Statement of Basis

Tier I Operating Permit No. T1-2014.0001
Project ID 62458

P4 Production LLC
Soda Springs, Idaho

Facility ID 029-00001

Final

September 30, 2020

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Permit Writer

The purpose of this Statement of Basis is to set forth the legal and factual basis for the Tier I operating permit terms and conditions, including references to the applicable statutory or regulatory provisions for the terms and conditions, as required by IDAPA 58.01.01.362

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1. ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	continuous emission monitoring system
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring system
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
MRRR	Monitoring, Recordkeeping and Reporting Requirements
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PC	permit condition
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers

PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
QIP	quality improvement plan
RICE	reciprocating internal combustion engines
RMP	risk management plan
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T1	Tier I operating permit
T2	Tier II operating permit
TAP	toxic air pollutants
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compound

2. INTRODUCTION AND APPLICABILITY

P4 Production LLC is a manufacturer of elemental phosphorus, and is located at 1853 Highway 34 North, Soda Springs, Idaho. The facility is classified as a major facility, as defined by IDAPA 58.01.01.008.10.c, because it emits or has the potential to emit sulfur dioxide and carbon monoxide above the major source threshold of 100 tons-per-year.

IDAPA 58.01.01.362 requires that as part of its review of the Tier I application, DEQ shall prepare a technical memorandum (i.e. statement of basis) that sets forth the legal and factual basis for the draft Tier I operating permit terms and conditions including reference to the applicable statutory provisions or the draft denial. This document provides the basis for the draft Tier I operating permit for P4 Production LLC.

3. FACILITY INFORMATION

3.1 Facility Description

P4 Production operates a phosphorus production facility in Soda Springs. Coke, quartzite, and phosphate ore are brought to the site by truck or railcar. The coke and quartzite are dried, if needed, and screened. Nodules are generated by processing phosphate ore in a rotary kiln. The kiln's exhaust is routed through four parallel hydrosonic scrubbing systems. The coke, quartzite, and nodules are then combined and heated in three electric furnaces. Particulate emissions from the furnaces are controlled by electrostatic precipitators. The cleaned gases are sent through water spray condensers where the gases are cooled, condensing the phosphorus, which is then pumped to settling/storage tanks. The stored phosphorus is loaded into water-sealed railroad cars for shipment. Slag and ferrophosphorus from the furnaces are stockpiled on site.

3.2 Facility Permitting History

Tier I Operating Permit History - Current 5-year permit term February 11, 2016 to February 11, 2021.

The following information is the permitting history of this Tier I facility during the current five-year permit term which is from February 11, 2016 to February 11, 2021. This information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

November 5, 2019 T1-2014.0001, added Federal requirements for engines (S by this permit action)

4. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

Application Scope

This Tier I permit is a significant permit modification. The applicant has requested to co-process a PTC and Tier I operating permit in accordance with IDAPA 58.01.01.209.05.b.

The applicant has proposed to:

- Add 3 new CO baghouses at the furnaces with updated ventilation systems to replace the existing CO baghouses; and
- Add 3 new furnace burden dust handling baghouses and remove the existing main furnace baghouse.

4.1 Application Chronology

February 13, 2020	DEQ received an application and an application fee.
March 24, 2020	DEQ determined that the application was incomplete.
April 24, 2020	DEQ received supplemental information from the applicant.
May 21, 2020	DEQ determined that the application was complete,
July 20, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
July 22, 2020	DEQ made available the draft permit and statement of basis for applicant review.
Aug. 13 – Sept. 14, 2020	DEQ provided a public comment period on the proposed action.
September 16, 2020	DEQ provided the proposed permit and statement of basis for EPA review.
September 30, 2020	DEQ issued the final permit and statement of basis.

5. EMISSIONS UNITS, PROCESS DESCRIPTION(S), AND EMISSIONS INVENTORY

This permit action is solely to change the air pollution control equipment used to control particulate matter emissions from the furnaces burden handling equipment. Associated emission limits, operating requirements and monitoring requirements have been added to the underlying permit to construct and are being added to the Tier I operating permit by this action.

Table 5.1 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION

Emissions Unit Description	Control Device
417 Belt unloading and belt sweep	No. 7 Stocking baghouse
672 Distributor	
713 Belt loading, unloading and belt sweep	
714 Belt loading, unloading and belt sweep	
Bins 701-706	No. 7 CO baghouse
416 Belt unloading and belt sweep	No. 8 Stocking baghouse
421 Distributor	
417 Belt loading	
418 Belt loading, unloading and belt sweep	
419 Belt loading	
824 Distributor	
824 E Belt loading, unloading and belt sweep	
824 W Belt loading, unloading and belt sweep	
Hoppers 1-12	
Bins 801-812	No. 8 CO baghouse
419 Belt loading unloading and belt sweep	No. 9 Stocking baghouse
420 Distributor	
420 West Belt loading, unloading and belt sweep	
420 East Belt loading, unloading and belt sweep	
Bins 901-912	No. 9 CO baghouse

5.2 Emissions Inventory

Table 5.2 summarizes the emissions inventory for the new baghouses. All values are expressed in units of tons-per-year and represent the facility's potential to emit. Potential to emit is defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air 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 state or federally enforceable.

The emissions estimates are based on an emission concentration of 0.002 grains per dry standard cubic foot. See Appendix A for calculation Details.

Table 5.2 EMISSIONS INVENTORY - POTENTIAL TO EMIT (T/yr)

Source Description	$PM_{10}/PM_{2.5}$ T/yr
CO Baghouse No. 7	0.46
CO Baghouse No. 8	0.91
CO Baghouse No. 9	0.91
Furnace Stocking Baghouse No.7	1.47
Furnace Stocking Baghouse No.8	2.69
Furnace Stocking Baghouse No.9	1.42
Total Emissions	**7.86**

6. EMISSIONS LIMITS AND MRRR

This section contains the applicable requirements for this T1 facility that are changed by this permit action.

Changed Permit Conditions

Table 2.1 has been updated to add three furnace stocking baghouses and remove the main stock baghouse to reflect the changes to be made by the facility.

Section 5, the process description for the scaleroom processing and furnace stocking has been updated to remove the main stock baghouse and add three new furnace stocking baghouses.

Table 5.1 has been updated to accurately describe which emissions units vent to which baghouse.

Permit Condition 5.1 and Table 5.3 have been updated to include the new baghouse emissions limits. The emissions limits are based the emission inventory provided by the applicant and used in the air pollution dispersion model. Permit Condition 5.4 has been divided into two sections, 5.4.1 and 5.4.2. Permit Condition 5.4.1 was updated to clarify that the existing requirements only apply to the coke handling baghouse and the scaleroom baghouse. Permit Condition 5.4.2 is a new permit condition and only applies to the 3 new CO baghouses and 3 new furnace stocking baghouses. The new requirement is DEQ standard permit condition for baghouses.

Permit Conditions 5.7, 5.8, 5.9, 5.12, and 5.13. These new permit conditions are intended to assure that there is no additional air flow at the stocking tubes, and therefore no additional CO emissions from the furnace stocking tubes to the new CO baghouses. The static pressure at the tubes shall not be less than the static pressure that existed prior to the addition of the new ventilation system. These permit conditions require that the diameter of the stocking tubes remain the same before and after the upgrades and that the source monitor the static pressure before and after the upgrades. The permittee requested that the static pressure limitation be based on an average value and this request was granted.

Permit Condition 5.14 requires an initial source test on each new baghouse within 180 days of startup. The source tests are warranted as the emission concentration (0.002 grains per dscf) used to calculate emissions rates is very low. Future testing can be required by the Tier I permit renewal considering the results of the initial performance tests and the compliance assurance monitoring provisions that are incorporated into the Tier I permit at the time of renewal.

7. REGULATORY REVIEW

The only newly applicable federal regulation is the requirement to incorporate compliance assurance monitoring requirements for the new baghouse upon the renewal of the Tier I operations. For more details see the Statement of Basis for P-2012.0055 project 62391.

7.1 Attainment Designation (40 CFR 81.313)

The facility is located in Caribou County which is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_X, and Ozone. Reference 40 CFR 81.313.

7.2 CAM Applicability (40 CFR 64)

Based on the application the uncontrolled potential to emit particulate matter exceeds 100 tons per year for each of the new baghouses and since the baghouses have emission rate limits CAM applies. In accordance with 40 CFR 64.5(b) CAM will be required to be included in the renewed Tier I permit. The current permit will expire February 11, 2021.

8. PUBLIC COMMENT

As required by IDAPA 58.01.01.209.05.b a comment period will be made available to the public.

In addition to the public comment period, DEQ will also provide an opportunity for a public hearing for persons interested to appear and submit written or oral comments.

9. EPA REVIEW OF PROPOSED PERMIT

As required by IDAPA 58.01.01.366, DEQ provided the proposed permit to EPA Region 10 for its review and comment on September 16, 2020, via the online the Electronic Permit System (EPS). On September 24, 2020, EPA Region 10 responded to DEQ via e-mail indicating that there was no objection to issuance of the permit by DEQ.

Appendix A - Emissions Inventory

Table 2. MODELED EMISSIONS RATES FOR SIL ANALYSES – PROPOSED BAGHOUSES					
Source ID	**Flow Rate (dscfm)**	**Dust Loading (gr/dscfm)[a]**	**PM Potential to Emit**		
			(g/s)	**(lb/hr)**	**(tpy)**
F7DustBH	19,600	0.002	0.04	0.34	1.47
F7COBH	6,100	0.002	0.01	0.10	0.46
F8DustBH	35,900	0.002	0.08	0.61	2.69
F8COBH	12,200	0.002	0.03	0.21	0.91
F9DustBH	18,900	0.002	0.04	0.32	1.42
F9COBH	12,200	0.002	0.03	0.21	0.91
				Total	

a. From filter vendor warranty statement (Schenck Process LLC)

Appendix B - Facility Comments on Draft Permit

The following comments were received from the facility on July 31, 2020:

Facility Comment: Section 5 Summary Description: P4 requests inclusion of a heading above the paragraph on quartzite handling titled "Undried quartzite handling to screening and storage" to eliminate confusion associated with having a section on quartzite handling under a heading on coke handling.

DEQ Response: DEQ made this suggested change.

Facility Comment: Section 5.1: Previously provided baseline actual and potential to emit emissions were based on previous testing specific to Method 5 only. P4 has no stack test results for particulate emissions from the baghouses that include condensable particulate, as measured by Method 202. Consequently, P4 requests the inclusion of a conditional compliance schedule that clarifies that in the event the measured emissions from the compliance test performed in accordance with Section 5.14 exceed the limits in Section 5.1 due to the use of Method 202, P4 will be permitted to submit an application for an amendment to this permit based on the data gained from the compliance test.

DEQ Response: Appendix C of P4's April 23, 2020, PTC application, which includes the most recent emissions data provided by P4, includes back half emissions data. That data was used for air pollution dispersion modeling. The emissions rate limits for PM_{10} and $P_{2.5}$ include back half emissions by definition and during the source test that is required by the permit back half emissions will be required to be measured. If P4 violates the emission rate limits a permit amendment application may be submitted to change the allowable emissions rates to those measured during the test. That submittal will be required to have updated air pollution dispersion modeling that shows that the source does not cause or significantly contribute to a violation. DEQ does not include condition compliance schedule language in permits describing that the permit may be amended at future date based on a permit violation and has not included that language in this permit.

Facility Comment: Table 5.3: It appears that DEQ accidentally inserted the ton/year values for PM_{10}. The emissions limits for PM_{10} should be the same as the emissions limits for $PM_{2.5}$.

DEQ Response: DEQ has made the corrections to the PM_{10} emissions rate limits.

Facility Comment: Section 5.7: P4 requests the addition of a heading titled "Furnace CO Baghouse Operation" to increase clarity.

DEQ Response: This heading has been added to the permit as requested.

Facility Comment: Section 5.12: P4 requests the addition of a heading titled "Furnace CO Baghouse Monitoring" to increase clarity.

DEQ Response: This heading has been added to the permit as requested.