Statement of Basis

Permit to Construct No. P-2012.0020
Project ID 61918

Idahoan Foods, LLC - Idaho Falls
Idaho Falls, Idaho

Facility ID 019-00038

Final

October 18, 2017
Tom Burnham
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.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AMU	air makeup unit
Btu	British thermal units
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
HAP	hazardous air pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
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
PAH	polyaromatic hydrocarbons
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
PC	Permit Condition
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	*Rules for the Control of Air Pollution in Idaho*
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Idahoan Foods, LLC – Idaho Falls is a potato processing company that dehydrates potatoes to make flakes, slices, and dices in Idaho Falls, Idaho. The process includes dryers and dehydration lines, which are sources of particulate matter emissions.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

May 9, 2008	T2-2007.0116, Initial T2 Permit, Permit status (S)
April 13, 2009	T2-2009.0027, Modified T2 Permit, Permit status (S)
August 26, 2013	P-2012.00210, Modify processes installing flaker drum dryer, two fluidized bed dryers, creamy mash dryer, limit boiler to natural gas, and add a baghouse and convert the T2 to a PTC(A, but will become S upon issuance of this permit)

Application Scope

This PTC is for a minor modification at an existing minor facility. The applicant has proposed to:

- Remove Flaker Drum Dryers #1, #2, #3, and #4.
- Install and operate Flaker Drum Dryers #21, #22, and #23.
- Replace three Vaculift baghouses with a single baghouse
- Remove Boiler #2 and install and operate Boiler #22.
- Install and operate and natural gas fired heater, Heater #23, for the boiler room and Boiler #22.
- Remove air makeup units AMU #1 and AMU #2.
- Install and operate AMU #21 and AMU #22.
- Increase flaker drum dryer throughput from 60 T/day to 100 T/day.
- Increase throughput for Fluidized Bed Dryers #1 and #2 from 90.2 T/day to 108 T/day.
- Remove the Creamy Mash System including, Creamy Mash loading station, dryer and baghouse.

Application Chronology

July 14, 2017	DEQ received an application.
July 18, 2017	DEQ received an application fee.
August 3 – 18, 2017	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
August 1, 2017	DEQ approved pre-permit construction.
August 14, 2017	DEQ determined that the application was complete.
September 1, 2017	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 10, 2017	DEQ made available the draft permit and statement of basis for applicant review.
October 16, 2017	DEQ received the permit processing fee.
October 18, 2017	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Permit Section	Source	Control Equipment	Emission Point ID No.
2	Boiler BLR-1 Manufacturer: Cleaver Brooks Rated heat capacity: 61.1 MMBtu/hr Model: WT200x-CN5 Fuel: natural gas only	None	#1
	Boiler BLR-22 Manufacturer: Cleaver Brooks Rated heat capacity: 60.8 MMBtu/hr Model: SP-NB-200D-45-300-AL-LH-EZ-250-SAT- NAT-30-NG-PP-3 Fuel: natural gas only	None	#31
	Air Makeup Units (4) #21 & #22: 8.25 MMBtu/hr (each) #3: 5 MMBtu/hr #4: 6.6 MMBtu/hr Fuel: natural gas only	None	#32, #33 #12 #13
	Boiler room heater #23 Rated heat capacity: 0.80 MMBtr/hr Fuel: natural gas only	None	#34
3	Flaker Drum Dryer #21 Manufacturer: Idaho Steel Capacity: 1.39 T/hr flake production Steam Heated	dryer has two stacks (main stack and snifter stack) with no control and product flow to vaculift with a baghouse	#25
	Flaker Drum Dryer #22 Manufacturer: Idaho Steel Capacity: 1.39 T/hr flake production Steam Heated	dryer has two stacks (main stack and snifter stack) with no control and product flow to vaculift with a baghouse	#26
	Flaker Drum Dryer #23 Manufacturer: Idaho Steel Capacity: 1.39 T/hr (each) flake production Steam Heated	dryer has two stacks (main stack and snifter stack) with no control and product flow to vaculift with a baghouse	#27
	Flaker Line Vaculifts (#1-#3) Manufacturer: Vaculift	Cyclone & Baghouse	#35
	Real Line #1 Fluidized Bed Dryer Manufacturer: Eclipse Production Rate Capacity: 2.25 T/hr Rated Heat Input Capacity: 10 MMBtu/hr Fuel: Natural Gas Only	Cyclone	#16
	Real Line #2 Fluidized Bed Dryer Manufacturer: Eclipse Production Rate Capacity: 2.25 T/hr Rated Heat Input Capacity: 10 MMBtu/hr Fuel: Natural Gas Only	Cyclone	#17
	Material Transfer Day Tank A & B Real Line* Product Transfer to Real Line #1 & #2* Product Transfer from Real Line #1 & #2* *Vents inside Building	Baghouse	Vent inside building
	Building Exhaust	None	#1 and #2
4	Fire Pump Engine Manufacturer: Clarke Model: JU6H-UFAD98 Rating: 315 bhp Date of Install: 2012 Fuel: Diesel	None	Fire Pump Engine Exhaust

Emissions Inventories

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 and GHG pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

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

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]
Boiler No. 1	0.452	1.978	0.036	0.156	5.94	26.033	4.993	21.868	0.327	1.432
Boiler No. 2	0.197	0.865	0.020	0.068	6.60	11.376	2.182	9.556	0.150	0.626
Dryer Flaker/Drum Type, Nos. 1-4	2.59	11.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Air Makeup Units (4)	0.123	0.538	0.010	0.042	1.615	7.073	1.356	5.941	0.089	0.389
Flaker Lines 1 & 2 Vaculift	2.6E-04	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Flaker Lines 3 Vaculift	2.5E-04	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Flaker line 4 Vaculift & Baghouse	2.3E-04	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dryer, Fluid Bed: Combined Emissions Real Lines 1-2	2.26	9.9	0.012	0.051	1.946	8.521	1.634	7.158	0.107	0.469
Baghouse Product Transfer Raw	0.005	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Baghouse Exhaust Dust Collector System	1.0E-10	4.5E-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Baghouse Finished Product Transfer, Creamy Mash	0.017	0.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bag Room Packaging	1.0E-10	4.5E-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #1	0.430	1.883	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #2	0.430	1.883	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #3	0.820	3.592	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #4	0.820	3.592	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pre-Project Totals	**6.71**	**29.4**	**0.077**	**0.318**	**12.22**	**53.003**	**10.31**	**44.523**	**0.673**	**2.915**

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

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project. The following table presents the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Boiler No. 1, source #1	0.466	1.978	0.036	0.156	5.94	26.033	4.993	21.868	0.327	1.432
Boiler No. 22, source #31	0.609	2.67	0.036	0.157	2.19	9.60	2.43	10.7	0.243	1.07
Boiler room heater, source #34	0.006	0.026	0.000	0.002	0.078	0.344	0.066	0.289	0.004	0.019
Dryer Flaker/Drum Type, Nos. 21-23, sources #25-#27	4.70	20.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Makeup Units (4) Sources #12, #13, #32, #33	0.21	0.91	0.02	0.07	2.17	9.50	1.19	5.22	0.151	0.658
Flaker line Vaculift & Baghouse #35	4.8E-4	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baghouse Exhaust Dust Collector System #15	1.0E-10	4.5E-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #28	0.108	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #29	0.108	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Snifter Vent #30	0.108	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dryer, Fluid Bed: Combined Emissions Real Lines 1 and 2, sources #16 and #17	2.71	11.9	0.012	0.051	1.946	8.521	1.634	7.158	0.107	0.469
Post Project Totals	**9.54**	**41.79**	**0.098**	**0.431**	**12.32**	**53.98**	**10.32**	**45.20**	**0.83**	**3.65**

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

Change in Potential to Emit

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

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	6.71	29.4	0.077	0.318	12.22	53.003	10.31	44.523	0.673	2.915
Post Project Potential to Emit	9.54	41.79	0.098	0.431	12.32	53.98	10.32	45.20	0.83	3.65
Changes in Potential to Emit	**2.83**	**12.39**	**0.02**	**0.11**	**0.10**	**0.98**	**0.01**	**0.68**	**0.16**	**0.74**

TAP Emissions

The toxic air pollutant (TAP) emissions from the project, which are regulated in accordance with IDPA 58.01.01.210.20, are below screening emissions levels with the exception of arsenic, cadmium, nickel, and formaldehyde.

A summary of the emissions changes from the project and a comparison to the relevant TAP screening emissions levels (EL) is provided in Appendix A.

Table 5 POST PROJECT POTENTIAL TO EMIT FOR TOXIC AIR POLLUTANTS

CAS No.	Pollutant	New Source Emission Rates (lb/hr)	Screening Emission Level[b] (lb/hr)	Exceeds Screening Level?
95501	1,2-Dichlorobenzene (ortho-)	9.20E-05	20	No
106467	1,4-Dichlorobenzene (para-)	2.04E-05	30	No
7440382	Arsenic	3.39E-06	1.5E-06	Yes
7440393	Barium	3.37E-04	0.033	No
7440439	Cadmium	1.87E-05	3.6E-06	Yes
7440473	Chromium	2.37E-05	0.033	No

7440484	Cobalt	1.42E-06	0.0033	No
7440508a	Copper (fume)	6.51E-05	0.013	No
50000	Formaldehyde	1.27E-03	5.1E-04	Yes
110543	Hexane	0.031	12	No
7439965	Manganese	6.45E-06	0.067	No
7439987a	Molybdenum (soluble compounds)	8.43E-05	0.333	No
91203	Naphthalene	1.03E-05	3.33	No
7440020	Nickel	3.56E-05	2.7E-05	Yes
109660	Pentane	0.199	118	No
7782492	Selenium	4.07E-07	0.013	No
108883	Toluene	5.77E-05	25	No
7440666	Zinc	2.22E-03	0.667	No
71432	Benzene	3.56E-05	8.00E-04	No
7440417	Beryllium	2.04E-07	2.80E-05	No
7439976	Mercury	1.99E-05	2.85E-03	No
91576	2-Methylnaphthalene	4.07E-07	9.10E-05	No
56495	3-Methylcholanthrene	3.05E-08	9.10E-05	No
57977	7,12-Dimethylbenz(a)anthracene	2.71E-07	9.10E-05	No
83329	Acenaphthene	3.05E-08	9.10E-05	No
120127	Anthracene	4.07E-08	9.10E-05	No
191242	Benzo(g,h,i)perylene	2.04E-08	9.10E-05	No
206440	Fluoranthene	5.09E-08	9.10E-05	No
86737	Fluorene	4.75E-08	9.10E-05	No
85018	Phenanathrene	2.88E-07	9.10E-05	No
129000	Pyrene	8.48E-08	9.10E-05	No
TAP Polycyclic Organic Matter (7-PAH group)		1.93E-07	2.00E-06	No
Sum of the following:				
56553	Benzo(a)anthracene	3.05E-08	--	---
205992	Benzo(b)fluoranthene	3.05E-08	--	---
205823	Benzo(k)fluoranthene	3.05E-08	--	---
53703	Dibenzo(a,h)anthracene	2.04E-08	--	---
218019	Chrysene	3.05E-08	--	---
193395	Indenol(1,2,3-cd)pyrene	3.05E-08	--	---
50328	Benzo(a)pyrene	2.04E-08	--	---

Some of the PTEs for TAP were exceeded as a result of this project. Therefore, modeling is required for arsenic, cadmium, nickel, and formaldehyde because the screening ELs identified in IDAPA 58.01.01.585 or 586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP 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 6 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (lb/hr)	PTE (T/yr)
1,4-Dichlorobenzene (para-)	9.20E-05	4.03E-04
2-Methylnaphthalene	1.84E-06	8.06E-06
3-Methylchloranthrene	1.38E-07	6.04E-07
7,12-Dimethylbenz(a)anthracene	1.23E-06	5.37E-06

Acenaphthene	1.38E-07	6.04E-07
Anthracene	1.84E-07	8.06E-07
Arsenic	1.53E-05	6.71E-05
Benzene	1.61E-04	7.05E-04
Benzo(a)anthracene	1.38E-07	6.04E-07
Benzo(a)pyrene	9.20E-08	4.03E-07
Benzo(b)fluoranthene	1.38E-07	6.04E-07
Benzo(g,h,i)perylene	9.20E-08	4.03E-07
Benzo(k)fluoranthene	1.38E-07	6.04E-07
Beryllium	9.20E-07	4.03E-06
Cadmium	8.43E-05	3.69E-04
Chromium	1.07E-04	4.70E-04
Chrysene	1.38E-07	6.04E-07
Cobalt	6.44E-06	2.82E-05
Dibenzo(a,h)anthracene	9.20E-08	4.03E-07
Fluoranthene	2.30E-07	1.01E-06
Fluorene	2.15E-07	9.40E-07
Formaldehyde	5.75E-03	2.52E-02
Hexane	1.38E-01	6.04E-01
Indenol(1,2,3-cd)pyrene	1.38E-07	6.04E-07
Manganese	2.91E-05	1.28E-04
Mercury	1.99E-05	8.73E-05
Naphthalene	4.67E-05	2.05E-04
Nickel	1.61E-04	7.05E-04
Phenanathrene	1.30E-06	5.71E-06
Pyrene	3.83E-07	1.68E-06
Selenium	1.84E-06	8.06E-06
Toluene	2.61E-04	1.14E-03
Total HAP Emissions (lb/hr)	**0.14**	
Total HAP Emissions (ton/yr)	**0.63**	
Max Single HAP Emission (lb/hr)	**1.38E-01**	**Hexane**
Max Single HAP Emission (ton/yr)	**0.60**	

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10}, $PM_{2.5}$, NO_X, and TAP from this project exceeded 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].

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 NAAQS. 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) for any TAPs that are not HAPs. A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix A – all TAPs that are not HAPs are emitted below screening emissions levels. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

Emission rates of the TAPs that are HAPs that did exceed Emissions Screening Level (EL) rates of Idaho Air Rules Section 585 and 586 are arsenic, cadmium, nickel, and formaldehyde. A demonstration of compliance with TAPs increments for the TAPs was included in the application and reviewed by DEQ modeling staff.

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

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Bonneville 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 actual or potential emissions ≥ 10 T/yr or if the aggregate of all HAPS (Total HAPs) has actual or potential emissions ≥ 25 T/yr.

SM80 = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits ≥ 8 T/yr of a single HAP or ≥ 20 T/yr of THAP.

SM = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to < 8 T/yr of a single HAP and/or < 20 T/yr of THAP.

B = Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold

UNK = Class is unknown

For All Other Pollutants:

A = Actual or potential emissions of a pollutant are ≥ 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.

B = Actual and potential emissions are < 100 T/yr without permit restrictions.

UNK = Class is unknown.

Table 7 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	> 100	41.8	**100**	**SM**
$PM_{10}/PM_{2.5}$	> 100	41.8	**100**	**SM**
SO_2	<100	0.11	**100**	**B**
NO_x	<100	54.0	**100**	**B**
CO	<100	45.2	**100**	**B**
VOC	<100	3.7	**100**	**B**
HAP (single)	<10	0.60	**10**	**B**
HAP (Total)	<25	0.63	**25**	**B**
Pb	1.68E-4	1.68E-4	**100**	**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 modified emissions sources. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 ..... Tier II Operating Permit

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

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

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

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, 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)

40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:

The source's 315 horse-power diesel fire pump engine is subject to and meets the requirements of this subpart by complying with the requirements of 40 CFR 60 Subpart IIII listed in Permit Conditions 4.2 through 4.10 and no changes were made to this engine for this permit modification.

40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units:

In accordance with 40 CFR 60.40c(a) boilers with a capacity between 10 MMBtu/hr and 100 MMBtu/hr constructed or modified after June 9, 1989 are subject to the standard. Boiler #1 is a 61.1 MMBtu/hr boiler but was constructed or modified before the applicability date and is therefore not subject to the standard. Boiler #22 is a 60.8 MMBtu/hr boiler but was constructed or modified after the applicability date and is subject to the standard. Permit Condition 2.5 contains requirements of the applicable sections of subpart Dc. A breakdown of the applicable portions is presented below as presented by the applicant:

§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 new 60.87 MMBtu/hr natural gas-fired boiler proposed by Idahoan ("Idahoan boiler") is an affected facility. The two new 8.25 MMBtu/hr natural gas-fired air makeup units and the new 0.8 MMBtu/hr building heater are not steam generating units and are, therefore, not affected facilities under this subpart.

§60.41c Definitions.

Natural gas means:

(1) A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface. of which the principal constituent is methane; or
(2) Liquefied petroleum (LP) gas, as defined by the American Society for Testing and Materials in ASTM 01835 (incorporated by reference, see §60.17); or
(3) A mixture of hydrocarbons that maintains a gaseous state at ISO conditions. Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 34 and 43 megajoules (MJ) per drv standard cubic meter (910 and 1.150 Btu per drv standard cubic foot).

-The Idahoan boiler will combust only natural gas.

§60.48c Reporting and recordkeeping requirements.

(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup. as provided by §60.7 of this part. This notification shall include:

- Idahoan will notify IDEQ of date of construction and actual startup date of the boiler.

(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

-The Idahoan boiler has a design heap input capacity of 60.87 MMBtu/hr, and the boiler will combust only natural gas.

(g)(1)Except as provided under paragraphs (g)(2) and (g)(3) of this section. the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.

(2) As an alternative to meeting the requirements of paragraph (g)(1) of this section. the owner or operator of an affected facility or multiple affected facilities located on a contiguous property unit where the only fuels combusted in any steam generating unit (including steam generating units not subject to this subpart) at that property are natural gas. wood, distillate oil meeting the most current requirements in §60.42C to use fuel certification to demonstrate compliance with the SO, standard. and/or fuels excluding coal and residual oil. not subject to an emissions standard (excluding opacity) may elect to record and maintain records of the total amount of each steam generating unit fuel delivered to that property during each calendar month.

-Idahoan will maintain records of natural gas fuel delivered to its Idaho Falls facility during each calendar month.

NESHAP Applicability (40 CFR 61)

The proposed source is not an affected source subject to NESHAP in 40 CFR 61, and this permitting action does not alter the applicability status of existing affected sources at the facility.

MACT Applicability (40 CFR 63)

40 CFR 63, Subpart JJJJJJ-National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources. In accordance with § 63.11195(e) the two existing boilers at the facility are not subject to this subpart because they are permitted to burn natural gas only.

Because the fire pump engine is regulated under 40 CFR 60 Subpart IIII, 40 CFR 63, Subpart ZZZZ–National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines requirements are met.

Permit Conditions Review

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

Permit Section 1

The scope of the project was changed to include the replacing equipment, sources removed, and throughput as described in the application. The regulated sources Table 1.1 was changed to reflect the same, as well as correct an error by removing the baghouse as a control for building exhausts.

Permit Section 2

Boiler #22 and related conditions were added, and Boiler #2 and related conditions were removed. New AMU's #21 and #22, along with the Boiler Room Heater #23 were added to the emission units Table. Additionally, the boiler room heater was added to Permit Condition (PC) 2.4 to combust natural gas only.

Permit Section 3

In this section PC 3.3 was updated to current equipment and throughput. The applicant presented a case to remove the snifter vents from regulation due to the small amount of emissions. Based on testing of the existing fans, the emissions of the new fans are demonstrated to be less than 0.11 lb/hr of $PM_{10}/PM_{2.5}$. The snifter vents are, therefore, not included in Table 3.2 emission limits. And, the creamy mash line sources have been removed from the permit, and the equipment is being removed from the facility. Throughput increases for the flake drum dryers and the Real Line were updated in PC 3.4. The performance test requirements in PC 3.8 for the Real line were removed, as they have already been performed; however, the new flake dryers will need to be tested. Because the dryers are made by the same manufacturer and identical design, only one representative dryer is to be tested within 180 days of start-up. The snifter vent test requirements were removed based on the applicant's case of low emissions and cost of monitoring.

Permit Section 4

A table was added describing the fire pump engine and controls.

Permit Section 5

General Provisions were updated to reflect current rules, specifically addressing an error found in PC 5.6.

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 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

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Design Values Summary

Drum Dryers -- New (Units 21, 22, and 23; Source IDs #25 - #30)

100 tons/day, *combined* daily production rate limit (proposed)
3 number of replacement units

Drum Dryers -- Existing (ID #s 1, 2, 3, and 4; Source IDs #3 - #6 and #20 - #23)

10 tons/day, actual maximum daily production rate, Dryers #1 and #2, each (20,000 lb/day)
17.5 tons/day, actual maximum daily production rate, Dryers #3 and #4, each (35,000 lb/day)

Real Line FB Dryers

108 tons/day; proposed new production rate limit, two dryers combined
90.2 tons/day; existing production rate limit, two dryers combined

AMUs -- New

2 Number of new air makeup units (AMUs #21 and #22)
8.25 MMBtu/hr; per-unit heat capacity input, natural gas only

AMUs -- Replaced

2 Number of existing, replaced air makeup units (AMUs #1 and #2)
2.5 MMBtu/hr; per-unit heat capacity input, natural gas only

Boiler -- New

60.87 MMBtu/hr; Boiler 22 design heat input capacity. Natural gas fuel only.

Boiler -- Replaced

26.7 MMBtu/hr; Boiler 2 design heat input capacity. Natural gas fuel only.

Building Heater -- New

1 Number of new building heaters
0.80 MMBtu/hr; New building heater heat input capacity. Natural gas fuel only.

General Parameters

8760 hours/year, maximum annual operating hours
365 days/year, maximum annual operating days
24 hours/day, maximum daily operating hours
1,020 btu/scf; nominal pipeline quality natural gas heat content (AP-42, Ch. 1.4, 07/98)

TOTAL PROJECT POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS (TON/YEAR)

Source ID	Description	TSP	PM10	PM2.5	NOx	SO2	CO	VOC	Pb	CO2e
Point Sources										
New, Increased, ton/year										
31	New Boiler #22	2.67	2.67	2.67	9.60	0.157	10.7	1.07	1.31E-04	31,552
25, 26, 27	New Drum Dryers, #21, #22, #23, Main Stacks (3)	20.6	20.6	20.6	--	--	--	--	--	--
28, 29, 30	New Drum Dryer, #21, #22, #23, Snifter Vents (3)	1.42	1.42	1.42	--	--	--	--	--	--
32, 33	New AMUs #21 & #22	0.538	0.538	0.538	4.56	0.043	1.07	0.390	3.54E-05	8,553
16, 17	Real Line #1 & #2 Fluidized Bed Dryers, New Rate	11.9	11.9	11.9	--	--	--	--	--	--
34	New Heater #23	0.026	0.026	0.026	0.344	0.002	0.289	0.019	1.72E-06	415
Removed, Decreased, ton/year										
2	Existing Boiler #2	-1.75	-1.75	-1.75	-11.4	-0.070	-9.56	-0.626	---	-13,683
3, 4, 5, 6	Existing Drum Dryer Main Stacks (4, removed)	-11.3	-11.3	-11.3	--	--	--	--	--	--
20, 21, 22, 23	Existing Drum Dryer Snifter Vents (4)	-0.779	-0.779	-0.779	--	--	--	--	--	--
10, 11	Existing AMUs (2, removed)	-0.160	-0.160	-0.160	-2.14	-0.020	-1.78	-0.117	---	-2,562
16, 17	Real Line #1 & #2 Fluidized Bed Dryers, Current Rate	-9.90	-9.90	-9.90	--	--	--	--	--	--
14	Product Transfer Creamy Mash Feed Bag House	-0.039	-0.039	-0.039	--	--	--	--	--	--
18	Creamy Mash Dryer with Cyclone*	-0.745	-0.745	-0.745	--	--	--	--	--	--
19	Product Transfer Cyclone for Bag Room Bag Packaging	--	--	--	--	--	--	--	--	--
Changes in PTE for NSR Regulated Pollutants, ton/year										
	Total Emissions Increases	37.1	37.1	37.1	14.5	0.201	12.0	1.48	1.68E-04	40,520
	Total Emissions Decreases	-24.7	-24.7	-24.7	-13.5	-0.1	-11.3	-0.743	--	-16,245
	Net Emissions Change	**12.4**	**12.4**	**12.4**	**0.976**	**0.111**	**0.681**	**0.732**	**1.68E-04**	**24,275**

* The emissions total of 0.745 T/yr for the creamy mash dryer is based on the permit limit of 0.17 lb/hr PM_{10} and $PM_{2.5}$; the P-2012.0020 Statement of Basis lists 0.759 T/yr PM_{10} and $PM_{2.5}$ emisisons from the creamy mash dryer.

POST PROJECT FACILITY-WIDE POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Description	TSP	PM10	PM2.5	NOx	SO2	CO	VOC	Pb	CO2e
Existing facility-wide PTE*	29.4	29.4	29.4	53.0	0.320	44.5	2.92	--	63,461
Change in PTE due to proposed project	12.4	12.4	12.4	0.976	0.111	0.681	0.732	1.68E-04	24,275
New facility-wide total emissions	**41.8**	**41.8**	**41.8**	**54.0**	**0.431**	**45.2**	**3.65**	**1.68E-04**	**87,736**

* From the current permit's Statement of Basis. Facility-wide lead emissions are not quantified in the Statement of Basis.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Facility-Wide Regulated Pollutant Emissions Summary

REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	PTE (T/yr)	Major Source Thresholds (T/yr)[a]	AIRS/AFS Classification[b]
PM	> 100	41.8	100	SM
$PM_{10}/PM_{2.5}$	> 100	41.8	100	SM
SO_2	< 100	0.43	100	B
NO_X	< 100	54.0	100	B
CO	< 100	45.2	100	B
VOC	< 100	3.7	100	B
CO_2e	< 100,000	87,736	100,000	B
HAP (single)	< 10	0.60	10	B
HAP (total)	< 25	0.63	25	B

(a) In this context, "Major Source" thresholds for criteria pollutants refers to the Title V operating permit program. The major source threshold that applies to this facility for NSR-PSD is 250 T/yr for criteria pollutants. Note that the CO_2e major source threshold applies only if the facility qualifies as a major source for either NSR-PSD or Title V for another pollutant.

(b) "SM": Potential emissions fall below applicable major source thresholds based on federally enforceable regulations or limitations. "B": Uncontrolled potential emissions are below applicable major source thresholds.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Project HAP Potential Emissions

HAP POTENTIAL TO EMIT EMISSIONS SUMMARY

CAS Nbr.	Pollutant	New Source Emission Rates (lb/hr)	Notes
106467	1,4-Dichlorobenzene (para-)	9.20E-05	a
91576	2-Methylnaphthalene	1.84E-06	b
56495	3-Methylchloranthrene	1.38E-07	b
57977	7,12-Dimethylbenz(a)anthracene	1.23E-06	b
83329	Acenaphthene	1.38E-07	b
120127	Anthracene	1.84E-07	b
7440382	Arsenic	1.53E-05	
71432	Benzene	1.61E-04	
56553	Benzo(a)anthracene	1.38E-07	
50328	Benzo(a)pyrene	9.20E-08	b
205992	Benzo(b)fluoranthene	1.38E-07	b
191242	Benzo(g,h,i)perylene	9.20E-08	b
205823	Benzo(k)fluoranthene	1.38E-07	b
7440417	Beryllium	9.20E-07	
7440439	Cadmium	8.43E-05	
7440473	Chromium	1.07E-04	
218019	Chrysene	1.38E-07	b
7440484	Cobalt	6.44E-06	
53703	Dibenzo(a,h)anthracene	9.20E-08	b
206440	Fluoranthene	2.30E-07	b
86737	Fluorene	2.15E-07	b
50000	Formaldehyde	5.75E-03	
110543	Hexane	1.38E-01	
193395	Indenol(1,2,3-cd)pyrene	1.38E-07	b
7439965	Manganese	2.91E-05	
7439976	Mercury	1.99E-05	
91203	Naphthalene	4.67E-05	b
7440020	Nickel	1.61E-04	
85018	Phenanathrene	1.30E-06	b
129000	Pyrene	3.83E-07	b
7782492	Selenium	1.84E-06	
108883	Toluene	2.61E-04	
	Total HAP Emissions (lb/hr)	0.14	
	Total HAP Emissions (ton/yr)	0.63	
	Max Single HAP Emission (lb/hr)	1.38E-01	*Hexane*
	Max Single HAP Emission (ton/yr)	0.60	*Hexane*

Notes:
(a) AP-42 provides an emission factor for total Dichlorobenze which comprises three chemical compounds: ortho-, meta-, and para-dichlorobenzene. Clean Air Act Section 112(b) lists para-Dichlorobenzene as a HAP. For purposes of this calculation, all dichlorobenzene is assumed to be para-dichlorobenzene.
(b) HAP because it is Polycyclic Organic Matter (POM) and/or Polycyclic Aromatic Hydrocarbon (PAH). POM is a HAP as defined by Section 112(b) of the Clean Air Act. PAH is a subset of POM.

PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT[a]

CAS Nbr.	Pollutant	New Source Emission Rates (lb/hr)	Screening Emission Level[b] (lb/hr)	Exceeds Screening Level?	Notes
95501	1,2-Dichlorobenzene (ortho-)	9.20E-05	20	No	c
106467	1,4-Dichlorobenzene (para-)	2.04E-05	30	No	c,f
7440393	Barium	3.37E-04	0.033	No	
7440473	Chromium	2.37E-05	0.033	No	f
7440484	Cobalt	1.42E-06	0.0033	No	f
7440508a	Copper (fume)	6.51E-05	0.013	No	
110543	Hexane	0.031	12	No	f
7439965	Manganese	6.45E-06	0.067	No	f
7439987a	Molybdenum (soluble compounds)	8.43E-05	0.333	No	
91203	Naphthalene	1.03E-05	3.33	No	f
109660	Pentane	0.199	118	No	
7782492	Selenium	4.07E-07	0.013	No	f
108883	Toluene	5.77E-05	25	No	f
7440666	Zinc	2.22E-03	0.667	No	

PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT[a]

CAS Nbr.	Pollutant	New Source Emission Rates (lb/hr)	Screening Emission Level[b] (lb/hr)	Exceeds Screening Level?	Notes
7440382	Arsenic	3.39E-06	1.50E-06	Yes	f
71432	Benzene	3.56E-05	8.00E-04	No	f
7440417	Beryllium	2.04E-07	2.80E-05	No	f
7440439	Cadmium	1.87E-05	3.70E-06	Yes	f
50000	Formaldehyde	1.27E-03	5.10E-04	Yes	f
7439976	Mercury	1.99E-05	2.85E-03	No	g
7440020	Nickel	3.56E-05	2.70E-05	Yes	f
TAP Polyaromatic Hydrocarbons (except 7-PAH group)			--	---	
91576	2-Methylnaphthalene	4.07E-07	9.10E-05	No	d,f
56495	3-Methylcholanthrene	3.05E-08	9.10E-05	No	d,f
57977	7,12-Dimethylbenz(a)anthracene	2.71E-07	9.10E-05	No	d,f
83329	Acenaphthene	3.05E-08	9.10E-05	No	d,f
120127	Anthracene	4.07E-08	9.10E-05	No	d,f
191242	Benzo(g,h,i)perylene	2.04E-08	9.10E-05	No	d,f
206440	Fluoranthene	5.09E-08	9.10E-05	No	d,f
86737	Fluorene	4.75E-08	9.10E-05	No	d,f
85018	Phenanathrene	2.88E-07	9.10E-05	No	d,f
129000	Pyrene	8.48E-08	9.10E-05	No	d,f
TAP Polycyclic Organic Matter (7-PAH group) Sum of the following:		1.93E-07	2.00E-06	No	e,f
56553	Benzo(a)anthracene	3.05E-08	--	---	e,f
205992	Benzo(b)fluoranthene	3.05E-08	--	---	e,f
205823	Benzo(k)fluoranthene	3.05E-08	--	---	e,f
53703	Dibenzo(a,h)anthracene	2.04E-08	--	---	e,f
218019	Chrysene	3.05E-08	--	---	e,f
193395	Indenol(1,2,3-cd)pyrene	3.05E-08	--	---	e,f
50328	Benzo(a)pyrene	2.04E-08	--	---	e,f

Notes:

(a) Potential emission rates are based on combined emissions increases for the project. In all cases, the 24-hour average and annual-average hourly emission rates are equal.

(b) Emission rate screening levels per IDAPA 58.01.01.585 (non-carcinogenic) and .586 (carcinogenic).

(c) AP-42 provides an emission factor for total Dichlorobenze which comprise of three chemical compounds: ortho-, meta-, and para-dichlorobenzene. The total factor will be used for each individual compound. IDAPA 58.0101.585 provides emission limits for ortho- and para- compounds.

(d) Polyaromatic Hydrocarbons are considered TAPs (excluding the 7-PAH group) per IDAPA 58.0101.586

(e) An October 8, 2008 memorandum produced by Carl Brown of the Idaho DEQ states that the Polycyclic Organic Matter (POM, or 7-PAH group) should be considered one TAP with an equivalent potency to benzo(a)pyrene. Additional PAHs should be analyzed independently when evaluating carcinogenic risk.

(f) Pollutants from only the new AMUs and heater sources. The boiler may emit these TAPs/HAPs but these emissions are exempt under IDAPA 58.01.01.210.20 because they are exempt from applicability under NESHAP subpart JJJJJJ and are accounted for in the HAPs summary.

(g) Hg standard in lb/hr (25 lb/year * 1 year/8760 hr) to show Hg emissions are below the IDAPA 58.01.01.215 standard of 25 lb/year.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Modeling Applicability Thresholds Comparisons

Pollutant	PTE	Units	Level I Threshold	Above/Below	Level II Threshold	Above/Below	BRC Threshold	Above/Below
PM_{10}	8.47	lb/hr	0.22	Above	2.6	Above	--	--
	37.1	tpy	--	--	--	--	1.5	Above
$PM_{2.5}$	8.47	lb/hr	0.054	Above	0.63	Above	--	--
	37.1	tpy	0.35	Above	4.1	Above	1	Above
NO_X	3.31	lb/hr	0.2	Above	2.4	Above	--	--
	14.5	tpy	1.2	Above	14	Above	4	Above
SO_2	0.05	lb/hr	0.21	Below	2.5	Below	--	--
	0.20	tpy	1.2	Below	14	Below	4	Below
CO	2.74	lb/hr	15	Below	175	Below	--	--
	12.0	tpy	--	--	--	--	10	Above
Pb	0.028	lb/month	14	Below	14	Below	--	--
	1.68E-04	tpy	--	--	--	--	0.06	Below

PTE values represent only emissions increases associated with the proposed project.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Modeled Sources and Emission Rates

Model ID	Description	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	NO_x (lb/hr)	As (lb/hr)	Cd (lb/hr)	Ni (lb/hr)	CH_2O (lb/hr)
E_DD1_MS	Existing Drum Dryer #1, main stack	-0.470	-0.470	–	–	–	–	–
E_DD2_MS	Existing Drum Dryer #2, main stack	-0.470	-0.470	–	–	–	–	–
E_DD3_MS	Existing Drum Dryer #3, main stack	-0.823	-0.823	–	–	–	–	–
E_DD4_MS	Existing Drum Dryer #4, main stack	-0.823	-0.823	–	–	–	–	–
E_DD1_SV	Existing Drum Dryer #1, snifter stack	-0.032	-0.032	–	–	–	–	–
E_DD2_SV	Existing Drum Dryer #2, snifter stack	-0.032	-0.032	–	–	–	–	–
E_DD3_SV	Existing Drum Dryer #3, snifter stack	-0.057	-0.057	–	–	–	–	–
E_DD4_SV	Existing Drum Dryer #4, snifter stack	-0.057	-0.057	–	–	–	–	–
E_FBD1	Existing rate Real Line Fluidized Bed Dryer #1	-1.13	-1.13	–	–	–	–	–
E_FBD2	Existing rate Real Line Fluidized Bed Dryer #2	-1.13	-1.13	–	–	–	–	–
E_BLR2	Existing Boiler #2	-0.400	-0.400	-2.60	–	–	–	–
E_CM_DRYER	Existing Creamy Mash Dryer	-0.170	-0.170	–	–	–	–	–
N_DD21MS	New Drum Dryer #21, main stack	1.567	1.567	–	–	–	–	–
N_DD22MS	New Drum Dryer #22, main stack	1.567	1.567	–	–	–	–	–
N_DD23MS	New Drum Dryer #23, main stack	1.567	1.567	–	–	–	–	–
N_DD21SV	New Drum Dryer #21, snifter stack	0.108	0.108	–	–	–	–	–
N_DD22SV	New Drum Dryer #22, snifter stack	0.108	0.108	–	–	–	–	–
N_DD23SV	New Drum Dryer #23, snifter stack	0.108	0.108	–	–	–	–	–
N_BLR22	New Boiler #22	0.609	0.609	2.19	–	–	–	–
N_HEATER	New Building Heater 23 (exhaust through BLR22)	0.006	0.006	0.078	1.57E-07	8.63E-07	1.65E-06	5.88E-05
N_FBD1	New rate Real Line Fluidized Bed Dryer #1	1.35	1.35	–	–	–	–	–
N_FBD2	New rate Real Line Fluidized Bed Dryer #2	1.35	1.35	–	–	–	–	–
AMU_E_DD1_MS	Existing AMUs exhaust from main stack DD1	-0.008	-0.008	-0.111	–	–	–	–
AMU_E_DD2_MS	Existing AMUs exhaust from main stack DD2	-0.008	-0.008	-0.111	–	–	–	–
AMU_E_DD3_MS	Existing AMUs exhaust from main stack DD3	-0.008	-0.008	-0.111	–	–	–	–
AMU_E_DD4_MS	Existing AMUs exhaust from main stack DD4	-0.008	-0.008	-0.111	–	–	–	–
AMU_E_DD1_SV	Existing AMUs exhaust from snifter stack DD1	-0.001	-0.001	-0.011	–	–	–	–
AMU_E_DD2_SV	Existing AMUs exhaust from snifter stack DD2	-0.001	-0.001	-0.011	–	–	–	–
AMU_E_DD3_SV	Existing AMUs exhaust from snifter stack DD3	-0.001	-0.001	-0.011	–	–	–	–
AMU_E_DD4_SV	Existing AMUs exhaust from snifter stack DD4	-0.001	-0.001	-0.011	–	–	–	–
AMU_N_DD21MS	New AMUs exhaust from main stack DD21	0.027	0.027	0.231	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD22MS	New AMUs exhaust from main stack DD22	0.027	0.027	0.231	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD23MS	New AMUs exhaust from main stack DD23	0.027	0.027	0.231	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD21SV	New AMUs exhaust from snifter stack DD21	0.003	0.003	0.023	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD22SV	New AMUs exhaust from snifter stack DD22	0.003	0.003	0.023	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD23SV	New AMUs exhaust from snifter stack DD23	0.003	0.003	0.023	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV1	New AMUs exhaust from process building vent #1	0.003	0.003	0.023	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV2	New AMUs exhaust from process building vent #2	0.003	0.003	0.023	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_BLR1	New AMUs exhaust from existing Boiler #1	0.014	0.014	0.116	3.59E-07	1.98E-06	3.77E-06	1.35E-04
AMU_N_RCVBLD	New AMUs exhaust from receiving room vent	0.014	0.014	0.116	3.59E-07	1.98E-06	3.77E-06	1.35E-04
	TOTAL (lb/hr)	***2.84***	***2.84***	***0.223***	***3.39E-06***	***1.87E-05***	***3.56E-05***	***1.27E-03***
	TOTAL (tpy)	***12.4***	***12.4***	***0.976***	***1.49E-05***	***8.17E-05***	***1.56E-04***	***5.57E-03***
	TOTAL Increases (lb/hr)	***8.47***	***8.47***	***3.31***	***3.39E-06***	***1.87E-05***	***3.56E-05***	***1.27E-03***
	TOTAL Increases (ton/yr)	***37.1***	***37.1***	***14.5***	***1.49E-05***	***8.17E-05***	***1.56E-04***	***5.57E-03***

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Distribution of Exhaust from New AMUs

	Air Flow Rate (cfm)	Fraction Of Total (%)	Fraction Without Fugitives (%)
Supply			
AMU #21	75,000	50%	--
AMU #22	75,000	50%	--
Total	**150,000**		
Exhaust			
Drum Dryer main vents (3 @ 30,000 cfm each)	90,000	60%	67%
Drum Dryer snifter vents (3 @ 3,000 cfm each)	9,000	6%	7%
process building vent #1	3,000	2%	2%
process building vent #2	3,000	2%	2%
Boiler #1 (combustion air)	15,000	10%	11%
Receiving room	15,000	10%	11%
Process building fugitives	15,000	10%	--
Total	**150,000**	**100%**	**100%**

New AMUs Emissions Distrubed by Exhaust Source Type (lb/hr)

	PM_{10}	$PM_{2.5}$	NOx	CO	SO_2	As	Cd	Ni	CH_2O
Total Emissions	0.123	0.123	1.04	0.244	0.010	3.24E-06	1.78E-05	3.40E-05	1.21E-03
Drum Dryer main vents (3 @ 30,000 cfm each)	0.082	0.082	0.694	0.163	0.006	2.16E-06	1.19E-05	2.26E-05	8.09E-04
Drum Dryer snifter vents (3 @ 3,000 cfm each)	0.008	0.008	0.069	0.016	0.001	2.16E-07	1.19E-06	2.26E-06	8.09E-05
process building vent #1	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
process building vent #2	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
Boiler #1 (combustion air)	0.014	0.014	0.116	0.027	0.001	3.59E-07	1.98E-06	3.77E-06	1.35E-04
Receiving room	0.014	0.014	0.116	0.027	0.001	3.59E-07	1.98E-06	3.77E-06	1.35E-04
Total (check)	0.123	0.123	1.042	0.244	0.010	3.24E-06	1.78E-05	3.40E-05	1.21E-03

New AMUs Emissions Distrubed by Emission Point (lb/hr)

Model ID	PM_{10}	$PM_{2.5}$	NOx	CO	SO_2	As	Cd	Ni	CH_2O
AMU_N_DD21MS	0.027	0.027	0.231	0.054	0.002	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD22MS	0.027	0.027	0.231	0.054	0.002	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD23MS	0.027	0.027	0.231	0.054	0.002	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD21SV	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD22SV	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD23SV	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV1	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV2	0.003	0.003	0.023	0.005	0.000	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_BLR1	0.014	0.014	0.116	0.027	0.001	3.59E-07	1.98E-06	3.77E-06	1.35E-04
AMU_N_RCVBLD	0.014	0.014	0.116	0.027	0.001	3.59E-07	1.98E-06	3.77E-06	1.35E-04
Total (check)	0.123	0.123	1.042	0.244	0.010	3.24E-06	1.78E-05	3.40E-05	1.21E-03

Based on descign data provided via conversations with Idahoan engineering staff and Idaho Steel design/build contractor.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Distribution of Exhaust from Old AMUs

	New AMU Distribution	Existing AMU Distribution
Drum Dryer main vents (3 @ 30,000 cfm each)	67%	91%
Drum Dryer snifter vents (3 @ 3,000 cfm each)	7%	9%
process building vent #1	2%	--
process building vent #2	2%	--
Boiler #1 (combustion air)	11%	--
Receiving room	11%	--
Process building fugitives	--	--
Total	**100%**	**100%**

Old AMUs Emissions Distrubed by Exhaust Source Type (lb/hr)

	PM_{10}	$PM_{2.5}$	NOx	CO	SO_2
Total Emissions	-0.037	-0.037	-0.489	-0.406	-0.005
Drum Dryer main vents (4)	-0.033	-0.033	-0.444	-0.369	-0.004
Drum Dryer snifter vents (4)	-0.003	-0.003	-0.044	-0.037	0.000
Total (check)	-0.037	-0.037	-0.489	-0.406	-0.005

Old AMUs Emissions Distrubed by Emission Point (lb/hr)

Model ID	PM_{10}	$PM_{2.5}$	NOx	CO	SO_2
AMU_E_DD1_MS	-0.008	-0.008	-0.111	-0.092	-0.001
AMU_E_DD2_MS	-0.008	-0.008	-0.111	-0.092	-0.001
AMU_E_DD3_MS	-0.008	-0.008	-0.111	-0.092	-0.001
AMU_E_DD4_MS	-0.008	-0.008	-0.111	-0.092	-0.001
AMU_E_DD1_SV	-0.001	-0.001	-0.011	-0.009	0.000
AMU_E_DD2_SV	-0.001	-0.001	-0.011	-0.009	0.000
AMU_E_DD3_SV	-0.001	-0.001	-0.011	-0.009	0.000
AMU_E_DD4_SV	-0.001	-0.001	-0.011	-0.009	0.000
Total (check)	-0.037	-0.037	-0.489	-0.406	-0.005

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Flaker Drum Dryers

Design Parameters and Limits

100 tons/day, *combined* daily production rate limit (proposed), **replacement** dryers
10.0 tons/day, actual maximum daily production rate,[(a)] existing Dryers #1 and #2, *each*
17.5 tons/day, actual maximum daily production rate,[(a)] existing Dryers #3 and #4, *each*
8,760 hours/year, maximum annual operating hours
24 hours/day, maximum daily operating hours

Constants and Conversion Factors

2,000 lb/ton

Emission Factors[(b)]

1.13 lb/ton; main stack PM emission factor
0.078 lb/ton; snifter stack PM emission factor

Emission Rates, PM_{10} and $PM_{2.5}$

Replacement Dryers, Main Stacks
4.70 lb/hr, combined hourly PM emission rate, replacement dryers main stacks
20.6 tons/yr, combined annual PM emission rate, replacement dryers main stacks

Replacement Dryers, Snifter Vents
0.323 lb/hr, combined hourly PM emission rate, replacement dryers main stacks
1.42 tons/yr, combined annual PM emission rate, replacement dryers main stacks

---

Existing Dryers 1 and 2, Main Stacks
0.470 lb/hr, per-unit hourly PM emission rate
2.06 tons/yr, per-unit annual PM emission rate

Existing Dryers 1 and 2, Snifter Vents
0.032 lb/hr, per-unit hourly PM emission rate
0.142 tons/yr, per-unit annual PM emission rate

Existing Dryers 3 and 4, Main Stacks
0.823 lb/hr, per-unit hourly PM emission rate
3.60 tons/yr, per-unit annual PM emission rate

Existing Dryers 3 and 4, Snifter Vents
0.057 lb/hr, per-unit hourly PM emission rate
0.248 tons/yr, per-unit annual PM emission rate

Particulate Emission Rate Summary (*Combined* Units):

	Main Stacks		Snifter Vents	
	lb/hr	tons/yr	lb/hr	tons/yr
Replacement	**4.70**	**20.6**	**0.323**	**1.42**
Existing	-2.59	-11.3	-0.18	-0.78
Increase	2.12	9.3	0.15	0.64

Notes:

(a) DEQ has directed Idahoan to model existing drum dryer emissions based on measured emission factors and actual maximum throughput rates rather than using a potential to emit value based on current permit limits.

(b) Emission factors are based on emissions testing performed on existing Drum Dryers #2 and #4 in February 2014. A summary sheet of test results is included with this workbook. A copy of the test report is included with this application.

The 2014 test mesured total particulate; no EPA-approved test method exists to measure PM_{10} or $PM_{2.5}$ in a water-saturated exhaust stream as is produced in the main stacks. for purposes of this application, all measured particulate matter is assumed to be 2.5 microns or less, although the filterable fraction of particulate would be expected to actually contain relatively small fractios of PM_{10} and $PM_{2.5}$.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
2014 Test Data, Drum Dryers #2 and #4
Measured Production and Emission Rates

Production Rates

	Drum Dryer 2		Drum Dryer 4	
	Time	Production (lb)	Time	Production (lb)
Run #1				
Start	10:50		9:45	
End	11:05	302	10:00	315
	11:20	240	10:15	335
	11:35	211	10:30	297
	11:50	205	10:45	309
Production Rate (lb/hr)		958		1256
Run #2				
Start	12:35		11:15	
End	12:50	179	11:30	314
	13:05	142	11:45	330
	13:20	140	12:00	305
	13:35	138	12:15	331
Production Rate (lb/hr)		599		1280
Run #3				
Start	14:20		13:15	
End	14:35	226	13:30	312
	14:50	196	13:45	335
	15:05	190	14:00	320
	15:20	196	14:15	295
Production Rate (lb/hr)		808		1262

Emission Factors

Production	PM emission rate (lb/hr)		PM emission factor (lb/ton)	
ton/hr	Main Stack	Snifter Vent	Main Stack	Snifter Vent
Drum Dryer #2				
0.479	0.573	0.028	1.20	0.058
0.300	0.572	0.005	1.91	0.017
0.404	0.340	0.076	0.842	0.188
Drum Dryer #4				
0.628	0.474	0.043	0.755	0.068
0.640	0.693	0.031	1.08	0.048
0.631	0.622	0.054	0.986	0.086
Average				
			1.13	0.078
		Drum dryer #2 average:	1.32	0.088
		Drum dryer #4 average:	0.941	0.067

Note:

Emission rates are reported in the test report included with this application. Produced potato weights for each test run were submitted as a separate spreadsheet. The data on this spreadsheet were taken from the original test report and reformatted for improved clarity.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Real Line Fluidized Bed Dryers

Design Parameters and Limits

108 tons/day; proposed new production rate limit, two dryers combined
90.2 tons/day; existing production rate limit, two dryers combined

Calculated Values

1.20 unitless; ratio of proposed production rate to existing throughput rate limit

Constants and Conversion Factors

2,000 lb/ton

Emission Rates, PM_{10} and $PM_{2.5}$[(a)]

Proposed

2.71 lb/hr, proposed combined hourly PM emission rate, based on 20% throughput increase
11.9 tons/yr, proposed combined hourly PM emission rate, based on 20% throughput increase

Current

2.26 lb/hr, combined hourly PM emission rate, based on per-unit current emission limits
9.9 ton/yr, combined hourly PM emission rate, based on per-unit current emission limits

Notes:

(a) All particulate matter emitted as a result of the proposed throughput increase is assumed to be 2.5 microns or less. The dryer burners will not be modified, so no change is expected in combustion-related pollutant emissions. Because almost all of the particulate emissions will result from entrainment of product in the exhaust stream, particulate emissions are assumed to be proportional to product throughput. IFL recognizes that a small fraction of particulate emissions result from natural gas combustion, but ignoring that factor results in a slightly higher emission rate estimate than would otherwise be calculated. IFL has demonstrated that the potential particulate emissions as calculated protect the relevant ambient standards.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Biolers, Replacement and Replaced

Design Parameters

New, replacement boiler

60.87 MMBtu/hr; replacement (new) Boiler 22 design heat input capacity. Natural gas fuel only.

Existing, replaced boiler

26.7 MMBtu/hr; replace (existing) Boiler 2 design heat input capacity.

Constants and Conversion Factors

2,000 lb/ton

8,760 hrs/yr; maximum annual operating hours

1,020 btu/scf; nominal pipeline quality natural gas heat content

Global Warming Potentials (GWPs); 40 CFR 98, Subpart A, Table A-1

1 CO_2

25 Methane (CH_4)

298 Nitrous oxide (N_2O)

Calculated Values

0.060 MMscf/hr; replacement boiler natural gas rate

0.026 MMscf/hr; existing boiler natural gas rate

0.034 MMscf/hr; increase in boiler natural gas rate

Criteria and GHG Emission Rates (new, replacement boiler)

Pollutant	Emission Factor	Units	Emissions (lb/hr)	Emissions (tons/yr)	Notes
PM_{10}	0.01	lb/MMBtu	0.609	2.67	(a)
$PM_{2.5}$	0.01	lb/MMBtu	0.609	2.67	(a)
NOx	0.036	lb/MMBtu	2.19	9.60	(a)
CO	0.04	lb/MMBtu	2.43	10.7	(a)
VOC	0.004	lb/MMBtu	0.243	1.07	(a)
SO_2	0.6	lb/MMscf	0.036	0.157	(b)
Pb	0.0005	lb/MMscf	2.98E-05	1.31E-04	(b)
CO_2	120,000	lb/MMscf	7,161	31,366	(b)
CH_4	2.3	lb/MMscf	0.14	0.60	(b)
N_2O	2.2	lb/MMscf	0.13	0.58	(b)
Total CO_2e	N/A	N/A	7,204	31,552	(c)

Notes:

(a) Emission factor source: Manufacturer specification (attached). Emission rates for PM_{10} and $PM_{2.5}$ sizes are assumed to be equal and include filterable and condensible fractions.

(b) Emission factor source: AP-42 Table 1.4-2 (07/98).

(c) Carbon dioxide equivalent (CO_2e) emission rate is equal to the sum of the three primary greenhouse gases CO_2, CH_4, and N_2O after multiplying each by its respective global warming potential value.

Potential Criteria and GHG Emission Rates (existing, replaced boiler)

Pollutant	Emissions (lb/hr)	Emissions (tons/yr)	Notes
PM_{10}	-0.400	-1.75	(a)
$PM_{2.5}$	-0.400	-1.75	(a)
NOx	-2.60	-11.4	(a)
CO	-2.18	-9.56	(b)
VOC	-0.143	-0.626	(b)
SO_2	-0.016	-0.070	(b)
Pb	---	---	(c)
CO_2	---	---	(c)
CH_4	---	---	(c)
N_2O	---	---	(c)
Total CO_2e	-3,124	-13,683	(b)

Notes:

(a) Permit P-2012.0020 lists these lb/hr values as emission limits for Boiler 2. PM_{10} and $PM_{2.5}$ emissions are assumed to be equal. Annual emissions are calculated based on maximum annual hours of operation.

(b) Permit P-2012.0020 Statement of Basis lists these tons/yr values in the emissions calculations section. Hourly emissions are calculated based on maximum annual hours of operation.

(c) Emission rates for these pollutatants are not provided in the permit or the permit statement of basis.

New Boiler #22 Potential Hazardous Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New Boiler Emission Rates (lb/hr)	Notes
91576	2-Methylnaphthalene	2.40E-05	1.43E-06	b
56495	3-Methylchloranthrene	1.80E-06	1.07E-07	b
57977	7,12-Dimethylbenz(a)anthracene	1.60E-05	9.55E-07	b
83329	Acenaphthene	1.80E-06	1.07E-07	b
120127	Anthracene	2.40E-06	1.43E-07	b
7440382	Arsenic	2.00E-04	1.19E-05	
71432	Benzene	2.10E-03	1.25E-04	
56553	Benzo(a)anthracene	1.80E-06	1.07E-07	b
50328	Benzo(a)pyrene	1.20E-06	7.16E-08	b
205992	Benzo(b)fluoranthene	1.80E-06	1.07E-07	b
191242	Benzo(g,h,i)perylene	1.20E-06	7.16E-08	b
205823	Benzo(k)fluoranthene	1.80E-06	1.07E-07	b
7440417	Beryllium	1.20E-05	7.16E-07	
7440439	Cadmium	1.10E-03	6.56E-05	
7440473	Chromium	1.40E-03	8.35E-05	
218019	Chrysene	1.80E-06	1.07E-07	b
7440484	Cobalt	8.40E-05	5.01E-06	
53703	Dibenzo(a,h)anthracene	1.20E-06	7.16E-08	b
106467	1,4-Dichlorobenzene (para-)	1.20E-03	7.16E-05	a
206440	Fluoranthene	3.00E-06	1.79E-07	b
86737	Fluorene	2.80E-06	1.67E-07	b
50000	Formaldehyde	7.50E-02	4.48E-03	
110543	Hexane	1.80	1.07E-01	
193395	Indeno(1,2,3-cd)pyrene	1.80E-06	1.07E-07	b
7439965	Manganese	3.80E-04	2.27E-05	
7439976	Mercury	2.60E-04	1.55E-05	
91203	Naphthalene	6.10E-04	3.64E-05	b
7440020	Nickel	2.10E-03	1.25E-04	
85018	Phenanathrene	1.70E-05	1.01E-06	b
129000	Pyrene	5.00E-06	2.98E-07	b
7782492	Selenium	2.40E-05	1.43E-06	
108883	Toluene	3.40E-03	2.03E-04	

New Boiler #22 Potential Toxic (non-HAP) Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New Boiler Emission Rates (lb/hr)	IDAPA 58.01.01 Section	Notes
95501	1,2-Dichlorobenzene (ortho-)	1.20E-03	7.16E-05	585	a
7440393	Barium	4.40E-03	2.63E-04	585	
7440508a	Copper (fume)	8.50E-04	5.07E-05	585	
7439987a	Molybdenum (soluble compounds)	1.10E-03	6.56E-05	585	
109660	Pentane	2.60	1.55E-01	585	
7440666	Zinc	2.90E-02	1.73E-03	585	

Notes:

General: Natural gas-fired boiler HAP emissions are specifically exempted from applicability to NESHAP JJJJJJ and are therefore exempt from demonstrating preconstruction compliance with toxic standards per IDAP 58.01.01.210 (reference IDAPA 58.01.01.210.20).

General: HAP and TAP Emission factor source: AP-42 Table 1.4-3 (07/98) Natural Gas Combustion

(a) AP-42 provides an emission factor for total Dichlorobenze which comprise of three chemical compounds: ortho-, meta-, and para-dichlorobenzene. The total factor will be used for each individual compound. IDAPA 58.0101.585 provides emission limits for ortho- and para- compounds. Clean Air Act Section 112(b) provides a limit for the para-Dichlorobenzene.

(b) Polycyclic Organic Matter (POM) and/or Polycyclic Aromatic Hydrocarbon (PAH), a subset of POM.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
AMUs, Replacement and Replaced

Design Parameters

New, replacement AMUs

8.25 MMBtu/hr; replacement (new) AMUs per-unit design heat input capacity. Natural gas only.

2 Number of new air makeup units (AMUs #21 and #22)

Existing, replaced AMUs

2.5 MMBtu/hr; replaced (existing) AMUs per-unit design heat input capacity.

2 Number of existing, replaced air makeup units (AMUs #1 and #2)

Constants and Conversion Factors

2,000 lb/ton

8,760 hrs/yr; maximum annual operating hours

8,710 dscf/MMBtu; natural gas "F_d factor," 40 CFR Part 60, Appendix A, Table 19-2

0.7302 Ideal gas constant [(ft^3*atm)/(lb-mol*R)] -- *R*

527.7 Degrees R; standard temperature (20 deg C, 68 deg F) -- *T*

46.0 lb/lb-mol; molecular weight of NOx (as NO_2) -- *MWp*

28.0 lb/lb-mol; molecular weight of CO -- *MWp*

1020 btu/scf; nominal pipeline quality natural gas heat content

Global Warming Potentials (GWPs); 40 CFR 98, Subpart A, Table A-1

1 CO_2

25 Methane (CH_4)

298 Nitrous oxide (N_2O)

Calculated Values

143,715 dscf/hr; replacement (new) AMUs combined exhuast flow rate

0.016 MMscf/hr; replacement AMUs natural gas rate, combined

0.005 MMscf/hr; existing AMUs natural gas rate, combined

0.011 MMscf/hr; increase in natural gas rate for AMUs, combined

Criteria and GHG Emission Rates (new, replacement AMUs--combined)

Pollutant	Emission Factor	Units	Emissions (lb/hr)	Emissions (tons/yr)	Notes
PM_{10}	7.6	lb/MMscf	0.123	0.538	a
$PM_{2.5}$	7.6	lb/MMscf	0.123	0.538	a
NOx	52	ppmvd @3% O_2	1.04	4.56	b, c, d
CO	20	ppmvd @3% O_2	0.244	1.07	b, c, d
VOC	5.5	lb/MMscf	0.089	0.390	a
SO_2	0.6	lb/MMscf	0.010	0.043	a
Pb	0.0005	lb/MMscf	8.09E-06	3.54E-05	a
CO_2	120,000	lb/MMscf	1,941	8,502	a
CH_4	2.3	lb/MMscf	0.037	0.163	a
N_2O	2.2	lb/MMscf	0.036	0.156	a
Total CO_2e	N/A	N/A	1,953	8,553	a

Notes:

(a) Emission factor source: AP-42 Table 1.4-2 (07/98).

(b) Emission factor source: Manufacturer specification (provided).

(c) Emission rate (lb/hr) = Cv * Y * MWp / (R * T) where:
Cv = pollutant concentration, ppmvd
Y = exhaust flow rate, MMdscf/hr
R = ideal gas constant, (ft3*atm)/(lb-mol*R)
T = exhaust temprature, degrees R
MWp = molecular weight of the pollutant, lb/lb-mol

Exhaust flow rate is calculated using the EPA's dry gas combustion factor ("Fd" factor) for natural gas. See Note (d) for more detail.

(d) The combustion F-factor assumes no excess air, whereas the NOx and CO exhaust concentrations are provided for 3% oxygen. To make the flow rate and concentration factors compatible, the ppmvd concentration factors are multiplied by [20.9/(20.9-3)]. (See 40 CFR 60, Appendix A-7, Method 19.)

(e) Carbon dioxide equivalent (CO_2e) emission rate is equal to the sum of the three primary greenhouse gases CO_2, CH_4, and N_2O after multiplying each by its respective global warming potential value.

Criteria and GHG Emission Rates (existing, replaced AMUs--*combined*)

Pollutant	Emissions (lb/hr)	Emissions (tons/yr)	Notes
PM_{10}	-0.037	-0.160	(a)
$PM_{2.5}$	-0.037	-0.160	(a)
NOx	-0.489	-2.14	(a)
CO	-0.406	-1.78	(a)
VOC	-0.027	-0.117	(a)
SO_2	-0.005	-0.020	(a)
Pb	---	---	(b)
CO_2	---	---	(b)
CH_4	---	---	(b)
N_2O	---	---	(b)
Total CO_2e	-585	-2,562	(a)

Notes:

(a) Permit P-2012.0020 Statement of Basis lists these tons/yr values in the emissions calculations section. Hourly emissions are calculated based on maximum annual hours of operation. No emission limits for these units are provided in the current permit.

The listed emission rates also correspond with AP-42 natural gas combustion factors within 2 percent in all cases but for SO_2,. The SOB listed SO_2 rate and the AP-42-derived rate differ by more, but the SOB rate is higher and both are very small.

(b) Emission rates for these pollutatants are not provided in the permit or the permit statement of basis.

AMU Hazardous and Toxic Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New AMU Emission Rates (lb/hr)	IDAPA 58.01.01 Section	Notes
7440382	Arsenic	2.00E-04	3.24E-06	586	
71432	Benzene	2.10E-03	3.40E-05	586	
7440417	Beryllium	1.20E-05	1.94E-07	586	
7440439	Cadmium	1.10E-03	1.78E-05	586	
7440473	Chromium	1.40E-03	2.26E-05	585	
7440484	Cobalt	8.40E-05	1.36E-06	585	
106467	1,4-Dichlorobenzene (para-)	1.20E-03	1.94E-05	585	a
50000	Formaldehyde	7.50E-02	1.21E-03	586	
110543	Hexane	1.80E+00	2.91E-02	585	
7439965	Manganese	3.80E-04	6.15E-06	585	
7439976	Mercury	2.60E-04	4.21E-06	Non-TAP	
91203	Naphthalene	6.10E-04	9.87E-06	585	
7440020	Nickel	2.10E-03	3.40E-05	586	
7782492	Selenium	2.40E-05	3.88E-07	585	
108883	Toluene	3.40E-03	5.50E-05	585	
TAP Polyaromatic Hydrocarbons (except 7-PAH group) and HAP Polycyclic Organic Matter				--	b
91576	2-Methylnaphthalene	2.40E-05	3.88E-07	586	
56495	3-Methylchloranthrene	1.80E-06	2.91E-08	586	
57977	7,12-Dimethylbenz(a)anthracene	1.60E-05	2.59E-07	586	
83329	Acenaphthene	1.80E-06	2.91E-08	586	
120127	Anthracene	2.40E-06	3.88E-08	586	
191242	Benzo(g,h,i)perylene	1.20E-06	1.94E-08	586	
206440	Fluoranthene	3.00E-06	4.85E-08	586	
86737	Fluorene	2.80E-06	4.53E-08	586	
85018	Phenanathrene	1.70E-05	2.75E-07	586	
129000	Pyrene	5.00E-06	8.09E-08	586	
TAP Polycyclic Organic Matter or 7-PAH group and HAP Polycyclic Organic Matter Sum of the following for TAP analysis:			1.84E-07	586	c
56553	Benzo(a)anthracene	1.80E-06	2.91E-08	586	
205992	Benzo(b)fluoranthene	1.80E-06	2.91E-08	586	
205823	Benzo(k)fluoranthene	1.80E-06	2.91E-08	586	
53703	Dibenzo(a,h)anthracene	1.20E-06	1.94E-08	586	
218019	Chrysene	1.80E-06	2.91E-08	586	
193395	Indenol(1,2,3-cd)pyrene	1.80E-06	2.91E-08	586	
50328	Benzo(a)pyrene	1.20E-06	1.94E-08	586	

AMU Toxic (non-HAP) Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New AMU Emission Rates (lb/hr)	IDAPA 58.01.01 Section	Notes
95501	1,2-Dichlorobenzene (ortho-)	1.20E-03	1.94E-05	585	a
7440393	Barium	4.40E-03	7.12E-05	585	
7440508a	Copper (fume)	8.50E-04	1.38E-05	585	
7439987a	Molybdenum (soluble compounds	1.10E-03	1.78E-05	585	
109660	Pentane	2.6	4.21E-02	585	
7440666	Zinc	2.90E-02	4.69E-04	585	

Notes:

General: AMU HAP emissions are not subject NESHAP standards and therefore are not exempt from demonstrating preconstruction compliance with toxic standards per IDAP 58.01.01.210.20. They will be assessed in the TAPs summary in comparison to DEQ emission screening levels.

General: HAP and TAP Emission factor source: AP-42 Table 1.4-3 (07/98).

(a) AP-42 provides an emission factor for total Dichlorobenze which comprises three chemical compounds: ortho-, meta-, and para-dichlorobenzene. The total factor will be used for each individual compound. IDAPA 58.0101.585 provides emission limits for ortho- and para- compounds. Clean Air Act Section 112(b) identifies para-Dichlorobenzene ("1,4-Dichlorobenzene(p)") as a HAP.

(b) Each individual polyaromatic hydrocarbon (PAH) is considered a TAP (excluding the 7-PAH group) per IDAPA 58.0101.586.

(c) An October 8, 2008 memorandum produced by Carl Brown of the Idaho DEQ states that the Polycyclic Organic Matter (POM) group (or "7-PAH group") should be considered one TAP with an equivalent potency to benzo(a)pyrene. Additional PAHs should be analyzed independently when evaluating carcinogenic risk.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Building Heater, New

Design Parameters

0.80 MMBtu/hr; New building heater design heat input capacity. Natural gas fuel only.
1 Number of new building heaters

Constants and Conversion Factors

2,000 lb/ton
8,760 hrs/yr; maximum annual operating hours

Global Warming Potentials (GWPs); 40 CFR 98, Subpart A, Table A-1

1 CO_2
25 Methane (CH_4)
298 Nitrous oxide (N_2O)

Calculated Values

7.84E-04 MMscf/hr; boiler natural gas firing rate

Criteria and GHG Emission Rates (new building heater)

Pollutant	Emission Factor	Units	Emissions (lb/hr)	Emissions (tons/yr)	Notes
PM_{10}	7.6	lb/MMscf	0.006	0.026	(a)
$PM_{2.5}$	7.6	lb/MMscf	0.006	0.026	(a)
NOx	100	lb/MMscf	0.078	0.344	(b)
CO	84	lb/MMscf	0.066	0.289	(b)
VOC	5.5	lb/MMscf	0.004	0.019	(a)
SO_2	0.6	lb/MMscf	0.000	0.002	(a)
Pb	0.0005	lb/MMscf	3.92E-07	1.72E-06	(a)
CO_2	120,000	lb/MMscf	94.118	412	(a)
CH_4	2.3	lb/MMscf	0.002	0.008	(a)
N_2O	2.2	lb/MMscf	0.002	0.008	(a)
Total CO_2e	N/A	N/A	95	415	(c)

Notes:

(a) Emission factor source: AP-42 Table 1.4-2 (07/98). Total PM_{10} and $PM_{2.5}$ emissions are the sum of the filterable and condensible PM fractions.
(b) Emission factor source: AP-42 Table 1.4-1 (07/98). NOx and CO factors were selected for "Small Boilers (<100), Uncontrolled."
(c) Carbon dioxide equivalent (CO_2e) emission rate is equal to the sum of the three primary greenhouse gases CO_2, CH_4, and N_2O after multiplying each by its respective global warming potential value.

Heater Hazardous and Toxic Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New Heater Emission Rates (lb/hr)	IDAPA 58.01.01 Section	Notes
7440382	Arsenic	2.00E-04	1.57E-07	586	
71432	Benzene	2.10E-03	1.65E-06	586	
7440417	Beryllium	1.20E-05	9.41E-09	586	
7440439	Cadmium	1.10E-03	8.63E-07	586	
7440473	Chromium	1.40E-03	1.10E-06	585	
7440484	Cobalt	8.40E-05	6.59E-08	585	
106467	1,4-Dichlorobenzene (para-)	1.20E-03	9.41E-07	585	a
50000	Formaldehyde	7.50E-02	5.88E-05	586	
110543	Hexane	1.80E+00	1.41E-03	585	
7439965	Manganese	3.80E-04	2.98E-07	585	
7439976	Mercury	2.60E-04	2.04E-07	Non-TAP	
91203	Naphthalene	6.10E-04	4.78E-07	585	
7440020	Nickel	2.10E-03	1.65E-06	586	
7782492	Selenium	2.40E-05	1.88E-08	585	
108883	Toluene	3.40E-03	2.67E-06	585	
TAP Polyaromatic Hydrocarbons (except 7-PAH group) and HAP Polycyclic Organic Matter				--	b
91576	2-Methylnaphthalene	2.40E-05	1.88E-08	586	
56495	3-Methylchloranthrene	1.80E-06	1.41E-09	586	
57977	7,12-Dimethylbenz(a)anthracene	1.60E-05	1.25E-08	586	
83329	Acenaphthene	1.80E-06	1.41E-09	586	
120127	Anthracene	2.40E-06	1.88E-09	586	
191242	Benzo(g,h,i)perylene	1.20E-06	9.41E-10	586	
206440	Fluoranthene	3.00E-06	2.35E-09	586	
86737	Fluorene	2.80E-06	2.20E-09	586	
85018	Phenanathrene	1.70E-05	1.33E-08	586	
129000	Pyrene	5.00E-06	3.92E-09	586	
TAP Polycyclic Organic Matter or 7-PAH group and HAP Polycyclic Organic Matter Sum of the following for TAP analysis:			8.94E-09	586	c
56553	Benzo(a)anthracene	1.80E-06	1.41E-09	586	
205992	Benzo(b)fluoranthene	1.80E-06	1.41E-09	586	
205823	Benzo(k)fluoranthene	1.80E-06	1.41E-09	586	
53703	Dibenzo(a,h)anthracene	1.20E-06	9.41E-10	586	
218019	Chrysene	1.80E-06	1.41E-09	586	
193395	Indenol(1,2,3-cd)pyrene	1.80E-06	1.41E-09	586	
50328	Benzo(a)pyrene	1.20E-06	9.41E-10	586	

Heater Toxic (non-HAP) Air Pollutant Emissions

CAS Nbr.	Pollutant	Emission Factor (lb/MMscf)	New Heater Emission Rates (lb/hr)	IDAPA 58.01.01 Section	Notes
95501	1,2-Dichlorobenzene (ortho-)	1.20E-03	9.41E-07	585	a
7440393	Barium	4.40E-03	3.45E-06	585	
7440508a	Copper (fume)	8.50E-04	6.67E-07	585	
7439987a	Molybdenum (soluble compounds	1.10E-03	8.63E-07	585	
109660	Pentane	2.6	2.04E-03	585	
7440666	Zinc	2.90E-02	2.27E-05	585	

Notes:

General: Heater HAP emissions are not subject NESHAP standards and therefore are not exempt from demonstrating preconstruction compliance with toxic standards per IDAP 58.01.01.210.20. They will be assessed in the TAPs summary in comparison to DEQ emission screening levels.

General: HAP and TAP Emission factor source: AP-42 Table 1.4-3 (07/98).

(a) AP-42 provides an emission factor for total Dichlorobenze which comprises three chemical compounds: ortho-, meta-, and para-dichlorobenzene. The total factor will be used for each individual compound. IDAPA 58.0101.585 provides emission limits for ortho- and para- compounds. Clean Air Act Section 112(b) identifies para-Dichlorobenzene ("1,4-Dichlorobenzene(p)") as a HAP.

(b) Each individual polyaromatic hydrocarbon (PAH) is considered a TAP (excluding the 7-PAH group) per IDAPA 58.0101.586.

(c) An October 8, 2008 memorandum produced by Carl Brown of the Idaho DEQ states that the Polycyclic Organic Matter (POM) group (or "7-PAH group") should be considered one TAP with an equivalent potency to benzo(a)pyrene. Additional PAHs should be analyzed independently when evaluating carcinogenic risk.

Idahoan Foods, LLC
Idaho Falls Manufacturing Facility
Creamy Mash Dryer System

Emission Rates, PM_{10} and $PM_{2.5}$

Existing Creamy Mash Dryer, SID 18

Proposed
0.00 The creamy mash dryer will be removed and not replaced.

Current
0.170 lb/hr, current emission limit
0.745 ton/yr, calculated from maximum annual operating hours and the current emission limit

For reference only
0.759 T/yr from P-2012.0020 SOB emissions inventory annual PTE
0.173 lb/hr, derived from emissions inventory annual PTE

Existing Creamy Mash Loading Station, SID 14

Proposed
0.00 The creamy mash loading station will be removed and not replaced.

Current
0.0394 T/yr from P-2012.0020 SOB emissions inventory annual PTE
0.009 lb/hr, derived from emissions inventory annual PTE

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: **October 13**, 2017

TO: **Tom Burnham**, Permit Writer, Air Program

FROM: Thomas Swain, Air Quality Modeler, Analyst 3, Air Program

PROJECT: Idahoan Foods LLC, in Idaho Falls, Idaho, a Permit to Construct (PTC) P-2012.0020, Project 61918, Facility ID No. 019-00038

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

1.0 Summary

Idahoan Foods, LLC, of Idaho Falls, Idaho, (IDF), submitted an application for a Permit to Construct (PTC) on July 14, 2017, for a modification to an existing facility located in Idaho Falls, Idaho, denoted as PTC P-2012.0020.

IDF is a potato processing facility that dehydrates potatoes to produce potato flakes. The operations for this facility include delivery of potatoes to storage areas, where the product is washed and conveyed to a refined cleaning/sorting area. The potatoes are then processed by a steam peeler, a brush peeler, and finally dry and wet scrubbing to remove all peels. The potatoes are then sorted and sent to a flake line. The product is "blanched" using a pre-cooker, cooled, and fully cooked in steam cookers. These cooked potatoes are then riced and processed through three rotating Flaker Drum Dryers, where supplied steam dehydrates the potatoes. The resulting sheets of dried potato are then removed from the drums and broken into small flakes, which are pneumatically transferred into day bins. These flakes are then processed by Real Line #1 and Real Line #2, which include bed dryers for further processing. The final product is packaged. This system of processes includes four conveying systems with venting through dedicated baghouses. Two other baghouses filter air and dust during cleaning activities. The steam is provided by two boilers. Four Air Makeup Units (AMUs) provide heat to the facility.

Details of the entire process are discussed in the main body of the DEQ Statement of Basis supporting the issued proposed PTC. This modeling review memorandum provides a summary and approval of the ambient air impact analyses submitted with the permit application. It also describes DEQ's review of those analyses, DEQ's verification analyses, additional clarifications, and conclusions.

Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that emissions resulting from the proposed project would not cause or significantly contribute to a violation of any ambient air quality standard as required by IDAPA 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03).

Bison Engineering, Inc., (BISON), performed the ambient air impact analyses for this project on behalf of IDF. The analyses were performed to demonstrate compliance with applicable air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that the estimated emissions increases at the facility associated with the proposed project will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates is the responsibility of the permit writer and is addressed in the main body of the Statement of Basis. The accuracy of emissions estimates was not evaluated as part of DEQ's review of the air impact analyses submitted and described in this modeling review memorandum.

A modeling protocol was submitted via email on May 8, 2017. This protocol was conditionally approved on June 2, 2017. BISON submitted a 15-day application on July 14, 2017. The application was given an acceptable 15-day determination on August 2, 2017. The application was deemed complete on August 14, 2017.

The final submitted air quality impact analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions 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 as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (*Guideline on Air Quality Models*). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed facility will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses. All emission rates were modeled at 8,760 hours a year to determine annual modeled impacts.
Modeling Thresholds for Criteria Pollutant Emissions. Maximum short-term and long-term emissions of the criteria pollutants NO_2, PM_{10}, and $PM_{2.5}$ associated with the proposed project are above the Level 1 threshold for each pollutant. Therefore, a demonstration of compliance with NAAQS was done for those criteria pollutants and applicable averaging times.	Project-specific air impact analyses demonstrating compliance with NAAQS, as required by Idaho Air Rules Section 203.02, are required for pollutants having an emissions increase that is greater than Level I modeling applicability thresholds, or for pollutant increases above BRC thresholds (where the pollutant-specific BRC modeling exemption can be used). Compliance with NAAQS has not been demonstrated for emissions that exceed the emission estimates presented in the application.
TAPS Modeling. Emission rates of the TAPs arsenic, cadmium, nickel, and formaldehyde exceeded Emissions Screening Level (EL) rates of Idaho Air Rules Section 585 and 586.	Air impact analyses demonstrating compliance with TAPS, as required by Idaho Air Rules Section 203.03, is required for pollutants having an emissions rate greater than ELs. Therefore, a demonstration of compliance with TAPs increments was required.

2.0 Background Information

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

2.1 Project Description

IDF is an existing facility located in Idaho Falls, Idaho, which produces retail potato products. A more detailed description of the facility is in the application and in section 1.0 of this document. This project proposes to replace existing dryers, boilers, and air make-up units (AMUs), to allow for an increase in production capacity and improve efficiency. The changes are summarized as:

- Replace existing Boiler #2 (26.7 MMBtu/hr) with new Boiler #2 (60.87 MMBtu/hr)
- Replace existing drum dryers at 60 Tons/day with new drum dryers at 100 Tons
- combine existing exhausts from Vaculift sources 7, 8, 9 and vent through new Baghouse
- Replace existing AMUs#1 and #2 with new AMUs #1 and #2
- remove existing creamy mash loader and dryer
- increase process capacity on Real Line #1 and #2 from 90.2 tons/day to 108 tons/day
- remove existing product transfer cyclone
- install new heater (0.8 MMBtu/hr)

The air impact analyses performed by BISON, as part of the permit application, were submitted to show that emissions increases associated with the proposed modification will not contribute to an exceedance of any NAAQS or TAPS AACs or AACCs. A detailed description of the facility is listed in Section 1 of the application.

2.2 Proposed Location and Area Classification

The IDF facility is located 2.5 miles north of Idaho Falls, Idaho. The plant borders the Snake River, and is in Bonneville County, Idaho. 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.

2.3 Air Impact Analyses Required for All Permits to Construct

Criteria Pollutant and TAP Impact Analyses for a PTC are addressed in 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:

> ***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

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 using methods and data as outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). 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.

If modeled maximum pollutant impacts to ambient air from the emissions 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.

DEQ has developed modeling applicability thresholds that effectively assure that project-related emissions increases below stated values will result in ambient air impacts below the applicable SILs. The threshold levels and dispersion modeling analyses supporting those levels are presented in the *State of Idaho Guideline for Performing Air Quality Impact Analyses*[1] (*Idaho Air Modeling Guideline*). Use of a modeling threshold represents the use of conservative modeling, performed in support of the threshold, as a project SIL analysis. Project-specific modeling applicability for this project is addressed in Section 3.1.1 of this memorandum.

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 facility-wide emissions, and emissions from any nearby co-contributing sources, 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 lists SILs and 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 a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. If the SIL analysis indicates the facility/modification has an impact exceeding the SIL, the facility might not have a significant contribution to a violation if impacts are below the SIL at the specific receptor showing the violation during the time periods when a modeled violation occurred.

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	0.3	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.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) 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 c) 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 Idaho Air Rules Section 210, if the total project-wide emissions 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 emissions 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.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions rates of criteria pollutants and TAPs for the project were provided by the applicant for various applicable averaging periods. Review and approval of estimated emissions was the responsibility of the DEQ permit writer, and is not addressed in this modeling memorandum. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses submitted by BISON, as listed in this

memorandum, should be reviewed by the DEQ permit writer against those in the emissions inventory of the permit application. All modeled criteria air pollutant and TAP emissions rates should be equal to or greater than the facility's emissions calculated in other sections of the PTC application or requested permit allowable emission rates.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

If the modification-related or facility-wide potential to emit (PTE) values for a specific criteria pollutant would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for some pollutants exceeding BRC thresholds, then an air impact analysis for that pollutant may not be required for permit issuance. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules (Policy on NAAQS Compliance Demonstration Requirements, DEQ policy memorandum, July 11, 2014) 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." The interpretation policy also states that the exemption criteria of uncontrolled 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.

DEQ has generated non-site-specific project modeling thresholds for those projects that cannot use the BRC exemption from an impact analysis (if there are specific permitted emissions limits that require changing, etc.). Modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*. These thresholds were based on assuring an ambient impact of less than established SIL for that specific pollutant and averaging period. If project-specific total emissions rates are below Level I Modeling Thresholds, project-specific air impact analyses are not necessary for permitting. Use of level II modeling thresholds are conditional, requiring DEQ approval.

Table 3 provides the emissions-based modeling applicability summary. The submitted application did not evaluate estimated emissions increases against BRC thresholds. It was assumed that the project would not qualify for the BRC exclusion from NAAQS compliance demonstration because various existing permit limits/restrictions must be changed, which could not be accomplished under an exemption. The submitted modeling report evaluated modeling applicability based on comparison of emissions to Level 1 Modeling Applicability Thresholds. Emissions of all criteria pollutants except SO_2, CO, and Lead resulting from the proposed project are greater than the Level 1 modeling thresholds, and therefore air impact analyses are required for these criteria pollutants.

Table 3. MODELING APPLICABILITY ANALYSIS RESULTS

Pollutant	Averaging Period	Emissions	BRC Threshold[a] (ton/year)	Level I Modeling Thresholds (lb/hour or ton/year)	Level II Modeling Thresholds (lb/hour or ton/year)	Modeling Required
$PM_{2.5}$	Annual	37.1 ton/yr[b]	1.0	0.350	4.1	Yes
	24-hour	8.47 lb/hr[c]		0.054	0.63	Yes
PM_{10}	24-hour	8.47 lb/hr[c]	1.5	0.22	2.6	Yes
NOx	Annual	14.4 ton/yr[b]	4.0	1.2	14	Yes
	1-hour	3.3 lb/hr[c]		0.2	2.4	Yes
SO_2	Annual	0.2 ton/yr[b]	4.0	1.2	14	No
	1-hour	0.1 lb/hr[c]		0.21	2.5	No
CO	1,8 hour	2.7 lb/hr[c]	10.0	15	175	No
Lead	Annual	0.03 lb/mo[d]	0.06	14 pounds/month		No

a. The BRC exemption threshold was not used to evaluate applicability of NAAQS compliance demonstration requirements.
b. Tons/year.
c. Pounds/hour.
d. Pounds/month

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 (see Section 3.3.3) 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.

Addressing secondary formation of O_3 has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

Allowable emissions estimates of VOCs and NOx are below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis.

Emissions rates used in the SIL analyses are provided in Table 4. Where there were reductions in emissions

occurring as a result of this project, the emissions reduction was modeled as a negative value. NO_2 was modeled using the Tier 1 NOx chemistry option that assumes 100 percent of NOx is NO_2. Emissions rates used for short-term NAAQS were conservatively used for NAAQS with annual averaging periods.

Table 4. MODELED CRITERIA POLLUTANTS (pounds/hour)				
Source ID	**Source Description**	**PM_{10}**	**$PM_{2.5}$**	**NO_2**
E_DD1_MS	Existing Drum Dryer #1, main stack	-0.47	-0.47	0
E_DD2_MS	Existing Drum Dryer #2, main stack	-0.47	-0.47	0
E_DD3_MS	Existing Drum Dryer #3, main stack	-0.823	-0.823	0
E_DD4_MS	Existing Drum Dryer #4, main stack	-0.823	-0.823	0
E_DD1_SV	Existing Drum Dryer #1, snifter stack	-0.032	-0.032	0
E_DD2_SV	Existing Drum Dryer #2, snifter stack	-0.032	-0.032	0
E_DD3_SV	Existing Drum Dryer #3, snifter stack	-0.057	-0.057	0
E_DD4_SV	Existing Drum Dryer #4, snifter stack	-0.057	-0.057	0
E_FBD1	Existing rate Real Line Fluidized Bed Dryer #1	-1.13	-1.13	0
E_FBD2	Existing rate Real Line Fluidized Bed Dryer #2	-1.13	-1.13	0
E_BLR2	Existing Boiler #2	-0.4	-0.4	-2.6
E_CM_DRYER	Existing Creamy Mash Dryer	-0.17	-0.17	0
N_DD21MS	New Drum Dryer #21, main vent	1.567	1.567	0
N_DD22MS	New Drum Dryer #22, main vent	1.567	1.567	0
N_DD23MS	New Drum Dryer #23, main vent	1.567	1.567	0
N_DD21SV	New Drum Dryer #21, snifter vent (exhaust DD21MS)	0.108	0.108	0
N_DD22SV	New Drum Dryer #22, snifter vent (exhaust DD22MS)	0.108	0.108	0
N_DD23SV	New Drum Dryer #23, snifter vent (exhaust DD23MS)	0.108	0.108	0
N_BLR22	New Boiler #22	0.609	0.609	2.19
N_HEATER	New Building Heater 23 (exhaust through BLR22)	0.006	0.006	0.078
N_FBD1	New rate Real Line Fluidized Bed Dryer #1	1.35	1.35	0
N_FBD2	New rate Real Line Fluidized Bed Dryer #2	1.35	1.35	0
AMU_E_DD1_MS	Existing AMUs exhaust from main stack DD1	-0.008	-0.008	-0.111
AMU_E_DD2_MS	Existing AMUs exhaust from main stack DD2	-0.008	-0.008	-0.111
AMU_E_DD3_MS	Existing AMUs exhaust from main stack DD3	-0.008	-0.008	-0.111
AMU_E_DD4_MS	Existing AMUs exhaust from main stack DD4	-0.008	-0.008	-0.111
AMU_E_DD1_SV	Existing AMUs exhaust from snifter stack DD1	-0.001	-0.001	-0.011
AMU_E_DD2_SV	Existing AMUs exhaust from snifter stack DD2	-0.001	-0.001	-0.011
AMU_E_DD3_SV	Existing AMUs exhaust from snifter stack DD3	-0.001	-0.001	-0.011
AMU_E_DD4_SV	Existing AMUs exhaust from snifter stack DD4	-0.001	-0.001	-0.011
AMU_N_DD21MS	New AMUs exhaust from DD21MS	0.027	0.027	0.231
AMU_N_DD22MS	New AMUs exhaust from DD22MS	0.027	0.027	0.231
AMU_N_DD23MS	New AMUs exhaust from DD23MS	0.027	0.027	0.231
AMU_N_DD21SV	New AMUs exhaust through snifter vent to DD21MS	0.003	0.003	0.023
AMU_N_DD22SV	New AMUs exhaust through snifter vent to DD22MS	0.003	0.003	0.023
AMU_N_DD23SV	New AMUs exhaust through snifter vent to DD23MS	0.003	0.003	0.023
AMU_N_PBV2	New AMUs exhaust from new process building vent #2	0.003	0.003	0.023

AMU_N_PBV1	New AMUs exhaust from new process building vent #1	0.003	0.003	0.023
AMU_N_BLR1	New AMUs exhaust from existing Boiler #1	0.014	0.014	0.116
AMU_N_RCVBLD	New AMUs exhaust from receiving room vent	0.014	0.014	0.116

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NOx, SO_2, and/or VOCs was assumed by DEQ to be negligible based on the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM_{10} and $PM_{2.5}$ impacts would be anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. The submitted emissions inventory in the application identified five TAPs having potential emission increases that could exceed screening emissions levels (ELs) of Idaho Air Rules Section 585 or 586. Potential increases in emissions of other TAPs were all less than applicable ELs. Table 5 lists emission increases for theses TAPs and compares them to the EL.

Table 5. MODELED TAP EMISSIONS RATES

Pollutant	CAS No.	Total Emissions Increase (pounds/hour)[a]	Screening Emissions Level (EL) (pounds/hour)
Arsenic	7440-38-2	3.39E-06	1.5E-06
Cadmium	7440-43-9	1.86E-05	3.7E-06
Formaldehyde	50-00-0	1.27E-03	5.1E-04
Nickel	7440-02-0	3.56E-05	2.70E-05

[a] Annual average emissions rate, expressed as pounds/hour, PTE.

Table 6 provides source-specific TAP emission rates as provided in the air impact analyses.

Table 6. TAPS EMISSIONS AS MODELED PER SOURCE

Source ID	Source Description	Arsenic (lb/hr)[a]	Cadmium (lb/hr)[a]	Nickel (lb/hr)[a]	Formal. (lb/hr)[a]
N_HEATER	New Building Heater 23 (exhaust through BLR22)	1.57E-07	8.63E-07	1.65E-06	5.88E-05
AMU_N_DD21MS	New AMUs exhaust from DD21MS	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD22MS	New AMUs exhaust from DD22MS	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD23MS	New AMUs exhaust from DD23MS	7.19E-07	3.95E-06	7.55E-06	2.70E-04
AMU_N_DD21SV	New AMUs exhaust through snifter vent to DD21MS	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD22SV	New AMUs exhaust through snifter vent to DD22MS	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_DD23SV	New AMUs exhaust through snifter vent to DD23MS	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV2	New AMUs exhaust from new process building vent #2	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_PBV1	New AMUs exhaust from new process building vent #1	7.19E-08	3.95E-07	7.55E-07	2.70E-05
AMU_N_BLR1	New AMUs exhaust from existing Boiler #1	3.59E-07	1.98E-06	3.77E-06	1.35E-04
AMU_N_RCVBLD	New AMUs exhaust from receiving room vent	3.59E-07	1.98E-06	3.77E-06	1.35E-04
TOTAL		3.39E-06	1.86E-05	3.56E-05	1.27E-03

[a] Pounds/hour, PTE.

3.2 Emission Release Parameters

Table 7 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for facility sources as used in the final modeling assessment.

Stack parameters used in the modeling analyses were largely documented/justified adequately in the application. Stack parameters and emissions were based on a 2014 source visit test for many of the sources. Emission factors used for the two fluidized bed dryer sources were taken from the previous permit (2013) and not the 2014 source test (the emission factors in 2013 were derived from a source test at a similar facility in Lewiston, and conservatively adjusted to account for operating flexibility). DEQ prefers that the latest source test data from 2014 be utilized in the modeling analyses. However, because the "delta" emissions" as calculated from the previous 2013 permit are, in effect, larger than those calculated from the 2014 test, DEQ determined this a conservative treatment for this application and accepts the modeling results as submitted.

TABLE 7. MODELING PARAMETERS

Source ID	Source Description	Easting[a] (X) (m)	Northing[b] (Y) (m)	Stack Ht (ft)[c]	Temp (°F)[d]	Exit Vel (fps)[e]	Stack Diam (ft)[c]
E_DD1_MS	Existing Drum Dryer #1, main stack	414625	4822483	35.4	100	55.1	3.23
E_DD2_MS	Existing Drum Dryer #2, main stack	414618	4822483	37.6	100	55.1	3.23
E_DD3_MS	Existing Drum Dryer #3, main stack	414618	4822493	39.8	100	36.7	3.50
E_DD4_MS	Existing Drum Dryer #4, main stack	414624	4822492	65	100	36.7	3.50
E_DD1_SV	Existing Drum Dryer #1, snifter stack	414625	4822484	39	100	60.2	0.70
E_DD2_SV	Existing Drum Dryer #2, snifter stack	414618	4822485	38.4	100	60.2	0.70
E_DD3_SV	Existing Drum Dryer #3, snifter stack	414618	4822494	38.4	100	94.0	0.70
E_DD4_SV	Existing Drum Dryer #4, snifter stack	414624	4822494	60	100	94.0	0.70
E_FBD1	Existing rate Real Line Fluidized Bed Dryer #1	414591	4822526	60	135	37.8	4.33
E_FBD2	Existing rate Real Line Fluidized Bed Dryer #2	414598	4822526	60	135	37.8	4.33
E_BLR2	Existing Boiler #2	414638	4822443	43.1	390	29.0	2.59
E_CM_DRYER	Existing Creamy Mash Dryer	414591	4822537	27.2	132	48.7	2.19
N_DD21MS	New Drum Dryer #21, main vent	414625	4822484	85	100	112.0	2.50
N_DD22MS	New Drum Dryer #22, main vent	414621	4822492	85	100	112.0	2.50
N_DD23MS	New Drum Dryer #23, main vent	414618	4822484	85	100	112.0	2.50
N_DD21SV	New Drum Dryer #21, snifter vent (exhaust DD21MS)	414625	4822484	85	100	112.0	2.50
N_DD22SV	New Drum Dryer #22, snifter vent (exhaust DD22MS)	414621	4822492	85	100	112.0	2.50
N_DD23SV	New Drum Dryer #23, snifter vent	414618	4822484	85	100	112.0	2.50

	(exhaust DD23MS)						
N_BLR22	New Boiler #22	414638	4822443	50	300	71.0	2.67
N_HEATER	New Building Heater 23 (exhaust through BLR22)	414638	4822443	50	300	71.0	2.67
N_FBD1	New rate Real Line Fluidized Bed Dryer #1	414591	4822526	60	135	37.8	4.33
N_FBD2	New rate Real Line Fluidized Bed Dryer #2	414598	4822526	60	135	37.8	4.33
AMU_E_DD1_MS	Existing AMUs exhaust from main stack DD1	414625	4822483	35.4	100	55.1	3.23
AMU_E_DD2_MS	Existing AMUs exhaust from main stack DD2	414618	4822483	37.6	100	55.1	3.23
AMU_E_DD3_MS	Existing AMUs exhaust from main stack DD3	414618	4822493	39.8	100	36.7	3.50
AMU_E_DD4_MS	Existing AMUs exhaust from main stack DD4	414624	4822492	65	100	36.7	3.50
AMU_E_DD1_SV	Existing AMUs exhaust from snifter stack DD1	414625	4822484	39	100	60.2	0.70
AMU_E_DD2_SV	Existing AMUs exhaust from snifter stack DD2	414618	4822485	38.4	100	60.2	0.70
AMU_E_DD3_SV	Existing AMUs exhaust from snifter stack DD3	414618	4822494	38.4	100	94.0	0.70
AMU_E_DD4_SV	Existing AMUs exhaust from snifter stack DD4	414624	4822494	60	100	94.0	0.70
AMU_N_DD21MS	New AMUs exhaust from DD21MS	414625	4822484	85	100	112.0	2.50
AMU_N_DD22MS	New AMUs exhaust from DD22MS	414621	4822492	85	100	112.0	2.50
AMU_N_DD23MS	New AMUs exhaust from DD23MS	414618	4822484	85	100	112.0	2.50
AMU_N_DD21SV	New AMUs exhaust through snifter vent to DD21MS	414625	4822484	85	100	112.0	2.50
AMU_N_DD22SV	New AMUs exhaust through snifter vent to DD22MS	414621	4822492	85	100	112.0	2.50
AMU_N_DD23SV	New AMUs exhaust through snifter vent to DD23MS	414618	4822484	85	100	112.0	2.50
AMU_N_PBV2	New AMUs exhaust from new process building vent #2	414622	4822443	40.9	100	46.8	1.17
AMU_N_PBV1	New AMUs exhaust from new process building vent #1	414622	4822460	35.9	100	7.1	3.00
AMU_N_BLR1	New AMUs exhaust from existing Boiler #1	414633	4822443	43.1	390	27.7	3.41
AMU_N_RCVBLD	New AMUs exhaust from receiving room vent	414574	4822439	40	70	50.9	2.50

a. Universal Transverse Mercator coordinates in meters in the east/west direction.
b. Universal Transverse Mercator coordinates in meters in the north/south direction.
c. Feet.
d. Temperature in degrees Fahrenheit.
e. Stack gas velocity at the point of release to the atmosphere in feet/second.

BISON did not model the baghouse source because of its minimal emission rate of 0.001 lb/hr (PM). DEQ performed a sensitivity assessment to assure that impacts from this source would not significantly alter the resultant design impacts.

3.2 Background Concentrations

Background concentrations were obtained from NWAirquest[2], based on the coordinates of the center of the facility. Because maximum modeled impacts for assessing the change in emissions did not exceed the Significant Impact Level (SIL) for any criteria pollutant, NAAQS compliance demonstration modeling utilizing these background data were not required.

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 Analyses

BISON performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the proposed facility as described in the application. Results of the submitted 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 8 provides a brief description of parameters used in the modeling analyses.

Table 8. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Idaho Falls, Idaho	The facility is located in an area that is attainment or unclassified for all criteria air pollutants
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 16216r
Meteorological Data	2012-2016 surface data from Idaho Falls, ID and upper air data from Boise, ID	See Section 3.3.4 for a detailed discussion on the meteorological data.
Terrain	Considered	See Section 5.3 below.
Building Downwash	Considered	Because buildings are present at the IDF facility, BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
Receptor Grid	Grid 1	20-meter spacing along the areas of ambient boundary out to 100 meters
	Grid 2	50-meter spacing out to distances of 1000 meters with respect to the facility
	Grid 3	100-meter spacing out to approximately 3000 meters
	Grid 4	500- meter spacing out to 5,000 meters
	Grid 5	1000-meter spacing out to 20,000 meters

3.3.2 Modeling protocol and Methodology

A modeling protocol was submitted via email on May 8, 2017. This protocol was conditionally approved on June 2, 2017. BISON submitted a 15-day application on July 14, 2017. The application was given an acceptable 15-day determination on August 2, 2017. The application was deemed complete on August 14, 2017.

Project-specific modeling and other required impact analyses were generally conducted using data and methods discussed in pre-application correspondence and in the *Idaho Air Quality Modeling Guideline*[1].

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 40 CFR 51, Appendix W (Guideline on Air Quality Models). 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 includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 16216r was used by the applicant for the air impact modeling analyses to evaluate impacts of the facility. This version is the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

BISON used meteorological data collected at the NWS site located at Idaho Falls International Airport for the period 2012-2016. Upper air data were taken from the Boise, Idaho, airport. DEQ supplied these data and determined the meteorological data used in the submitted analyses were representative for modeling for this permit in the locale of IDF.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the WGS84 datum (approximately equal to the NAD83 datum). Stantec used 1/3 Arc Second resolution data, which are adequate for this analysis.

The terrain preprocessor AERMAP Version 11103 was used 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 emissions 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. DEQ also overlaid modeling files with a digital photograph background images acquired from the 2013 ARCGIS NAIP (National Agriculture Imagery Program) data base. The immediate area is effectively flat with regard to dispersion modeling affects. Elevations in the modeling domain matched those indicated by the background images.

3.3.6 Facility Layout

DEQ compared the facility layout used in the model to that indicated in aerial photographs on Google Earth. The modeled layout was consistent with aerial photographs in Google Earth as well as from those in the

ARCGIS 2013 NAIP database.

3.3.7 Effects of Building Downwash on Modeled Impacts

Structures at the IDF facility will affect how emissions plumes disperse from various emissions release points. Potential downwash effects on emissions plumes are usually accounted for in the model by using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME) to accurately assess how existing structures affect the emissions plumes at the facility.

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." Public access to the IDF facility is limited by existing fence-lines on three sides of the facility and the Snake River on the west. Signage exists on the west side to restrict access from the river. This approach is adequate to preclude public access to areas excluded from the air impact assessment.

3.3.9 Receptor Network

Table 8 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[1]. DEQ determined this grid assured maximum impacts were reasonably resolved by the model considering: 1) types of sources modeled; 2) modeled impacts and the modeled concentration gradient; 3) conservatism of the methods and data used as inputs to the analyses; 4) potential for continual exposures or exposure to sensitive receptors. Additionally, DEQ performed sensitivity analyses using a finer grid-spaced receptor network to assure that maximum concentrations were below all applicable standards. Maximum concentrations did not change from those listed in the application.

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.

Buildings exist in the vicinity of all point sources modeled, and emissions stack heights are less than GEP. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 Impact Modeling Results

4.1 Results for NAAQS Significant Impact Level Analyses

Because estimated emissions for the project were above Level I Modeling Applicability Thresholds, air quality dispersion modeling was necessary for the criteria pollutants PM_{10}, $PM_{2.5}$, and NO_2. The ambient air impact analyses submitted with the PTC application demonstrated to DEQ's satisfaction that emissions as modeled did not exceed the significant impact levels for these criteria pollutants. These results are listed in Table 9.

Table 9. RESULTS FOT SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Design Concentration ($\mu g/m^3$)[a]	Significant Impact Level Concentration ($\mu g/m^3$)[a]	Percentage of SIL
$PM_{2.5}$	24-hour	1.1	1.2	94%
	Annual	0.06	0.3	21%
PM_{10}	24-hour	1.4	5	28%
NO_2	1-hour	3.8	7.52	51%
	Annual	0.004	1.0	< 1%

a. Micrograms per cubic meter.

4.2 Results for TAPs Impact Analyses

Dispersion modeling is required to demonstrate compliance with TAP increments (AACs and AACCs) specified by Idaho Air Rules Section 585 and 586 for those TAPs with project-specific emission increases exceeding emissions screening levels (ELs). Several TAPs emissions rates exceeded ELs and modeling was required. Results are listed in Table 10 and show compliance with all AACs and AAACs.

Table 10. TAP MODELING RESULTS

Pollutant	CAS No.	Average	Modeled Conc. ($\mu g/m^3$)[a]	AAC/AAAC[b] ($\mu g/m^3$)	%AAC/AAAC
Arsenic	7440-38-2	Annual	1.5E-06	2.3E-04	<1%
Cadmium	7440-43-9	Annual	8.4E-06	5.6E-04	2%
Formaldehyde	50-00-0	Annual	5.8E-04	7.7E-02	<1%
Nickel	7440-02-0	Annual	1.6E-05	4.2E-03	<1%

a. Micrograms per cubic meter.
b. Acceptable Ambient Concentration or Acceptable Ambient Concentration of a Carcinogen.

5.0 Conclusions

The ambient air impact analyses and other air quality analyses submitted with the PTC application demonstrated to DEQ's satisfaction that emissions from the IDF project will not cause or significantly contribute to a violation of any ambient air quality standard.

References:

1. *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.

2. Air Quality Environmental Science and Technology Consortium (NW AIRQUEST). *Lookup 2009-2011 Design Values of Criteria Pollutants.* Available at: http://lar.wsu.edu/nw-airquest/lookup.html.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on October 12, 2017:

Facility Comment: [Regarding Building Exhaust in Table 1, Permit Section 1] Although this text exists in the current permit, a large majority of building ventilation air exhausts through the uncontrolled drum dryer stacks. Building ventilation exhaust is described in detail in the application's modeling report.

DEQ Response: It is noted that the permit being replace had an error in Table 1 describing a baghouse on Building Vents #1 and #2. After speaking with the consultant, the baghouse control for building ventilation has been removed, and the vents removed from the baghouse procedures permit condition.

Facility Comment: Although this text exists in the current permit, a large majority of building ventilation air exhausts through the uncontrolled drum dryer stacks. Building ventilation exhaust is described in detail in the application's modeling report.

DEQ Response: See baghouse comment above. Also, regarding a strike-through in the performance test permit conditions, "baghouse handling" was removed.

Facility Comment: Condition 4.8 conflicts with 4.7. Condition 4.7 allows us to operate the ICE up to 100 hours per year to check readiness and to maintenance. Condition 4.8 allows us to operate the ICE no more than 1 hour per week or 52 hours per year.

DEQ Response: These two conditions stem from overarching federal regulations. Permit Condition 4.7 originates from 40 CFR 40 CFR 60.4211(f) as stated in the permit condition. Permit Condition 4.8 is derived from efforts to meet the NAAQS. Both of the federal regulations apply; therefore both of the conditions are included in the permit.

Facility Comment: [General Provisions] - This requirement is not listed in IDAPA 58.01.01.211.03. Further, "the maximum production rate" is vague; does it mean, for example, the maximum design capacity of the equipment or the maximum expected system production rate or something else? Finally, the need for this information is not apparent. The only new testing required by this modification must occur within 180 days of startup, irrespective of production rates.

DEQ Response: The commenter is correct. General Provisions have been updated to the latest version of the Rules and this reference citation is corrected.

Facility Comment: SOB [Regarding emissions tables] - Per our discussion, these annual values mostly—or all—came from the 2013 Statement of Basis, but many of the values are not reported with such precision there. How were these more precise numbers calculated? We also assume the hourly emission rates were calculated from the annual values by dividing by the ratio (8760/2000 = 4.38), but several of these annual/hourly emission rate ratios are not 4.38. The more extreme deviations are highlighted here and in the next table.

DEQ Response: The lb/hr calculation method proposed was incorporated and resulting emissions changed. The lb/hr values were not included in the EI and were therefore derived in a similar, but slightly different manner. This did not result in any changes to the permit.

Facility Comment: SOB [Regarding Pre-post Table 2 footnotes] - This is confusing because not all the listed units have hourly, daily, or annual limits (which, presumably, refers to mass-rate emission limits). Also, referring to "proposed" operating schedules is inappropriate in the context of reporting pre-project emissions.

DEQ Response: Although this may be confusing, it is accurate, as uncontrolled sources are listed together with controlled sources. Uncontrolled may be thought of as zero control if it helps understanding.

Facility Comment: SOB - Reference to the TAPs/HAPs relationship is a bit confusing in this narrative. Facility-wide TAP emissions reported for comparison with relevant ELs exclude HAPs emitted by the new boiler because natural-gas-fired boilers are explicitly exempted from applicability under area source NESHAP 6J. Emissions from all other new sources of HAPs that are also TAPs were included in the evaluation of compliance with IDPA 58.01.01.210. Additionally, the application quantified all potential HAP emissions to evaluate the facility's post-project status as a major or area source of HAP emissions.

DEQ Response: The exclusion of HAPs from TAPs is normally considered to avoid unnecessary modeling burdens for TAPs. As described in the SOB, it is presumed that EPA evaluated the 187 HAPs when developing the emission standards for new, modified or existing stationary sources regulated by 40 CFR Part 63; therefore, no further review is required under IDAPA 58.01.01.210 for these pollutants for sources subject to 40 CFR Part 63, including sources specifically exempted within the subpart. Since the HAPs that are TAPs were modeled in parallel with criteria pollutants in this application, the HAP/TAPs will be included in Table 5, and text updated accordingly. This did not result in any changes to the permit.

Facility Comment: SOB - HAPs and TAPs. The fact that the TAPs that exceeded the ELs were also HAPs is largely immaterial. As noted above, facility-wide TAP emissions reported for comparison with relevant ELs exclude only those HAPs emitted by the new boiler because natural-gas-fired boilers are explicitly exempted from applicability under area source NESHAP 6J. TAP/HAP emissions from the new new AMUs and new heater were not excluded because those sources are not subject to (or explicitly exempted from) a NESHAP.

DEQ Response: See the previous response regarding TAPs that are HAPs.

Facility Comment: SOB - The engine is technically subject to NESHAP ZZZZ, but the only applicable requirement in that standard is to comply with the requirements of NSPS IIII.

DEQ Response: Text has been changed to reflect this comment.

Facility Comment: SOB - strike-through related county location

DEQ Response: The commenter is correct. The county has been changed to Bonneville.

Facility Comment: SOB – strike-through related to Permit Section 2 clarifying Boiler#2 and Boiler#22.

DEQ Response: Text has been changed to reflect this comment.

Facility Comment: Modeling memo strike-through referring to creamy mash line, Real Line #1 and Real Line #2.

DEQ Response: These errors originated in the application and have been corrected in the final draft.

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: Idahoan Foods, LLC - Idaho Falls
Address: 6140 West River Road
City: Idaho Falls
State: ID
Zip Code: 83402
Facility Contact: Kenny Kniep
Title: Plant Manager
AIRS No.: 019-00038

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	1.0	0	1.0
SO_2	0.1	0	0.1
CO	0.7	0	0.7
PM10	12.4	0	12.4
VOC	0.7	0	0.7
TAPS/HAPS	0.6	0	0.6
Total:			**15.5**
Fee Due	$ 5,000.00		

Comments: