.1	153 – 155	2.1.6 H.2	Updated the MACT Subpart AA permit condition for Purified Acid Plant No. 2, Train No. 4 (ep503). Changes include the following: • Updated the formatting; • Added a general duty clause; • Removed startup, shutdown, and malfunction provisions; and • Updated reporting requirements.
112	2.1.6.I – Regulations Table	156	2.1.6.I – Regulations Table	Removed reference to CAM because the acid defluorination column/concentrator (ID No. S12888/T1270) is not subject to CAM.
112 – 113	2.1.6 I.2	--	--	Removed permit condition for CAM because the acid defluorination column/concentrator (ID No. S1288/T1270) is not subject to CAM.
--	--	157	2.1.6 J.1.c	Added statement that no monitoring, recordkeeping, or reporting is required for BACT for the cooling tower (ep518/519).
113	2.1.6 J.1	157	2.1.6 J.2	Updated the MACT Subpart AA permit condition for cooling tower (ep518/519). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.
114	2.1.6 K.1	158 – 159	2.1.6 K.2	Updated the MACT Subpart AA permit condition for cooling tower (ep520/521). Changes include the following: • Updated the formatting; • Added a general duty clause; and • Added reporting requirements.
--	--	159	2.1.6 L	Added permit condition for emission sources not noted elsewhere in the Phosphoric Acid Production Area.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
118	2.1.8 A	163	2.1.8 A	The emission sources under Section 2.1.8.A were updated as described below. The following emission sources are not "Shipping Operations" and were moved to the appropriate section of the permit. • Calcined/dried rock CTS (ep225, ep226, and ep227). These emissions points were previously ep650, ep651, and ep652. • Phosphate rock storage silo (ep435) The following emission sources are "Shipping Operations" and were moved to this Section. • Ammonia Rail Car Unloading, Truck Unloading, and Storage Tanks, ep601 through ep605 and epNH3TRK1 and NH3TRK2 • Sulfur Unloading, ep610 through ep614 • Railcar Wash Station No. 1 ep615 • Railcar Wash Station No. 2, ep617 • Phosphoric/Superphosphoric Acid Shipping Tank Farm and Miscellaneous Sources, ep616 The following emission sources are no longer in operation and were removed from the permit. • Phosphate rock transfer station (ep653) • Chute barge rock load out (ep655) • Chute train rock loadout (ep656)
121	2.1.9 A	164	2.1.9 A	Removed following emergency engines from this Section • Diesel-fired emergency engine for backup power at wastewater treatment plant (ID No. 130-458) • Diesel-fired emergency engine for backup power at main lift station pumps (ID No. 130-457) • Diesel-fired fire pump engine – PAP plant (ID No. 624-231-484) • Diesel-fired fire pump engine – PAP plant (ID No. 624-293-484) • Diesel-fired emergency engine for ammonia emergency deluge system (ID No. 555-218-484) • LPG-fired 4SRB emergency engine for backup power at radio tower (ID No. 190-400-484) • LPG-fired 4SRB emergency engine for backup power for the No. 7 Sulfuric Acid Plant turbine lube oil pump (ID No. 407-401). • Emergency engines (ID Nos. 365-160-523 and 365-136-484).
121	2.1.9 A Regulations Table	164	2.1.9 A Regulations Table	Removed references to MACT Subpart ZZZZ and NSPS Subparts IIII and JJJJ, as applicable, for the emergency engines noted above.
123 – 130	2.1.9 A.4 through 2.1.9 A.9	--	--	Removed permit conditions for MACT Subpart ZZZZ and NSPS Subparts IIII and JJJJ, as applicable, for the emergency engines noted above.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
130	2.1.9 B Equipment List	165	2.1.9 B Equipment List	The following sources are not "Miscellaneous Sources" as delineated in Table 1.9 and were moved to the appropriate section of the permit. • Sulfuric Acid Plant Fugitive Emissions, ep191-194 • Mill Concentrator Fugitives, ep290 • Filter Presses, ep305 • Phosphoric Acid Pilot Plant No. 2, ep316 • Technical Services Dust Collection System, Pilot Plant, ep318 • Filter Press/Filter Press Repulp Tank, ep335 • Filter Presses Repulp Tank, ep336 • Warehouse No. 2 for DAP2, ep390 • Fugitive Plant Fugitives, ep391, ep392 • Process Vessels and Product Tank, ep493 • Filter Presses Building Vent No. 1, ep495 • Filter Presses Building Vent No. 2, ep497 • Purified Acid Plant Tank Farm, ep590 through ep593 • Ammonia Rail Car Unloading, Truck Unloading, and Storage Tanks, ep601 through ep605 and epNH3TRK1 and NH3TRK2 • Sulfur Unloading, ep610 through ep614 • Railcar Wash 1, ep615 • Railcar Wash 2, ep617 • Phosphoric/Superphosphoric Acid Shipping Tank Farm and Miscellaneous Sources, ep616
131	2.1.9 B Regulations Table	165	2.1.9 B Regulations Table	• Removed reference to 15A NCAC .02D .0530(u). The only remaining emission sources are not subject to this regulation. • Added reference to 15A NCAC .02D .1111. The cooling ponds are subject to MACT Subpart AA.
--	--	165 – 166	2.1.9 B.1	Added MACT Subpart AA permit condition for cooling ponds (ep910, 914, and ep922).
132	2.1.9 C	166	2.1.9 C	Moved Reclaim Areas 1 to 11 (ID Nos. I-R1 to I-R14) to insignificant activities list.
--	--	167 – 168	2.1.9 C.1	Added MACT Subpart AA permit condition for gypsum stack ponds (ep955A, ep950A, and ep954A).
128	2.2 A.1	--	--	Removed "Reserved" place holder and renumbered permit accordingly.
134	2.2 A.2	169	2.2 A.2	Updated dates for RMP submittal.
134	2.2 B	--	--	Removed condition for 02D .0501(e) for the DFP Area. This area was replaced by the Calcium Phosphate Plant under Air Permit No. 04176T61.
134 – 136	2.2 C	--	--	• Removed permit condition for 15A NCAC 02D .0530(u) for the LOMAG/DFMGAA project, as the tracking requirements have been met. • Renumbered permit accordingly.
139	2.2 E.2	171	2.2 B.2	Removed reference to I-APPCOOLTOWER in requirement to submit permit application. This emission source is an insignificant activity and does not require a permit.
141	2.3	--	--	• Removed "Reserved" place holder and renumbered permit accordingly.

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
142 – 143	Section 2.4	173 – 174	Section 2.3	• Modified the emission source for Calcined/dried rock CTS (ep227). This emissions points was ep652. • Removed emission sources ep653, ep655, and ep 656, as they have been demolished. • Removed ep220, ep223, ep650, and ep651. These emission sources are enclosed in a building and no PM emissions are expected from them.
147	Section 2.6	178	Section 2.5	• Updated language for non-applicability for the X07 Superheater replacement project. • Clarified reference for the HF Production Process. • Added non-applicability statement for the phosphate rock dryer (ID No. 332-120).
148 – 149	Section 2.3 Insignificant Activities List	179 – 180	Section 3 Insignificant Activities List	• Moved the following emergency engines to the insignificant activities list: o Diesel-fired emergency engine for backup power at wastewater treatment plant (ID No. I-130-458) o Diesel-fired emergency engine for backup power at main lift station pumps (ID No. I-130-457) o Diesel-fired fire pump engine – PAP plant (ID No. I-624-231-484) o Diesel-fired fire pump engine – PAP plant (ID No. I-624-293-484) o Diesel-fired emergency engine for ammonia emergency deluge system (ID No. I-555-218-484) o LPG-fired 4SRB emergency engine for backup power at radio tower (ID No. I-190-400-484) o LPG-fired 4SRB emergency engine for backup power for the No. 7 Sulfuric Acid Plant turbine lube oil pump (ID No. I-407-401). • Moved reclaim areas 1 to 11 (ep960 through ep970) to the insignificant activities list. These emission sources meet the definition of insignificant activities under 15A NCAC 02Q .0503(8) and were only included on the permit because they are subject to a NESHAP. • Added three new reclaim areas 12 to 14 (ep971 through 973). The DAQ issued an applicability determination on June 17, 2019 stating that the three new reclaim areas did not require permitting. • Moved sources (ID Nos. I-Belt41 to Belt39, I-Belt27 to Belt41, I-Belt39 to Belt70.1, and I-339-809-464) to the insignificant activities list. • Moved sources (I-453-485, I-453-489, I-453-490, and I-426-244) to the insignificant activities list. • Removed DFP vacuum cleaner (ID No. I-14). • Removed DFP rock silos (ID No. DFP1).

ATTACHMENT 1 – TABLE OF CHANGES

Previous Permit		New Permit		Description of Changes
Pages	**Sections**	**Pages**	**Sections**	
159 – 161	Attachment 1	190 – 192	Attachment 1	• Removed GTSP Rock Silo (ep310). The Permittee no longer produces GTSP. • Removed ep220, ep223, ep650, and ep651. These emission sources are enclosed in a building and no PM emissions are expected from them. • Removed emission source ep433 as it is no longer on the permit. • Removed emission sources ep653, ep655, and ep 656, as they have been demolished.

ATTACHMENT 2
Permit Review for First Step Permit Application (0700071.20C) f

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: April 3, 2020

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 10/23/2019
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 .0507, 02D .0516, 02D .0521, 02D .0530, 02D .0530(u), 02D .0614, 02D .1111, 02Q .0504.
NSPS: No
NESHAP: Subpart BB
PSD: No
PSD Avoidance: 02D .0530(u)
NC Toxics: No
112(r): No
Other: N/A

Contact Data

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Application Data

Application Number: 0700071.20C
Date Received: 02/04/2020
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 04176/T59
Existing Permit Issue Date: 11/22/2019
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/T60
Permit Issue Date: 04/03/20
Permit Expiration Date: 12/31/22

1

ATTACHMENT 2
Permit Review for First Step Permit Application (0700071.20C) f

1. Purpose of Application

PCS Phosphate Company, Inc. – Aurora (PCS) currently holds Title V Permit No. 04176T59 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. 0700071.20C was received on February 4, 2020 as a "Part 1" of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for replacement of the vaporizer/ granulator (ID No. 505-103) and shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) located in the diammonium phosphate (DAP) Plant No. 2 (EP 303).[1]

2. Application Chronology

February 4, 2020	Received permit application.
February 7, 2020	Sent acknowledgment letter indicating the application was complete.
February 17, 2020	Robert Bright of Washington Regional Office (WaRO) of the DAQ provided comments on the permit application.
February 21, 2020	Draft of permit and permit review forwarded to DAQ staff for internal review.
March 3, 2020	Robert Bright indicated he had no comments on the drafts.
March 6, 2020	Draft of permit and permit review forwarded to PCS for review.
March 9, 2020	Comments received from Mark Cuilla, Permitting Supervisor.
March 30, 2020	Comments received from PCS.
April 3, 2020	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.
5 - 6	Table 1.3	Added footnote stating emission source (ID No. 505-103) and control device (ID No. 505-148) is listed as a 15A NCAC 02Q .0501(b)(2) modification.
48	2.1.3.A – Regulations Table	• Added reference to 15A NCAC 02D .0530(u). • Added reference to 15A NCAC 02Q .0504.
49	2.1.3.A.1.i (new numbering)	Updated startup, shutdown, and malfunction requirements for 40 CFR Part 63 Subpart BB.

[1] EP = Emission Point.

Pages	Section	Description of Changes
50	2.1.3.A.1.1 (new numbering)	Added reporting requirements for performance tests.
51	2.1.3.A.4. c and e	• Updated permit condition for 15A NCAC 02D .0521 with most current permit language and requiring the facility to reestablish normal visible emissions for Diammonium Phosphate Plant No. 2 (ep 303) in the first 30 days following the beginning operation of the granulator **(ID No. 505-103)**. • Removed noncompliance statements because this modification is a "Part 1" of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2).
53	2.1.3.A.8	Added permit condition requiring facility to submit a "Part 2" permit application within 12 months after the restart of emission source (ID No. 505-103) or control device (ID No. 505-148) in accordance with 15A NCAC 02Q .0504.
72	2.1.4.E – Regulations Table	Added reference to 15A NCAC 02D .0530(u) for fertilizer warehouse fugitive emissions (ID No. DAPWH3).
131	2.1.9.B – Regulations Table	Added reference to 15A NCAC 02D .0530(u) for the fugitive warehouse emissions (ID Nos. F391 and F392).
139 – 140	2.2 F	Added permit condition for recordkeeping and reporting of emissions in accordance with 15A NCAC 02D .0530(u) for the DAP Plant No. 2 Replacement Project.

No changes to the Title V Equipment Editor (TVEE) are required as part of this modification.

4. Replacement of Equipment in DAP Plant No. 2

Figure 1 provides a process flow diagram for DAP Plant No. 2. Diammonium phosphate is produced by reacting an aqueous solution of phosphoric acid with ammonia to prepare a partially reacted slurry of monoammonium phosphate (MAP) and DAP. The slurry is pumped to a reactor-granulator where further ammonia is added to yield a diammonium phosphate product. The diammonium phosphate product leaving the reactor-granulator is transferred to a dryer. The granular product is then cooled in a cooler and separated by size via screening. Oversized granules can be milled to produce the desired size of granular diammonium phosphate. Emissions from the reactor-granulator are controlled via a venturi wet scrubber and packed tower tail gas scrubber with saddle-type packing and demister pad.

The proposed project involves the replacement of the vaporizer / granulator (ID No. 505-103) and the shell and scrubbing liquid holding tank for the tail gas scrubber (ID No. 505-148) in DAP Plant No. 2 (EP 303). The equipment will be replaced with functionally identical equipment. The internal equipment for the tail gas scrubber is not being modified. As such, the scrubber performance will not be impacted nor will there be a changed in liquid injection rate or pressure drop across the system. This project will not increase the production capacity of the plant.

Replacing the equipment in DAP Plant No. 2 (hereafter referred to as the Replacement Project) represents a physical change or change in the method of operation. As such, the emissions resulting from the modification were reviewed to determine if the project would be considered a major modification under Prevention of Significant Deterioration (PSD) rules. PCS assessed the

applicability of PSD by performing the comparison test of baseline actual emissions (BAE) to projected actual emissions (PAE) for the project.

Baseline Actual Emissions

As specified in 15A NCAC 02D .0530, BAE are calculated as the average rate, in tons per year (tpy), at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the five-year period immediately preceding the date that a complete permit application is received.

For the BAE, PCS conducted a three-year look-back period from 2015 to 2018 using emissions from DAP Plant No. 2 (EP 303) as reported in DAQ's emission inventory. In accordance with 15A NCAC 02D .0530(b)(1)(A)(v), PCS selected different consecutive 24-month periods for the NSR pollutants. The table below contains the BAE for each regulated pollutant and the associated time period. The selected time period for each pollutant is highlighted in the table below.

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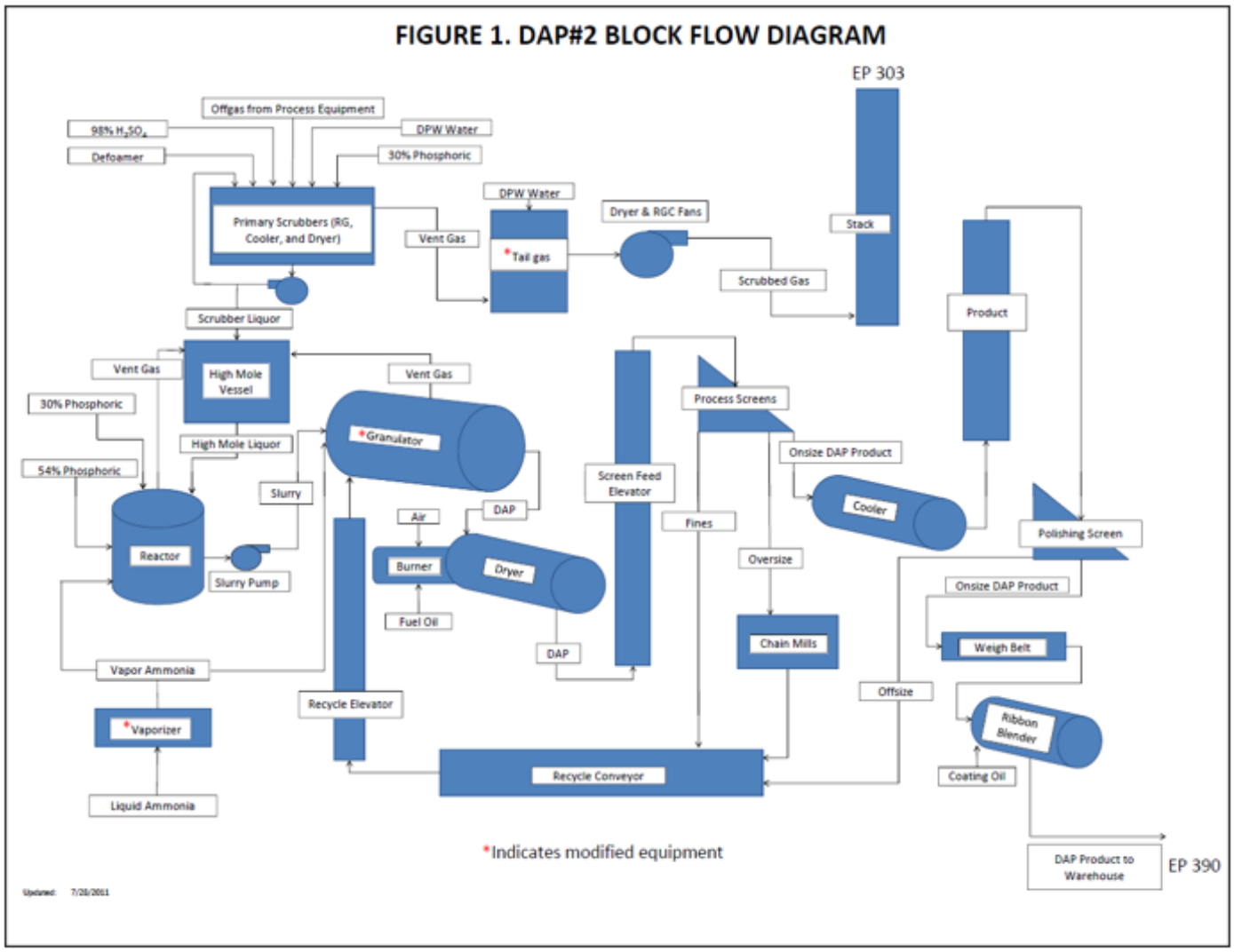

Pollutant	Average Emission Rate (tpy)		
	2015 - 2016	2016 - 2017	2017 - 2018
SO2	16.48	17.40	17.39
NOx	5.56	5.77	4.45
CO	0.44	0.44	0.33
PM	18.72	26.84	35.72
PM10	18.72	26.84	26.65
PM2.5	13.65	20.45	23.75
VOC	0.025	0.024	0.018
Fluorides (excluding HF)	4.52	4.66	4.78
Lead	1.64E-03	2.35E-03	3.13E-03
CO2e	5,650	5,838	4,272

Notes:
CO_2 equivalent (CO2e) is defined as the sum of individual greenhouse gas pollutant emission times their global warming potential, converted to metric tons.

Projected Actual Emissions

PAE is defined in 40 CFR 51.166(b)(40) as the maximum annual rate, in tpy, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant. The Replacement Project will not affect the design capacity or potential to emit of DAP Plant No. 2.

Emissions of particulate matter (PM), PM10, PM2.5, and fluorides are tested annually, while nitrogen oxides (NOx) and sulfur dioxide (SO_2) are tested once permit cycle. The emission factors for these pollutants were determined via source testing. Because MAP and DAP can both be produced in DAP Plant No. 2, PAE for these pollutants were based on the highest emission factor for either MAP or DAP production used during the baseline look-back period (2015 to 2018). The selected emission factor for each pollutant was then multiplied by the highest anticipated input rate of 305,000 ton of phosphoric acid (P_2O_5) per year. Fluoride emissions also included fugitive emissions from the fertilizer plants (EP 391 and EP 392) and storage of product in the fertilizer warehouse (EP 390). Lead emissions were determined based on the PM emissions and previously measured concentration.

Emissions of VOC, CO, and CO2e result only from combustion in the residual oil-fired dryer (ID No. 505-104). Emissions of these pollutants were calculated using US EPA AP-42 emission factors for No. 6 fuel oil (i.e., residual oil) and the anticipated fuel usage in the residual oil-fired dryer

The table below provides the selected emission factors, and the PAE for the Replacement Project.

Pollutant	Emission Factor	Emission Inventory Year	MAP or DAP	PAE (tpy)
SO_2	0.29 lb/ ton P_2O_5 input	2018	DAP	43.6
NOx	0.11 lb/ ton P_2O_5 input	2015	DAP	16.74

Pollutant	Emission Factor	Emission Inventory Year	MAP or DAP	PAE (tpy)
CO	5 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		0.78
PM	0.353 lb/ ton P_2O_5 input	2018	MAP	53.83
PM10	0.262 lb/ ton P_2O_5 input	2017	DAP	39.96
PM2.5	0.219 lb/ ton P_2O_5 input	2016	DAP	33.34
VOC	0.28 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		0.044
Fluorides (excluding HF) DAP/MAP process Process fugitive Warehouses	 0.0072 lb/ ton P_2O_5 input 0.321 lb/hr 0.670 lb/hr	 2017 Maximums from look-back period	 DAP -- --	5.4
Lead	87.5 ppm of TSP	Average of 1994 and 1996 laboratory analyses		4.71E-03
CO2e CO2 Methane Nitrous Oxide	 24.4 lb/gal 0.001 lb/gal 0.00011 lb/gal	N/A (US EPA AP-42 emission factors used)		3,814

Comparison of BAE to PAE

The comparison of the BAE and PAE is provided in the table below. PCS is a major source under the PSD rules. For this modification to be considered a significant modification under PSD, the emissions increase must exceed the PSD significant emission rates (SER). As shown in the table below, the emission increases are less than the SER for all pollutants. Therefore, the Replacement Project is not a major modification under PSD, and no PSD review is required.

Pollutant	BAE (tpy)	PAE (tpy)	Emission Increase (tpy)	PSD SER (tpy)	Below PSD SER?
SO_2	17.4	43.6	26.2	40	YES
NOx	5.8	16.7	11.0	40	YES
CO	0.44	0.8	0.3	100	YES
PM	35.7	53.8	18.1	25	YES
PM10	26.8	40.0	13.1	15	YES
PM2.5	23.8	33.3	9.6	10	YES
VOC	0.025	0.04	0.02	40	YES
Fluorides (excluding HF)	4.8	5.4	0.7	3	YES
Lead	3.13E-03	4.71E-03	1.53E-03	0.6	YES
CO_2e	5,838	3,814	-2,024	75,000	YES

A permit condition for 02D .0530(u) for tracking emissions of PM/PM10/PM2.5, NOx, SO_2, lead, and fluorides (excluding HF) for the Replacement Project will be added to the permit under this modification. Emissions of VOC, CO, and CO2e do not need to be tracked because potential emissions from the residual oil-fired dryer do not exceed the SER for these pollutants. Because the project does not involve increasing an emission unit's design capacity or its potential to emit, the

condition will require only five years of tracking emissions from emission sources associated Replacement Project. More discussion on 02D .0530(u) is provided below in Section 5.

Emissions of NC Toxic Air Pollutants (TAPs)
Discussion of TAP emissions from DAP Plant No. 2 (EP 303) and compliance with NC Air Toxics is provided below in Section 6.

Regulations
DAP Plant No. 2 (EP 303) is subject to the following regulations

- 15A NCAC 02D .0507, Particulates from Chemical Fertilizer Manufacturing – DAP Plant No. 2 is subject to 02D .0507 and must meet the following emission standard:

  $E = 9.377 \times P^{0.3067}$

  Where E = allowable emission rate in pounds per hour
  P = process weight in tons per hour

  DAP Plant No. 2 is also subject to "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB (MACT Subpart BB). The monitoring, recordkeeping, and reporting for MACT Subpart BB requirements are sufficient for demonstrating compliance with 02D .0507. No changes to the permit are required as part of this modification, and continued compliance is anticipated.

  15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources – DAP Plant No. 2 includes a residual oil-fired dryer (ID No. 505-104), which is not part of this modification. No changes to the permit are required as part of this modification, and continued compliance is anticipated.

  15A NCAC 02D .0521, Control of Visible Emissions – DAP Plant No. 2 was 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 conducts monthly visible emission observations to ensure compliance. The permit condition will be updated under this modification to add the requirement to establish "normal" visible emissions after restart of the replaced vaporizer / granulator and to reflect the most current permitting language. Continued compliance is anticipated.

- 15A NCAC 02D .0530, PSD – DAP Plant No. 2 previously underwent a PSD analysis, and a permit condition containing Best Achievable Control (BACT) and emission limits was added to Air Permit No. 04176T28 issued on June 17, 2005. The BACT emission limits for DAP Plant No. 2 and the emissions / emission factors used to calculate the PAE for the Replacement Project are provided in the table below.

Pollutant	BACT Technology	Emission Limit	Emission Rates/ Factors Used to Determine PAE
Nitrogen oxides	Conventional combustion	14.7 lb/hr	3.82 lb/hr
VOC	Good engineering practices	N/A	0.01 lb/hr
Sulfur dioxide	Scrubbing with process ammonia	15 lb/hr	9.96 lb/hr
Total fluorides	Venturi and packed bed scrubbers	0.058 pounds per ton of equivalent P_2O_5 feed	0.0122 pounds per ton of equivalent P_2O_5 feed
TSP/PM-10	Venturi and packed bed scrubbers	64.1 lb/hr	12.29 lb/hr

Notes:
The hourly emission rate of SO_2 used to calculate the PAE is less than hourly emission rate observed during the most recent source test. This difference is acceptable because the hourly rate observed during testing was based on the production rate during the test, while the PAE was based on the maximum **annual rate** projected to occur when resuming operations. Regardless, the hourly emission rate of SO_2 observed during testing was in compliance with the BACT emission limit.

As shown in the table above, all emission rates/ factors selected for use in calculating the PAE are less than the BACT emission limits, indicating compliance with these limits.

PCS monitors and records the mass flow rate of phosphorus bearing material to the process, the pressure drop across each wet scrubber, and flow rate of scrubbing liquid to each scrubber to ensure compliance. PCS must also test fluoride and PM emissions annually and NOx and SO_2 emissions every five years to ensure compliance with the BACT limits. No changes to the BACT condition are needed, and continued compliance with the BACT limits is anticipated.

- 15A NCAC 02D .0530(u) – PCS has demonstrated the Replacement Project is not a major modification under PSD. The recordkeeping and reporting requirements of 15A NCAC 02D .0530(u) will be included in the revised air permit. The permit condition for 15A NCAC 02D .0530(u) is provided in Attachment 1 to this permit review. Please see Section 5 below for a detailed discussion of PSD and 02D .0530(u). Compliance is anticipated.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring - Emissions of PM10 and total fluorides from the DAP Plant No. 2 are controlled as specified in Table 1.3 of the permit, and these control devices are subject to CAM. Under CAM, PCS must monitor pressure drop across the various scrubbers used to control emissions of PM10 and fluorides. No changes to the permit are required as part of this modification, and continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – DAP Plant No. 2 is subject to "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB. Please see Section 5 below for a more detailed discussion of MACT Subpart BB. Continued compliance is anticipated.

- 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 the replaced vaporizer/ granulator (ID No. 505-103) or the tail gas scrubber (ID No. 505-148).

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

NSPS

PCS has numerous emission sources subject to various New Source Performance Standards (NSPS). No emission sources associated with this modification are subject to NSPS, and this modification does not affect the NSPS status of the facility.

NESHAPS/MACT

PCS is a major source of hazardous air pollutants (HAPs) and has numerous emission sources subject to various MACT standards. This modification does not affect the MACT status of the facility.

With respect to this permit application, DAP Plant No. 2 is subject to "NESHAP from Phosphoric Fertilizer Production Plants," 40 CFR 63 Subpart BB. This rule was revised on August 19, 2015, in part, to require work practice standards in lieu of emission standards during periods of startup, shutdown, and malfunction in accordance with 40 CFR 63.622(d). The permit condition for MACT Subpart BB will be revised to reflect updates to MACT Subpart BB as part of this permit modification. Attachment 2 contains the revised permit condition for MACT Subpart BB. Continued compliance is anticipated.

PSD

PCS is a major facility under PSD. This modification does not change the PSD status of the facility.

With respect to this permit application, PCS has demonstrated the Replacement Project is not a major modification under PSD. The recordkeeping and reporting requirements of 15A NCAC 02D .0530(u) will be included in the revised air permit. The PAE from the modification are shown in the table and will be included in the permit for tracking purposes. As noted previously, emissions of VOC, CO, and CO2e do not require tracking under 02D .0530(u) because potential emissions of these pollutants are less than the associated SERs.

Pollutant	Projected Actual Emissions* (tpy)
SO_2	43.6
NOx	16.74
PM	53.83
PM10	39.96
PM2.5	33.34
Lead	4.71E-03
Fluorides (excluding HF)	5.4

The permit condition for 15A NCAC 02D .0530(u) is provided in Attachment 1 to this permit review. 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). This modification does not affect the 112(r) status of the facility.

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).

The vaporizer / granulator (ID No. 505-103), which is being replaced, is controlled by venturi wet scrubber (ID No. 505-118) and packed tower tail gas scrubber (ID No. 505-148). The liquid holding tank for the tail gas scrubber is also being replaced as part of this permit modification.

The tail gas scrubber is subject to CAM. For this scrubber, CAM is achieved through continuous monitoring of the pressure drop and water flow rate. Indicator ranges are set at 5% of the allowable ranges. If the indicator ranges are exceeded, PCS Permittee must conduct an inspection of the associated device. Each monitoring system must be operated in accordance with a quality assurance program developed and implemented according to the provisions of 15A NCAC 2D .0613. No change to the permit is required, and continued compliance is anticipated.

6. NC Air Toxics

DAP Plant No. 2 is subject to MACT Subpart BB and is exempt from NC Air Toxics in accordance with 15A NCAC 02Q .0702(a)(27). However, the DAQ must evaluate TAP emissions to ensure the Replacement Project would not present "an unacceptable risk to human health," in accordance with G.S. 143-215.107(b) as codified on May 1, 2014.

Emissions for all TAPS associated with the Replacement Project were compared with their TAP Permitting Emission Rate (TPER), as shown in the table below. TAP emissions less than their TPERs do not pose an unacceptable risk to human health, and no further analysis is required. However, emissions of ammonia, arsenic, beryllium, cadmium, fluorides (excluding HF), hydrogen fluoride, and nickel all exceed their TPER, and further analysis is required.

TAP	Emission Rates for Replacement Project			TPER		
	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Ammonia	2.85E+01	6.84E+02	2.50E+05	0.68		
Arsenic	1.27E-04	3.04E-03	1.11E+00			0.053
Benzene	7.62E-06	1.83E-04	6.67E-02			8.1
Beryllium	1.24E-04	2.98E-03	1.09E+00			0.28
Cadmium	1.41E-03	3.39E-02	1.24E+01			0.37
Chromium VI	8.83E-06	2.12E-04	7.73E-02		0.013	

TAP	Emission Rates for Replacement Project			TPER		
	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Fluorides (except hydrogen fluoride)	1.24E+00	2.98E+01	1.09E+04	0.064	0.34	
Formaldehyde	1.51E-03	3.63E-02	1.33E+01	0.04		
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.95E-11	4.69E-10	1.71E-07			0.0051
Hexachlorodibenzo-p-dioxin	6.20E-11	1.49E-09	5.43E-07			0.0051
Hydrogen Fluoride	9.70E-01	2.33E+01	8.49E+03	0.064	0.63	
Manganese	1.20E-03	2.89E-02	1.06E+01		0.63	
Mercury	2.46E-05	5.90E-04	2.15E-01		0.013	
Methyl Chloroform	8.40E-06	2.02E-04	7.36E-02		250	
Nickel	3.01E-02	7.23E-01	2.64E+02		0.13	
Toluene	2.21E-04	5.30E-03	1.93E+00	14.4	98	

PCS has previously conducted facility-wide air dispersion modeling for numerous TAPs to demonstrate compliance with 02D .1100. The TAPs noted above were among the TAPs PCS previously modeled. Emissions associated with Replacement Project were compared with the most recently modeled emissions for DAP Plant No. 2 (EP 303), as shown in the table below.

TAP	AAL (µg/m3)	% of AAL	Date of Modeling Review Memo	Emission Rate for EP 303 Used in Previous Modeling	Emission Rate for EP 303 for the Replacement Project
Ammonia	2700	82.50%	12/07/17	49.1 lb/hr	28.5 lb/hr
Arsenic	2.10E-02	98%	10/14/14	27.3 lb/yr	1.1 lb/yr
Beryllium	4.10E-03	98%	10/14/14	171 lb/yr	1.09 lb/yr
Cadmium	5.50E-03	98%	10/14/14	93.0 lb/yr	12.4 lb/yr
Fluoride (except HF)	16	67%	10/31/2019	3.48 lb/hr	1.24 lb/hr
	250	16%		83.4 lb/day	29.8 lb/day
Hydrogen Fluoride	30	38%	10/31/2019	2.40 lb/hr	0.97 lb/hr
	250	24%		57.5 lb/day	23.3 lb/day
Nickel	6	98%	10/14/14	142 lb/day	0.72 lb/day

As shown in the table above, the modeled emissions are greater than the PAE for DAP Plant No. 2 (EP 303). The reason these emission rates differ is twofold. First, the modeled emission rates for metals appear to have been optimized to 98% of the acceptable ambient level (AAL). Secondly, emissions for the Replacement Project represent PAE, not potential emissions. As noted previously, PAE is defined under PSD as "the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the project." It is expected PAE would be less than the potential or modeled emission rates.

Tom Anderson of the Air Quality Analysis reviewed PAE for the TAPs in the table above and concluded the Replacement Project does not pose an "unacceptable risk to human health." Compliance with NC Air Toxics is demonstrated.

7. Facility Emissions Review

Facility-wide potential emissions after this modification are provided in the table below. Actual emissions from PCS from 2014 to 2018 are reported in the header of this permit review.

Pollutant	Expected Actual Emissions (tpy)	TV Potential Emissions (tpy)
PM (TSP)	2,042	3,502
PM10	803	2,060
PM2.5	228	1,428
CO	425	1,263
NO_x	431	10,086
SO_2	3,440	8,745
VOC	278	289
CO2e	302,052 metric tons	752,972 metric tons
Notes: Emissions contained in Form D1 of Permit Application No. 0700071.20C.		

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 pounds of 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.

8. 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).

9. 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 $988 was submitted with the permit application.

10. 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. 04176T60.

Attachment 1
Permit Condition for 15A NCAC 02D .0530(u)

Section 2.2 F.1

F. Diammonium Phosphate Plant No. 2 (ID Nos. 505-104, 505-107, 505-114, 505-110, 505-143, 505-111, 505-103, 505-121), ep303
Fertilizer Warehouse Fugitives: Warehouse No. 3 (ID No. DAP3WH3), ep390
Fugitive Plant Fugitives (ID Nos. F391 and F392), ep391, ep392

1. 15A NCAC 02D .0530(u): USE OF PROJECTED ACTUAL EMISSIONS TO AVOID APPLICABILITY OF REQUIREMENTS OF PSD

a. The Permittee has used projected actual emissions to avoid applicability of prevention of significant deterioration requirements pursuant to application 0700071.20C for the DAP Plant No. 2 Replacement Project. In order to verify the assumptions used in the projected actual emissions calculations, the Permittee shall comply with the requirements in Section 2.2 A.1.c below.

Testing [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance General Condition JJ.

Monitoring/Recordkeeping/Reporting [15A NCAC 02D .0530(u) and 02Q .0308]

c. The Permittee shall perform the following:
   i. The Permittee shall maintain records of annual SO_2, PM, PM_{10}, $PM_{2.5}$, NO_X, and Fluoride (excluding HF) from DAP Plant No. 2 (ep303) in tons per year, on a calendar year basis, related to the DAP Plant No. 2 Replacement Project, for five years following resumption of regular operations after the change is made.
   ii. The Permittee shall submit a report to the Director within 60 days after the end of each calendar year during which these records must be generated. The report shall contain the items listed in 40 CFR 51.166(r)(6)(v)(a-c).
   iii. The Permittee shall make the information documented and maintained under this condition available to the Director or the general public pursuant to the requirements in 40 CFR 70.4(b)(3)(viii).
   iv. The reported actual emissions (post-construction emissions) for each of the five calendar years will be compared to the projected actual emissions (pre-construction projection) as included below:

Pollutant	Projected Actual Emissions* (tpy)
SO_2	43.6
NOx	16.74
PM	53.83
PM10	39.96
PM2.5	33.34
Lead	4.71E-03
Fluorides (excluding HF)	5.4

* The projected actual emissions are not enforceable limitations. If the reported actual emissions exceed the projected actual emissions, the Permittee shall include in its annual report an explanation as to why actual emissions exceeded the projected actual emissions.

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Permit Review for First Step Permit Application (0700071.20C) f

Attachment 1
Revised Permit Condition for 40 CFR Part 63 Subpart BB for DAP Plant No. 2 (EP 303)

Section 2.1.3.A.1

1. **15A NCAC 02D .1111: Maximum Achievable Control Technology (40 CFR Part 63, Subpart BB, Phosphoric Fertilizer Production Plants)**
   a. The Permittee shall not cause to be discharged into the atmosphere from any affected source any gases which contain total fluorides in excess of 30 grams/metric ton equivalent P_2O_5 feed (0.060 pounds/ton). [40 CFR 63.622(a)]

   Testing [15A NCAC 02Q .0508(f)]
   b. If emissions testing is required, the Permittee shall perform such testing in accordance with General Condition JJ. If the results of this test are above the limit given in Section 2.1.3.A 1.a., the Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111.
   c. Per 40 CFR 63.606, the Permittee shall conduct a performance test to demonstrate compliance with the applicable emission standard for the diammonium phosphate process line in accordance with 40 CFR 63.626. Details of the emissions testing and requirements can be found in Section 3 - General Condition JJ. The fertilizer plant **(ep303)** shall be tested annually at a rate demonstrable by production records to be equal to or greater than the normal production rate of the source. The normal production rate (hourly) shall be calculated by dividing the total annual production for the plant by the number of hours that plant was operated during that year. The facility shall establish the normal production rate using the production records over the last production year. If the results of this test are above the emission standard given above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111. The results of this testing shall be saved for possible inclusion in future determinations of operating parameter ranges.
   d. If the Permittee produces monoammonium phosphate in this fertilizer plant **(ep303)** during the life of this permit, then the Permittee shall conduct a performance test to demonstrate compliance with the applicable emission standard for that monoammonium phosphate process line in accordance with 40 CFR 63.626 while producing monoammonium phosphate. The test must be performed before the expiration date of this permit. Details of the emissions testing and requirements can be found in Section 3 - General Condition JJ. If the results of this test are above the emission standard given above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111. The results of this testing shall be saved for possible inclusion in future determinations of operating parameter ranges.

   Monitoring/Recordkeeping [15A NCAC 02Q .0508(f)]
   e. The Permittee shall install, calibrate, maintain, and operate a monitoring system that can be used to determine and permanently record the mass flow of phosphorus-bearing feed material to the process. The monitoring system shall have an accuracy of ±5 percent over its operating range. The results of the monitoring shall be recorded in a log (electronic or written form). The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if this monitoring system is not maintained, calibrated, operated, and the results recorded.
   f. The Permittee shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in short ton/hour of phosphorus bearing feed using a monitoring system for measuring mass flow rate and then by proceeding according to 40 CFR 63.626(c)(3).
   g. The Permittee shall install, calibrate, maintain, and operate the following monitoring systems installed on the wet scrubbing emission control system:
      i. A monitoring system that continuously measures and permanently records the pressure drop across each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of ±5 percent over its operating range.
      ii. A monitoring system that continuously measures and permanently records the flow rate of the scrubbing liquid to each scrubber in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of ±5 percent over its operating range.

      The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these monitoring systems are not maintained, calibrated, operated, and the results recorded.
   h. The Permittee has chosen to determine the allowed ranges for the above operating parameters by conducting performance tests as described in 40 CFR 63.625(f)(2). The Permittee has submitted the results

of previous tests to demonstrate allowed ranges for the parameter values listed above in (f). The allowed ranges are:

i. Reactor/Granulator/Tail gas Scrubber - Pressure drop: 7.8 to 21.2 inches of water; flow rate: 2327 to 2829 gpm;
ii. Cooler Scrubber - Pressure drop: 6.2 to 17.0 inches of water; flow rate: 840 to 1259 gpm;
iii. Reactor/Granulator acid scrubber - Pressure drop: 7.0 to 18.4 inches of water; flow rate: 660 to 989 gpm;
iv. Dryer/Scrubber - Pressure drop: 10.5 to 20.0 inches of water; flow rate: 516 to 774 gpm; and
v. Tail gas Scrubber - Pressure drop: 8.0 to 14.5 inches of water; flow rate: 1138 to 1466 gpm.

Should the results of any subsequent annual performance test demonstrate that the allowed range is incorrect, the Permittee shall submit new ranges to the Division of Air Quality for inclusion in this permit. If the daily averages (for any day for which there are 24 hours of normal (not startup, shutdown or malfunction) operation) of the pressure drop or flow rate to the scrubber exceeds the allowable range an exceedance will have occurred. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 for each exceedance.

Start-up, Shutdown, and Malfunction Procedures [40 CFR 63.622(d)]

i. During periods of startup and shutdown, as defined in 40 CFR 63.621, the Permittee shall comply with the work practice specified in this paragraph in lieu of the emission limits specified above in Section 2.1.3.A.1.a. During periods of startup and shutdown, the Permittee shall operate any control device(s) being used at the affected source, monitor the influent liquid flow in accordance with Section 2.1.3.A.1.g above, and comply with the operating limits specified in 2.1.3.A.1.h above. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the work practice is not followed.

Reporting [15A NCAC 02Q .0508(f), 40 CFR 63.627(e)]

j. Summary report. If the total duration of control system exceedances for the reporting period is less than 1 percent of the total operating time for the reporting period, the Permittee shall submit a summary report containing the information specified in §63.10(e)(3)(iv) rather than the full excess emissions report. The summary report shall be postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June.
k. Excess emissions report. If the total duration of control system operating parameter exceedances for the reporting period is 1 percent or greater of the total operating time for the reporting period, the Permittee shall submit both a Summary Report and an excess emissions report for any exceedance of an operating parameter limit. The report shall contain the information specified in 40 CFR 63.10. The report shall be postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. If exceedances are reported, the Permittee shall report quarterly until a request to reduce reporting frequency is approved as described in 40 CFR 63.10.
l. EPA Electronic Reporting Tool. Within 60 days after the date of completing each performance test (defined in §63.2) as required by 40 CFR Part 63 Subpart BB, the Permittee shall submit the results of the performance tests, including any associated fuel analyses, to the DAQ pursuant to 40 CFR 63.10(d)(2) and to the EPA via the procedures in 40 CFR 63.627(e).

ATTACHMENT 3
Permit Review for First Step Permit Application (0700071.21B)

CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: October 22, 2021

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 04/29/2021
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:**
Fee Classification: Before: Title V **After:**

Permit Applicability (this application only)

SIP: 02D .0501(e), 02D .0521, 02D .0530(u), 02D .0543, 02D .1100, 02D .1111
NSPS: N/A
NESHAP: MACT Subpart AA
PSD: No
PSD Avoidance: 02D .0530(u)
NC Toxics: N/A
112(r): N/A
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	William Ponton General Manager (252) 322-8014 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: 0700071.21B
Date Received: 07/06/2021
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 04176/T63
Existing Permit Issue Date: 04/01/2021
Existing Permit Expiration Date: 12/31/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	2307.21	457.20	160.20	390.70	818.98	268.66	159.36 [MIBK (methyl isobutyl ketone)]
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)]

Review Engineer: Betty Gatano

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

Betty Gatano 10/22/2021

Comments / Recommendations:
Issue 04176/T64
Permit Issue Date: 10/22/2021
Permit Expiration Date: 12/31/2022

1

ATTACHMENT 3
Permit Review for First Step Permit Application (0700071.21B)

1. Purpose of Application

PCS Phosphate Company, Inc. – Aurora (PCS) currently holds Title V Permit No. 04176T63 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. 0700071.21B was received on July 6, 2021 as a "Part 1"application of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2) for maintenance and equipment replacement for Phosphate Rock Calciners Nos. 1 through 6 (ID Nos. 339-051 through 339-056).

2. Application Chronology

July 6, 2021	Received application for permit modification. E-payment received that same day.
July 6, 2021	Sent acknowledgment letter indicating the application was complete.
August 6, 2021	Betty Gatano participated in meeting with Joe Sullivan, who was the facility's consultant at that time, to review emission calculations associated with this permit modification.
September 2021	Throughout September, Betty Gatano exchanged e-mails with Dana Norvell, the new consultant for PCS, and Chris Smith of PCS regarding the permit application.
September 22, 2021	Draft permit and permit review forwarded for comments.
October 1, 2021	Received comments and revised emissions calculations from PCS.
October 8, 2021	Additional issues with the emission spreadsheets were discovered. Dana Norvell provided a revised version of the emission calculations.
October 12, 2021	Received comments from Heather Sands, Permitting Supervisor.
October 13, 2021	Betty Gatano requested additional information on could have accommodated (CHA) emissions from Dana Norvell. Response was received that same day.
October 20, 2021	Betty Gatano, Heather Sands, and other Permitting staff meet to discuss the facility's methodology for determining CHA emissions. DAQ followed up this internal meeting with a call with Dana Norvell and Chris Smith and requested that the demonstrate the selected production rates used in calculating the CHA emission were sustainable.
October 21, 2021	PCS provided the requested information.
October 22, 2021	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.
5	Section 1.2 for the Mill Area	Added footnote stating that the calciners (ID Nos. 339-051 through 339-056) are listed as a 15A NCAC 02Q .0501(b)(2) modification.
33	2.1.2 A Regulations Table	• Added reference to 15A NCAC 02D .0530(u) requirements. • Added reference to 15A NCAC 02Q .0504.
37 – 38	2.1.2 A.5	Added permit condition for emission tracking in accordance with 15A NCAC 02D .0530(u) for the Calciner Project.
38	2.1.2 A.6	Added permit condition requiring submittal of a TV permit application in accordance with 15A NCAC 02Q .0504 within one year of the first calciner beginning operation after completion of any activity included in the Calciner Project.
132	2.2 C.1	Added statement to the permit condition indicating all emission tracking and reporting requirements under 15A NCAC 02D .0530(u) have been met for the LOMAG/DFMGAA Project.

There are no changes to the Title V Equipment Editor (TVEE) associated with this permit modification.

4. Calciner Maintenance and Replacement

Phosphate rock from the ore mines is first sent to beneficiation units to separate sand and clay from the phosphate. A portion of the wet beneficiated phosphate rock is calcined to remove organics. PCS operates six vertical fluidized bed calciners (ID Nos. 339-051 through 339-056), each with a designed maximum (aka nominal) operating rate of 105.1 tons per hour. Each calciner is controlled via two duplex cyclones, in series with a fixed-throat venturi scrubber, and a wet electrostatic participator. The calcined rock is used in "green" phosphoric acid production, which in turn is used in the production of superphosphoric acid (SPA) and purified phosphoric acid. Figure 1 below provides a schematic of a calciner and its associated controls.

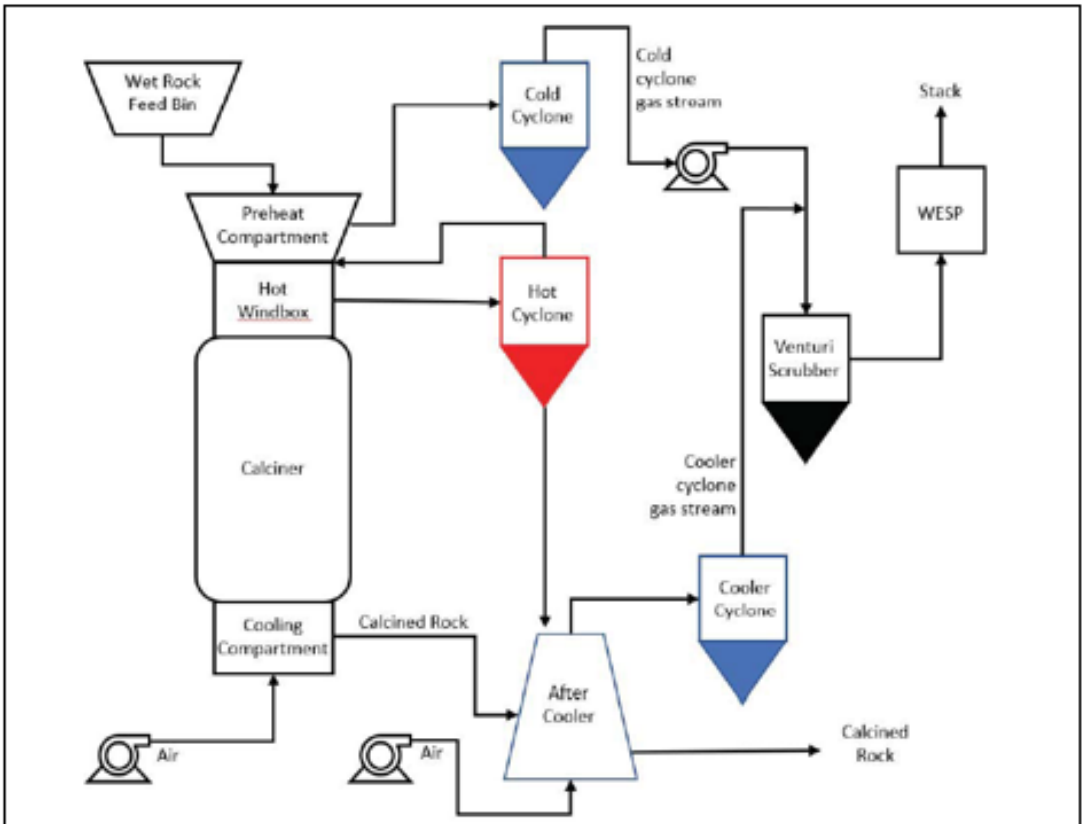

Figure 1. Basic Schematic of a Phosphate Rock Calciner

This permit application addresses maintenance, repairs, and replacement of various equipment in the calciners over a period of up to ten years. Over this time period, the following activities may occur on the calciners, associated controls, or supporting equipment (e.g., tanks, hoppers, etc.):

- Cold cyclone hopper replacement,
- Hot cyclone replacement,
- Hot wind box shell replacement,
- Replacement of aspirating air pipes,
- Replacement of old GE electrical gear,
- Shell replacement on freeboard compartments,
- Vapor line, aftercooler cyclone, and after cooler duct replacements, and
- Scrubber tank replacements.

According to PCS, replacement equipment will be functionally equivalent to the existing equipment and will sustain current production capacities. The calciners collectively operate well below their capacity and are effectively constrained by the maximum capacity of phosphoric acid Trains 1 and

2,[1] which currently manufacture green phosphoric acid. Therefore, these maintenance and replacement activities will not increase downstream phosphoric green acid production capacity.

PCS has combined all these maintenance and replacement activities together in a single project under this permit application. (These activities are referred to as "the Calciner Project" throughout the remainder of this review.) In the permit application, PCS contends the activities listed above are not interdependent and each calciner requires its own capital expenditure. PCS is electing to aggregate these activities to generate the most conservative estimate of emission increases for an applicability determination under Prevention of Significant Deterioration (PSD). PCS chose this approach because its calciner department intends to conduct at least one of these maintenance or replacement activities each year, and PCS views the combined work as a singular "project" for the purpose of PSD applicability only. DAQ agrees with the aggregation in this situation because it allows for the most conservative estimate of emission increase for determining applicability to PSD.

Emissions

According to the permit application, the potential emissions from the calciners are not affected by the Calciner Project. However, certain physical changes to the calciners, associated controls, or supporting equipment could be considered modifications as defined under PSD regulations. Accordingly, PCS conducted a PSD applicability determination for the Calciner Project as part of this permit modification.

PCS performed the baseline actual emissions (BAE) to projected actual emissions (PAE) evaluation pursuant 15A NCAC 02D .0530 for each PSD regulated pollutant. For certain pollutants as discussed below, PCS used the demand grown exclusion in accordance with 40 CFR 51.166(b)(40(i)(c) in determining the emission increase from the Calciner Project. The demand grown exclusion allows the facility to subtract emissions that a source could have accommodated (CHA) unrelated to the change from the PAE, as discussed in more detail below.

Baseline Actual Emissions

BAE were established using data from the facility's annual emissions inventories from 2016 to 2020. PCS considered this period to be most representative of normal operations as production rates from 2016 onward reflect a normal range of production and emission variability due to the demand for green acid products. This period is slightly outside the five-year period immediately preceding July 6, 2021, which is the date the complete permit application was received. In accordance with 15A NCAC 02D .0530(b)(1)(a), the DAQ can allow a different time period, not to exceed 10 years immediately preceding the date that a complete permit application is received, if the extended time period is more representative of normal source operation. DAQ agrees the extended time period is acceptable for the BAE. Table 1 below provides the maximum two-year average emissions selected as BAE and the associated time period for each pollutant.

[1] In accordance with Section 2.1.5 A.5.a.i of the permit, only two phosphoric acid trains (of Trains 1, 2, or 4 which are the three trains capable of processing calcined rock) may process calcined rock at any given time for "green" acid. Only Trains 3 and 4 may process uncalcined rock at any given time for "amber" acid. Chris Smith of PCS indicated Train 4 is a swing plant and is only used to produce green acid when Trains 1 or 2 are down.

Table 1 – BAE Used to Determine PSD Applicability for the Calciner Project

Pollutant	Maximum Two-Year Average Emissions (tpy)	Calendar Years
Carbon Monoxide (CO)	441.5	2016 – 2017
Nitrogen Oxides (NO_X)	291.4	2019 – 2020
Total Suspended Particles (Particulate Matter (PM))	70.6	2016 – 2017
Particle Matter <10 (PM_{10})	104.6	2016 – 2017
Particle Matter <2.5 ($PM_{2.5}$)	43.0	2018 – 2019
Sulfur Dioxide (SO_2)	32.8	2018 – 2019
Volatile Organic Compounds (VOC)	1.09	2016 – 2017
Total Fluorides (F)	0.40	2018 – 2019
Sulfuric acid mist (H_2SO_4)	1.15	2019 – 2020
Lead (Pb)	7.98E-03	2016 – 2017

Projected Actual Emissions
PAE were calculated using the maximum projected production rate of all calciners plus a safety margin of 21 percent. Emission factors for the PAE were the highest values observed during the two-year baseline period for each pollutant, except more conservative (i.e., higher) values were used for CO, NO_X, and VOCs. The resulting PAE were then compared with the BAE to determine the emission increase for the Calciner Project.

Table 2 below provides the PAE, BAE, and emission increase for H_2SO_4, F, Pb, and VOC. Because the increase in emissions (PAE – BAE) for these pollutants is less than 50 percent of the significant emission rates (SERs) under PSD, no monitoring, recordkeeping and reporting requirements apply in accordance with 15A NCAC 02D .0530(u).

Table 2 – Pollutants with Emission Increases < 50% of SERs

	Project Emission increase (tpy)			
	H_2SO_4	F	Pb	VOC
Project Emission Increases				
Baseline Actual Emissions	1.15	0.40	7.98E-03	1.09
Projected Actual Emissions	2.06	0.65	1.10E-02	1.69
Total Emission Increase	0.91	0.25	2.99E-03	0.60
Comparison of Emission increases from Project to Permitting Threshold				
Total Project Emission increases	0.9	0.25	2.99E-03	0.60
PSD SERs	7	3	0.6	40
Percentage of PSD SERs	13%	8%	0.5%	2%
Notes Emissions in this table as reported in revised emission calculation spreadsheet received on October 8, 2021.				

For PM (filterable), PM_{10}, $PM_{2.5}$, NO_X, and CO, the increase in emissions (PAE – BAE) exceeds the SERs. PCS used the demand growth exclusion (calculated as CHA emissions – BAE) to exclude emissions of these pollutants to demonstrate that the Calciner Project is not a PSD major modification. The demand growth exclusion was also used for SO_2 emissions, which are greater than 50% of the SER. Table 3 below provides the PAE, BAE, CHA, and emission increases for these pollutants. As shown in the table, emission increases for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, and

CO are below their respective SERs when CHA emissions are excluded. Therefore, the Calciner Project is not a major modification under PSD.

Table 3 – Pollutants with Emission Increases > 50% of SERs

	Project Emissions Increase (tpy)					
	PM	PM_{10}	$PM_{2.5}$	SO_2	NOx	CO
Project Emission Increases (BAE to PAE Comparison)						
Baseline Actual Emissions	70.6	104.6	43.0	32.8	291.4	441.5
Projected Actual Emissions	99.8	155.7	59.8	56.2	500.3	706.5
Total Emissions Increase	29.3	51.1	16.7	23.5	208.9	265.0
Use of Could Have Accommodated Emissions						
Projected Actual Emissions	99.8	155.7	59.8	56.2	500.3	706.5
Could Have Accommodated	98.4	162.6	62.4	50.2	528.4	621.8
Total Emissions Increase	1.5	-7.0	-2.7	6.0	-28.1	84.6
PSD Significant Emission Rates	25	15	10	40	40	100
Major PSD Review Required	NO	NO	NO	NO	NO	NO
Emissions Tracking Values	122.4	169.7	68.8	89.2	539.3	720.8

Notes
- Emissions in this table as reported in revised emission calculation spreadsheet received on October 8, 2021.
- Emissions Tracking = (The lesser of the PAE or the CHA emissions) + (SER -1)

Could Have Accommodated Emissions

CHA emissions included in Table 3 were based on the daily production rates during the selected baseline emission period. The production rates used in calculating the CHA emissions were established as the 90th percentile highest daily production during the two-year baseline period to ensure that abnormally high production rate data were not considered in the PSD evaluation. An average of the 90th percentile values for the two years for each pollutant in selected baseline period was determined, and this average value was then annualized to calculate the CHA emissions. Daily production values used in CHA emissions are provided in Attachment C of the permit application (0700071.21B).

PCS reviewed the daily production rate over the entire baseline period[2] and identified periods where the calciners operated above 90th percentile values for consecutive days to demonstrate that the selected production rates are sustainable. The selected 90th percentile values also demonstrate that the calciners have actually operated above these values for 10 percent of the operating time each year. The number of days of consecutive operation above the 90th percentile values for each calciner during the baseline period is provided in Attachment 1 to this document.

Calciner production is tied to the demand of green phosphoric acid. As noted previously, the phosphoric acid plants at PCS produce either green acid (from calcined rock) or amber acid (non-calcined rock). Market demand shifts the green/amber production ratio and controls the calcined rock production rates. These rates may also be controlled by the need to create a reserve in the calcined rock silos. The market is cyclical due to availability of green acid from other global sources, which leads to swings in production needs. One calciner can operate at higher

[2] The baseline period is specific for each pollutant as shown in Table 1.

rates to cover production needs when another calciner is down due to maintenance or turnaround. Extended days of no operation are when a calciner is down for maintenance/troubleshooting, including routine turnarounds.

Because the demand growth exclusion was used, emission tracking in accordance with 15A NCAC 02D .0530(u) is required for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, and CO. The projected actual emission rate for each applicable pollutant will be included in the 02D .0530(u) condition in the permit for tracking, monitoring and reporting. An example calculation for the emission track value is provided below for PM_{10} emissions:

Emissions for Tracking = (The lesser of the PAE or the CHA emissions) + (SER -1)

PAE for PM_{10} = 155.7 tpy
CHA emissions for PM_{10} = 162.6 tpy
SER PM_{10} = 15 tpy
Emissions for Tracking = 155.7 tpy + (15 tpy – 1 tpy) = 169.7 tpy

The Calciner Project does not increase the design capacity of any of the six calciners; therefore, monitoring and recordkeeping is required for only five years following resumption of regular operations after the change for each calciner. PCS must also submit an annual report within 60 days after the end of each year during which these records are generated.

PAE and CHA emissions for all pollutants evaluated are provided in Attachment 2 to this document. Sample calculations of the BAE, PAE, and CHA emissions for NO_X are also provided in Attachment 2 as reference.

Regulations
The following regulations apply to the calciners. No changes to the permit conditions are required for these regulations, unless noted below.

- 15A NCAC 02D .0501(e), Compliance with National Ambient Air Quality Standards (NAAQS) – The calciners at PCS have limits on PM_{10} and SO_2 emissions to ensure compliance with the NAAQS. The proposed tracking emissions for 15A NCAC 02D .0530(u) are below these emission limits as shown in the table below. Compliance is anticipated.

Pollutant	Emission limit under 15A NCAC 02D .0501(e)	Projected Actual Emissions Used for Emission Tracking
PM_{10}	1,992 pounds per day from all calciners combined	155.7 tons per year 853.2 pounds per day from all calciners combined
SO_2	0.75 pounds per million Btu	0.049 pounds per million Btu (emission factor used to calculated proposed emissions)
	1,026 pounds per day from all calciners combined	56.2 tons per year 308.0 pounds per day from all calciners combined

- 15A NCAC 02D .0521, Control of Visible Emissions

- 15A NCAC 02D .0530, Prevention of Significant Deterioration – The following discussion addresses emission tracking and reporting requirements under 02D .0530(u) for the calciners.

LOMAG/DFMGAA Project
The calciners are subject to emission tracking and reporting under 15A NCAC 02D .0530(u) for a project to increase the product capacities for both low magnesium superphosphoric acid ("LOMAG") and defluorinated phosphoric acid ("DFMGAA"), as described in Permit Application No. 0700071.14A. Air Permit No. 04176T49 was issued on March 6, 2014 for this project and included projected actual emissions of 451 tons/year of NO_X for Calciner Nos. 1 through 6 (ID Nos. 339-051 through 339-056), combined, as specified in Section 2.2 C.1.c. of the current air permit (04176T63).

The emission tracking and reporting requirements for the LOMAG/DFMGAA Project have been met. The final report was submitted on February 27, 2020. Robert Bright of the Washington Regional Office (WaRO) reviewed the report on that same date and noted compliance was indicated. A statement will be added to the permit condition stating that all emission tracking and requirements required under 15A NCAC 02D .0530(u) have been met with the submittal of the final report on February 27, 2020.

Calciner Project
As discussed above, PCS has demonstrated the Calciner Project is not a major modification under PSD through the use of PAE in accordance with 15A NCAC 02D .0530(u). The recordkeeping and reporting requirements of 15A NCAC 02D .0530(u) will be included for PM (filterable), PM_{10}, $PM_{2.5}$, NO_X, and CO in the revised air permit as part of this modification. PCS will be required to track emissions of these pollutants for each calciner following the resumption of regular operations after the change is made to each individual calciner. Emission tracking and reporting will continue for five years for each calciner.

No tracking is required for emissions of H_2SO_4, F, Pb, and VOC because the increased emissions of these pollutants is less than 50% of the SERS as noted above.

Compliance is anticipated.

- 15A NCAC 02D .0543, Best Available Retrofit Technology (BART)

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants

- 15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) – The calciners are subject to MACT standards under "National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants," promulgated under 40 CFR Part 63, Subpart AA (MACT Subpart AA). The calciners are considered existing units under MACT Subpart AA because they commenced construction before December 27, 1996.

  The Calciner Project was reviewed to ensure it does not trigger reconstruction under the MACT. For the Calciner Project to be considered reconstruction, the following criteria must be met, as specified in 40 CFR 63.2:

  - The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and

- It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

According to PCS, the most conservative cost estimate for all potential projects performed on the calciners (including smaller non-capital projects) over the next 10 years is less than $33 million. The cost of a new plant with six calciners is approximately $126 million. The fixed capital cost of the replaced components will not exceed 50 percent of the fixed capital cost required to construct a comparable new source. The cost estimates were also considered on a per calciner basis, and costs were estimated as one-sixth of the overall costs. Potential projects performed on a calciner (including smaller non-capital projects) over the next 10 years would be less than $5.5 million. The cost of a new calciner would be $21 million. Therefore, the Calciner Project does not meet the definition of reconstruction per 40 CFR 63.2, and the calciners remain existing units under the MACT.

The MACT Subpart AA rule was revised on August 19, 2015 in conjunction with the residual risk and technology review (RTR). The current permit does not reflect these updates. PCS has requested to update MACT Subpart AA in the permit as part of the TV permit renewal application, which is in house. DAQ concurs with this request.

Although the current permit does not reflect updates to MACT Subpart AA, PCS is required to be in compliance with the revised rule. The following discussion addresses emission compliance with MACT Subpart AA.

The PM emission limit in the permit was not changed in the revised MACT Subpart AA. However, emission limits for mercury and total fluorides from the calciners were included in the August 2015 updates. PCS is required to test the calciners annually for these pollutants under MACT Subpart AA. During previous emission tests, PCS has demonstrated compliance for the total fluoride and PM emission limits but was unable to demonstrate compliance with the new emission limits for mercury.

PCS and DAQ entered into two Special Orders by Consent (SOCs) to resolve all noncompliance issues associated with mercury emissions from the calciners. The most recent SOC (SOC 2019-002), which supersedes the first SOC, was finalized on September 5, 2019.

On November 3, 2020, the Environmental Protection Agency (EPA) finalized another amendment to 40 CFR Part 63 Subpart AA. The amendment revised the mercury MACT floor for existing calciners from 0.14 milligrams per dry standard cubic meter (mg/dscm) at 3-percent oxygen to 0.23 mg/dscm at 3-percent oxygen.

This final rule amendment effectively resolves SOC 2019-002. PCS was required to submit a final data collection report showing they can comply with the emission limit for mercury without add-on controls. On March 25, 2021, the DAQ issued a letter to PCS indicating DAQ had reviewed the facility's air quality files and determined PCS had met all the requirements of SOC 2019-002, and the letter closed the SOC.

The most recent testing results for the calciners are provided in Table 4 below, and the results demonstrate compliance with MACT Subpart AA.

Table 4. Results of Testing for Compliance with MACT Subpart AA

Emission Source	Test Date	Test Results	Emission Limit	Compliance
Particulate Matter				
Calciner No. 1 (ep201)	2/26/2021	0.005 gr/dscf	0.080 gr/dscf	Yes
Calciner No. 2 (ep202)	12/10/2020	0.004 gr/dscf		Yes
Calciner No. 3 (ep203)	7/16/2020	0.0097 gr/dscf		Yes
Calciner No. 4 (ep204)	10/1 -02/2020	0.007 gr/dscf		Yes
Calciner No. 5 (ep205)	05/26 - 27/2021	0.006 gr/dscf		Yes
Calciner No. 6 (ep206)	05/13 - 14/2021	0.005 gr/dscf		Yes
Total Fluorides				
Calciner No. 1 (ep201)	2/25/2021	0.0003 lb/ton	0.0009 lb/ton	Yes
Calciner No. 2 (ep202)	12/9/2020	0.0003lb/ton		Yes
Calciner No. 3 (ep203)	7/15/2020	0.0002 lb/ton		Yes
Calciner No. 4 (ep204)	10/1/2020	0.0003 lb/ton		Yes
Calciner No. 5 (ep205)	5/26/2021	0.0003 lb/ton		Yes
Calciner No. 6 (ep206)	5/13/2021	0.0005/lb/ton		Yes
Mercury				
Calciner No. 1 (ep201)	02/24 - 25/2021	0.161 mg/dscm@3%O_2	0.23 mg/dscm@3%O_2	Yes
Calciner No. 2 (ep202)	12/3/2020	0.147 mg/dscm@3%O_2		Yes
Calciner No. 5 (ep205)	5/25/2021	0.137 mg/dscm@3%O_2		Yes
Calciner No. 6 (ep206)	05/12 - 05/13/2021	0.180 mg/dscm@3%O_2		Yes
Calciner No. 3 (ep203)	7/14/2020	0.163 mg/dscm@3%O_2	0.14 mg/dscm@3%O2 (prior limit) 0.23 mg/dscm@3%O2* (revised limit)	No Yes*
Calciner No. 4 (ep204)	9/30/2020	0.166 mg/dscm@3%O_2		No Yes*

Notes:
*At the time of testing Calciners Nos. 3 and 4, the revised mercury emission limit had not been finalized. Thus, these calciners tested in noncompliance with the mercury emission limit at that time, but they demonstrated compliance with the proposed emission limit. The proposed emission limit was finalized on November 3, 2020.

- 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 the first calciner (ID Nos. 339-051 through 339-056) after completion of any activity included in the Calciner Project.

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

NSPS
PCS has numerous emission sources subject to various New Source Performance Standards (NSPS). However, the calciners are not subject to a NSPS, and this modification does not affect the facility's status with respect to NSPS. Continued 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. This modification does not affect the major source status of the facility.

With respect to this permit application for the Calciner Project, the calciners are subject to MACT Subpart AA, as noted previously. Several other emission sources at the facility are also subject to MACT Subpart AA, and PCS has requested to update the permit conditions for all emission sources subject to MACT Subpart AA under one permitting action. DAQ concurs with this request and will update the MACT Subpart AA condition for the calciners as part of the TV permit renewal application, which is currently in house.

PSD
PCS is a major source under PSD. This modification does not change the PSD major source status of the facility.

15A NCAC 02D .0530(u)
As described above with respect to this permit application, PCS has demonstrated the Calciner Project is not a major modification under PSD. The emission tracking and reporting requirements under 15A NCAC 02D .0530(u) will be included in the revised air permit for emissions of PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, and CO, as noted above. The values used for emission tracking for these pollutants are shown in the Table 5 below. Compliance is anticipated.

Table 5. Values Used for Emissions Tracking under 15A NCAC 02D .0530(u)

Pollutant	Potential Actual Emissions (tpy)
PM (filterable)	122.4
PM_{10}	169.7
$PM_{2.5}$	68.8
SO_2	89.2
NO_X	539.3
CO	720.8

As noted previously, emissions of PM, H_2SO_4, F, Pb, and VOC do not require tracking under 15A NCAC 02D .0530(u) because the PAE for these pollutants are less than 50 percent of the associated SERs.

Increment Tracking
PCS PCS is located in Beaufort County, North Carolina. The PSD minor baseline dates have been triggered for Beaufort County for NO_X, SO_2, and PM_{10} emissions. The emission increases for increment tracking is based on the PAE for these pollutants and is provided below in Table 6 below.

Table 6. Emission Increases for the Calciner Project Used for Increment Tracking

Type of Emissions	PM_{10}	SO_2	NOx
Baseline Actual Emissions	104.6 tpy	32.8 tpy	291.4 tpy
Projected Actual Emissions	155.7 tpy	56.2 tpy	500.3 tpy
Total Emission Increase from Project (PAE – BAE)	51.1 tpy	23.5 tpy	276.9 tpy
Hourly Emission increases from Project	11.7 lb/hr	5.4 lb/hr	47.7 lb/hr

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). This permit modification does not affect the 112(r) status of the facility, and continued compliance is anticipated.

Compliance Assurance Monitoring (CAM)
Pursuant to 40 CFR Part 64 and 15A NCAC 02D .0614, Compliance Assurance Monitoring (CAM), is applicable to any pollutant-specific emission unit (PSEU), 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.
- unit's precontrol potential emission rate exceeds either 100 tons/yr (for criteria pollutants) or 10/25 tons/yr (for HAPs).

As discussed in the permit review[3] for the most recent permit TV renewal for PCS, the calciners are not subject to CAM because the precontrolled emissions of PM_{10} is less than 100 tpy. This modification will not change the CAM status of the calciners.

6. NC Air Toxics

The six calciners are subject to MACT Subpart AA and are exempt from permitting under NC Air Toxics program in accordance with 15A NCAC 02Q .0702(a)(27). However, the DAQ must evaluate Toxics Air Pollutant (TAP) emissions to ensure the Calciner Project would not present "an unacceptable risk to human health," in accordance with G.S. 143-215.107(b) as codified on May 1, 2014.

[3]Permit Review for PCS Phosphate dated 01/09/2013. Mark Cuilla.

The Calciner Project does not increase the design capacity of any of the six calciners nor does it increase the potential emissions of the calciners. The modeled TAP emissions from the calciners are optimized and exceed the potential emissions from the calciners, as shown in Attachment 3 to this document. Therefore, changes in actual emissions of TAPs resulting from Calciner Project will not present an "unacceptable risk to human health."

The current permit (04176T63) includes concentration limits for the used oil/used oil sludge/used glycols burned in the calciners for compliance with NC Air Toxics. This condition will remain in the permit to ensure compliance with NC Air Toxics. Continued compliance is anticipated.

7. Facility Emissions Review

Facility-wide potential emissions are provided in the table below. Actual emissions from PCS from 2015 to 2019 are reported in the header of this permit review.

Pollutant	TV Potential Emissions (tpy)
PM (TSP)	3,502
PM10	2,060
PM2.5	1,428
CO	1,263
NO_x	10,085
SO_2	8,745
VOC	289
GHG	756,785
Notes Facility-wide emissions as reported in Form D-1 in application no. 0700071.21B	

8. Compliance Status

Robert Bright of the WaRO completed the most recent full compliance evaluation (FCE) for PCS on April 9, 2021. 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 No. 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 per ton P_2O_5 wet feed. A civil penalty in the amount of $4,218, including costs, was assessed on October 9, 2019 for this violation. The penalty was paid in full on October 28, 2019.
- PCS and DAQ entered into a 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. On March 25, 2021, the DAQ issued a letter to PCS indicating the facility had met all the requirement of SOC 2019-002. The letter closed the SOC.

- A NOV/NRE was issued on June 14, 2016. From January 30 through February 11, 2016, PCS conducted mercury emissions testing for Calciner Nos. 1, 3, and 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 is not required for this 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 $1,002 was submitted as an e-payment on July 6, 2021.

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. 04176T64.

Attachment 1
Days of Consecutive Operation above the 90th Percentile Production Rate

Number of Consecutive Days above 90th Percentile Value

Year	Calciner #1		Calciner #2		Calciner #3		Calciner #4		Calciner #5		Calciner #6	
	Dry Feed	Production	Dry Feed	Production	Dry Feed	Production	Dry Feed	Production	Dry Feed	Production	Dry Feed	Production
2016	6	6	6	6	5	5	5	5	5	5	5	5
2017	8	8	6	6	5	5	5	5	6	6	6	6
2018	4	4	3	3	11	11	4	4	5	5	6	6
2019	5	5	6	6	6	6	6	6	5	5	6	6
2020	8	8	6	6	5	5	4	4	8	8	5	5

Attachment 2
PAE and CHA Emissions and Sample Calculations for NO_X Emissions for the Calciner Project

Projected Actual Emissions for the Calciner Project

	Projected Production		Emission Factor		Emissions
Pollutant	Value	Units	Value	Units	ton/yr
Carbon Monoxide	2,299,432	MMBtu/yr	6.14E-01	lb/MMBtu (weighted)	706.5
Nitrogen Oxides	2,900,000	ton rock produced	3.45E-01	lb/ton rock produced	500.3
Total Suspended Particulates	3,239,976	ton dry rock feed	6.16E-02	lb/ton dry feed	99.8
Particulate Matter (<10 microns)	3,239,976	ton dry rock feed	9.61E-02	lb/ton dry feed	155.7
Particulate Matter (<2.5 microns)	3,239,976	ton dry rock feed	3.69E-02	lb/ton dry feed	59.8
Sulfur Dioxide	2,299,432	MMBtu/yr	4.89E-02	lb/MMBtu	56.2
Volatile Organic Compounds	2,299,432	MMBtu/yr	1.47E-03	lb/MMBtu	1.69
Fluorides (except hydrogen fluoride)	3,239,976	ton dry rock feed	4.02E-04	lb/ton dry feed	0.65
Sulfuric Acid Mist	3,239,976	ton dry rock feed	1.27E-03	lb/ton dry feed	2.06
Lead	3,239,976	ton dry rock feed	6.77E-06	lb/ton dry feed	1.10E-02

Note: Factors derived from highest factor during the two year baseline period

Could Have Accommodated Emissions for the Calciner Project

	Baseline	CHA Maximum (tpd)		CHA Conversion Factor		Maximum		Emissions
Pollutant	Years	Dry Feed	Production	Value	Units	Factor	Units	(tpy)
Carbon Monoxide	2016/2017	8,747	8,453	0.66	MMBtu/ton Production	6.14E-01	lb/MMBtu (weighted)	621.8
Nitrogen Oxides	2019/2020	8,776	8,392	[redacted]		3.45E-01	lb/ton rock produced	528.4
Total Suspended Particulates	2016/2017	8,747	8,453			6.16E-02	lb/ton dry feed	98.4
Particulate Matter (<10 microns)	2018/2019	9,275	8,800			9.61E-02	lb/ton dry feed	162.6
Particulate Matter (<2.5 microns)	2018/2019	9,275	8,800			3.69E-02	lb/ton dry feed	62.4
Sulfur Dioxide	2018/2019	9,275	8,800	0.64	MMBtu/ton Production	4.89E-02	lb/MMBtu	50.2

Attachment 2
PAE and CHA Emissions and Sample Calculations for NO_X Emissions for the Calciner Project

A sample calculation of NOx emissions from the calciners are provided below.

- **Baseline Actual Emissions (BAE) of NOx**

Emissions of NO_X as Reported in DAQ Emission Inventory (2016 - 2020)

Calciner No. 1

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	21.65	5.38	27.02
2017	26.74	6.45	33.19
2018	22.04	10.93	32.98
2019	16.23	19.52	35.74
2020	10.63	40.60	51.23

Calciner No. 2

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	27.47	5.54	33.02
2017	23.81	7.62	31.43
2018	14.45	29.32	43.76
2019	13.50	26.35	39.85
2020	6.06	50.79	56.86

Calciner No. 3

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	25.64	6.45	32.08
2017	25.27	6.22	31.49
2018	15.63	21.80	37.43
2019	6.80	42.61	49.41
2020	7.25	47.80	55.06

Calciner No. 4

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	25.96	7.04	33.00
2017	24.92	6.24	31.16
2018	16.22	23.26	39.49
2019	11.59	30.18	41.76
2020	8.66	44.77	53.42

Calciner No. 5

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	23.99	4.99	28.98
2017	26.96	5.41	32.37
2018	22.72	9.19	31.91
2019	14.63	24.17	38.80
2020	5.57	53.27	58.84

Calciner No. 6

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	24.02	5.83	29.85
2017	27.06	4.43	31.50
2018	22.13	10.97	33.10
2019	11.02	32.68	43.70
2020	6.33	51.83	58.15

Total Emissions from Calciners No. 1 - No. 6

Calendar Year	Nitrogen Oxides (steam injection) (ton/yr)	Nitrogen Oxides (no steam injection) (ton/yr)	Total NOx (ton/yr)
2016	148.72	35.23	183.96
2017	154.76	36.38	191.14
2018	113.19	105.48	218.67
2019	73.77	175.50	249.27
2020	44.50	289.07	333.56

Two Year Average Emissions (ton/yr)

Calendar Years	Total NOx (ton/yr)
2016 - 2017	187.55
2017 - 2018	204.90
2018 - 2019	233.97
2019 - 2020	291.42

Attachment 2
PAE and CHA Emissions and Sample Calculations for NO_X Emissions for the Calciner Project

- **Projected Production Data for Calciners**

Source ID	Modified Source	Projected Production (tons/yr)	Units	Reference
201 - 206	Calciner #1 - #6	2,900,000	ton rock produced/yr	Maximum projected production rate of all calciners plus safety margin
202 - 206	Calciner #1 - #6	3,239,976	dry rock feed/yr	Maximum projected production rate of all calciners multiplied by maximum ratio of dry rock feed to rock production occurring during the baseline lookback period
203 - 206	Calciner #1 - #6	2,299,432	MMBtu/yr	Calculated by multiplying the projected production rate by the highest ratio of MMBtu/ton production during the baseline lookback period

- **NOx Emission Factor**

Calendar Year	Total NOx Emissions (all calciners) (ton/yr)	Total Rock Produced (all calciners) (ton/yr)	NOx Emission Factor (lb/ton)
2016	183.96	2,184,948	0.168
2017	191.14	2,305,314	0.166
2018	218.67	2,166,438	0.202
2019	249.27	2,138,397	0.233
2020	333.56	1,933,463	0.345
	EF selected:	**0.345 lb NOx/ton of rock produced**	

- **Projected Actual Emissions (PAE) of NOx**

Activity factor = 2,900,000 ton of rock produced /yr : PCS used maximum projected production rate of all calciners plus safety margin

NOx EF = 0.345 lb NOx/ton rock produced: Emission factor calculated from actual emission data and production data

NOx emission = 0.345 lb NOX/ ton rock produced * 2,900,000 ton rock produced/yr * (ton/2000 lb)
NOx emissions = 500.25 tons/yr

Attachment 2
PAE and CHA Emissions and Sample Calculations for NO_X Emissions for the Calciner Project

- **Could Have Accommodated Emissions (CHA) of NOx**

Calciners Production Rates (90% Highest Day)

Calciner No. 1

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,455
2017	1,395
2018	1,452
2019	1,374
2020	1,360

Calciner No. 5

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,402
2017	1,412
2018	1,472
2019	1,430
2020	1,324

Calciner No. 2

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,463
2017	1,481
2018	1,563
2019	1,484
2020	1,385

Calciner No. 6

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,400
2017	1,398
2018	1,499
2019	1,421
2020	1,304

Calciner No. 3

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,408
2017	1,342
2018	1,449
2019	1,400
2020	1,239

Total Production from Calciners No. 1 - No. 6

Calendar Year	90th Percentile Daily Production (ton/day)
2016	8,453
2017	8,315
2018	8,800
2019	8,392
2020	7,693

Calciner No. 4

Calendar Year	90th Percentile Daily Production (ton/day)
2016	1,374
2017	1,352
2018	1,446
2019	1,348
2020	1,205

Calciner No. 1

Calendar Year	90th Percentile Daily Production (ton/day)
2016 - 2017	8,453
2017 - 2018	8,800
2018 - 2019	8,800
2019 - 2020	**8,392**

CHA Maximum Production = 8,392 ton of rock produced /day

NOx EF = 0.345 lb NOx/ton rock produced: Emission factor calculated from actual emission data and production data

CHA NOx emission = 0.345 lb NOX/ ton rock produced * 8,392 ton rock produced/day * 365 day/yr * (ton/2000 lb)
CHA NOx emissions = 528.4 tons/yr

Attachment 3
Comparison of TAP Modeled and Potential Emissions

Source Name (Source Number)	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)	Manganese (lb/day)	Mercury (lb/day)	Nickel (lb/day)	Sulfuric Acid (lb/hr)	Sulfuric Acid (lb/day)
Modeled TAP Emissions from Calciners																	
Calciner #1 (201)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Calciner #2 (202)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Calciner #3 (203)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Calciner #4 (204)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Calciner #5 (205)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Calciner #6 (206)	9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00	1.87E+00	2.27E+00	4.23E-01	2.68E-01	3.74E+00
Potential Emissions from Calciners as Reported in Permit Application No. 0700071.21B																	
Calciner #1 (201)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01
Calciner #2 (202)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01
Calciner #3 (203)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01
Calciner #4 (204)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01
Calciner #5 (205)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01
Calciner #6 (206)	2.00E-01	9.64E+00	2.58E-02	6.86E+00	2.64E-03	8.11E-04	1.16E-02	2.78E-01	2.04E-04	1.02E+00	1.17E-02	2.82E-01	2.66E-03	1.20E-01	9.14E-03	3.24E-02	7.78E-01

ATTACHMENT 4

Permitted TAP Emission Rates for All Emission Sources Modeled at PCS, Including MACT/NESHAP Emission Sources

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)		2.74E-01		9.91E-01	2.04E-01		1.19E-04			9.79E+01					1.06E+01	1.09E-01			3.49E-01	1.65E+01	3.96E+02
SA Plant # 6 (104)		2.74E-01		9.91E-01	2.04E-01		1.19E-04			9.79E+01					1.06E+01	1.09E-01			3.49E-01	1.74E+01	4.18E+02
SA Plant #7 (105)		2.74E-01		9.91E-01	2.04E-01		1.19E-04			9.79E+01					1.06E+01	1.09E-01			3.49E-01	1.69E+01	4.05E+02
FW Auxiliary Boiler (110)		5.12E+00		1.85E+01	3.81E+00		1.44E-02			3.75E+00					9.74E+00	1.00E-01			3.21E-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)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Calciner #2 (202)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Calciner #3 (203)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Calciner #4 (204)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Calciner #5 (205)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Calciner #6 (206)		9.78E-01	9.33E+02	6.10E-01	3.33E+01	1.51E+02	1.45E-02	3.69E-02	8.86E-01	1.96E+00	1.26E+01	5.14E-02	1.23E+00		1.87E+00	2.27E+00			4.23E-01	2.68E-01	3.74E+00
Rock Dryer (210)		3.13E+00	4.59E+01	1.05E+02	1.47E+01		1.30E+01	1.67E-01	4.01+00	2.32E+00		2.17E-02	5.22E-01		3.30E+02	3.72E-03			2.41E+01	3.31E-01	8.33E+00
Coal Pulverizer/Dryer (215)		1.96E-02	1.87E+01	1.22E-02	6.66E-01	3.03E+00	2.90E-04	7.38E-04	1.77E-02	3.92E-02	2.51E-01	1.03E-03	2.47E-02		3.75E-02	4.55E-02			8.46E-03	5.37E-03	7.47E-02
Calcine CTS (220)		9.87E-02		4.57E-02	1.31E-01			4.06E-03	9.73E-02						4.63E-02	1.79E-06			3.81E-03		
Storage Silo Baghouses (222)		2.59E-01		1.05E-01	3.02E-01			9.36E-03	2.25E-01						1.07E-01	4.14E-06			8.79E-03		
Mill Concentrator Fugitives (290)								8.70E-04	2.09E-02			6.53E-03	1.57E-01	1.00E+01							
Fugitives from Calciner (291)		6.00E-01		2.78E-01	7.96E-01			2.46E-02	5.92E-01						2.82E-01	1.09E-05			2.31E-02		
DAP No. 3 Plant (302)	1.03E+02	5.08E+00	1.86E+01	2.62E+01	3.70E+01		5.27E+00	1.70E+00	4.08E+01	9.42E-01		1.17E+00	2.81E+01		7.05E+01	2.26E-01			9.10E+01	1.35E+00	3.39E+01
DAP No. 2 Plant (303)	4.91E+01	2.41E+01	1.17E+01	1.14E+02	2.66E+02		3.30E+00	3.48E+00	8.34E+01	5.90E-01		2.40E+00	5.75E+01		1.06E+02	1.09E-01			1.74E+02	8.43E-01	2.12E+01
APP Plant Line 1 (304)	7.90E-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)		7.82E-01		3.62E-01	1.04E+00			3.21E-02	7.71E-01						3.67E-01	1.42E-05			3.02E-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)		4.71E-01		2.18E-01	6.24E-01			1.93E-02	4.64E-01						2.21E-01	8.56E-06			1.82E-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								
SPA #3/#4 (332)								2.18E-01	5.24E+00			2.09E-01	5.02E+00								
SPA #5 (333)								9.57E-02	2.30E+00			9.16E-02	2.20E+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)		5.31E-02		2.46E-02	7.05E-02										2.50E-02	9.66E-07			2.05E-03		
Additive Storage Silo (341)		1.50E+00		6.93E-01	1.98E+00										7.02E-01	2.72E-05			5.77E-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)		1.71E-01		9.43E-02	1.39E+00			4.41E-01	1.06E+01			4.22E-01	1.01E+01	3.56E+02	1.48E+00	6.02E-04			1.59E-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)		8.39E-03		2.83E-02	3.13E-01			2.96E-01	7.10E+00			2.83E-01	6.79E+00	3.50E+00	7.18E-01	3.58E-04			1.06E-01		
PA #2 Crossflow Scrubber (404)		1.71E-01		9.43E-02	1.39E+00			4.93E-01	1.18E+01			4.72E-01	1.13E+01	3.58E+02	1.48E+00	6.02E-04			1.59E-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)		2.74E-01		7.84E-02	1.14E+00			5.44E-01	1.31E+01			5.21E-01	1.25E+01	1.46E+01	1.06E+00	6.49E-04			2.11E-01		
PA #2 Vacuum Pump Stack (407)								2.47E-03	5.93E-02			2.36E-03	5.66E-02	6.00E-02							
PA #3/#4 Belt Filter Scrubber Stack (408)		9.63E-02		4.78E-02	2.88E-01			2.96E-01	7.11E+00			2.83E-01	6.80E+00	2.00E-01	1.15E+00	2.86E-04			1.26E-01		
PA #4 Crossflow Scrubber (409)		2.74E-01		7.84E-02	1.14E+00			5.07E-01	1.22E+01			4.85E-01	1.16E+01	1.46E+01	1.06E+00	6.49E-04			2.11E-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								

ATTACHMENT 4

Permitted TAP Emission Rates for All Emission Sources Modeled at PCS, Including MACT/NESHAP Emission Sources

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)
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)		3.42E-01		1.58E-01	4.53E-01			1.78E-02	4.27E-01						1.60E-01	6.21E-06			1.32E-02		
PA #2 Baghouse (431)		3.42E-01		1.58E-01	4.53E-01			1.78E-02	4.27E-01						1.60E-01	6.21E-06			1.32E-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)		2.73E-01		1.27E-01	3.63E-01			1.46E-02	3.50E-01						1.28E-01	4.97E-06			1.05E-02		
PA Storage Silo #2 (435)		9.25E-02		8.44E-02	2.42E-01			7.49E-03	1.80E-01						8.56E-02	3.31E-06			7.03E-03		
Calcined Rock CTS Baghouse (437)		2.05E-01		9.49E-02	2.72E-01			1.10E-02	2.64E-01						9.63E-02	3.73E-06			7.91E-03		
HF loading and Storage/HF Train 1 (440)								3.35E-01	8.04E+00		5.24E+00	2.90E+00	6.95E+01								
HF loading and Storage/HF Train 2 (441)								3.35E-01	8.04E+00		5.24E+00	2.90E+00	6.95E+01								
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							
Filtration Process # 1 (470)								3.03E-02	7.28E-01			1.52E-02	3.66E-01								
Filtration Process # 2 (471)								2.52E-02	6.05E-01			1.27E-02	3.04E-01								
PA Plant Fugitives (491)								1.32E-01	3.17E+00			1.26E-01	3.02E+00	1.50E+01							
PA Tank Farm Fugitives (492)								1.32E-02	3.17E-01			1.26E-02	3.02E-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) Filter Press No. 1 and Filter Press No. 2 building vent No. 2 (497)								2.12E-02	5.09E-01			2.04E-02	4.90E-01								
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)		5.51E-03		4.78E-03	5.29E-02			9.52E-02	2.28E+00			9.52E-02	2.28E+00	1.00E+00	7.67E-02				9.39E-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)		5.51E-03		4.78E-03	5.29E-02			3.52E-02	8.44E-01			3.36E-02	8.07E-01	1.00E+00	7.67E-02				9.39E-03		
PAP No.2 Train No 4 Scrubber stack (506)		5.51E-03		4.78E-03	5.29E-02			3.52E-02	8.44E-01			3.36E-02	8.07E-01	1.00E+00	7.67E-02				9.39E-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												
PAP loading no. 2 (595)								3.38E-06	8.11E-05												
PAP loading no. 3 (596)								3.38E-06	8.11E-05												

ATTACHMENT 4

Permitted TAP Emission Rates for All Emission Sources Modeled at PCS, Including MACT/NESHAP Emission Sources

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. 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							
Rock Loadout Transfer Station (652)		1.79E+00		8.80E-01	3.19E+00			8.17E-02	1.96E+00						5.95E-01	3.67E-05			7.29E-02		
CTS - Phos Rock Loadout (653)		1.76E+00		8.67E-01	3.14E+00			2.81E-02	6.75E-01						5.86E-01	3.62E-05			7.18E-02		
Chute-Barge Rock Loadout (655)		1.76E+00		8.67E-01	3.14E+00			2.81E-02	6.75E-01						5.86E-01	3.62E-05			7.18E-02		
Chute-Barge Rock Loadout (656)		4.26E+00		2.09E+00	7.57E+00			6.80E-02	1.63E+00						1.41E+00	8.73E-05			1.73E-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												
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								
Product handling (717)		7.89E-01		1.64E+00	3.27E-01			2.79E-03	6.69E-02						1.70E+01				2.77E-02		
Product loadout (718)		2.54E-01		5.28E-01	1.05E-01			8.96E-04	2.15E-02						5.46E+00				8.89E-03		
Product Shipping (754)		3.04E-01		6.34E-01	1.26E-01			1.07E-03	2.58E-02						6.56E+00				1.07E-02		
Limestone Railcar Unloading (759)		7.28E-03			1.16E-03										2.58E-01				5.23E-05		
No. 1 Limestone Silo (760)		4.96E-02			7.92E-03										1.76E+00				3.57E-04		
No. 2 Limestone Silo (761)		4.96E-02			7.92E-03										1.76E+00				3.57E-04		
No. 3 Limestone Silo (762)		4.96E-02			7.92E-03										1.76E+00				3.57E-04		
Limestone supply weigh hopper (765)		4.90E-02			7.82E-03										1.74E+00				3.52E-04		
Milling Operations (IMILL)								1.02E-03	2.46E-02												
54% Phosphoric Acid Storage (I4)								3.73E-04	8.95E-03			2.57E-04	6.17E-03								
Dryer and delumper (774)		1.14E+01		3.79E+01	7.75E+00			7.39E-03	1.77E-01						5.05E+01	5.59E-02			2.53E-01		
Screening/conveying operations (777)		4.97E-01		1.04E+00	2.06E-01			1.76E-03	4.21E-02						1.07E+01				1.74E-02		
Bagging and tote filling operations (I-BAG)		1.87E-05		3.89E-05	7.75E-06			6.60E-08	1.58E-06						4.02E-04				6.55E-07		
Final screening operations (783)		9.94E-01		2.07E+00	4.13E-01			3.51E-03	8.43E-02						2.14E+01				3.49E-02		
Mine Pit Diesel Generator (801)			8.54E+01							6.20E-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)								4.31E-01	1.03E+01			3.48E+00	8.35E+01								
Gypsum Stack Pond #6 (954A)								3.32E-01	7.97E+00			2.68E+00	6.43E+01								
Gypsum Stack Pond #4 (955A)								4.17E-01	1.00E+01			3.38E+00	8.11E+01								
Mill Pond (957)								8.14E-03	1.95E-01			6.59E-02	1.58E+00								

ATTACHMENT 4

Permitted TAP Emission Rates for All Emission Sources Modeled at PCS, Including MACT/NESHAP Emission Sources

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)
Recycle Lake (958)								2.89E-01	6.94E+00			2.34E+00	5.62E+01								
Concentrate Pile (990)		1.53E-02		7.52E-03	2.72E-02			6.97E-04	1.67E-02						5.08E-03	3.13E-07			6.22E-04		
Facility Total	**167.56**	**75.51**	**5778.30**	**322.29**	**562.65**	**909.03**	**21.67**	**15.53**	**368.66**	**313.71**	**86.33**	**38.39**	**726.53**	**822.10**	**691.13**	**14.51**	**976.80**	**9912.00**	**295.25**	**55.01**	**1306.90**

Yellow highlights = NESHAP/MACT emission sources