

**Statement of Basis  
Concrete Batch Plant General Permit**

**Permit to Construct No. P-2017.0036  
Project ID 61906**

**Dahle's Red-E-Mix, Inc.  
Salmon, Idaho**

**Facility ID 059-00004**

**Final**

**September 26, 2017**  
**Rakael Pope**  
**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
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hr/yr	hours per consecutive 12 calendar month period
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O <sub>2</sub>	oxygen
PC	permit condition
PCB	polychlorinated biphenyl
PM	particulate matter
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit

PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd <sup>3</sup>	cubic yards
µg/m <sup>3</sup>	micrograms per cubic meter

## **FACILITY INFORMATION**

### ***Description***

Dahle's Red-E-Mix, Inc. has proposed a stationary truck mix concrete batch plant consisting of aggregate stockpiles, a cement storage silo, a cement supplement (fly ash) storage silo, a weigh batcher, and conveyors. The facility combines aggregate, sand, fly ash, and cement and then transfers the mixture into a truck mixer, along with water, for in-transit mixing of the concrete. In addition, water heater(s) are used to heat the water in cold weather prior to use for the mixing of concrete.

The concrete batch plant will be fed a mixture of aggregates from imported aggregate.

The process begins with materials being fed via front end loader to a compartment bin feeder system and then dispensed in metered proportions to a collecting conveyor. The material will pass over a scalping screen before being conveyed into the truck mixer.

Particulate emissions will be controlled by maintaining the moisture content at 1.5% by weight for all ¼ in and smaller aggregate feed materials via water sprays.

The Applicant has proposed concrete production rate throughput limits of 50 cubic yards per hour, 500 cubic yards per day, and 14,500 cubic yards per year.

The Applicant has proposed that line power will be used exclusively at the facility. Therefore, no IC engines powering electrical generators were included in the application.

### ***Permitting History***

This is the initial PTC for an existing facility that was constructed in 1957 and there is no permitting history.

### ***Application Scope***

This is the initial PTC for an existing concrete batch plant that was constructed in 1957.

### ***Application Chronology***

June 6, 2017	DEQ received an application and an application and processing fee.
June 15 – June 30, 2017	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
June 23, 2017	DEQ received a request for a public comment period.
June 19, 2017	DEQ received supplemental information from the applicant.
June 23, 2017	DEQ determined that the application was complete.
August 10 – September 11, 2017	DEQ provided a public comment period on the proposed action.
September 26, 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

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Materials Handling	<u>Material Transfer Points:</u> Materials handling Concrete aggregate transfers Truck unloading of aggregate Aggregate conveyor transfers Aggregate handling	Maintaining the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or other emissions controls	N/A
Concrete Mixer	<u>Concrete Batch Plant – Truck Mix:</u> Manufacturer: Spomac/Fabtech Model: BOS6749 Manufacture Date: 1967 Max. production: 50 yd <sup>3</sup> /hr, 500 yd <sup>3</sup> /day, and 50,000 yd <sup>3</sup> /yr  <u>Cement Storage Silo:</u> Baghouse Manufacturer <sup>a</sup> : Con-E-Co Model: PJC-600  <u>Fly Ash Storage Silo:</u> Bin Vent Filter Manufacturer <sup>a</sup> : Fastway Model: 0206274-4	<u>Weigh Batch Filter:</u> Manufacturer: Spomac Model: BOS6749 PM <sub>10</sub> /PM <sub>2.5</sub> control efficiency: 99%  <u>Cement Storage Silo Bin Vent Baghouse:</u> Manufacturer: Con-E-Co Model: PJC-600 PM <sub>10</sub> /PM <sub>2.5</sub> control efficiency: 99%  <u>Fly Ash Storage Silo Bin Vent Filter:</u> Manufacturer: Fastway Model: BOS6749 PM <sub>10</sub> /PM <sub>2.5</sub> control efficiency: 99%  <u>Truck Load-out:</u> Control: Shroud with Baghouse PM <sub>10</sub> /PM <sub>2.5</sub> control efficiency: 99%  <u>Material Transfer Points:</u> Control: Water sprays PM <sub>10</sub> /PM <sub>2.5</sub> control efficiency: 75%	<u>Weigh Batch Filtered Exhaust:</u> Exit height: 20 ft (6.096 m) Exit diameter: 0.67 ft (0.23 m) Exit flow rate: Gravity fill displacement Exit temperature: Ambient  <u>Cement Storage Silo Bin Vent Baghouse Exhaust:</u> Exit height: 45 ft (13.72 m) Exit diameter: 1.17 ft (0.36 m) Exit flow rate: 3040 acfm Exit temperature: Ambient  <u>Fly Ash Storage Silo Bin Vent Filter Exhaust:</u> Exit height: 35 ft (10.67 m) Exit diameter: 8 ft (2.44 m) Exit flow rate: 800 acfm Exit temperature: Ambient
Boiler	<u>Boiler:</u> Manufacturer: Etnyre Tank Model: Custom Heat input rating: 0.5 MMBtu/hr Fuel: Propane	N/A	<u>Boiler Exhaust:</u> Exit height: 5 ft (1.524 m) Exit diameter: 0.42 ft (.127 m) Exit flow rate: Ambient/no blower Exit temperature: 100 °F (37.8 °C)

- a. Both the storage silo baghouse and supplement storage silo flyash baghouse are considered process equipment and therefore there is no associated control efficiency. Controlled PM<sub>10</sub> emission factors were used when determining PTE and for modeling purposes.

## **Emissions Inventories**

### **Potential to Emit**

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

Using this definition of Potential to Emit an emission inventory was developed for the concrete batch plant operations at the facility associated with this proposed project using the DEQ developed CBP EI spreadsheet (see Appendix A). Emissions estimates of criteria pollutant PTE were based on the following assumptions:

- Maximum concrete throughput does not exceed 50 yd<sup>3</sup>/hour, 500 yd<sup>3</sup>/day, and 14,500 yd<sup>3</sup>/year (per the Applicant).
- Baghouse/cartridge filter control efficiencies were assumed to be 99.0%.
- Fugitive emissions of particulate matter (PM), PM<sub>10</sub>, and PM<sub>2.5</sub> from the concrete batch plant material transfer points were assumed to be controlled by manual water sprays, sprinklers, or spray bars, or an equivalent method that reduce PM emissions by an estimated 75%. The assumed 75% control efficiency is based on the Western Regional Air Partnership Fugitive Dust Handbook. According to the Handbook, water suppressant of material handling can range from 50-90% control. Assuming the average of 70% and including another 5% due to Best Management Practices required by the permit allow for 75% control to be a conservative estimate.
- Aggregate is washed before delivery to the concrete batch plant site, and water is used on-site to control the temperature of the aggregate. Particulate matter and PM<sub>10</sub> emissions from the weigh batcher transfer point are controlled by a baghouse and truck mix load-out emissions are controlled by a boot. Capture efficiency of the truck mix load-out boot and baghouse or equivalent was estimated at 99%.
- Controlled emissions of particulate toxic air pollutants (TAPs) were estimated based on the presence of bin vent filters/baghouse controlling emissions from the cement/cement supplement silos, a baghouse controlling emissions from the weigh batcher, and 99% control for truck load-out emissions. Hexavalent chromium content was estimated at 20% of total chromium for cement, and 30% of total chromium for the cement supplement/fly ash. The hexavalent chromium percentages were taken from a University of North Dakota study, by the Energy and Environmental Research Center, Center for Air Toxic Metals. Detailed emissions calculations can be found in Appendix A of this document.
- Determining emissions from a concrete batch plant also includes transfer emissions from the number of drop points throughout the process. The PM<sub>10</sub> emissions from truck-mix loading operations are defined by an equation which includes the wind speed at each drop point and the moisture content of cement and cement supplement and a number of exponents and constants defined by AP-42 Equation 11.12-1 (6/06). An average value of wind speed and moisture content are 7 mph, 4.17%, and 1.77%, respectively<sup>1</sup>. The following equation of particulate emissions is specific to PM<sub>10</sub>. The resulting emissions were used to determine a factor to help evaluate wind speed variations in AERMOD modeling.

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<sup>1</sup> 7 mph was the average wind speed obtained from an average of 19 Idaho airports throughout the state from 1996-2006. This data is from the Western Regional Climate Center (<http://www.wrcc.dri.edu/htmlfiles/westwind.final.html#IDAHO>). 4.17 % and 1.77% were the average percentages for sand and aggregate respectively. These values are based on EPA tests conducted at Cheney Enterprises. The percentages used in AP-42 are typical for most concrete batching operations.

$$E = k(0.0032) * \left[ \frac{U^a}{M^b} \right] + c$$

Where:

k = particle size multiplier

a = exponent

b = exponent

c = constant

U = mean wind speed

M = moisture content

- The second transfer emissions calculations were used to determine conveyor emissions. For both coarse and fine aggregate to a conveyor. It was assumed that 82%, which for this facility is 41 yd<sup>3</sup>/hr (0.82 x 50 yd<sup>3</sup>/hr), of the concrete produced was aggregate. This percentage was based on 1,865 lb coarse aggregate, 1,428 lb sand, 564 lb cement/supplement and 167 lb water for a total of 4,024 lb concrete as defined by AP-42 Table 11.12-5 (06/06). The fine and coarse aggregate contributions were separated into 36% and 46% of the total concrete production<sup>2</sup>. Employing emission factors from AP-42 Table 11.12-5 (6/06) for conveyor transfer and assuming 75% control efficiency as stated earlier for conveyor transfer PM<sub>10</sub> emissions were calculated for each transfer point. For both fine and coarse aggregate, the facility has 2 transfer points.
- Any emissions unit outside a 1,000 foot radius from the concrete batch plant was not included in the emissions modeling analysis for this project.

### **Uncontrolled Potential to Emit**

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

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

The following table presents the uncontrolled Potential to Emit for regulated air pollutants from all emissions units at the facility as determined by DEQ staff using the DEQ Concrete Batch Plant EI spreadsheet. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this operation uncontrolled Potential to Emit is calculated with 0% control efficiency for the Concrete Batch Plant itself.

**Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS**

Source	PM <sub>10</sub> /PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	CO <sub>2e</sub>
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
<b>Point Sources</b>						
Concrete batch plant	0.066	N/A	N/A	N/A	N/A	N/A
Water Heater	0.019	0.035	0.359	0.201	0.026	230
Materials handling	0.550	N/A	N/A	N/A	N/A	N/A
<b>Total, Point Sources</b>	<b>0.64</b>	<b>0.04</b>	<b>0.36</b>	<b>0.20</b>	<b>0.03</b>	<b>230</b>

<sup>2</sup> The percentages of coarse and fine aggregate are based on the AP-42 concrete composition. One cubic yard of concrete as defined by AP-42 is 4024 total pounds. Similarly, coarse aggregate is 1865 pounds or 46% of the total and sand (fine) aggregate is 1428 pounds or 36%.

The following table presents the uncontrolled Potential to Emit for HAP pollutants from all emissions units at the facility as determined by DEQ staff using the DEQ Concrete Batch Plant EI spreadsheet. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this operation uncontrolled Potential to Emit is calculated with 0% control efficiency for the Concrete Batch Plant itself.

**Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS**

IDAPA Listing	Hazardous Air Pollutants	PTE (T/yr)
585	Chromium metal (II and III)	0.0000184
	Manganese as Mn (fume)	0.0000461
	Phosphorous	0.0000520
	Selenium	0.0000226
586	Arsenic	0.0000158
	Beryllium and compounds	0.00000899
	Cadmium and compounds	0.0000126
	Chromium (VI)	0.0000474
	Nickel	0.0000278
<b>Total</b>		<b>0.000181</b>

**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. However, since this is the first time the facility is receiving a permit, pre-project emissions are set to zero for all criteria pollutants.

**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 using the DEQ Concrete Batch Plant EI spreadsheet. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

**Table 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS**

Source	PM <sub>10</sub> /PM <sub>2.5</sub>		SO <sub>2</sub>		NO <sub>x</sub>		CO		VOC		CO <sub>2</sub> e
	lb/hr <sup>(a)</sup>	T/yr <sup>(b)</sup>	lb/hr <sup>(a)</sup>	T/yr <sup>(b)</sup>	lb/hr <sup>(a)</sup>	T/yr <sup>(b)</sup>	lb/hr <sup>(a)</sup>	T/yr <sup>(b)</sup>	lb/hr <sup>(a)</sup>	T/yr <sup>(b)</sup>	T/yr <sup>(b)</sup>
Concrete batch plant	0.000	0.002	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Boiler	0.004	0.001	0.008	0.001	0.082	0.015	0.046	0.008	0.006	0.001	9
Materials handling	0.052	0.018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Post Project Totals</b>	<b>0.06</b>	<b>0.02</b>	<b>0.01</b>	<b>0.00</b>	<b>0.08</b>	<b>0.02</b>	<b>0.05</b>	<b>0.01</b>	<b>0.01</b>	<b>0.00</b>	<b>9</b>

- 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 5 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS**

Source	PM <sub>10</sub> /PM <sub>2.5</sub>		SO <sub>2</sub>		NO <sub>x</sub>		CO		VOC		CO <sub>2e</sub>
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Pre-Project Potential to Emit <sup>a</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Potential to Emit	0.06	0.02	0.01	0.00	0.08	0.02	0.05	0.01	0.01	0.00	9.00
<b>Changes in Potential to Emit</b>	<b>0.06</b>	<b>0.02</b>	<b>0.01</b>	<b>0.00</b>	<b>0.08</b>	<b>0.02</b>	<b>0.05</b>	<b>0.01</b>	<b>0.01</b>	<b>0.00</b>	<b>9</b>

a) Pre-Project PTE emissions for existing facility initial permit.

**Non-Carcinogenic TAP Emissions**

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

**Table 6 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)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	0.0	0.00E-00	0.00E-00	0.017	No
Barium	0.0	0.00E-00	0.00E-00	2	No
Chromium metal (II and III)	0.0	7.06E-06	7.06E-06	0.033	No
Cobalt metal dust, and fume	0.0	0.00E-00	0.00E-00	0.0033	No
Copper (fume)	0.0	0.00E-00	0.00E-00	0.013	No
Ethyl benzene	0.0	0.00E-00	0.00E-00	29	No
Hexane	0.0	0.00E-00	0.00E-00	12	No
Manganese as Mn (fume)	0.0	5.50E-06	5.50E-06	0.067	No
Mercury (alkyl compounds as Hg)	0.0	0.00E-00	0.00E-00	0.001	No
Methyl chloroform	0.0	0.00E-00	0.00E-00	127	No
Methyl ethyl ketone (MEK)	0.0	0.00E-00	0.00E-00	39.3	No
Molybdenum (soluble)	0.0	0.00E-00	0.00E-00	0.333	No
Naphthalene (24-hour)	0.0	0.00E-00	0.00E-00	3.33	No
Pentane	0.0	0.00E-00	0.00E-00	118	No
Phosphorous	0.0	2.04E-05	2.04E-05	0.007	No
Propionaldehyde	0.0	0.00E-00	0.00E-00	0.0287	No
Quinone	0.0	0.00E-00	0.00E-00	0.027	No
Selenium	0.0	2.09E-07	2.09E-07	0.013	No
Toluene	0.0	0.00E-00	0.00E-00	25	No
Vanadium as V <sub>2</sub> O <sub>5</sub> , (respirable dust and fume)	0.0	0.00E-00	0.00E-00	0.003	No
Xylene	0.0	0.00E-00	0.00E-00	29	No
Zinc metal	0.0	0.00E-00	0.00E-00	0.667	No

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.

**Carcinogenic TAP Emissions**

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

**Table 7 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)	Exceeds Screening Level? (Y/N)
Acetaldehyde	0.00E-03	0.00E-00	0.00E-00	3.0E-03	No
Arsenic	0.00E-03	1.19E-07	1.19E-07	1.5E-06	No
Benzene	0.00E-03	0.00E-03	0.00E-03	8.0E-04	No
Benzo(a)pyrene	0.00E-03	0.00E-03	0.00E-03	2.0E-06	No
Beryllium and compounds	0.00E-03	6.80E-09	6.80E-09	2.8E-05	No
1,3-Butadiene	0.00E-03	0.00E-03	0.00E-03	2.4E-05	No
Cadmium and compounds	0.00E-03	9.53E-08	9.53E-08	3.7E-06	No
Chromium (VI)	0.00E-03	3.58E-08	3.58E-08	5.6E-07	No
Formaldehyde	0.00E-03	0.00E-03	0.00E-03	5.1E-04	No
3-Methylcholanthrene	0.00E-03	0.00E-03	0.00E-03	2.5E-06	No
Nickel	0.00E-03	2.10E-07	2.10E-07	2.7E-05	No
PAHs Total	0.00E-03	0.00E-03	0.00E-03	2.0E-06	No
POM Total	0.00E-03	0.00E-03	0.00E-03	2.0E-06	No
<b>Non-Listed (in 586) PAHs*</b>					
2-Methylnaphthalene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Acenaphthene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Acenaphthylene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Anthracene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Benzo(g,h,i)perylene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Dichlorobenzene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Fluoranthene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Fluorene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Naphthalene (Annual)	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Phenanthrene	0.00E-03	0.00E-03	0.00E-03	9.10E-05	No
Pyrene	0.00E-03	0.00E-03	0.00E-03	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.

None of the PTEs for carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any carcinogenic TAP because none of the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 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 8 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY**

IDAPA Listing	Hazardous Air Pollutants	PTE (T/yr)
585	Acrolein	0.0
	Chromium metal (II and III)	6.08E-07
	Cobalt metal dust, and fume	0.0
	Ethyl benzene	0.0
	Hexane	0.0
	Manganese as Mn (fume)	1.53E-06
	Mercury (alkyl compounds as Hg)	0.0
	Methyl chloroform	0.0
	Naphthalene	0.0
	Phosphorous	1.72E-06
	Propionaldehyde	0.0
	Quinone	0.0
	Selenium	7.27E-08
	Toluene	0.0
Xylene	0.0	
586	Acetaldehyde	0.0
	Arsenic	5.22E-07
	Benzene	0.0
	Benzo(a)pyrene	0.0
	Beryllium and compounds	2.98E-08
	1,3-Butadiene	0.0
	Cadmium and compounds	4.17E-07
	Chromium (VI)	1.57E-07
	Formaldehyde	0.0
	3-Methylcholanthrene	0.0
Nickel	9.21E-07	
Not listed	Acenaphthene	0.0
	Acenaphthylene	0.0
	Anthracene	0.0
	Benzo(b)fluoranthene	0.0
	Benzo(k)fluoranthene	0.0
	Benzo(e)pyrene	0.0
	Benzo(g,h,i)perylene	0.0
	Chrysene	0.0
	Dibenzo(a,h)anthracene	0.0
Isooctane	0.0	
<b>Total</b>		<b>5.98E-06</b>

The estimated PTE for all federally listed HAPs combined is below 25 T/yr and no PTE for a federally listed HAP exceeds 10 T/yr. Therefore, this facility is not a Major Source for HAPs.

**Ambient Air Quality Impact Analyses**

The estimated emission rates of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, VOC, HAP, and TAPs from this project were below 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<sup>3</sup>. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

As a result of the information submitted by the Applicant for specific operating scenarios, the following conditions (along with corresponding monitoring and record keeping requirements) were placed in the permit:

- The Emissions Limits Permit condition 3.3
- The Concrete Production Limits Permit Condition 3.5

<sup>3</sup> Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

## REGULATORY ANALYSIS

### Attainment Designation (40 CFR 81.313)

The facility is located in Lemhi County, which is designated as attainment or unclassifiable for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

### Facility Classification

The AIRS/AFS facility classification codes are as follows:

For THAPs (Total Hazardous Air Pollutants) Only:

- A = Use when any one HAP has actual or potential emissions  $\geq 10$  T/yr or if the aggregate of all HAPS (Total HAPs) has actual or potential emissions  $\geq 25$  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  $\geq 8$  T/yr of a single HAP or  $\geq 20$  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  $\geq 100$  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  $\geq 80$  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 9 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION**

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	0.64	0.02	100	B
PM <sub>10</sub> /PM <sub>2.5</sub>	0.64	0.02	100	B
SO <sub>2</sub>	0.04	0.00	100	B
NO <sub>x</sub>	0.36	0.02	100	B
CO	0.20	0.01	100	B
VOC	0.03	0.00	100	B
HAP (single)	0.000052	1.72E-06	10	B
HAP (Total)	0.000181	5.98E-06	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 for this existing facility. Since the facility commissioned before January 30, 1969, it was previously a grandfathered emissions source. However, based on information from the applicant, several equipment changes have been implemented since January 30, 1969, therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

### **Tier II Operating Permit (IDAPA 58.01.01.401)**

IDAPA 58.01.01.401

Tier II Operating Permit

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

### **Visible Emissions (IDAPA 58.01.01.625)**

IDAPA 58.01.01.624

Visible Emissions

The sources of PM<sub>10</sub> emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Condition 3.4.

### **Fugitive Emissions (IDAPA 58.01.01.650)**

IDAPA 58.01.01.650

Rules for the Control of Fugitive Emissions

The sources of fugitive emissions at this facility are subject to the State of Idaho fugitive emissions standards. These requirements are assured by Permit Conditions 2.1, 2.2, and 2.4.

### **PSD Classification (40 CFR 52.21)**

40 CFR 52.21

Prevention of Significant Deterioration of Air Quality

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

### **NSPS Applicability (40 CFR 60)**

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

### **NESHAP Applicability (40 CFR 61)**

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

### **MACT Applicability (40 CFR 63)**

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

### **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 condition 1.1 establishes the permit to construct scope.

Permit condition, Table 1.1, provides a description of the purpose of the permit and the regulated sources, the process, and the control devices used at the facility.

### ***FACILITY-WIDE CONDITIONS***

As discussed previously, permit condition 2.1 establishes that the permittee shall take all reasonable precautions to prevent fugitive particulate matter (PM) from becoming airborne and provides examples of the controls in accordance with IDAPA 58.01.01.650-651.

As discussed previously, permit condition 2.2 establishes that the concrete batch plant shall employ efficient fugitive dust controls and provides examples of the controls in accordance with IDAPA 58.01.01.808.01 and 808.02.

As discussed previously, permit condition 2.3 establishes that there are to be no emissions of odorous gases, liquids, or solids from the permit equipment into the atmosphere in such quantities that cause air pollution.

As discussed previously, permit condition 2.4 establishes that the permittee shall monitor fugitive dust emissions on a daily basis to demonstrate compliance with the facility-wide permit requirements.

As discussed previously, permit condition 2.5 establishes that the permittee monitor and record odor complaints to demonstrate compliance with the facility-wide permit requirements.

Permit Condition 2.6 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

### ***CONCRETE BATCH PLANT EQUIPMENT***

Permit condition 3.1 provides a process description of the concrete production process at this facility.

Permit condition 3.2 provides a description of the control devices used on the concrete production equipment at this facility.

Permit condition 3.3 establishes hourly and annual emissions limits for PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC emissions from the concrete production operation at this facility.

As discussed previously, Permit Condition 3.4 establishes a 20% opacity limit for the concrete batch plant baghouse and the boiler stacks or functionally equivalent openings associated with the concrete production operation.

Permit Condition 3.5 establishes a daily and an annual concrete production limit for the concrete production operation as proposed by the Applicant.

Permit condition 3.6 requires that the permittee employ a boot or shroud to control emissions from the truck loadout operation as proposed by the Applicant.

Permit condition 3.7 requires that the permittee employ a baghouse to control emissions from the truck loadout operation as proposed by the Applicant.

Permit condition 3.8 requires that the permittee employ industry specific water sprays on material transfer points to control fugitive emissions as proposed by the Applicant.

Permit condition 3.9 establishes that the Permittee monitor and record hourly and daily concrete production to demonstrate compliance with the Concrete Production Limits permit condition.

Permit condition 3.10 establishes that the Permittee shall establish procedures for operating the weigh batcher and truck baghouse. This is a DEQ imposed standard requirement for operations using baghouses to control particulate emissions.

Permit Condition 3.11 establishes that the permittee shall maintain records as required by the Recordkeeping General Provision.

## **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 were no comments on the application and there was a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

### ***Public Comment Period***

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.01.c.

A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

## **APPENDIX A – EMISSIONS INVENTORIES**

**Final Concrete Batch Plant Emissions Inventory**

Listed Below are the emissions estimates for the units selected.

<b>Company:</b>	Dahle's Red-E-Mix
<b>Facility ID:</b>	059-00004
<b>Permit No.:</b>	P-2017.0036 Project 61906
<b>Source Type:</b>	Stationary Concrete Batch Plant
<b>Manufacturer/Model:</b>	Spoma/Fabtech

**Production**

Maximum Hourly Production Rate:	50 cy/hr
Proposed Daily Production Rate:	500 cy/day
Proposed Maximum Annual Production Rate:	14,500 cy/year

		Tons/year								
Emissions Units		PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Lead	THAPs	CO <sub>2</sub> e
CBP Type:	Truck Mix	0.001	0.002	NA	NA	NA	NA	NA		N/A
Water Heater #1:	0.5 MMBtu/hr Propane Heater	0.001	0.001	1.45E-03	0.015	0.008	0.001	0.00E+00		9
	Transfer/Drop Points	0.006	0.018	NA	NA	NA	NA	NA		N/A
	<b>Annual Totals (T/yr)</b>	<b>0.007</b>	<b>0.021</b>	<b>1.45E-03</b>	<b>0.015</b>	<b>0.008</b>	<b>0.001</b>	<b>0.00E+00</b>	<b>5.98E-06</b>	<b>9</b>

  

		Pounds/hour							
Emissions Units		PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Lead	THAPs
CBP Type:	Truck Mix	0.000	0.000	NA	NA	NA	NA	1.53E-06	
Water Heater #1:	0.5 MMBtu/hr Propane Heater	0.004	0.004	8.08E-03	0.082	0.046	0.006	0.00E+00	
	Transfer/Drop Points	0.016	0.052	NA	NA	NA	NA	NA	
	<b>Daily Totals (lb/hr)</b>	<b>0.021</b>	<b>0.057</b>	<b>8.08E-03</b>	<b>0.082</b>	<b>0.046</b>	<b>0.006</b>	<b>1.53E-06</b>	<b>3.36E-05</b>

\* The Large engine may run: **There is no large engine.** hr/yr  
 \* The Small engine(s) may run: **There is no small engine.** hr/yr

**HAPS & TAPS Emissions Inventory**

Metals	HAP	TAP	lb/hr	T/yr	Averaging Period	EL lb/hr	Exceeded?
Arsenic	X	X	1.19E-07	5.22E-07	Annual	1.50E-06	No
Barium		X	0.00E+00	0.00E+00	24-hour	3.30E-02	No
Beryllium	X	X	6.80E-09	2.98E-08	Annual	2.80E-05	No
Cadmium	X	X	9.53E-08	4.17E-07	Annual	3.70E-06	No
Cobalt	X	X	0.00E+00	0.00E+00	24-hour	3.30E-03	No
Copper		X	0.00E+00	0.00E+00	24-hour	1.30E-02	No
Chromium	X	X	7.06E-06	6.08E-07	24-hour	3.30E-02	No
Manganese	X	X	5.50E-06	1.53E-06	24-hour	3.33E-01	No
Mercury	X	X	0.00E+00	0.00E+00	24-hour	N/A	No
Molybdenum (soluble)		X	0.00E+00	0.00E+00	24-hour	3.33E-01	No
Nickel	X	X	2.10E-07	9.21E-07	Annual	2.70E-05	No
Phosphorus	X	X	2.04E-05	1.72E-06	24-hour	7.00E-03	No
Selenium	X	X	2.09E-07	7.27E-08	24-hour	1.30E-02	No
Vanadium		X	0.00E+00	0.00E+00	24-hour	3.00E-03	No
Zinc		X	0.00E+00	0.00E+00	24-hour	6.67E-01	No
Chromium VI	X	X	3.58E-08	1.57E-07	Annual	5.60E-07	No
<b>Non PAH Organic Compounds</b>							
Pentane		X	0.00E+00	0.00E+00	24-hour	118	No
Methyl Ethyl Ketone		X	0.00E+00	0.00E+00	24-hour	39.3	No
<b>Non-PAH HAPs</b>							
Acetaldehyde	X	X	0.00E+00	0.00E+00	Annual	3.00E-03	No
Acrolein	X	X	0.00E+00	0.00E+00	24-hour	1.70E-02	No
Benzene	X	X	0.00E+00	0.00E+00	Annual	8.00E-04	No
1,3-Butadiene	X	X	0.00E+00	0.00E+00	Annual	2.40E-05	No
Ethyl Benzene	X	X	0.00E+00	0.00E+00	24-hour	29	No
Formaldehyde	X	X	0.00E+00	0.00E+00	Annual	5.10E-04	No
Hexane	X	X	0.00E+00	0.00E+00	24-hour	12	No
Isocotane	X		0.00E+00	0.00E+00	N/A	N/A	N/A
Methyl Chloroform	X	X	0.00E+00	0.00E+00	24-hour	127	No
Propionaldehyde	X	X	0.00E+00	0.00E+00	24-hour	2.87E-02	No
Quinone	X	X	0.00E+00	0.00E+00	24-hour	2.70E-02	No
Toluene	X	X	0.00E+00	0.00E+00	24-hour	25	No
o-Xylene	X	X	0.00E+00	0.00E+00	24-hour	29	No
<b>PAH HAPs</b>							
2-Methylnaphthalene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
3-Methylcholanthrene	X	X	0.00E+00	0.00E+00	Annual	2.50E-06	No
7,12-Dimethylbenz(a)anthracene	X		0.00E+00	0.00E+00	N/A	N/A	N/A
Acenaphthene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Acenaphthylene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Anthracene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Benzo(a)anthracene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Benzo(a)pyrene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Benzo(b)fluoranthene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Benzo(e)pyrene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Benzo(g,h,i)perylene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Benzo(k)fluoranthene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Chrysene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Dibenz(a,h)anthracene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Dichlorobenzene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Fluoranthene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Fluorene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Indeno(1,2,3-cd)pyrene	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Naphthalene (24-hour)	X	X	0.00E+00	0.00E+00	24-hour	3.33	No
Naphthalene (Annual)	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Perylene	X		0.00E+00	0.00E+00	N/A	N/A	N/A
Phenanthrene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
Pyrene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	No
PAH HAPs Total	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No
Polycyclic Organic Matter (POM)	X	X	0.00E+00	0.00E+00	Annual	2.00E-06	No

**APPENDIX B – FACILITY DRAFT COMMENTS**

**The facility did not request a facility draft copy.**

**APPENDIX C – PROCESSING FEE**

## PTC Processing Fee Calculation Worksheet

**Instructions:**

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

**Company:** Dahle's Red-E-Mix  
**Address:** 522 River Street  
**City:** Salmon  
**State:** Idaho  
**Zip Code:** 83467  
**Facility Contact:** Marc Dahle  
**Title:** President  
**AIRS No.:**

**Y** 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)

<b>Emissions Inventory</b>			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO <sub>x</sub>	0.0	0	0.0
SO <sub>2</sub>	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
<b>Total:</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>
<b>Fee Due</b>	<b>\$ 500.00</b>		

**Comments:** P-2017.0036, Project 61906