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: 02D .0501(c), 02D .0517, 02D .0519
NSPS: Subpart H
NESHAP: Subpart AA
PSD: 02D .0530
PSD Avoidance: N/A
NC Toxics: 02D .1100
112(r): N/A
Other: N/A

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: 0700071.22E, 0700071.22F
Date Received: 09/27/2022, 09/26/2022
Application Type: Modification
Application Schedule: TV-Significant

Existing Permit Data
Existing Permit Number: 04176/T68
Existing Permit Issue Date: 12/22/2022
Existing Permit Expiration Date: 11/30/2027

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2021	2631.31	532.97	83.52	403.81	812.82	190.11	82.59 [MIBK (methyl isobutyl ketone)]
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)]

Review Engineer: Emily Supple

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

Comments / Recommendations:
Issue 04176/T69
Permit Issue Date:
Permit Expiration Date:

1. **Purpose of Application**

Two permit applications will be addressed in this technical review: 0700071.22E and 0700071.22F.

- The purpose of permit application No. 0700071.22E was to request a relaxation/removal of various testing requirements for the Phosphate Rock Calciners and the Sulfuric Acid Plants. This permit application is being processed as a 1-step significant modification under 15A NCAC 02Q .0501(b)(1).
- The purpose of permit application No. 0700071.22F was a 502(b)(10) notification to add a sulfuric acid truck loading process to load trucks with sulfuric acid for the purpose of selling to off-site customers. This source will be included with the insignificant sulfuric acid loading process (ID No. I-SAL), added with the issuance of T67.

2. Application History

June 9, 2022	Air Permit Application No. 0700071.22B was received 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.
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.
September 26, 2022	A 502(b)(10) notification was received as application 0700071.22F to add a sulfuric acid truck loading process.
September 27, 2022	Air Permit Application No. 0700071.22E was received as a 1-step significant modification under 15A NCAC 02Q .0516 to relax various stack testing requirements for the Phosphate Rock Calciners and the Sulfuric Acid Plants.
December 22, 2022	Air Permit No. 04176T68 was issued for renewal of the air permit.
April 5, 2023	Recommendations were received from Steve Hall, Chief of Technical Services Section, regarding the request to relax testing requirements.
May 23, 2023	Draft permit and review forwarded to applicant and regional office for comments.
May 25, 2023	A comment was received from Mr. Joe Sullivan of PCS Phosphate. The comment as well as DAQ's response is shown below in Section 13 of this review.
XXXXX XX, 2023	Draft permit and permit review forwarded to public notice.
XXXXXX XX, 2023	Public comment period ends. No comments received.
XXXXXX XX, 2023	EPA comment period ends. No comments received.
XXXXXX XX, 2023	Permit issued.

3. Permit Modifications/Changes

Page No.	Section	Description of Changes
Cover and throughout	--	• Updated all dates and permit revision numbers.
25	2.1.1 A.2.b	• Removed NOx testing requirements
26	2.1.1 A.3.f	• Revised sulfuric acid mist testing requirement from annually to once every three years

29	2.1.1 A.4.c	• Removed NOx testing requirements
43	2.1.2 A.1.c	• Revised PM_{10} testing requirement such that two calciners may be tested each year as representative of all six calciners
47	2.1.2 A.5.h	• Revised PM, fluorides, and mercury testing requirement such that two calciners may be tested each year as representative of all six calciners
170	2.2 A.1.c	• Revised sulfuric acid mist testing requirement from annually to once every three years
183	3	• Added I-SAL to insignificant activities list.
188-196	General Conditions	• Updated to the latest version of DAQ shell version 6.0 01/17/2022.

4. 502(b)(10) Notification (Permit Application No. 0700071.22F)

On August 22, 2022, Air Permit No. 04176T67 was issued as the first step of a two-step significant modification for a Sulfuric Acid Project that will, in part, allow the facility to ship sulfuric acid offsite to increase profitability. This modification included the addition of a new source, sulfuric acid loading (ID No. I-SAL) for loading sulfuric acid to railcars. The potential SAM emissions increases from the sulfuric acid loading were determined in the T67 review to be minimal (2.66E-08 tons of SAM per year). This number represents the displacement emissions from loading a maximum of 66,500 tons of sulfuric acid annually calculated with the vapor pressure of sulfuric acid at a maximum temperature of approximately 30 ^{o}C (86 ^{o}F). Since the increase in emissions is so minimal, the sulfuric acid loading (ID No. I-SAL) may be considered to be an insignificant activity as per 15A NCAC 02Q .0503(8).

Although emissions from the sulfuric acid loading (ID No. I-SAL) are minimal, it was determined during the T67 review that the sulfuric acid loaded (i.e., shipped offsite) from the facility will result in greater emissions increases of NOx, SO2, and SAM facility-wide because more acid may be produced in the sulfuric acid plants. Thus, to avoid applicability of PSD, the facility accepted an avoidance condition via 02Q .0317 (Section 2.1.1 A.7 of the current Title V air permit) to limit emissions of NOx, SO2, and SAM from the Sulfuric Acid Project to less than the SER for each pollutant (40 tons per year, each, for NOx and SO2; 7 tons per year for SAM). It was determined in the T67 review that the maximum amount of sulfuric acid that the facility may load while remaining under the SERs for SO2, NOx, and SAM is 66,500 tons per year. The facility must calculate emissions of SO2 and NOx from the sulfuric acid plants each month to ensure compliance with the avoidance condition.

Permit Application No. 0700071.22F was received as a 502(b)(10) notification to add a sulfuric acid truck loading process to load trucks with sulfuric acid for the purpose of selling to off-site customers. On October 3, 2022, the DAQ issued a 502(b)(10) acknowledgement letter for this change.

With this 502(b)(10) notification, the facility is requesting that the sulfuric acid loading to trucks process be added to the existing sulfuric acid loading to railcars process (ID No. I-SAL). The facility will track emissions from upstream sulfuric acid production under the PSD avoidance cap under Section 2.1.1 A.7 of the facility's current Title V air permit, so this proposed change will not further increase any air emissions allowed under the permit. No further permitting action is required.

5. One-step Significant Modification (Permit Application No. 0700071.22E)

The purpose of this permit application was to request a relaxation of testing requirements for the Phosphate Rock Calciners and the Sulfuric Acid Plants. The following section discusses each of these requests. Changes to be made to the permit are discussed in Section 6 below. The following table was provided as Table 1 in the application and provides a summary of the existing stack testing requirements for the sulfuric acid plants and calciners.

Source	Emission Unit ID No.	Pollutant	Permit Condition	Basis for Condition	Current Frequency	Proposed Frequency	Proposed Resumptive Trigger
Sulfuric Acid No. 5-7	103, 104, 105	SA Mist	2.1.1 A.3.f**, 2.2 A.2.c	NSPS/Toxics	Annual	Once/3 years*	≥80%
Sulfuric Acid No. 7	105	SA Mist	2.1.1 A.3.f**, 2.1.1 A.4.c**, 2.2 A.2.c	NSPS/BACT/Toxics	Annual	Once/3 years*	≥80%
Sulfuric Acid No. 5 and 6	103 and 104	NOx	2.1.1 A.2.b**	SIP	Once/5 years	Eliminate	N/A
Sulfuric Acid No. 7	105	NOx	2.1.1 A.4.c**	SIP/BACT	Annual	Eliminate	N/A
Calciners 1-6	201, 202, 203, 204, 205, 206	PM	2.1.2 A.1.c**	PSD/NAAQS	Annual	2 calciners/year	≥80%
Calciners 1-6	201, 202, 203, 204, 205, 206	PM	2.1.2 A.5.h**	NESHAP	Annual	2 calciners/year	≥80%
Calciners 1-6	201, 202, 203, 204, 205, 206	Fluorides	2.1.2 A.5.h**	NESHAP	Annual	2 calciners/year	≥80%
Calciners 1-6	201, 202, 203, 204, 205, 206	Mercury	2.1.2 A.5.h**	NESHAP	Annual	2 calciners/year	≥90%

*Table 1 in the application indicates the proposed testing frequency is once per 5 years, but the application discusses a proposed testing frequency of once per 3 years. The frequency approved by SSCB is once per 3 years as per the memo in Attachment 1 below.
**The section number has been updated to the corresponding section from the most recent permit, Permit No. 04176T68.

a. Calciner Nos. 1 through 6 (ID Nos. 339-051 through 339-056)

PM/PM-10, Fluorides, and Mercury

The six calciners are subject to the emissions standards for particulate matter (PM), fluorides, and mercury under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Phosphoric Acid Manufacturing Plants under 40 CFR Part 63 Subpart AA (Subpart AA). Subpart AA includes an annual testing requirement for PM, fluorides, and mercury. Additionally, the calciners are subject to a daily PM-10 limit for all calciners combined pursuant to 15A NCAC 02D .0501(c). Under these regulations, PCS Phosphate is currently required to test the calciners annually for PM, PM-10, fluorides, and mercury to ensure compliance with the applicable emission limits.

With Permit Application No. 0700071.22E, PCS Phosphate is requesting that annual testing for PM/PM-10, fluorides, and mercury be required for only two of six calciners per year (annual testing would be waived for the other four). The calciners would be tested in rotation such that two new calciners are tested each year, and each calciner is tested at least every three years. In support of this request, PCS Phosphate provided the following background information. The full summary of stack testing results for the calciners can be found in Attachment 2 below.

- All six calciners are identical in design and use the same fuel and have identical fuel systems. Each calciner uses an identical air pollution control system consisting of an Airetron venturi scrubber

followed by a Croll Reynolds wet electrostatic precipitator (WESP). All of the calciners and pollution control systems are maintained and operated similarly.

- 15A NCAC 02D .0501(c), Section 2.1.2 A.1.c of the current air permit, limits calciner PM-10 emissions to 1,992 pounds per day, total for all calciners combined. According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum combined PM10 emissions from the calciners was 570.5 pounds per day which is approximately 28.6 percent of the emission limit. The average yearly calciner emissions are 21.2 percent of the PM10 emissions limit.
- Subpart AA limits calciner PM emissions to 0.181 grams per dry standard cubic meter (g/dscm) or 0.080 grains per dry standard cubic foot (gr/dscf). According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum emissions from any of the calciners was 0.023 gr/dscf which is approximately 28.8 percent of the emission limit. The average yearly calciner emissions ranged from 6.3 to 12.2 percent of the NESHAP PM emissions limit.
- Subpart AA limits calciner fluorides emissions to 9.0E-04 pounds per ton of rock feed. According to the test data provided by PCS Phosphate for 2016 through 2022, the maximum emissions from any of the calciners was 0.00093 pounds per ton of rock feed which is approximately 103.3 percent of the emission limit. This exceedance of the emission limit caused a NOV/NRE to be issued to PCS Phosphate on June 24, 2019. The facility has indicated in the application that the single stack test exceeding the standard was attributable to an anomaly associated with several water management systems directing water with higher-than-normal fluoride content into the mill recycle lake which is used as scrubber makeup water. Fluoride compounds in the scrubber water changed the fluoride-water equilibrium of the makeup water to the scrubber which reduced fluoride control efficiency for the calciner exhaust. Since this occurrence, management procedures have been implemented to ensure such waters do not enter the mill recycle lake and the lake is tested several times weekly to ensure that fluorides are being maintained at low levels. No further exceedances of the fluoride emission limit have occurred since this exceedance. The average yearly fluoride emissions in the calciners range from 38.9 percent to 49.7 percent of the NESHAP fluorides limit.
- Subpart AA limits calciner mercury emissions to 0.23 milligrams per dry standard cubic meter (mg/dscm) corrected to 3 percent oxygen. According to the test data provided by PCS Phosphate for 2016 through 2022, the maximum emissions from any of the calciners was 0.197 mg/dscm at 3 percent oxygen which is approximately 85.7 percent of the emission limit. The average yearly mercury emissions in the calciners range from 60.8 percent to 67.2 percent of the NESHAP mercury limit.

The facility proposed a compliance method for the calciners such that any calciner, for which emissions are equal to or exceed 80 percent of the relevant emission standard, would revert to annual testing for that pollutant until 2 years of consecutive tests with results less than 80 percent of the relevant emission standard are demonstrated and testing for that pollutant would resume to the relaxed testing schedule. For mercury emissions, PCS Phosphate has requested that the "trigger" threshold for resumption of annual testing be 90 percent (rather than 80 percent) of the emissions standard. This request is based on the following justification:

- The mercury emissions standard in Subpart AA for existing phosphate rock calciners was based on a large data set for the only regulated facility in the U.S. subject to the mercury emissions standard for existing calciners (PCS Phosphate). This standard was established with a 99th percentile production limit, indicating that the potential of exceeding the emissions standard is highly unlikely.
- Emissions from the calciners are log normally distributed, meaning that a greater number of compliant values will occur closer to the upper range than a typical normally distributed data set.
- Since mercury emissions are a function of ore composition rather than how the identical calciners are operated, testing of two calciners annually will reflect actual mercury emissions from the other four calciners.

PCS Phosphate cited EPA Stack Testing Guidance[1] allowing for a waiver from stack testing requirements for identical units. The guidance also provided for the appropriate criteria by which to evaluate waiver requests for identical units. Section VII.2 of the US EPA's April 27, 2009, *Clean Air Act National Stack*

[1] Letter and attachments from Lund, L.C., Director, Office of Compliance, US EPA to US EPA Regional Compliance/Enforcement Division Directors. "Issuance of the Clean Air Act National Stack Testing Guidance." April 27, 2009.

Testing Guidance[1] states that a performance test waiver for identical emissions units may be appropriate when the following conditions are met:

- The units are located at the same facility;
- The units were produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;
- The units are operated and maintained in a similar manner; and
- The EPA or delegated agency, based on documents submitted by the facility:
    - Determines that the margin of compliance for the identical units tested is significant and can be maintained on an ongoing basis; or
    - Determines based on a review of sufficient emission data that, though the margin of compliance is not substantial, other factors allow for the demonstration that the variability of emissions for identical tested units is low enough for confidence that the untested units will be in compliance. These factors may include, but are not limited to, the following:
        - Historical records at the tested unit showing consistent/invariant loads;
        - Fuel characteristics yielding low variability and therefore assurance that the emissions will be consistent and below allowable levels; and
        - Statistical analysis of a robust emissions data set demonstrates sufficiently low variability to convey assurance that the margin of compliance, though small, is reliable.

The information in the application indicates that the calciners are all located at the same facility, identical in design, and operated and maintained in a similar manner. The application also provides emissions information that indicates a history of a large margin of compliance with the applicable emissions standards for PM/PM-10 and a reasonable margin of compliance with the applicable emissions standards for fluorides and mercury.

On February 8, 2023, it was requested that the Stationary Source Compliance Branch (SSCB) review the request from PCS Phosphate for reduced stack testing frequencies. Steve Hall, Chief of the Technical Service Section, issued an internal memo on April 5, 2023 (Attachment 1, below) in which it was indicated that SSCB agrees that the testing frequencies for the calciners may be reduced for certain pollutants. A large amount of emissions test data collected by PCS Phosphate over the last decade demonstrates a large or reasonable margin of compliance with PM/PM-10, fluorides, and mercury emissions standards and supports the request for reduced testing frequencies for certain pollutants from the calciners. Additionally, SSCB agrees that 80 percent of the relevant emission standard is a good "trigger" threshold to include in the facility's permit to require the facility to resume annual testing for PM/PM-10 and fluorides from the calciners. SSCB also agrees that that a 90 percent trigger threshold for mercury emissions from the calciners is a good trigger threshold in this specific case based on the justification provided in the application and discussed above. SSCB also determined that the company's proposal to test two calciners on an annual basis for certain pollutant as representative of all six calciners at the facility is consistent with US EPA's April 27, 2009, Clean Air Act National Stack Testing Guidance. It was clarified via an email from Steve Hall on May 22, 2023 that if one calciner tests at or above the trigger threshold of a relevant emission standard, then all six calciners must resume an annual testing schedule until two consecutive years of testing below the trigger threshold of the relevant emission standard and testing can resume back to the relaxed schedule.

In the memo, it was mentioned that the permit engineer may want to consider keeping the annual testing requirement for PM/PM-10 in Section 2.1.2 A.1.c if annual emissions testing is required to ensure compliance with the projected actual emissions (PAE) established for PM/PM-10 pursuant to 15A NCAC 02D .0530(u), Section 2.1.2 A.3 of the air permit. It is this engineer's opinion that annual testing of each calciner to ensure compliance with the PAE may be reduced to the schedule described above according to the following reasoning:

- Permit Application No. 0700071.21B provided PAE calculations for PM and PM-10 as part of the Calciner Project modification. The PAE were calculated conservatively using the maximum projected production rate of all calciners plus a safety margin of 21 percent.
- Emissions factors used for the PAE calculations were the highest values observed during the two-year baseline period selected for each pollutant.
- The stack testing data provided in this application from 2011 through 2022 indicates that the highest combined PM/PM-10 emissions from the calciners was 570.5 pounds per day which equates to 102.7

tons per year (assuming 360 days of operation) which is below the calculated PAE for PM (122.4 tpy) and PM-10 (169.7 tpy).

PCS Phosphate had previously requested reduction of the stack testing requirements under Subpart AA in Permit Application No. 0700071.16B. Since, at that time, PCS Phosphate was operating under Special Order of Consent (SOC) No. 2016-004 (which was eventually replaced by SOC No. 2019-002) due to violation of the mercury emissions standards for existing calciners in Subpart AA, DAQ did not feel it was appropriate to allow a reduced testing frequency at that time. However, EPA revised the mercury emission standard for existing phosphate rock calciners in Subpart AA on November 3, 2020, and on March 25, 2021, the SOC was closed out upon written approval by DAQ of the Data Collection Report submitted by PCS Phosphate on December 9, 2020. Therefore, DAQ shall reconsider the request to reduce the facility's stack testing frequencies under Subpart AA.

North Carolina DAQ has been given delegated authority for Subpart AA, specifically 40 CFR 63.606 "Performance Tests and Compliance Provisions."[2] Under the General Provisions, 40 CFR 63.7(e)(2)(iv) allows the Administrator (in this case, NC DAQ) to waive the requirement for performance tests if the owner/operator demonstrates compliance using other means:

> "(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this section, in each relevant standard, and, if required, in applicable appendices of parts 51, 60, 61, and 63 of this chapter unless the Administrator-… (iv) Waives the requirement for performance tests because the owner or operator of an affected source has demonstrated by other means to the Administrator's satisfaction that the affected source is in compliance with the relevant standard."

Therefore, DAQ may waive the annual performance testing requirement for the calciners under Subpart AA if it is determined that PCS Phosphate has demonstrated that the calciners are in compliance with the relevant emission standards.

In summary, it appears that PCS Phosphate's request to reduce the stack testing frequency for PM/PM-10, fluorides, and mercury is reasonable according to the following findings:

- The DAQ may waive performance test requirements as given in 40 CFR 63.7(e)(2)(iv) if the owner or operator of an affected source has demonstrated compliance with the relevant standard by other means to the Administrator's satisfaction;
- PCS Phosphate has submitted a large data set to DAQ that supports their request for reduced testing frequencies for PM/PM-10, fluorides, and mercury from the calciners by demonstrating a large or reasonable margin of compliance with the relevant emissions standards;
- SSCB agrees that 80 percent of the relevant emissions standard for PM/PM-10 and fluorides is a good trigger threshold to include in the facility's permit to require the facility to resume annual testing of the calciners for the affected pollutant;
- SSCB agrees that 90 percent of the mercury emissions standard is a good trigger threshold to include in the facility's permit to require the facility to resume annual mercury testing of the calciners;
- SSCB agrees that the proposal to test two calciners on an annual basis for certain pollutants as representative of all six calciners at the facility is appropriate as per the EPA's Stack Testing Guidance;
- The SOC, which may have prevented the reduction of stack testing frequencies under Subpart AA, has been closed out as of March 25, 2021; and
- Annual testing for PM/PM-10 is not necessary to ensure compliance with the PAE in Section 2.1.2 A.3 of the current air permit.

[2] 40 CFR 63.611(b): The authorities specified in paragraphs (b)(1) through (5) of this section are retained by the Administrator of U.S. EPA and cannot be delegated to State, local, or Tribal agencies.
(1) Approval of alternatives to the requirements in §§63.600, 63.602, 63.605, and 63.610.
(2) Approval of requests under §§63.7(e)(2)(ii) and 63.7 (f) for alternative requirements or major changes to the test methods specified in this subpart, as defined in §63.90.
(3) Approval of requests under §63.8(f) for alternative requirements or major changes to the monitoring requirements specified in this subpart, as defined in §63.90.
(4) Waiver or approval of requests under §63.10(f) for alternative requirements or major changes to the recordkeeping and reporting requirements specified in this subpart, as defined in §63.90.
(5) Approval of an alternative to any electronic reporting to the EPA required by this subpart."

Therefore, the stack testing conditions given in Sections 2.1.2 A.1.c and 2.1.2 A.5.h will be revised to reduce the testing frequencies of the calciners for PM/PM-10, fluorides, and mercury. The new testing frequency will be two calciners tested each year in rotation such that all calciners are tested at least every three years. The trigger threshold for PM/PM-10 and fluorides to resume annual testing of all calciners will be 80 percent of the relevant emission standard. The trigger threshold for mercury to resume annual testing of all calciners will be 90 percent of the mercury emission standard.

b. Sulfuric Acid Plants 5, 6, and 7 (ID Nos. S-5 through S-7)

With Permit Application No. 0700071.22E, PCS Phosphate is requesting a reduction in frequency of the SAM testing requirements and removal of the NOx testing requirements according to the following discussion.

Sulfuric Acid Mist (SAM)

The three sulfuric acid plants are subject to the emissions standards for sulfuric acid mist (SAM) under the New Source Performance Standards for Sulfuric Acid Plants under 40 CFR Part 60 Subpart H (Subpart H), 15A NCAC 02D .0530 (PSD BACT, S-7 only), 15A NCAC 02D .0517, 15A NCAC 02D .1100 (air toxics), and Consent Decree Civil Action No. 14-707-BAJ-SCR.

NSPS Subpart H only requires an initial performance test pursuant to 40 CFR 60.8, although the current permit specifies an annual testing requirement. The facility must also comply with the Consent Decree Civil Action No. 14-707-BAJ-SCR, effective February 26, 2015, given in Section 2.4 A of the current air permit. The Consent Decree provides a SAM emission limit for each sulfuric acid plant of 0.15 pounds per ton of 100% sulfuric acid produced, which is the same as the emission limit given in Subpart H. The Consent Decree requires a performance test be conducted on each sulfuric acid plant by the corresponding compliance deadline specified in Section 2.4 A.1.g. No annual or recurring testing requirement is given or implied by the Consent Decree. Sections 2.1.1 A.1 (02D .0517) and 2.1.1 A.4 (02D .0530, S-7 only) specify that sulfuric acid mist testing shall be conducted according to the requirements of Subpart H. Section 2.2 A.1 (02D .1100) specifies an annual sulfuric acid mist testing requirement.

PCS Phosphate is requesting that the annual testing for SAM in the sulfuric acid plants be reduced to only once every three years for each sulfuric acid plant. The facility proposed a compliance method for the sulfuric acid plants such that any plant, for which SAM emissions are equal to or exceed 80 percent of the relevant emission standard, would revert to annual testing until 2 years of consecutive tests with results less than 80 percent of the relevant emission standard are demonstrated and testing for SAM would resume to the relaxed testing schedule. A full summary of the stack testing results for the sulfuric acid plants can be found in Attachment 3 below.

In support of this request, PCS Phosphate provided the following background information:

- Subpart H limits each sulfuric acid plant SAM emissions to 0.15 pounds per ton of 100% sulfuric acid produced. According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum SAM emissions from any of the sulfuric acid plants was 0.11 pounds per ton of 100% sulfuric acid produced which is approximately 73.3 percent of the Subpart H emission limit. The average yearly SAM emissions range from 31.9 percent to 45.6 percent of the SAM emission limit given in Subpart H.
- 15A NCAC 02D .0530, Prevention of Significant Deterioration (PSD), Section 2.1.1 A.4.a of the current air permit, limits SAM emissions from S-7 to 0.075 pounds per ton of 100% sulfuric acid produced. According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum SAM emissions from S-7 were 0.054 pounds per ton of 100% sulfuric acid produced which is approximately 72 percent of the PSD emission limit. The average yearly SAM emissions from S-7 are approximately 45.6 percent of the PSD emission limit.
- 15A NCAC 02D .1100, Control of Air Toxics, Section 2.2 A.1.c of the current air permit, limits sulfuric acid emissions from S-5 to 16.5 pounds per hour, from S-6 to 17.4 pounds per hour, and S-7 to 16.9 pounds per hour. According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum sulfuric acid emissions for any of the sulfuric acid plants was 11.32 pounds per hour which is approximately 65.1 percent of the relevant emission limit. The average yearly sulfuric acid

emissions range from 36.3 percent to 41.4 percent of the sulfuric acid emissions limits for the sulfuric acid plants given in 02D .1100.
- All three sulfuric acid plants are subject to CAM requirements to ensure compliance on an ongoing basis with 15A NCAC 02D .0517, Subpart H and Consent Decree Civil Action No. 14-707-BAJ-SCR, and 15A NCAC 02D .0530 (S-7 only).

On February 8, 2023, it was requested that the Stationary Source Compliance Branch (SSCB) review the request from PCS Phosphate for reduced stack testing frequencies. Steve Hall, Chief of the Technical Service Section, issued an internal memo on April 5, 2023 (Attachment 1, below) in which it was indicated that SSCB agrees that the testing frequency for the sulfuric acid plants may be reduced for SAM. A large amount of emissions test data collected by PCS Phosphate over the last decade demonstrates a large margin of compliance with the sulfuric acid emissions standards and supports their request for reduced testing frequencies for certain pollutants from the sulfuric acid plants. Additionally, SSCB agrees that 80 percent of the relevant emission standard is a good "trigger" threshold to include in the facility's permit to require the facility to resume annual testing for sulfuric acid in the sulfuric acid plants. It was clarified via an email from Steve Hall on May 22, 2023 that if one sulfuric acid plants tests at or above 80% of the relevant emission standard, then only that sulfuric acid plant must resume an annual testing schedule until two consecutive years of testing below 80% of the relevant emission standard and testing can resume back to the relaxed schedule.

In summary, it appears that PCS Phosphate's request to reduce the stack testing frequency for SAM is reasonable according to the following findings:
- PCS Phosphate has submitted a large data set to DAQ that supports their request for reduced testing frequencies for SAM from the sulfuric acid plants by demonstrating a large margin of compliance with the relevant emissions standards;
- SSCB agrees that the testing frequency for the applicable requirements can be reduced to once every three years;
- SSCB agrees that 80 percent of the relevant emissions standard for SAM is a good trigger threshold to include in the facility's permit to require the facility to resume annual SAM testing of a sulfuric acid plant;

Therefore, the stack testing conditions given in Sections 2.1.1 A.3.f, 2.1.1 A.4.c.i, and 2.2 A.1.c will be revised to reduce the testing frequencies of the sulfuric acid plants for SAM. The new testing frequency will be each plant is tested at least once every three years. The trigger threshold for SAM emissions to resume annual testing of a sulfuric acid plant will be 80 percent of the relevant emission standard.

<u>NOx</u>

The sulfuric acid plants are subject to the NOx emissions standards under 15A NCAC 02D .0519 and 15A NCAC 02D .0530 (PSD BACT, S-7 only). Under the current permit, PCS Phosphate is currently required to test S-7 annually and either S-5 or S-6 once every five years for NOx. A full summary of the stack testing results for the sulfuric acid plants can be found in Attachment 3 below.

In support of this request, PCS Phosphate provided the following background information:
- 15A NCAC 02D .0519 provides NOx emission limits for each sulfuric acid plant of 5.8 pounds per ton of sulfuric acid produced. According to the test data provided by PCS Phosphate for 1996 through 2021, the maximum NOx emissions from plants S-5 and S-6 were 0.13 pounds per ton of sulfuric acid produced which is approximately 2.2 percent of the 02D .0519 emission limit. From the provided test data for 2011 through 2022, the maximum NOx emissions from plant S-7 were 0.146 pounds per ton of sulfuric acid produced which is approximately 2.5 percent of the 02D .0519 emission limit. The average yearly NOx emissions from all sulfuric acid plants ranged from 1.4 to 2.0 percent of the 02D .0519 emission limit.
- 15A NCAC 02D .0530 (PSD BACT) provides a NOx emission limit for plant S-7 of 0.6 pounds per ton of 100% sulfuric acid produced. According to the test data provided by PCS Phosphate for 2011 through 2022, the maximum NOx emissions from plant S-7 were 0.146 pounds per ton of 100%

sulfuric acid produced which is approximately 24.3 percent of the PSD BACT emission limit. The average yearly NOx emissions from plant S-7 were 13.4 percent of the PSD BACT emission limit.

On February 8, 2023, it was requested that the Stationary Source Compliance Branch (SSCB) review the request from PCS Phosphate for reduced stack testing frequencies. Steve Hall, Chief of the Technical Service Section, issued an internal memo on April 5, 2023 (Attachment 1, below) in which it was indicated that SSCB agrees that NOx testing for the sulfuric acid plants may be removed. A large amount of emissions test data collected by PCS Phosphate over the last decade demonstrates a large margin of compliance with the NOx emissions standards and supports their request for removal of NOx testing for the sulfuric acid plants.

In summary, it appears that PCS Phosphate's request to remove NOx testing for sulfuric acid plants is reasonable according to the following findings:

- PCS Phosphate has submitted a large data set to DAQ that supports their request for removal of NOx testing for the sulfuric acid plants by demonstrating a large margin of compliance with the relevant emissions standards;
- SSCB agrees that the applicable NOx testing requirements can be removed from the permit;

Therefore, the stack testing conditions given in Sections 2.1.1 A.2.b and c, and 2.1.1 A.4.c.ii will be revised to remove the NOx testing requirements for the sulfuric acid plants.

6. Regulatory Review

This permit modification potentially impacts State regulations applicable to the Nos. 1 through 6 Phosphate Rock Calciners and the Nos. 5, 6, and 7 Sulfuric Acid Plants. The following discussion summarizes any permit modifications being made to the applicable regulations.

A. Nos. 1 through 6 Phosphate Rock Calciners (ID Nos. 339-051 through 339-056)

The current permit lists the following regulations as being applicable to the Nos. 1 through 6 Phosphate Rock Calciners.

- 15A NCAC 02D .0501(c): Compliance with National Ambient Air Quality Standards
- 15A NCAC 02D .0521: Control of Visible Emissions
- 15A NCAC 02D .0530(u): Use of Projected Actual Emissions to Avoid Applicability of Requirements of PSD
- 15A NCAC 02D .1100: Toxic Air Pollutant Emissions Limitations and Requirements
- 15A NCAC 02D .1111: Maximum Achievable Control Technology (40 CFR Part 63 Subpart AA)
- 15A NCAC 02D .0543: Best Available Retrofit Technology

Except for 02D .0501(c) and 02D .1111 (Subpart AA), the permit modification requested in Permit Application No. 0700071.22E does not result in any changes to permit conditions addressing the rules listed above and a review of these regulations will not be included in this review. Changes to 02D .0501(c) and 02D .1111 (Subpart AA) are discussed in the following sections.

15A NCAC 02D .0501(c): Compliance with National Ambient Air Quality Standards

Section 2.1.2 A.1.c of the current air permit requires the facility to limit PM10 emissions to 1,992 pounds per day, total from all calciners. Currently, an annual stack test is required for all six calciners to verify the allowable ranges of baseline average values for secondary voltage for the WESP's by determining the PM/PM10 emission rate.

The facility has requested to test only two of six calciners annually as representative of all six calciners. With this request, the calciners would be tested in rotation such that each calciners is tested at least once every three years, and if any emissions test shows that the measured emission rate is greater than or equal to 80 percent of the allowable limit, the testing frequency shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing may resume the relaxed testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by maintaining the pressure drop and liquid injection flow rate to each venturi scrubber, the voltage across each WESP, and feed rate to each calciner, which are monitored by continuous parametric monitoring systems (CPMS). CPMS operating ranges have been established using prior performance test data.

As discussed in Section 5.a of this review, the facility has demonstrated a large margin of compliance with the PM/PM10 emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for reduced testing frequencies for the calciners. Therefore, the permit condition will be revised to allow PCS Phosphate to test two of six calciners annually, waiving the testing requirement for the other four. The calciners shall be tested in rotation such that each calciner is tested at least once every three years. The Permittee must test at least two calciners each year.

15A NCAC 02D .1111: Maximum Achievable Control Technology (40 CFR Part 63 Subpart AA)

Section 2.1.2 A.5.f of the current air permit requires the facility to limit the calciners' (ID Nos. ep201 through ep206) emissions of total particulate matter, fluorides, and mercury as per the emissions limits given in 40 CFR 63.602(a)(2) and Table 1 of 40 CFR Part 63, Subpart AA. Additionally, 40 CFR 63.606(b) requires a performance test be conducted once per calendar year to ensure compliance with the Subpart AA emissions limits.

With this application, the facility has requested to test only two calciners each year as representative of all six calciners. The calciners shall be tested in rotation such that each calciner is tested at least once every three years. If any emissions test shows that the measured emission rate of PM/PM-10 or fluorides is more than 80 percent of the allowable limit, the testing frequency shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing may resume the relaxed testing schedule. If any emissions test shows that the measured emission rate of mercury is more than 90 percent of the allowable limit, the testing frequency shall be increased back to annually until two years of consecutive tests with results less than 90% of the allowable limit are demonstrated, and testing may resume the relaxed testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by maintaining the pressure drop and liquid injection flow rate to each venturi scrubber, the voltage across each WESP, and feed rate to each calciner, which are monitored by continuous parametric monitoring systems (CPMS). CPMS operating ranges have been established using prior performance test data.

North Carolina DAQ has been given delegated authority for Subpart AA, specifically 40 CFR 63.606 "Performance Tests and Compliance Provisions." Under the General Provisions, 40 CFR 63.7(e)(2)(iv) allows the Administrator (in this case, NC DAQ) to waive the requirement for performance tests if the owner/operator demonstrates compliance using other means:
"(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this section, in each relevant standard, and, if required, in applicable appendices of parts 51, 60, 61, and 63 of this chapter unless the Administrator-… (iv) Waives the requirement for performance tests because the owner or operator of an affected source has demonstrated by other means to the Administrator's satisfaction that the affected source is in compliance with the relevant standard."

As discussed in Section 5.a of this review, the facility has demonstrated a large margin of compliance with the PM/PM10 emission limits and a reasonable margin of compliance with the fluorides and mercury emission limits. An April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for reduced testing frequencies for the calciners. Therefore, the permit condition will be revised to allow PCS Phosphate to test two of six calciners annually, waiving the testing requirement for the other four. The calciners shall be tested in rotation such that each calciner is tested at least once every three years. The Permittee must test at least two calciners each year.

B. Nos. 5, 6, and 7 Sulfuric Acid Plants (ID Nos. S-5, S-6, and S-7)

The current permit lists the following regulations as being applicable to the Nos. 5 through 7 Sulfuric Acid Plants.

- 15A NCAC 02D .0517: Emissions from Plants Producing Sulfuric Acid
- 15A NCAC 02D .0519: Control of Nitrogen Dioxide and Nitrogen Oxides Emissions;
- 15A NCAC 02D .0524: New Source Performance Standards (40 CFR Part 60, Subpart H);
- 15A NCAC 02D .0530: Prevention of Significant Deterioration;
- 15A NCAC 02D .0530(u): Use of Projected Actual Emissions to Avoid Applicability of Requirements of PSD
- 15A NCAC 02D .0614: Compliance Assurance Monitoring;
- 15A NCAC 02D .1100: Control of Toxic Air Pollutants, and
- 15A NCAC 02Q .0317: Avoidance Conditions.

With this permit application, changes will be made to conditions 02D .0517, 02D .0519, 02D .0524, 02D .0530, and 02D .1100. The remaining permit conditions will not change with this application, and a review of these conditions will not be included in this review. Changes to the permit conditions are discussed in the following section.

15A NCAC 02D .0517: Emissions from Plants Producing Sulfuric Acid

This rule requires PCS Phosphate to limit emissions of sulfuric acid mist to less than 0.5 pounds per ton of 100% sulfuric acid produced. The testing requirement for this condition refers to New Source Performance Standards (NSPS) Subpart H of Section 2.1.1 A.3 which currently requires an annual performance test for sulfuric acid mist emissions.

The facility has requested to reduce the testing requirement from annually to once every three years for the sulfuric acid plants. If any emissions test shows that the measured emission rate is more than 80 percent of the allowable limit, the testing frequency for that plant shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing for that plant may resume the triennial testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by complying with the CAM requirements listed in Section 2.1.1 A.6.

As discussed in Section 5.b of this review, the facility has demonstrated a large margin of compliance with the sulfuric acid emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for reduced testing frequency for sulfuric acid mist from the sulfuric acid plants. This permit condition will not be revised since the testing requirement refers to NSPS Subpart H, but the testing condition in Subpart H will be revised to reduce the stack testing frequency required for sulfuric acid mist.

15A NCAC 02D .0519: Control of Nitrogen Dioxide and Nitrogen Oxide Emissions

This rule requires PCS Phosphate to limit emissions of NOx from the sulfuric acid plants to 5.8 pounds per ton of acid produced from any sulfuric acid manufacturing plant. This condition currently requires the facility to test either Sulfuric Acid Plant No. 5 or Sulfuric Acid Plant No. 6 once every five years. Sulfuric Acid Plant No. 7 shall demonstrate compliance with this rule by conducting an annual performance test in accordance with the PSD BACT provisions given in Section 2.1.1 A.4.c.ii of the current permit.

The facility has requested removal of all required NOx emissions testing. The facility indicates in the application that there is not a realistic possibility of ever exceeding the applicable emission standards.

As discussed in Section 5.b of this review, the facility has demonstrated a large margin of compliance with the NOx emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for removal of NOx emissions testing requirements. Therefore, this permit condition will be revised to remove the testing requirements for NOx for the sulfuric acid plants.

15A NCAC 02D .0524: New Source Performance Standards (40 CFR Part 60, Subpart H)

This rule requires PCS Phosphate to limit emissions of sulfuric acid to 0.15 pounds per ton of 100% sulfuric acid produced. This condition as listed in the permit currently requires annual testing for sulfuric acid mist for each of the sulfuric acid plants (Nos. 5, 6, and 7). However, the NSPS Subpart H regulation only specifies that an initial performance test is required.

The facility has requested to reduce the testing requirement from annually to once every three years for the sulfuric acid plants. If any emissions test shows that the measured emission rate is more than 80 percent of the allowable limit, the testing frequency for that plant shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing for that plant may resume the triennial testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by complying with the CAM requirements listed in Section 2.1.1 A.6.

As discussed in Section 5.b of this review, the facility has demonstrated a large margin of compliance with the sulfuric acid emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for reduced testing frequency for sulfuric acid mist from the sulfuric acid plants. This permit condition will be revised to reduce the stack testing requirement from annually to once every three years.

15A NCAC 02D .0530: Prevention of Significant Deterioration

This rule requires PCS Phosphate to limit emissions of sulfuric acid mist from Sulfuric Acid Plant No. 7 to the BACT emission limit of 0.075 pounds per ton of 100% sulfuric acid produced and emissions of nitrogen oxides from Sulfuric Acid Plant No. 7 to 0.6 pounds per ton of 100% sulfuric acid produced. This condition currently requires annual testing for both sulfuric acid (pursuant to NSPS Subpart H) and nitrogen oxides.

The facility has requested removal of all required NOx emissions testing. The facility indicates in the application that there is not a realistic possibility of ever exceeding the NOx emission standards. The facility has also requested to reduce the testing requirement for sulfuric acid mist from annually to once every three years for the sulfuric acid plants. If any emissions test shows that the measured emission rate is more than 80 percent of the allowable limit, the testing frequency for that plant shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing for that plant may resume the triennial testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by complying with the CAM requirements listed in Section 2.1.1 A.6.

As discussed in Section 5.b of this review, the facility has demonstrated a large margin of compliance with the NOx and sulfuric acid mist emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for removal of NOx emissions testing requirements and reduction of testing frequency for sulfuric acid mist from the sulfuric acid plants. Therefore, this permit condition will be revised to remove the testing requirements for NOx. The sulfuric acid mist testing requirement in this condition points to NSPS Subpart H and will not be revised, but Subpart H will be revised to reduce stack testing frequency to once every three years.

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

This rule limits emissions of sulfuric acid in the Sulfuric Acid Plants to 16.5 pounds per hour for Sulfuric Acid Plant No. 5, 17.4 pounds per hour for Sulfuric Acid Plant No. 6, and 16.9 pounds per hour for Sulfuric Acid Plant No. 7. This condition currently requires annual performance testing for sulfuric acid in the Sulfuric Acid Plants.

The facility has requested to reduce the testing requirement from annually to once every three years for the sulfuric acid plants. If any emissions test shows that the measured emission rate is more than 80 percent of the allowable limit, the testing frequency for that plant shall be increased back to annually until two years of consecutive tests with results less than 80% of the allowable limit are demonstrated, and testing for that plant may resume the triennial testing schedule.

According to the application, day-to-day compliance with the emission limits is ensured by complying with the CAM requirements listed in Section 2.1.1 A.6.

As discussed in Section 5.b of this review, the facility has demonstrated a large margin of compliance with the sulfuric acid emission limits, and an April 5, 2023 memo from Steve Hall indicates that the SSCB supports the facility's request for reduced testing frequency for sulfuric acid mist from the sulfuric acid plants. This permit condition will be revised to reduce the stack testing requirement from annually to once every three years.

7. NSPS, NESHAP, PSD, and CAM Applicability

A. New Source Performance Standards

The Phosphate Rock Calciners are not subject to an NSPS that is affected by this modification.

The Nos. 5, 6, and 7 Sulfuric Acid Plants are subject to sulfuric acid mist standards under NSPS Subpart H. The current permit requires annual performance tests for sulfuric acid mist under 15A NCAC 02D .0524. However, NSPS Subpart H only requires an initial performance test per 40 CFR 60.8. PCS Phosphate has requested a reduction in testing frequency from annually to once every three years. This request has been reviewed and discussed in Sections 5 and 6 above. DAQ has agreed to allow the reduction of testing frequency for sulfuric acid mist in the Sulfuric Acid Plants. Therefore, Section 2.1.1 A.4 of the permit will be modified to reduce the testing frequencies for sulfuric acid mist.

B. National Emission Standards for Hazardous Air Pollutants

The Sulfuric Acid Plants are not subject to a NESHAP that is affected by this modification.

The Phosphate Rock Calciners are subject to a NESHAP, as implemented in 15A NCAC 02D .1111: Phosphoric Acid Manufacturing NESHAP (40 CFR Part 63, Subpart AA). PCS Phosphate has requested to modify the testing requirement for PM/PM-10, fluorides, and mercury such that only two calciners will be tested each year as representative of all six. This request has been reviewed and discussed in Sections 5 and 6 above. DAQ has agreed to allow the reduction of testing frequencies for PM/PM-10, fluorides, and mercury in the Phosphate Rock Calciners. Therefore, Section 2.1.2 A.5 of the permit will be modified to reduce the testing frequencies for the above pollutants.

C. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

The current permit contains several PSD conditions, including avoidance conditions under 15A NCAC 02Q .0317, PSD under 15A NCAC 02D .0530, as well as conditions under 02D .0530(u) for use of projected actual emissions to avoid applicability of requirements of PSD.

The only PSD condition that is affected by this modification is for the No. 7 Sulfuric Acid Plant which is subject to BACT limits under 02D .0530 for NO_X and sulfuric acid mist. No changes to the BACT limits are being made under this permit modification. The Permittee has requested removal of the NOx testing requirements and reduction in frequency of the sulfuric acid mist testing requirements. These requests have been reviewed and discussed in Section 5 and 6 above. DAQ has agreed to remove the NOx testing requirements and reduce the frequency of the sulfuric acid mist testing requirements. Therefore, Section 2.1.1 A.4 of the permit will be modified to reduce/remove the above testing requirements.

D. Compliance Assurance Monitoring

At the last renewal, CAM applicability was determined for the entire facility (Permit No. 04176T68, issued December 22, 2022). The proposed modifications do not increase emissions for any PSEUs and therefore, a revised CAM analysis is not required.

8. Facility-Wide Air Toxics

PCS Phosphate is subject to Air Toxics under 15A NCAC 02D .1100. According to 15A NCAC 02Q .0706 for modifications, owners and operators are required to "…submit a permit application to comply with 15A NCAC 02D .1100 if the modification results in: (1) a net increase in emissions or ambient concentration of any toxic air pollutant that the facility was emitting before the modification; or (2) emissions of any toxic air pollutant that the facility was not emitting before the modification if such emissions exceed the levels contained in Rule .0711…." As discussed in Sections 4, 5, and 6 above, the purpose of the proposed permit modifications was to add sulfuric acid loading for trucks to the existing emission source (ID No. I-SAL) and to reduce testing requirements for several sources (Calciners and Sulfuric Acid Plants). No changes in toxic emissions, including sulfuric acid, are expected with these modifications. Since the sources are not being modified (i.e., no physical change or change in the method of operation), no changes to the permit will be required in association with this permitting action.

9. Facility Emissions Review

The table above (in the review summary) represents the criteria pollutant (plus total HAP) from the latest available reviewed facility emissions inventories (CY2017 - 2021).

10. Facility Compliance Status

DAQ has reviewed the compliance status of this facility. The most recent full facility-wide inspection, conducted on April 28, 2023 by Robert Bright of the Washington Regional Office, appears to indicate that the facility was operating in compliance at the time of the inspection. Moreover, the facility responsible official has certified compliance with all applicable requirements through completion of form E5.

11. Draft Permit Review Summary

A copy of the draft permit was submitted to PCS and to WaRO on May 23, 2023.

12. Public Notice/EPA Review

Pursuant to 15A NCAC 2Q .0521, a notice of the DRAFT Title V Permit shall be made. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA.

Public Notice of the DRAFT Title V Permit ran from XXXXX XX, 2023 to XXXXXX XX, 2023.

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXXX XX, 2023 to XXXXX XX, 2023.

13. Conclusions, Comments, and Recommendations

PE Seal

Pursuant to 15A NCAC 2Q .0112 "Application requiring a Professional Engineering Seal," a professional engineer's seal (PE Seal) is required to seal technical portions of air permit applications for new sources and modifications of existing sources as defined in Rule .0103 of this Section that involve:

(1) design;
(2) determination of applicability and appropriateness;

(3) or determination and interpretation of performance; of air pollution capture and control systems.

A professional engineer's seal (PE Seal) was not required for this permit application.

Zoning

The PCS Phosphate facility is located in an area without zoning so is subject to 15A NCAC 02Q .0113. Since the facility is not expanding operations with this permit application, an affidavit and proof of publication that the legal notice required pursuant to 15A NCAC 02Q .0113(b) is not required.

Recommendations

This permit modification application has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility appears to be complying with all applicable requirements. This permit engineer recommends issuance of Permit No. 04176T69.

Comment from PCS Phosphate

"We only have one general comment on the permit. We would like to request that the DAQ remove the parenthetical "36 months" after the three years, so that it allows testing anytime within the calendar year. That is the way the compliance section has typically interpreted our "annual" performance testing requirements, which provides a sufficient backstop (i.e., the end of the calendar year) to prevent excessive passage of time between tests. In addition, it is very important to us that we test by calendar year for these additional reasons:

1. Despite a reduction in the number of tests allowed by this permit modification, we will still have extensive stack testing requirements at the facility with at least 28 to 34 tests per year, which is far more than any other facility located in the state.
2. Each year, there is extensive coordination between Operations, Engineering and Maintenance, as well as crane operators, our internal testing group and an external testing contractor to develop a test schedule. We typically schedule tests within the same timeframes each year based on past history and operating/maintenance schedules, but there are a number of unanticipated operational, maintenance and even weather-related issues that can lead to test postponement. Because we have tests already lined up in succession, it can be extraordinarily difficult to reschedule tests without causing cascading disruptions to our test schedule and these difficulties can be further compounded by internal and external staffing issues due to other commitments. Due to all these considerations, to ensure that we can confidently meet a 36 month clock every year for every emission source for which 36 month testing is required, tests would repeatedly have to be moved at least several months in advance of a fixed 36-monthe time period, which diminishes the value of the time extension. As the acceleration of testing would happen year after year, this would inevitably create substantial logistical issues, as other tests for other sources are scheduled at similar dates each year.
3. Not only are there logistical constraints that we incorporate into our annual test plans based on operating and maintenance schedules, but we are also scheduling in a manner that will protect the safety of our workers. For instance (and this is just one example), calciner testing can be physically dangerous during the hot summer months due to not only the ambient hot conditions of our coastal environment, but also the temperatures near the large, hot stack and proximity of the test ports to the stack. Accordingly, we attempt to test at least two calciners each spring, attempting to work them in among a heavy test schedule. Occasionally, testing cannot be conducted as planned due to operational issues or weather conditions. Similar to the issues we face in #2 above, if we are continually pulling forward scheduling for testing with enough buffer to ensure we meet a strict 36-month requirement, we will inevitably be facing either accelerating certain test schedules so far in advance to avoid testing under adverse weather conditions that it substantially diminishes the value of the time extension. "

DAQ Response: Agreed with applicant. The permit is consistently written with testing requirements given on a calendar year basis. All prior testing requirements for the calciners and sulfuric acid plants were given on a calendar year basis as well. The permit will be revised to remove the 36 month specifications.

Attachment 1: SSCB memo

DIVISION OF AIR QUALITY
Technical Services Section
217 West Jones Street / 1641 Mail Service Center
Raleigh, NC 27699-1641

April 5, 2023

MEMORANDUM

TO: Mark Cuilla, Title V Permitting Section Chief

FROM: Steve Hall, Technical Services Section Chief SGH

SUBJECT: **Review of Request for Reduced Testing Frequencies**
PCS Phosphate Company, Inc.
Aurora, Beaufort County, North Carolina
Facility ID No. 0700071; Current Air Permit No. 04176T68

On February 8, 2023, Betty Gatano, formerly of your staff, forwarded to me a permit application (0700071.22E) submitted to the Division of Air Quality (DAQ) by PCS Phosphate Company – Aurora (PCS Phosphate) on September 28, 2023. This permit application was essentially a request to reduce the emissions testing frequencies defined in the facility's current air permit for the three sulfuric acid plants and six calciners for certain pollutants based on the results of multiple emission tests on these emission sources over the last several years. The company also referenced United States Environmental Protection Agency (US EPA) guidance for waiving certain stack testing requirements under federal regulations for identical emission sources that meet specific criteria.

In some cases, PCS Phosphate requested that the frequency of certain testing requirements in their air permit be reduced and in other cases eliminated entirely. For the calciners, the company requested that two calciners be tested every year as representative of all six calciners. Section VII.2 of the US EPA's April 27, 2009, *Clean Air Act National Stack Testing Guidance* states that a performance test waiver for identical emissions units may be appropriate when the following conditions are met:

1. the units are located at the same facility;
2. the units were produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;
3. the units are operated and maintained in a similar manner; and
4. the EPA or delegated agency, based on documents submitted by facility:
    a. determines that the margin of compliance for the identical units tested is significant and can be maintained on an ongoing basis; or
    b. determines based on a review of sufficient emission data that, though the margin of compliance is not substantial, other factors allow for the determination that the variability of emissions for identical tested units is low enough for confidence that the untested unit(s) will be in compliance. These factors may include, but are not limited to, the following:
        i. historical records at the tested unit showing consistent/invariant loads;
        ii. fuel characteristics yielding low variability and therefore assurance that the emissions will be consistent and below allowable levels; and
        iii. statistical analysis of a robust emissions data set demonstrates sufficiently low variability to convey assurance that the margin of compliance, though small, is reliable.

The Stationary Source Compliance Branch (SSCB) has reviewed PCS Phosphate's request and agree that the testing frequencies for the three sulfuric acid plants (Permit ID Nos. S-5, S-6, and S-7) and six calciners (Permit ID Nos. 339-051, 339-052, 339-053, 339-054, 339-055, and 339-056) at the Aurora facility can be reduced or eliminated as detailed below. All specific condition references are from Air Permit No. 04176T68.

- Specific Condition 2.1.1.A.2.b. requires once every five testing for nitrogen oxide (NOx) emissions from sulfuric acid plants S-5 and S-6 pursuant to 15A NCAC 02D .0519.
    - Based on the test results dating back to 1996 which have consistently demonstrated a large margin of compliance with the applicable emission limit, the company requests that this testing requirement be eliminated.
        - SSCB agrees that this testing requirement can be removed from the permit.
- Specific Conditions 2.1.1.A.2.c. and 2.1.1.A.4.c. require annual testing for NOx emissions from sulfuric acid plant S-7 pursuant to 15A NCAC 02D .0519 and 15A NCAC 02D .0530.
    - Based on the annual test results dating back to 2011 which have consistently demonstrated a large margin of compliance with the applicable emission limits, the company requests that this testing requirement be eliminated.
        - SSCB agrees that this testing requirement can be removed from the permit.
- Specific Conditions 2.1.1.A.3.f. and 2.2.A.1.c. require annual testing for sulfuric acid mist (H_2SO_4) emissions from sulfuric acid plants S-5, S-6, and S-7 pursuant to 15A NCAC 02D .0524, 40 CFR Part 60, Subpart H, and 15A NCAC 02D .1100. Specific Condition 2.1.1.A.4.c. also requires annual testing for sulfuric acid mist (H_2SO_4) emissions from sulfuric acid plant S-7 pursuant to 15A NCAC 02D .0530.
    - Based on the annual test results dating back to 2011 which have generally demonstrated a significant margin of compliance with the applicable emission limits (especially over the last five years), the company requests that this testing requirement be reduced to once every three years. [Note: The Proposed Frequency in Table 1 of the company's request mistakenly requested a new frequency of once every five years instead of once every three years as specified in the request narrative.]
        - SSCB agrees that the testing frequency for these requirements can be reduced to once every three years.
- Specific Condition 2.1.2.A.1.c. requires annual testing for total particulate matter (PM) and particulate matter less than 10 microns (PM_{10}) emissions from calciners 339-051, 339-052, 339-053, 339-054, 339-055, and 339-056 pursuant to 15A NCAC 02D .0501(c).
    - Based on the annual test results dating back to 2011 which have consistently demonstrated a large margin of compliance with the applicable emission limit, the company requests that this testing requirement be reduced to testing two calciners annually as representative of all six calciners.
        - SSCB agrees that the testing frequency for this requirement can be reduced to testing two calciners annually as representative of all six calciners with all calciners being testing at least once every three years as part of the testing cycle.
- Specific Condition 2.1.2.A.5.h. requires annual testing for PM, total fluorides, and mercury emissions from calciners 339-051, 339-052, 339-053, 339-054, 339-055, and 339-056 pursuant to 15A NCAC 02D .1111 and 40 CFR Part 63 Subpart AA.
    - Based on the annual test results dating back to 2011 for PM and 2016 total fluorides and mercury which have demonstrated a significant margin of compliance for PM and a reasonable margin of compliance for total fluorides and mercury given the number of data points, the company requests that this testing requirement be reduced to testing two

calciners annually as representative of all six calciners. The company also points out that the mercury emission limit in 40 CFR Part 63 Subpart AA was established based on historical emissions testing data from the Aurora facility since this facility is the only one in the nation subject to this maximum achievable control technology (MACT).

- SSCB agrees that the testing frequency for these requirements can be reduced to testing two calciners annually as representative of all six calciners such with all calciners being testing at least once every three years as part of the testing cycle.

Specific Permit Condition 2.1.2.A.3 does not explicitly require emissions testing to demonstrate compliance with the projected actual emissions for the six calciners established pursuant to 15A NCAC 02D .0530(u). However, if annual emissions testing is necessary to ensure compliance with the projected actual emissions for PM and PM_{10}, the permit engineer may want to consider keeping the annual testing requirement for these pollutants in Specific Condition 2.1.2.A.1.c. However, if PCS Phosphate's proposal of testing two calciners every year with all calciners being tested at least once every three years for PM and PM_{10} is sufficient for calculation of actual emissions per 15A NCAC 02D .0530(u), then reducing the testing frequency in Specific Condition 2.1.2.A.1.c is still supported.

PCS Phosphate also proposed "trigger" thresholds for the reduced testing frequencies that would require the facility to resume annual testing on the applicable emission sources if the threshold is ever exceeded for a pollutant in any individual test. The proposed "trigger" threshold of 80% of the applicable standard for all emission sources and pollutants except for mercury emissions from the calciners, which would have a trigger" threshold of 90%. The rationale for the higher "trigger" threshold in this one case was related to how the mercury emissions standard was set in 40 CFR Part 63 Subpart AA, the log normal distribution of calciner emissions with more values toward the upper end of the range than a typical data set, and the nature of calciner mercury emissions being directly related to the ore composition. SSCB agrees that 80% is a good "trigger" threshold in general to include in the facility's permit to require the facility to resume annual testing and that 90% is a good "trigger" threshold for the specific case of mercury emissions testing on the calciners.

In summary, SSCB agrees that the large amount of emissions test data collected by PCS Phosphate over the last decade supports their request for reduced testing frequencies for certain pollutants from the sulfuric acid plants and calciners. We also have determined that the company's proposal to test two calciners on an annual basis for certain pollutant as representative of all six calciners at the facility is consistent with US EPA's April 27, 2009, *Clean Air Act National Stack Testing Guidance*. Finally, we agree with the company's proposed testing frequencies and "trigger" thresholds are reasonable and recommend that DAQ incorporate them into the facility's Title V permit.

If you have any questions, please feel free to contact me or Taylor Fort of my staff.

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Laserfiche (0700071)

Attachment 2: Calciner stack test results summary

Summary of Calciner PM Stack Test Results Compared to NESHAP Limits (Table 4 of the application)

Calciner	Emission Rate (g/dscf)												Limit[1]
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
1	0.0031	0.0027	0.0097	0.0110	0.0124	0.0108	0.005	0.003	0.003	0.011	0.005	Pending	0.08
2	0.0044	0.0031	0.0141	0.0035	0.0080	0.0075	0.006	0.005	0.004	0.004	0.006	Pending	0.08
3	0.0022	0.0018	0.0035	0.0049	0.0053	0.0124	0.007	0.004	0.005	0.004	0.005	Pending	0.08
4	0.0044	0.0102	0.0093	0.0035	0.0062	0.0065	0.005	0.005	0.008	0.007	0.005	0.011	0.08
5	0.0168	0.0044	0.0057	0.0075	0.0159	0.0109	0.011	0.006	**0.023***	0.007	0.006	0.003	0.08
6	0.0053	0.0027	0.0080	0.0084	0.0080	0.0122	0.003	0.008	0.005	0.016	0.011	0.007	0.08

Calciner	Percent of Emission Limit											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1	3.9	3.3	12.2	13.8	15.5	13.5	6.3	3.8	3.8	13.8	6.3	Pending
2	5.5	3.9	17.7	4.4	9.9	9.4	7.5	6.3	5.0	5.0	7.5	Pending
3	2.8	2.2	4.4	6.1	6.6	15.5	8.8	5.0	6.3	5.0	6.3	Pending
4	5.5	12.7	11.6	4.4	7.7	8.1	6.3	6.3	10.0	8.8	6.3	13.8
5	21.0	5.5	7.2	9.4	19.9	13.6	13.8	7.5	**28.8***	8.8	7.5	3.8
6	6.6	3.3	9.9	10.5	9.9	14.0	3.8	10.0	6.3	20.0	14.1	8.8

Calciner	Statistical Summary		
	Average	Low	High
1	8.7%	3.3%	15.5%
2	7.5%	3.9%	17.7%
3	6.3%	2.2%	15.5%
4	8.4%	4.4%	13.8%
5	12.2%	3.8%	**28.8%***
6	9.8%	3.3%	20.0%

*Bolded value represents the highest value observed.

Summary of Daily Calciner PM-10 Emissions from Stack Testing Compared to Daily Emission Limits (Table 5 of the application)

Calciner	Emission Rate (lb/day)											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1	60.48	43.68	48.91	62.62	45.64	45.65	55.42	71.45	22.66	92.83	43.68	Pending
2	51.61	46.80	49.90	52.08	50.60	52.34	98.00	40.10	29.38	41.47	55.63	Pending
3	42.72	29.76	45.00	75.70	74.40	74.42	70.10	34.51	42.89	38.76	38.69	Pending
4	121.20	43.92	40.88	90.60	98.60	59.28	168.90	18.72	60.48	54.05	134.11	227.28
5	173.28	93.60	114.24	89.94	149.50	74.11	102.50	54.48	187.66	54.65	51.96	20.66
6	111.12	56.64	71.52	93.58	77.10	61.35	75.60	106.61	43.99	132.17	45.34	139.92
Total	560.4	314.4	370.5	464.5	495.8	367.2	**570.5***	325.9	387.0	413.9	369.4	Pending
Limit	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992
% of Limit	28.1%	15.8%	18.6%	23.3%	24.9%	18.4%	**28.6%***	16.4%	19.4%	20.8%	18.5%	Pending

Statistical Summary		
Average	Low	High
21.2%	15.8%	28.6%

*Bolded value represents the highest value observed.

Summary of Calciner Fluoride Stack Test Results Compared to NESHAP Limits (Table 6 of the application)

Calciner	Emission Rate (lb/ton wet feed)							Limit
	2016	2017	2018	2019	2020	2021	2022	
1	0.0004	0.0002	0.0008	0.0002	0.0002	0.0003	Pending	0.0009
2	0.0005	0.0003	0.0007	0.0004	0.0003	0.0004	Pending	0.0009
3	0.0004	0.0003	0.0005	0.0004	0.0002	0.0005	Pending	0.0009
4	0.0004	0.0003	0.0005	**0.00093***	0.0003	0.0003	0.0004	0.0009
5	0.0003	0.0004	0.0004	0.0005	0.0007	0.0003	0.0004	0.0009
6	0.0004	0.0003	0.0007	0.0004	0.0004	0.0003	0.0004	0.0009

Calciner	Percent of Emission Limit						
	2016	2017	2018	2019	2020	2021	2022
1	44.4	22.2	88.9	22.2	22.2	33.3	Pending
2	55.6	33.3	77.8	44.4	33.3	44.4	Pending
3	44.4	33.3	55.6	44.4	22.2	55.6	Pending
4	44.4	33.3	55.6	**103.3***	33.3	33.3	44.4
5	33.3	44.4	44.4	55.6	77.8	33.3	44.4
6	44.4	33.3	77.8	44.4	44.4	55.6	44.4

Calciner	Statistical Summary		
	Average	Low	High
1	38.9%	22.2%	88.9%
2	48.1%	33.3%	77.8%
3	42.6%	22.2%	55.6%
4	49.7%	33.3%	**103.3%***
5	47.6%	33.3%	77.8%
6	49.2%	33.3%	77.8%

*Bolded value represents the highest value observed.

Summary of Calciner Mercury Stack Test Results Compared to NESHAP Limits (Table 7 of the application)

Calciner	Emission Rate (mg/dscm @3% O_2)							Limit
	2016	2017	2018	2019	2020	2021	2022	
1	0.149	0.14	0.131	0.164	0.183	0.161	Pending	0.23
2	0.144	0.09	0.159	0.167	0.147	0.132	Pending	0.23
3	0.157	0.11	0.132	0.172	0.163	0.190	Pending	0.23
4	0.146	0.12	0.148	**0.197***	0.166	0.152	0.141	0.23
5	0.125	0.17	0.123	0.166	0.144	0.137	0.127	0.23
6	0.140	0.13	0.149	0.183	0.158	0.180	0.138	0.23

Calciner	Percent of Emission Limit						
	2016	2017	2018	2019	2020	2021	2022
1	64.8	60.9	57.0	71.3	79.6	70.0	Pending
2	62.6	39.1	69.1	72.6	63.9	57.4	Pending
3	68.3	47.8	57.4	74.8	70.9	82.6	Pending
4	63.5	52.2	64.3	**85.7***	72.2	66.1	61.3
5	54.3	73.9	53.5	72.2	62.6	59.6	55.2
6	60.9	56.5	64.8	79.6	68.7	78.3	60.0

Calciner	Statistical Summary		
	Average	Low	High
1	67.2%	57.0%	79.6%
2	60.8%	39.1%	72.6%
3	67.0%	47.8%	82.6%
4	66.5%	52.2%	**85.7%***
5	61.6%	53.5%	73.9%
6	67.0%	56.5%	79.6%

*Bolded value represents the highest value observed.

Attachment 3: Sulfuric acid plant stack test results summary

Summary of Sulfuric Acid Plant Stack Test Results Compared to Sulfuric Acid Mist Limits (Table 2 of the application)

Plant	Emission Rate (lb/ton of 100% H2SO4 produced)												NSPS and/or BACT Limit
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
5	0.08	0.04	0.05	**0.11***	0.04	0.04	0.035	0.034	0.03	0.051	0.024	0.041	0.15 (NSPS)
6	0.04	0.07	0.08	0.074	0.07	0.03	0.042	0.03	0.063	0.034	0.04	0.034	0.15 (NSPS)
7	0.03	0.036	0.045	**0.054***	0.022	0.044	0.03	0.03	0.028	0.031	0.043	0.017	0.075 (BACT)

Plant	Percent of Emission Limit											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
5	53.3	26.7	33.3	**73.3***	26.7	26.7	23.3	22.7	20.0	34.0	16.0	27.3
6	26.7	46.7	53.3	49.3	46.7	20.0	28.0	20.0	42.0	22.7	26.7	22.7
7	40.0	48.0	60.0	**72.0***	29.3	58.7	40.0	40.0	37.3	41.3	57.3	22.7

Plant	Emission Rate (lb/hr)												02D .1100 Limit[1]
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
5	9.93	5.45	7.00	7.64	4.48	5.66	4.52	9.93	4.11	6.19	3.47	4.36	0.15
6	6.83	**11.32***	10.69	10.8	9.98	4.86	6.33	4.22	8.32	4.13	4.86	4.14	0.15
7	5.87	7.03	8.80	5.14	4.50	9.62	5.87	5.64	5.21	5.37	7.26	3.25	0.075

Plant	Percent of Emission Limit											
	2011	2012	2013	2014[2]	2015	2016	2017	2018	2019	2020	2021	2022
5	60.2	33.0	42.4	46.3	27.2	34.3	27.4	60.2	24.9	37.5	21.0	26.4
6	39.3	**65.1***	61.4	62.1	57.4	27.9	36.4	24.3	47.8	23.7	27.9	23.8
7	34.7	41.6	52.1	30.4	26.6	56.9	34.7	33.4	30.8	31.8	43.0	19.2

Plant	Statistical Summary – NSPS/BACT Limits		
	Average	Low	High
5	31.9%	16.0%	**73.3%***
6	33.7%	20.0%	53.3%
7	45.6%	22.7%	**72.0%***

Plant	Statistical Summary – 02D .1100 Limits		
	Average	Low	High
5	36.7%	21.0%	60.2%
6	41.4%	23.7%	**65.1%***
7	36.3%	19.2%	56.9%

*Bolded value represents the highest value observed.

[1] 02D .1100 limitations are specified for both hourly and daily mist emissions. However, since the daily limits are exactly 24 times greater than the hourly emission rates, the statistics for both hourly and daily will be identical.

[2] The Plant 5 hourly emission rate presented for 2014 is the average of the first two hourly runs of 7.78 and 7.51 lb/hr. The third run of 30.18 lb/hr is an outlier believed to be attributable to probe contamination from introduction through the stack/port walls.

Summary of Sulfuric Acid Plant Stack Test Results Compared to NOx Limits (Table 3 of the application)

Plant	Emission Rate (lb/ton of 100% H2SO4 produced)					SIP Limit
	1996	2006	2011	2016	2021	
5	0.12	0.12	**0.13***	[redacted]	0.07	5.8
6	[redacted]			**0.13***	[redacted]	5.8

Plant	Percent of Emission Limit				
	1996	2006	2011	2016	2021
5/6	2.1	2.1	**2.2***	**2.2***	1.2

Plant	Statistical Summary		
	Average	Low	High
5/6	2.0%	1.2%	**2.2%***

Plant	Emission Rate (lb/ton of 100% H2SO4 produced)												SIP Limit	BACT Limit
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
7	0.1030	0.0780	0.0760	0.0640	0.0750	0.09	0.052	0.05	0.07	0.08	**0.146***	0.082	5.8	0.6

Plant 7	Percent of Emission Limit											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SIP	1.8	1.3	1.3	1.1	1.3	1.6	0.9	0.9	1.2	1.4	**2.5***	1.4
BACT	17.2	13.0	12.7	10.7	12.5	15.0	8.7	8.3	11.7	13.3	**24.3***	13.7

Plant 7	Statistical Summary		
	Average	Low	High
SIP	1.4%	0.9%	**2.5%***
BACT	13.4%	8.3%	**24.3%***

*Bolded value represents the highest value observed.