Statement of Basis

Permit to Construct No. P-2017.0056
Project ID 62464

SEBS Feed and Supply, Inc.
Terreton, Idaho

Facility ID 051-00016

Final

September 25, 2020
Christina Boulay
Permit Writer

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
BP	Batch Process
BLD	Building
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
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
GHG	greenhouse gases
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
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
LPG	liquid petroleum gas
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&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

PE	process equipment
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
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
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Hay is pulled from stacks via a front end loader and loaded into an open top stationary electric tub grinder (PE01). The unit is located under the main storage and process shed, Building one (BP01). The tub grinder is the first unit in this process line; it is used to reduce the baled feed to coarse grind hammer mill feed. The coarse grind feed is collected in enclosed chutes from the bottom of the tub grinder, split into two feed streams and conveyed to two separate hammer mill process lines; West Alfalfa Pellet Process Line 1A and East Alfalfa Pellet Process Line 1B. There are three baghouses used to control $PM_{2.5}$ and PM_{10} emissions, baghouses PE04, PE10, and PE19.

The west hammer mill (PE02) uses a pneumatic elevator to feed the coarse ground alfalfa into a cyclone surge bin (PE03) which serves as a holding tank. The coarse ground alfalfa, also known as ground meal, held in the cyclone surge bin is gravity fed into the west pellet mill (PE05). A baghouse (PE04) is connected to the cyclone surge bin and the ground meal collected in the cyclone as well as the dust collected in the baghouse is transferred to the west pellet mill for processing. The west pellet mill has an integral meal conditioning and mixing section where steam is generated from the Superior Boiler Works boiler (PE18), to aid in pellet formation. At this point in the production line grain and bentonite are added from batch processes (BP07 and BP09). The grain and bentonite are stored in separate silos; bentonite is added to either of the process lines from an enclosed bottom-fed auger. Grain, when used is fed from independent bottom-fed enclosed augers as well. From the west pellet mill process unit, the pellets are fed to the west pellet cooler (PE06), where the pellets are dried and cooled. Emissions are captured by the west cooler cyclone (PE07). After the alfalfa pellets are cooled and a small percentage of moisture is removed, the pellets are ready for batch processes (BP02, BP03, and BP04), storage, loadout, and bagging. Baghouse PE19 was added to control emissions from the, bentonite, and grain receiving process.

The east alfalfa process line is similar to the west in that, the east hammer mill (PE08) uses a pneumatic elevator to feed into a cyclone surge bin (PE09) which serves as a holding tank. The ground meal held in the cyclone surge bin is gravity fed into the east pellet mills (PE11, PE12, PE13). A baghouse (PE010) is connected to the cyclone surge bin and the ground meal collected in the cyclone as well as the dust collected in the baghouse is transferred to the east pellet mill for processing. The east pellet mill has an integral meal conditioning and mixing section where steam is generated from the Superior Boiler Works boiler (PE18) to aid in pellet formation. From the east pellet mill process units, the pellets are fed to the east pellet cooler (PE14), where the pellets are dried and cooled. Emissions are captured by the east cooler cyclone (PE15). After the alfalfa pellets are cooled and a small percentage of moisture is removed, the pellets are ready for batch processes (BP02, BP03, and BP04), storage, loadout, and bagging. Baghouse PE19 was added to control emissions from the east hammer mill process.

The third process line produces alfalfa cubes. Hay is pulled from stacks via a front end loader and loaded into an vertical open stationary electric hay shredder (PE16A). The unit is located under the main storage and process shed, adjacent to the tub grinder. The hay shredder is the first unit in this process line; it is used to reduce the baled feed to coarse grind feed. The coarse ground feed is collected in enclosed chutes from the bottom of the hay shredder, and conveyed to the cube press, and then to the cube cooler (PE16), where it is then transferred to the storage and bagging building (BLD04). Baghouse PE19 was added to control emissions from this process.

The Superior Boiler Works boiler (PE18) provides steam to both the alfalfa pellet process lines as well as the alfalfa cube process line. The alfalfa pellet process lines are the primary production lines for the facility, as they use 94,640 tons of alfalfa per year. The alfalfa cube process line is a secondary production line and uses 29,120 tons of alfalfa per year.

Batch Process two, (BP02) handles all bulk alfalfa pellet loadouts from the bulk bins on the north side of building one, (BLD01). The height of the bin gates above grade have been designed to allow the alfalfa pellets to be gravity fed into the trucks for transport. The drop distance from the bulk bins to the trucks have been minimized to reduce PM generation during the transfer process. Baghouse PE19 was added to control emissions from this process.

Batch Process three, (BP03) is a standalone pellet elevator used to load bulk trucks from the larger alfalfa pellet storage area, building five (BLD05). This process provides a controlled way to load bulk trucks, by using a front end loader to transfer pellets to a hopper which feeds to an elevator. The discharge chute is designed to allow the pellets to be gravity fed into the trucks. The drop distance from the discharge chute to the trucks has been minimized to reduce PM generation during the transfer process.

Batch Process four, (BP04) is the alfalfa pellet bagging process that takes place on the north side of building one, (BLD01). The bagger has scales and a chute which are used to manually fill 50 pound bags with product for end use by retail customers. This process produces some PM emissions and is currently assigned 10% of the loadout tonnage for alfalfa pellets. Exhaust from this process area is routed to PE10, the East Baghouse.

Batch Process five, (BP05) is the building exhaust for building four, (BLD04) where the alfalfa cube bagging and storage is located. Since the cubes are made up of coarse ground hay, the material removed by the ventilation system is collected and recycled through the cube or pellet process. The equipment is similar to that used in batch process four (BP04), with the addition of storing bulk product on pallets on the floor for bulk loadout. This process accounts for 23.5% of product manufactured annually, as it is secondary to the pellet manufacturing process.

Permitting History

This is a modified PTC for an existing alfalfa manufacturing company.

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).

July 12, 2018	P-2017.0056, Tier II operating permit conversion to a permit to construct, Permit status (A, but will become S upon issuance of this permit)
July 12, 1999	Permit No. 051-00016, Tier II Operating Permit, Permit status (S)

Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Install and operate a new LPG-fired boiler
- Increase daily throughput for the pellet process line, cube process line, bentonite and grain receiving
- Install a new baghouse to control $PM_{2.5}$ and PM_{10} emissions from building 1 process emission units, including the tub grinder, cube shredder, cube cooler, and batch process sources, including grain receiving, bentonite receiving, and main pellet loadout areas

Application Chronology

June 2, 2020	DEQ received an application.
June 9, 2020	DEQ received an application fee.
June 24 – July 9, 2020	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
July 10, 2020	DEQ determined that the application was complete.
August 27, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
September 3, 2020	DEQ made available the draft permit and statement of basis for applicant review.
September 14, 2020	DEQ received the permit processing fee.
September 25, 2020	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment
PE01	Tub Grinder: Manufacturer: W.H.O. MFG. Model: 1164 Electric Manufacture Date: 2003 Maximum Capacity: 40 Tons/hour	West Baghouse PE04: Manufacturer: Donaldson Torit Model: HPW80 $PM_{2.5/10}$ control efficiency: 99.9% East Baghouse PE10: Manufacturer: Donaldson Torit Model: HPW96 $PM_{2.5/10}$ control efficiency: 99.9% Baghouse PE19: Manufacturer: Donaldson Torit Model: 108MBT10 Stack Height: 22.3 vertical feet $PM_{2.5/10}$ control efficiency: 99.9%
PE02	West Hammer Mill: Manufacturer: CPM-California Pellet Mill Model: 20x44 Champion Mill Manufacture Date: 1/1/2008	West Baghouse PE04: Manufacturer: Donaldson Torit Model: HPW80 $PM_{2.5/10}$ control efficiency: 99.9%
PE03	Surge Bin Cyclone: Manufacturer: Unknown Model: Unknown Manufacture Date: Unknown	
PE05	West Pellet Mill: Manufacturer: Sprout Waldron Model: 26-300 Manufacture Date: 1/1/2008	West Cooler Cyclone (PE07): Manufacturer: Law Marot PM2.5/10 control efficiency: 90.00%
PE06	West Pellet Cooler: Manufacturer: Law Marot Model: VC 95 Manufacture Date: 1/1/2008	
PE08	East Hammer Mill: Manufacturer: CPM-California Pellet Mill Model: 20x44 Champion Mill Manufacture Date: 1/1/2003	East Baghouse (PE10): Manufacturer: Donaldson Torit Model: HPW96 $PM_{2.5/10}$ control efficiency: 99.9% Baghouse PE19: Manufacturer: Donaldson Torit Model: 108MBT10 Stack Height: 22.3 vertical feet $PM_{2.5/10}$ control efficiency: 99.9%
PE09	Surge Bin Cyclone: Manufacturer: LMC Model: 20x44 Champion Mill Manufacture Date: 1/1/2003	
PE11	East Pellet Mill: Manufacturer: CPM-California Pellet Mill Model: Century 100 Manufacture Date: 1999	East Cooler Cyclone (PE15): Manufacturer: Custom Build $PM_{2.5/10}$ control efficiency: 90.00%
PE12	East Pellet Mill: Manufacturer: CPM-California Pellet Mill Model: Century 100 Manufacture Date: 1999	
PE13	East Pellet Mill: Manufacturer: CPM-California Pellet Mill Model: Century 100 Manufacture Date: 1999	

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION (continued)

Source ID No.	Sources	Control Equipment
PE14	East Pellet Cooler: Manufacturer: Law Marot Model: VC 95 Manufacture Date: 1/1/2003 Maximum Capacity: 19.8 Tons/hour pellets; Air Flow 12,500 CFM	East Cooler Cyclone (PE15): Manufacturer: Custom Build $PM_{2.5/10}$ control efficiency: 90.00%
PE16	Cuber and Cooler Unit: Manufacturer: Cooper Cuber Model: Single Head Cuber 250 Manufacture Date: 10/1/2003 Maximum Capacity: 8.0 Tons/hour	Baghouse PE19: Manufacturer: Donaldson Torit Model: 108MBT10 Stack Height: 22.3 vertical feet $PM_{2.5/10}$ control efficiency: 99.9%
PE16A	Hay Shredder: Manufacturer: Cooper Equipment Inc. Model: SHR440 Manufacture Date: 10/1/2003	
BP02	Storage & Load Out (BP02)	
BP06	Bentonite Receiving (BP08)	
BP08	Grain Receiving (BP06):	
PE18	Boiler: Manufacturer: Superior Boiler Works Model: Super Seminole X6-5-1000-S15 Manufacture Date: 1987 Heat input rating: 7.88 MMBtu/hr Fuel: Liquid Petroleum Gas	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 one tub grinder, one hay shredder, two hammer mills, two cyclone surge bins, four pellet mills, two pellet coolers, two cyclone cooler, and one boiler operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutants and HAP PTE were based on emission factors from AP-42 section 9.9.1-2 SCC 30200817, SCC 30200816, SCC 30200803, AP-42 section 1.5-1 SCC 10201002, AP-42 section 13.2.2-2(1a), AP-42 11.23-10 SCC 30302345, AP-42 9.9.1 SCC 30200540, EPA Webfire SCC 30200805 and 30302307, bentonite factors from the supplier, operation of 8,760 hours per year, and process information specific to the facility for this proposed project.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then 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 **not** be treated as part of its design **since** the limitation or the effect it would have on emissions

is not state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a “Synthetic Minor” source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the uncontrolled Potential to Emit for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this alfalfa pellet and cube manufacturing operation uncontrolled Potential to Emit is based upon a worst-case for operation of the facility of 8,760 hr/yr (8 hr/day x 7 day/wk x 52 wk/yr).

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Point Sources						
Tub Grinder (PE01)	42.05	7.15	N/A	N/A	N/A	N/A
Baghouse (PE04)	293.46	17.87	N/A	N/A	N/A	N/A
Cyclone (PE07)	65.70	11.17	N/A	N/A	N/A	N/A
Baghouse (PE10)	293.46	17.87	N/A	N/A	N/A	N/A
Cyclone (PE15)	65.70	11.17	N/A	N/A	N/A	N/A
Cube Cooler (PE16)[e]	19.71	3.36	N/A	N/A	N/A	N/A
Hay Shredder (PE16A)	6.30	1.07	N/A	N/A	N/A	N/A
Superior Boiler Works (PE18)	0.26	0.26	0.04	4.90	2.82	0.30
Pellet Bin Loadout (BP02)	0.08	0.01	N/A	N/A	N/A	N/A
Pellet Storage Loadout (BP03)	0.06	0.01	N/A	N/A	N/A	N/A
Pellet Bagging (BP04)	0.01	2.40E-03	N/A	N/A	N/A	N/A
Cube Bagging (BP05)	0.02	4.00E-03	N/A	N/A	N/A	N/A
Bentonite and Barley Combined (BP06 and BP08)	0.12	0.023	N/A	N/A	N/A	N/A
Bentonite Silo (BP07)	0.05	2.00E-03	N/A	N/A	N/A	N/A
Barley Silo (BP09)	0.41	0.02	N/A	N/A	N/A	N/A
Total, Point Sources	**787.39**	**69.99**	**0.04**	**4.90**	**2.82**	**0.30**

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

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 3 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]
Tub Grinder (PE01)	0.70	0.10	N/A	N/A	N/A	N/A
Baghouse (PE04)	0.14	0.02	N/A	N/A	N/A	N/A
Cyclone (PE07)	0.87	0.91	N/A	N/A	N/A	N/A
Baghouse (PE10)	0.14	0.02	N/A	N/A	N/A	N/A
Cyclone (PE15)	0.87	0.91	N/A	N/A	N/A	N/A
Cube Cooler (PE16)	0.73	0.10	N/A	N/A	N/A	N/A
Hay Shredder (PE16A)	0.03	4.08E-03	N/A	N/A	N/A	N/A
Kisco Boiler (PE17)	0.02	0.02	0.01	1.17	0.68	0.07
Bentonite and Barley Combined (BP06 and BP08)	0.06	0.01	N/A	N/A	N/A	N/A
Bentonite Silo (BP07)	0.13	0.01	N/A	N/A	N/A	N/A
Barley Silo (BP09)	1.63E-04	2.43E-05	N/A	N/A	N/A	N/A
Pre-Project Totals	**3.69**	**2.10**	**0.01**	**1.17**	**0.68**	**0.07**

a) 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 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC
	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]	T/yr[(a)]
Tub Grinder (PE01)	0.57	0.10	N/A	N/A	N/A	N/A
Baghouse (PE04)	0.28	0.05	N/A	N/A	N/A	N/A
Cyclone (PE07)	1.78	0.30	N/A	N/A	N/A	N/A
Baghouse (PE10)	0.28	0.05	N/A	N/A	N/A	N/A
Cyclone (PE15)	1.78	0.30	N/A	N/A	N/A	N/A
Cube Cooler (PE16)	1.09	0.19	N/A	N/A	N/A	N/A
Hay Shredder (PE16A)	0.18	0.03	N/A	N/A	N/A	N/A
Superior Boiler Works (PE18)	0.22	0.22	0.03	4.09	2.36	0.25
Bentonite and Grain Combined (BP08 and BP06)	3.00E-03	0.00	N/A	N/A	N/A	N/A
Bentonite Silo (BP07)	0.02	2.00E-03	N/A	N/A	N/A	N/A
Grain Silo (BP09)	0.10	0.02	N/A	N/A	N/A	N/A
Post Project Totals	**6.30**	**1.26**	**0.03**	**4.09**	**2.36**	**0.25**

a) 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 5 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{2.5}$	PM_{10}	SO_2	NO_X	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Pre-Project Potential to Emit	2.10	3.69	0.01	1.17	0.68	0.07
Post Project Potential to Emit	1.26	6.30	0.03	4.09	2.36	0.25
Changes in Potential to Emit	**-0.84**	**2.61**	**0.02**	**2.92**	**1.68**	**0.18**

Non-Carcinogenic and Carcinogenic TAP Emissions

Due to the type of product manufactured at this facility, non-carcinogenic and carcinogenic toxic air pollutants are not produced from the production lines. According to AP 42 1.5-1 liquid petroleum gas (LPG) used in the Superior Boiler Works boiler, there is no potential for any TAP emissions to be generated.

HAP Emissions

According to AP 42 1.5-1 the liquid petroleum gas (LPG) used in the Superior Boiler Works boiler, there is no potential for any HAP emissions to be generated.

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10}, $PM_{2.5}$, and NO_x from this project were greater than applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix A.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Jefferson County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, 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.

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[1] Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

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	787.39	6.30	**100**	SM
PM_{10}	787.39	6.30	**100**	SM
$PM_{2.5}$	69.99	1.26	**100**	B
SO_2	0.04	0.03	**100**	B
NO_X	4.90	4.09	**100**	B
CO	2.82	2.36	**100**	B
VOC	0.30	0.25	**100**	B
HAP (single)	N/A	N/A	**10**	B
Total HAPs	N/A	N/A	**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 proposed modified emissions source. 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.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 .... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 3.7, 2.8, and 2.9.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 .... Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Conditions 5.4.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701... Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979, and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following equations:

- IDAPA 58.01.01.701.01.a: If PW is < 9,250 lb/hr; $E = 0.045 (PW)^{0.60}$
- IDAPA 58.01.01.701.01.b: If PW is ≥ 9,250 lb/hr; $E = 1.10 (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

- IDAPA 58.01.01.702.01.a: If PW is < 17,000 lb/hr; $E = 0.045 (PW)^{0.60}$
- IDAPA 58.01.01.702.01.b: If PW is ≥ 17,000 lb/hr; $E = 1.12 (PW)^{0.27}$

For the new Tub Grinder (PE01) emissions unit proposed to be installed as a result of this project with a proposed throughput of 14.13 T/hr, E is calculated as follows:

- Proposed throughput = 14.13 T/hr x 2,000 lb/1 T = 28,255.71 lb/hr

Therefore, E is calculated as:

- $E = 1.10 \times PW^{0.25} = 1.10 \times (28{,}255.71)^{0.25} = 13.86$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 11.04 lb-PM_{10}/hr. Assuming PM is 50% PM_{10} means that PM emissions will be 5.52 lb-PM/hr (11.04 lb-PM_{10}/hr ÷ 0.5 lb-PM_{10}/lb-PM). Therefore, compliance with this requirement has been demonstrated.

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

IDAPA 58.01.01.301... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for SO_2, NO_X, CO, VOC, and HAP 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 Applicability (40 CFR 60)

The facility is not subject to any NSPS requirements in 40 CFR Part 60.

DEQ has been delegated Subpart Dc.

Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units Source: 72 FR 32759, June 13, 2007, unless otherwise noted.

SEBS has a small industrial steam generating unit (boiler), §60.40c Applicability and delegation of authority.

(a) Except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).

The boiler's heat input capacity is 7.88 MMBtu/hr, therefore the boiler does not have a rated heat input capacity to fall under this section.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

GACT Applicability (40 CFR 63)

The facility is not subject to any GACT standards in 40 CFR Part 63.

Subpart DDDDDDD—National Emission Standards for Hazardous Air Pollutants for Area Sources: Prepared Feeds Manufacturing.

SEBS does not use a material containing chromium or manganese and is an area source of HAPs.

Subpart JJJJJJ—National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Source

SEBS Superior Boiler Works boiler is gas-fired and exempt from this subpart.

Permit Conditions Review

This section describes the permit conditions for this modified permit that have been added, revised, modified or deleted as a result of this permitting action. The General Provision were taken from the current template.

Newly Added Permit Condition 2.11

This permit condition was added to ensure the Kisco boiler was removed or rendered inoperable such that the unit will no longer have the ability to emit any criteria toxic air pollutants upon the issuance of this permit. This permitting action did not account for any emissions from this boiler in the modeling for the NAAQS demonstration. Also, the facility-wide potential to emit for the facility submitted by the applicant and verified by IDEQ staff did not account for any emissions from this emission unit.

Newly Added Permit Condition 2.12

The permit condition was added to ensure the facility notifies the region upon removal or rendering the Kisko boiler inoperable, to demonstrate compliance with permit condition 2.12.

Newly Added Permit Condition 2.13

The facility submitted information pertaining to the stack heights of emission units, specifying modification from horizontal to vertical. Uninterrupted vertical stack heights for PE04, PE07, PE15, BP05, and PE19 were used in the modeling demonstration to show compliance with NAAQS. Therefore these units shall have a vertical stack in place of a horizontal stack. PE19 shall have a stack height of 22.3 feet above ground level.

Modified Permit Condition 3.1

This permit condition was modified to remove the Kisko boiler and insert the Superior Boiler Works boiler and to add the newly added PE19 baghouse to the process description..

Modified Permit Condition 3.2

This permit condition was modified to include the newly added baghouse PE19 to the tub grinder.

Modified Permit Condition 3.3

This permit condition was modified to include the current emissions from this emission source as submitted by the applicant for this permitting action.

Modified Permit Condition 3.4

This permit condition was modified from,"The annual throughput of the Tub Grinder (PE01) shall not exceed 45,000 tons of baled hay per year. Every seven day rolling work week, the Tub Grinder shall not process more than 145 tons per day for three days, and 116 tons per day for the remaining four days. " to, "260 tons per day of baled hay for the tub grinder."

Modified Permit Condition 3.5

This permit condition was modified from, "The maximum amount of Bentonite received shall not exceed 30 tons per week and shall not be received during the same week as Barley." To, "90 tons per day of bentonite received in receiving."

Modified Permit Condition 3.6

This permit condition was modified from, "The maximum amount of Barley received shall not exceed 25 tons per week and shall not be received during the same week as the Bentonite. " to, "90 tons per day of barley received in receiving."

Modified Permit Condition 3.9

This permit condition was modified to include the newly added PE19 baghouse.

Modified Permit Condition 3.13

This permit condition was modified to include the newly added PE19 baghouse.

Modified Permit Condition 3.16

This permit condition was modified to include the newly added PE19 baghouse.

Modified Permit Condition 3.17

This permit condition was modified from, "The permittee shall monitor and record the number of hay bales used per day based on a 20 bale average bale weight to calculate the weight of alfalfa pellets manufactured on a daily basis in tons of product per day, not to exceed the annual throughput limit of baled hay per year. All data shall be kept on-site, in a log, for a period of five (5) years and made available to DEQ representatives upon request." To, "260 tons per day of baled hay."

Modified Permit Condition 3.18

This permit condition was modified from, "The permittee shall monitor and record the throughput of barley and bentonite received per week, through receiving records, in a ton of product per day. All data shall be kept on-site, in a log, for a period of five (5) years and made available to DEQ representatives upon request." to account for the monitoring of bentonite and barley being able to each receive 90 tons per day in receiving.

Modified Permit Condition 4.2

This permit condition was modified to include the newly added baghouse PE19.

Modified Permit Condition 4.3

This permit condition was modified to include the current emissions from this emission source as submitted by the applicant for this permitting action.

Modified Permit Condition 4.4

This permit condition was modified from, "The annual throughput of the hay shredder (PE16A) shall not exceed 1,800 tons of baled hay per year. Every seven day rolling work week, the hay shredder shall not process more than 5 tons per day for three days (while producing 145 tons per day of alfalfa pellets), and 4 tons per day for the remaining four days (while producing 116 tons per day of alfalfa pellets. This ensures compliance with NAAQS,

according to the modeling memo results of the two different production scenarios.“ to, “80 tons per day of finished product.“

Modified Permit Condition 4.5

This permit condition was modified from, “The permittee shall monitor and record the number of hay bales used per day based on a 20 bale average bale weight to calculate the weight of alfalfa cubes manufactured on a daily basis in tons of product per day, not to exceed the annual throughput limit of baled hay per year. All data shall be kept on-site, in a log, for a period of five (5) years and made available to DEQ representatives upon request.” to account for the monitoring of 80 tons per day of baled hay.

Modified Permit Condition 5.1

This permit condition was modified to remove the Kisko boiler and insert the Superior Boiler Works boiler.

Modified Permit Condition 5.2

This permit condition was modified to remove the Kisko boiler and insert the Superior Boiler Works boiler.

Modified Permit Condition 5.3

This permit condition was modified to include the current emissions from this emission source as submitted by the applicant for this permitting action.

Modified Permit Condition 5.5

This permit condition was modified to remove the Kisko boiler and insert the Superior Boiler Works boiler.

Modified Permit Condition 5.6

This permit condition was modified to account for the annual LPG fuel use. The boiler was modeled at 100% capacity for six months out of the year and a reduced capacity for the remaining 6 months. Therefore the following calculation is how the annual fuel use was derived.

4,380 hours/year x 57.4 gal/hour + 4,380 hours/year x 86.1 gal/hour = 628,530 gallons per year.

Modified Permit Condition 5.8

This permit condition was modified to remove the Kisko boiler and insert the Superior Boiler Works boiler.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was not a request for a public comment period on DEQ’s proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

Summary of Criteria Pollutants

	Controlled (T/yr)			Uncontrolled (T/yr)		
	Boiler	Production	**Total**	Boiler	Production	**Total**
PM	0.220	11.399	**11.619**	0.264	1526.371	**1526.634**
PM_{10}	0.220	6.322	**6.542**	0.264	787.401	**787.664**
$PM_{2.5}$	0.220	1.257	**1.476**	0.264	69.986	**70.250**
NO_x	4.085		**4.085**	4.897		**4.897**
SO_2	0.031		**0.031**	0.038		**0.038**
CO	2.357		**2.357**	2.825		**2.825**
VOC	0.251		**0.251**	0.301		**0.301**

	TAP Summary - Controlled			TAP Summary - Uncontro		
	Boiler	Production	**Total**	Boiler	Production	**To**
	T/yr			T/yr		
Antimony	0	1.28E-07	**1.28E-07**	0	1.28E-07	**1.28E-07**
Arsenic	2.31E-06	0.00E+00	**2.31E-06**	2.77E-06	0	**2.77E-06**
Barium	0	1.52E-05	**1.52E-05**	0	1.52E-05	**1.52E-05**
Benzene	2.43E-05	0.00E+00	**2.43E-05**	2.91E-05	0	**2.91E-05**
Beryllium	1.39E-07	2.10E-07	**3.48E-07**	1.66E-07	2.10E-07	**3.76E-07**
Boron Oxide	0	2.95E-07	**2.95E-07**	0	2.95E-07	**2.95E-07**
Bromine	0	1.47E-07	**1.47E-07**	0	1.47E-07	**1.47E-07**
Cadmium	1.27E-05	2.32E-09	**1.27E-05**	1.53E-05	2.32E-09	**1.53E-05**
Cesium Hydroxide	0	1.37E-08	**1.37E-08**	0	1.37E-08	**1.37E-08**
Chromium VI est.[1]	5.09E-07	0	**5.09E-07**	1.39E-07	0	**1.39E-07**
Chromium, total[2]	1.55E-05	1.69E-07	**1.57E-05**	1.86E-05	1.69E-07	**1.88E-05**
Cobalt	9.71E-07	4.63E-08	**1.02E-06**	1.16E-06	4.63E-08	**1.21E-06**
Copper, dust	0	9.48E-07	**9.48E-07**	0	9.48E-07	**9.48E-07**
Fluorides, as F	0	2.32E-07	**2.32E-07**	0	2.32E-07	**2.32E-07**
Formaldehyde	8.67E-04	0.00E+00	**8.67E-04**	1.04E-03	0	**1.04E-03**
Hexane	2.08E-02	0.00E+00	**2.08E-02**	2.50E-02	0	**2.50E-02**
Iodine	0	6.11E-07	**6.11E-07**	0	6.11E-07	**6.11E-07**
Manganese, dust	4.39E-06	4.42E-06	**8.82E-06**	5.27E-06	4.42E-06	**9.69E-06**
Mercury	3.00E-06	0.00E+00	**3.00E-06**	3.61E-06	0	**3.61E-06**
Naphthalene	7.05E-06	0.00E+00	**7.05E-06**	8.46E-06	0	**8.46E-06**

Nickel	2.43E-05	8.00E-08	**2.44E-05**
Phosphorus	0	3.79E-06	**3.79E-06**
Selenium	2.77E-07	0.00E+00	**2.77E-07**
Silver, compounds	0	4.00E-08	**4.00E-08**
Tellurium	0	1.26E-08	**1.26E-08**
Tin, oxide	0	1.47E-08	**1.47E-08**
Toluene	3.93E-05	0.00E+00	**3.93E-05**
Vanadium	0	6.53E-07	**6.53E-07**
Yttrium	0	1.28E-06	**1.28E-06**
Zinc, oxide dust	0	2.95E-07	**2.95E-07**
Zirconium	0	3.79E-06	**3.79E-06**
Total			**2.18E-02**

2.91E-05	8.00E-08	**2.92E-05**
0	3.79E-06	**3.79E-06**
3.33E-07	0	**3.33E-07**
	4.00E-08	**4.00E-08**
0	1.26E-08	**1.26E-08**
0	1.47E-08	**1.47E-08**
4.71E-05	0	**4.71E-05**
0	6.53E-07	**6.53E-07**
0	1.28E-06	**1.28E-06**
0	2.95E-07	**2.95E-07**
0	3.79E-06	**3.79E-06**
		2.62E-02

[1]4% of total chromium is estimated to be chromium (VI) for SCC 10200603, boiler less than 10 MMBtu/hr. See EPA NATA 201

[2]100% of chormium is treated as chromium (II) or (III) for bentonite and 96% for LPG combustion. Not HAP.

Criteria Pollutant Emission Limit	Criteria Pollutant Emission Limit	**Level II Exempt?**	**Level I Exempt ?**
Level II	Level I		
NA	NA		
2.6 lb/hr	0.22 lb/hr	Level II Exempt	Not Level I Exempt
4.1 t/yr & 0.63 lb/hr	0.35 t/yr & 0.054 lb/hr	Level II Exempt	Not Level I Exempt
14 t/yr & 2.4 lb/hr	1.2 t.yr & 0.20 lb/hr	Level II Exempt	Not Level I Exempt
14 t/yr & 2.4 lb/hr	1.2 t.yr & 0.21 lb/hr	Level II Exempt	Level I Exempt
175 lb/hr	15 lb/hr	Level II Exempt	Level I Exempt
NA	NA		

lled
otal
lb/hr
3.04E-08
6.56E-07
3.59E-06
6.88E-06
8.89E-08
6.97E-08
3.49E-08
3.61E-06
3.24E-09
3.29E-08
4.45E-06
2.86E-07
2.24E-07
5.48E-08
2.46E-04
5.90E-03
1.44E-07
2.29E-06
8.52E-07
2.00E-06

HAP Summary - Uncontrolled PTE		
Total	**Level I Exempt ?**	**BRC Exempt ?**
Uncontrolled (T/yr)		
1.28E-07	Level I Exempt	BRC Exempt
2.77E-06	Level I Exempt	BRC Exempt
na	Level I Exempt	Not BRC Exempt
2.91E-05	Level I Exempt	BRC Exempt
3.76E-07	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
1.53E-05	Level I Exempt	Not BRC Exempt
na	Level I Exempt	BRC Exempt
1.39E-07	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
1.21E-06	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
1.04E-03	Level I Exempt	Not BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
9.69E-06	Level I Exempt	BRC Exempt
3.61E-06	Level I Exempt	BRC Exempt
8.46E-06	Level I Exempt	BRC Exempt

6.90E-06
8.96E-07
7.87E-08
9.46E-09
2.99E-09
3.49E-09
1.11E-05
1.54E-07
3.04E-07
6.97E-08
8.96E-07

2.92E-05	Level I Exempt	Not BRC Exempt
3.79E-06	Level I Exempt	BRC Exempt
3.79E-06	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
4.71E-05	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
na	Level I Exempt	BRC Exempt
1.19E-03		

5 Exhibit D-1.

TAP Screening EL Lb/hr
3.30E-02
3.30E-02
2.80E-05
8.00E-04
2.80E-05
6.67E-01
4.70E-02
3.70E-06
1.33E-01
5.60E-07
3.30E-02
3.30E-03
6.70E-02
1.67E-01
5.10E-04
1.20E+01
6.70E-03
3.33E-01
2.85E-03
3.33E+00

2.70E-05
7.00E-03
1.30E-02
1.00E-03
7.00E-03
1.33E-01
2.50E+01
3.00E-03
6.70E-02
6.67E-01
3.33E-01

Rocky Mountain ENVIRONMENTAL ASSOCIATES, INC.

Table 1. Uncontrolled and Controlled Potential to Emit for Superior Boiler Super Seminole[1]

Warm Season

Regulated Air Pollutant (Regulated NSR Pollutant)[2]	**Controlled** Hours of Operation[10]	Process Parameter[3] **Uncontrolled** Hours of Operation[9]	Process Parameter Units[4] (e.g., lb/hr)	Emission Factor Source[5] (e.g., AP-42)	Gallons per Hour @ 6.695 MMBtu/hr rated output/0.85*0.667 (5.3 MMBtu/hr) 66% of maximum for Warm Season	1000/gal per hour
PM filterable	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
PM Condensed	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
PM Total	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
SO_2[11]	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
NOx	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
N_2O	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
CO_2	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
CO	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
TOC	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
CH_4	4380	4380	lb/10^3 gallons	AP-42 1.5-1	57.4	0.0574
VOC (TOC-CH_4)	4380	4380	lb/10^3 gallons	Calculated Difference Between TOC and CH_4		

Cold Season Production

Regulated Air Pollutant (Regulated NSR Pollutant)[2]	**Controlled** Hours of Operation[10]	Process Parameter[3] **Uncontrolled** Hours of Operation[9]	Process Parameter Units[4] (e.g., lb/hr)	Emission Factor Source[5] (e.g., AP-42)	Gallons per Hour @ 6.695 MMBtu/hr rated output/0.85 (7.9 MMBtu/hr) 100% of maxiumum for Cold Season	1000/gal per hour
PM filterable	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
PM Condensed	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
PM Total	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
SO_2[11]	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
NOx	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
N_2O	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
CO_2	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
CO	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861

TOC	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
CH_4	4380	4380	lb/10^3 gallons	AP-42 1.5-1	86.1	0.0861
VOC (TOC-CH_4)	4380	4380	lb/10^3 gallons	Calculated Difference Between TOC and CH_4		
Combined Annual Total						
PM filterable	8760	8760				
PM Condensed	8760	8760				
PM Total	8760	8760				
SO_2[11]	8760	8760				
NOx	8760	8760				
N_2O	8760	8760				
CO_2	8760	8760				
CO	8760	8760				
TOC	8760	8760				
CH_4	8760	8760				
VOC (TOC-CH_4)	8760	8760				

Annual gallons consumed at burn rate x.	Controlled 1000 gallons per year	Uncontrolled 1000 gallons per year

Rocky Mountain ENVIRONMENTAL ASSOCIATES, INC.

Table 1. Uncontrolled and Controlled Potentia

Warm Season

Regulated Air Pollutant (Regulated NSR Pollutant)[2]	Emission Factor Units[6] lb/1000 gallons	Emission lb/hr 24 hr average hour operation (**Controlled**)	Emission lb/hr of operation - Uncontrolled Emissions	Current **Controlled** Max. Emissions from the Source[8] (T/yr)	**Uncontrolled Potential to Emit from the Source[7] (T/yr)**
PM filterable	0.2	0.0115	0.0172	0.025	**0.038**
PM Condensed	0.5	0.0287	0.0430	0.063	**0.094**
PM Total	0.7	0.0402	0.0602	0.088	**0.132**
SO_2[11]	0.1	0.0057	0.0086	0.013	**0.019**
NOx	13.0	0.7462	1.1180	1.634	**2.448**
N_2O	0.9	0.0517	0.0774	0.113	**0.170**
CO_2	12500	717.5000	1075.0000	1571.325	**2354**
CO	7.5	0.4305	0.6450	0.943	**1.413**
TOC	1.0	0.0574	0.0860	0.126	**0.188**
CH_4	0.2	0.0115	0.0172	0.025	**0.038**
VOC (TOC-CH_4)		0.0459	0.0688	0.101	**0.151**

Cold Season Production

Regulated Air Pollutant (Regulated NSR Pollutant)[2]	Emission Factor Units[6] lb/1000 gallons	Emission lb/hr 24 hr average hour operation (Controlled)	Emission lb/hr of operation - Uncontrolled Emissions	Current **Controlled** Max. Emissions from the Source[8] (T/yr)	**Uncontrolled Potential to Emit from the Source[7] (T/yr)**
PM filterable	0.2	0.0172	0.0172	0.038	**0.038**
PM Condensed	0.5	0.0431	0.0430	0.094	**0.094**
PM Total	0.7	0.0603	0.0602	0.132	**0.132**
SO_2[11]	0.1	0.0086	0.0086	0.019	**0.019**
NOx	13.0	1.1193	1.1180	2.451	**2.448**
N_2O	0.9	0.0775	0.0774	0.170	**0.170**
CO_2	12500	1076.2500	1075.0000	2356.988	**2354**
CO	7.5	0.6458	0.6450	1.414	**1.413**

TOC	1.0	0.0861	0.0860	0.189	**0.188**
CH_4	0.2	0.0172	0.0172	0.038	**0.038**
VOC (TOC-CH_4)		0.0689	0.0688	0.151	**0.151**

Combined Annual Total		Annual Average Emission lb/hr 24 hr average hour operation (Controlled)	Annual Average Emission lb/hr of operation - Uncontrolled Emissions	Current **Controlled** Max. Emissions from the Source[8]	**Uncontrolled Potential to Emit from the Source[7]**
				(T/yr)	**(T/yr)**
PM filterable		0.0144	0.0172	0.063	**0.075**
PM Condensed		0.0359	0.0430	0.157	**0.188**
PM Total		0.050	0.0602	0.220	**0.264**
SO_2[11]		0.0072	0.0086	0.031	**0.038**
NOx		0.9328	1.1180	4.085	**4.897**
N_2O		0.0646	0.0774	0.283	**0.339**
CO_2		896.8750	1075	3928.313	**4708.500**
CO		0.5381	0.6450	2.357	**2.825**
TOC		0.0718	0.0860	0.314	**0.377**
CH_4		0.0144	0.0172	0.063	**0.075**
VOC (TOC-CH_4)		0.0574	0.0688	0.251	**0.301**

Annual gallons consumed at burn rate x.

[10] 24-hour days, 7 days a week, 26 weeks a year (warm season); 24-hour days, 7 days a week, 26 weeks a year (cool s
[11] Conservative use of factor assigns 1% S to formula of 0.100(S).
Sources indicate sulfer content of LPG is "very low" , much of it due to sulfur compounds used as odorants.
Sulfur content for residential LPG combustion is 0.10 lb/10^3 gallons per AP42 1.5-1 1996
[12] N_20 not included in Nox calculations.

Table 2. PM-10 for listed sources					
Unit(s)	Regulated Air Pollutant (Regulated NSR Pollutant)	Process Parameter	**Tons processed per day**	**Tons per hour**	
	Cyclone controlled	**Tons Processed Annually**		**Tons per hour**	**Hours per day**
PE01	Tub Grinder[1] .	94,640	260	10.8	24
PE16A	Hay Shredder[1] .	29,120	80	3.3	24
PE16	Cube Cooler[5]	29,120	80	3.3	24
BP06	Grain Receiving 3 trucks/day	32,760	90	3.75	24
BP08	Bentonite Recieving[10]	32,760	90	3.75	24
BP02	Pellet Storage Load Out[8]	56784	156	6.5	24
Sum new baghouse PE 19					

PE04	**West Baghouse 80 HPW[2]**	**47320**	**130**	**5.417**	**24**
PE10	East Baghouse 96 HPW[3]	47320	130	5.4	24
BP04	Pellet Bagging[9]	9464	26	1.1	24
Sum new baghouse PE 10 configuration					

PE07	**West Cooler Cyclone[4]**	**47320**	**130**	**5.4**	**24**
PE15	**East Cooler Cyclone[4]**	**47320**	**130**	**5.4**	**24**

All	**LPG Usage 1000 gallons/annually**				
PE18	**Superior Boiler[6]**	**629**			
PE17	Kisco Boiler is out of commission				
	Net Operating Days				
BP01	Fugitive Road Way Emisions[7]	365			
	Regular Batch Processes				
BP03	**Pellet Storage Load Out[8]**	**37856**	**104**	**4.3**	**24**
BP05	**Cube Bagging (Building Exhaust)[8]**	**29120**	**32**	**1.3**	**24**
BP07	**Bentonite storage**	**32,760**	**90**	**3.75**	**24**
BP09	**Grain Silo[13] 3 trucks /day**	**32,760**	**90**	**3.75**	**24**
	Sum No Roadway Emissions				

[1] Tub grinder and hay shredder are the same type of process. Values are calculated separately for c

[2] Process line including hammer mills. Data for Filterable PM used at 100% to estimate PM-10 per f

[3] Process line including hammer mills. Data for Filterable PM used at 100% to estimate PM-10 per f

[4] Cyclones are high efficiency design. Used factor from Table 9.9.1-2, per footnote, PM-10 est. at 50

[5] No control system on Cube Cooler. Emission Factor derived from reverse calculation of 90% efficie

[6] PM_{10} only. Uncontrolled hours of operation. AP 42, 1.5, Table 1.5-1, footnote d, assume PM=PM_{10}

[7] 6 days per week, 52 weeks per year. VTM calculations are calculated using data from Table 13.2.2

80% control based on facility use of chemical dust suppression.

[8] Pellet and cube output as pro-rated percentage of total input.

[9] 10% of pellet production is estmated to be bagged out. Second handling step.

[10] Bentonite factors were adapted from supplier's data for bentonite quarry.

[11] No control on silo. PM_{10} is estimated at 25% of PM.

[12] This factor is used instead of factors for unloading at grain elevators.

[13] Two silios are combined because only one unit can functionally be used at a time resulting in only

[14] Tons per year divided by controled hours for average pounds per hour per day.

	Process Parameter Units	Emission Factor Source	EM FACTOR lb/ton processed	EM FACTOR lb/ton processed
	(e.g., lb/hr)	(e.g., AP-42)	PM	PM-10 (calculated per AP 42 9.9.1-13, if not stated
	lb/ton processed	EPA WebFire SCC 30200817-baghouse	0.012	0.012
	lb/ton processed	EPA WebFire SCC 30200817-baghouse	0.012	0.012
	lb/ton processed	AP-42 9.9.1-2 SCC 30200816	0.150	0.075
	lb/ton processed	AP-42 9.9.1 SCC 30200802 - unc. factor x cyclone efficiency for controlled	0.017	0.0025
	lb/ton processed	30502006 stone quarry	0.000140	0.000046
0.600	lb/ton processed	AP-42 9.9.1-2 SCC 30200803	0.003	0.0008

	lb/ton processed	**AP-42 9.9.1-2 SCC 30200817 - baghouse**	**0.012**	**0.012**
	lb/ton processed	AP-42 9.9.1-2 SCC 30200817	0.012	0.012
0.100	lb/ton processed	AP-42 9.9.1-2 SCC 30200803	0.003	0.0008

	lb/ton processed	**AP-42 9.9.1-2 SCC 30200816**	**0.150**	**0.075**
	lb/ton processed	**AP-42 9.9.1-2 SCC 30200816**	**0.150**	**0.075**

			lb/1000 gallons	**lb/1000 gallons**
	lb/1000 gallons	**AP-42 1.5-1 SCC 10201002**	**0.700**	**0.700**
			lb/day	**lb/day**
		AP-42 13.2.2-2 (1a)	44.210	13.480
Proportion of Throughput used to cacluate Column C from cell C4, total process input.			**lb/ton processed**	**lb/ton processed**
0.400	**lb/ton processed**	**AP-42 9.9.1-2 SCC 30200803**	**0.003**	**0.0008**
1.000	**lb/ton processed**	**AP-42 9.9.1-2 SCC 30200803**	**0.003**	**0.0008**
1	**lb/ton processed**	**AP-42 11.19.2-2 SCC 30502006 uncontrolled**	**0.003**	**0.0011**
1	**lb/ton processed**	**AP-42 9.9.1 SCC 30200540**	**0.025**	**0.006**

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ootnote (y).

ootnote (y).

)% of filterable PM. PM calculations used footnote g, also calculates PM2.5.

ent cyclone, plus using footnote *g* to calculate 50% of PM=PM_{10} and 17% of PM_{10} to calculalte $PM_{2.5}$.

. Technology Transfer Network website also assumes all PM=$PM_{2.5}$.

2-2 (1a) in AP-42 for fugitive emissions from unpaved roads, industrial roads, equation 1a (E=k(S/12)a(W/3)b

one emission point at a given time.

EM FACTOR lb/ton processed	Emissions Control Rating (%)	Potential Operational Hours	Controlled Operational Hours	**Controlled** Emissions (PM_{10})	**Controlled Emissions (PM_{10})**
PM-2.5 (calculated per AP 42 9.9.1-13, if not stated	efficiency rating already in EF			(lb/yr)[14]	**(lb/hr)[14]**
0.002	95	8760	8760	1136	**0.130**
0.002	95	8760	8760	349	**0.040**
0.013	90	8760	8760	2184	**0.249**
0.00042	95	8760	8760	4.095	**0.000**
0.00001	99	8760	8760	1.507	**0.000**
0.00014	99	8760	8760	0.454	**0.000**
				3675	**0.420**

0.00204	**99**	**8760**	**8760**	568	**0.065**
0.002	99	8760	8760	568	**0.065**
0.00014	99	8760	8760	0.076	**0.000**
				568	**0.065**

0.013	**90**	**8760**	**8760**	3549	**0.405**
0.013	**90**	**8760**	**8760**	3549	**0.405**

lb/1000 gallons					
0.700	**0**	**8760**	**8760**	440	**0.050**
lb/day					
1.380	80	8760		984	
lb/ton processed					
0.00014	**0**	**8760**	**8760**	30	**0.0035**
0.00014	**0**	**8760**	**8760**	23	**0.0027**
0.00013	**0**	**8760**	**8760**	36	**0.0041**
0.001	**0**	**8760**	**8760**	206	**0.0236**
				12645	***1.443***

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Controlled Emissions (PM_{10})	**Controlled** Emissions ($PM_{2.5}$)	**Controlled Emissions ($PM_{2.5}$)**	**Controlled** Emissions ($PM_{2.5}$)	**Controlled** Emissions (PM)
T/yr	(lb/yr)[14]	**(lb/hr)[14]**	**T/yr**	(lb/yr)
0.568	193	**0.022**	0.097	1136
0.175	59	**0.007**	0.030	349
1.092	371	**0.042**	0.186	4368
0.002	0.683	**0.000**	0.000	27.846
0.001	0.33	**0.000**	0.000	5
0.000	0.077	**0.000**	0.000	1.874
1.838	625	**0.071**	0.312	5887

0.284	97	**0.011**	0.048	568
0.284	97	**0.011**	0.048	568
0.000	0.013	**0.000**	0.000	0.312
0.284	97	**0.011**	0.048	568

1.775	603	**0.069**	0.302	7098
1.775	603	**0.069**	0.302	7098

0.220	440	**0.050**	0.220	440
0.492	101		0.050	
0.015	5.15	**0.0006**	0.003	125
0.012	3.96	**0.0005**	0.002	96
0.018	4.26	**0.0005**	0.002	98
0.103	35.09	**0.0040**	0.018	819
6.322	*2513*	***0.287***	*1.257*	*22798*

Controlled Emissions (PM)	**Controlled** Emissions (PM)	**Uncontrolled Tons Processed per Year**	Emission Factor Source
lb/hr	**T/yr**		(e.g., AP-42)
0.130	0.568	**350400**	EPA WebFire SCC 30200817-cyclone
0.040	0.175	**52560**	EPA WebFire SCC 30200817-cyclone
0.499	2.184	**52560**	AP-42 9.9.1-2 SCC 30200816
0.003	0.014	**32850**	AP-42 9.9.1 SCC 30200802 - unc. factor x cyclone efficiency for controlled
0.001	0.002	**32850**	30502006 stone quarry
0.000	0.001	**210240**	AP-42 9.9.1-2 SCC 30200803
0.672	2.944		
0.065	0.284	**175200**	**AP-42 9.9.1-2 SCC 30200817 - cyclone**
0.065	0.284	**175200**	AP-42 9.9.1-2 SCC 30200817 (Cyclone data)
0.000	0.000	**35040**	AP-42 9.9.1-2 SCC 30200803
0.065	0.284		
0.810	3.549	**175200**	**AP-42 9.9.1-2 SCC 30200816**
0.810	3.549	**175200**	**AP-42 9.9.1-2 SCC 30200816**

0.050	0.220		**AP-42 1.5-1 SCC 10201002**
			AP-42 13.2.2-2 (1a)
0.014	0.062	**140160**	**AP-42 9.9.1-2 SCC 30200803**
0.011	0.048	**52560**	**AP-42 9.9.1-2 SCC 30200803**
0.011	0.049	**32850**	**AP-42 11.19.2-2 SCC 30502006 uncontrolled**
0.093	0.410	**32850**	**AP-42 9.9.1 SCC 30200540**
2.602	*11.399*	784020	

EM FACTOR lb/ton processed	EM FACTOR lb/ton processed	EM FACTOR lb/ton processed	**Uncontrolled** Emissions (PM_{10})	**Uncontrolled** Emissions (PM_{10})
PM	PM-10 (calculated per AP 42 9.9.1-13, if not stated	PM-2.5 (calculated per AP 42 9.9.1-13, if not stated	(lb/yr)	(lb/hr)
same as for controlled	same as for controlled	same as for controlled	84096	**9.600**
same as for controlled	same as for controlled	same as for controlled	12614	**1.440**
same as for controlled	same as for controlled	same as for controlled	39420	**4.500**
same as for controlled	same as for controlled	same as for controlled	82	**0.009**
same as for controlled	same as for controlled	same as for controlled	151	**0.017**
same as for controlled	same as for controlled	same as for controlled	168	**0.019**
			136532	**15.586**

0.067	0.034	**0.006**	586920	**67.000**
0.067	0.034	0.006	586920	**67.000**
same as for controlled	same as for controlled	same as for controlled	28	**0.003**
			586948	**67.003**

same as for controlled	**same as for controlled**	**same as for controlled**	131400	**15.000**
same as for controlled	**same as for controlled**	**same as for controlled**	131400	**15.000**

lb/1000 gallons	**lb/1000 gallons**	**lb/1000 gallons**		
same as for controlled	**same as for controlled**	**same as for controlled**	527.4	**0.060**
lb/day	**lb/day**	**lb/day**		
44.210	13.480	1.380		
lb/ton processed	**lb/ton processed**	**lb/ton processed**		
same as for controlled	**same as for controlled**	**same as for controlled**	112	**0.013**
same as for controlled	**same as for controlled**	**same as for controlled**	42	**0.005**
same as for controlled	**same as for controlled**	**same as for controlled**	99	**0.011**
same as for controlled	**same as for controlled**	**same as for controlled**	821	**0.094**
			1574801	*179.772*

Uncontrolled *Emissions (PM_{10})*	**Uncontrolled** Emissions ($PM_{2.5}$)	**Uncontrolled Emissions ($PM_{2.5}$)**	***Uncontrolled*** *Emissions ($PM_{2.5}$)*	**Uncontrolled** Emissions (PM) Annual Potential
T/yr	(lb/yr)	**(lb/hr)**	**T/yr**	(lb/yr)
42.048	14296	**1.6320**	*7.148*	*84096*
6.307	2144	**0.2448**	*1.072*	*12614*
19.710	6701	**0.765**	*3.351*	*78840*
0.041	14	**0.002**	*0.007*	558
0.076	33	**0.004**	*0.016*	*460*
0.084	29	**0.003**	*0.014*	*694*
68.266	23217	**2.650**	*11.609*	*177263*
293.460	35741	**4.080**	*17.870*	*1173840*
293.460	35741	**4.080**	*17.870*	*1173840*
0.014	4.77	**0.0005**	*0.0024*	*116*
293.474	35746	**4.081**	*17.873*	*1173956*
65.700	22338	**2.550**	*11.169*	*262800*
65.700	22338	**2.550**	*11.169*	*262800*

0.264	527.4	**0.060**	*0.264*	527
0.056	19.062	**0.002**	*0.010*	*463*
0.021	7.148	**0.0008**	*0.004*	*173*
0.049	4.271	**0.0005**	*0.002*	*99*
0.411	35.182	**0.004**	*0.018*	*821*
787.40	*139973*	***15.979***	*69.986*	*3052741*

Uncontrolled Emissions (PM) Annual Potential	**Uncontrolled** Emissions (PM) Annual Potential	Comments/ Explanations
lb/hr	**T/yr**	
9.600	42.048	
1.440	6.307	
9.000	39.420	
0.064	0.279	
0.052	0.230	
0.079	0.347	
20.235	88.631	
134.000	586.920	
134.000	586.920	
0.013	0.058	
134.013	586.978	
30.000	131.400	
30.000	131.400	

0.060	0.264	
0.053	0.231	
0.020	0.087	
0.011	0.049	
0.094	0.411	
348.486	*1526.371*	

Adapted Minnesota Pollution Control Agency spreadsheed "p-sbap5-21"

Air emissions from burning propane

Propane combustion

What is the total maximum rated heat input for your propane units?	7876471	Btu per hour	(Check your units!)
In the previous 12 months, how many **Choose one**	0		
Sulfur content of propane	0.1	grains/100 cubic feet	

Propane potential and actual emissions

Pollutant	a GWP[1]	b Maximum hourly usage (gal/hr) (Btu/hr) / (91500 Btu/gal)	c Actual propane burned (gal/yr)	d Hours in a Year (hr/yr) 24 hr/day * 365 day/yr	e Emission Factor (lb/gal)	Potential Emissions (ton/yr) (b * d * e) / 2000	Actual Emissions (tons/yr) (c * e) / 2000
		86.08	628530	8760	by pollutant		
Criteria Air Pollutants						Source: EPA AP-42 Chapter 1.5	
PM					0.0007	**0.26**	**2.20E-01**
PM10					0.0007	**0.26**	**2.20E-01**
PM2.5					0.0007	**0.26**	**2.20E-01**
SOx					0.0001	**0.04**	**3.14E-02**
NOx					0.0130	**4.90**	**4.09E+00**
VOC					0.0010	**0.38**	**3.14E-01**
CO					0.0075	**2.83**	**2.36E+00**
Lead					n/a		
Greenhouse Gas Emissions						Source: 40 CFR 98, Subp. C, Table C-1 and C-2	
CO_2	1				12.40	**4674.48**	**3896.23**
CH_4	25				0.0002017	**0.08**	**0.06**
N_2O	298				0.0000202	**0.01**	**0.01**
				GHG Total (CO_2e)[2]		**4678.64**	**3899.70**

Adapted Minnesota Pollution Control Agency spreadsheed "p-sbap5-21"

Air emissions from burning propane

Hazardous Air Pollutants — [Source: EPA AP-42 Chapter 1.4]

Benzene		7.72E-08	**2.91E-05**	**2.43E-05**
Formaldehyde		2.76E-06	**1.04E-03**	**8.67E-04**
Hexane		6.62E-05	**2.50E-02**	**2.08E-02**
Naphthalene		2.24E-08	**8.46E-06**	**7.05E-06**
Toluene		1.25E-07	**4.71E-05**	**3.93E-05**
Arsenic		7.36E-09	**2.77E-06**	**2.31E-06**
Beryllium[3]		4.41E-10	**1.66E-07**	**1.39E-07**
Cadmium[3]		4.05E-08	**1.53E-05**	**1.27E-05**
Chromium[3]		5.15E-08	**1.94E-05**	**1.62E-05**
Cobalt[3]		3.09E-09	**1.16E-06**	**9.71E-07**
Manganese[3]		1.40E-08	**5.27E-06**	**4.39E-06**
Mercury[4]		9.56E-09	**3.61E-06**	**3.00E-06**
Nickel[3]		7.72E-08	**2.91E-05**	**2.43E-05**
Selenium		8.83E-10	**3.33E-07**	**2.77E-07**
	HAP total		**0.0262**	**2.18E-02**

[1] Global Warming Potential from 40 CFR Part 98, Subpart A, Table A-1

[2] CO_2e = carbon dioxide equivalents

[3] Also found in bentonite. AP-42 makes no distinction for Cr(III) vs Cr(VI). 4% of total chromium is estimated to l

Identified HAP / TAP			
Combined emission from bentonite receiving and storage			0.0048
			2.40E-06
	lb TAP / ton bentonite		
Antimony	1.22E-02		
Barium	1.44E+00		
Beryllium	1.99E-02		
Boron Oxide	2.80E-02		
Bromine	1.40E-02		
Cadmium	2.20E-04		
Cesium Hydroxide	1.30E-03		
Chromium, hexavalent	0.00E+00		
Chromium, total	1.60E-02		
Cobalt	4.40E-03		
Copper, dust	9.00E-02		
Fluorides, as F	2.20E-02		
Iodine	5.80E-02		
Manganese, dust	4.20E-01		
Nickel	7.60E-03		
Phosphorus	3.60E-01		
Silver, compounds	3.80E-03		
Tellurium	1.20E-03		
Tin, oxide	1.40E-03		
Vanadium	6.20E-02		
Yttrium	1.22E-01		
Zinc, oxide dust	2.80E-02		
Zirconium	3.60E-01		

From Redmond Minerals	**ppm (mg/kg)**	**wt % conversion**	**lb/ton conversion**
Antimony	6.1	0.00061	0.0122
Barium	720	0.072	1.44
Beryllium	9.96	0.000996	0.01992
Boron Oxide	14	0.0014	0.028
Bromine	7	0.0007	0.014
Cadmium	0.11	0.000011	0.00022
Cesium Hydroxide	0.65	0.000065	0.0013
Chromium, hexavalent[1]	0	0	0
Chromium, total[2]	8	0.0008	0.016

Cobalt	2.2	0.00022	0.0044
Copper, dust	45	0.0045	0.09
Fluoride	11	0.0011	0.022
Iodine	29	0.0029	0.058
Manganese, dust	210	0.021	0.42
Nickel	3.8	0.00038	0.0076
Phosphorus	180	0.018	0.36
Silver, compounds	1.9	0.00019	0.0038
Tellurium	0.6	0.00006	0.0012
Tin, oxide	0.7	0.00007	0.0014
Vanadium	31	0.0031	0.062
Yttrium	61	0.0061	0.122
Zinc, oxide dust	14	0.0014	0.028
Zirconium	180	0.018	0.36

Convert ppm to %	divide ppm by 10,000

Convert wt% to lb/ton	0.0001 lb TAP	2000 lb bentonite
	100 lb bentonite	1 ton bentonite

[1] Bentonite chromium speciation is expected to be all Cr (II) and Cr(III). See "Chemical Speciation of Chrc

[2]SDS makes no distinction between forms. All chromium is treated as chromium (II) and chromium (III).

lb bentonite / hr emission ton bentonite / hr emission				
586?	Emission Factor Calculated from tons bentonite / hr	Uncontrolled (Maximum) Emissions	Uncontrolled (Maximum) TPY	Controlled Average Emissions
	lb/hr	lb annually	ton/year	lb/hr
	2.93E-08	2.57E-04	1.28E-07	2.93E-08
	3.46E-06	3.03E-02	1.52E-05	3.46E-06
586	4.79E-08	4.20E-04	2.10E-07	4.79E-08
	6.73E-08	5.90E-04	2.95E-07	6.73E-08
	3.37E-08	2.95E-04	1.47E-07	3.37E-08
586	5.29E-10	4.63E-06	2.32E-09	5.29E-10
	3.13E-09	2.74E-05	1.37E-08	3.13E-09
586	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	3.85E-08	3.37E-04	1.69E-07	3.85E-08
	1.06E-08	9.27E-05	4.63E-08	1.06E-08
	2.16E-07	1.90E-03	9.48E-07	2.16E-07
	5.29E-08	4.63E-04	2.32E-07	5.29E-08
	1.39E-07	1.22E-03	6.11E-07	1.39E-07
	1.01E-06	8.85E-03	4.42E-06	1.01E-06
586	1.83E-08	1.60E-04	8.00E-08	1.83E-08
	8.66E-07	7.58E-03	3.79E-06	8.66E-07
	9.14E-09	8.00E-05	4.00E-08	9.14E-09
	2.89E-09	2.53E-05	1.26E-08	2.89E-09
	3.37E-09	2.95E-05	1.47E-08	3.37E-09
	1.49E-07	1.31E-03	6.53E-07	1.49E-07
	2.93E-07	2.57E-03	1.28E-06	2.93E-07
	6.73E-08	5.90E-04	2.95E-07	6.73E-08
	8.66E-07	7.58E-03	3.79E-06	8.66E-07

= 0.002 lb TAP / ton bentonite conversion factor

omium in Drilling Muds", T. Taguchi, Feb. 2007, DOI: 10.1063/1.2644501.

Controlled Emissions	Controlled Emissions
lb/yr	ton/year
2.57E-04	1.28E-07
3.03E-02	1.52E-05
4.20E-04	2.10E-07
5.90E-04	2.95E-07
2.95E-04	1.47E-07
4.63E-06	2.32E-09
2.74E-05	1.37E-08
0.00E+00	0.00E+00
3.37E-04	1.69E-07
9.27E-05	4.63E-08
1.90E-03	9.48E-07
4.63E-04	2.32E-07
1.22E-03	6.11E-07
8.85E-03	4.42E-06
1.60E-04	8.00E-08
7.58E-03	3.79E-06
8.00E-05	4.00E-08
2.53E-05	1.26E-08
2.95E-05	1.47E-08
1.31E-03	6.53E-07
2.57E-03	1.28E-06
5.90E-04	2.95E-07
7.58E-03	3.79E-06

Uncontrolled 24-hour Average Emission	Under BRC Rate for Uncontrolled Emssion	Controlled 24-hour Average Emission
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt
Level I Exempt	Level I Exempt	Level I Exempt

BRC Rate 10% of EL	DEQ Emission Limit (EL) which triggers modeling	8760	hrs/year	
EL lb/hr	EL lb/hr	24-hour Average AAC or annual AACC	Units for AAC or annual AACC	**24-hour Average AAC or annual AACC**
				ug/m^3 equivalent
3.300E-03	3.30E-02	2.50E-02	mg/m^3	2.50E+01
3.300E-03	3.30E-02	2.50E-02	mg/m^3	2.50E+01
2.800E-06	2.80E-05	4.20E-03	µg/m^3	4.20E-03
6.670E-02	6.67E-01	5.00E-01	mg/m^3	5.00E+02
4.700E-03	4.70E-02	3.50E-02	mg/m^3	3.50E+01
3.700E-07	3.70E-06	5.60E-04	µg/m^3	5.60E-04
1.330E-02	1.33E-01	1.00E-01	mg/m^3	1.00E+02
5.600E-08	5.60E-07	8.30E-05	µg/m^3	8.30E-05
3.300E-03	3.30E-02	2.50E-02	mg/m^3	2.50E+01
3.300E-04	3.30E-03	2.50E-03	mg/m^3	2.50E+00
6.700E-03	6.70E-02	5.00E-02	mg/m^3	5.00E+01
1.670E-02	1.67E-01	1.25E-01	mg/m^3	1.25E+02
6.700E-04	6.70E-03	5.00E-03	mg/m^3	5.00E+00
3.330E-02	3.33E-01	2.50E-01	mg/m^3	2.50E+02
2.700E-06	2.70E-05	4.20E-03	µg/m^3	4.20E-03
7.000E-04	7.00E-03	5.00E-03	mg/m^3	5.00E+00
1.000E-04	1.00E-03	5.00E-03	mg/m^3	5.00E+00
7.000E-04	7.00E-03	5.00E-03	mg/m^3	5.00E+00
1.330E-02	1.33E-01	1.00E-01	mg/m^3	1.00E+02
3.000E-04	3.00E-03	2.50E-03	mg/m^3	2.50E+00
6.700E-03	6.70E-02	5.00E-02	mg/m^3	5.00E+01
6.670E-02	6.67E-01	5.00E-01	mg/m^3	5.00E+02
3.330E-02	3.33E-01	5.00E-02	mg/m^3	5.00E+01

NWAIRQUEST Background 2014-2017			SEBS Concentration (highest)	SEBS + Background Concentration		% of Reg. Limit
Latitude or UTMN	43.87	4858436.05				
Longitude or UTME	-112.46	382385.19				
UTM zone		12				
PM_{10} 24hr	78.4	µg/m³	60.56	138.96		92.6
$PM_{2.5}$ 24hr	13.3	µg/m³	10.49	23.788		68.0
$PM_{2.5}$ annual	4.3	µg/m³	3.06	7.36		61.3
O_3 daily 8hr max	58	ppb				
O_3 for PVMRM	53	ppb				
NO_2 1hr	12	µg/m³	66.97	78.97	42.0	42.0
NO_2 annual	2.3	µg/m³	3.34	5.64	3.0	5.64
SO_2 1hr	4.7	µg/m³				
SO_2 3hr	6.4	µg/m³				
SO_2 24hr	2.5	µg/m³				
SO_2 annual	0.5	µg/m³				
CO 1hr	1.77	ppb				
CO 8hr	0.99	ppb				

Applicable Regulatory Limits			
PM_{10}	24-hour	5	150[f]
$PM_{2.5}$	24-hour	1.2	35[i]
	Annual	0.3	12[k]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]
	8-hour	500	10,000[m]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 μg/m^3)	75 ppb[p] (196 μg/m^3)
	3-hour	25	1,300[m]
	24-hour	5	365[m]
	Annual	1	80[r]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 μg/m^3)	100 ppb[s] (188 μg/m^3)
	Annual	1	100[r]

From P-2017.0056								
Emissions Unit		**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NOx**	**CO**	**VOC**
		T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
		Point Sources						
PE01		18.954	9.477	1.611	-	-	-	-
PE16A		0.758	0.379	0.064	-	-	-	-
PE16		4.739	2.369	0.04	-	-	-	-
BP02		0.156	0.038	0.006	-	-	-	-
BP06 and BP08		8.424	0.59	0.067	-	-	-	-
Sum for PE19		33.031	12.853	1.788				
PE04		473.85	473.85	80.555	-	-	-	-
PE10		473.85	473.85	80.555	-	-	-	-
PE07		59.231	29.616	5.035	-	-	-	-
PE15		59.231	29.616	5.035	-	-	-	-
PE17		0.063	0.063	0.063	0.009	1.173	0.677	0.072
BP03		0.104	0.025	0.004	-	-	-	-
BP04		0.026	0.0063	0.001	-	-	-	-
BP05		0.01	0.0025	0.0004	-	-	-	-
BP07		6.318	0.442	0.051	-	-	-	-
BP09		0.002	0.001	0.0001	-	-	-	-
Totals		**1105.7**	**1020.3**	**173.1**	**0.009**	**1.173**	**0.677**	**0.072**

For this Application							
Emissions Unit	**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NOx**	**CO**	**VOC**
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
	Point Sources						
PE19	88.631	68.266	11.609	-	-	-	-
PE04	586.92	293.46	17.870	-	-	-	-
PE10	586.98	293.47	17.873	-	-	-	-
PE07	131.4	65.7	11.169	-	-	-	-
PE15	131.4	65.7	11.169	-	-	-	-
PE18	0.264	0.264	0.264	0.038	4.897	2.825	0.301
BP03	0.231	0.056	0.01	-	-	-	-
BP05	0.087	0.021	0.004	-	-	-	-
BP07	0.049	0.049	0.002	-	-	-	-
BP09	0.411	0.411	0.018	-	-	-	-
Totals	**1526.4**	**787.4**	**70.0**	**0.038**	**4.897**	**2.825**	**0.301**

Net Difference From P-2017.005 to Proposed Emissions							
Emissions Unit	**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NOx**	**CO**	**VOC**
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
	Point Sources						
PE19	55.600	55.413	9.821	-	-	-	-
PE04	113.070	-180.39	-62.685	-	-	-	-
PE10	113.128	-180.38	-62.682	-	-	-	-
PE07	72.169	36.084	6.134	-	-	-	-
PE15	72.169	36.084	6.134	-	-	-	-

PE18	0.201	0.201	0.201	0.029	3.724	2.148	0.229
BP03	0.127	0.031	0.006	-	-	-	-
BP05	0.077	0.0147	0.003	-	-	-	-
BP07	-6.269	0.0465	0.0016	-	-	-	-
BP09	0.409	-0.031	-0.033	-	-	-	-
Totals	**420.7**	**-232.9**	**-103.1**	**0.029**	**3.724**	**2.148**	**0.229**

PE04
West Baghouse
Flow & Temperature

Date Time	145 [°F]	145 [fpm]	263 [°F]	263 [%RH]
24.01.2020 14:34:23	72.4	5480	59.2	53.9
24.01.2020 14:34:24	74.2	--	59.2	53.9
24.01.2020 14:34:25	76.8	5873	59.2	54.0
24.01.2020 14:34:26	77.1	5589	59.2	54.0
24.01.2020 14:34:27	77.2	5167	59.2	54.0
24.01.2020 14:34:28	77.4	5549	59.2	54.0
24.01.2020 14:34:29	77.7	5850	59.2	54.0
24.01.2020 14:34:30	77.8	4293	59.2	54.0
24.01.2020 14:34:31	78.1	4377	59.1	54.1
24.01.2020 14:34:32	78.2	4260	59.2	54.1
24.01.2020 14:34:33	78.4	4404	59.1	54.1
24.01.2020 14:34:34	78.5	4133	59.1	54.1
24.01.2020 14:34:35	78.6	5286	59.1	54.1
24.01.2020 14:34:36	79.0	4792	59.1	54.1
24.01.2020 14:34:37	79.0	4627	59.1	54.1
24.01.2020 14:34:38	78.0	4902	59.1	54.1
24.01.2020 14:35:05	73.0	5639	59.0	54.2
24.01.2020 14:35:06	73.5	5565	59.0	54.2
24.01.2020 14:35:07	73.5	5180	59.0	54.2
24.01.2020 14:35:08	73.7	5484	59.0	54.2
24.01.2020 14:35:09	73.5	5210	59.0	54.2
24.01.2020 14:35:10	73.6	5234	59.0	54.2
24.01.2020 14:35:11	73.7	6064	59.0	54.2
24.01.2020 14:35:12	73.8	6028	59.0	54.1
24.01.2020 14:35:13	74.3	5141	59.0	54.1
24.01.2020 14:36:04	65.7	4764	58.6	53.8
24.01.2020 14:36:05	66.5	3394	58.5	53.8
24.01.2020 14:36:06	66.9	3019	58.5	53.8
24.01.2020 14:36:07	67.3	4844	58.5	53.8
24.01.2020 14:36:08	67.5	4865	58.5	53.8
24.01.2020 14:36:09	67.5	5000	58.5	53.8
24.01.2020 14:36:10	67.5	4828	58.5	53.8
24.01.2020 14:36:11	67.4	4736	58.5	53.8
24.01.2020 14:36:12	67.3	3123	58.5	53.8
24.01.2020 14:36:13	67.1	4653	58.5	53.8
24.01.2020 14:36:14	67.1	5019	58.4	53.8
24.01.2020 14:36:15	67.0	5300	58.4	53.8
24.01.2020 14:36:16	66.9	5066	58.4	53.8
24.01.2020 14:36:17	66.9	5033	58.4	53.8
24.01.2020 14:36:18	66.8	4918	58.4	53.8
24.01.2020 14:36:19	66.8	5019	58.4	53.8
24.01.2020 14:36:20	66.8	5070	58.4	53.8
24.01.2020 14:36:21	66.7	2686	58.4	53.8
24.01.2020 14:36:22	66.6	4553	58.4	53.8
24.01.2020 14:36:23	66.6	4131	58.4	53.8
24.01.2020 14:36:24	66.5	4149	58.4	53.8
24.01.2020 14:36:25	66.5	4866	58.4	53.8
24.01.2020 14:36:26	66.5	5397	58.4	53.8
24.01.2020 14:36:27	66.4	4022	58.4	53.8
24.01.2020 14:36:28	66.5	3093	58.3	53.8
Averages	71.4	4809.7	58.8	53.9

Feet per Second Model Input	**80.2**		

Instrument name	Serial Number
testo 605i	49332263
testo 410i	49027145
testo 805i	49627832

BP05
Cube Building Exhaust
Flow & Temperature

Date Time	145 [°F]	145 [fpm]
24.01.2020 12:25:56	57.0	1072
24.01.2020 12:25:57	56.4	1691
24.01.2020 12:25:58	56.3	1840
24.01.2020 12:25:59	56.1	1567
24.01.2020 12:26:00	55.9	1717
24.01.2020 12:26:01	55.9	1802
24.01.2020 12:26:02	55.7	1686
24.01.2020 12:26:03	55.5	1988
24.01.2020 12:26:04	55.3	2146
24.01.2020 12:26:05	55.3	2193
24.01.2020 12:26:06	55.5	2475
24.01.2020 12:26:07	55.4	2168
24.01.2020 12:26:08	55.5	2294
24.01.2020 12:26:09	55.4	--
24.01.2020 12:26:10	55.4	--
24.01.2020 12:26:11	55.3	2211
24.01.2020 12:26:12	55.2	1898
24.01.2020 12:26:13	55.2	1870
24.01.2020 12:26:14	55.1	--
24.01.2020 12:26:15	55.1	1161
24.01.2020 12:26:16	55.0	959
24.01.2020 12:26:17	54.6	--
24.01.2020 12:26:18	54.5	1458
24.01.2020 12:26:19	54.3	--
24.01.2020 12:26:20	53.8	--
24.01.2020 12:26:21	53.7	--
24.01.2020 12:26:22	53.9	2265
24.01.2020 12:26:23	53.8	1228
24.01.2020 12:26:24	53.8	2244
24.01.2020 12:26:25	53.9	1917
24.01.2020 12:26:26	54.0	2239
24.01.2020 12:26:27	54.0	1356
24.01.2020 12:26:28	53.9	1818
24.01.2020 12:26:29	53.8	1339
24.01.2020 12:26:30	53.8	1291
24.01.2020 12:26:31	53.7	1196
24.01.2020 12:26:32	53.6	--
24.01.2020 12:26:33	53.5	--
24.01.2020 12:26:34	53.6	1921
24.01.2020 12:26:35	53.2	991
24.01.2020 12:26:36	53.2	937
24.01.2020 12:26:37	53.3	1647
24.01.2020 12:26:38	53.5	1757
24.01.2020 12:26:39	53.5	993
24.01.2020 12:26:40	53.6	1573
24.01.2020 12:26:41	53.6	2402
24.01.2020 12:26:42	53.6	1200
	54.6	1697.6

BP07 & 09
Headbox exhaust
Flow & Temperature

Date Time	145 [°F]	145 [fpm]
24.01.2020 14:45:39	54.7	1095
24.01.2020 14:45:40	55.0	1427
24.01.2020 14:45:41	55.0	1443
24.01.2020 14:45:42	55.1	1488
24.01.2020 14:45:43	55.1	1563
24.01.2020 14:45:44	55.1	1706
24.01.2020 14:45:45	55.2	1909
24.01.2020 14:45:46	55.2	1913
24.01.2020 14:45:47	55.2	1939
24.01.2020 14:45:48	55.3	1939
24.01.2020 14:45:49	55.3	1957
24.01.2020 14:45:50	55.3	1855
24.01.2020 14:45:51	55.4	1923
	55.1	1704.4

	28.3			28.4

PE07 West Cooler **Humidity**		
Date Time	263 [°F]	263 [%RH]
24.01.2020 14:29:20	83.0	73
24.01.2020 14:29:21	---	78.8
24.01.2020 14:29:22	86.1	83.1
24.01.2020 14:29:23	87.8	86
24.01.2020 14:29:24	89.5	84.7
24.01.2020 14:29:25	90.9	81.2
24.01.2020 14:29:26	91.9	77.9
24.01.2020 14:29:27	92.8	74.6
24.01.2020 14:29:28	93.6	71.8
24.01.2020 14:29:29	---	69.4
24.01.2020 14:29:30	94.1	67.5
24.01.2020 14:29:31	94.7	65.7
24.01.2020 14:29:32	94.9	64.3
24.01.2020 14:29:33	95.2	63.3
24.01.2020 14:29:34	95.5	62.8
24.01.2020 14:29:35	95.7	62.3
24.01.2020 14:29:36	95.9	62
24.01.2020 14:29:37	---	61.4
24.01.2020 14:29:38	96.1	60.8
24.01.2020 14:29:39	96.3	60.4
24.01.2020 14:29:40	96.5	60.1
24.01.2020 14:29:41	96.6	59.8
24.01.2020 14:29:42	96.7	59.4
24.01.2020 14:29:43	---	59.3
24.01.2020 14:29:44	96.8	59.1
24.01.2020 14:29:45	---	58.8
24.01.2020 14:29:46	96.9	58.8
24.01.2020 14:29:47	96.9	58.5
24.01.2020 14:29:48	96.9	58.4
24.01.2020 14:29:49	97.0	58.3
24.01.2020 14:29:50	97.0	58.3
24.01.2020 14:29:51	97.1	58
24.01.2020 14:29:52	97.1	58
24.01.2020 14:29:53	97.1	58
24.01.2020 14:29:54	---	57.8
24.01.2020 14:29:55	97.2	57.7
24.01.2020 14:29:56	97.3	57.8
24.01.2020 14:29:57	97.3	57.7
24.01.2020 14:29:58	97.4	57.5
24.01.2020 14:29:59	96.4	57.7
24.01.2020 14:30:00	94.8	52.7
24.01.2020 14:30:01	93.6	41.9
	94.7	63.7

PE07 West Pellet Cooler **Flow & Temperature**	
Date Time	263 [%RH]
24.01.2020 13:46:15	57.0
24.01.2020 13:46:16	57.1
24.01.2020 13:46:17	57.2
24.01.2020 13:46:18	57.3
24.01.2020 13:46:19	57.6
24.01.2020 13:46:20	---
24.01.2020 13:46:21	57.8
24.01.2020 13:46:22	---
24.01.2020 13:46:23	58.0
24.01.2020 13:46:24	58.1
24.01.2020 13:46:25	58.3
24.01.2020 13:46:26	58.5
24.01.2020 13:46:27	---
24.01.2020 13:46:28	58.8
24.01.2020 13:46:29	---
24.01.2020 13:46:30	59.2
24.01.2020 13:46:31	59.7
24.01.2020 13:46:32	60.2
24.01.2020 13:46:33	60.7
24.01.2020 13:46:34	---
24.01.2020 13:46:35	60.9
24.01.2020 13:46:36	---
24.01.2020 13:46:37	60.9
24.01.2020 13:46:38	---
24.01.2020 13:46:39	61.0
24.01.2020 13:46:40	61.0
24.01.2020 13:46:41	---
24.01.2020 13:46:42	61.2
24.01.2020 13:46:43	---
24.01.2020 13:46:44	61.4
	59.1

			PE10 East Baghouse **Flow & Temperature**			
145 [°F]	145 [fpm]		Date Time	145 [°F]	145 [fpm]	
56	4620		24.01.2020 13:38:09	57.0	1519	
57.1	4455		24.01.2020 13:38:10	57.7	2116	
57.7	4675		24.01.2020 13:38:11	58.1	2973	
57.8	4241		24.01.2020 13:38:12	58.4	3103	
58.3	4750		24.01.2020 13:38:13	58.7	2586	
58.8	4190		24.01.2020 13:38:14	58.9	1870	
58.9	4274		24.01.2020 13:38:15	59.0	1192	
58.8	4178		24.01.2020 13:38:16	58.7	--	
58.8	4193		24.01.2020 13:38:17	58.7	--	
59.1	5240		24.01.2020 13:38:18	59.0	2080	
59.2	4953		24.01.2020 13:38:19	59.2	2066	
59.3	4951		24.01.2020 13:38:20	59.4	1746	
59.5	4918		24.01.2020 13:38:21	59.5	2025	
59.5	4885		24.01.2020 13:38:22	59.6	1936	
59.6	4927		24.01.2020 13:38:23	59.6	2408	
59.8	4898		24.01.2020 13:38:24	59.7	2938	
59.9	4382		24.01.2020 13:38:25	59.7	3935	
60	4563		24.01.2020 13:38:26	59.8	1896	
60.1	4538		24.01.2020 13:38:27	59.9	3008	
60.2	4501		24.01.2020 13:38:28	60.0	2553	
60.4	4893		24.01.2020 13:38:29	60.1	2337	
60.6	4296		24.01.2020 13:38:30	60.2	2352	
60.7	4894		24.01.2020 13:38:31	60.2	2340	
60.8	5136		24.01.2020 13:38:32	60.3	2255	
60.9	5251		24.01.2020 13:38:33	60.3	1738	
61.1	5327		24.01.2020 13:38:34	60.4	1702	
61.2	5184		24.01.2020 13:38:35	60.5	2246	
61.3	5113		24.01.2020 13:38:36	60.5	3015	
61.4	5165		24.01.2020 13:38:37	60.7	3591	
61.5	5080		24.01.2020 13:38:38	60.7	3659	
			24.01.2020 13:38:39	60.8	3259	
			24.01.2020 13:38:40	61.0	3207	
			24.01.2020 13:38:41	61.1	3372	
			24.01.2020 13:38:42	61.1	2511	
			24.01.2020 13:38:43	61.2	1942	
			24.01.2020 13:38:44	61.3	2425	
			24.01.2020 13:38:45	61.3	1772	
			24.01.2020 13:38:46	61.3	1588	
			24.01.2020 13:38:47	61.3	1897	
			24.01.2020 13:38:48	61.4	2163	
			24.01.2020 13:38:49	61.4	2774	
			24.01.2020 13:38:50	61.5	3735	
			24.01.2020 13:38:51	61.6	4039	
			24.01.2020 13:38:52	61.7	3456	
			24.01.2020 13:38:53	61.7	3791	
			24.01.2020 13:38:54	61.8	2942	
			24.01.2020 13:38:55	61.8	2046	
			24.01.2020 13:38:56	61.9	1905	
			24.01.2020 13:38:57	61.9	2068	
			24.01.2020 13:38:58	62	2457	
59.6	4755.7			60.3	2511.1	

	79.3				41.9	

PE15 East Cooler **Humidity**		
Date Time	263 [°F]	263 [%RH]
24.01.2020 13:39:49	48.4	65.2
24.01.2020 13:39:50	50.1	67.4
24.01.2020 13:39:51	51.4	68.7
24.01.2020 13:39:52	52.5	69.4
24.01.2020 13:39:53	53.4	69.4
24.01.2020 13:39:54	54.3	69.3
24.01.2020 13:39:55	55.1	68.6
24.01.2020 13:39:56	56.0	68.1
24.01.2020 13:39:57	57.1	67.3
24.01.2020 13:39:58	57.8	66.3
24.01.2020 13:39:59	58.4	65
24.01.2020 13:40:00	59.0	64
24.01.2020 13:40:01	59.5	62.7
24.01.2020 13:40:02	59.9	61.5
24.01.2020 13:40:03	60.3	60.5
24.01.2020 13:40:04	60.8	59.4
24.01.2020 13:40:05	61.2	58.4
24.01.2020 13:40:06	61.5	57.5
24.01.2020 13:40:07	61.8	56.7
24.01.2020 13:40:08	62.0	55.9
24.01.2020 13:40:09	62.3	55.1
	57.3	63.6

PE15 East Cooler **Flow & Temperature**		
Date Time	145 [°F]	145 [fpm]
24.01.2020 14:20:47	72.1	3708
24.01.2020 14:20:48	71.8	4652
24.01.2020 14:20:49	72.0	4520
24.01.2020 14:20:50	73.1	4566
24.01.2020 14:20:51	74.4	1530
24.01.2020 14:20:52	70.4	--
24.01.2020 14:20:53	68.4	--
24.01.2020 14:20:54	65.7	--
24.01.2020 14:20:55	66.9	3657
24.01.2020 14:20:56	73.5	3696
24.01.2020 14:20:57	75.7	3865
24.01.2020 14:20:58	76.9	3826
24.01.2020 14:20:59	77.2	4153
24.01.2020 14:21:00	79.3	3146
24.01.2020 14:21:01	78.6	4289
24.01.2020 14:21:02	78.5	4422
24.01.2020 14:21:03	79.1	4376
24.01.2020 14:21:04	79.5	4520
24.01.2020 14:21:05	79.8	4831
24.01.2020 14:21:06	80.2	4900
24.01.2020 14:21:07	80.5	4791
24.01.2020 14:21:08	81.3	4778
24.01.2020 14:21:09	81.7	4795
24.01.2020 14:21:10	82.1	4759
24.01.2020 14:21:11	82.0	4890
24.01.2020 14:21:12	82.3	4836
24.01.2020 14:21:13	83.0	4911
24.01.2020 14:21:14	83.5	4543
24.01.2020 14:21:15	83.8	4879
24.01.2020 14:21:16	83.8	3650
24.01.2020 14:21:17	80.3	--
24.01.2020 14:21:18	82.3	4141
24.01.2020 14:21:19	83.1	4528
24.01.2020 14:21:20	84.0	4345
24.01.2020 14:21:21	84.9	4093
24.01.2020 14:21:22	85.3	4392
	78.3	4280.9

				71.3

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

M E M O R A N D U M

DATE: August 24, 2020

TO: Christina Boulay, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Dispersion Modeling Analyst, Air Program

PROJECT: P-2017.0056 PROJ 62464, Permit for a Modification to the Existing SEBS Feed and Supply Facility located near Terreton, Idaho.

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) Related to Air Quality Impact Analyses.

Contents

Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
acfm	Actual cubic feet per minute
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
ARM	Ambient Ratio Method
ASOS	Automated Surface Observing System
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
DV	Design Values
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
ft	Feet
ft/sec	Feet per second
GEP	Good Engineering Practice
hr	Hours
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
lb/hr	Pounds per hour
m	Meters
m/sec	Meters per second
MERPs	Modeled Emission Rates for Precursors
MMBtu	Million British Thermal Units
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NSR	New Source Review
NW AIRQUEST	Northwest International Air Quality Environmental Science and Technology Consortium
O_3	Ozone
Pb	Lead
PM_{10}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers

$PM_{2.5}$	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per billion
PRIME	Plume Rise Model Enhancement
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
RMEA	Rocky Mountain Environmental Associates, Inc. (permitting and modeling consultant)
scfm	Standard cubic feet per minute
SEBS	SEBS Feed and Supply (permittee)
SIL	Significant Impact Level
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
Tons/year	Tons per year
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOCs	Volatile Organic Compounds
WGS	World Geodetic System
ºF	Degrees Fahrenheit
$\mu g/m^3$	Micrograms per cubic meter of air

1.0 Summary

SEBS Feed and Supply, Inc. (SEBS) submitted a Permit to Construct (PTC) application to modify its existing facility, located near Terreton, Idaho, and PTC P-2017.0056 Project 61954, which was issued on July 12, 2018. This project consists of the following changes:

- Install a new liquid propane gas (LPG)-fired boiler assumed to operate under two separate seasonal load condition scenarios-a cold season at 100% rated capacity and a warm season at 67% of rated capacity;
- Remove the existing LPG-fired KISCO boiler from service;
- Install a new baghouse to control particulate matter (PM_{10} and $PM_{2.5}$) emissions from Building 1 process emissions units, including a Tub Grinder, Cuber Shredder, Cube Cooler, and batch processes sources, including Grain Receiving, Bentonite Receiving, and Main Pellet Loadout;
- Alter bentonite material emission factors;
- Separate bentonite material receiving and handling and grain receiving and handling and increase grain receiving and handling to 90 tons/day;
- Increase facility production to 260 tons/day of feed pellets and 80 tons/day of hay cubes;
- Alter several existing emission point release orientations from horizontal to uninterrupted vertical releases; and,
- Alter existing PTC daily operation restrictions to an unlimited operating approach for process units reflecting 24 hours per day, 7 days per week, and 365 days per year to increase production flexibility.

Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of the applicability assessment for analyses and air impact analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

Rocky Mountain Environmental Associates, Inc. (RMEA), on behalf of SEBS, prepared the PTC application and performed ambient air impact analyses for this project. DEQ review of submitted data and DEQ analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emission calculation methods were not evaluated in this modeling review memorandum.

Table 1 presents key assumptions and results to be considered in the development of the permit. Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

The submitted information and analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emission estimates

was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emission increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments. This conclusion assumes that conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure emissions do not exceed applicable regulatory thresholds requiring further analyses and to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES.

Criteria/Assumption/Result	Explanation/Consideration
General Emission Rates. Emission rates used in the air impact analyses, as listed in Table 4 of this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emission rates greater than those used in the submitted air impact analyses and DEQ's sensitivity analyses discussed in Section 4.1.3.
Air Impact Analyses for Criteria Pollutant Emissions. Short-term and long-term facility-wide emissions of $PM_{2.5}$[a], PM_{10}[b], and NOx[d] are greater than DEQ Level I modeling thresholds. Therefore, project-specific air impact modeling must be performed for these pollutants and all averaging times.	A NAAQS compliance demonstration is required by Idaho Air Rules Section 203.02 for pollutant increases above BRC thresholds, and project-specific impact analyses are required for pollutants having an emissions increase that is greater than Level I modeling applicability thresholds (where the BRC exclusion cannot be used).
New Superior Boiler Super Seminole Boiler. Warm season (April through September) operating limitations are not required to ensure NAAQS compliance.	Emission rates at 100% load are 1.12 lb/hr NO_x, 0.06 lb/hr PM_{10} and $PM_{2.5}$. Facility-wide compliance is not affected at 100% load for 8,760 hours/year.
Baghouse Control for Process Emissions Units. <u>Baghouse PE19</u> A new baghouse (model ID PE19) will be installed to control PM, PM_{10}, and $PM_{2.5}$ emissions from the following sources: • Tub grinder (PE01), • Cuber shredder (PE16A), • Cube cooler (PE16), • Grain receiving (BP06), • Bentonite receiving (BP08), and • Main pellet loadout (BP02) <u>Baghouse PE10</u> The exhaust stream from source BP04—Pellet Bagging—will be routed to existing baghouse PE10 that controls emissions from the East Process Line.	The new PE19 baghouse will control PM, PM_{10}, and $PM_{2.5}$ emissions from previously uncontrolled sources. The existing PE10 baghouse will control PM, PM_{10}, and $PM_{2.5}$ emissions from a previously uncontrolled source.
Changes to Stack Release Orientations. The following stacks were modeled with uninterrupted vertical release orientations instead of horizontal releases:	Modeling point sources with uninterrupted vertical releases instead of horizontal releases improves dispersion of the

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES.	
Criteria/Assumption/Result	**Explanation/Consideration**
• West Process Line Baghouse (PE04) • West Cooler Cyclone (PE07) • East Cooler Cyclone (PE15) • Cube Bagging and Storage Building (BP05) Pellet storage Loadout exhaust stack (BP03) will remain a horizontal release point.	exhaust streams and generally reduce predicted ambient impacts. A permit requirement to alter the orientation to an uninterrupted vertical release for each of the PE04, PE07, PE15, and BP05 emission points is appropriate.
Permit-Allowable Throughputs Limits The facility production will be limited to 260 tons/day of finished pellets and 80 tons/day of finished hay cubes. The project's modeling demonstration accounted for operation at these levels for 24 hours/day, 7 days/week, and 52 weeks/year.	Raw material processing throughputs were included in the current PTC. Limitations on finished product throughput representing an increase over the current limits were included in the Project 62464 PTC application and modeled emission rates.
Release Height of New Baghouse Stack PE19 The baghouse was modeled with a release height of 6.8 meters (22.3 feet).	Modeled PM_{10} and $PM_{2.5}$ impacts for the project were based on the modeled release height. Building downwash effects and any increase in ambient impacts were not evaluated at a lower release height. A permit requirement to establish the release height of at least 22.3 feet above grade for the PE19 emission point is appropriate.

[a.] Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
[b.] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
[c.] Nitrogen oxides.

Summary of Submittals and Actions

December 27, 2019 RMEA submitted a modeling protocol to DEQ via email on behalf of SEBS.

January 17, 2020 DEQ issued a conditional modeling protocol approval letter to RMEA and SEBS.

June 2, 2020 DEQ received a PTC application from RMEA on behalf of SEBS.

June 10, 2020 PTC application regulatory start date.

July 10, 2020 DEQ declared the application complete.

2.0 Background Information

This section provides background information applicable to the project and the site proposed for the facility. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

SEBS is an existing facility located near Terreton, Idaho. SEBS manufactures animal feed pellets made from ground alfalfa and bentonite binder, with grain added for select products. Cube-shaped animal feed

made of ground hay is also produced. A new liquid propane (LPG)-fired Superior Boiler Super Seminole boiler rated at 7.88 MMBtu/hr was installed to replace an existing KISCO 1.88 MMBtu/hr LPG-fired boiler that was removed from service. The new boiler was assumed to operate under two separate seasonal load condition scenarios—a cold season at 100% rated capacity, and a warm season at 67% of rated capacity.

A new baghouse (model ID PE19) will be installed to control particulate matter (PM_{10} and $PM_{2.5}$) emissions from Building 1 process emissions units, including the Tub Grinder, Cuber Shredder, and Cube Cooler. Batch process Grain Receiving, Bentonite Receiving, and Main Pellet Loadout emissions will also be controlled by the new baghouse.

Permit-allowable production limits will be increased, with an increase to 260 tons/day of feed pellets and 80 tons/day of hay cubes. Bentonite material receiving and handling and grain receiving and handling emission limits will be established and be increased to 90 tons/day. The current PTC contains daily operation restrictions, which will be removed using an unlimited operating approach for process units reflecting 24 hours/day, 7 days/week, and 365 days/year for this project.

Several existing emission point release orientations will be changed from horizontal releases to uninterrupted vertical releases (West Baghouse-model ID PE04, West Cooler Cyclone-PE07, East Cooler Cyclone-PE15, and Cube Bagging-PE05).

2.2 Facility Location and Area Classification

The SEBS facility is located near Terreton, within Jefferson County (Northing: 4,856,183 m; Easting: 382,866 m; UTM Zone 12). This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

Land use in the facility's immediate area is primarily agricultural and rural dispersion coefficients are appropriate for AERMOD. Terrain elevations surrounding the project site are flat.

2.3 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS****. The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.*** *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***02. Estimates of Ambient Concentrations****. All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses

If specific criteria pollutant emission increases associated with the proposed permitting project cannot qualify for a BRC exemption as per Idaho Air Rules Section 221, then the permit cannot be issued unless the application demonstrates that applicable emission increases will not cause or significantly contribute to a violation of NAAQS, as required by Idaho Air Rules Section 203.02.

The first phase of a NAAQS compliance demonstration is to evaluate whether the proposed facility/project could have a significant impact to ambient air. Section 3.1.1 of this memorandum describes the applicability evaluation of Idaho Air Rules Section 203.02. The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in Appendix W. Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a "significant contribution" in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

Table 2. APPLICABLE REGULATORY LIMITS.

Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit [c] ($\mu g/m^3$)	Modeled Design Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.2	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	70 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

If modeled maximum pollutant impacts to ambient air from the emission sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from potential/allowable emissions resulting from the project and emissions from any nearby co-contributing sources (including existing emissions from the facility that are unrelated to the project), and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates an exceedance of NAAQS, a culpability analysis can determine if this exceedance is due to emissions from the proposed project. The permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emission increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation[1]; or b) all modeled impacts of the SIL analysis are below the applicable SIL or

other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

2.5 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emission increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emission increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion.

3.0 Analytical Methods and Data

This section describes the methods and data used in the analyses to demonstrate compliance with applicable air quality impact requirements. The DEQ Statement of Basis provides a discussion of the methods and data used to estimate criteria and TAP emission rates.

3.1 Emission Source Data

Emissions of criteria pollutants and TAPs resulting from operation of the SEBS facility were estimated by

RMEA for various applicable averaging periods. The calculation of potential emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emission estimates is not addressed in this modeling memorandum. DEQ air impact analysts are responsible for assuring that potential emission rates provided in the emission inventory are properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emission rates used in the impact modeling applicability analyses and any modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All modeled criteria air pollutant and TAP emission rates must be equal to or greater than the facility's potential emissions calculated in the PTC emission inventory or proposed permit allowable emission rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emission Rates

If project-specific emission increases for criteria pollutants would qualify for a BRC permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.[1]" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in most cases where a PTC is required for the action regardless of emission quantities, such as the modification of an existing emission or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*[2]. These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If total project-specific emission rate increases of a pollutant are below Level I Modeling Applicability Thresholds, project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds is conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emission sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Table 3 provides a comparison between facility-wide emissions and modeling applicability thresholds. Annual emission rate values were taken from the application emission rate spreadsheet. Modeling

requirements were evaluated based on facility-wide emissions due to the numerous changes to the facility, including emission release point orientation, new emission sources, routing existing fugitive process emissions to control devices, and increased process throughputs. This approach was presented in the modeling protocol.

Table 3. CRITERIA POLLUTANT MODELING APPLICABILITY

Pollutant	Averaging Period	Facility-wide Annual Potential Emissions (tons/year)	Below Regulatory Concern Thresholds (tons/year)	Modeling Required?	Emission Rate	Level I Modeling Thresholds	Modeling Required?
PM_{10}[a]	24-hour	6.5[c]	1.5	Yes	1.46[g]	0.22 lb/hr[e]	Yes
$PM_{2.5}$[b]	24-hour	1.5[c]	1.0	Yes	0.30[g]	0.054 lb/hr[e]	Yes
	Annual				1.26[g]	0.35 ton/yr	Yes
Nitrogen Oxides (NO_x)	1-hour	4.1[d]	4.0	Yes	1.12	0.20 lb/hr[e]	Yes
	Annual				4.1	1.2 Ton/yr	Yes
Sulfur Dioxide (SO_2)	1-hour and 3-hour	0.03[d]	4.0	No	NA	0.21 lb/hr[e]	NA
Carbon Monoxide (CO)	1-hour and 8-hour	2.4[d]	10.0	No	NA	15 lb/hr[e]	NA
Volatile Organic Compounds (VOCs)	As a precursor to ozone, 8-hour average	0.3[d]	4.0	No	NA	NA	NA
Lead (Pb)	Rolling 3-month average	Emission rate was not listed.[h]	0.06	No	NA	14 lb/month[f]	NA

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
c. Particulate matter emissions based on requested permit-allowable throughputs considering emission controls. The new Superior boiler emissions reflected a heat input capacity of 7.9 MMBtu/hr with cold and warm seasonal limitations.
d. The new Superior Boiler emissions reflected a heat input capacity of 7.9 MMBtu/hr during a six month period of cooler conditions and 5.3 MMBtu/hr during a six month period of warm conditions as seasonal limitations.
e. Pounds per hour.
f. Pounds per month.
g. Based on annual emissions averaged over 8,760 hours per year.

Modeling is required for 24-hour PM_{10}, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$ based on the Level I modeling thresholds. Due to the distance of sources to the ambient air boundary receptors DEQ did not approve Level II modeling thresholds for the project.

Table 4 lists criteria pollutant emission rates used in the cumulative NAAQS ambient impact analyses. SIL analyses were not performed by RMEA for the project.

Table 4. MODELED EMISSION RATES FOR CUMULATIVE NAAQS IMPACT ANALYSIS.						
Source ID	**Description**	**24-hour average PM_{10}[a] (lb/hr)[b]**	**24-hour average $PM_{2.5}$[c] (lb/hr)**	**Annual average $PM_{2.5}$ (lb/hr)**	**1-hour average NOx[d] (lb/hr)**	**Annual average NOx (lb/hr)**
PE04	80 HPW West Process Line	0.065	0.011	0.011	0	0
PE07	West Pellet Cooler Cyclone	0.406	0.069	0.069	0	0
PE10	96 HPW East Process Line w/ Pellet bagroom included	0.065	0.011	0.011	0	0
PE15	East Pellet Cooler Cyclone	0.406	0.069	0.069	0	0
PE18_WARM_S	Seminole Boiler Warm Season	0.030[e] (0.041)[f]	0.030[e] (0.041)[f]	0.030[e] (0.041)[f]	0.56[e] (0.758)[f]	0.56[e] (0.758)[f]
PE18_COLD_S	Seminole Boiler Cold Season	0.060	0.060	0.060	1.12	1.12
PE19	108MBT10 Baghouse	0.42	0.071	0.071	0	0
BP03	Pellet Storage Loadout	0.0035	6.00E-04	6.00E-04	0	0
BP05	Cube Bagging (Building Exhaust)	0.0027	5.00E-04	5.00E-04	0	0
BP07	Bentonite Storage	0.0041	5.00E-04	5.00E-04	0	0
BP09	South Grain Silo	0.024	0.0040	0.0040	0	0

a. Particulate matter with a mean aerodynamic diameter of 10 microns or less.
b. Pounds per hour.
c. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.
d. Nitrogen dioxide.
e. The application's modeled emission rates for the "warm" season were 50% load emission rates instead of the requested 66.7% load that was listed as an operational limitation for months with warmer temperature conditions.
f. Warm season emission rates at 66.7% boiler load, and modeled by DEQ in verification analyses matching the requested load level.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource-intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting. DEQ applies recently-issued EPA final MERPs guidance[3] to establish applicability, and if required, a demonstration using the simplistic analyses methods based on photochemical modeling analyses performed by EPA and others on example cases at numerous locations within the United States. Source-specific photochemical modeling is only considered if the simple MERPs evaluation methods do not readily demonstrate compliance with the SIL, or with the NAAQS if required.

The applicability criteria for an 8-hour O_3 SIL, and possibly NAAQS demonstration, is based on annual emission rates of NOx and VOCs precursor emissions. DEQ applies the EPA guidance to minor NSR projects and recommends using applying the Tier 1 MERPs methods to estimate secondary formation of ozone for individual stationary source projects. A demonstration that a project will not exceed the 8-hour O_3 SIL is required if the annual project emission increases of either NOx or VOCs exceeds the significant emission rates (SERs) specified in Section 006.108 of the Idaho *Air Rules* of 40 tons/year.

The facility-wide emissions of NOx are 4.1 tons/year and VOCs are 0.3 tons/year, which are both below 40 tons/year, and a secondary O_3 impact analysis is not required for this project.

3.1.2 TAPs Modeling Applicability

TAP emission regulations under Idaho Air Rules Section 210 are only applicable for new or modified sources constructed after July 1, 1995.

Emission increases of all TAPs are below the applicable screening emission levels (ELs) of Idaho Air Rules Section 585 and 586. Therefore, TAPs modeling was not required for this project.

3.1.3 Emission Release Parameters

Table 5 lists the emission release parameters, including stack height, exhaust temperature, exhaust velocity, and stack diameter for SEBS facility's emission sources in metric units first and in English units below in parentheses. Emission point release parameters were based on information provided in the application. All emission sources were modeled as point sources due to the changes in process emission collection and routing to baghouse control.

Table 5. POINT SOURCE EMISSION RELEASE PARAMETERS IN METRIC UNITS (ENGLISH UNITS IN PARENTHESES).

Release Point	Description	UTM[a] Coordinates WGS84 datum, Zone 12		Stack Height (m) (ft)[c]	Stack Exhaust Temperature (K)[d] (°F)[e]	Stack Exhaust Velocity (m/s)[f] (fps)[g]	Stack Diameter (m) (ft)	Release Orien-tation[h]
		Easting-X (m)[b]	Northing-Y (m)					
PE04	80 HPW West Process Line Baghouse	382,852.52	4,856,166.31	9.45 (31)	294.32 (70.1)	24.44 (80.2)	0.405 (1.33)	Default
PE07	West Pellet Cooler Cyclone	382,853.63	4,856,164.93	10.21 (33.5)	307.98 (94.7)	24.17 (79.3)	0.500 (1.64)	Default
PE10	96 HPW East Process Line Baghouse w/ Pellet bagroom included	382,858.27	4,856,166.40	8.60 (28.2)	288.98 (60.5)	12.77 (41.9)	0.543 (1.78)	Default
PE15	East Pellet Cooler Cyclone	382,865.36	4,856,173.61	9.79 (32.1)	298.87 (78.3)	21.73 (71.3)	0.393 (1.29)	Default
PE18_WARM_S	Seminole Boiler Warm Season	382,829.06	4,856,161.27	9.75 (32)	477.59 (400)	10.24 (33.6)	0.540 (1.77)	Raincap
PE18_COLD_S	Seminole Boiler Cold Season	382,829.06	4,856,161.27	9.75 (32)	477.59 (400)	14.94 (49.0)	0.540 (1.77)	Raincap
PE19	108MBT10 Baghouse	382,865.97	4,856,182.53	6.80 (22.3)	280.93 (46)	18.19 (59.7)	0.655 (2.15)	Default
BP03	Pellet Storage Loadout	382,838.36	4,856,226.13	4.30 (14.1)	280.93 (46)	0.001 (0.003)	0.305 (1.00)	Default
BP05	Cube Bagging (Building Exhaust)	382,762.90	4,856,252.70	0.91 (3)	285.71 (54.6)	8.63 (28.4)	0.607 (1.99)	Default
BP07	Bentonite Storage	382,841.90	4,856,167.75	10.97 (36)	277.04 (39)	8.66 (28.4)	0.099 (0.33)	Default
BP09	South Grain Silo	382,841.90	4,856,167.75	10.97 (36)	277.04 (39)	8.66 (28.4)	0.099 (0.33)	Default

a. Universal Transverse Mercator.
b. Meters.
c. Feet.
d. Kelvin.
e. Degrees Fahrenheit.
f. Meters per second
g. Feet per second.
h. Default is an uninterrupted vertical release

3.1.4 Emission Release Parameter Justification

RMEA has updated the stack release height and exit diameters with recent on-site field measurements. Stack release orientations for most existing sources previously equipped with a horizontal release orientation.

On-site field survey measurements obtained on January 24, 2020, were used to establish temperature and exhaust stream flow velocity values for modeled release parameters for the current project's ambient impact analyses. Measurement devices included a vane anemometer to measure in-stack flow velocity and a thermometer device to measure in-stack temperature. Readings were described as being obtained at multiple locations across the exhaust stack opening for at least 15 seconds at each monitoring point and a minimum of 13 points across the stack opening, with the data presented in the project's emission estimate spreadsheet titled "SEBS 260." Date and time stamp reference data in the data sheet was disregarded as temperatures on that date in Terreton was a low of 23°F and a high of 33°F. Two channels of data were included—a "263" channel and a "145" channel. The "145" channel provided temperature and flow velocity data. The "263" channel provided temperature and relative humidity data. The "145" channel temperature data was applied for the majority of the stacks and is assumed to reflect measured stack temperature not ambient temperature.

The average value of the readings for each stack established the modeled exit flow velocity and exit temperature for these point sources. These measurements were taken during actual operation of the facility and were used to establish release parameters for point sources, including the West Baghouse (PE04), West Cooler Cyclone (PE07), East Process Line and Pellet Bag Room Baghouse (PE10), East Pellet Cooler Cyclone (PE15), Cube Building Exhaust (BP05), Bentonite Storage (BP07), and South Grain Silo (BP09). The facility production level during the measurement period was not described.

Data for the Pellet Storage Loadout exhaust stack (BP03) and the new Superior boiler (PE18_WARM_S and PE18_COLD_S) were not included in this set of measurement data.

Stack release heights and exit diameters for all sources except the new PE19 baghouse exhaust stack were measured by RMEA by on-site field survey.

New Superior Boiler - Model ID PE18_WARM_S and PE18_COLD_S)
The new liquefied propane gas-fired boiler is a Superior Boiler Super Seminole boiler with a rated heat input capacity of 7.88 MMBtu/hr. Two operating levels were modeled during the year with the six colder weather months (October through March) at 100% load and six months of warmer weather months (April through September) at 66.7% load. Operational factors were applied to model emissions from the boiler during the appropriate months. It is DEQ's understanding that the existing KISCO boiler has been decommissioned and the new boiler has been installed and is operational.

The new boiler uses the existing boiler stack for the KISCO boiler that has been decommissioned. The stack release height was measured by RMEA at 32 feet above grade with an exit diameter of 1.77 feet.

The existing rain cap has been retained for the new boiler exhaust stack.

The 400°F exit temperature was based on in-stack temperature gauge measurement. The same value was used for both boiler load levels. DEQ accepts this value as appropriate and notes that boiler impacts do not contribute significantly to the facility-wide design impacts for the PM_{10} and $PM_{2.5}$ NAAQS demonstrations. Exit velocity was based on EPA F-Factor for volumetric flow rate estimates of 7,237 ACFM at full load and 4,960 ACFM at 66.7% load. The importance of flow rate and velocity values is reduced because the stack was modeled with a POINTCAP AERMOD release designation for a capped stack, which eliminates the vertical momentum component for the boiler stack exhaust plume.

The Superior boiler release parameters were appropriately documented and justified.

New Process Baghouse - Model ID PE19

RMEA supplied equipment schematic diagrams and project specification sheet for the Donaldson Torit baghouse and the AirPro Fan & Blower Company fan system. The project specification sheet listed the 13,000 CFM (taken as ACFM) value which supported the modeled volumetric flow rate of 12,999 ACFM. The schematic diagram supported the modeled release height and the modeled stack equivalent diameter of 2.15 feet based on the fan system silencer outlet dimensions of 24.875 inches by 22.0 inches. The actual calculated equivalent diameter is 2.20 feet, but the discrepancy is small enough to be acceptable.

The supported flow rate of 13,000 ACFM and the modeled exit diameter of 2.15 feet were used to establish the modeled exit velocity of 18.2 m/sec. At an exit diameter of 2.20 feet the velocity would be 59.7 ft/sec (17.4 m/s). DEQ accepts the slightly higher velocity value as applied in the model which is attributed to the smaller modeled exit diameter value.

The release point will be uninterrupted and vertical as represented in the model. DEQ requested confirmation from RMEA on the stack release height because the baghouse and fan blower schematic diagrams did not conclusively support the modeled value. RMEA indicated the modeled 22.3 feet above grade was an assumed height. RMEA and SEBS were advised the modeling group will recommend a permit requirement for a final as-built stack release height of 22.3 feet above grade.

A release temperature of 46°F was modeled and DEQ views this temperature as conservative without additional justification.

West Process Line Baghouse – Model ID PE04

The modeled stack release height of 31 feet and exit diameter of 1.33 feet were based on measured field survey values.

The modeled 80.2 ft/sec exit velocity was based on the average measured field survey stack velocity. The modeled exit temperature was 70.1°F was based on the average measured stack temperature of 71.4°F, which does not match the measured value but is slightly more conservative. Ambient temperature during the stack temperature measurement was 58.6°F based on the submitted handheld device data.

West Pellet Cooler Cyclone - Model ID PE07

The modeled stack release height of 33.5 feet and exit diameter of 1.64 feet were based on measured field survey values.

The modeled 79.3 ft/sec exit velocity was based on the average measured field survey stack velocity. The modeling report describes a measured 70.1°F temperature for this source. This value was not noted in the

submitted measurement data. An exit temperature of 94.7°F modeled for this source, which is listed under the channel “263” temperature readings, which were assumed to be the average ambient temperature during the period of measurement rather than the stack temperature. The channel “145” average temperature was 59.6°F. A sensitivity run using the 59.6°F value as an exit temperature in place of the 94.7°F value indicated that the 24-hour PM_{10} NAAQS impact plus background would be at 90.6% of the allowable 150 $\mu g/m^3$ NAAQS, for a 1% increase over the submitted analyses. For comparison the measured exit temperature for the East Cooler Cyclone was 71.3°F.

The modeled West Pellet Cooler Cyclone release parameters were accepted as submitted for this project based on DEQ’s sensitivity run results.

East Process Line Baghouse with Pellet Bag Room Baghouse – Model ID PE10

The modeled stack release height of 28.2 feet and exit diameter of 1.78 feet were based on measured field survey values.

The modeled 60.5°F exit temperature and 41.9 ft/sec exit velocity were based on measured values and matched the submitted data.

East Pellet Cooler Cyclone – Model ID PE15

The modeled stack release height of 32.1 feet and exit diameter of 1.29 feet were based on measured field survey values.

The modeled 78.3°F exit temperature and 71.3 ft/sec exit velocity were based on measured values and matched the submitted data.

Pellet Storage Loadout – Model ID BP03

The modeled stack release height of 14.1 feet and exit diameter of was based on a measured field survey value. The modeled exit diameter of 1.0 feet was based on measured stack dimensions for a square opening of 1.12 feet by 1.13 feet. The equivalent diameter for these dimensions is 1.27 feet. This source has minimal emissions of 0.0035 lb/hr PM_{10} and 0.0006 lb/hr of $PM_{2.5.}$ The discrepancy of 0.27 feet was deemed to have an insignificant effect on predicted impacts.

This source will remain a horizontal release point and was modeled with a 0.003 ft/sec exit velocity to nearly eliminate vertical momentum of the plume. RMEA elected to model this source as an uninterrupted vertical release and minimize the flow velocity to represent the horizontal release orientation. The AERMOD POINTHOR option was not applied and this stack.The modeled exit temperature of 46°F was not supported with measurement data. This temperature is viewed as adequately conservative and additional justification is not needed.

Cube Bagging Building Exhaust – Model ID BP05

The modeled stack release height of 3 feet and exit diameter of 1.99 feet were based on measured field survey values.

The modeled 54.6°F exit temperature and 28.3 ft/sec exit velocity were based on measured values and matched the submitted data.

Bentonite Storage – Model ID BP07

The modeled stack release height of 36 feet and exit diameter of 0.33 feet were based on measured field survey values.

The modeled 39°F exit temperature is lower than the submitted measurement data-derived temperature of 55.1°F, and is regarded as conservative. The modeled 28.4 ft/sec exit velocity was based on measured the average measured value and matched the submitted data.

South Grain Silo – Model ID BP09

The modeled stack release height of 36 feet and exit diameter of 0.33 feet were based on measured field survey values.

The modeled 39°F exit temperature is lower than the submitted measurement data-derived temperature of 55.1°F, and is regarded as conservative. The modeled 28.4 ft/sec exit velocity was based on measured the average measured value and matched the submitted data.

DEQ concluded that the modeling demonstration's modeled release parameters were adequately substantiated or conservative in nature and did not require additional substantiation.

3.2 Background Concentrations

Background concentrations are used if a cumulative NAAQS impact analysis is needed to demonstrate compliance with applicable NAAQS. Background design values (DV) for 24-hour PM_{10}, 24-hour $PM_{2.5}$, annual $PM_{2.5}$, 1-hour NO_2, and annual NO_2 were obtained from the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST; https://arcg.is/1jXmHH) using the project site coordinates. These background air pollutant levels are based on regional-scale air pollution modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. The SEBS facility is located near the midpoint of two background cells, and DEQ used the average of the background values of the two adjoining cells. The average values obtained from NW AIRQUEST are listed in Table 6.

Table 6. DEQ-RECOMMENDED CRITERIA POLLUTANT AMBIENT BACKGROUNDS

Pollutant	Averaging Period	Northern Grid Cell (43.87 degrees latitude, -112.46 degrees longitude)	Southern Cell (43.83 degrees latitude, -112.47 degrees longitude)	Average Background Concentration (μg/m³)
		Background Concentration (μg/m³)[a]	Background Concentration (μg/m³)	
PM_{10}[b]	24-hour	78.9	77.9	**78.4**
$PM_{2.5}$[c]	24-hour	13.1	13.4	**13.3**
	Annual	4.2	4.3	**4.3**
NO_2[d]	1-hour	9.8 (5.2 ppb[e])	14.1 (7.5 ppb[e])	**12.0**
	Annual	1.9 (1.0 ppb[e])	2.6 (1.4 ppb[e])	**2.3**

a. Micrograms per cubic meter.
b. Particulate matter with mean aerodynamic diameter of 10 microns or less.
c. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.
d. Nitrogen dioxide.
e. Parts per billion.

3.3 Impact Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of Impact Analyses

SEBS performed the project-specific air pollutant emission inventory and air impact analyses that were submitted with the application. The submitted information/analyses, in combination with results from DEQ's air impact analyses, demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 7 provides a brief description of parameters used in the modeling analyses.

Table 7. MODELING PARAMETERS.

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Terreton, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 19191.
Meteorological Data	Rexburg surface data; Boise upper air data	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Considered	1 arc second National Elevation Dataset (NED) was acquired from the USGS for the surrounding area. AERMAP version 18081 was used to process terrain elevation data for all buildings and receptors. See Section 3.3.5 for more details.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD. See Section 3.3.6.
Receptor Grid	**NAAQS Receptor Grid**	
	Grid 1	10-meter to 20-meter spacing along the ambient air boundary.
	Grid 2	5-meter spacing for receptors located within the property boundary at locations where the general public is afforded access for product sales.
	Grid 3	25-meter spacing in a rectangular grid centered on the facility extending 300 meters from the property boundary.
	Grid 4	50-meter spacing in a rectangular grid extending 700 meters beyond Grid 3.
	Grid 5	100-meter spacing in a rectangular grid centered on Grid 4 and the facility covering 3,800 meters (X) and 3,100 meters (Y).

3.3.2 Modeling Methodology

Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the *Idaho Air Quality Modeling Guideline*[2].

3.3.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in Appendix W. The refined, steady-state, multiple-source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight-line trajectory of ISCST3, but it includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

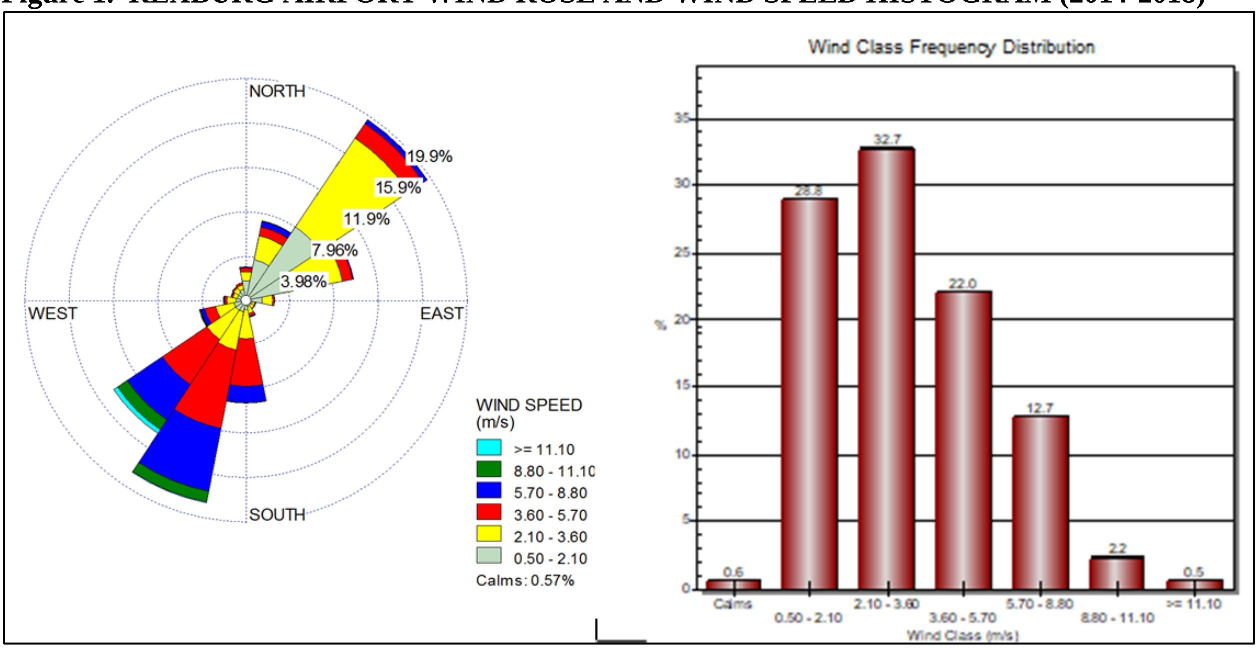
AERMOD version 19191 was used by RMEA for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

DEQ processed a meteorological dataset from Rexburg, Idaho (KRXE; station ID 726818-94194) covering the years 2014-2018. The upper air soundings required by AERMET were obtained from the Boise airport station (site ID 24131). Surface characteristics were determined by DEQ staff using AERSURFACE version 13016. DEQ modeling staff evaluated annual moisture conditions for the AERSURFACE runs based on thirty years of Rexburg airport precipitation data. Conditions were determined to be "wet" for 2014, 2016, and 2018, and "average" for 2015 and 2017. Average moisture content is defined as within a 30 percentile of the 30-year mean of 10.03 inches. Calms were low at 0.57% of the data, and less than 1 percent of the data were missing from the 5-year record.

Figure 1 shows a wind rose and wind speed histogram at the Rexburg Airport. AERMINUTE version 15272 was used to process Automated Surface Observing Systems (ASOS) wind data for use in AERMET. AERMET version 19191 was used to process surface and upper air data and to generate a model-ready meteorological data input file. The "adjust u star" (ADJ_U*) option was applied in AERMET to enhance model performance during low wind speeds under stable conditions. DEQ provided meteorological data to RMEA, with and without the ADJ_U* option enabled. RMEA used the meteorological data with the ADJ_U* option enabled. DEQ determined that these data are adequately representative of the meteorology at the SEBS facility site near Terreton, Idaho, for minor source permitting.

Figure 1. REXBURG AIRPORT WIND ROSE AND WIND SPEED HISTOGRAM (2014-2018)



3.3.5 Effects of Terrain on Modeled Impacts

The ambient air impact analyses used terrain data extracted from a United States Geological Survey (USGS) National Elevation Dataset (NED) 1 arc second file with 30 meter resolution. The terrain preprocessor AERMAP version 18081 was used by SEBS to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also

determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emission plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

DEQ reviewed the area surrounding the facility by using the web-based mapping program Google Earth, which uses the WGS84 datum, and compared the Google Earth elevation data to the elevations obtained from the 1 arc second resolution data. The elevations for all of the 3.577 receptors in the modeling domain ranged from 1,458.5 meters to 1,461.4 meters across the entire 3.1 kilometer (X) by 3.8 kilometer (Y) receptor grid. A review of terrain on Google Earth confirmed the area is essentially flat with regard to effects on the modeling demonstration, considering all design impacts were predicted to occur at ambient air boundary receptors. A north to south elevation profile through the facility over the receptor extents provided a range in elevation from 1,457 meters to 1,462 meters, and for an elevation range from 1,458 meters to 1,460 meters for the receptors running from east to west.

A USGS NED file with 1.0 arc second resolution was used based on the AERMAP MAPDETAIL and MAPPARAMS files rather than a 1/3 arc second NED file which provides higher 10 meter resolution that was described in the model report. The NED file used in the submitted modeling demonstration produced a constant elevation and hill-height scale of 1,459.6 meters for the entire facility property area exempted from ambient air and the area surrounding the facility; whereas, Google Earth indicated the elevation within facility property exempted from ambient air and along the ambient air boundary ranged from 1,460 to 1,462 meters. The Google Earth imagery terrain data provides higher resolution data than the USGS 1 arc second NED file. DEQ accepted the modeling demonstration's treatment of terrain based on the margin of compliance for the NAAQS demonstrations, other conservative assumptions applied in the analyses, and the conclusion that the terrain is flat.

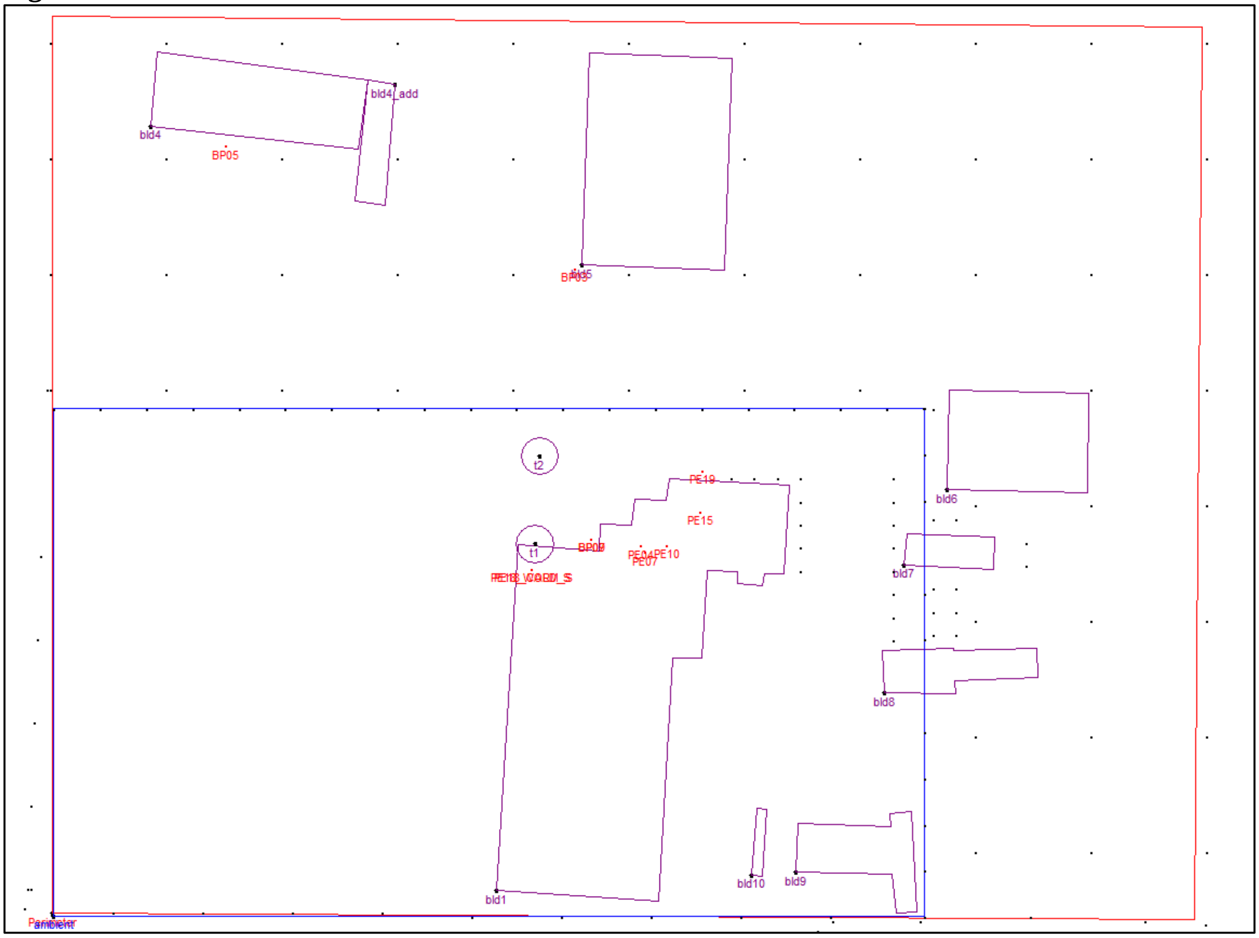
3.3.6 Facility Layout and Building Downwash

DEQ verified proper identification of the site location, emission point locations, and the ambient air boundary by comparing a graphical representation of the modeling input file to plot plans submitted in the application. Aerial photographs and measurement tools on Google Earth (available at https://www.google.com/earth) were also used to assure that horizontal coordinates were accurately represented.

Figure 2 shows the SEBS facility structures and emission sources in the modeling analyses. Point source model ID labels and locations are shown in red dots and lettering. Buildings are shown in purple font and outlines. The facility property boundary is outlined in red and the ambient air boundary is outlined in blue. Note the inclusion of receptors within the ambient air boundary near Buildings 1, 7, and 8 where the public is provided access for product sales.

DEQ compared the model layout to plot plan diagrams and the model export to Google Earth imagery presented in the modeling report and DEQ concluded the model setup stack locations and buildings matched well. RMEA noted that Building 1 (model ID "bld1") was rebuilt in 2018 so Google Earth images are not an exact match for the current building layout.

Figure 2. SEBS FEED AND SUPPLY FACILITY LAYOUT



Potential downwash effects on emission plumes were accounted for in the model by using building dimensions and locations. Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME version 04274) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD.

Figure 3 presents a three-dimensional wireframe depiction of the modeled buildings and point sources viewed from the southwest. DEQ noted that all stacks located within Building 1 (model ID "bld1") were modeled with stack release heights that were below the modeled 10.61 meter tier height for bld1, which is a conservative approach. Building 1 stack release heights versus the building tier height as viewed from the south are shown in Figure 4. Building heights were described as verified based on on-site survey. The modeling report described two tier heights for Building 1 versus the single tier height that was modeled. This is a conservative approach for evaluating building downwash effects considering stack termination heights for were modeled below the building tier height.

Figure 3. SEBS FEED AND SUPPLY FACILITY LAYOUT

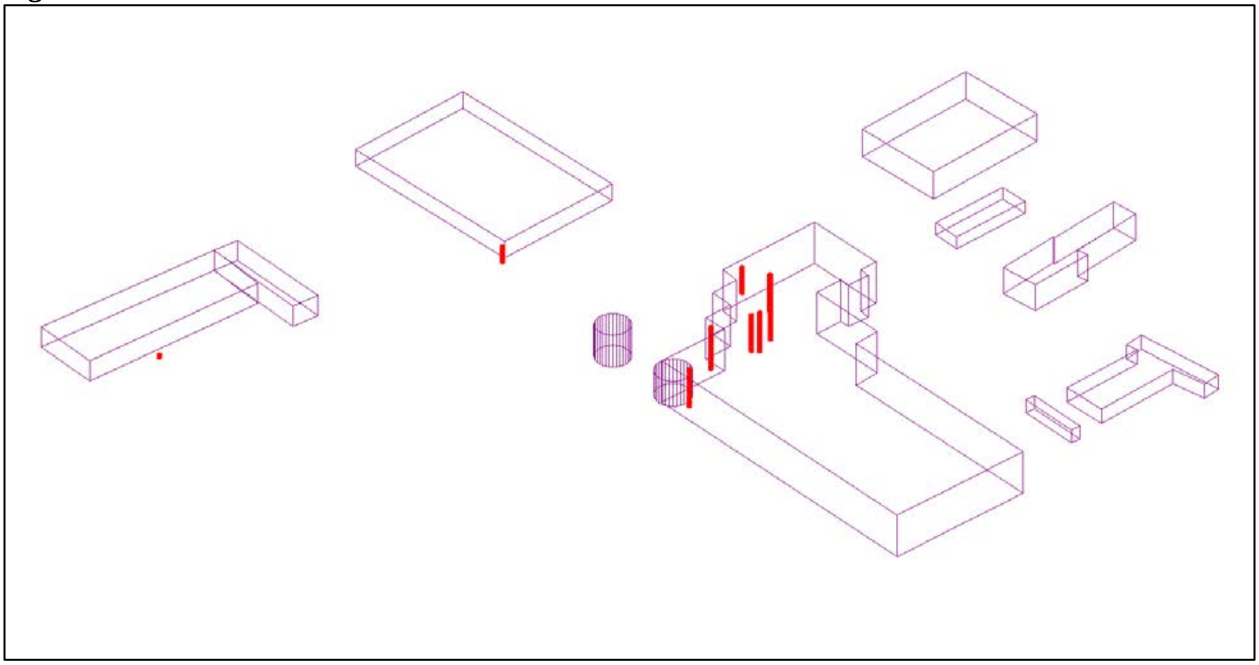
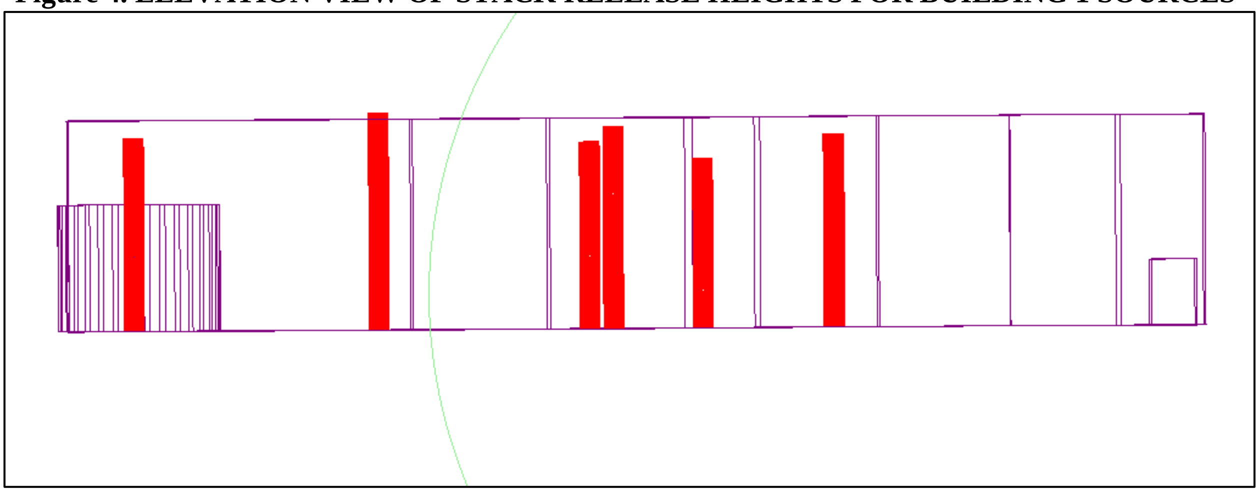


Figure 4. ELEVATION VIEW OF STACK RELEASE HEIGHTS FOR BUILDING 1 SOURCES



3.3.7 NOx Chemistry

RMEA applied the regulatory default Tier 2 ARM2 method for 1-hour average and annual average NO_2 modeling. Regulatory default values of 0.5 for the minimum value and 0.9 for the maximum values were used. DEQ agrees the Tier 2 ARM2 methods were appropriately applied in the ambient impact analyses.

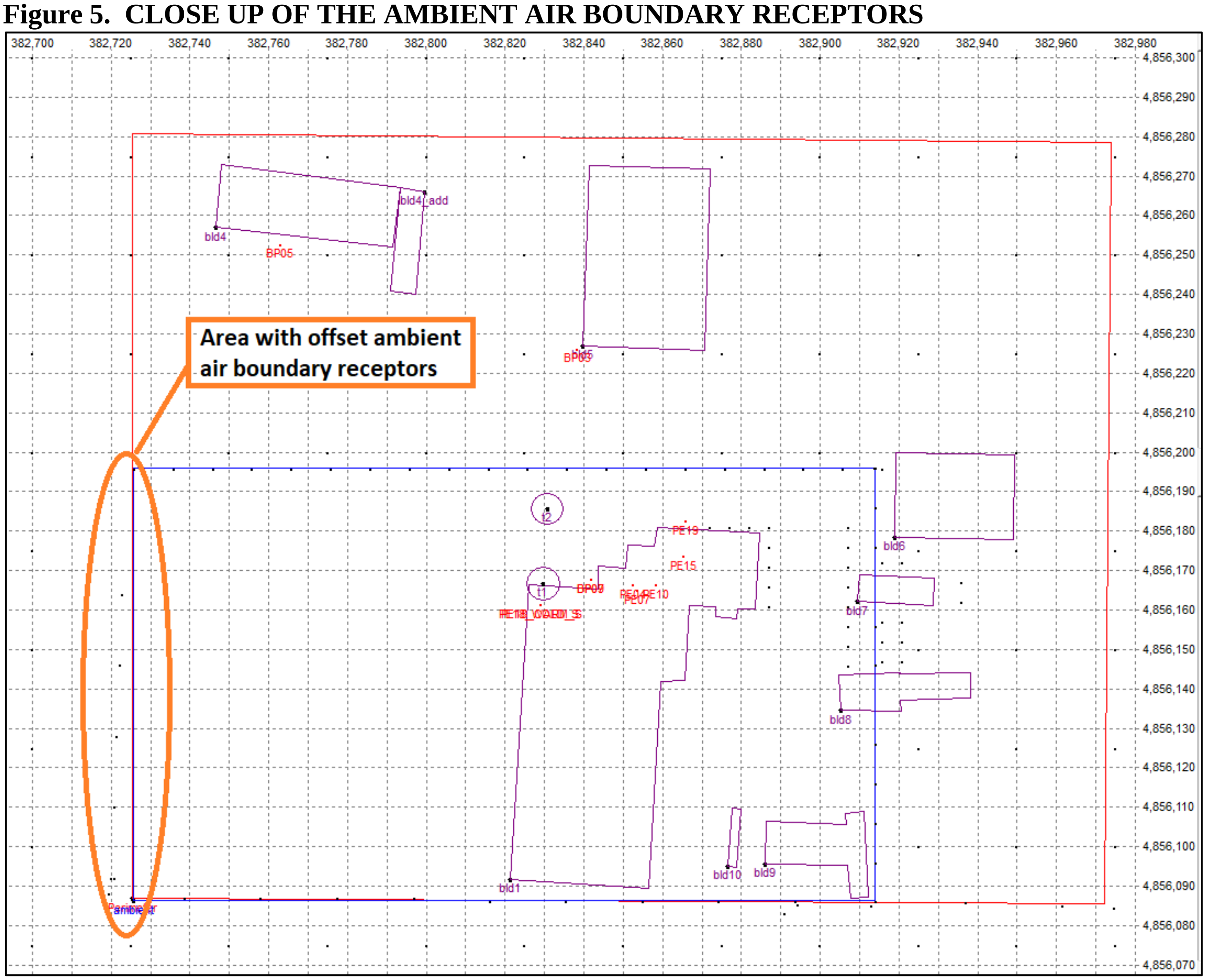
3.3.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." A copy a parcel map showing the SEBS property.

The entire SEBS facility property was not excluded from treatment as ambient air. More than half of the SEBS property was treated as ambient air and the general ambient air boundary was established at the point where members of the general public would reasonably be allowed access within the SEBS property. SEBS allows sales to the general public and locations within the facility property where the public is allowed to access the facility were treated as ambient air. Sections of fencing along portions of the southern and western ambient air boundary, employee surveillance and monitoring, and no trespassing signs were described as methods used to preclude public access to areas within the ambient air boundary.

Ambient air boundary receptors were offset from the ambient air boundary by distances ranging from 9 feet to 15 feet on the western side of the facility. See Figure 5. All design impacts were predicted to occur in different locations with 24-hour and annual average $PM_{2.5}$, 24-hour average PM_{10}, and annual average NO_2, which were predicted to occur on the southern ambient air boundary. The design impact for 1-hour average NO_2 was located at a receptor on the eastern ambient air boundary at a location where the general public is allowed access within the facility's property for retail sales. DEQ determined that the NAAQS compliance demonstration was not affected by the offset of the ambient air boundary receptors and compliance was adequately demonstrated.

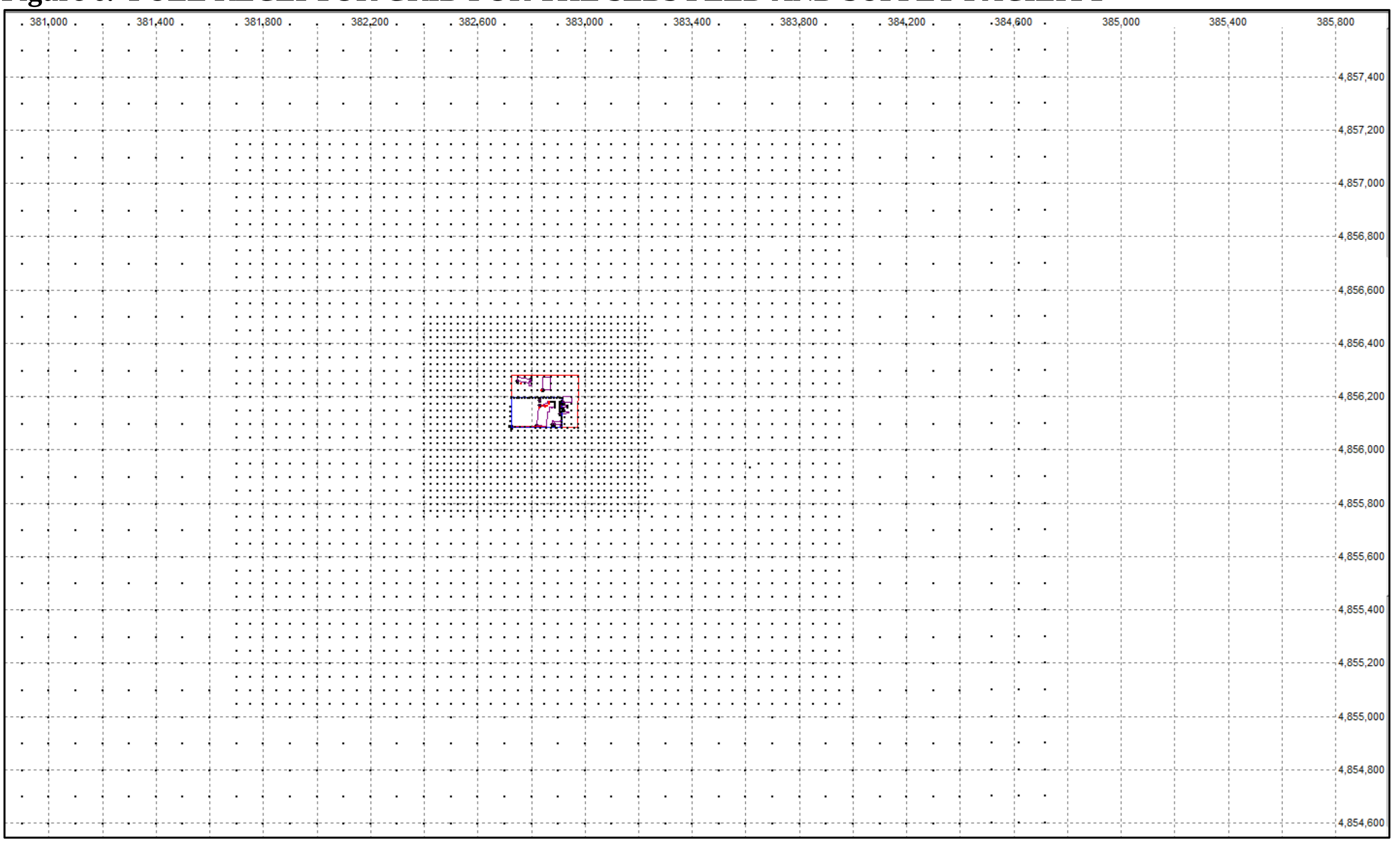
Figure 5. CLOSE UP OF THE AMBIENT AIR BOUNDARY RECEPTORS



3.3.9 Receptor Network

DEQ determined that the receptor grid used in the submitted modeling analyses was adequate to resolve maximum modeled impacts. Table 7 describes the receptor network used in the submitted modeling analyses. A total of 3,577 receptors were included in the receptor grid. See Figure 6. The receptor grids used in the model provided reasonable resolution of the maximum design concentrations for the project and provided extensive coverage. The entire receptor grid was used for the cumulative NAAQS impact analyses.

Figure 6. FULL RECEPTOR GRID FOR THE SEBS FEED AND SUPPLY FACILITY



The receptor grid used in the submitted modeling analyses met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[2], and DEQ determined that the receptor network was effective in reasonably assuring compliance with applicable air quality standards at all ambient air locations.

3.3.10 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

All sources from the SEBS facility are below GEP stack height. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 NAAQS and TAPs Impact Modeling Results

4.1 Results for NAAQS Analyses

4.1.1 Significant Impact Level Analysis

Significant impact level (SIL) analyses were not performed for any of the pollutants and averaging periods subject to modeling for this project. RMEA elected to perform cumulative NAAQS analyses for the project.

4.1.2 Cumulative NAAQS Impact Analysis

Table 8 provides results for the cumulative NAAQS impact analysis. Project-specific air impact modeling was required for 24-hour PM_{10}, 24-hour $PM_{2.5}$, annual $PM_{2.5}$, 1-hour NO_2, and annual NO_2. For each modeled pollutant, the total facility-wide ambient impact was calculated by adding the design value concentration to the ambient background value. The sum was then compared to the NAAQS to establish compliance with the applicable standard. The impacts were based on the new Superior boiler (model ID PE_18_WARM) at 50% load instead of the requested 66.7% load during the warm seasonal months and 100% load for cold season months. DEQ conducted a sensitivity run to verify the project complies with NAAQS at the requested operating level, described in Section 4.1.3 below.

Table 8. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSIS.

Pollutant	Averaging Period	Modeled Design Value Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[b]	24-hour	56.0	78.4	134.4	150	89.6%
$PM_{2.5}$[c]	24-hour	8.6	13.3	21.9	35	62.6%
	Annual	3.2	4.3	7.5	12	62.5%
NO_2[d]	1-hour	60.6	12.0	72.6	188	38.6%
	Annual	3.6	2.3	5.9	100	5.9%

a. Micrograms per cubic meter.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Nitrogen dioxide.

4.1.3 DEQ Sensitivity Analyses

RMEA modeled the new Superior Boiler Works, Inc. Super Seminole boiler with 50% load emission rates instead of the requested limit of 66.7% during the warm months (April through and including September). DEQ ran sensitivity analyses for 66.7% and 100% emission rates during the "warm" season months to verify NAAQS compliance was reasonably assured rather than recommending permit limitations based on operation at the modeled 50% load emission rates. For the warm season 66.7% load case NO_2, $PM_{2.5}$, and PM_{10} emission rates and the boiler exhaust flow rate were scaled to this level. The boiler stack is rain-capped and the effect of reduced flow rate is minimized. The 100% load warm and cold season sensitivity run modeled 100% load emission rates and release parameters for 8,760 hours/year.

$PM_{2.5}$ and PM_{10} ambient impacts for the project were dominated by the process sources rather than the new boiler as demonstrated by the two sensitivity runs where $PM_{2.5}$ and PM_{10} design impacts were unaffected by the increased emissions for 67% and 100% warm season load cases. The facility-wide 24-hour PM_{10} design value impact and the design value impact of the new boiler (warm and cold seasons combined as a source group) were predicted to occur at the same receptor and date, and the boiler accounted for 1.5% of the design impact, and new boiler contributed 8.3% or less of the total facility-wide 24-hour and annual $PM_{2.5}$ design impacts.

The new boiler is the only NO_x source modeled for the project, thus NO_2 impacts are attributed to only this source. The 1-hour and annual average NO_2 impacts were less than 50% of the NAAQS for both operating load cases. Interestingly, the 66.7% load case produced a slightly higher design value impact with a lower warm season NOx emission rate than the unrestricted full load case with a higher NOx emission rate. This is presumably due to greater building downwash effects caused by a lower exhaust exit velocity. DEQ concludes a seasonal load restriction on the new Superior boiler is not necessary to assure NO_2, PM_{10}, or $PM_{2.5}$ NAAQS compliance.

Table 9. MODELED EMISSION RATES FOR SENSITIVITY NAAQS ANALYSIS.

Source ID	Description	24-hour average PM_{10}[a] (lb/hr)[b]	24-hour average $PM_{2.5}$[c] (lb/hr)	Annual average $PM_{2.5}$ (lb/hr)	1-hour average NOx[d] (lb/hr)	Annual average NOx (lb/hr)
Sensitivity Run 1 - 66.7% Warm Season Load (April-September)						
PE18_WARM_S	Seminole Boiler Warm Season (66.7% load)	0.041	0.041	0.041	0.758	0.758
PE18_COLD_S	Seminole Boiler Cold Season (100% load)	0.062	0.062	0.062	1.12	1.12
Sensitivity Run 2 - 100% Load (Entire Year)						
PE18_ALLYEAR	Seminole Boiler (100% load entire year)	0.062	0.062	0.062	1.12	1.12

a. Particulate matter with a mean aerodynamic diameter of 10 microns or less.
b. Pounds per hour.
c. Particulate matter with a mean aerodynamic diameter of 2.5 microns or less.
d. Nitrogen oxides.

Table 10. RESULTS FOR DEQ SENSITIVITY NAAQS ANALYSIS.						
Pollutant	**Averaging Period**	**Modeled Design Value Concentration - Warm Season 66.7% load with 100% load in parentheses (μg/m³)[a]**	**Background Concentration (μg/m³)**	**Total Ambient Impact – Warm Season 66.7% load with 100% load in parentheses (μg/m³)**	**NAAQS (μg/m³)**	**Percent of NAAQS - Warm Season 66.7% load with 100% load in parentheses**
PM_{10}[b]	24-hour	56.0 (56.0)	78.4	134.4 (134.4)	150	89.6% (89.6%)
$PM_{2.5}$[c]	24-hour	8.6 (8.6)	13.3	21.9 (21.9)	35	62.6% (62.6%)
	Annual	3.3 (3.3)	4.3	7.6 (7.6)	12	63.3% (63.3%)
NO_2[d]	1-hour	72.8 (62.2)	12.0	84.8 (74.2)	188	45.1% (39.5%)
	Annual	4.1 (4.5)	2.3	6.4 (6.8)	100	6.4% (6.8%)

a. Micrograms per cubic meter.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. Nitrogen dioxide.

4.2 Results for TAPs Impact Analyses

All TAPs emission increases were below TAPs screening emission levels in Idaho Air Rules Section 585 and 586. Therefore, no TAPs were modeled for this project.

5.0 Conclusions

The information submitted with the PTC application, combined with DEQ’s verification analyses, demonstrated to DEQ’s satisfaction that emissions from the SEBS Feed and Supply facility, located near Terreton, will not cause or significantly contribute to a violation of any applicable ambient air quality standard or TAP increment.

References

1. *Policy on NAAQS Compliance Demonstration Requirements.* Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.

2. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

3. *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program.* United States Environmental Protection Agency, Office of Air Quality Planning and Standards. April 30, 2019. EPA-454_R-19-003. Available at https://www3.epa.gov/ttn/scram/guidance/guide/EPA-454_R-19-003.pdf.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on September 18, 2020:

Permit

Facility Comment: SEBS is an acronym converted to a business name, similar to KFC from Kentucky Fried Chicken once was.

DEQ Response: The facility name has been revised to, SEBS Feed and Supply, Inc., as requested.

Facility Comment: Table 1.1 Tub Grinder, This may or may not be needed to clarify the difference between the open top of the tub and the ground material produced for the east and west processing lines, "Emissions from the top".

DEQ Response: Specifying the location in this table is not needed. This information was used in the modeling analysis and is contained in the modeling memo, Appendix B.

Facility Comment: Table 1.1 Tub Grinder, This may or may not be needed to clarify the difference between the open top of the tub and the ground material produced for the east and west processing lines, "Emissions from ground material produced".

DEQ Response: Specifying the location in this table is not needed. This information was used in the modeling analysis and is contained in the modeling memo, Appendix B.

Facility Comment: Baghouse efficiency is the same for the three baghouses 99.9%. They are all Torit-Donaldson or Donaldson brand machines using the same bag type.

DEQ Response: The application and emission inventory stated/used 99.0%, however upon the facility's request this control efficiency has been revised to 99.9%.

Facility Comment: Table 1.1, changed East line to West line baghouse.

DEQ Response: East line baghouse has been changed to West line baghouse as requested.

Facility Comment: Table 1.1 add East to PE10 for the East Hammer Mill.

DEQ Response: East has been added per the request.

Facility Comment: The East production line feeds into a combined cyclone/baghouse. The PE19 baghouse doesn't treat process line emissions although it may appear to do so because it is include in PE01 emissions.

Removed this statement. PE19 is designed to control emissions from the top of the tub grinder, the cuber and cube cooler and pellet handling and storage emissions at BP02.

DEQ Response: The emission inventory and the modeling analysis support this request, the requested change has been made.

Facility Comment: Section 3.1 first paragraph, "the process lines are separate. They are not hammer mill lines. It is more clear to state process lines". Also change to, "control emission from the top of the tub grinder".

DEQ Response: The emission inventory and the modeling analysis support this request, the requested change has been made.

Facility Comment: Section 3.1 second paragraph, "PE19 is not part of this process. The cooler cyclone exhaust is too humid to send through a baghouse. PE04 is the baghouse attached to the PE03 cyclone which controls emissions from this process line".

DEQ Response: This change has been made; it is also consistent with the requested change in Table 1.1.

Facility Comment: Section 3.1, third paragraph, "PE19 is not part of this process. The cooler cyclone exhaust is too humid to send through a baghouse. PE10 is the baghouse attached to the PE09 cyclone which controls emissions from this process line".

DEQ Response: This change has been made; it is also consistent with the requested change in Table 1.1.

Facility Comment: Section 3.1 fourth paragraph, "Two separate emissions points are assigned to the same location. This provides analysis and modeling for two types of materials (grain and bentonite) that have very different emissions factors.

See page 45|SEBS in the Air Impact Modeling Analysis Report.

DEQ Response: This paragraph has been revised/clarified further to reflect two separate processes.

Facility Comment: Section 3.1 fifth paragraph, "May clarify that there are two points of emission for the tub grinder".

DEQ Response: This is clarified in the statement of basis in the footnotes under the emission tables, however this has also been added to this section per the request.

Facility Comment: Section 3.1 sixth paragraph, "May clarify that there are two points of emission for the tub grinder".

DEQ Response: This is clarified in the statement of basis in the footnotes under the emission tables, however this has also been added to this section per the request.

Facility Comment: Table 3.1, add top end and lower end emissions to the tub grinder control devices.

DEQ Response: Specifying the location in this table is not needed. This information was used in the modeling analysis and is contained in the modeling memo, Appendix B.

Facility Comment: Table 3.1, "Baghouse efficiency is the same for the three baghouses 99.9%. They are all Torit-Donaldson or Donaldson brand machines using the same bag type". "Baghouse efficiency is the same for the three baghouses 99.9%. They are all Torit-Donaldson or Donaldson brand machines using the same bag type".

DEQ Response: The application and emission inventory stated/used 99.0%, however upon the facility's request this control efficiency has been revised to 99.9%.

Facility Comment: Table 3.1, "Changed East line to west line baghouse".

DEQ Response: Requested change has been made.

Facility Comment: Table 3.1, "I separated the tub grinder from the west process line to clarify that PE19 isn't part of the emissions control for the pellet process equipment".

DEQ Response: Table 3.1 and 1.1 have been revised to reflect the requested change.

Facility Comment: Table 3.1, **"**The East production line feeds into a combined cyclone/baghouse. The PE19 baghouse doesn't treat process line emissions. Removed this statement. PE19 is designed to control emissions from the top of the tub grinder, the cuber and cube cooler and pellet handling and storage emissions at BP02".

DEQ Response: This change has been made; it is also consistent with the requested change in Table 1.1.

Facility Comment: Table 3.1, capitalized CPM as it is a business name/acronym.

DEQ Response: The requested change has been made.

Facility Comment: Table 3.1, "Throughput updated based on more recent equipment information, and requested permit limit is 80 TPD. PE19 is designed to capture emissions from the cuber (PE16 and PE16A)".

DEQ Response: The requested change has been made**.**

Facility Comment: Table 3.2, "It is assumed these two are combined because they a) use the same receiving pit; and b) they are both less than 0.00 units individually. The designations were switched. Grain is BP06. Bentonite is BP08. The two designations are used in the emissions inventory to calculate emissions from two different EFs for the model".

DEQ Response: The designations have been revised to reflect the request change. The emission limit table shall keep the bentonite and grain combined as that is how the emission inventory submitted with the application represents the facility-wide potential to emit.

Facility Comment: Permit condition 3.4, "The facility does not have a means to measure daily pellet output. There are two storage locations and trucks may also loadout during production. There is no interim scale to measure what comes off the production line. SEBS monitors throughput by measuring hay input. This is done by periodically measuring 20 bales (roughly 1 semi load) and using that average bale weight to track hay throughput.

Hay moisture varies as does pellet moisture content. Because of the way these are processed, it is difficult to equate input tonnage to output tonnage. PM emissions are generated based on the hay that is processed or input to the system, not the output".

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 3.4, "80 TPD * 365 days per year = 29,200 TPY. Also, for clarity no bentonite or grain is used in this process".

DEQ Response: This permit condition can be found under section 4, it shall not be added to permit condition 3.4.

Facility Comment: Permit Condition 3.7, "Added BP06 and placed BP08 and BP06 in relative order to which they are mentioned in this section".

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 3.9, "Comment / suggested edit includes the cuber process as controlled also. 99.9% is consistent with other statements made in the permit regarding baghouse efficiency".

DEQ Response: The cuber process shall not be added to this permit condition as that process unit can be found under section 4. The application and emission inventory stated/used 99.0%, however upon the facility's request this control efficiency has been revised to 99.9%.

Facility Comment: Permit condition 3.13, "This may or may not be a good way of clarifying these statements. Two of these units are the ultimate emissions controls for the east and west process lines, while PE19 is in part controlling emissions from the grinder tub top which is open to the room".

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 3.17, "As noted previously in these comments, SEBS doesn't have means to monitor finished pellets produced in terms of tons per day. The pollutant of concern is PM in the form of PM-10 and / or PM-2.5. PM is generated from grinding the raw material. The emissions inventories are calculated primarily on hay input, not tons of output. Permit P-2017.0056_07.12.2018 used this method of calculating average bale weight as the means for tracking throughput. We request that this method be maintained.

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 4.2, Table 4.1 "This value was updated in this application".

DEQ Response: The increased throughput value for the cuber and cooler has been added the Table 4.1.

Facility Comment: Permit condition 4.4, "Cubes are the product; the hay is put through the process".

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 4.5, "The loader operator and loader are the same for both processing lines (cubes and pellets). It simplifies record keeping and the method for tracking tonnage by using the same 20 bale average method to quantify and track the amounts processed per day. The tracking is then in the same place, with the same operator".

DEQ Response: The requested change has been made.

Facility Comment: Permit condition 5.1, "This process is modular. Steam is injected between the shredder and the cooler before the cubes are formed".

DEQ Response: The requested verbiage has been added.

Facility Comment: Permit condition 5.3, "This would match the PM-10 emissions inventory better if the higher cold season lb/hr. rate was used (0.06 lb/hr.) but the annual limit of 0.22 T/yr. was used for the combined rates used to calculate boiler emissions using a cold and warm season differential. For SO2 the same logic would list

8.6E-03 lb/hr. For NOx it would be 1.12 lb/hr maximum per hour and CO would be 0.64 lb/hr. maximum. If these are annual average lb/hr. emissions, then the comment doesn't apply. If these reflect the modeled rates and limits on hourly emissions, the adjustment would reflect the maximums as modeled.

DEQ Response: The combined emissions based off of the maximum capacity during the winter and a reduced capacity during the warmer months was used. Table 5.2 shall not change.

Statement of Basis

Facility Comment: Cover page, "No apostrophe. It is "SEBS "as in "DEQ". It started as an acronym like KFC. KFC once stood for Kentucky Fried Chicken, but KFC has since been adopted as the brand name".

DEQ Response: Requested change has been made.

Facility Comment: Description, first paragraph, "Technically true, though the control is for distinct separate parts of the process.

DEQ Response: Noted

Facility Comment: Description, second paragraph, "Grain or bentonite are added just before PE02 or PE08 so they are ground up and included in the conditioned meal. BP09 is the grain storage silo. BP07 is the bentonite storage silo. These are added back to the process lines using different conveyors and at different rates. Or conveyor. West process line. PE19 doesn't handle direct emissions from the hammer mill. That would be PE04. PE19 does handle emissions from storage and load out. Bagging emissions are incorporated into PE04.

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Description, third paragraph, "Ground meal is collected in the cyclones rather than the baghouses. PE19 doesn't handle direct emissions from the hammer mill. That is PE10. PE19 does handle emissions from storage and load out yes. The term "process line" may add clarity to the discussion rather than 'hammer mill line".

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Description, fourth paragraph, "This one is not open top. It is vertical with bales being fed into a semi enclosed section of the machine. One bale pushes another into the shredder. A conveyor chain pushes the bales into the mouth of the shredder which is covered on 4 sides, with another bale on the conveyor making the 5th "side".

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Description, eighth paragraph, "This process has been ducted to PE10, the East Baghouse, rather than PE19".

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Description, ninth paragraph, "This estimate is based on 80 TPD cubes added to 260 TPD pellets (340 TPD total production). 80 TPD / 340 TPD total = 23.5%. This reflects permitted values in the draft permit".

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Table 1, "99.9% is consistent with values used for PE19. All baghouses use the same bags for control. Add East to PE10. Update Cuber daily throughput. BP02 bins are "as built" overhead bins with no specific manufacturer or model number, delete from table. Bentonite emissions are tied to BP08. No equipment ID was available or submitted for BP06. Grain emissions are tied to BP06, No equipment ID was available or submitted".

DEQ Response: The requested changes have been made and verbiage added.

Facility Comment: Table 9, "BP06 is the designation for grain, BP08 is the designation for bentonite, consistent with the submitted emissions inventories and spreadsheet "SEBS 260".

DEQ Response: The requested changes have been made.

Facility Comment: Modified permit condition 3.2, “A correction is suggested in the draft permit comments. Each process line has its own baghouse for the hammer mills. The tub grinder top emissions are all that is treated by the new PE19”.

DEQ Response: The requested change has been made.

Facility Comment: Modified permit condition 3.4, “The means by which SEBS tracks production on a daily basis remains the bale count method. The 20-bale average weight, tracked on a periodic basis, is still the best method available for measuring process input. PM generation is calculated based on process input of hay, not finished pellets. A correction is suggested in the draft permit comments”.

DEQ Response: The permit condition was changed back to baled hay counts as in the previous permit.

Facility Comment: Modified permit condition 3.17, “The means by which SEBS tracks production on a daily basis remains the bale count method. The 20-bale average weight, tracked on a periodic basis, is still the best method available for measuring process input. PM generation is calculated based on process input of hay, not finished pellets. If the bale count method is an acceptable method for tracking the hay throughput for pellets and cubes, a note to that effect would be good to include, if the permit condition change is left as “260 TPD of finished product”.

DEQ Response: The permit condition was changed back to baled hay counts as in the previous permit.

Facility Comment: Modified permit condition 4.5, “The means by which SEBS tracks production on a daily basis remains the bale count method. The 20-bale average weight, tracked on a periodic basis, is still the best method available for measuring process input. PM generation is calculated based on process input of hay, not finished cubes or pellets”.

DEQ Response: The permit condition was changed back to baled hay counts as in the previous permit.

APPENDIX D – 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:	**SEBS Feed and Supply, Inc.**
Address:	**1555 N 1200 E**
City:	**Terreton**
State:	**ID**
Zip Code:	**83450**
Facility Contact:	**Brad Colling**
Title:	**Owner and General Manager**
AIRS No.:	**115114**

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	2.9	0	2.9
SO_2	0.0	0	0.0
CO	1.7	0	1.7
PM10	2.6	0	2.6
VOC	0.2	0	0.2
Total:	7.4	0	**7.4**
Fee Due	**$ 2,500.00**		

Comments: