Statement of Basis

Concrete Batch Operations General Permit

Soda Springs Ready Mix
Soda Springs, Idaho
Facility ID No. 777-00539

Permit to Construct P-2014.0017
Project No. 61354

May 16, 2014
Morrie Lewis
Permit Writer

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

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations for non-carcinogens
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BMP	best management practices
Btu	British thermal units
Btu/lb	British thermal units per pound
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CBP	concrete batch plant
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
cy/day	cubic yard per day
cy/hr	cubic yard per hour
cy/yr	cubic yard per year
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EF	Emission Factor
EI	Emission Inventory
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
g/kW-hr	gram per kilowatt hour
gr	grain (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per year
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
kW	kilowatts
lb/cy	pound per cubic yard
lb/10^3 gal	pound per thousand gallons
lb/gal	pound per gallon
lb/hr	pounds per hour
lb/MMBtu	pound per million British thermal unit
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf/hr	million standard cubic feet per hour
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NSCR	Non-Selective Reduction Catalyst

NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PAH	polyaromatic hydrocarbons
PC	permit condition
PERF	Portable Equipment Relocation Form
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SCL	significant contribution limits
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_X	sulfur oxides
T/yr	tons per consecutive 12-calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TCEQ	Texas Commission on Environmental Quality
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Soda Springs Ready Mix is a portable truck mix concrete batch plant that may consist of the following: aggregate stockpiles, a cement storage silo, a cement supplement (flyash) storage silo, a weigh batcher, conveyors and an electric power supply. The facility combines aggregate, flyash and cement, and transfers the mixture into a truck along with a measured amount of water for in-transit mixing of the concrete. Electrical power will be supplied to the facility by the local power grid.

Application Scope and Permitting History

This permit is the initial PTC for a portable concrete batch plant (CBP).

Application Chronology

April 15, 2014	DEQ received a PTC application and combined application and processing fee.
April 28 – 30, 2014	DEQ made available the draft permit and statement of basis for peer and regional office review.
April 30, 2014	DEQ was informed by the applicant that a generator engine (rental) could be required for the first few months following startup until line power is installed and available at the proposed initial location (Soda Springs). It was also clarified that the proposed CBP equipment would be portable and could be relocated depending upon future business conditions.
May 1 – 16, 2014	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action. No request for a public comment period was received.
May 1, 2014	DEQ made available the draft permit and statement of basis for applicant review. The facility ID was changed to a portable number, and draft permit updated to include a generator engine operating scenario (99 bhp).
May 7, 2014	DEQ determined that the application was complete.
May 16, 2014	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Devices

Table 1 CONCRETE BATCH PLANT AND CONTROL DEVICE INFORMATION[a]

Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description
Concrete Batch Plant – Truck Mix Manufacturer: Johnson Model: (unknown) Maximum capacity: 50 cy/hr Maximum production: 500 cy/day and 150,000 cy/year	Cement Storage Silo Baghouse No. 1[b]: Manufacturer: Belgrade Steel Tank Co., Inc. Model: 225 sq. ft dust collector 18 bags 6' x 0.67' baghouse	Baghouse No. 1 stack Stack height: 67 feet Exit diameter: 3.67 feet Exit air flow rate: 650 acfm Exit Temperature: Ambient Control efficiency: 99%
	Weigh Batcher Baghouse: Manufacturer: Belgrade Steel Tank Co., Inc. Model: 16 sq. ft dust vent 4 bags 2' x 0.67' baghouse	Weigh Batcher Baghouse: Stack height: 33 feet Exit diameter: 1' x 3' x 2' Exit air flow rate: 40 acfm Exit Temperature: Ambient Control efficiency: 99%
	Load-out Shroud: Boot or shroud	Load-out Boot: Control efficiency: 95%
	Material Transfer Point Water Sprays or Equivalent Sprays and other suppressants Best Management Practices	Materials Transfer: Control Efficiency: 75%
Diesel Engine, or equivalent [(b)] Maximum Rating: 99 bhp Construction Date: 2007 EPA Certification: Tier 3 Sulfur content: 0.0015% (ultra-low sulfur diesel)	No control devices	Stack height: 6.5 feet Exit Velocity: 663 acfm

a. Note that this table is for informational purposes only.

b. "Or equivalent" is defined as equipment which has an equivalent or less brake horsepower than listed in this table, which does not result in an increase in emissions, and which does not result in the emission of a toxic air pollutant not previously emitted.

c. 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_{10} emission factors were used when determining PTE and for modeling purposes.

Emissions Inventories

The emissions inventory for this portable concrete batch plant was developed by DEQ and is based on AP-42 Section 11.12 emission factors for central-mix and truck-mix concrete batch plants and the following assumptions: 50 cy per hour concrete production capacity and concrete production limits of 500 cy per day and 150,000 cy per year. Baghouse/cartridge filter capture efficiencies were presumed to be 99.0% in DEQ's generic emissions estimation.

The emissions analysis developed by DEQ, at most, assumes one central-mix or truck-mix concrete batch plant, a 5.0 MMBtu/hr diesel-fired water heater and a 1,340 bhp diesel-fired internal combustion engine are used. The total emissions associated with the facility are equal to or less than the equipment mentioned above. All possible equipment may not be included in the facility specific emissions inventory. Only equipment identified within the application material will be included in the inventory. AP-42 Sections 3.3 and 3.4 (10/96) were used to determine both criteria and TAPs emissions from the diesel-fired engine(s). AP-42 Sections 1.3, 1.4 and 1.5 (9/98) were used to calculate emissions from the water heaters.

Fugitive emissions of particulate matter (PM), $PM_{2.5}$ and PM_{10} from batch plant material transfer points were assumed to be controlled by manual water sprays, sprinklers, or spray bars, or an equivalent method (e.g., enclosing the entire process inside a building) that reduce the 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 batch plant site, and water is used on-site to control the temperature of the aggregate. Particulate matter and PM_{10} emissions from the weigh batcher transfer point are controlled by a baghouse/cartridge, and truck/central mix load-out emissions are controlled by a boot. Capture efficiency of the truck mix load-out boot or equivalent was estimated at 95%.

Controlled emissions of particulate toxic air pollutants (TAPs) were estimated based on the presence of a baghouse on the cement/cement supplement silos, a baghouses/cartridge on the weigh batcher, and 95% 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.

Emissions Inventory for 1,340 bhp, Tier II Certified Engine(s)

Emissions are based on using diesel fuel in a Tier 3, 99 bhp engine. The maximum fuel use rate was calculated in gal/hr and was based on the maximum rating of the engine. The following equation was used to determine the fuel use rate from the fuel heating value and average brake-specific fuel consumption (BSFC). Note that the fuel heating value applied is based on AP-42 Sections 3.3 and 3.4 values of 19,300 Btu/lb and a density of 7.1 lb/gal. The maximum fuel use rate was converted into MMBtu/hr and multiplied by a given emission factor in lb/MMBtu to obtain and emission rate in lb/hr.

$$\max fuel = \frac{(rating * BSFC)}{(fuelheatingvalue)} = \frac{(99\text{ bhp} * 7{,}000 Btu/hp-hr)}{(137{,}030 Btu/gal)} = 5.06 gal/hr$$

The facility may use any engine of choice, but if the corresponding emissions exceed those of a Tier II, 1,340 bhp the operating hours are reduced. Emission factors are derived from one of three sources: 1) If the engine is uncertified, AP-42 factors from Sections 3.3 and 3.4 (10/96) were applied; 2) If the engine is certified as Tier 1-3 or Blue Sky engine, 40 CFR 89 factors were applied; 3) For the more recent Tier 4 engines, 40 CFR 1039 factors were applied.

Emissions Inventory for Transfer Points

Determining emissions from a concrete batch plant also includes transfer emissions from the number of drop points throughout the process. The PM_{10} 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 and 6%, respectively[1]. The following equation of particulate emissions is specific to PM_{10}. The resulting emissions were used to determine a factor to help evaluate wind speed variations in AERMOD modeling.

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

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% or 41 cy/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[2]. 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_{10} emissions were calculated for each transfer point. For both fine and coarse aggregate the facility has 3 transfer points.

---

[1] 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.

[2] 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%.

Table 2 FACILITY WIDE CRITERIA POLLUTANT EMISSION ESTIMATES

Emissions Unit	$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	CO_2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Concrete Batch Plant	0.059	0.32	--	--	--	--	4.74E-06	--
Small Diesel Fired Engine(s)	0.14	0.14	0.0023	1.68	1.78	0.55	--	249
Transfer Points	0.088	0.28	--	--	--	--	--	--
Total	**0.29**	**0.74**	**0.00**	**1.68**	**1.78**	**0.55**	**0.00**	**249.00**

A summary of the estimated controlled emissions of toxic air pollutants (TAP) is provided in the Emissions Inventory within Appendix A. The emission estimates are total summation values of each unit used at the facility which are outlined in the previous table.

Ambient Air Quality Impact Analyses

A circular grid with 5.0 meter receptor spacing, extending out to 100 meters was used in the non-site-specific modeling performed by DEQ. To establish a setback distance, the following procedure was followed for various production levels and operational configurations:

1. Trigger values for the modeling analyses were determined (see Appendix C for details). These are values, when combined with background concentrations, indicated an exceedance of a standard. They were calculated by subtracting the background value from the standard (because the model does not specifically include background in the results). The following are trigger values:

Table 3 AMBIENT AIR IMPACT ANALYSIS TRIGGER VALUES

Pollutants	Averaging Period	Trigger Value (μg/m³)
PM_{10}	24-hr	77
	Annual	24
SO_2	3-hr	1266
	24-hr	339
	Annual	72
CO	1-hr	36400
	8-hr	7700
NO_2	Annual	83

2. For each operational configuration scenario, pollutant, averaging period, and meteorological data set, all receptors with concentrations equal or greater than the trigger value were plotted. This effectively gave a plot of receptors where the standard could be exceeded for that pollutant and averaging period.

3. The controlling receptor for each pollutant, averaging period, and meteorological data set was identified. First, the receptor having a concentration in excess of the trigger value that was the furthest from any emissions source was identified. The controlling receptor was the next furthest downwind receptor from that point.

4. The minimum setback distance was then calculated. This was the furthest distance between an emissions point and the controlling receptor.

The applicant has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard so long as the setback distance and other permit conditions are complied with. The applicant has also demonstrated compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

Because a separate modeling analysis was not provided to demonstrate compliance with applicable standards in $PM_{2.5}$ and PM_{10} nonattainment areas, this portable facility is not permitted for operation in nonattainment areas.

Permit to Construct (IDAPA 58.01.01.201)

The proposed project does not meet the permit to construct exemption criteria in IDAPA 58.01.01.220–223.

A concrete batch plant with associated internal combustion engine and water heater are not categorically exempt and therefore do not meet the criteria of IDAPA 58.01.01.221 or 222. As a result, a permit to construct is required in accordance with IDAPA 58.01.01.201. 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)

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 are not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 8 – 9.

Rules For Control of Fugitive Dust (IDAPA 650-651)

All sources of fugitive dust emissions at the facility are subject to the State of Idaho rules for controlling fugitive dust. Reasonable precautions shall be taken to prevent particulate matter from becoming airborne. This requirement is assured by Permit Conditions 5 – 7.

Rules For Control of Odors (IDAPA 58.01.01.775-776)

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. This requirement is assured by Permit Conditions 10 – 11.

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

The facility is not classified as a major facility as defined in IDAPA 58.01.01.008.10. The facility is a synthetic minor facility, because without limits on the potential to emit, the emissions of regulated air pollutants the facility would exceed major source thresholds. Therefore, the requirements of IDAPA 58.01.01.300–399 are not applicable to this permitting action.

PSD Classification (40 CFR 52.21 and IDAPA 205)

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 subject to the requirements of 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

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

§ 60.4200 Am I subject to this Subpart?

(a) The provisions of this Subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this Subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(b) The provisions of this Subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this Subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this Subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this Subpart applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this Subpart as described in 40 CFR part 1068, Subpart C (or the exemptions described in 40 CFR part 89, Subpart J and 40 CFR part 94, Subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

The 99 bhp IC engine was constructed in 2007, which is after July 11, 2005. Therefore the engine is subject to this Subpart.

As the general permit was being developed there were discussions about the differences between 40 CFR 60, Subpart IIII and Non-road Diesel Engine requirements, 40 CFR 1068.30. According to CFR 1068.30, Non-road engine means that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

Also, according to 40 CFR 1068.30 (2)(iii), an internal combustion engine is not a non-road engine if it:

- Will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source.
- A location is any single site at a building, structure, facility, or installation.
- Any engine (or engines) that replace an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.

The conclusions were that the requirements for non-road engines and Subpart IIII were very similar with a few exceptions. Those exceptions being the installation of a non-resettable hour meter, the maintenance schedule and the use of colored fuel. But possibly, the biggest issue was the timeframe that stipulated whether or not a unit was stationary or non-road. If an engine stays in one place longer than 12 months it is considered a stationary source and would be subject to Subpart IIII. In order to avoid any potential non-compliance issues and to eliminate the possibility of failure by a non-road engine to comply with 40 CFR 1068.30, it was concluded to require Subpart IIII for all engines regardless of time at a given location. To eliminate permitting complexity, all applicants that choose the general permit have been required to comply with Subpart IIII.

§ 60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

The Permittee is not the manufacturer of the IC engine and the engine is not used for emergency purposes. Therefore, this requirement is not applicable.

§ 60.4203 How long must my engines meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of less than 10 liters per cylinder must comply with the emission standards in table 1 to this Subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

The Subpart requires that the Permittee comply with Table 1 of IIII if the engine is pre-2007 and has a displacement of less than 10 liters/cylinder. However, this permit requires that the Permittee comply with 40 CFR 89.112 or 40 CFR 139 where applicable. All of those standards are equal to or more stringent than Table 1 of this Subpart. Also, if the engine or engines are non-certified, per the Subpart they have to demonstrate compliance with Table 1 and the hours of operations are reduced. If the engines have a model year of 2007 or greater they too must meet and certify that their IC engine meets all non-road engine standards: 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable. These emission standard requirements are accounted for in the PTC.

§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

The Permittee is not using the IC engine for emergency purposes. Therefore, this requirement is not applicable.

§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

The Permittee must operate the IC engine for the life of the unit in accordance with manufacturer-approved methods. This is included in the PTC.

§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this Subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this Subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this Subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel.

The Permittee has stated that they will operate the applicable IC engine in accordance with 40 CFR 80.510(b). The fuel sulfur content cannot exceed 15 ppm or 0.0015% by weight. All emissions calculations assume that percentage throughout the PTC.

§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in the previous model year?

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.

The Permittee is installing a 2007 model engine that meets the applicable requirements for that model year.

§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

The Permittee is not installing an emergency IC engine. Thus, a non-resettable meter is not required and the engine does not have a diesel particulate filter. These requirements are not applicable to the unit, but the unit must comply with 60.4211.

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

The Permittee is not the manufacturer of the IC engine and therefore this requirement is not applicable.

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this Subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

The Permittee is subject to §60.4204(b), therefore the engine must be installed and configured according to the manufacturer's specifications.

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

A Performance test on the IC engine is not required at this time, and therefore this requirement is not applicable to the Permittee and the 99 bhp IC engine.

§ 60.4213 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder?

A Performance test on the IC engine is not required at this time, and the engine is less than 30 liters per cylinder. Therefore this requirement is not applicable to the Permittee and the 99 bhp IC engine.

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

The applicable IC engine does not meet the criteria set forth in the Subpart requiring notification unless it is uncertified, greater than 175 bhp and was reconstructed or modified on or after July 11, 2005. All engines are less than 3,000 HP and have a displacement less than 10 liters per cylinder.

All engines that are uncertified and constructed reconstructed or modified prior to July 11, 2005 are subject to 40 CFR 63, Subpart ZZZZ. Therefore section (a) of the requirement is not applicable. However, section (c) does apply only if the engine is equipped with a diesel particulate filter.

§ 60.4215 What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

The applicable IC engine is not being operated in Guam, American Somoa or the Northern Mariana Islands. Therefore this requirement is not applicable.

§ 60.4216 What requirements must I meet for engines used in Alaska?

The applicable IC engine is not being operated in Alaska. Therefore this requirement is not applicable.

§ 60.4217 What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

The applicable IC engine is not using any special fuels. Therefore this requirement is not applicable.

NESHAP Applicability (40 CFR 61)

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

MACT Applicability (40 CFR 63)

This Concrete Batch plant does not emit or have the potential to emit more than 10 tons or more per year of any HAP, or 25 tons or more per year of any combination of HAPs. Major source Maximum Achievable Control Technology (MACT) requirements therefore do not apply to this facility.

Area source MACT requirements that would apply to the IC engines include Subpart ZZZZ:

40 CFR 63, Subpart ZZZZ…………National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

§ 63.6585 Am I subject to this Subpart?

You are subject to this Subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(c) An area source of HAP emissions is a source that is not a major source.

All engines used with this general CBP plant are subject to 40 CFR 63, Subpart ZZZZ as they are all stationary engines operating at a HAP emissions area source. HAP emissions are defined under section 112(b) of the Clean Air Act. Diesel IC engines emit several of the pollutants listed in the section and are therefore consider HAP emissions sources.

However, a source may be exempt from Subpart ZZZZ if the engine(s) requires compliance with 40 CFR 60, Subpart IIII. Section 40 CFR 63.6590(c) states that an engine that is subject to Subpart IIII, is therefore in compliance with Subpart ZZZZ.

(c) Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that is a new or reconstructed stationary RICE located at an area source, or is a new or reconstructed stationary RICE located at a major source of HAP emissions and is a spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of less than 500 brake HP, a spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of less than 250 brake HP, or a 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP, a stationary RICE with a site rating of less than or equal to 500 brake HP which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, an emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP, or a compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP, must meet the requirements of this part by meeting the requirements of 40 CFR part 60 Subpart IIII, for compression ignition engines or 40 CFR part 60 Subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

CAM Applicability (40 CFR 64)

The facility is not classified as a major source (refer to Title V Classification section). Because the facility does not require a Title V permit, the requirements of CAM are not applicable.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Scope

Purpose

Permit Condition 1

States that the purpose is to permit a concrete batch plant

Permit Condition 2

The table in this condition outlines those regulated sources within the permit.

Facility-wide Conditions

Fuel Specifications

Permit Condition 3

This condition identifies the allowable fuels that may be combusted in the engine. The restriction of sulfur content is in accordance with 40 CFR 60.4207 and 40 CFR 80.510(b). Also, the inclusion of the minimum cetane index and maximum aromatic content is in accordance with 40 CFR 80.510(b).

Fuel Monitoring and Recordkeeping

Permit Condition 4

The permittee needs to maintain documentation each time fuel is received to demonstrate compliance with the sulfur content limitation.

Fugitive Dust Control

Permit Condition 5

This condition requires that the permittee perform visible emissions checks on see/no see basis to verify that fugitive emissions are not extending beyond the property boundary. If visible emissions are seen, corrective action must be taken. Reasonable control requirements for fugitive dust are needed at any potential site. Permit conditions requires that the plant must take corrective action where practical to control fugitive dust when operating. This requires compliance with IDAPA 58.01.01.650-651.

Permit Condition 6

More fugitive dust control is required by implementing Best Management Practices. Visible emissions are determined by a see/no see basis at the facility boundary. If visible emissions are present, the permittee must take appropriate action to correct the problem or perform a Method 9 test. The methods provided in this condition are options that the permittee may use to control any dust problems.

Fugitive Dust Control Monitoring & Recordkeeping

Permit Condition 7

Requires the permittee to conduct inspections each day that the plant is operating to assess the control of fugitive emissions and specifies corrective actions to take if fugitive dust is not reasonably controlled.

Opacity

Permit Condition 8

The condition is in accordance with the opacity limit of 20% as stated by IDAPA 58.01.01.625.

Visible Emissions Monitoring & Recordkeeping

Permit Condition 9

Visible emissions and/or opacity monitoring is required on a monthly basis. This includes a see/no see evaluation of baghouse stacks. If there are any visible emissions, corrective actions must be taken within 24 hours. If the problem persists, a Method 9 opacity test must be performed in accordance to IDAPA 58.01.01.130-136. Records of all inspections need to be maintained as well.

Odors

Permit Condition 10

The permittee must operate in accordance with IDAPA 58.01.01.776.01 to minimize odors associated with the facility.

Permit Condition 11

Maintaining records of odor complaints, and corrective action taken demonstrates compliance with this condition.

Nonattainment Areas

Permit Condition 12

The concrete batch plant cannot relocate and operate in any nonattainment area. Operations within a nonattainment area were not included in the modeling compliance analysis. Therefore, it is not permitted with this general CBP permit. See the associated modeling memo.

Co-location

Permit Condition 13

The concrete batch plant may only co-locate with one (1) rock crushing facility. Co-location is defined as being within 1,000 ft of the nearest emission unit. This includes the concrete batch plant, silos and the center of any stockpile.

Reporting Requirements

Permit Condition 14

When relocating to another site, the permittee must submit a Portable Equipment Relocation Form (PERF) within 10 days of desired moving date in accordance with IDAPA 58.01.01.500. A scaled plot must also be included with the PERF form.

Subpart A General Provisions

Permit Condition 15

This set of general provisions applies because the engine(s) associated with the CBP is an affected source in accordance with 40 CFR 60, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Incorporation by Reference

Permit Condition 16

If there is any discrepancy between this permit and the NSPS standard this condition states that the federal standards shall govern.

Concrete Batch Plant

Description

Permit Condition 17

The process description is provided to outline the activity at the facility.

Permit Condition 18

The table in this condition outlines the associated emission control devices for each regulated unit.

Operating Requirements

Permit Condition 19

Limits the finished concrete production and required setback for any future site. A setback distance from the property boundary was used in the ambient air quality impact analysis to demonstrate compliance with NAAQS and TAP increments. Because the equipment is portable and the location may be changed from its initial location, compliance with a minimum setback distance limit is required. The setback distances are based on a number of criteria which include the use of an engine, control devices such as baghouses, boot enclosures, water ring and other suppressants.

One of the biggest drivers when establishing the setback distances was truck loadout. It is accepted by the DEQ that a boot enclosure alone provides 95% control. This acceptance is based on several previously issued permits that demonstrated through manufacturer information. To increase the flexibility of the general permit and allow for small setback distances the permittee has the option to increase the loadout control to 99%. The permittee can increase the control efficiency to 99% in one of two ways; either 1) route all loadout emissions to a baghouse or 2) equip the boot enclosure with a water-fog-ring spray system. A BACT analysis done by the Texas Commission of Environmental Quality (TCEQ) in 2006 suggested that the appropriate control efficiency for the water ring was 85%. Multiply (1-95%) and (1-85%) returns a value of .0075. 1- .0075 = .9925 or 99.25%. Therefore adding the water fog ring to the boot enclosure obtains 99% control efficiency for truck loadout.

The fugitive dust control ranges from 75% to 95%. The additional 20% is obtained by mandating the enclosing of aggregate/sand piles with three-sided barriers and covering piles or adding additional suppressants.

Setback distances of both line power and engine use are included in the condition. This allows for the facility to move from one site that requires an engine for power to another site in which line power is available without requiring a permit revision.

Permit Condition 20

This condition limits the total amount of hours the facility may operate in any given day.

Permit Condition 21

A baghouse filter/cartridge system must be installed on any storage silo and all control equipment must be operated with a developed procedures document. This is required to control particulate emissions and demonstrate compliance with NAAQS standards.

Permit Condition 22

A water spray bar or equivalent must be installed and all control equipment must be operated with a developed procedures document. This is required to control particulate emissions and demonstrate compliance with NAAQS standards.

Permit Condition 23

Within 60 days of startup, the permittee needs to develop a procedures document outlining operations and maintenance schedules. This procedure must be submitted to the appropriate regional DEQ office for review. This is to demonstrate that all required control equipment is being operated and maintained properly. Also any change whether it is done by the facility or requested by DEQ must be submitted to DEQ within 15 days of the change.

Permit Condition 24

Truck loadout emissions must be controlled to a minimum of 95% efficiency. This is achieved by requiring a shroud or boot enclosure.

Monitoring & Recordkeeping Requirements

Permit Condition 25

Concrete production monitoring is required daily, monthly and annually. This is necessary to demonstrate compliance with the production limits.

Permit Condition 26

Setback monitoring is required to demonstrate compliance with the setback distance requirements. This must be done each time the CBP relocates or anytime the layout has changed.

Permit Condition 27

Daily records of the hours of operation of the facility must be kept to demonstrate compliance with the hours of operation permit condition.

Compression Ignition Internal Combustion Engines

Process Description

Permit Condition 28

This condition provides a brief synopsis of the engine used by the facility.

Operating Requirements

Permit Condition 29

This condition states that the facility must install and operate an IC engine that is tier certified and that documentation stating such is maintained onsite.

Permit Condition 30

This condition is included to limit the engine use to those hours requested by the permittee. The engine limitation was added to help reduce the setback distance. Note that the modeling associated with this condition assumes that if there are multiple engines onsite that they are operating simultaneously. But this is a permittee-defined condition so the stringency associated with the condition is dependent on what operating requirements are needed by the facility.

Monitoring & Recordkeeping

Permit Condition 31

Each month the permittee must record the operational time of the engine. The annual usage needs to be summed over a consecutive 12-month period to demonstrate compliance with the annual hourly limit.

NSPS 40 CFR 60, Subpart IIII Requirements

Permit Condition 32

The permittee needs to operate and maintain the diesel engine according to manufacturer procedures. This is required in accordance with 40 CFR 60, Subpart IIII specifically sections 60.4206 and 60.4211(a).

Permit Condition 33

If the engine is equipped with a particulate filter, it must be installed with a backpressure monitor in accordance with 40 CFR 60, Subpart IIII, specifically section 60.4209.

Permit Condition 34

All reports and notifications need to be sent to the appropriate DEQ Regional Office. This condition provides the mailing address.

Records of any corrective action must be maintained when the backpressure monitor notifies the operator that a high backpressure limit has been approached. This condition is in accordance with 40 CFR 60.4214(c).

General Provisions

General Compliance

Permit Condition 35

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Permit Condition 36

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Permit Condition 37

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Inspection & Entry

Permit Condition 38

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Construction & Operation Notification

Permit Condition 39

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.02.

Permit Condition 40

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

Performance Testing

Permit Condition 41

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Permit Condition 42

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Permit Condition 43

The performance test report provision requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Monitoring & Recordkeeping

Permit Condition 44

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to assess compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Excess Emissions

Permit Condition 45

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130.

Certification

Permit Condition 46

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

False Statements

Permit Condition 47

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Tampering

Permit Condition 48

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Transferability

Permit Condition 49

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Severability

Permit Condition 50

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

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. During this time, there were no comments on the application and 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

Data Entry Form

Facility Information

Company:	Soda Springs Ready Mix
Facility ID:	777-00539
Permit No.:	P-2014.0017 Proj 61354
Source Type:	Portable Concrete Batch Plant
Manufacturer/Model:	Johnson

Production Rates

Maximum Hourly Production Rate:	50		
Proposed Daily Production Rate:	500	cy/day	10.00
Proposed Maximum Annual Production Rate:	150,000	cy/year	hr/day

Operating Hours

Maximum daily hours of operation for facility?	10.00

Concrete Batch Plant Specifications

Is the facility a Truck Mix (T) or Central mix (C)?	T
What level of Control is used for loadout, either Truck or Central?	95%
What level of Control is used for fugitive emissions?	75%

Water Heater Usage

Does this facility use a water heater?	No		
How many units?	0	Rating	
What type of fuel, Diesel, Natural Gas or Propane for unit 1?	N/A	0	MMBtu/hr
If multiple units, what type of fuel, Diesel, Natural Gas or Propane for unit 2?	N/A	0	MMBtu/hr
Are you assuming continual operations throughout the year?	No		
Maximum annual hours of water heaters? (If assuming continual operation, enter 8760)	0		

Internal Combustion Engine(s)

Do you have any internal combustion engines?	Yes
How many small engines (less than or equal to 600 bhp) are being used?	1
Size of small engine #1 (<=600 bhp)? (If no engine enter 0)	99
Size of small engine #2 (<=600 bhp)? (If no engine enter 0)	0
Size of large engine (greater than 600 bhp)? (If no engine enter 0)	0

Note: If there is no small or large engine enter -1 for the certification

	Small #1	Small #2	Large Engine
Select the EPA Certification:	3	-1	-1
Not EPA-certified: Enter "0" (zero)			
Certified Tier I, Tier 2, Tier 3, or Tier 4: Enter 1, 2, 3, or 4			
Certified "BLUE SKY" engine: Enter 5			

Enter the number of operating hours for the small engine(s)	4380
Enter the number of operating hours for the large engine	0

Transfer Points

Enter the number of transfer points in the facility? (2 is the default)	3

Final Concrete Batch Plant Emissions Inventory

Listed Below are the emissions estimates for the units selected.

Company:	**Soda Springs Ready Mix**
Facility ID:	**777-XXXXX**
Permit No.:	**P-2014.0017 Proj 61354**
Source Type:	**Portable Concrete Batch Plant**
Manufacturer/Model:	**Johnson**

Production

Maximum Hourly Production Rate:	50	cy/hr
Proposed Daily Production Rate:	500	cy/day
Proposed Maximum Annual Production Rate:	150,000	cy/year

Tons/year

Emissions Units		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs	CO_2e
CBP Type:	**Truck Mix**	0.059	0.32	NA	NA	NA	NA	4.74E-06		NA
Water Heater #1:	**No water heater**	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00		0
Water Heater #2:	**No water heater**	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00		0
Small Diesel Engine(s) *:	**99 bhp, Tier 3 engine**	0.14	0.14	2.30E-03	1.68	1.78	0.55	NA		249
Large Diesel Engine *:	**No Large Engine**	0.00	0.00	0.00E+00	0.00	0.00	0.00	NA		0
	Transfer/Drop Points	0.088	0.28	NA	NA	NA	NA	NA		NA
	Totals	0.29	0.74	2.30E-03	1.68	1.78	0.55	4.74E-06	6.18E-03	249
	SER	*10.00*	*15.00*	*40.00*	*40.00*	*100.00*	*40.00*	*0.60*		
	10% SER	*1.00*	*1.50*	*4.00*	*4.00*	*10.00*	*4.00*	*0.06*		
	Exceeded 10% SER "BRC"?	*No*	*No*	*No*	*No*	*No*	*No*	*No*		

Pounds/hour

		$PM_{2.5}$	PM_{10}	SO_2	NO_x	CO	VOC	Lead	THAPs
CBP Type:	**Truck Mix**	0.014	0.07	NA	NA	NA	NA	3.63E-06	
Water Heater #1:	**No water heater**	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00	
Water Heater #2:	**No water heater**	0.000	0.000	0.00E+00	0.000	0.000	0.000	0.00E+00	
Small Diesel Engine(s) *:	**99 bhp, Tier 3 engine**	0.07	0.07	1.05E-03	0.76	0.81	0.25	NA	
Large Diesel Engine*:	**No Large Engine**	0.00	0.00	0.00E+00	0.00	0.00	0.00	NA	
	Transfer/Drop Points	0.024	0.08	NA	NA	NA	NA	NA	
	Totals	0.10	0.22	1.05E-03	0.76	0.81	0.25	3.63E-06	1.36E-03
	SER	*2.30*	*3.40*	*9.10*	*9.10*	*22.81*			
	10% SER	*0.23*	*0.34*	*0.91*	*0.91*	*2.28*			
	Exceeded 10% SER "BRC"?	*No*	*No*	*No*	*No*	*No*			

* The Large engine may ru **There is no large engine.** hr/yr
* The Small engine(s) may 4380 hr/yr

HAPS & TAPS Emissions Inventory

Metals	HAP	TAP	lb/hr	T/yr	Averaging Period	EL lb/hr	*Exceeded?*
Arsenic	X	X	1.38E-06	6.03E-06	Annual	1.50E-06	*No*
Barium		X	0.00E+00	0.00E+00	24-hour	3.30E-02	*No*
Beryllium	X	X	1.17E-07	5.14E-07	Annual	2.80E-05	*No*
Cadmium	X	X	2.27E-08	9.93E-08	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	9.74E-06	1.[illegible]E-05	24-hour	3.30E-02	*No*
Manganese	X	X	1.99E-05	6.76E-05	24-hour	3.33E-01	*No*
Mercury	X	X	0.00E+00	0.00E+00	24-hour	3.00E-03	*No*
Molybdenum		X	0.00E+00	0.00E+00	24-hour	2.70E-05	*No*
Nickel	X	X	4.47E-06	1.96E-05	Annual	2.70E-05	*No*
Phosphorus	X	X	2.94E-05	5.03E-05	24-hour	7.00E-03	*No*
Selenium	X	X	8.25E-07	2.07E-06	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	8.39E-07	3.[illegible]E-06	Annual	5.60E-07	Yes
Non PAH Organic Compunds							
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*
Non-PAH HAPs							
Acetaldehyde	X	X	2.[illegible]E-04	1.16E-03	Annual	3.00E-03	*No*
Acrolein	X	X	2.67E-05	1.40E-04	24-hour	1.70E-02	*No*
Benzene	X	X	3.23E-04	1.42E-03	Annual	8.00E-04	*No*
1,3 - Butadiene	X	X	1.35E-05	5.93E-05	Annual	2.40E-05	*No*
Ethyl Benzene	X	X	0.00E+00	0.00E+00	24-hour	29	*No*
Formaldehyde	X	X	4.09E-04	1.79E-03	Annual	5.10E-04	*No*
Hexane	X	X	0.00E+00	0.00E+00	24-hour	12	*No*
Isooctane	X		0.00E+00	0.00E+00	NA	NA	*NA*
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	1.18E-04	6.21E-04	24-hour	25	*No*
o-Xylene	X	X	8.23E-05	4.33E-04	24-hour	7.00E-03	*No*
PAH HAPs							
2-Methylnaphthalene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	*No*
3-Methylchloranthrene	X	X	0.00E+00	0.00E+00	Annual	2.50E-06	*No*
7,12-Dimethylbenz(a)anthracen	X		0.00E+00	0.00E+00	NA	NA	*NA*
Acenaphthene	X	X	4.92E-07	2.16E-06	Annual	9.10E-05	*No*
Acenaphthylene	X	X	1.75E-06	7.[illegible]E-06	Annual	9.10E-05	*No*
Anthracene	X	X	6.48E-07	2.84E-06	Annual	9.10E-05	*No*
Benzo(a)anthracene	X	X	5.82E-07	2.55E-06	Annual	9.10E-05	*No*
Benzo(a)pyrene	X	X	6.51E-08	2.85E-07	Annual	2.00E-06	*No*
Benzo(b)fluoranthene	X	X	3.43E-08	1.50E-07	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	1.69E-07	7.42E-07	Annual	9.10E-05	*No*
Benzo(k)fluoranthene	X	X	5.37E-08	2.35E-07	Annual	2.00E-06	*No*
Chrysene	X	X	1.22E-07	5.36E-07	Annual	2.00E-06	*No*
Dibenzo(a,h)anthracene	X	X	2.02E-07	8.85E-07	Annual	2.00E-06	*No*
Dichlorobenzene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	*No*
Fluoranthene	X	X	2.64E-06	1.15E-05	Annual	9.10E-05	*No*
Fluorene	X	X	1.01E-05	4.43E-05	Annual	9.10E-05	*No*
Indeno(1,2,3-cd)pyrene	X	X	1.30E-07	5.69E-07	Annual	2.00E-06	*No*
Naphthalene	X	X	0.00E+00	1.29E-04	24-hour	3.33	*No*
Naphthalene	X	X	2.94E-05	1.29E-04	Annual	9.10E-05	*No*
Perylene	X		1.02E-05	4.46E-05	NA	NA	*NA*
Phenanathrene	X	X	1.66E-06	7.25E-06	Annual	9.10E-05	*No*
Pyrene	X	X	0.00E+00	0.00E+00	Annual	9.10E-05	*No*
Polycyclic Organic Matter (PON	X	X	1.19E-06	5.21E-06	Annual	2.00E-06	*No*

Total HAPs Emissions: 1.36E-03 6.18E-03 1.79E-03

APPENDIX B – PERMIT FEES

All associated permitting fees were paid when the application was submitted. The total cost of the Concrete Batch General Permit is $1,500. That includes a $1,000 application fee and $500 processing fee.

Per Section 224 of the Rules, all PTC applications are subject to an application fee of $1000.
Per Section 225 of the Rules, General PTC permits are subject to a processing fee of $500. The definition of General permit per the Rules: "no facility-specific requirements (defined as a source category specific permit for which the Department has developed standard emission limitations, operating requirements, monitoring and recordkeeping requirements, and that require minimal engineering analysis. General permit facilities may include portable concrete batch plants, portable hot-mix asphalt plants and portable rock crushing plants.)"

APPENDIX C – AMBIENT AIR QUALITY ANALYSIS

MEMORANDUM

DATE: May 16, 2014

TO: Morrie Lewis, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: PTC Applications for a Concrete Batch Plant using DEQ's General Modeling Developed for such Plants

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

1.0 Summary

A Permit to Construct (PTC) application has been received for a portable concrete batch plant (CBP) to be operated in Idaho. Non-site-specific air quality impact analyses involving atmospheric dispersion modeling of emissions associated with CBPs meeting specific criteria were performed by DEQ to demonstrate that such facilities would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). The permit applicant submitted applicable information and data for DEQ to evaluate whether the proposed facility met the criteria for using DEQ's non-site-specific CBP ambient impact analyses.

A technical review of the submitted information was conducted by DEQ. DEQ staff performed non-site-specific detailed air quality impact analyses to assure compliance with air quality standards for CBPs meeting specified criteria for various production levels and operational configurations. Results from DEQ's analyses were used to establish minimum setback distances between emissions points and the property boundary of the site. The submitted information, in combination with DEQ's air quality analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the required setback distance (closest distance from pollutant emission points to the property boundary). Table 1 presents key assumptions and results to be considered in the development of the permit.

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

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

Table 1. KEY DATA, ASSUMPTIONS, AND CONCLUSIONS OF THE MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Maximum throughput does not exceed 500 cubic yards per day and 150,000 cubic yards per year.	Short-term and annual modeling was performed assuming these rates.
Emissions units must maintain a setback distance from the nearest property boundary (96 feet for line power and 192 feet when the IC engine is operated).	This setback distance is necessary to assure compliance with applicable air quality standards at all ambient air locations.
Allowable emissions summed from generators used at the site are equivalent or less than the values modeled.	Different types and size of engines can be operated provided emissions are limited accordingly.
Fugitive emissions from material handling and vehicle traffic are controlled to a high degree.	Emissions from vehicle traffic were assumed to be negligible.
Emissions rates for applicable averaging periods are not greater than those used in the representative modeling analyses, as listed in this memorandum.	Compliance with TAPs increments has only been demonstrated for those emissions rates listed in these analyses that correspond to specific operational configurations and setback distances.
Co-contributing emissions sources such as other CBPs, HMAs, or rock crushing plants may not be operated at the site.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other.
Stack heights for the baghouses, boiler, and generators are as listed in this memorandum or higher.	Actual stack heights may be greater than those listed in this memo.
Stack parameters of exhaust temperature and flow rate should not be less than about 75 percent of values listed in this memorandum.	Higher temperatures and flow rates increase plume rise, allowing the plume to disperse to a larger degree before impacting ground level.
The CBP may not locate in any non-attainment areas.	All analyses performed assumed the facility will be located in areas attaining air quality standards for those pollutants emitted from the CBP.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The CBP will be a portable facility. The CBP will only locate in areas designated as attainment or unclassifiable for all criteria pollutants.

2.1.2 NAAQS Impact Analyses Not Required

If a permitting action would qualify for a below regulatory concern (BRC) exemption (Idaho Air Rules Section 221) except for the emissions quantities of some specific criteria pollutants, then modeling is not required for those pollutants having emissions rates below the BRC threshold.[1]

Because the proposed new facility will not exceed the BRC thresholds of any criteria pollutants (10% of significant as defined in IDAPA 58.01.01.006), modeling analyses and review was not required for any criteria pollutant to demonstrate compliance with NAAQS.

[1] State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, p.11, Idaho DEQ, September 2013.

2.1.3 Toxic Air Pollutant Analyses

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

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

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

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

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

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

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

3.1.1 Overview of Analyses

DEQ performed general non-site-specific analyses that were determined to be reasonably representative of all CBPs meeting DEQ-specified criteria, and the results demonstrated compliance with applicable air quality standards to DEQ's satisfaction.

Table 4 provides a brief description of parameters used in the DEQ modeling analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description[a]
General facility location	Portable	Can only locate in attainment or unclassifiable areas
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 09292
Meteorological data	Multiple Data Sets	See Section 3.1.4
Terrain	Flat	The analyses assumed flat terrain for the immediate area
Building downwash	Considered	A building of 10 m X 10 m X 10 m high was assumed for downwash consideration.
Receptor Grid	Grid 1	5-meter spacing along the property boundary out 100 meters
	Grid 2	10-meter spacing out to 200 meters

3.1.2 Modeling protocol and Methodology

A modeling protocol was not submitted to DEQ prior to the application because DEQ staff performed non-site-specific air quality impact analyses. Non-site-specific modeling was generally conducted using data and methods described in the *State of Idaho Air Quality Modeling Guideline.*

Because of the portable nature of the CBP, DEQ performed non-site-specific modeling to establish setback distances between emissions source locations and the property boundary for a series of CBP production rates.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 require that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a 1-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer
- Improved plume rise and buoyancy calculations
- Improved treatment of terrain affects on dispersion
- New vertical profiles of wind, turbulence, and temperature

AERMOD was used for the DEQ analyses.

3.1.4 Meteorological Data

Because of the portable nature of CBPs, DEQ used seven different meteorological data sets from various locations in Idaho to assure compliance with applicable standards for the non-site-specific analyses. Table 5 lists the meteorological data sets used in the air impact analyses.

Table 5. METEOROLOGICAL DATA SETS USED IN MODELING ANALYSES

Surface Data	Upper Air Data	Years
Boise	Boise	2001-2005
Aberdeen	Boise	2001-2005
Idaho Falls	Boise	2000-2004
Minidoka	Boise	2000-2004
Soda Springs	Boise	2004-2008
Lewiston	Spokane, Wa	1992-1995, 1997
Sandpoint	Spokane, Wa	2002-2006

Use of representative meteorological data is of greater concern when using AERMOD than when using

ISCST3. This is because AERMOD uses site-specific surface characteristics to more accurately account for turbulence. To account for this uncertainty, the following measures were taken:

- Use the maximum of 2nd high modeled concentration to evaluate compliance with the 24-hour PM_{10} standard, rather than the maximum of 6th high modeled concentration typically used when modeling a five-year meteorological data set to demonstrate that the standard will not be exceeded more than once per year on average over a three year period.

- Use the maximum of 1st high modeled concentration to evaluate compliance with all pollutants and averaging times, except for 24-hour PM_{10}.

3.1.5 Terrain Effects

Terrain effects on dispersion were not considered in the non-site-specific analyses. Flat terrain was an appropriate assumption because most emissions sources associated with CBPs are near ground-level and the immediate surrounding area is typically flat for dispersion modeling purposes. Emissions sources near ground-level typically have maximum pollutant impacts near the source, minimizing the potential affect of surrounding terrain to influence the magnitude of maximum modeled impacts.

3.1.6 Facility Layout

DEQ's analyses used a conservative generic facility layout. This was done because the specific layout will vary depending upon product needs and specific characteristics of the site. To provide conservative results, DEQ used a tight grouping of emissions sources. Sources were positioned within 2.5 meters of the center of the facility.

3.1.7 Building Downwash

DEQ's analyses accounted for building downwash in a fairly general manner because of the following:

- Determining a building configuration is extremely difficult given the portable nature of the facility.
- Many CBP have at least semi-permanent structures associated with them, even though the permit will be for portable source.
- Much of the equipment is porous with regard to wind, thereby minimizing downwash effects.

Downwash was accounted for by placing a 10 meter by 10 meter by 10 meter high building among the sources.

3.1.8 Ambient Air Boundary

DEQ's non-site-specific analyses, using a generic facility layout, were used to generate minimum setback distances between emissions units and the property boundary. The issued permit will require this distance be maintained at all locations.

3.1.9 Receptor Network and Generation of Setback Distances

A circular grid with 5.0 meter receptor spacing, extending out to 100 meters was used in the non-site-specific modeling performed by DEQ. To establish a setback distance, the following procedure was followed for various production levels and operational configurations:

1) For each operational configuration scenario, pollutant, averaging period, and meteorological data set, all receptors with concentrations equal or greater than the trigger value were plotted. This effectively gave a plot of receptors where the standard could be exceeded for that pollutant and averaging period.

2) The controlling receptor for each pollutant, averaging period, and meteorological data set was identified. First, the receptor having a concentration in excess of the trigger value that was the furthest from any emissions source was identified. The controlling receptor was the next furthest downwind receptor from that point.

3) The minimum setback distance was calculated. This was the furthest distance between an emissions point and the controlling receptor.

3.2 Emission Rates

Emissions rates of criteria pollutants and TAPs were calculated for several CBP production rates and operational configurations for various applicable averaging periods.

3.2.1 TAP Emissions Rates

Table 6 lists TAP emissions rates for setback-controlling TAPs.

3.3 Emission Release Parameters and Plant Criteria

Table 7 lists the characteristics of CBPs used in DEQ's non-site-specific CBP air impact analyses. Different scenarios were used to generate different setback distances depending upon throughput rates and operational configurations.

Table 8 provides emissions release parameters for the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

DEQ modeling staff will make the determination of whether any release parameters slightly outside of those listed in Table 7 and 8 are still adequate for using DEQ's non-site-specific air impact analyses for the application in question.

3.4 Results for TAPs Analyses

DEQ determined required setback distances from the non-site-specific modeling results for each CBP production level scenario, criteria pollutant, and averaging period. Table 9 lists setback distances for each production level scenario and averaging period.

4.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility will not cause or significantly contribute to a violation of any air quality standard.

Table 6. TAP EMISSIONS USED IN DEQ ANALYSES			
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)**
			150,000 cy/yr
TRUCKLOD[a]	Arsenic	period	7.340E-7
	Chromium 6+	period	5.861E-7
	Nickel	period	2.873E-6
TRKLDBAG[a]	Arsenic	period	1.468E-7
	Chromium 6+	period	1.172E-7
	Nickel	period	5.746E-7
SILO	Arsenic	period	6.428E-7
	Chromium 6+	period	2.532E-7
	Nickel	period	1.601E-6
BOILER[b]	POM	period	2.086E-7
	Total PAH	period	2.018E-5
	Formaldehyde	period	5.893E-4
	Arsenic	period	1.000E-5
	Chromium 6+	period	0.0
	Nickel	period	7.500E-6
NGBOILER[b]	POM	period	2.794E-8
	Total PAH	period	1.495E-6
	Formaldehyde	period	1.838E-4
	Arsenic	period	4.902E-7
	Chromium 6+	period	0.0
	Nickel	period	5.147E-6
GEN1	POM	period	2.111E-5
	Total PAH	period	6.102E-4
	Formaldehyde	period	3.703E-4

a. Impacts will be evaluated for multiple operational scenarios. Truck loadout emissions will either be modeled as controlled by a boot with 95% control efficiency (TRUCKLOD) or as captured and controlled by a baghouse with 99% control efficiency (TRKLDBAG).

b. Impacts will be evaluated for multiple operational scenarios. Boiler emissions will either be modeled as fueled by diesel (BOILER) or as fueled by natural gas (NGBOILER).

Table 7. CHARACTERISTIC OF CBP USED IN DEQ GENERIC ANALYSES	
Parameter	**Value or Description**
Throughput Rates	Scenario 1: < 500 cy/day Scenario 1: < 1,000 cy/day Scenario 1: < 1,500 cy/day Scenario 1: < 2,500 cy/day Annual Scenario: 150,000 cy/yr
Co-Contributing Sources	The emissions points of the CBP is not located within 1,000 feet of other permittable (has or would be required to have an air permit to operate) emissions sources.
Silo Filling (SILO) Stack Parameters	Point source controlled by fabric filter. Stack height ≥ 5 m
Weigh Hopper (WEIGHOP) Stack Parameters	Point source controlled by a baghouse. Stack height ≥ 3 m
Truck Loadout (TRUCKLOD) Stack Parameters (boot control)[a]	Fugitive source. Emissions controlled by 95% by a boot and/or water spray. Release height ≥ 5 m
Truck Loadout (TRKLDBAG) Stack Parameters (baghouse control)[a]	Point source controlled by a baghouse. Emissions 100% captured and controlled by baghouse at 99%. Stack height ≥ 5 m
Diesel Boiler (BOILER) Stack Parameters[b]	5 MMBtu/hr, diesel-fired. Stack height ≥ 5 m
Natural Gas Boiler (NGBOILER) Stack Parameters[b]	5 MMBtu/hr, natural gas-fired. Stack height ≥ 5
Electrical Power Generator (GEN1) Stack Parameters	Line power or generator with an engine of ≤ 1,000 kW fueled by low sulfur distillate (0.0015% sulfur). ≤68.5 gal/hr, 24 hr/day, ≤4,380 hr/yr. Can use other generator type, provided operations are restricted such that emissions are equivalent to a 1,000 kW engine at 24 hr/day.
Frontend Loader Transfers at Ground Level (AGG&SND)	≤2 transfers each for any given quantity of aggregate and sand processed. Emissions are assumed controlled by an additional 75% beyond that associated with handling aggregate with a 1.77% moisture content and sand with a 4.17% moisture content.
Material Transfers to Elevated Storage (AGGTOSTO)	≤1 transfer each for any given quantity of aggregate and sand processed. Emissions are assumed controlled by an additional 75% beyond that associated with handling aggregate with a 1.77% moisture content and sand with a 4.17% moisture content.
Frontend Loader Transfers at Ground Level (AGG&SND2)	≤2 transfers each for any given quantity of aggregate and sand processed. Emissions are assumed controlled by an additional 95% beyond that associated with handling aggregate with a 1.77% moisture content and sand with a 4.17% moisture content.
Material Transfers to Elevated Storage (AGGTOST2)	≤1 transfer each for any given quantity of aggregate and sand processed. Emissions are assumed controlled by an additional 95% beyond that associated with handling aggregate with a 1.77% moisture content and sand with a 4.17% moisture content.

a. Impacts will be evaluated for multiple operational scenarios. Truck loadout emissions will either be modeled as controlled by a boot with 95% control efficiency (TRUCKLOD) or as captured and controlled by a baghouse with 99% control efficiency (TRKLDBAG).

b. Impacts will be evaluated for multiple operational scenarios. Boiler emissions will either be modeled as fueled by diesel (BOILER) or as fueled by natural gas (NGBOILER).

Table 8. EMISSIONS RELEASE PARAMETERS[a]					
Release Point /Location	**Source Type**	**Stack Height (m)[b]**	**Modeled Diameter (m)**	**Stack Gas Temp. (K)[c]**	**Stack Gas Flow Velocity (m/sec)[d]**
TRKLDBAG	Point	5.0	0.001[e]	0[f]	0.001[e]
SILO	Point	5.0	1.0[e]	0[f]	0.001[e]
WEIGHOP	Point	3.0	1.0[e]	0[f]	0.001[e]
BOILER	Point	5.0	0.2	450	12.1
NGBOILER	Point	5.0	0.3	450	10.48
GEN	Point	5.0	0.31	500	25
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
TRUCKLOD	Volume	5.0	4.65	4.65	
AGG&SND	Volume	2.0	2.33	0.7	
AGGTOSTO	Volume	5.0	2.33	4.65	
AGG&SND2	Volume	2.0	2.33	0.7	
AGGTOST2	Volume	5.0	2.33	4.65	

a. See Attachment 1 for additional details.
b. Meters
c. Kelvin
d. Meters per second
e. Set to limit momentum-induced plume rise since the stack may be capped or emissions may vent horizontally.
f. Using a temperature of 0 K directs the model to use a release temperature equal to ambient air.

Table 9. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION

CBP Configuration Scenario	Setback (m)	Controlling Pollutant	CBP Configuration Scenario	Setback (m)	Controlling Pollutant
Setbacks for 500 cubic yards per day and 150,000 cubic yards per year					
Scenario 1[a]: mod fugitive dust control, boot on loadout, diesel boiler, generator	58	TAPs	Scenario 9[i]: mod fugitive dust control, boot on loadout, nat. gas boiler, generator	58	TAPs
Scenario 2[b]: high fugitive dust control, boot on loadout, diesel boiler, generator	58	TAPs	Scenario 10[j]: high fugitive dust control, boot on loadout, nat. gas boiler, generator	58	TAPs
Scenario 3[c]: mod fugitive dust control, boot on loadout, diesel boiler, no generator	36	24hr PM_{10}	Scenario 11[k]: mod fugitive dust control, boot on loadout, nat. gas boiler, no generator	29	24hr PM_{10}
Scenario 4[d]: high fugitive dust control, boot on loadout, diesel boiler, no generator	34	24hr PM_{10}	Scenario 12[l]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	25	24hr PM_{10}
Scenario 5[e]: mod fugitive dust control, baghouse on loadout, diesel boiler, generator	58	TAPs	Scenario 13[m]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, generator	58	TAPs
Scenario 6[f]: high fugitive dust control, baghouse on loadout, diesel boiler, generator	58	TAPs	Scenario 14[n]: high fugitive dust control, baghouse on loadout, nat. gas boiler, generator	58	TAPs
Scenario 7[g]: mod fugitive dust control, baghouse on loadout, diesel boiler, no generator	34	24hr PM_{10}	Scenario 15[o]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, no generator	7	24hr PM_{10}
Scenario 8[h]: high fugitive dust control, boot on loadout, diesel boiler, no generator	29	24hr PM_{10}	Scenario 16[p]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	7	24hr PM_{10}
Setbacks for 1,000 cubic yards per day and 150,000 cubic yards per year					
Scenario 1[a]: mod fugitive dust control, boot on loadout, diesel boiler, generator	87	24hr PM_{10}	Scenario 9[i]: mod fugitive dust control, boot on loadout, nat. gas boiler, generator	72	24hr PM_{10}
Scenario 2[b]: high fugitive dust control, boot on loadout, diesel boiler, generator	67	24hr PM_{10}	Scenario 10[j]: high fugitive dust control, boot on loadout, nat. gas boiler, generator	58	TAPs
Scenario 3[c]: mod fugitive dust control, boot on loadout, diesel boiler, no generator	78	24hr PM_{10}	Scenario 11[k]: mod fugitive dust control, boot on loadout, nat. gas boiler, no generator	67	24hr PM_{10}
Scenario 4[d]: high fugitive dust control, boot on loadout, diesel boiler, no generator	57	24hr PM_{10}	Scenario 12[l]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	51	24hr PM_{10}
Scenario 5[e]: mod fugitive dust control, baghouse on loadout, diesel boiler, generator	58	TAPs	Scenario 13[m]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, generator	58	TAPs
Scenario 6[f]: high fugitive dust control, baghouse on loadout, diesel boiler, generator	58	TAPs	Scenario 14[n]: high fugitive dust control, baghouse on loadout, nat. gas boiler, generator	58	TAPs
Scenario 7[g]: mod fugitive dust control, baghouse on loadout, diesel boiler, no generator	46	24hr PM_{10}	Scenario 15[o]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, no generator	42	24hr PM_{10}
Scenario 8[h]: high fugitive dust control, boot on loadout, diesel boiler, no generator	34	24hr PM_{10}	Scenario 16[p]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	34	24hr PM_{10}
Setbacks for 1,500 cubic yards per day and 150,000 cubic yards per year					
Scenario 1[a]: mod fugitive dust control, boot on loadout, diesel boiler, generator	127	24hr PM_{10}	Scenario 9[i]: mod fugitive dust control, boot on loadout, nat. gas boiler, generator	107	24hr PM_{10}

Table 9. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION

CBP Configuration Scenario	Setback (m)	Controlling Pollutant	CBP Configuration Scenario	Setback (m)	Controlling Pollutant
Scenario 2[b]: high fugitive dust control, boot on loadout, diesel boiler, generator	103	24hr PM_{10}	Scenario 10[j]: high fugitive dust control, boot on loadout, nat. gas boiler, generator	87	24hr PM_{10}
Scenario 3[c]: mod fugitive dust control, boot on loadout, diesel boiler, no generator	118	24hr PM_{10}	Scenario 11[k]: mod fugitive dust control, boot on loadout, nat. gas boiler, no generator	102	24hr PM_{10}
Scenario 4[d]: high fugitive dust control, boot on loadout, diesel boiler, no generator	92	24hr PM_{10}	Scenario 12[l]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	78	24hr PM_{10}
Scenario 5[e]: mod fugitive dust control, baghouse on loadout, diesel boiler, generator	73	24hr PM_{10}	Scenario 13[m]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, generator	71	24hr PM_{10}
Scenario 6[f]: high fugitive dust control, baghouse on loadout, diesel boiler, generator	58	TAPs	Scenario 14[n]: high fugitive dust control, baghouse on loadout, nat. gas boiler, generator	58	TAPs
Scenario 7[g]: mod fugitive dust control, baghouse on loadout, diesel boiler, no generator	68	24hr PM_{10}	Scenario 15[o]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, no generator	61	24hr PM_{10}
Scenario 8[h]: high fugitive dust control, boot on loadout, diesel boiler, no generator	52	24hr PM_{10}	Scenario 16[p]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	38	24hr PM_{10}
Setbacks for 2,500 cubic yards per day and 150,000 cubic yards per year					
Scenario 1[a]: mod fugitive dust control, boot on loadout, diesel boiler, generator	200	24hr PM_{10}	Scenario 9[i]: mod fugitive dust control, boot on loadout, nat. gas boiler, generator	181	24hr PM_{10}
Scenario 2[b]: high fugitive dust control, boot on loadout, diesel boiler, generator	169	24hr PM_{10}	Scenario 10[j]: high fugitive dust control, boot on loadout, nat. gas boiler, generator	159	24hr PM_{10}
Scenario 3[c]: mod fugitive dust control, boot on loadout, diesel boiler, no generator	190	24hr PM_{10}	Scenario 11[k]: mod fugitive dust control, boot on loadout, nat. gas boiler, no generator	169	24hr PM_{10}
Scenario 4[d]: high fugitive dust control, boot on loadout, diesel boiler, no generator	149	24hr PM_{10}	Scenario 12[l]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	133	24hr PM_{10}
Scenario 5[e]: mod fugitive dust control, baghouse on loadout, diesel boiler, generator	127	24hr PM_{10}	Scenario 13[m]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, generator	102	24hr PM_{10}
Scenario 6[f]: high fugitive dust control, baghouse on loadout, diesel boiler, generator	97	24hr PM_{10}	Scenario 14[n]: high fugitive dust control, baghouse on loadout, nat. gas boiler, generator	81	24hr PM_{10}
Scenario 7[g]: mod fugitive dust control, baghouse on loadout, diesel boiler, no generator	117	24hr PM_{10}	Scenario 15[o]: mod fugitive dust control, baghouse on loadout, nat. gas boiler, no generator	97	24hr PM_{10}
Scenario 8[h]: high fugitive dust control, boot on loadout, diesel boiler, no generator	92	24hr PM_{10}	Scenario 16[p]: high fugitive dust control, boot on loadout, nat. gas boiler, no generator	81	24hr PM_{10}

a. Scenario 1: 95% control on loadout (boot, water, etc); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr diesel boiler; 1,000 kW engine for generator.
b. Scenario 2: 95% control on loadout (boot, water, etc); high control of fugitives from material handling (+95%); 5 MMBtu/hr diesel boiler; 1,000 kW engine for generator.
c. Scenario 3: 95% control on loadout (boot, water, etc); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr diesel boiler; no generator.
d. Scenario 4: 95% control on loadout (boot, water, etc); high control of fugitives from material handling (+95%); 5 MMBtu/hr diesel boiler; no generator.
e. Scenario 5: 99% control on loadout (baghouse); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr diesel boiler; 1,000 kW engine for generator.

Table 9. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION

CBP Configuration Scenario	Setback (m)	Controlling Pollutant	CBP Configuration Scenario	Setback (m)	Controlling Pollutant

f. Scenario 6: 99% control on loadout (baghouse); high control of fugitives from material handling (+95%); 5 MMBtu/hr diesel boiler; 1,000 kW engine for generator.
g. Scenario 7: 99% control on loadout (baghouse); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr diesel boiler; no generator.
h. Scenario 8: 99% control on loadout (baghouse); high control of fugitives from material handling (+95%); 5 MMBtu/hr diesel boiler; no generator.
i. Scenario 9: 95% control on loadout (boot, water, etc); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr nat gas boiler; 1,000 kW engine for generator.
j. Scenario 10: 95% control on loadout (boot, water, etc); high control of fugitives from material handling (+95%); 5 MMBtu/hr nat gas boiler; 1,000 kW engine for generator.
k. Scenario 11: 95% control on loadout (boot, water, etc); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr nat gas boiler; no generator.
l. Scenario 12: 95% control on loadout (boot, water, etc); high control of fugitives from material handling (+95%); 5 MMBtu/hr nat gas boiler; no generator.
m. Scenario 13: 99% control on loadout (baghouse); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr nat gas boiler; 1,000 kW engine for generator.
n. Scenario 14: 99% control on loadout (baghouse); high control of fugitives from material handling (+95%); 5 MMBtu/hr nat gas boiler; 1,000 kW engine for generator.
o. Scenario 15: 99% control on loadout (baghouse); moderate control of fugitives from material handling (+75%); 5 MMBtu/hr nat gas boiler; no generator.
p. Scenario 16: 99% control on loadout (baghouse); high control of fugitives from material handling (+95%); 5 MMBtu/hr nat gas boiler; no generator.

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR

DEQ'S AIR IMPACT ANALYSES

CBP Plant Modeled Emissions Rates

Operations were assumed to be limited to daily and annual throughputs as selected

Daily production scenarios: < 500 cy/day; < 1,000 cy/day < 1,500 cy/day ; < 2,500 cy/day

Annual production: < 150,000 cy/year

Truck Loadout

Truck loadout emissions were modeled for two different operational scenarios. One scenario involves control of emissions by 95%. This typically involves using a boot loading devise and/or water spray rings. The other scenario involves 100% capture of emissions and control to 99% by a baghouse.

Weigh hopper

Emissions from the weigh hopper are assumed to be captured and controlled to 99% by a baghouse.

Boiler

It was assumed a 5 MM Btu/hr boiler would be operated at CBPs. Emissions were modeled using two different operational scenarios. One scenario involves a diesel-fired boiler and the other involves a natural gas-fired boiler. Boiler operations of 24 hours per day and 4,380 hours per year were used to calculate emissions for respective averaging periods.

Cement and Supplement Silo Filling

It was assumed that emissions from silo filling are controlled by a fabric filter. Emissions factors for controlled emissions were used, and it was assumed that a mix of 35% supplement and 55% cement is used in the process.

Power Generator

Emissions were modeled using two different operational scenarios. One scenario involves operating a diesel-fired engine of 1,000 kW rating or less. The other operational scenario does not involve operation of a generator. Emissions estimates were calculated assuming EPA Tier II certification and combustion of 0.0015% sulfur diesel. Generator operations of 24 hours per day and 4,380 hours per year were used to calculate emissions for respective averaging periods.

Aggregate Handling Emissions

Emissions from handling of aggregate and sand were calculated for the following transfers: 1) material to ground storage; 2) material from storage to a receiving hopper; 3) material handling to elevated storage bin.

PM_{10} emissions associated with the handling of aggregate materials were calculated using emissions factors from AP42 Section 13.2.4.

Emissions were calculated using the following emissions equation:

$$E = k(0.0032)\left[\frac{(U/5)^{1.3}}{(M/2)^{1.4}}\right] \quad \text{lb/ton}$$

Where:

k	=	0.35 for PM_{10}
M	=	1.77% for aggregate and 4.17% for sand
U	=	wind speed (mph)

A moisture content of 1.77% for aggregate and 4.17% for sand was used based on defaults suggested for CBPs in AP-42. Emissions were then modified according to supplementary control measures. Two operational scenarios were modeled: 1) assuming additional controls achieve a 75% control; 2) assuming additional controls achieve a 95% control.

In the model, emissions are varied as a function of windspeed, with the base emissions entered for a windspeed of 10 mph.

upper windspeeds for 6 categories: 1.54, 3.09, 5.14, 8.23, 10.8 m/sec

Median windspeed for each category (1 m/sec = 2.237 mph)

Cat 1: (0 + 1.54)/2 = 0.77 m/sec ➢ 1.72 mph
Cat 2: (1.54 + 3.09)/2 = 2.32 m/sec ➢ 5.18 mph
Cat 3: (3.09 + 5.14)/2 = 4.12 m/sec ➢ 9.20 mph
Cat 4: (5.14 + 8.23)/2 = 6.69 m/sec ➢ 14.95 mph
Cat 5: (8.23 + 10.8)/2 = 9.52 m/sec ➢ 21.28 mph
Cat 6: (10.8 + 14)/2 = 12.4 m/sec ➢ 27.74 mph

Base factor for aggregate – use 10 mph wind: $0.35\,(0.0032)\dfrac{(10/5)^{1.3}}{(1.77/2)^{1.4}} = 3.272\text{ E}-3$ lb/ton

Adjustment factors to put in the model:

Cat 1: $(1.72/5)^{1.3}$ (1.329 E-3) = 3.319 E-4 lb/ton
Factor = 3.319 E-4/3.272 E-3 = 0.1014

Cat 2: $(5.18/5)^{1.3}$ (1.329 E-3) = 1.392 E-3 lb/ton
Factor = 1.392 E-3/ 3.272 E-3 = 0.4253

Cat 3: $(9.20/5)^{1.3}$ (1.329 E-3) = 2.936 E-3 lb/ton
Factor = 2.936 E-3/3.272 E-3 = 0.8974

Cat 4: $(14.95/5)^{1.3}$ (1.329 E-3) = 5.519 E-3 lb/ton
Factor = 5.519 E-3/3.272 E-3 = 1.687

Cat 5: $(21.28/5)^{1.3}$ (1.329 E-3) = 8.734 E-3 lb/ton
Factor = 8.734 E-3/3.272 E-3 = 2.669

Cat 6: $(27.74/5)^{1.3}$ (1.329 E-3) = 1.233 E-2 lb/ton
Factor = 1.233 E-2/3.272 E-3 = 3.768

These adjustment factors are the same for emissions from handling sand.

1 yd^3 of concrete ≈ 4024 lbs, consisting of:
1865 lbs aggregate
1428 lbs sand
491 lbs cement
73 lbs supplement
20 gal water

Fraction of aggregate = 1865 lb / 4024 lb = 0.463

Base PM_{10} factor for aggregate handling emissions in terms of lb/yd^3:

$$\frac{3.272\text{ E-3 lb }PM_{10}}{\text{ton agg}} \Bigg| \frac{0.463\text{ ton agg}}{\text{ton concrete}} \Bigg| \frac{\text{ton}}{2000\text{ lb}} \Bigg| \frac{4024\text{ lb conc}}{yd^3} = \frac{3.048\text{ E-3 lb}}{yd^3}$$

Base daily PM_{10} for 1,000 cy/day and 75% supplementary control:

$$\frac{3.048\text{ E-3 lb }PM_{10}}{yd^3} \Bigg| (1-0.75) \Bigg| \frac{1000\ yd^3}{\text{day}} \Bigg| \frac{\text{day}}{24\text{ hour}} = \frac{3.175\text{ E-2 lb}}{\text{hr}}$$

These sources were modeled as two volume sources: 1) material transfers at ground level (2 each of aggregate and sand); 2) material transfers to elevated storage (1 each of aggregate and sand).

CBP Modeling Parameters

Truck Loadout

Scenario 1-4, 9-12 (as indicated in Table 9): fugitive emissions from loading with boot, model as volume source on a 10 m x 10 m x 10 m high building:

Release height = 5 meters
Initial dispersion coefficients: σ_{y0} = 20 m / 4.3 = 4.65 m
σ_{z0} = 10 m / 2.15 = 4.65 m

Scenario 5-8, 13-16 (as indicated in Table 9): 100% capture of emissions and release from baghouse stack, model as point source with the following parameters:

Stack height = 5.0 m; stack diameter = 0.001 meters (to limit momentum plume rise for potential vertical release or capped release); stack gas temperature = 0 K (model will use ambient air temperature for release); flow velocity = 0.001 meters/second (to limit momentum plume rise for potential vertical release or capped release)

Weigh Hopper

Emissions were modeled as a point source with the following parameters:

Stack height = 3.0 m; stack diameter = 1.0 meters (to limit momentum plume rise for potential vertical release or capped release); stack gas temperature = 0 K (model will use ambient air temperature for release); flow velocity = 0.001 meters/second (to limit momentum plume rise for potential vertical release or capped release)

Boiler

Stack parameters are dependent upon the fuel combusted. A combustion evaluation was used to estimate actual stack flow, assuming respective fuel requirements for a 5 MMBtu/hr boiler and a stack gas release temperature of 450 K.

Parameters for the diesel-fired boiler are as follows:

Stack height = 5.0 m; stack diameter = 0.2 meters; stack gas temperature = 450 K; flow velocity = 12.1 meters/second (value needed to achieve a 806 acfm flow rate as indicated by a combustion evaluation)

Parameters for the natural gas-fired boiler are as follows:

Stack height = 5.0 m; stack diameter = 0.3 meters; stack gas temperature = 450 K; flow velocity = 10.48 meters/second (value needed to achieve a 1570 acfm flow rate as indicated by a combustion evaluation)

Cement and Supplement Silo Filling

Emissions were modeled as a point source with the following parameters:

Stack height = 5.0 m; stack diameter = 1.0 meters (to limit momentum plume rise for potential vertical release or capped release); stack gas temperature = 0 K (model will use ambient air temperature for release); flow velocity = 0.001 meters/second (to limit momentum plume rise for potential vertical release or capped release)

Power Generator

Stack gas temperatures and flow rates are often overestimated by permit applicants, likely because values reported by manufacturers are based on values measured at the exhaust manifold rather than at the point of release to the atmosphere. The parameters used in modeling were derived by the following process:

1. The flow for a 1000 kW generator found online was 6907 cfm at 959° F (515° C)(788 K)
2. A reasonably conservative (on the low side) release temperature of 500 K was selected and the acfm flow of 4383 was calculated for the new temperature.
3. A reasonably conservative flow velocity of 25 m/sec was selected, and then a stack diameter of 0.3101 m was calculated (the diameter needed to generate 4000 acfm with a 25 m/sec velocity).

The final point source parameters were as follows:

Stack height = 5.0 m; stack diameter = 0.3101 meters; stack gas temperature = 500 K; flow velocity = 25 meters/second.

Aggregate and Sand to and from Storage

Model as a volume source, released from a 10 m X 10 m area, 3 m high, released at 2 m

Initial dispersion coefficients: σ_{y0} = 10 m / 4.3 = 2.33 m
σ_{z0} = 3 m / 4.3 = 0.7 m

Sources include: two transfers, equivalent in emissions to that of a frontend loader, from the point of aggregate and sand delivery to transfer to the CBP receiving hopper.

Aggregate and Sand to Elevated Storage

Model as a volume source on a building that is 10 m X 10 m X 10 m high, release height = 5 m.

Initial dispersion coefficients: σ_{y0} = 10 m / 4.3 = 2.33 m
σ_{z0} = 10 m / 2.15 = 4.65 m

Sources include: one transfer, equivalent in emissions to that of a frontend loader, to the point of aggregate and sand delivery to elevated storage.