

Statement of Basis

**Permit to Construct No. P-2012.0041
Project ID 62077**

**Basalite Concrete Products
Meridian, Idaho**

Facility ID 001-00292

Final

August 01, 2018

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Permit Writer

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

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAA	Clean Air Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hr/yr	hours per consecutive 12 calendar month period
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
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
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SO ₂	sulfur dioxide
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
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Basalite Concrete Products (Basalite) brings in raw materials in various amounts. These materials are mixed in recipe specific batches to form concrete-based products including but not limited to concrete masonry units, segmented retaining wall units, interlocking paver units, garden line product units, and water revetment erosion control units. Mixes are formed in molds, which are then heated with steam to cure as final products. Final product is stored at the facility property until units are shipped state-wide as well as to bordering states.

Emission points are primarily the raw material intake points, a small percentage of the material transfer or handling points are not fully enclosed, three cement storage silos, five aggregate storage silos, crushing and screening operations, and two 5 MMBtu/hr natural gas fired vaporizers that provide heat for curing the molded concrete-based products inside eight ovens.

The crushing and screening operation handles reclaimed materials (molded concrete product not up to specification) for reuse in the product development process. Only white pumice reclaim is crushed in the crusher. The crushing and screening occur in an enclosed building, with the emissions from the crusher, the screening operation, and some material transfers controlled by a baghouse inside that building.

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).

August 01, 2018	P-2012.0041, modified permit to construct (PTC) for a molded concrete block manufacturing facility to update the dust collection/baghouse system, increase permitted material throughput, increase permitted steam vaporizer fuel usage, add a new product being processed at the facility (Utelite) and remove the use of Flyash at the facility. Permit Status (A).
December 17, 2012	P-2012.0041, initial permit to Construct (PTC) for a molded concrete block manufacturing facility. Permit status (A, but will become S upon issuance of this permit).

Application Scope

This permit is a modified permit to construct (PTC) for a molded concrete block manufacturing facility to update the dust collection/baghouse system, increase permitted material throughput, increase permitted steam vaporizer fuel usage, add a new product being processed at the facility (Utelite) and remove the use of Flyash at the facility.

Application Chronology

June 11, 2018	DEQ received an application and an application fee.
June 18- July 3, 2018	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
June 21, 2018	DEQ determined that the application was complete.
June 27, 2018	DEQ received supplemental information from the applicant correcting emissions inventory calculations for steam vaporizers.
July 2, 2018	DEQ made available the draft permit and statement of basis for peer and regional office review.
July 9, 2018	DEQ made available the draft permit and statement of basis for applicant review.
July 30, 2018	DEQ received the permit processing fee.
August 01, 2018	DEQ issued the final PTC to the facility.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Sources	Control Equipment	Emission Point ID No.
<u>Raw Material Storage Silos:</u> Line A Cement Silo Line B Cement Silo Line A/B Cement Ash Silo	None	<u>Line A Cement Silo Vent Parameters:</u> Stack exit height: 39.2 ft Exit diameter: 3.3 ft Exit velocity: 0.001 meter per second (m/s) Exit temperature: Ambient <u>Line B Cement Silo Vent Parameters:</u> Stack exit height: 42.2 ft Exit diameter: 3.3 ft Exit velocity: 0.001 m/s Exit temperature: Ambient <u>Line A/B Cement Silo Vent Parameters:</u> Stack exit height: 36.2 ft Exit diameter: 3.3 ft Exit velocity: 0.001 m/s Exit temperature: Ambient
<u>Batching Operations:</u>	None	Building Ventilation
<u>Concrete Curing Ovens:</u> <u>Line No. 1 Vaporizer (Primary)</u> Manufacturer: Kraft Model: 50-2S Construction date: 2018 Heat input rating: 5 MMBtu/hr Fuel: Natural gas <u>Line No. 2 Vaporizer (Back-up)</u> Manufacturer: Kemo Systems Model: 50/4B Construction date: 2000 Heat input rating: 5 MMBtu/hr Fuel: Natural gas	None	<u>Vent parameters:</u> There are 8 vents used as emission points related to the curing ovens. Each vent is with the following parameters: Stack exit height: 23.1 ft Exit diameter: 0.88 ft Exit Velocity: 4.52 m/s Exit temperature: 130°F
<u>Crusher:</u> Manufacturer: Cedarapids (for the roll and Jaw crushers) Model: 60X16DD (Roll); LFMC 800 6 (Jaw) Serial No.: 34991 (Roll); 53 (Jaw) Maximum Capacity (Jaw): 15 T/hr Maximum Capacity (Roll): 30 T/hr Crusher is powered by electricity	<u>Baghouse:</u> Manufacturer: Donaldson Torit Model No.: VH-16 PM ₁₀ & PM _{2.5} Control Efficiency: 98%	<u>Vent parameters:</u> The baghouse is enclosed in a three-sided building. All emissions associated with the baghouse are released into the atmosphere via the fourth open building side.

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit (PTE) as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the vaporizer ovens, cement and silos, roll crusher, jaw crusher, railcar, and fugitive emissions operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, HAP/TAP PTE were based on emission factors from AP-42, proposed permitted material and fuel usage limits, and process information specific to the facility for this proposed project. Vaporizer ovens emission estimates were derived from AP-42, Section 1.4 (Natural Gas Combustion), Table 2, Small Boiler < 100 MMBtu/hr (uncontrolled.) The PM₁₀ and PM_{2.5} emissions rates from the cement and silos were calculated using emission factors (EF) in lb/ton of material handled from AP-42, Table 11.12-2, and the percentage of PM that is considered to be PM_{2.5} that was used is based on California CEIDARS list for crushing, screening, loading and unloading. It was established that the fraction that is PM_{2.5} is 30%. The PM₁₀ and PM_{2.5} emission factors for the roll and jaw crushers are derived from AP-42, Section 11.19-2, Crushed Stone Processing and Pulverized Mineral Processing. Particulate fugitive EFs from aggregate handling, belt conveyors, storage piles, screening are obtained from AP-42, Sections 13.2.3 and 13.2.4.

Of the emission factor sources listed above, the only sources listing any HAP/TAP emissions estimates were AP-42, Section 11.12 (Version 06/06) used for emissions associated with filling of Silo A, B and A/B and AP-42, Section 1.4 used for emission associated with vaporizer emissions. In addition, small amounts of HAP/TAP have been accounted for in use of Coloring Agents based on product specific MSDS data (see Appendix A for details).

It should also be noted that IDAPA 58.01.01.221.20 and subsequent DEQ guidance establishes that any TAP emission that is also a Federal HAP emission regulated by or specifically exempt under 40 CFR 63 is not required to demonstrate any further compliance. Since the two steam vaporizers are specially exempted from 40 CFR 63 Subpart JJJJJ (see MACT Applicability (40 CFR 63) section below) analysis of any TAP emissions that are HAP from the vaporizers is not required to be included within the emission inventory analysis of this permitting project. However, the facility has voluntarily chosen to quantify TAP emissions that are HAP from the vaporizers. Thus they are included in the subsequent analysis below.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall not be treated as part of its design since the limitation or the effect it would have on emissions is not state or federally enforceable.

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

The following table presents the uncontrolled Potential to Emit for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this all operations, uncontrolled Potential to Emit is based upon a worst-case for operation of the facility of 8,760 hr/yr (24 hr/day x 365 day/yr).

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Point Sources						
Source	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Vaporizer #1	0.163	0.163	0.013	2.147	1.804	0.118
Vaporizer #2	0.163	0.163	0.013	2.147	1.804	0.118
Cement silo –Line A	10.29	3.09	N/A	N/A	N/A	N/A
Cement silo –Line B	10.29	3.09	N/A	N/A	N/A	N/A
Cement silo –Line A&B	10.29	3.09	N/A	N/A	N/A	N/A
Roll Crusher	0.315	0.095	N/A	N/A	N/A	N/A
Jaw Crusher	0.158	0.047	N/A	N/A	N/A	N/A
Railcar Emissions routed to Baghouse	1.288	0.386	N/A	N/A	N/A	N/A
Total Point Source Emissions	32.97	10.12	0.026	4.29	3.61	0.24

The following table presents the uncontrolled Potential to Emit for HAP pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For facility-wide operations, uncontrolled Potential to Emit is based upon a worst-case of 8,760 hr/yr (24 hr/day x 365 day/yr). Then, the worst-case maximum HAP Potential to Emit was determined for the facility. See Appendix A for detailed calculations.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants	PTE (T/yr)
Chromium	6.20E-05
Cobalt	3.61E-06
Lead	7.16E-07
Hexane*	7.73E-02
Manganese	2.40E-05
Mercury	1.12E-05
Naphthalene	2.62E-05
Phosphorous	7.75E-04
Toluene	1.46E-04
Arsenic	8.87E-06
Benzene	9.02E-05
Beryllium	5.47E-07
Cadmium	4.16E-05
Formaldehyde	3.22E-03
Nickel	9.29E-05
Total PAH	8.15E-05
Facility-Wide Total HAPs	8.19E-02

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. This is an existing facility. Pre-project emissions in Table 4 were taken from the post-project totals from the previous permitting action P-2012.0041 PROJ 61081 (with a correction to lb/hr SO₂ limits).

Table 4 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀		PM _{2.5}		NO _x		CO		VOC		SO ₂	
	lb/hr ^(a)	T/yr ^(b)										
Vaporizer Oven #1	0.037	0.034	0.037	0.034	0.490	0.450	0.412	0.378	0.027	0.025	0.003	0.003
Vaporizer Oven #2	0.037	0.034	0.037	0.034	0.490	0.450	0.412	0.378	0.027	0.025	0.003	0.003
Cement silo – Line A	1.70E-03	5.30E-03	6.75E-04	2.11E-03	--	--	--	--	--	--	--	--
Cement silo – Line B	1.70E-03	5.30E-03	6.75E-04	2.11E-03	--	--	--	--	--	--	--	--
Cement silo – Line A & B	0.025	0.076	6.68E-03	2.08E-02	--	--	--	--	--	--	--	--
Roll crusher	7.20E-04	1.78E-04	7.20E-04	1.78E-04	--	--	--	--	--	--	--	--
Jaw crusher	3.60E-04	1.78E-04	3.60E-04	1.78E-04	--	--	--	--	--	--	--	--
Railcar Emissions Routed to Baghouse	2.94E-03	6.94E-04	2.94E-03	6.94E-04	--	--	--	--	--	--	--	--
Pre Project Totals	0.106	0.156	0.087	0.094	0.980	0.900	0.824	0.756	0.054	0.050	0.006	0.005

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 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 5 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀		PM _{2.5}		NO _x		CO		VOC		SO ₂	
	lb/hr ^(a)	T/yr ^(b)										
Vaporizer Oven #1	0.037	0.065	0.037	0.065	0.490	0.850	0.412	0.714	0.027	0.047	0.003	0.005
Vaporizer Oven #2	0.037	0.065	0.037	0.065	0.490	0.850	0.412	0.714	0.027	0.047	0.003	0.005
Cement silo – Line A	1.70E-03	5.30E-03	5.10E-04	1.59E-03	--	--	--	--	--	--	--	--
Cement silo – Line B	1.70E-03	5.30E-03	5.10E-04	1.59E-03	--	--	--	--	--	--	--	--
Cement silo – Line A & B	1.70E-03	2.65E-03	5.10E-04	7.96E-04	--	--	--	--	--	--	--	--
Roll crusher	1.44E-03	2.65E-04	4.32E-04	7.95E-05	--	--	--	--	--	--	--	--
Jaw crusher	7.20E-04	2.65E-04	2.16E-04	7.95E-05	--	--	--	--	--	--	--	--
Railcar Emissions Routed to Baghouse	4.91E-02	1.47E-02	1.47E-02	2.77E-03	--	--	--	--	--	--	--	--
Post Project Totals	0.194	0.173	0.110	0.141	0.980	1.70	0.824	1.428	0.054	0.094	0.006	0.010

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 6 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀		PM _{2.5}		NO _x		CO		VOC		SO ₂	
	lb/hr	T/yr	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	0.106	0.156	0.087	0.094	0.980	0.900	0.824	0.756	0.054	0.050	0.006	0.005
Post Project Potential to Emit	0.194	0.173	0.110	0.141	0.980	1.70	0.824	1.428	0.054	0.094	0.006	0.010
Changes in Potential to Emit	0.09	0.02	0.02	0.05	0.00	0.80	0.00	0.67	0.00	0.04	0.09	0.02

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table.

Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 7 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr) ^(a)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Ammonium Sulfamate	1.58E-06	1.58E-06	0.00E+00	6.67E-01	No
Amorphous Silica	2.84E-06	2.84E-06	0.00E+00	6.67E-01	No
Barium	2.16E-05	2.16E-05	0.00E+00	3.3E-02	No
Chromium	1.33E-05	1.04E-05	-2.82E-06	3.3E-02	No
Cobalt	4.12E-07	4.12E-07	0.00E+00	3.3E-03	No
Copper	4.17E-06	4.17E-06	0.00E+00	6.7E-02	No
Hexane	8.82E-03	8.82E-03	0.00E+00	1.2E+01	No
Iron Oxide	6.30E-05	6.30E-05	0.00E+00	3.3E-01	No
Manganese	4.31E-06	3.62E-06	-6.95E-07	3.33E-01	No
Molybdenum	5.39E-06	5.39E-06	0.00E+00	3.33E-01	No
Naphthalene	2.99E-06	2.99E-06	0.00E+00	2.00E-06	No
Pentane	1.27E-02	1.27E-02	0.00E+00	1.18E+2	No
Phosphorous	1.36E-04	1.77E-04	4.10E-05	7.0E-03	No
Selenium	4.80E-07	1.18E-07	-3.62E-07	1.3E-02	No
Vanadium	1.13E-05	1.13E-05	0.00E+00	3.0E-03	No
Toluene	1.67E-05	1.67E-05	0.00E+00	2.5E+01	No
Zinc	1.42E-04	1.42E-04	0.00E+00	6.67E-01	No

a) A reduction in some TAP is seen due to the removal of fly ash.

None of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded (see Ambient Air Quality Impact Analyses section below).

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 8 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)^(b)	Exceeds Screening Level? (Y/N)
Arsenic	4.00E-06	2.27E-06	-1.72E-06	1.50E-06	No
Benzene	4.32E-06	8.15E-06	3.84E-06	8.00E-04	No
Beryllium	3.51E-07	5.09E-08	-3.00E-07	2.80E-05	No
Cadmium	4.00E-06	6.35E-06	2.36E-06	3.70E-06	No
Chromium VI	2.21E-06	1.71E-06	-5.00E-07	5.60E-07	No
Formaldehyde	1.54E-04	2.91E-04	1.37E-04	5.10E-04	No
Naphthalene	1.25E-06	2.37E-06	1.11E-06	9.10E-05	No
Nickel	1.3E-05	1.53E-05	2.59E-06	2.70E-05	No
POM (7-PAH) ^a	2.34E-08	4.42E-08	2.08E-08	2.00E-06	No
Total PAHs	3.90E-06	7.37E-06	3.47E-06	9.10E-05	No

- a) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd) pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.
- b) A reduction in some TAP is seen due to the removal of fly ash.

None of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average carcinogenic screening ELs identified in IDAPA 58.01.01.585 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 9 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (T/yr)
Chromium	2.49E-05
Cobalt	1.43E-06
Lead	4.25E-07
Hexane*	3.06E-02
Manganese	1.10E-05
Mercury	4.42E-06
Naphthalene	1.04E-05
Phosphorous	4.60E-04
Toluene	5.78E-05
Arsenic	3.57E-06
Benzene	3.57E-05
Beryllium	2.23E-07
Cadmium	2.78E-05
Formaldehyde	1.28E-03
Nickel	3.73E-05
Total PAH	3.23E-05
Facility-Wide Total HAPs	3.26E-02

Ambient Air Quality Impact Analyses

An ambient air impact analysis was not required for criteria pollutants for this project because the facility wide PTE for all criteria pollutants are below regulatory concern and qualify for a Category I PTC Exemption under IDAPA 58.01.01.221. TAPS emissions from the facility do not qualify for a PTC Exemption under IDAPA 58.01.01.223. However, the applicant has elected to show compliance with Idaho Toxic Standards under IDAPA 58.01.01.210 through the Net Emissions method (IDAPA 58.01.01.210.09). As Table 7 and Table 8 above show, the net increase in emission for all TAPS are below listed Emissions Limits, therefore no ambient air impact analysis is required.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

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

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

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

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

For All Other Pollutants:

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

Table 10 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	32.97	0.173	100	B
PM ₁₀	32.97	0.173	100	B
PM _{2.5}	10.12	0.141	100	B
SO ₂	0.026	0.010	100	B
NO _x	4.29	1.70	100	B
CO	3.61	1.428	100	B
VOC	0.24	0.094	100	B
HAP (single)	7.7E-02	3.06E-02	10	B
HAP (total)	812E-02	3.26E-02	25	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility to update the dust collection/baghouse system, increase permitted material throughput, increase permitted steam vaporizer fuel usage, add a new product being processed at the facility (Utelite) and remove the use of Flyash at the facility. 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.

Other Rules as Applicable (IDAPA 58.01.01.776)

IDAPA 58.01.01.776 Control of Odors

Section 776.01 states that no person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution. These requirements are assured by Permit Conditions 2.5 and 2.13.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of opacity emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is included as Permit Conditions 2.3 and 2.15.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Conditions 2.4, 2.7 and 2.8.

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 any criteria pollutant (i.e., PM₁₀, PM_{2.5}, SO₂, NO_x, CO, VOC) or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Also, the GHG emissions from the facility don't exceed 100,000 T/yr. 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/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)

Subpart 000—Standards of Performance for Nonmetallic Mineral Processing Plants

§ 60.670 Applicability and designation of affected facility.

(a)(1) Except as provided in paragraphs (a)(2), (b), (c), and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart.

(2) The provisions of this subpart do not apply to the following operations: All facilities located in underground mines; plants without crushers or grinding mills above ground; and wet material processing operations (as defined in §60.671).

(b) An affected facility that is subject to the provisions of subparts F or I of this part or that follows in the plant process any facility subject to the provisions of subparts F or I of this part is not subject to the provisions of this subpart.

(c) Facilities at the following plants are not subject to the provisions of this subpart:

(1) Fixed sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less;

(2) Portable sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 136 megagrams per hour (150 tons per hour) or less; and

(3) Common clay plants and pumice plants with capacities, as defined in §60.671, of 9 megagrams per hour (10 tons per hour) or less.

(d)(1) When an existing facility is replaced by a piece of equipment of equal or smaller size, as defined in §60.671, having the same function as the existing facility, and there is no increase in the amount of emissions, the new facility is exempt from the provisions of §§60.672, 60.674, and 60.675 except as provided for in paragraph (d)(3) of this section.

(2) An owner or operator complying with paragraph (d)(1) of this section shall submit the information required in §60.676(a).

(3) An owner or operator replacing all existing facilities in a production line with new facilities does not qualify for the exemption described in paragraph (d)(1) of this section and must comply with the provisions of §§60.672, 60.674 and 60.675.

(e) An affected facility under paragraph (a) of this section that commences construction, modification, or reconstruction after August 31, 1983, is subject to the requirements of this part.

(f) Table 1 of this subpart specifies the provisions of subpart A of this part 60 that do not apply to owners and operators of affected facilities subject to this subpart or that apply with certain exceptions.

The rock crushing operated by Basalite is not subpart to 40 CFR 60, Subpart OOO because of 60.670(c)(1) and 60.670(e). Section 60.670(a)(1) states that there are exceptions to applicability under subsections (b), (c) and (d). The jaw crusher has a maximum capacity of less than 25 T/hr. It is only 15 T/hr. Therefore, under subsection (c) it is not subject to the subpart. In addition, subsection (e) states that an affected source as defined in (a) is one that commenced constructed after August 31, 1983. The roll crusher was installed and be operational since 1977. Thus, it too is not an affected source and not subject to the subpart.

Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

§ 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/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr).

The steam generating vaporizers were built on 1998 and 2000, respectively. However, per the name plate on both units, the maximum design heat input capacity is not between 10 and 100 MMBtu/hr. Rather, they are both only 5 MMBtu/hr. Therefore, the subpart does not apply to Basalite.

NESHAP Applicability (40 CFR 61)

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

MACT Applicability (40 CFR 63)

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

§63.11193 Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in §63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195.

§63.11195 Are any boilers not subject to this subpart?

The types of boilers listed in paragraphs (a) through (k) of this section are not subject to this subpart and to any requirements in this subpart.

(a) Any boiler specifically listed as, or included in the definition of, an affected source in another standard(s) under this part.

(b) Any boiler specifically listed as an affected source in another standard(s) established under section 129 of the Clean Air Act.

(c) A boiler required to have a permit under section 3005 of the Solid Waste Disposal Act or covered by subpart EEE of this part (e.g., hazardous waste boilers), unless such units do not combust hazardous waste and combust comparable fuels.

(d) A boiler that is used specifically for research and development. This exemption does not include boilers that solely or primarily provide steam (or heat) to a process or for heating at a research and development facility. This exemption does not prohibit the use of the steam (or heat) generated from the boiler during research and development, however, the boiler must be concurrently and primarily engaged in research and development for the exemption to apply.

(e) A gas-fired boiler as defined in this subpart.

The steam generating vaporizers meet the definition of *Boiler* under section §63.11237 and the facility is an area source of HAP. However, the vaporizers also meet the definition of a gas-fired boiler since they are exclusively burn natural gas and are therefore exempted from this subpart.

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.

Revised Permit Condition 2.1 – 2.2

These permit conditions were revised to include minor changes updating the process description and control device description to reflect the removal of Flyash at the facility.

Operating Requirements

Previous Permit Condition 2.8

The maximum amount of natural gas fuel burned in the steam vaporizers shall not exceed 18 million standard cubic feet per any consecutive 12-calendar month (MMscf/yr).

Revised Permit Condition 2.8

The maximum amount of natural gas fuel burned collectively in steam vaporizer #1 and steam vaporizer #2 shall not exceed 34 million standard cubic feet per any consecutive 12-calendar month (MMscf/yr).

The permit condition was revised to increase the permitted fuel usage limits for the vaporizers. The increase was requested by the applicant and subsequent criteria pollutants, HAPS, and TAPS compliance was demonstrated by the applicant.

Previous Permit Condition 2.9

The material throughput used at the facility shall not exceed the following limits in any consecutive 12-calendar months:

- *Gravel: 21,430 tons/yr (T/yr),*
- *Red Cinder: 350 T/yr,*
- *Black Cinder: 350 T/yr,*
- *Gold Pumice: 153 T/yr,*
- *White Pumice: 14,850 T/yr,*
- *Sand: 44,845 T/yr, and*
- *Reclaim Aggregate: 8,690 T/yr*

Revised Permit Condition 2.9

The material throughput used at the facility shall not exceed the following limits in any consecutive 12-calendar months:

- *Combined use of Gravel, Red Cinder, Black Cinder, Gold Pumice, and Utelite : 28,300 (T/yr),*
- *White Pumice: 18,860 T/yr,*
- *Sand: 56,953 T/yr,*
- *Reclaim Aggregate: 11,036 T/yr*

The permit condition was revised to increase the facility's permitted material usage limits. The increase was requested by the applicant and subsequent criteria pollutants, HAPS, and TAPS compliance was demonstrated by the applicant. In addition since Gravel, Red Cinder, Black Cinder, Gold Pumice and Utelite all share the same emissions factors for basis of emissions evaluation essentially allowing them to be treated as the material. Therefore, they have been grouped together to provide operational flexibility to the facility.

Previous Permit Condition 2.10

The Cement and flyash throughput used at the facility shall not exceed the following limits in any consecutive 12-calendar months:

- *Line A Cement Silo: 31,200 T/yr,*
- *Line B Cement Silo: 31,200 T/yr,*
- *Line A & B Cement Supplement (Flyash) Silo: 31,200 T/yr*

Revised Permit Condition 2.10

The Cement throughput used at the facility shall not exceed the following limits in any consecutive 12-calendar months:

- *Line A Cement Silo: 31,200 T/yr,*
- *Line B Cement Silo: 31,200 T/yr,*
- *Line A & B Cement Silo: 15,600 T/yr,*

The permit condition was revised to increase the facility's permitted cement usage limits. The increase was requested by the applicant and subsequent criteria pollutants, HAPS, and TAPS compliance was demonstrated by the applicant.

Previous Permit Condition 2.11

- *The permittee shall install and operate a baghouse to control PM_{10} and PM emissions from the crusher stack.*
- *Within 180 days of permit issuance, the permittee shall have developed a baghouse procedures document for the inspection and operation of the baghouse which controls the PM_{10} and PM emissions from the crusher. The baghouse procedures document shall be a permittee developed document independent of the manufacturer supplied operating manual but may include summaries of procedures included in the manufacturer supplied operating manual.*

The baghouse procedures document shall describe the procedures that will be followed to comply with the General Compliance of the General Provision and shall contain requirements for quarterly see-no-see visible emissions inspections of the baghouse stack. The inspection shall occur during daylight hours and under normal operating conditions.

The baghouse procedures document shall also include a schedule and procedures for corrective action that will be taken if visible emissions are present from the baghouse at any time. At a minimum the document shall include:

- *Procedures to determine if bags are ruptured; and*
- *Procedures to determine if bags are not appropriately secured in place.*

The permittee shall maintain records of the results of each baghouse inspections in accordance with the Monitoring and Recordkeeping of the General Provision. The records shall include a description of whether visible emissions were present and if visible emissions were present a description of the corrective action that was taken.

The baghouse procedures document shall be submitted to DEQ within 180 days of permit issuance and shall contain a certification by a responsible official. Any changes to the baghouse procedures document shall be submitted within 15 days of the change.

The baghouse procedures document shall also remain on site at all times and shall be made available to DEQ representatives upon request.

The operating and monitoring requirements specified in the baghouse document are incorporated by reference to this permit and are enforceable permit conditions.

Revised Permit Condition 2.11

- *The permittee shall install and operate a baghouse to control PM_{10} and $PM_{2.5}$ emissions from the crusher stack.*
- *The baghouse shall be demonstrated to have a 98% control efficiency for capture of PM_{10} and $PM_{2.5}$ either through a manufacturer's rating or a DEQ approved source test method.*
- *Within 180 days of permit issuance, the permittee shall have developed a baghouse procedures document for the inspection and operation of the baghouse which controls the PM_{10} and $PM_{2.5}$ emissions from the crusher. The baghouse procedures document shall be a permittee developed document independent of the manufacturer supplied operating manual but may include summaries of procedures included in the manufacturer supplied operating manual.*

The baghouse procedures document shall describe the procedures that will be followed to comply with the General Compliance of the General Provision and shall contain requirements for quarterly see-no-see visible

emissions inspections of the baghouse stack. The inspection shall occur during daylight hours and under normal operating conditions.

The baghouse procedures document shall also include a schedule and procedures for corrective action that will be taken if visible emissions are present from the baghouse at any time. At a minimum the document shall include:

- *Procedures to determine if bags are ruptured; and*
- *Procedures to determine if bags are not appropriately secured in place.*

The permittee shall maintain records of the results of each baghouse inspections in accordance with the Monitoring and Recordkeeping of the General Provision. The records shall include a description of whether visible emissions were present and if visible emissions were present a description of the corrective action that was taken.

The baghouse procedures document shall be submitted to DEQ within 180 days of permit issuance and shall contain a certification by a responsible official. Any changes to the baghouse procedures document shall be submitted within 15 days of the change.

The baghouse procedures document shall also remain on site at all times and shall be made available to DEQ representatives upon request.

The operating and monitoring requirements specified in the baghouse document are incorporated by reference to this permit and are enforceable permit conditions.

The permit condition was revised to include the requirement that the baghouse shall be demonstrated to have a 98% control efficiency for capture of PM₁₀ and PM_{2.5} either through a manufacturer's rating or a DEQ approved source test method. The facility's emission inventory and subsequent compliance demonstration is predicated upon the assumption of 98% control efficiency and therefore required to maintain demonstration of compliance.

Previous Permit Condition 2.14

The permittee shall monitor and record monthly, tons, the usage of all material (i.e., gravel, red cinder, black cinder, gold pumice, white pumice, sand, and reclaim aggregate) used in the batching process. The monthly usage records shall be aggregated over a consecutive 12-month period to demonstrate compliance with the annual limits.

Revised Permit Condition 2.14

The permittee shall monitor and record monthly, tons, the usage of all individual materials (i.e., gravel, red cinder, black cinder, gold pumice, white pumice, sand, reclaim aggregate, and Utelite) used in the batching process. The monthly usage records shall be aggregated over a consecutive 12-month period to demonstrate compliance with the Material Through Put Limits and Cement Silo Throughput Limits.

The permit condition was revised to account for removal of fly ash, and the addition of Utelite.

Previous Permit Condition 2.16

The permittee shall monitor and record the fuel consumption monthly (when the vaporizers are operated that month), and annually to demonstrate compliance with the fuel burning throughput limits. Annual fuel consumption shall be determined by summing each monthly fuel consumption over the previous consecutive 12-month period. A compilation of the most recent five years of fuel throughput data shall be kept on site, and shall be made available to DEQ representatives upon request.

Revised Permit Condition 2.16

The permittee shall monitor and record the fuel consumption monthly (when the vaporizers are operated that month), and annually to demonstrate compliance with the fuel burning throughput limits. Annual fuel consumption shall be determined by summing each monthly fuel consumption over the previous consecutive 12-month period.

This permit condition was revised to remove the last sentence covering time keeping period of records as it is redundant and already required by General Permit condition 3.10.

PUBLIC REVIEW

Public Comment Opportunity

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

APPENDIX A – EMISSIONS INVENTORIES

IDEQ PTC Forms

Facility Wide Potential to Emit Emission Inventory

Table 1. PRE PROJECT POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS (FROM 2012 PTC EI provided by DEQ)

Description	Criteria Pollutant Emission Summary													
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions		PM-2.5 Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Vaporizer #1	0.490	0.450	0.412	0.378	0.037	0.034	0.003	0.003	0.027	0.025	2.45E-06	2.25E-06	0.037	0.034
Vaporizer #2	0.490	0.450	0.412	0.378	0.037	0.034	0.003	0.003	0.027	0.025	2.45E-06	2.25E-06	0.037	0.034
Cement Silo - Line A	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	6.75E-04	2.11E-03
Cement Silo - Line B	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	6.75E-04	2.11E-03
Supplement Silo - Line A & B	N/A	N/A	N/A	N/A	2.45E-02	7.64E-02	N/A	N/A	N/A	N/A	2.60E-06	8.11E-06	6.68E-03	2.08E-02
Roll Crusher	N/A	N/A	N/A	N/A	7.20E-04	1.78E-04	N/A	N/A	N/A	N/A	N/A	N/A	7.20E-04	1.78E-04
Jaw Crusher	N/A	N/A	N/A	N/A	3.60E-04	1.78E-04	N/A	N/A	N/A	N/A	N/A	N/A	3.60E-04	1.78E-04
Railcar Emissions Routed to Baghouse	N/A	N/A	N/A	N/A	2.94E-03	6.94E-04	N/A	N/A	N/A	N/A	N/A	N/A	2.94E-03	6.94E-04
Proposed PTE Total (excluding fugitives)	0.980	0.900	0.824	0.756	0.106	0.156	0.006	0.005	0.054	0.050	7.61E-06	1.30E-05	0.087	0.094
Fugitives	N/A	N/A	N/A	N/A	0.391	0.104	N/A	N/A	N/A	N/A	N/A	N/A	0.097	2.051

NSR Regulated air Pollutants are defined as: Particulate Matter (PM-10, PM-2.5), Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, all pollutants regulated by NSPS (40 CFR 60)(i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.) The Gem State facility is not a source of any pollutants regulated by NSPS other than NSR regulated air pollutants, nor is the facility a source of Class I or Class II Ozone Depleting Substances.

** See spreadsheets prepared by Stantec (included in Appendix E of the permit application for further information regarding emission factors and calculation assumptions)

Table 2. POST PROJECT MAXIMUM POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

Description	Criteria Pollutant Emission Summary													
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions		PM-2.5 Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Vaporizer #1	0.490	0.850	0.412	0.714	0.037	0.065	0.003	0.005	0.027	0.047	2.45E-06	4.25E-06	0.037	0.065
Vaporizer #2	0.490	0.850	0.412	0.714	0.037	0.065	0.003	0.005	0.027	0.047	2.45E-06	4.25E-06	0.037	0.065
Cement Silo - Line A	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	5.10E-04	1.59E-03
Cement Silo - Line B	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	5.10E-04	1.59E-03
Cement Silo - Line A & B	N/A	N/A	N/A	N/A	1.70E-03	2.65E-03	N/A	N/A	N/A	N/A	5.45E-08	8.50E-08	5.10E-04	7.95E-04
Roll Crusher	N/A	N/A	N/A	N/A	1.44E-03	2.65E-04	N/A	N/A	N/A	N/A	N/A	N/A	4.32E-04	7.95E-05
Jaw Crusher	N/A	N/A	N/A	N/A	7.20E-04	2.65E-04	N/A	N/A	N/A	N/A	N/A	N/A	2.16E-04	7.95E-05
Railcar Emissions Routed to Baghouse	N/A	N/A	N/A	N/A	4.91E-02	1.47E-02	N/A	N/A	N/A	N/A	N/A	N/A	1.47E-02	2.77E-03
White Pumice Drop	N/A	N/A	N/A	N/A	6.27E-02	1.56E-02	N/A	N/A	N/A	N/A	N/A	N/A	1.88E-02	4.67E-03
Proposed PTE Total (excluding fugitives)	0.980	1.700	0.824	1.428	0.194	0.173	0.006	0.010	0.054	0.094	5.07E-06	8.93E-06	0.110	0.141
Fugitives	N/A	N/A	N/A	N/A	0.568	1.166	N/A	N/A	N/A	N/A	N/A	N/A	0.171	0.412

NSR Regulated air Pollutants are defined as: Particulate Matter (PM-10, PM-2.5), Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, all pollutants regulated by NSPS (40 CFR 60)(i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.) The Baseline facility is not a source of any pollutants regulated by NSPS other than NSR regulated air pollutants, nor is the facility a source of Class I or Class II Ozone Depleting Substances.

IDEQ PTC Forms

Facility Wide Potential to Emit Emission Inventory

Table 3. UNCONTROLLED POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

Description	Criteria Pollutant Emission Summary													
	NOx Emissions		CO Emissions		PM-10 Emissions		SOx Emissions		VOC Emissions		Lead Emissions		PM-2.5 Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Vaporizer #1	0.490	2.147	0.412	1.804	0.037	0.163	0.003	0.013	0.027	0.118	2.45E-06	1.07E-05	0.037	0.163
Vaporizer #2	0.490	2.147	0.412	1.804	0.037	0.163	0.003	0.013	0.027	0.118	2.45E-06	1.07E-05	0.037	0.163
Cement Silo - Line A	N/A	N/A	N/A	N/A	2.35	10.29	N/A	N/A	N/A	N/A	5.45E-08	2.39E-07	0.71	3.09
Cement Silo - Line B	N/A	N/A	N/A	N/A	2.35	10.29	N/A	N/A	N/A	N/A	5.45E-08	2.39E-07	0.71	3.09
Cement Silo - Line A & B	N/A	N/A	N/A	N/A	2.35	10.29	N/A	N/A	N/A	N/A	5.45E-08	2.39E-07	0.71	3.09
Roll Crusher	N/A	N/A	N/A	N/A	0.072	0.315	N/A	N/A	N/A	N/A	N/A	N/A	0.022	0.095
Jaw Crusher	N/A	N/A	N/A	N/A	0.036	0.158	N/A	N/A	N/A	N/A	N/A	N/A	0.011	0.047
Railcar Emissions Routed to Baghouse	N/A	N/A	N/A	N/A	0.294	1.288	N/A	N/A	N/A	N/A	N/A	N/A	0.088	0.386
Proposed PTE Total (excluding fugitives)	0.980	4.294	0.824	3.607	7.527	32.966	0.006	0.026	0.054	0.236	5.07E-06	2.22E-05	2.310	10.118
Fugitives	N/A	N/A	N/A	N/A	0.568	2.488	N/A	N/A	N/A	N/A	N/A	N/A	0.171	0.749

IDEQ PTC Forms

Toxic Air Pollutant Emissions Inventory

Part 1. PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

NON-CARCINOGENS						
Pollutant	CAS #	TAP Emissions (lb/hr)	Pre-Project TAP Emissions (lb/hr)	Difference (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)
Ammonium Sulfamate	7773-06-0	1.58E-06	1.58E-06	0.00E+00	6.67E-01	No
Amorphous Silica	112926-00-8	2.84E-06	2.84E-06	0.00E+00	6.67E-01	No
Barium	7440-39-3	2.16E-05	2.16E-05	0.00E+00	3.30E-02	No
Chromium	7440-47-3	1.04E-05	1.33E-05	-2.82E-06	3.30E-02	No
Cobalt	7440-48-4	4.12E-07	4.12E-07	0.00E+00	3.30E-03	No
Copper	7440-50-8	4.17E-06	4.17E-06	0.00E+00	6.70E-02	No
Iron Oxide	1309-37-1	6.30E-05	6.30E-05	0.00E+00	3.33E-01	No
Hexane	110-54-3	8.82E-03	8.82E-03	0.00E+00	1.20E+01	No
Manganese	7439-96-5	3.62E-06	4.31E-06	-6.95E-07	3.33E-01	No
Molybdenum	7439-98-7	5.39E-06	5.39E-06	0.00E+00	3.33E-01	No
Naphthalene	91-20-3	2.99E-06	2.99E-06	0.00E+00	2.00E-06	No
Pentane	109-66-0	1.27E-02	1.27E-02	0.00E+00	1.18E+02	No
Phosphorous	7723-14-0	1.77E-04	1.36E-04	4.10E-05	7.00E-03	No
Selenium	7782-49-2	1.18E-07	4.80E-07	-3.62E-07	1.30E-02	No
Vanadium	71-43-2	1.13E-05	1.13E-05	0.00E+00	3.00E-03	No
Toluene	108-88-3	1.67E-05	1.67E-05	0.00E+00	2.50E+01	No
Zinc	7440-66-6	1.42E-04	1.42E-04	0.00E+00	6.67E-01	No

Part 2. PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

CARCINOGENS						
Pollutant	CAS #	TAP Emissions (lb/hr)	Pre-Project TAP Emissions (lb/hr)	Difference (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)
Arsenic	7440-38-2	2.27E-06	4.00E-06	-1.72E-06	1.50E-06	No
Benzene	71-43-2	8.15E-06	4.32E-06	3.84E-06	8.00E-04	No
Beryllium	7440-41-7	5.09E-08	3.51E-07	-3.00E-07	2.80E-05	No
Cadmium	7440-43-9	6.35E-06	4.00E-06	2.36E-06	3.70E-06	No
Chromium VI	7440-47-3	1.71E-06	2.21E-06	-5.00E-07	5.60E-07	No
Formaldehyde	50-00-0	2.91E-04	1.54E-04	1.37E-04	5.10E-04	No
Naphthalene	91-20-3	2.37E-06	1.25E-06	1.11E-06	9.10E-05	No
Nickel	7440-02-0	1.53E-05	1.27E-05	2.59E-06	2.70E-05	No
POM (7-PAH)	50-32-8	4.42E-08	2.34E-08	2.08E-08	2.00E-06	No
Total PAHs		7.37E-06	3.90E-06	3.47E-06	9.10E-05	No

A reduction is seen for some TAPs because the flyash has been removed

IDEQ PTC Forms

Facility Wide Hazardous Air Pollutant Potential to Emit

HAP MAXIMUM POTENTIAL TO EMIT EMISSIONS SUMMARY

HAP Pollutants	Controlled (T/yr)	PTE (T/yr)
Chromium	2.49E-05	6.20E-05
Cobalt	1.43E-06	3.61E-06
Lead	4.25E-07	7.16E-07
Hexane*	3.06E-02	7.73E-02
Manganese	1.10E-05	2.40E-05
Mercury	4.42E-06	1.12E-05
Naphthalene	1.04E-05	2.62E-05
Phosphorous	4.60E-04	7.75E-04
Toluene	5.78E-05	1.46E-04
Arsenic	3.57E-06	8.87E-06
Benzene	3.57E-05	9.02E-05
Beryllium	2.23E-07	5.47E-07
Cadmium	2.78E-05	4.16E-05
Formaldehyde	1.28E-03	3.22E-03
Nickel	3.73E-05	9.29E-05
Total PAH	3.23E-05	8.15E-05
Total	3.26E-02	8.19E-02

* Maximum Individual HAP

**Basalite Boise Plant
Permit to Construct Modification - May 2018
Emissions Inventory**

Description	Criteria Pollutant Emission Summary - PTE													
	NO _x Emissions		CO Emissions		PM ₁₀ Emissions		SO _x Emissions		VOC Emissions		Lead Emissions		PM _{2.5} Emissions	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Vaporizer #1	0.490	0.850	0.412	0.714	0.037	0.065	0.003	0.005	0.027	0.047	2.45E-06	4.25E-06	0.037	0.065
Vaporizer #2	0.490	0.850	0.412	0.714	0.037	0.065	0.003	0.005	0.027	0.047	2.45E-06	4.25E-06	0.037	0.065
Cement Silo - Line A	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	5.10E-04	1.59E-03
Cement Silo - Line B	N/A	N/A	N/A	N/A	1.70E-03	5.30E-03	N/A	N/A	N/A	N/A	5.45E-08	1.70E-07	5.10E-04	1.59E-03
Cement Silo - Line A & B	N/A	N/A	N/A	N/A	1.70E-03	2.65E-03	N/A	N/A	N/A	N/A	5.45E-08	8.50E-08	5.10E-04	7.95E-04
Roll Crusher	N/A	N/A	N/A	N/A	1.44E-03	2.65E-04	N/A	N/A	N/A	N/A	N/A	N/A	4.32E-04	7.95E-05
Jaw Crusher	N/A	N/A	N/A	N/A	7.20E-04	2.65E-04	N/A	N/A	N/A	N/A	N/A	N/A	2.16E-04	7.95E-05
Railcar Emissions Routed to Baghouse ¹	N/A	N/A	N/A	N/A	4.91E-02	1.47E-02	N/A	N/A	N/A	N/A	N/A	N/A	1.47E-02	2.77E-03
White Pumice Drop	N/A	N/A	N/A	N/A	6.27E-02	1.56E-02	N/A	N/A	N/A	N/A	N/A	N/A	1.88E-02	4.67E-03
Total Point Source Emissions	0.980	1.700	0.824	1.428	0.194	0.173	0.006	0.010	0.054	0.094	5.07E-06	8.93E-06	0.110	0.141
Fugitives ²	N/A	N/A	N/A	N/A	0.568	1.166	N/A	N/A	N/A	N/A	N/A	N/A	0.171	0.412
Total w/ Fugitives Included	0.980	0.824	0.824	1.428	0.762	1.339	0.006	0.010	0.054	0.094	5.07E-06	8.93E-06	0.281	0.552

¹ The railcar emissions that are routed to the point source baghouse that have not already been accounted for are as follows: screening operations and conveyance transfer to the screening.

² The fugitive emissions are determined from all processes outlined in the "Material Inflow", Crushing and from screening and to grizzly hopper transfer/loading.

FACILITY POTENTIAL TO EMIT - TAPS

NON-CARCINOGENS						
Pollutant	CAS #	TAP Emissions (lb/hr)	Pre-Project TAP Emissions (lb/hr) ¹	Difference (lb/hr)	Screening Level (lb/hr)	Modeling (Y/N)
Ammonium Sulfamate	7773-06-0	1.58E-06	1.58E-06	0.00E+00	6.67E-01	No
Amorphous Silica	112926-00-8	2.84E-06	2.84E-06	0.00E+00	6.67E-01	No
Barium	7440-39-3	2.16E-05	2.16E-05	0.00E+00	3.3E-02	No
Chromium	7440-47-3	1.04E-05	1.33E-05	-2.82E-06	3.3E-02	No
Cobalt	7440-48-4	4.12E-07	4.12E-07	0.00E+00	3.3E-03	No
Copper	7440-50-8	4.17E-06	4.17E-06	0.00E+00	6.7E-02	No
Hexane	110-54-3	8.82E-03	8.82E-03	0.00E+00	1.2E+01	No
Iron Oxide ²	1309-37-1	6.30E-05	6.30E-05	0.00E+00	3.3E-01	No
Manganese	7439-96-5	3.62E-06	4.31E-06	-6.95E-07	3.33E-01	No
Molybdenum	7439-98-7	5.39E-06	5.39E-06	0.00E+00	3.33E-01	No
Napthalene	91-20-3	2.99E-06	2.99E-06	0.00E+00	2.00E-06	No
Pentane	109-66-0	1.27E-02	1.27E-02	0.00E+00	1.18E+02	No
Phosphorous	7723-14-0	1.77E-04	1.36E-04	4.10E-05	7.7E-03	No
Selenium	7782-49-2	1.18E-07	4.80E-07	-3.62E-07	1.3E-02	No
Vanadium	7440-62-2	1.13E-05	1.13E-05	0.00E+00	3.0E-03	No
Toluene	108-88-3	1.67E-05	1.67E-05	0.00E+00	2.5E+01	No
Zinc	7440-66-6	1.42E-04	1.42E-04	0.00E+00	6.67E-01	No

CARCINOGENS						
Pollutant	CAS #	TAP Emissions (lb/hr) ¹	Pre-Project TAP Emissions (lb/hr) ²	Difference (lb/hr)	Screening Level (lb/hr)	Modeling (Y/N)
Arsenic	7440-38-2	2.27E-06	4.00E-06	-1.72E-06	1.5E-06	No
Benzene	71-43-2	8.15E-06	4.32E-06	3.84E-06	8.0E-04	No
Beryllium	7440-41-7	5.09E-08	3.51E-07	-3.00E-07	2.8E-05	No
Cadmium	7440-43-8	6.35E-06	4.00E-06	2.36E-06	3.7E-06	No
Chromium VI	7440-47-3	1.71E-06	2.21E-06	-5.00E-07	5.6E-07	No
Formaldehyde	50-00-0	2.91E-04	1.54E-04	1.37E-04	5.1E-04	No
Napthalene	91-20-3	2.37E-06	1.25E-06	1.11E-06	9.1E-05	No
Nickel	7440-02-0	1.53E-05	1.3E-05	2.59E-06	2.7E-05	No
POM (7-PAH)	50-32-8	4.42E-08	2.34E-08	2.08E-08	2.0E-06	No
Total PAHs		7.37E-06	3.90E-06	3.47E-06	9.10E-05	No

¹ The lb/hr is based on an annual average.

² Based on 2 vaporizers at 12 hr/day and 1636 hr/yr. Note that the 2012 PTC calcs were not 24-hr lb/hr averages, rather 1-hr lb/hr maximums. Silo A&B (24 hr/day and 6240 hr/yr) 585 NG contribution between Pre and Post emissions are equivalent. 12 hr/day is assumed now and 2012.

³ Unchanged from 2012 PTC.

FACILITY POTENTIAL TO EMIT - HAPS

	T/yr
Individual HAP	3.06E-02
Aggregate HAPs	3.26E-02

Material Throughputs

Material	Throughputs		Delivery	Storage and Transfer
	2012 Permitted Throughput	Proposed new 2016 Throughput		
Gravel	31,430	27,250	Loader	Stockpile/Underground Bin
Red Cinder	350	445	Loader	Stockpile/Underground Bin
Black Cinder	350	445	Loader	Stockpile/Underground Bin
Food Pellets	151	194	Loader	Stockpile/Underground Bin
Whole Purins	14,500	18,920	Tractor	Aggregate Silo
Recycled Aggregate	8,600	11,020	Tractor	Gravel to Crusher
Sand	14,845	56,920	Loader	Stockpile/Underground Bin
Gravel	0	10,000	Loader	Stockpile/Underground Bin
		125,148		

1. Emissions for 2016 from 2012 permitted levels plus the addition of gravel

Material Transfer

Material Process	Throughput ¹		Emission factor (lb/Ton) ²	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (T/yr)	Emission factor (lb/Ton) ²	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (T/yr)
	Ton/hr	Ton/yr						
Aggregate/Gravel Delivery to Underground	18	47,158	0.0013	0.13	0.02	9.00E-04	0.04	0.03
Sand Delivery to Underground Storage	18	56,920	0.0013	0.04	0.01	2.97E-04	0.01	0.01
Aggregate or Sand Transfer to Reverse Roll Conveyor	36	114,112	0.0013	0.13	0.19	9.90E-04	0.04	0.05
Aggregate or Sand Transfer to Aggregate Hauling Hopper	36	114,112	0.0013	0.13	0.19	9.90E-04	0.04	0.05
Purins Drop into Aggregate Silos	36	114,112	0.0013	0.13	0.19	9.90E-04	0.04	0.05
	Controlled Emissions (lb/hr)	Controlled Emissions (T/yr)	Controlled Emissions (lb/hr)	Controlled Emissions (T/yr)				
Aggregate/Purins Delivery to Underground	0.05	0.05	0.02	0.01				
Sand Delivery to Underground Storage	0.02	0.01	0.01	0.00				
Aggregate or Sand Transfer to Reverse Roll Conveyor	0.02	0.01	0.02	0.00				
Aggregate or Sand Transfer to Aggregate Hauling Hopper	0.02	0.01	0.02	0.00				
Purins Drop into Aggregate Silos	0.02	0.01	0.02	0.00				

1. The hourly throughput is based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 2. The aggregate material throughput includes all material types with the exception of whole purins and gravel.
 Only whole purins is related to the aggregate silos.
 3. All emission factors are taken from AP-42 Section 11.1 - Control Banding Table 7.
 4. The 17.5% uncontrolled efficiency is a value of material handling from Table 11.1 of AP-42. It is not a control efficiency. It is assumed that the uncontrolled efficiency is 17.5% for all material handling activities. This is a conservative assumption. The actual uncontrolled efficiency is 17.5% for all material handling activities.
 5. A control efficiency of 50% was applied to the emissions from the aggregate silos and the gravel silos.
 6. A control efficiency of 50% was applied to the emissions from the aggregate silos and the gravel silos.

Coloring Agents

Coloring Types	Throughput ¹		Emission factor (lb/Ton) ²	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (T/yr)	Emission factor (lb/Ton) ²	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (T/yr)
	Ton/hr	Ton/yr						
110-C Light Red	0.05	44	0.00029	4.35E-05	7.18E-05	2.97E-04	1.49E-05	4.85E-06
130-C Medium Red	0.05	44	0.00029	4.35E-05	7.18E-05	2.97E-04	1.49E-05	4.85E-06
330-C Black	0.05	44	0.00029	4.35E-05	7.18E-05	2.97E-04	1.49E-05	4.85E-06
920-C Yellow	0.05	44	0.00029	4.35E-05	7.18E-05	2.97E-04	1.49E-05	4.85E-06
	Controlled Emissions (lb/hr)	Controlled Emissions (T/yr)	Controlled Emissions (lb/hr)	Controlled Emissions (T/yr)				
110-C Light Red	1.49E-05	4.85E-06	4.45E-06	1.94E-06				
130-C Medium Red	1.49E-05	4.85E-06	4.45E-06	1.94E-06				
330-C Black	1.49E-05	4.85E-06	4.45E-06	1.94E-06				
920-C Yellow	1.49E-05	4.85E-06	4.45E-06	1.94E-06				

1. The hourly throughput is based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 2. The aggregate material throughput includes all material types with the exception of whole purins and gravel.
 Only whole purins is related to the aggregate silos.
 3. All emission factors are taken from AP-42 Section 11.1 - Control Banding Table 7.
 4. The 17.5% uncontrolled efficiency is a value of material handling from Table 11.1 of AP-42. It is not a control efficiency. It is assumed that the uncontrolled efficiency is 17.5% for all material handling activities. This is a conservative assumption. The actual uncontrolled efficiency is 17.5% for all material handling activities.
 5. A control efficiency of 50% was applied to the emissions from the aggregate silos and the gravel silos.
 6. A control efficiency of 50% was applied to the emissions from the aggregate silos and the gravel silos.

Material feed from Stockpiles

Material Feed	Throughput		Emission Factor (lb/Ton)		Uncontrolled PM ₁₀ Emissions		Uncontrolled PM _{2.5} Emissions	
	Ton/hr	Ton/yr	PM ₁₀	PM _{2.5}	lb/hr	Ton/yr	lb/hr	Ton/yr
Material Grab With Loader	38	95,253	1.11E-03	1.69E-02	4.23E-02	5.32E-02	6.26E-04	8.03E-04
Wind Erosion Sand Pile ³	N/A	N/A	N/A	N/A	N/A	N/A	2.05E-02	2.20E-01
Wind Erosion Gravel Pile ³	N/A	N/A	N/A	N/A	1.15E-01	3.72E-01	4.77E-02	1.46E-01
Wind Erosion Black Cinder Pile ³	N/A	N/A	N/A	N/A	4.77E-02	1.49E-01	1.91E-02	5.95E-02
Wind Erosion Red Cinder Pile ³	N/A	N/A	N/A	N/A	4.77E-02	1.49E-01	1.91E-02	5.95E-02
Wind Erosion Whole Purins Pile ³	N/A	N/A	N/A	N/A	1.95E-02	3.29E-02	4.34E-03	1.35E-02
Wind Erosion Gravel Pile ³	N/A	N/A	N/A	N/A	1.26E-01	4.20E-01	5.45E-02	1.75E-01
	Controlled PM₁₀ Emissions⁴	Controlled PM_{2.5} Emissions⁴						
Material Grab With Loader	4.23E-02	5.32E-02	6.45E-04	8.03E-04				
Wind Erosion Sand Pile	8.03E-04	2.75E-01	3.52E-02	1.15E-01				
Wind Erosion Gravel Pile	5.26E-02	1.68E-01	2.38E-02	7.43E-02				
Wind Erosion Black Cinder Pile	2.19E-02	7.43E-02	0.52E-03	2.97E-02				
Wind Erosion Red Cinder Pile	2.19E-02	7.43E-02	0.52E-03	2.97E-02				
Wind Erosion Whole Purins Pile	5.42E-03	1.69E-02	7.12E-03	6.71E-02				
Wind Erosion Gravel Pile	8.03E-04	2.75E-01	7.24E-02	8.52E-02				

1. The hourly throughput is based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 2. The aggregate material throughput includes all material types with the exception of whole purins and gravel.
 Only whole purins is related to the aggregate silos.
 3. The wind erosion agent emissions are calculated using the wind erosion equation from the National Weather Service (NWS) based on the uncontrolled capacity of the transfer system both for stock and on-site unloading. The wind erosion agent emissions are calculated using the wind erosion equation from the National Weather Service (NWS) based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 4. The control efficiency is 50% for all material handling activities.
 5. The control efficiency is 50% for all material handling activities.
 6. The control efficiency is 50% for all material handling activities.

Material feed from Stockpiles

Material Feed	Throughput		Emission Factor (lb/Ton)		Uncontrolled PM ₁₀ Emissions		Uncontrolled PM _{2.5} Emissions	
	Ton/hr	Ton/yr	PM ₁₀	PM _{2.5}	lb/hr	Ton/yr	lb/hr	Ton/yr
Material Grab With Loader	38	95,253	1.11E-03	1.69E-02	4.23E-02	5.32E-02	6.26E-04	8.03E-04
Wind Erosion Sand Pile ³	N/A	N/A	N/A	N/A	N/A	N/A	2.05E-02	2.20E-01
Wind Erosion Gravel Pile ³	N/A	N/A	N/A	N/A	1.15E-01	3.72E-01	4.77E-02	1.46E-01
Wind Erosion Black Cinder Pile ³	N/A	N/A	N/A	N/A	4.77E-02	1.49E-01	1.91E-02	5.95E-02
Wind Erosion Red Cinder Pile ³	N/A	N/A	N/A	N/A	4.77E-02	1.49E-01	1.91E-02	5.95E-02
Wind Erosion Whole Purins Pile ³	N/A	N/A	N/A	N/A	1.95E-02	3.29E-02	4.34E-03	1.35E-02
Wind Erosion Gravel Pile ³	N/A	N/A	N/A	N/A	1.26E-01	4.20E-01	5.45E-02	1.75E-01
	Controlled PM₁₀ Emissions⁴	Controlled PM_{2.5} Emissions⁴						
Material Grab With Loader	4.23E-02	5.32E-02	6.45E-04	8.03E-04				
Wind Erosion Sand Pile	8.03E-04	2.75E-01	3.52E-02	1.15E-01				
Wind Erosion Gravel Pile	5.26E-02	1.68E-01	2.38E-02	7.43E-02				
Wind Erosion Black Cinder Pile	2.19E-02	7.43E-02	0.52E-03	2.97E-02				
Wind Erosion Red Cinder Pile	2.19E-02	7.43E-02	0.52E-03	2.97E-02				
Wind Erosion Whole Purins Pile	5.42E-03	1.69E-02	7.12E-03	6.71E-02				
Wind Erosion Gravel Pile	8.03E-04	2.75E-01	7.24E-02	8.52E-02				

1. The hourly throughput is based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 2. The aggregate material throughput includes all material types with the exception of whole purins and gravel.
 Only whole purins is related to the aggregate silos.
 3. The wind erosion agent emissions are calculated using the wind erosion equation from the National Weather Service (NWS) based on the uncontrolled capacity of the transfer system both for stock and on-site unloading. The wind erosion agent emissions are calculated using the wind erosion equation from the National Weather Service (NWS) based on the uncontrolled capacity of the transfer system both for stock and on-site unloading.
 4. The control efficiency is 50% for all material handling activities.
 5. The control efficiency is 50% for all material handling activities.
 6. The control efficiency is 50% for all material handling activities.

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Storage Pile Calculations				
	Length (ft)¹	Width (ft)¹	Area (acres)¹	Worst Case (acres)²
Sand Pile Area #1 (West)	54	46	0.057	0.171
Sand Pile Area #2 (East)	66	37	0.056	0.168
Gravel Pile Area	60	28	0.039	0.116
Gold Pumice Area	24	28	0.015	0.046
Black Cinder Area	24	28	0.015	0.046
Red Cinder Area	8.5	18	0.004	0.011
Utelite Area	60	32	0.044	0.132

1. The length and width of each stockpile was determined by Basalite on May 8, 2018 actual measurements
2. The Worst case was determined to be three times that of the actual dimensions by Basalite and Stantec.

Wind Erosion Calculations

The following calculation was developed by the Mojave Desert Air Quality Management District for material handling, specifically wind erosion from stockpiles.
Emissions = E_f * A

$$E_f = J * 1.7 * sL / 1.5 * 365 / 235 * I / 15 * 365 / 2000$$

J = particulate aerodynamic factor (0.5 for PM₁₀ and 0.2 for PM_{2.5}).

sL = Silt loading % (30 used as default for conservatism).

I = % of days wind speed greater than 12 mph (10 was used).

Wind Erosion Emissions	Uncovered PM₁₀ (Ton/yr)	Uncovered PM_{2.5} (Ton/yr)
Sand Pile Area #1 (West)	0.5496	0.2198
Sand Pile Area #2 (East)	0.5403	0.2161
Gravel Pile Area	0.3717	0.1487
Gold Pumice Area	0.1487	0.0595
Black Cinder Area	0.1487	0.0595
Red Cinder Area	0.0339	0.0135
Utelite Area	0.4248	0.1699

**Basaltic Boise Plant
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Railcar Crushing Enclosure Area Emissions

Emissions Source	Throughput		Emission Factors (lb/Ton)		Uncontrolled Emissions (lb/hr)		Uncontrolled Emissions (Ton/yr)	
	Ton/hr ¹	Ton/yr ¹	PM ₁₀	PM _{2.5} ³	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}
Jaw Crusher ²	15	11,036	0.0024	0.0007	0.036	0.011	0.013	0.004
Roll Crusher ²	30	11,036	0.0024	0.0007	0.072	0.022	0.013	0.004
Screening ²	30	11,036	0.0087	0.0026	0.261	0.078	0.048	0.014
Screening Fines ²	30	11,036	0.0720	0.0216	2.160	0.648	0.397	0.119
Aggregate (white pumice & Reclaim) Conveyor transfers to screening ³	30	29,896	0.0011	0.0003	0.033	0.010	0.016	0.005
Aggregate (white pumice & Reclaim) Conveyor transfers from screening fines ⁴	30	29,896	1.11E-03	1.69E-05	3.34E-02	5.06E-04	1.66E-02	2.52E-04
Aggregate (white pumice & Reclaim) Conveyor transfers from screening coarse ⁴	30	29,896	1.11E-03	1.69E-05	3.34E-02	5.06E-04	1.66E-02	2.52E-04
Aggregate (white pumice & Reclaim) Delivery thru grizzly to ground storage ⁴	30	29,896	1.11E-03	1.69E-05	3.34E-02	5.06E-04	1.66E-02	2.52E-04
Emissions Source	Controlled Emissions (lb/hr)		Controlled Emissions (Ton/yr)					
	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}				
Jaw Crusher ⁵	7.2E-04	2.2E-04	2.65E-04	7.95E-05				
Roll Crusher ⁵	1.44E-03	4.32E-04	2.65E-04	7.95E-05				
Screening ⁵	5.22E-03	1.57E-03	9.60E-04	2.88E-04				
Screening Fines ⁵	4.32E-02	1.30E-02	7.95E-03	2.38E-03				
Aggregate (white pumice & Reclaim) Conveyor transfers to screening ⁵	6.60E-04	1.98E-04	3.29E-04	9.87E-05				
Aggregate (white pumice & Reclaim) Conveyor transfers from screening fines ⁶	1.67E-02	2.53E-04	8.32E-03	1.26E-04				
Aggregate (white pumice & Reclaim) Conveyor transfers from screening coarse ⁶	1.67E-02	2.53E-04	8.32E-03	1.26E-04				
Aggregate (white pumice & Reclaim) Delivery thru grizzly to ground storage ⁶	1.67E-02	2.53E-04	8.32E-03	1.26E-04				

1 The Ton/hr throughput values are based on the capacity of the crusher and the transfers are maximized to represent the highest throughput. Only reclaim aggregate is crushed and screened (11,036 T/yr).

2 The PM₁₀ emission factor is derived from AP-42 Section 11.19-2, Crushed Stone Processing & Pulverized Mineral Processing. Tertiary crushing is utilized.

3 The EFs were calculated using EFs in lb/ton of material handled from Table 11.19.2-2 for conveyor transfer points.

A percentage of PM₁₀ that is considered to be PM_{2.5} per California CEIDARS list for crushing, screening, loading and unloading. The ratio is 30% of PM₁₀ is PM_{2.5}.

4 The conveyor transfer from screening emission factors were derived from AP-42, Section 13.2.4 Aggregate Handling & Storage Piles - Equation 1, where k = 0.35 and 0.053 for PM₁₀ and PM_{2.5}, respectively. U is the average mean speed (7.7 mph) and M is moisture content (3%). The 3% is based on the average of 4.17% and 1.77%, the average percentages for sand and aggregate, respectively.

These values are based on EPA tests conducted at Cheney Enterprises Cement plant in Roanoke, VA (AP-42 11-12.08/06).

The average wind speed of 7.7 mph was based on the average speed observed at the Boise Airport from 1996-2006. <http://www.wrcc.dri.edu/htmlfiles/westwind/final.html#IDAH0>

Also, Chapter 4, section 4.2 of the WRAP Fugitive Dust Handbook identifies adding material to a pile by conveyor as an example of a continuous drop operation. Therefore, the drop equation used is appropriate.

5 Both crusher and screening operations are conducted within a building where all particulate emissions are routed to a dust collector. The dust collector is the Donaldson Torit VH-16 with a control efficiency of 98%.

6 The transfer of material via conveyance to the aggregate silos is partially enclosed. Typically, a "wall" estimates 25% control. A 50% assumption is conservative seeing as only the top of the conveyors are open.

**Basaltite Boise Plant
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Cement Silo Emissions

Emissions Source	Throughput ¹		Emission Factor (lb/Ton)		Controlled Emissions (lb/hr)			Controlled Emissions (Ton/yr)	
	T/hr	T/yr	PM ₁₀ ²	PM _{2.5} ²	PM ₁₀	PM _{2.5}	PM ₁₀	PM _{2.5}	
Line A Cement Silo	5	31,200	3.40E-04	1.02E-04	1.70E-03	5.10E-04	5.30E-03	1.59E-03	
Line B Cement Silo	5	31,200	3.40E-04	1.02E-04	1.70E-03	5.10E-04	5.30E-03	1.59E-03	
Line A & B Cement Silo	5	15,600	3.40E-04	1.02E-04	1.70E-03	5.10E-04	2.65E-03	7.96E-04	

¹ The throughputs are based on expected operations and 6,240 operating hours per year. Line A&B has removed the flyash and been replaced 50% filled with cement.

² The EFs were calculated using EFs in lb/ton of material handled from Table 11-12-2, and a percentage of PM that is considered to be PM_{2.5}.

The percentage used to establish the EFs were based on CEIDARS percentage for loading, unloading, PM_{2.5} Table. It was established that the fraction that is PM_{2.5} is 30% of PM₁₀.

HAP/TAP Emissions from Silos

HAP/TAP Emission Factors from AP-42, Table 11-12-8 (Version 06/06)

Emission Source ¹	Arsenic	Beryllium	Cadmium	Chromium	Manganese	Nickel	Phosphorus	Selenium	Chromium VI ²	Lead
Cement delivery to silo	4.24E-09	4.86E-10	2.34E-07	2.90E-08	1.17E-07	4.18E-08	1.18E-05		30%	1.09E-08

¹ All factors are in lb/ton and assume a fabric filter as control.

² Estimated percentage of Chromium that is Cr^{VI}. This is a value that has been accepted by Idaho DLQ in the past and is representative here.

	Arsenic		Beryllium		Cadmium		Chromium	
	lb/hr max	T/yr						
Line A Cement Silo	2.12E-08	6.61E-08	2.43E-09	7.59E-09	1.17E-06	3.65E-06	1.45E-07	4.52E-07
Line B Cement Silo	2.12E-08	6.61E-08	2.43E-09	7.59E-09	1.17E-06	3.65E-06	1.45E-07	4.52E-07
Line A & B Cement Silo	2.12E-08	3.31E-08	2.43E-09	3.79E-09	1.17E-06	1.83E-06	1.45E-07	2.26E-07
Total	6.36E-08	1.65E-07	7.29E-09	1.90E-08	3.51E-06	9.13E-06	4.36E-07	1.13E-06
	Manganese		Nickel		Phosphorus		Selenium	
	lb/hr max	T/yr	lb/hr max	T/yr	lb/hr max	T/yr	lb/hr max	T/yr ¹
Line A Cement Silo	5.85E-07	1.83E-06	2.09E-07	6.52E-07	5.90E-05	1.84E-04	0.00E+00	0.00E+00
Line B Cement Silo	5.85E-07	1.83E-06	2.09E-07	6.52E-07	5.90E-05	1.84E-04	0.00E+00	0.00E+00
Line A & B Cement Silo	5.85E-07	9.13E-07	2.09E-07	3.26E-07	5.90E-05	9.20E-05	0.00E+00	0.00E+00
Total	1.76E-06	4.66E-06	8.27E-07	1.63E-06	1.77E-04	4.60E-04	0.00E+00	0.00E+00
	Chromium VI		Lead					
	lb/hr max	T/yr	lb/hr max	T/yr				
Line A Cement Silo	4.35E-08	1.36E-07	5.45E-08	1.70E-07				
Line B Cement Silo	4.35E-08	1.36E-07	5.45E-08	1.70E-07				
Line A & B Cement Silo	4.35E-08	6.79E-08	5.45E-08	8.50E-08				
Total	1.31E-07	3.39E-07	1.64E-07	4.25E-07				

¹ Selenium is not detectable within the cement. Therefore it is determined to be zero.

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NATURAL GAS CRITERIA EMISSIONS

Source	MMBtu/hr	MMscf/yr ¹	Hours of Operation ²	Emission Factors (lb/MMscf)						
				PM ₁₀ /PM _{2.5} ³	NOx ⁴	SO ₂ ⁵	CO ⁶	VOC ⁷	Pb ⁸	
Vaporizer #1	5	17.0	3466	7.6	100	0.6	84	5.9	0.0005	
Vaporizer #2	5	17.0	3466	7.6	100	0.6	84	5.9	0.0005	

- Total Usage is expected to be 34 MMscf per yr. Adjusted evenly for calendar year.
- The hours of operations are based on the required fuel maximum (24 MMscf).
- Emission factor Reference for PM₁₀/PM_{2.5}, SO₂, VOC & Pb: AP-42 Section 1.4. Natural Gas Combustion, Table 2. Total Particulate includes both filterable & condensable, SO₂ assume 100% conversion.
- Emission factor Reference for NO_x and CO: AP-42 Section 1.4. Natural Gas Combustion, Table 1. Small Boiler < 100 MMBtu (a) combustion.

Combustion Source	Throughput (MMscf/hr) ¹	Emission Rates											
		PM ₁₀ /PM _{2.5}		NOx		SO ₂		CO		VOC		Pb	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Vaporizer #1	4.90E-03	0.037	0.06	0.490	0.85	0.003	5.10E-03	0.412	0.71	0.027	0.05	2.45E-06	4.25E-06
Vaporizer #2	4.90E-03	0.037	0.06	0.490	0.85	0.003	5.10E-03	0.412	0.71	0.027	0.05	2.45E-06	4.25E-06
Total	0.075	0.129	0.980	1.700	0.006	0.010	0.824	1.428	0.054	0.094	4.90E-06	8.50E-06	

¹ The throughput of each unit was determined by taking the maximum annual usage of 34 MMscf and dividing it by the operating hours.

NATURAL GAS HAPS

Combustion Source	Emission Factors (lb/MMscf) ¹											PAH ²			
	Benzene	Formaldehyde	Hexane	Naphthalene	Toluene	Arsenic	Beryllium	Cadmium	Chromium	Cobalt	Manganese		Mercury	Nickel	Selenium
Vaporizer #1	2.10E-03	7.60E-02	1.8	8.10E-04	3.40E-03	2.00E-04	1.20E-05	1.10E-03	1.40E-03	8.40E-06	3.80E-04	2.60E-04	3.10E-03	2.45E-06	N/A
Vaporizer #2	2.10E-03	7.60E-02	1.8	8.10E-04	3.40E-03	2.00E-04	1.20E-05	1.10E-03	1.40E-03	8.40E-06	3.80E-04	2.60E-04	3.10E-03	2.45E-06	N/A

- Emission Factor Reference: AP-42, Section 1.4, Table 2. All HAPs are based on EPA Section 113(d) of CAA.
- PAH (polycyclic aromatic hydrocarbon) is a subset of Polycyclic Organic Matter (POM) which is a HAP. There is no specific emission factor for the total. See table below for total POM emissions.

Combustion Source	Throughput (MMscf/hr) ¹	Emission Rates																	
		Benzene		Formaldehyde		Hexane		Naphthalene		Toluene		Arsenic		Beryllium		Cadmium		Chromium	
		lb/hr	tpy																
Vaporizer #1	4.90E-03	2.02E-05	1.79E-05	3.68E-04	6.38E-04	8.82E-03	1.53E-02	2.95E-06	5.19E-06	1.67E-05	2.89E-05	8.82E-07	1.70E-06	5.88E-08	1.02E-07	5.29E-06	9.35E-06	6.66E-08	1.19E-05
Vaporizer #2	4.90E-03	2.02E-05	1.79E-05	3.68E-04	6.38E-04	8.82E-03	1.53E-02	2.95E-06	5.19E-06	1.67E-05	2.89E-05	8.82E-07	1.70E-06	5.88E-08	1.02E-07	5.29E-06	9.35E-06	6.66E-08	1.19E-05
Total	2.96E-05	3.57E-05	7.35E-04	1.28E-03	1.76E-02	3.06E-02	5.98E-06	1.04E-05	3.32E-05	5.78E-05	1.96E-06	3.40E-06	1.18E-07	2.04E-07	1.06E-05	1.87E-05	1.77E-07	1.37E-05	2.38E-05

- PAHs include all of the following pollutants: 2-Methylanthracene, 3-Methylanthracene, 4-Methylanthracene, Acenaphthene, Acenaphthylene, Anthracene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Benz[a]a]pyrene, Fluorene, Indeno[1,2,3-cd]perylene, Phenanthrene and Pyrene. Note that naphthalene was not included as it is included for on its own.

Natural Gas TAPS

CAS No.	Pollutant ¹	SWS/SSE	EF (lb/MMscf)	Vaporizer #1	Vaporizer #2	Vaporizer #1	Vaporizer #2	Total
				1-hr Max (lb/hr)	1-hr Max (lb/hr)	Ann/24-hr Avg	Ann/24-hr Avg	
56-29-5	3-Methylcholanthrene	586	1.80E-06	8.82E-09	8.82E-09	3.40E-09	3.49E-09	6.99E-09
71-43-7	Benzene	586	2.10E-03	1.03E-05	1.03E-05	4.08E-06	4.08E-06	8.15E-06
50-33-8	Benzobicyclopentadiene	585	1.20E-06	5.88E-09	5.88E-09	2.33E-09	2.33E-09	4.66E-09
50-00-0	Formaldehyde	586	7.60E-02	3.68E-04	3.68E-04	1.46E-04	1.46E-04	2.91E-04
110-54-3	Hexane	585	1.80E-03	8.82E-03	8.82E-03	4.41E-03	4.41E-03	8.82E-03
91-20-3	Naphthalene	585	8.10E-04	2.99E-06	2.99E-06	1.50E-06	1.50E-06	2.99E-06
109-66-0	Naphthalene	586	6.10E-04	2.99E-06	2.99E-06	1.18E-06	1.18E-06	2.37E-06
109-66-0	Phenanthrene	585	2.90E-05	1.27E-02	1.27E-02	6.37E-03	6.37E-03	1.27E-02
109-66-3	Toluene	585	3.40E-03	1.67E-05	1.67E-05	6.33E-06	6.33E-06	1.67E-05
7440-38-2	PAH (7-PAH) ²	586	N/A	5.99E-08	5.99E-08	2.21E-08	2.21E-08	4.42E-08
7440-50-3	Arsenic	586	2.00E-04	9.80E-07	9.80E-07	3.89E-07	3.89E-07	7.76E-07
7440-41-7	Beryllium	585	4.40E-03	2.18E-05	2.18E-05	1.08E-05	1.08E-05	2.18E-05
7440-43-9	Cadmium	586	1.20E-05	5.88E-08	5.88E-08	2.33E-08	2.33E-08	4.66E-08
7440-47-3	Chromium	585	1.10E-03	5.39E-06	5.39E-06	2.13E-06	2.13E-06	4.27E-06
7440-47-3	Chromium VI ³	585	1.40E-03	6.86E-06	6.86E-06	3.43E-06	3.43E-06	6.86E-06
7440-47-3	Chromium VI ³	586	N/A	2.00E-07	2.00E-07	8.15E-07	8.15E-07	1.63E-06
7440-48-4	Cobalt	585	8.40E-05	4.12E-07	4.12E-07	2.06E-07	2.06E-07	4.12E-07
7440-50-8	Copper	585	9.80E-04	4.17E-06	4.17E-06	2.08E-06	2.08E-06	4.17E-06
7439-96-4	Manganese	585	3.80E-04	1.86E-06	1.86E-06	9.31E-07	9.31E-07	1.86E-06
7439-96-7	Molybdenum	586	1.10E-03	5.39E-06	5.39E-06	2.13E-06	2.13E-06	4.27E-06
7440-00-0	Nickel	586	2.13E-02	1.03E-05	1.03E-05	4.08E-06	4.08E-06	8.15E-06
7440-45-2	Selenium	585	2.40E-05	1.18E-07	1.18E-07	5.88E-08	5.88E-08	1.18E-07
7440-52-2	Vanadium	585	2.30E-03	1.13E-05	1.13E-05	5.64E-06	5.64E-06	1.13E-05
7440-56-4	Zinc	585	2.90E-02	1.42E-04	1.42E-04	7.11E-05	7.11E-05	1.42E-04

- Polycyclic Organic Matter (POM) is considered an aggregated list of the following pollutants: benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]h]anthracene, chrysene, indeno[1,2,3-cd]perylene and benzo[e]pyrene.
- Note: (a) mercury is no longer regulated under the TAP rules.
- Chromium VI is expected to be 30% of total chromium.

POM(7-PAH)	EF (lb/MMscf)	1-hr Max (lb/hr)	Ton/yr
Benzo(a)	1.80E-06	1.78E-08	3.05E-08
3-Methyl	1.80E-06	1.78E-08	3.05E-08
Benzo(b)	1.80E-06	1.78E-08	3.05E-08
7,12-Dimethyl	1.80E-06	1.78E-08	3.05E-08
Benzo(k)	1.80E-06	1.78E-08	3.05E-08
Dibenz(a,h)	1.20E-06	1.18E-08	2.04E-08
Chrysene	1.80E-06	1.78E-08	3.05E-08
Indeno	1.80E-06	1.78E-08	3.05E-08
Benzo(a)pyrene	1.20E-06	1.18E-08	2.04E-08
Total	1.12E-07	1.94E-07	

Total PAH	EF (lb/MMscf)	1-hr Max (lb/hr)	Ton/yr
2-Methyl	2.40E-05	2.35E-07	4.08E-07
3-Methyl	1.80E-06	1.78E-08	3.05E-08
7,12-Dimethyl	1.80E-06	1.78E-08	3.05E-08
Acenaphthene	1.80E-06	1.78E-08	3.05E-08
Acenaphthylene	1.80E-06	1.78E-08	3.05E-08
Anthracene	2.40E-05	2.35E-07	4.08E-07
Benzo(a)	1.80E-06	1.78E-08	3.05E-08
Benzo(a)pyrene	1.20E-06	1.18E-08	2.04E-08
Benzo(b)	1.80E-06	1.78E-08	3.05E-08
Benzo(k)	1.80E-06	1.78E-08	3.05E-08
Benzo(h)	1.20E-06	1.18E-08	2.04E-08
Benzo(i)	1.80E-06	1.78E-08	3.05E-08
Chrysene	1.80E-06	1.78E-08	3.05E-08
Dibenz(a,h)	1.20E-06	1.18E-08	2.04E-08
Dibenz(a,j)	1.20E-06	1.18E-08	2.04E-08
Fluorene	3.00E-06	2.94E-08	5.10E-08
Fluorene	2.80E-06	2.75E-08	4.76E-08
Indeno	1.80E-06	1.78E-08	3.05E-08
Naphthalene	6.10E-04	5.98E-06	1.04E-05
Phenanthrene	1.70E-05	1.67E-07	2.89E-07
Pyrene	5.00E-06	4.90E-08	8.50E-08
Total	1.86E-05	3.23E-05	

Grain Loading Standard Verification	
Unit	Combined Vaporizers
Fuel	Natural Gas
Rated Heat Input (MM Btu/hr)	10.00
PM Emission Rate (lb/hr) ¹	0.07
Exit/Flue Gas Flowrate Calculation	
F _d (Table 19-2, EPA Method 19) (dscf/MM Btu) ^{2,3}	8,710
Exit flowrate @ 0% O ₂ : (dscfm)	1,452
Exit flowrate @ 3% O ₂ : (dscfm) ⁴	1,695
Calculated Grain Loading (gr/dscf @ 3% O ₂) ⁵	0.005
PM Loading Standard (IDAPA 58.01.01.677) (gr/dscf @ 3% O ₂)	0.015
Compliance w/ PM Loading Standard	Yes

¹ The emission rate is calculated based on 15 MMBtu/hr / 1.020 MMscf/MMBtu * 7.6 lb/MMscf

² Appendix A-7 to 40 CFR part 60, Method 19—Determination of sulfur dioxide removal

³ F_d, Volumes of combustion components per unit of heat content (scf/million Btu). F_d for natural gas and biogas is 8,710 dscf/10⁶ Btu

⁴ (Flow_{3%}) = (Flow_{0%}) x (20.9/(20.9 - 3)), where 20.9 = Oxygen concentration in ambient air

⁵ (Flow (dscfm) x (7,000 gr/lb) x (PM lb/hr) x (60 min/ hr) = gr/dscf

APPENDIX B – FACILITY DRAFT COMMENTS

The following comments were received from the facility on July 12, 2018:

Facility Comment: Condition 1.2 – Table 1.1 – Add PM_{2.5} control to the Donaldson Torit description

DEQ Response: PM_{2.5} control does apply to the Donaldson Torit Baghouse System but was mistakenly not included in equipment description. Requested change has been made in final permit

Facility Comment: Condition 1.2 – Table 1.1 – The Block Machine description should state “existing” rather than “exiting”. The Rock Crusher description should state Cedarapids” rather than “Cederapids”.

DEQ Response: Requested change has been made in final permit.

Facility Comment: Condition 1.2 – Table 1.1 – The primary curing oven is the new Kraft Vapor Generator unit (model # 50-2S); one of the Kemco units were replaced. The construction date is 2018. This change will need to be made in the SOB as well.

DEQ Response: Requested change has been made in final permit and associated statement of basis.

Facility Comment: Condition 2.1 - Suggest changing “concrete based” to “concrete-based”

DEQ Response: Requested change has been made in final permit.

Facility Comment: Condition 2.2 – Table 2.1 – Suggest changing “three sided” to “three-sided”

DEQ Response: Requested change has been made in final permit.

Facility Comment: Condition 2.2 – Table 2.1 – The exhaust system of the curing ovens has changed. There used to be 2 stacks per oven, but now there is only 1 stack per oven.

DEQ Response: Description of the exhaust system has been updated.

Facility Comment: Condition 2.9 – The combined use value of gravel, red cinder etc. appears not to include the 10,000 tons of Utelite in the calculation. It should be 38,300 tpy rather than 28,300 tpy as currently stated. Also, we are proposing to incorporate both the white pumice and reclaim aggregate into that total. This is valid because the emission factor applied is consistent for all materials except for sand. If you do not agree, we request that the white pumice and reclaim be added into its own total at a minimum. This is valid because each of the two materials are routed through the crusher and any emissions are controlled through the baghouse with the same emission factor. If all are combined the limit should be 68,196 tpy or 29,896 if the white pumice/reclaim is combined alone.

DEQ Response: Facility is correct in the fact Utelite was addressed in emission inventory analysis but mistakenly not included in calculating permitted limits. Final permit has changed Gravel, Red Cinder, Black Cinder, Gold Pumice and Utelite permitted throughput limit from 28,300 tons per year to 38,300 tons per year. However, permitted grouping of materials will not be changed in final permit. Materials have been grouped when process and emission factors are the same, as is the case for Gravel, Red Cinder, Black Cinder, Gold Pumice and Utelite. However emission factors and/or the processing of Sand, White Pumice and Reclaim Aggregate make the emission impact of each material unique from all other materials or groups of materials. Thus to preserve the approved emissions scenario and inventory presented as part of this permit modification project the current limits are required. This fact was discussed and agreed upon by the facility’s hired engineering consultant Eric Clark via phone call on July 16th, 2018.

APPENDIX C – PROCESSING FEE

PTC Fee Calculation

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: Basalite Concrete Products
Address: 1300 Franklin Road
City: Meridian
State: Idaho
Zip Code: 83712
Facility Contact: Jeff Murphy
Title: Plant Manager
AIRS No.: 001-00292

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.8	0	0.8
SO ₂	0.02	0	0.02
CO	0.67	0	0.67
PM10	0.02	0	0.02
VOC	0.04	0	0.04
TAPS/HAPS	1.51E-02	0	1.51E-02
Total:	1.55	0	1.55
Fee Due	\$2,500.00		

Comments:

The PTC processing fees are determined in accordance with IDAPA 58.01.01.225. The emissions are between one (1) to less than ten (10) T/yr. Therefore, fees are \$2,500.00.