

Statement of Basis

**Permit to Construct No. P-2008.0050
Project ID 62707**

**High Desert Milk, Inc.
Burley, Idaho**

Facility ID 031-00034

Final

January 5, 2022

Kelli Wetzel
Permit Writer

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The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAA	Clean Air Act
CAS No.	Chemical Abstracts Service registry number
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GACT	Generally Available Control Technology
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
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
lb/qtr	pound per quarter
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
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
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
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit

PTE	potential to emit
RICE	reciprocating internal combustion engines
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
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
T2	Tier II operating permit
TAP	toxic air pollutants
U.S.C.	United States Code
VOC	volatile organic compounds
yd ³	cubic yards
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

The facility processes up to 5 million pounds of raw milk received by tanker truck per day, producing sweet cream, skim milk, and dried milk products. Milk will be processed in the natural gas-fired dryers to prepare dried milk products. Natural gas combustion products are exhausted through the baghouse stacks for Dryer 1, and are exhausted separately for Dryer 2. For each dryer, particulate emissions are split between two cyclone-and-baghouse sets in series (i.e., two sets per dryer) to recover milk powder products (including MPC70, MP80, and MPI). Emissions are recombined and exhausted in a single stack for Dryer 2, and are exhausted in separate stacks for Dryer 1. Product collected in the cyclones and baghouses is diverted to the fluid bed.

In one production line, the dried solids will be cooled in the fluid bed. Exhaust air from the fluid bed will pass through a baghouse (P102) and then be discharged. The powder from the fluid bed cooler will drop through an airlock, through a rotary sifter, and onto a conveyor for transfer to a storage silo. Exhaust from the silos passes through a baghouse (P103B) and then discharge to the atmosphere.

In a second production line, powder is transferred through one of two sifter accumulation hopper vacuum receivers. Powder from the silos is transported with a vacuum dense phase transport system to one sifter accumulation hopper. The sifter accumulation hopper has two vacuum receivers (small baghouses). Both baghouses vent outside the building through a common 6-inch diameter vent. Only one vacuum receiver is running at a given time (cycle back and forth). Only one bin vent is running at a given time.

The operating receiver delivers powder to one of three powder handling silos. Exhaust from the operating silo passes through a baghouse (POWDSILO) and then discharges to the atmosphere.

Milk powder products stored in the silos are packaged and shipped off-site.

Permitting History

The following 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 7, 2007	P-2007.0100, New milk processing facility, Permit status (S)
June 3, 2008	P-2008.0050, Replacement of the boilers and emergency generator engine, Permit status (S)
March 1, 2021	P-2008.0050, Install and operate a new dryer and associated heater, power handling system, and powder storage silos for a new product line to increase dried milk production, Permit status (A, but will become S upon issuance of this permit)

Application Scope

This PTC is for a modification at an existing Tier I facility to reclassify the source to become a minor facility based on a decrease in CO emissions. The applicant has proposed to incorporate a more accurate CO and NO_x emission factor for Dryer 2 based on manufacturer emissions specifications and emissions testing.

Application Chronology

September 27, 2021	DEQ received an application.
September 20, 2021	DEQ received an application fee.
October 27, 2021	DEQ determined that the application was complete.
November 29, 2021	DEQ made available the draft permit and statement of basis for peer and regional office review.
December 6, 2021	DEQ made available the draft permit and statement of basis for applicant review.

December 27, 2021

DEQ received the permit processing fee.

January 5, 2022

DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment
<u>Dryer 1 and associated heater</u> Emissions Unit Name: Skim Milk Dryer (P101) Manufacturer: C/E/Rogers Burner: Maxon Model: Crossfire Low NO _x Line Burner Max Capacity: 32.5 MMBtu/hr Operation: 8,760 hr/yr Fuel: natural gas	Dryer 1 Baghouses (P101A & P101B)
<u>Dryer 2 and associated heater</u> Emissions Unit Name: Skim Milk Dryer (DRYER2) Manufacturer: Relco Burner: Maxon (DRYER2HT) Model: Low NO _x Max Capacity: 26.0 MMBtu/hr Operation: 8,760 hr/yr Fuel: natural gas	Dryer 2 Baghouse (DRYER2) None (DRYER2HT)
<u>Boiler 1</u> Manufacturer: Superior Boiler Works Model: 4000 Maximum capacity: 33.48 MMBtu/hr Operation: 8,760 hr/yr Fuel: natural gas	None (P104)
<u>Boiler 2</u> Manufacturer: Superior Boiler Works Model: 4000 Maximum capacity: 33.48 MMBtu/hr Operation: 8,760 hr/yr Fuel: natural gas	None (P105)
<u>Fluid Bed</u> Manufacturer: C/E/Rogers Maximum capacity: 9,000 lb/hr	<u>Fluid Bed Baghouse (P102)</u> Manufacturer: C/E/Rogers Control Efficiency: PM/PM ₁₀ : 99.93%
<u>Powder Silo 1</u> Manufacturer: C/E/Rogers	<u>Powder Handling Baghouse (P103B)</u> Manufacturer: C/E/Rogers Control Efficiency: 98.4 % for PM/PM ₁₀
<u>Powder Silo 2</u> Manufacturer: Relco Model: Three, operated one at a time	<u>Powder Silo Baghouse (POWDSILO)</u> Manufacturer: Relco Control Efficiency: 99.0 % or better for PM/PM ₁₀
<u>Hopper Vacuum Receivers</u>	<u>Hopper Vacuum Receiver Baghouses (VACRCV)</u> Manufacturer: Relco Control Efficiency: 99.0 % or better for PM/PM ₁₀
<u>Emergency Generator</u> Manufacturer: Cummins Model: QST30-G5 Maximum capacity: 2.55 liters/cylinder Ignition: Compression Fuel: diesel	None

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit 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. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the facility in the previous permit, P-2008.0050, issued on March 1, 2021. The emission inventory has been updated (see Appendix A) to incorporate a. Manufacturer specific emission factors include a corrected emission factor for CO of 400 ppm at 3% oxygen. This yields a maximum CO emission rate of 7.59 lb/hr. Based on testing conducted at the facility in July of 2021, the maximum CO emission rate during testing was 4.37 lb/hr. The facility is proposing to use a CO emission rate of 4.75 lb/hr. Manufacturer specific emission factors also included a corrected emission factor for NO_x of 30 ppm at 3% oxygen or 0.94 lb/hr.

Pre-Project Potential to Emit

The following table presents the pre-project potential to emit for all criteria pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Dryer 1	4.60	20.15	0.02	0.08	1.46	6.42	11.90	52.20	0.18	0.76
Fluid Bed	1.08	4.73								
Powder Silo 1	0.12	0.50								
Boiler 1	0.25	1.10	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79
Boiler 2	0.25	1.10	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79
Emergency Generator	0.36	0.09	0.33	0.08	13.30	3.33	1.90	0.48	0.94	0.05
Dryer 2	8.82	38.63								
Dryer 2 Heater	0.20	0.87	0.02	0.07	1.57	6.88	20.98	91.89	0.14	0.63
Powder Silo 2	0.0036	0.016								
Hopper Vacuum Receiver	0.0036	0.016								
Pre-Project Totals	15.69	67.20	0.41	0.41	23.03	45.97	40.40	169.19	1.62	3.02

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Dryer 1	4.60	20.15	0.02	0.08	1.46	6.42	11.90	52.20	0.18	0.76
Fluid Bed	1.08	4.73								
Powder Silo 1	0.12	0.50								
Boiler 1	0.25	1.09	0.02	0.09	3.29	14.38	2.76	12.08	0.18	0.79
Boiler 2	0.25	1.09	0.02	0.09	3.29	14.38	2.76	12.08	0.18	0.79
Emergency Generator	0.36	0.09	0.33	0.08	13.30	3.33	1.90	0.48	0.94	0.05
Dryer 2	8.82	38.63								
Dryer 2 Heater	0.20	0.87	0.02	0.07	0.94	4.10	4.75	20.78	0.14	0.63
Powder Silo 2	0.0036	0.016								
Hopper Vacuum Receiver	0.0036	0.016								
Post Project Totals	15.69	67.18	0.41	0.41	22.28	42.61	24.07	97.62	1.62	3.02

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	15.69	67.20	0.41	0.41	23.03	45.97	40.40	169.19	1.62	3.02
Post Project Potential to Emit	15.69	67.18	0.41	0.41	22.28	42.61	24.07	97.62	1.62	3.02
Changes in Potential to Emit	0.00	-0.02	0.00	0.00	-0.75	-3.36	-16.33	-71.57	0.00	0.00

Post Project HAP and TAP Emissions

This project does not affect the HAP and TAP emissions for the facility. The facility remains a minor source of HAP. The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility.

Table 5 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (T/yr)
2-Methylnaphthalene	1.3E-05
3-Methylchloranthrene	9.8E-07
Acenaphthene	4.6E-07
Acenaphthylene	9.8E-07
Anthracene	1.3E-06
Arsenic	9.7E-05
Barium	2.1E-03
Benzene	1.1E-03
Benzo(a)anthracene	9.8E-07
Benzo(a)pyrene	6.5E-07
Benzo(b)fluoranthene	9.8E-07
Benzo(g,h,i)perylene	6.5E-07
Benzo(k)fluoranthene	9.8E-07
Beryllium	5.8E-06
Cadmium	5.3E-04
Chromium	6.8E-04
Cobalt	4.1E-05
Dibenzo(a,h)anthracene	6.5E-07
Dichlorobenzene	6.5E-04
Fluoranthene	1.6E-06
Fluorene	1.5E-06
Formaldehyde	4.1E-02
Hexane	9.8E-01
Indeno(1,2,3-cd)pyrene	9.8E-07
Lead Compounds	2.2E-04
Manganese	1.8E-04
Mercury Compounds	1.3E-04
Naphthalene	3.3E-04
Nickel	1.0E-03
Phenanthrene	9.3E-06
Pyrene	2.7E-06
Polycyclic Organic Matter	6.2E-06
Selenium	1.2E-05
Toluene	1.9E-03
Maximum Single HAP	0.98
Total	1.03

Ambient Air Quality Impact Analyses

There is not an increase of emissions and therefore an ambient impact analysis is not required for this permitting action.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Bingham County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 6 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM ₁₀	83.69	67.18	100	B
PM _{2.5}	83.69	67.18	100	B
SO ₂	1.77	0.41	100	B
NO _x	76.79	42.61	100	B
CO	105.92	97.62	100	SM80
VOC	3.02	3.02	100	B
HAP (single)	0.98	0.98	10	B
Total HAPs	1.03	1.03	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the corrected emission factors for Dryer 2. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

With the decrease in emission of CO due to a corrected emission factor, post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM₁₀, PM_{2.5}, SO₂, NO_x, CO, and VOC or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS, NESHAP, MACT/GACT Applicability (40 CFR 60, 61, & 63)

The purpose of this permit action is to incorporate a more accurate CO and NO_x emission factor for Dryer 2 based on manufacturer emissions specifications and emissions testing conducted by the facility. These permit revisions do not affect the applicability of any NSPS, NESHAP or MACT/GACT. The previous permitting action removed specific NSPS and NESHAP requirements due to the requirement of a Tier I permit action. With this permit issuance, the following NSPS and NESHAP requirements are incorporated back into the PTC.

- NSPS 40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Each boiler is an affected source (Boiler 1 and Boiler 2).

- NSPS 40 CFR 60, Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. DEQ is delegated this Subpart. The compression ignition internal combustion engine (CI ICE) is an affected source (emergency generator).
- NESHAP 40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE). DEQ is delegated this Subpart. The reciprocating internal combustion engine (RICE) is an affected source (emergency generator). Because the emergency generator meets the requirements of 40 CFR 60 Subpart III, no further requirements apply for the engine under the Subpart.

Permit Conditions Review

This section describes those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Existing Permit Conditions 1.5 and 1.6

These conditions have been deleted as the facility will be reclassified as a minor source with CO emissions below 100 T/yr.

Existing Permit Condition 2.3

This condition was revised to include the manufacturer guaranteed and source testing emission limits for CO and NO_x for the Dryer 2 heater.

Added Permit Conditions 2.13 and 2.15

Testing and monitoring requirements were added to verify the proposed CO and NO_x emission rates used in the emission inventory for the Dryer 2 heater. Testing is to be conducted on a tiered schedule depending on the emission rate.

Added Permit Condition 3.5

An opacity limit for the boilers was added back into the permit as the facility is no longer required to obtain a Tier I operating permit in which the boilers would be covered under the facility-wide “visible emissions” permit conditions.

Revised Permit Condition 3.7

This condition was revised and the specific requirements for the boilers in accordance with NSPS 40 CFR 60, Subpart Dc were added back into the permit. This included reporting and recordkeeping requirements.

Added Permit Condition 5.3

An opacity limit for the emergency generator was added back into the permit as the facility is no longer required to obtain a Tier I operating permit in which the emergency generator would be covered under the facility-wide “visible emissions” permit conditions.

Added Permit Conditions 5.4, 5.6 – 5.10

The specific requirements for the emergency generator were added in accordance with NSPS 40 CFR 60, Subpart III back into the permit.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04 or IDAPA 58.01.01.404.04.

APPENDIX A – EMISSIONS INVENTORIES

3. PROJECT DESCRIPTION

3.1 Emission Factors and PTE for Dryer 2

The Original Dryer 2 PTC included a CO short-term maximum emission rate of 20.98 pounds per hour (lb/hr) listed to be obtained from the burner manufacturer. Recent examination of this emission rate has shown it to be inaccurate, resulting from a prior calculation error. The correct expression of manufacturer rated CO short term maximum emissions is contained in Appendix A and is 400 parts per million (ppm) CO corrected to 3% oxygen (O₂), equaling an emission factor of 0.292 pounds per million British Thermal Units (lb/MMBtu). This 0.292 lb/MMBtu emission factor yields a maximum CO emission rate of 7.59 lb/hr based on the permitted maximum firing rate.

Dryer 2 has been installed and commissioned since the issuance of the Original Dryer 2 PTC on March 1, 2021. Source emissions testing has been conducted on Dryer 2 as installed while operating across a wide range of typical operating conditions. Testing reports are contained in Appendix B and testing data is converted to CO lb/hr rates below in Table 3-1. The tested CO emission rates are significantly below the 7.59 lb/hr derived from manufacturer specifications.

Table 3-1. Post-Commissioning Dryer 2 Burner Tested CO Emissions

Firing Rate Proportion of Maximum ¹	Tested CO ppm ¹	Tested % O ₂ ¹	CO ppm @ 3% O ₂ ²	Emission Factor @ 3% O ₂ ³ (lb/MMBtu)	Firing Rate Scaled From Max. Firing rate (MMBtu/hr)	Tested CO Emission Rate (lb/hr)
20%	665	10.4	1134	0.8405	5.20	4.371
50%	258	8.6	375	0.2784	13.00	3.619
90%	131	7.6	176	0.1307	23.40	3.059

¹ Obtained from July 13, 2021 burner testing report by Martin Control contained and detailed in Appendix B.

² Conversion based on below formula:

$$\text{Pollutant Conc. @ 3\% O}_2 = (\text{Stack Pollutant Conc.}) \times \frac{20.9 - 3}{20.9 - \text{Stack O}_2 \text{ Conc.}}$$

³ Converted from ppm to lb/MMbtu based on the below formula.

$$\frac{\text{lb}}{\text{MMBtu}} = \text{ppm} \times 10^{-6} \times \frac{1}{\text{molar volume}} \times \text{Molar Weight} \times F_d \times \frac{20.9}{(20.9 - \%O_2)}$$

CO Molar Weight 28.01

Molar Volume 379.7 dscf/lb-mol at 1 atm and 60 °F

Fd Factor 8608 dscf/MMBtu (for 1,050 Btu/scf natural Gas at 60 °F)

It is proposed to set the potential CO emission rate of the Dryer 2 heater at 4.75 lb/hr. This rate is conservatively above the maximum tested CO emission rate and corresponds to 250 ppm CO at the maximum rated firing rate. The pre-project, proposed, and project change emission factors and rates for CO are shown in Table 3-2 below. Annual emissions are based on 8,760 hours of operation at the maximum lb/hr emission rate.

Table 3-2. Dryer 2 Burner CO Emissions Change Detail

Scenario	CO Emission Factor (lb/MMBtu)	CO PTE (lb/hr)	CO PTE (tpy)
Pre-Project ¹	Not Specified	20.98	91.89
Manufacturer Specified ²	0.292	7.59	33.25
Proposed	0.183	4.75	20.78
Project Change	Not Applicable	-16.23	-71.11

¹ Obtained from Table 3 of March 1, 2021 Statement of Basis for PTC No. P-2008.0050

² Emissions factors based on manufacturer ratings obtained from Munters on July 23, 2021. Proposed CO emission factor derived from 250 ppm at maximum firing rate and determined by applying a ratio of 250 ppm ÷ 400 ppm to manufacturer supplied emission factor.

The manufacturer specific emission factors obtained from Munters on July 23, 2021 also included a corrected emission factor for NO_x corresponding to 30 ppm at 3% O₂. This updated emission factor is incorporated into the proposed PTE for the Dryer 2 burner, which is detailed in Table 3-3 below for criteria pollutants and greenhouse gasses (GHG).

Table 3-3. Dryer 2 Burner Criteria Pollutant and GHG Potential Emissions

Maximum Heat Input Capacity ¹	26.0	MMBtu/hr		
Maximum Heat Input Capacity ¹	0.0260	MMscf/hr		
Fuel		Natural Gas		
Fuel Heat Content	1,000	Btu/scf		
Annual Operation	8,760	hr/yr		
Annual Fuel Throughput	227,760	Mscf/yr		
Pollutant	NG Combustion Emission Factor (lb/MMscf)	Emission Factor Source	Potential Emissions	
			(lb/hr)	(tpy)
PM ₁₀	7.6	2	0.20	0.87
PM _{2.5}	7.6	2	0.20	0.87
CO	183	3	4.75	20.78
NO _x	36	3	0.94	4.10
SO ₂	0.6	2	0.02	0.07
VOC	5.5	2	0.14	0.63
Lead	0.0005	2	1.3E-05	5.69E-05
CH ₄	2.3	2	0.06	0.26
N ₂ O	2.2	2	0.06	0.25
CO ₂	120,000	2	3,120	13,666
CO ₂ e	-	4	3,139	13,747

¹ Maximum capacity from Table 1 of March 1, 2021 Statement of Basis for PTC No. P-2008.0050.

² AP-42 Section 1.4 Natural Gas Combustion, Table 1.4-1 and 1.4-2 converted from lb/MMBtu to lb/MMscf using 1000 btu/scf. Assumes PM = PM₁₀ = PM_{2.5}.

³ CO and NO_x emissions factors based on manufacturer ratings obtained from Munters on July 23, 2021. Proposed CO emission factor derived from 250 ppm at maximum firing rate and determined by applying a ratio of 250 ppm ÷ 400 ppm to manufacturer supplied emission factor.

⁴ CO₂e assumes a Global Warming Potential per Table A-1 to Subpart A of 40 CFR Part 98: CO₂ = 1, NH₄ = 25, N₂O = 298

3.2 Facility-Wide Potential To Emit

The changes to the Dryer 2 PTE for CO and NO_x are the only proposed changes in facility-wide PTE. All other pollutants and emission sources are proposed to remain at currently permitted PTE. Facility-wide pre- and post-project as well as project change PTE are shown in Table 3-4, Table 3-5, and Table 3-6 below.

The proposed PTE for CO is below 100 tpy which would remove the facility from being a Tier I regulated source. Regulatory applicability is evaluated in Section 4 and requested changes to the conditions of the facility PTC based on removal of Tier I applicability are contained in Section 5.

Table 3-4. Pre-Project PTE for Regulated Air Pollutants¹

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		Pb	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/qtr)	(tpy)
Dryer 1	4.60	20.15	0.02	0.08	1.46	6.42	11.90	52.20	0.18	0.76	0.01	2E-05
Fluid Bed	1.08	4.73	0	0	0	0	0	0	0	0	0	0
Powder Silo 1	0.12	0.5	0	0	0	0	0	0	0	0	0	0
Boiler 1	0.25	1.1	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79	0.04	8E-05
Boiler 2	0.25	1.1	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79	0.04	8E-05
Emergency Generator	0.36	0.09	0.33	0.08	13.30	3.33	1.90	0.48	0.94	0.05	0	0
Dryer 2	8.82	38.63										
Dryer 2 Heater ¹	0.20	0.87	0.02	0.07	1.57	6.88	20.98	91.89	0.14	0.63	0.03	6E-05
Powder Silo 2	0.0036	0.016										
Hopper Vacuum Receiver	0.0036	0.016										
Pre-Project Totals	15.69	67.20	0.41	0.41	23.03	45.97	40.4	169.2	1.62	3.02	0.12	2E-04

¹ Obtained from Table 3 of March 1, 2021 Statement of Basis for PTC No. P-2008.0050

Table 3-5. Post-Project PTE for Regulated Air Pollutants¹

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		Pb	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Dryer 1	4.60	20.15	0.02	0.08	1.46	6.42	11.90	52.20	0.18	0.76	0.01	2E-05
Fluid Bed	1.08	4.73										
Powder Silo 1	0.12	0.5										
Boiler 1	0.25	1.1	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79	0.04	8E-05
Boiler 2	0.25	1.1	0.02	0.09	3.35	14.67	2.81	12.31	0.18	0.79	0.04	8E-05
Emergency Generator	0.36	0.09	0.33	0.08	13.30	3.33	1.90	0.48	0.94	0.05	0.00	0.00
Dryer 2	8.82	38.63										
Dryer 2 Heater ²	0.20	0.87	0.02	0.07	0.94	4.10	4.75	20.78	0.14	0.63	0.03	6E-05
Powder Silo 2	0.0036	0.016										
Hopper Vacuum Receiver	0.0036	0.016										
Post-Project Totals	15.68	67.20	0.41	0.41	22.40	43.19	24.17	98.08	1.62	3.02	0.12	2E-04

¹ Obtained from Table 3 of March 1, 2021 Statement of Basis for PTC No. P-2008.0050

² Dryer 2 Heater PTE calculated separately in Table 3-3

Table 3-6. Changes in PTE for Regulated Air Pollutants

Scenario	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Pre-Project Potential to Emit	15.69	67.20	0.41	0.41	23.03	45.97	40.40	169.19	1.62	3.02
Post-Project Potential to Emit	15.68	67.16	0.40	0.41	22.40	43.19	24.17	98.08	1.62	2.99
Changes in Potential to Emit	0	0	0	0	-0.63	-2.78	-16.24	-71.11	0	0

APPENDIX B – FACILITY DRAFT COMMENTS

The facility had no comments on the draft permit and responded on December 20, 2021.

APPENDIX C – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: High Desert Milk, Inc.
Address: 1033 Idaho Avenue
City: Burley
State: ID
Zip Code: 83318
Facility Contact: Shawn Burton
Title: Chief Operating Officer
AIRS No.: 031-00034

- N** Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
- Y** Did this permit require engineering analysis? Y/N
- N** Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	3.4	-3.4
SO ₂	0.0	0	0.0
CO	0.0	71.6	-71.6
PM10	0.0	0	0.0
VOC	0.0	0	0.0
Total:	0.0	75	-75.0
Fee Due	\$ 1,000.00		

Comments: