Statement of Basis

Permit to Construct No. P-2010.0018
Project No. 60715

Central Paving Co., Inc.
Hot Plant 3

Facility ID No. 777-00322

Facility Review

March 22, 2011
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
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AP-42	AP-42, Volume I, Fifth Edition, January 1995, Compilation of Air Pollutant Emission Factors
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
ASTM Grade 1 and 2	ASTM standards for distillate fuel oil (diesel)
ASTM D6448	ASTM standards for used oil
ASTM D6751	ASTM standards for biodiesel
BACT	Best Available Control Technology
BHP	brake horsepower
Blue Sky engine	a nonroad engine meeting the requirements of 40 CFR 89.112(f)
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
COMS	continuous opacity monitoring systems
criteria pollutants	PM_{10}, SO_2, NO_2, CO, ozone, lead
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
gpm	gallons per minute
gph	gallons per hour
gr	grain (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HMA	hot mix asphalt
HP	horsepower
hr/yr	hours per consecutive 12-calendar month period
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
L/cylinder	liters per cylinder
lb/hr	pounds per hour
lb/qtr	pound per quarter
LPG	liquefied petroleum gas
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter

MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
PAH	polyaromatic hydrocarbons
PBR	Permit by Rule as established in IDAPA (Sections 795-799)
PCB	polychlorinated biphenyl
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
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil, recycled fuel oil, and used oil
RICE	reciprocating internal combustion engines
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
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_X	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per any consecutive 12-calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
Tier 2	an engine meeting Tier 2 emission standards in 40 CFR 89.112
Tier 3	an engine meeting Tier 3 emission standards in 40 CFR 89.112
Tier 4	an engine meeting Tier 4 emission standards in 40 CFR 1039.101 and 40 CFR 1039.102
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
TEQ	toxicity equivalent
U.S.C.	United States Code
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

Stockpiled aggregate is transferred to feed bins. Aggregate may consist of up to 50% percent recycled asphalt pavement (RAP). Aggregate is dispensed from the bins onto feeder conveyors, which transfer the aggregate to the heated drum mixer. Aggregate travels through the rotating hot mix asphalt (HMA) drum mixer, and when dried, the aggregate is mixed with liquid asphalt cement. The resulting HMA is then conveyed to hot storage bins or silos until it can be loaded into trucks for transport off site. During cool weather, HMA fuel(s) may need to be pre-heated to reduce the viscosity. Other equipment may include a portable sand and gravel and crushed stone operation, which crushes rock and aggregate to reduce material in size to desired specifications. Electrical power may be supplied to the plant equipment from the local power grid or from portable generators.

Permitting History

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

May 22, 2003	P-030020, initial permit to construct a hot mix asphalt plant (S)

Application Scope

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

The applicant has proposed to revise the portable operating scenario (for site locations other than the Apple Street Yard) to include:

- Use of reprocessed fuel oil (RFO) in the HMA Dryer
- Addition of a portable nighttime generator engine (GEN1)

Application Chronology

December 28, 2010	DEQ received a PTC application and an application fee.
January 13 - 28, 2011	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
January 14, 2011	DEQ made available the draft permit and statement of basis for peer and regional office review.
January 11 - 18, 2011	DEQ received supplemental information from the applicant, including a revised emission inventory and copies of the baghouse O&M manual and initial performance test results.
January 26, 2011	DEQ determined that the application was complete.
March 14, 2011	DEQ made available the draft permit and statement of basis for applicant review.
March 22, 2011	DEQ received the $5,000 permit processing fee.
March 22, 2011	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emission Sources and Control Equipment

TABLE 1 EMISSION SOURCES AND CONTROL EQUIPMENT

Source Description		Control Equipment	
HMA Dryer		Baghouse	
Manufacturer/model:	CMI PDT-400 or equivalent[a]	Manufacturer/model:	CMI RA318P or equivalent[a]
Manufacture date:	1999		
Burner model:	Hauck SJ520 or equivalent[a]		
Maximum capacity:	450 T/hr and 96.8 MMBtu/hr		
Maximum production:	7,200 T/day and 700,000 T/yr		
Fuel:	natural gas, propane, distillate fuel oil ASTM Grades 1 and 2, residual fuel oil, reprocessed fuel oil		
Asphalt Tank Heater		None	
Manufacturer/model:	or equivalent[a]		
Maximum capacity:	1.41 MMBtu/hr		
Maximum operation:	24 hr/day		
Fuel:	distillate fuel oil ASTM Grades 1 and 2		
Fuel consumption:	10.29 gal/hr		
Compression ignition internal combustion engines (CI ICE)		None	
GEN2			
Manufacturer/model:	Caterpillar 3412CDITA or equivalent[a]		
Manufacture date:	2001		
Maximum capacity:	902 kW		
Maximum operation:	16 hr/day		
Fuel:	distillate fuel oil ASTM Grades 1 and 2		
Fuel consumption:	59.6 gal/hr at full load		
GEN1			
Manufacturer/model:	John Deere MultiQuip 4045TF75 or equivalent[a]		
Manufacture date:	2006 (EPA Tier 2)		
Maximum capacity:	84 kW and 1.125 L/cylinder		
Maximum operation:	8 hr/day		
Fuel:	distillate fuel oil ASTM Grades 1 and 2		
Fuel consumption:	5.7 gal/hr at 75% load		
Storage tanks		None	
Model:	above-ground storage tank		
Maximum capacity:	25,000 gallons		
Type:	asphalt oil		
Model:	above-ground storage tank		
Maximum capacity:	25,000 gallons		
Type:	asphalt oil		
Model:	above-ground storage tank		
Maximum capacity:	10,000 gallons		
Type:	fuel oil and RFO		
Materials transfer points (includes fugitives) (4) bin aggregate feeders, (2) bin RAP feeders, Truck loading silo, Screen, Conveyors, Aggregate dump to ground, Aggregate dump to conveyor, Aggregate conveyor to elevated storage		Reasonable control methods	

Emission Inventories

An emission inventory was developed for the hot mix asphalt facility to estimate emissions from the sources listed in Table 1. Emissions estimates of criteria pollutant potential to emit (PTE) were based on the emission estimates for the Apple Street Yard operating scenario permitted under PTC No. P-030020 and emission estimates for portable operation (excluding the Apple Street Yard operating scenario) provided in the current application.

Criteria emission estimates for portable operation (excluding the Apple Street Yard operating scenario) were based on emission factors from AP-42,[1] operation of the HMA plant up to 7,200 T/day and 480,000 T/yr, operation of the primary diesel generator (GEN2) up to 16 hr/day, operation of a proposed nighttime diesel generator (GEN1) up to 24 hr/day, operation of the HMA Dryer using reprocessed fuel oil (RFO) containing up to 0.02% sulfur by weight in addition to fuels permitted under PTC No. P-030020, and process information specific to the facility for this proposed project. Summaries of the estimated controlled emissions of criteria pollutants, toxic air pollutants (TAP), and hazardous air pollutants (HAP) from the facility are provided in Appendix A.

To allow the flexibility to switching operations between co-located and non co-located operating scenarios (at the start of each calendar day), the annual operating limits and the corresponding emission estimates for each emission source were kept consistent across all operating scenarios.

Pre-Project Potential to Emit

Although the existing HMA plant is currently permitted for stationary and portable operation, the pre-project potential to emit was conservatively estimated to be zero for the purposes of estimating the emissions increase for the proposed statewide operating scenario. Because the existing plant was permitted (under PTC No. P-030020) to operate at production levels greater than those currently requested for portable operation, and because criteria pollutant emissions were estimated to be similar whether firing residual fuel oil or reprocessed fuel oil, the change in potential to emit estimates were considered conservative.

The following table presents the pre-project potential to emit for criteria pollutants from all emissions units at the facility as submitted by the applicant and verified by DEQ staff.

TABLE 2 PRE-PROJECT POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Drum Mix HMA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tank Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GEN1+GEN2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials Handling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Project Totals	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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

Post Project Potential to Emit

The following table presents the post-project potential to emit for criteria pollutants from all emissions units at the facility as submitted by the applicant and verified by DEQ staff. Refer to Appendix A for additional information concerning the post-project emission inventory.

[1] Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Fifth Edition, Office of Air Quality Planning and Standards Office of Air and Radiation, EPA, January 1995.

TABLE 3 POST-PROJECT POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]
Drum Mix HMA	10.35	5.52	1.53	0.82	24.76	13.20	58.50	31.20	14.40	7.68	7E-03	4E-03
Tank Heater	0.04	0.15	0.03	0.13	0.21	0.91	0.06	0.23	0.01	0.03	2E-05	7E-05
GEN1+GEN2	1.13	3.22	0.18	0.50	19.50	55.20	23.60	67.50	2.87	7.96	0	0
Materials Handling	0.50	0.27	0.00	0.00	0.00	0.00	1.14	0.61	1.81	0.97	0	0
Post-Project Totals	**12.02**	**9.16**	**1.74**	**1.45**	**44.47**	**69.31**	**83.30**	**99.54**	**19.09**	**16.64**	**7E-03**	**4E-03**

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

As demonstrated in Table 3, the facility has a potential to emit over 80% of the major source thresholds of 100 T/yr. Therefore, this facility has been designated as a SM80 facility.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required or if emissions modeling may be required. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

TABLE 4 CHANGES IN POTENTIAL TO EMIT FOR CRITERIA POLLUTANTS

	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources												
Pre-Project PTE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Post Project PTE	12.02	9.16	1.74	1.45	44.47	69.31	83.30	99.54	19.09	16.64	7E-03	4E-03
Changes in PTE	**12.02**	**9.16**	**1.74**	**1.45**	**44.47**	**69.31**	**83.30**	**99.54**	**19.09**	**16.64**	**7E-03**	**4E-03**

TAP Emission Increases

TAP emission estimates were evaluated for the project. Emission increases of TAP were estimated resulting from the use of reprocessed fuel oil, and from the addition of a portable nighttime generator engine operated up to 8 additional hours per day.

TABLE 5 TAP AND HAP CONTROLLED EMISSIONS INCREASES EXCEEDING EL

Toxic Air Pollutants	Average Emission Rates[a] (lb/hr)	Screening Emission Levels[b] (lb/hr)
HCl	0.095	0.05
Acetaldehyde	0.0714	0.003
Priopionaldehyde	0.039	0.0287
Quinone	0.048	0.027

a) 24-hour average emission rate for non-carcinogenic TAP listed in Section 585 or annual average emission rate for carcinogenic TAP listed in Section 586, as appropriate and in accordance with IDAPA 58.01.01.585-586.
b) Applicable screening emission levels as specified in IDAPA 58.01.01.585-586.

Controlled TAP emission estimates exceeded applicable emissions screening levels (EL). A summary of TAP emission estimates which exceeded applicable emission screening levels (EL) identified in IDAPA 58.01.01.585-586 and for which an ambient air quality impact analysis was required is provided in Table 5.

Acetaldehyde is a carcinogenic TAP listed in IDAPA 58.01.01.586, and is a product of combustion. The acetaldehyde emissions increase is primarily attributed to combustion of RFO in the HMA Dryer, with some contribution from the addition of the nighttime generator engine.

With regard to TAP combustion products, DEQ has determined for combustion sources that T-RACT is good combustion practices. In accordance with IDAPA 58.01.01.210.12, when T-RACT is employed the applicable acceptable ambient concentration listed in IDAPA 58.01.01.586 may be increased by a factor of 10. As a result, with regard to acetaldehyde the facility has demonstrated compliance with IDAPA 58.01.01.210.12.b and .c that

the TAP emissions increase due to this permitting action will not exceed any T-RACT ambient concentration at the point of compliance.

In accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e, the requirement to maintain an O&M manual which includes good combustion practices was included (Permit Condition 13) to assure that the facility will be operated in the manner described in this preconstruction compliance demonstration. Refer to the Permit Conditions Review section for additional information concerning this requirement.

Summaries of the estimated controlled emissions of criteria pollutants, toxic air pollutants (TAP), and hazardous air pollutants (HAP) are provided in Appendix A.

Ambient Air Quality Impact Analyses

The estimated emissions from regulated sources exceeded published modeling thresholds[2] for all criteria pollutants except lead, and the toxic air pollutants listed in Table 5. As discussed in Emission Inventories section, the emission increases associated with this project were conservatively estimated as the potential to emit.

For portable statewide operation (excluding the Apple Street Yard location), the operating scenarios modeled included operation of the HMA plant and generators (non co-located), and the simultaneous operation of the HMA plant, generators, and a PBR crusher (co-located).

As presented in the modeling memo in Appendix B, the applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). Refer to Appendix B for additional information concerning the ambient air quality impact analyses.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is portable, with the initial location in Ada County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Because a separate modeling analysis was not provided to demonstrate compliance with applicable standards in nonattainment areas, this facility was not permitted for operation in nonattainment areas.

Idaho has nonattainment areas designated for PM_{10}. Information regarding the geographical location of nonattainment areas in Idaho may be found at:

http://www.deq.idaho.gov/air/data_reports/monitoring/overview.cfm#AttvNon

Permit to Construct (IDAPA 58.01.01.201)

The permittee has requested a revision of PTC No. P-030020 to address the items proposed in the Application Scope section. Therefore, a permit to construct was required in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

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

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[2] Criteria pollutant thresholds provided in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002; and TAP EL thresholds provided in IDAPA 58.01.01.585-586.

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

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM_{10}, SO_2, NO_X, CO, VOC, and HAP or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated the emissions estimates referenced in the Emission Inventories section of this analysis. Therefore, the facility was not classified as a Tier I source in accordance with IDAPA 58.01.01.006, and the requirements of IDAPA 58.01.01.301 were not applicable.

The requirement to maintain and operate a baghouse control device (Permit Condition 46) was established as a synthetic minor limit to ensure that annual PM_{10} emissions do not exceed the PM_{10} major source threshold. Annual production limits for the HMA Dryer (Permit Conditions 11 and 41), annual emission limits (Permit Conditions 6 and 40), and operating hours limits (Permit Conditions 16 and 42) were established as synthetic minor limits to ensure that annual CO and NO_X emissions do not exceed CO and NO_X major source thresholds. Fuel oil sulfur content specifications (Permit Condition 18) were established as synthetic minor limits to ensure that annual SO_2 emissions do not exceed the SO_2 major source threshold.

PSD Classification (40 CFR 52.21)

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.

Use of a baghouse control device (Permit Condition 46) is required to limit emissions below the PSD major source threshold for PM_{10}.

NSPS Applicability (40 CFR 60)

The existing facility was subject to Subparts I and A under PTC No. P-030020, and a detailed applicability analysis for these subparts was not presented in this statement of basis.

The proposed nighttime generator engine (GEN1) was not determined to be subject to Subpart IIII, and a detailed applicability analysis follows.

NSPS Subpart IIII

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

40 CFR 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.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines,

(ii) The model year listed in table 3 to this subpart or later model year, for fire pump engines.

(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.

Because commencement of construction (the date the engine is ordered) of the GEN1 engine has been proposed after July 11, 2005, and manufactured after April 1, 2006, the requirements of this subpart would be applicable to the permittee if the generator engine was operated as a stationary source. However, the permittee has requested operation of the generator engines only under portable operating scenarios (at site locations other than the Apple Street Yard) and as nonroad engines. When operated as a nonroad engine, the requirements of Subpart IIII are not applicable.

With regard to the difference in definitions between "stationary internal combustion engine (ICE)" at 40 CFR 60.4219 and "nonroad engine" at 40 CFR 1068.30;

- *a nonroad engine means that by itself or in or on a piece of equipment, it 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.*
- *an internal combustion engine is not a nonroad 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.*

In order to ensure that engines are operated as nonroad engines, the requirement to use nonroad engine(s) and to monitor the time the engine(s) are operated at each location associated with the hot mix asphalt facility were included as permit conditions (Permit Conditions 15 and 23).

NESHAP Applicability (40 CFR 61)

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

MACT Applicability (40 CFR 63)

The existing and proposed generator engines were not determined to be subject to Subpart ZZZZ, and a detailed applicability analysis follows.

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

40 CFR 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.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

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

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR Part 70 or 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 as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR Part 1068, subpart C.

The facility was not classified as a major source of HAP emissions; refer to the Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70) section for additional information concerning facility classification. In accordance with §63.6585(a) and (c), because the engines are existing RICE at an area source of HAP emissions, the requirements of this subpart would be applicable to the permittee if the generator engine(s) were operated as stationary sources. However, the permittee has requested operation of the generator engines only under portable operating scenarios (at site locations other than the Apple Street Yard) and as nonroad engines. When operated as a nonroad engine, the requirements of Subpart ZZZZ are not applicable. Refer to the NSPS Applicability (40 CFR 60) section for discussion regarding the differences between "stationary reciprocating internal combustion engine (RICE)" at 40 CFR 63.6675 and "nonroad engine" at 40 CFR 1068.30.

In order to ensure that engines are operated as nonroad engines, the requirement to use nonroad engine(s) and to monitor the time the engine(s) are operated at each location associated with the hot mix asphalt facility were included as permit conditions (Permit Conditions 15 and 23).

Nonroad engines are a category of units/equipment that are excluded from the definition of "stationary source" under the Clean Air Act Section 302(z), and hence are exempt from federal stationary source permitting requirements.[3] For this reason and it was considered reasonable not to include such requirements in the permit. Although such requirements were not explicitly included in the permit, by not electing to regulate the generator engines as stationary sources they may be subject to and required to comply with nonroad engine requirements, including meeting the requirements of 40 CFR 89, 94, and/or 1068 as applicable.

Permit Conditions Review

This section describes those permit conditions that have been added, revised, modified or deleted as a result of this permitting action. Certain permit conditions which required renumbering but were otherwise unchanged have not been described.

In addition to the changes described below, the permittee has requested clarification of the language on the cover sheet regarding permit authority:

"This permit will expire if construction has not begun within two years of its issue date or if construction is suspended for one year."

This requirement was determined to have been satisfied for the purposes of this permitting action, because this facility is an existing facility which has already been constructed and operated under PTC No. P-030020.

Existing Permit Conditions 2.1, 2.2, and Appendix A

The PM emissions from the HMA dryer stack shall not exceed 0.04 gr/dscf, nor shall PM_{10}, SO_2, NO_X, CO, or formaldehyde emissions from the HMA dryer stack and the generator stack exceed any corresponding emission rate limit listed in the appendix.

Portable HMA Facility

Table 6.1 HOURLY CRITERIA POLLUTANT EMISSIONS LIMITS[a]

Source Description	*PM_{10}[b]*		*CO*	*NO_X*	*SO_2*
	lb/hr	*T/yr*	*T/yr[d]*	*T/yr[d]*	*T/yr[d]*
Dryer Stack Outlet	*9.2*	*14.9*	*84.0*	*35.6*	*7.1*
Dryer Stack Outlet Collocated	*9.2*	*7.4*	*42.0*	*17.8*	*3.6*
Generator	*1.09*	*1.76*	*15.0*	*56.3*	*8.9*
Generator Collocated	*1.09*	*0.9*	*7.5*	*28.1*	*4.4*

[3] U.S. EPA Region IX "Response to March 12, 2001 Communities for Land, Air, Water and Species Comments on California's Title V Program," Jack P. Broadbent, EPA Region IX, December 14, 2001 (refer to "Our Response to Comment #12").

Table 6.2 FORMALDEHYDE EMISSIONS LIMITS[a]

Source Description	Formaldehyde	
	lb/hr	T/yr
Dryer Stack Outlet Long Term	1.24	0.959
Dryer Stack Outlet Short Term	1.24	2.00
Dryer Stack Outlet Collocated Long Term	1.24	0.48
Dryer Stack Outlet Collocated Short Term	1.24	1.00

a) *As determined by a pollutant-specific EPA reference method, Department-approved alternative, or as determined by the Department's emission estimation methods used in the permit application analysis.*

Gases from systems for screening, handling, storing, and weighing hot aggregate that emanate from a stack, vent, or other functionally equivalent opening shall not contain PM emissions in excess of 0.04 gr/dscf.

Revised Permit Conditions 5, 6, and 40

In accordance with 40 CFR 60.92, no owner or operator shall discharge or cause the discharge into the atmosphere from any HMA facility any gases which:

- *contain particulate matter in excess of 0.04 gr/dscf (90 mg/dscm);*
- *exhibit 20% opacity or greater.*

Except as specified for the Apple Street Yard (Permit Condition 40), the emissions from the HMA Dryer stack and the generator stack shall not exceed any corresponding emission rate limits listed in Table 2.

TABLE 2 HMA DRYER EMISSION LIMITS[a]

Source Description	PM_{10}[b] lb/hr[c]
HMA Dryer stack	10.35

a) *In absence of any other credible evidence, compliance is assured by complying with this permit's operating, monitoring, and record keeping requirements.*
b) *Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.81.*
c) *Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157 or DEQ-approved alternative.*

When operating at 5040 South Apple Street, the permittee shall comply with the following limits instead of the statewide emission limits (Permit Condition 6):

- *The emissions from the HMA Dryer stack and generator stack(s) shall not exceed any corresponding emission rate limits listed in Table 8.*

TABLE 8 HMA DRYER EMISSION LIMITS[a]

Source Description	PM_{10}[b]		CO	NO_X	SO_2	Formaldehyde	
	lb/hr[c]	T/yr[d]	T/yr[d]	T/yr[d]	T/yr[d]	lb/hr[c]	T/yr[d]
HMA Dryer stack	9.2	14.9	84.0	35.6	7.1	1.24	0.959
HMA Dryer stack Co-located	9.2	7.4	42.0	17.8	3.6	1.24	0.48
Generator stack(s)	1.09	1.76	15.0	56.3	8.9		
Generator stack(s) Co-located	1.09	0.9	7.5	28.1	4.4		

a) *As determined by a pollutant-specific EPA reference method, DEQ-approved alternative, or as determined by DEQ's emission estimation methods used in the permit application analysis.*

These permit conditions have been revised to separate the requirements associated with the Apple Street Yard operating scenarios and the statewide operating scenarios. The Apple Street Yard emission limits have been preserved while statewide operating scenario emission limits were revised based upon the emission estimates provided in the proposed operating scenarios.

Daily HMA plant throughput limits were established for non co-located and co-located operation (Permit Condition 10) to ensure compliance with the 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS). Annual throughput and emission limits were established as synthetic minor limits for non co-located and co-located operation to ensure that annual emissions do not exceed major source thresholds.

Refer to the Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70) section for additional information concerning annual emission limits as synthetic minor limits. Refer to the Emission Inventories and Ambient Air Quality Impact Analyses sections for additional information concerning the emission estimates and ambient air impact analyses for the proposed operating scenarios.

Daily RAP throughput limits were established based on the assumptions used in the development of the emissions inventory.

A setback distance from the property boundary was used in the modeling analyses developed to demonstrate preconstruction compliance with NAAQS and TAP standards. Because the equipment is portable and the location may be changed from its initial location, compliance with a minimum equipment setback distance limit is required at site locations other than the Apple Street Yard.

Existing Permit Condition 2.4

All reasonable precautions shall be taken to prevent PM from becoming airborne as required in IDAPA 58.01.01.651. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of particulate matter (PM). Some of the reasonable precautions include, but are not limited to, the following:

- *Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of lands.*
- *Application, where practical, of asphalt, oil, water, or suitable chemicals to, or covering of, dirt roads, material stockpiles, and other surfaces which can create dust.*
- *Installation and use, where practical, of hoods, fans, and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations.*
- *Covering, where practical, of open bodied trucks transporting materials likely to give rise to airborne dusts.*
- *Paving of roadways and their maintenance in a clean condition, where practical.*
- *Prompt removal of earth or other stored material from streets, where practical.*

Revised Permit Condition 8

In accordance with IDAPA 58.01.01.650-651 and IDAPA 58.01.01.808, all reasonable precautions shall be taken to prevent PM from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of particulate matter (PM). Some of the reasonable precautions include, but are not limited to, the following:

- *Good operating practices, including water spraying or other suitable measures, shall be employed to prevent dust generation and atmospheric entrainment during operations such as aggregate stockpiling, scalping screen changing and general maintenance.*
- *Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of lands.*
- *Application, where practical, of asphalt, oil, water, or suitable chemicals to, or covering of, dirt roads, material stockpiles, and other surfaces which can create dust.*
- *Installation and use, where practical, of hoods, fans, and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations.*
- *Covering, where practical, of open bodied trucks transporting materials likely to give rise to airborne dusts.*
- *Paving of roadways and their maintenance in a clean condition, where practical.*
- *Prompt removal of earth or other stored material from streets, where practical.*

This permit condition was revised to reference the fugitive dust control requirements for hot mix asphalt plants required by IDAPA 58.01.01.808 in addition to the requirements of IDAPA 58.01.01.650-651.

Existing Permit Condition 2.5

The burner fuel shall be either distillate fuel oil, residual fuel oil, natural gas, or propane gas only.

Revised Permit Condition 17

The HMA Dryer shall only combust the following fuels to ensure compliance with emission limits (Permit Conditions 6 and 40) and in accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e.

- *natural gas,*
- *propane,*
- *ASTM Grade 1 and Grade 2 distillate fuel oils,*
- *residual fuel oils, and*
- *reprocessed fuel oils (RFO) meeting the required specifications (Permit Conditions 18 and 19).*

As discussed above, these permit conditions have been revised to separate the requirements associated with the Apple Street Yard operating scenarios and the statewide operating scenarios. The Apple Street Yard fuel specifications have been preserved while statewide operating scenario fuel specifications were revised based upon the emission estimates provided in the proposed operating scenarios (use of reprocessed and/or residual fuel oil in the generators was not proposed or demonstrated for portable operation). Refer to the Emission Inventories section for additional information concerning the emission estimates for the proposed operating scenarios. NSPS requirements were also included separately and cited in accordance with the underlying regulation.

The permittee has requested the use of reprocessed fuel oil (RFO) in the dryer and has provided supplemental information supporting that no emissions increase is expected as a result of the combustion of RFO when compared to the combustion of residual fuel oil, for which the facility was permitted to use under PTC No.

P-030020.[4] Grades RFO4, RFO5L, RFO5H, and RFO6 are commonly defined as used or reprocessed lubricating oil blends, with or without distillate or residual fuel oil, or both.[5] HMA emissions when burning #2 diesel fuel and waste oil were estimated in the emission inventory developed for PTC No. P-030020, using emissions factors from AP-42 section 11.1.[6] After review of the background document for this section of AP-42, discussion suggests that reprocessed fuels were considered during the development of the emission factors for waste oil-fired dryers.[7]

Existing Permit Condition 2.6

The sulfur content in the No. 2 fuel oil (ASTM Grade 2) supplied to the HMA plant and generator shall not exceed 0.5% by weight as required in IDAPA 58.01.01.728.

Revised Permit Condition 18

The permittee shall not combust any fuel oil containing more than 0.02% sulfur by weight to ensure compliance with emission limits (Permit Conditions 6 and 40) and IDAPA 58.01.01.725.

As discussed above, this permit condition has been revised to separate the requirements associated with the Apple Street Yard operating scenarios and the statewide operating scenarios. The Apple Street Yard fuel specifications have been preserved while statewide operating scenario fuel specifications were revised based upon the emission estimates provided in the proposed operating scenarios. Refer to the Emission Inventories section for additional information concerning the emission estimates for the proposed operating scenarios. In addition, the NSPS requirements were included separately and cited in accordance with the underlying regulation.

Existing Permit Condition 2.7

The permittee shall, in accordance with manufacturer specifications, install, calibrate, maintain, and operate equipment to continuously measure the pressure differential across the air pollution control equipment and the scrubbing-media flow rate to the air pollution control equipment. A scrubbing-media flow rate monitor is required only if a wet scrubber is used to control some or all of the emission from the HMA plant.

Revised Permit Condition 12

The permittee shall install, calibrate, maintain, and operate equipment in accordance with manufacturer's specifications to continuously measure the pressure differential across the air pollution control equipment.

This permit condition has been revised to remove the reference to wet scrubber control equipment. The permittee has confirmed that a wet scrubber has not been used and is not currently planned to be used at the Apple Street Yard, and the proposed operating scenarios did not account for the use of a wet scrubber in the emission estimates and ambient air impact analyses. Refer to the Emission Inventories and Ambient Air Quality Impact Analyses sections for additional information concerning the emission estimates and ambient air impact analyses for the proposed operating scenarios.

Existing Permit Condition 2.8

Within 60 days of permit issuance, the permittee shall have developed an O&M manual for the air pollution control device, which describes the procedures that will be followed to comply with General Provision 2 and the air pollution control device requirements contained in this permit. The manual shall remain onsite at all times and made available to Department representatives upon request.

Revised Permit Condition 13

- *The permittee shall maintain an O&M manual for the air pollution control device and for the HMA Dryer which describes the following:*

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[4] Email to DEQ, Bob Potts, Central Paving Inc., March 11, 2011.
[5] Significance of Tests for Petroleum Products, 7th Edition, Salvatore J. Rand, ASTM International, 2003.
[6] Refer to "Appendix A - Emissions Estimate to Air Quality Permitting," Technical Analysis for PTC No. P-030020, DEQ, May 7, 2003.
[7] Refer to discussion concerning Reference 6 in "Section 4, Pollutant Emission Factor Development," Emission Factor Documentation for AP-42 Section 1.11 Waste Oil Combustion, Office of Air Quality Planning and Standards, EPA, April 1993.

- *good combustion practices that will be followed for the HMA Dryer, in accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e.*
- *the procedures that will be followed to comply with the maintenance and operation general provision (Permit Condition 46) and the air pollution control device requirements contained in this permit.*

- *The O&M manual shall remain onsite at all times and shall be made available to DEQ representatives upon request.*

The permittee has confirmed that the O&M manual has been developed, so the requirement to develop the manual has been satisfied and has been removed.[8] The requirement to maintain the O&M manual has been retained.

Because good combustion practices were proposed as a method to minimize acetaldehyde emissions, and were determined to be T-RACT (refer to the Ambient Air Quality Impact Analyses section for additional information concerning the T-RACT determination), the scope of the O&M manual was expanded to include operation and maintenance of the HMA Dryer, in accordance with IDAPA 58.01.01.210.12.d and 58.01.01.210.14.e.

It may be noted that during review of the O&M manual it was found that some procedural information was already included within the manual relating to good combustion practices, including the recommendation to check the burner frequently for loose linkage, defective fuel valves, leaks in fuel piping and proper burner adjustment.

Existing Permit Condition 2.10

The diesel-fired electrical generator used with this HMA plant shall meet the following criteria:

- *The stack height shall be at least seven feet;*
- *The maximum rated exhaust flow rate shall be at least 4,457 acfm; and*
- *The maximum rated fuel consumption shall be no more than 80 gal/hr*

The permittee shall maintain on-site at all times the manufacturers specifications for the generator being used. These specifications shall be made available to Department representatives upon request.

Revised Permit Conditions 15 and 23

- *The permittee shall utilize only nonroad engines as defined by 40 CFR 1068.30.*
  - *A nonroad engine is an internal combustion engine that meets the following criteria: by itself or in or on a piece of equipment, it 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.*
  - *An internal combustion engine is not a nonroad engine if it meets any of the following criteria: the engine remains or 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 replaces 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. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year.*
- *The GEN2 engine shall meet the following criteria:*
  - *The stack height shall be at least seven feet;*
  - *The maximum rated exhaust flow rate shall be at least 4,457 acfm; and*
  - *The maximum rated fuel consumption shall not exceed 80 gallons per hour.*

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[8] "Installation, Operation, & Maintenance, RA-P Series Baghouse," CMI Corporation, document PPO663-02 emailed to DEQ on January 17, 2011 (refer to "Oil Fired Burners" section, beginning p. 24 for information related to combustion practices).

- *The permittee shall maintain on site at all times the manufacturer's specifications for the generator being used. These specifications shall be made available to DEQ representatives upon request.*

The permittee shall maintain records of generator engine locations associated with the hot mix asphalt facility to ensure compliance with nonroad engine specifications (Permit Condition 15). The records shall include:

- *A description of each location in which an engine is operated. The Portable Equipment Relocation Form may be used for the purposes of complying with this requirement (Permit Condition 29).*
- *For each location, the date any engine is located, relocated, or removed and the total time that all engines have operated at that location.*

These permit conditions require monitoring and recordkeeping of total time spent by engines at each location to avoid applicability of 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ requirements to the internal combustion engines.

The permittee has requested to operate the permitted engines as nonroad engines, and will therefore need to comply with applicable nonroad engine requirements (e.g., 40 CFR 1068). Refer to the NSPS Applicability (40 CFR 60) and MACT Applicability (40 CFR 63) sections for additional information regarding the requirements for nonroad (and stationary) engines.

Existing Permit Condition 2.11

The following parameters shall be monitored and recorded. A compilation of the most recent five years of records shall be kept onsite and shall be made available to DEQ representatives upon request.

- *Pressure drop across the air pollution control device once on a daily basis*
- *When a wet scrubber is utilized, the scrubbing-media flow rate to the air pollution control device once on a daily basis*
- *HMA production in tons per day and tons per month*

Revised Permit Condition 22

- *Each day that the HMA Dryer is operated, the permittee shall monitor and record the daily production to demonstrate compliance with the relevant daily production limit (Permit Conditions 10 and 41).*
- *Each month the permittee shall monitor and record the monthly and annual production of the HMA Dryer to demonstrate compliance with the relevant annual production limit (Permit Conditions 11 and 41). Annual production shall be determined by summing each monthly production total over the previous consecutive 12-calendar month period.*
- *For each mix when RAP is used as part of the aggregate, the permittee shall monitor and record the tons of RAP used and the tons of aggregate mixed with RAP to demonstrate compliance with the RAP aggregate limit (Permit Conditions 10 and 41).*
- *Each day that the HMA Dryer is operated, the permittee shall monitor and record the pressure drop across the air pollution control device once on a daily basis.*

This permit condition has been revised to remove the reference to wet scrubber control equipment. The permittee has confirmed that a wet scrubber has not been used and is not currently planned to be used at the Apple Street Yard, and the proposed operating scenarios did not account for the use of a wet scrubber in the emission estimates and ambient air impact analyses. Refer to the Emission Inventories and Ambient Air Quality Impact Analyses sections for additional information concerning the emission estimates and ambient air impact analyses for the proposed operating scenarios.

This permit condition has also been revised to clarify that monitoring and recordkeeping of total daily production and RAP use are required on a daily basis when the plant is operated, and at a minimum each month to ensure compliance with production limits (Permit Conditions 10, 11, and 41).

Existing Permit Condition 2.12

The permittee shall conduct a monthly facility-wide inspection of potential sources of fugitive emissions, during daylight hours and under normal operating conditions to ensure that the methods used to reasonably control fugitive emissions are effective. If fugitive emissions are not being reasonably controlled, the permittee shall take corrective action as expeditiously as practicable. The permittee shall maintain records of the results of each monthly fugitive emissions inspection. The records shall include, at a minimum, the date of each inspection and a description of the following: the permittee's assessment of the conditions existing at the time fugitive emissions were present (if observed), any corrective action taken in response to the fugitive emissions, and the date the corrective action was taken.

Revised Permit Conditions 20 and 21

Each week that an emission source listed in Table 1 is operated, the permittee shall conduct a site-wide inspection of potential sources of visible emissions to ensure compliance with opacity limits (Permit Condition 7); including any baghouse stack, asphalt tank heater stack, fuel heater stack, engine stack, and any stack, vent, or other functionally equivalent opening. Each inspection shall take place during daylight hours and under normal operating conditions. The inspection shall consist of a see/no see evaluation for each emission source. If any visible emissions are present from any point source of emissions, the permittee shall either take appropriate corrective action as expeditiously as practicable, or perform a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625. A minimum of 30 observations shall be recorded when conducting the opacity test. If opacity is greater than 20% for a period or periods aggregating more than three minutes in any 60-minute period, the permittee shall take all necessary corrective action and report the exceedance in accordance with IDAPA 58.01.01.130-136.

The permittee shall maintain records of the results of each visible emissions inspection and each Method 9 test when conducted. The records shall include, at a minimum, the date and results of each inspection and test and a description of the following: the permittee's assessment of the conditions existing at the time visible emissions are present (if observed), any corrective action taken in response to the visible emissions, and the date corrective action was taken.

Each day that an emission source listed in Table 1 is operated, the permittee shall conduct a site-wide inspection of potential sources of fugitive emissions, during daylight hours and under normal operating conditions to ensure that the methods used to reasonably control fugitive emissions are effective, to ensure compliance with Permit Condition 8. If fugitive emissions are not being reasonably controlled, the permittee shall take corrective action as expeditiously as practicable. The permittee shall maintain records of the results of each fugitive emissions inspection. The records shall include, at a minimum, the date of each inspection and a description of the following: the permittee's assessment of the conditions existing at the time fugitive emissions were present (if observed), any corrective action taken in response to the fugitive emissions, and the date the corrective action was taken.

This permit condition has been updated to reflect permit condition language in current use for the sake of permitting consistency. Updates include the addition of citations of the underlying regulations, clarification that inspection is required only when the plant is operated, and distinguishing between point and fugitive emission sources.

Existing Permit Condition 2.13

The permittee shall monitor and record the generator's hours of operation on a monthly basis if generator hours of operation are limited in Permit Conditions 3, 4, 5, or 6. A compilation of the most recent five years of records shall be kept onsite and made available to Department representatives upon request.

Revised Permit Condition 24

Each day that GEN2 is operated, the permittee shall monitor and record the daily operating hours for GEN2 in hours per calendar day to demonstrate compliance with the GEN2 engine operating limit (Permit Condition 16).

This permit condition modifies the monitoring frequency to a daily basis (in support of and accommodating of all operating scenarios evaluated), and clarifies that this monitoring is required only when the plant is operated.

Existing Permit Condition 2.14

The permittee shall conduct a performance test on the HMA facility in accordance with 40 CFR 60.93, IDAPA 58.01.01.157, and General Provision 6 of this permit. The performance test shall be conducted to demonstrate compliance with the applicable PM standards defined in 40 CFR 60.92.

- *If the HMA facility has previously conducted a performance test in accordance with 40 CFR 60.93 that demonstrates compliance with the applicable standards, then an additional performance test is not required by this permit condition. The permittee shall maintain a copy of the performance test results of the most recently conducted stack test on this HMA facility. This report shall be made available to DEQ representatives upon request.*

Revised Permit Conditions 32 through 35

Performance testing on the Baghouse stack shall be performed within 180 days after permit issuance, and shall be performed no less than once every five years following the date of permit issuance.

The performance test shall measure the PM emission rate in grains per dry standard cubic feet, the PM_{10} emission rate in pounds per hour, and the opacity to demonstrate compliance with the corresponding emission limits (Permit Conditions 5, 6, 7, and 40).

The performance test shall be conducted under worst-case normal operating conditions in accordance with IDAPA 58.01.01.157 and in accordance with the conditions of this permit (including Permit Conditions 5, 6, 7, 33, 34, 36, 40, and 50).

The permittee shall monitor and record the following during each performance test:

- *The HMA production rate, in tons per hour, once every 15 minutes;*
- *The RAP usage in tons per hour, once every 15 minutes;*
- *The type of fuel combusted in the HMA Dryer during the test.*
- *The sulfur content of the fuel combusted in the HMA Dryer during the test.*

Performance test reports shall include records of the required monitoring (Permit Condition 33) and documentation that the performance test was conducted in accordance with periodic performance testing requirements (Permit Condition 32). The permittee shall submit the performance test report to DEQ (Permit Condition 39) in accordance with the performance test general provision (Permit Condition 50).

The permittee shall maintain a copy of the performance test results of the most recently conducted stack test on this HMA facility. This report shall be made available to DEQ representatives upon request.

The permittee has confirmed that the initial performance test was performed with passing results, so the requirement to conduct the initial performance test has been satisfied and was removed.[9] The requirement to perform followup performance testing at least every five years to demonstrate compliance with hourly PM and PM_{10} emission limits was included and the requirement to maintain a copy of the test results was retained.

Existing Permit Conditions 2.16 and 2.17

At least 30 days prior to conducting any emission test, the permittee is encouraged to submit a written performance test protocol to the Department in accordance with IDAPA 58.01.01.157.01.a.

[9] Source Test Report, EPA Methods 5 and 9 Initial Source Test, Spidell and Associates, November 17, 2003.

In accordance with IDAPA 58.01.01.157.04, the permittee shall submit a written report of the performance test results to the Department within 30 days of completion of the test.

Revised Permit Condition 50

If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ, at its option, may have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.

All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.

Within 30 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The written report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.

This permit condition has been updated to reflect permit condition language in current use for the sake of permitting consistency.

Existing Permit Condition 2.18

All existing portable equipment shall be registered. At least 10 days prior to relocation of any equipment covered by this permit, the permittee shall submit a scaled plot plan and a complete Portable Equipment Registration and Relocation Form (available on the Department website at: www.state.id.us/deq/air/equip_relocat.htm) in accordance with IDAPA 58.01.01.500, to the following address:

PERF Processing Unit
Idaho Department – Air Quality
1410 N. Hilton
Boise, ID 83706-1255

Revised Permit Condition 29

At least 10 days prior to relocation of any sources listed in Table 1, the permittee shall submit a scaled plot plan and a complete Portable Equipment Relocation Form (PERF) in accordance with IDAPA 58.01.01.500, to the following address or fax number:

PERF Processing Unit
DEQ– Air Quality
1410 N. Hilton
Boise, ID 83706-1255
Phone: (208) 373-0502
Fax: (208) 373-0340

The scaled plot plan shall show the location of any emissions source listed in Table 1, and distances to any area outside of a building where the general public has access, including property boundaries.

Electronic copies of the PERF may be obtained from the DEQ web site.

This permit condition has been updated to reflect permit condition language in current use for the sake of permitting consistency.

Existing Permit Conditions 3.1, 3.2, 4.3, 4.4

The production rate of the HMA facility shall not exceed a maximum of 9,600 T/day. In addition, when the HMA facility may operate for more than five years in one location, the production rate shall not exceed a maximum of 618,732 T/yr when located in any attainment or unclassifiable area.

When operating as a short-term source (less than five years in one location), the production rate shall not exceed 1,293,000 T/yr. When operating as a short-term source, the facility may not operate in the same location for a period exceeding five years.

When operating as a short-term source (less than five years in one location), the production rate shall not exceed 646,505 T/yr. When operating as a short-term source, the facility may not operate in the same location for a period exceeding five years.

The production rate of the HMA facility shall not exceed a maximum of 9,600 T/day. In addition, when the HMA facility may operate for more than five years in one location, the production rate shall not exceed a maximum of 309,366 T/yr when collocated with another HMA plant, concrete batch plant, or rock-crushing plant.

Revised Permit Conditions 10 and 41

Except as specified for the Apple Street Yard (Permit Condition 41), the permittee shall comply with the following limits:

- *The daily production rate of the hot mix asphalt plant shall not exceed the limit in Table 3 for the relevant operating scenario.*

TABLE 3 STATEWIDE DAILY PRODUCTION LIMITS

Operating Scenario Description	***Daily Production Limit T/day[a]***
HMA facility operating without co-location[b]	*7,200*
HMA facility co-located with one crusher[b]	*3,600*

a) T/day is tons of material processed per calendar day. The permittee shall only operate under a single operating scenario each calendar day.
b) Co-located as defined in Permit Condition 30.

- *The HMA plant shall process only aggregate, asphalt cement, and/or recycled asphalt cement (RAP) as raw materials. RAP used as part of the aggregate shall not exceed 50 percent by weight of the aggregate.*
- *The permittee shall comply with a minimum setback distance limit of 129 meters for all emission sources associated with the hot mix asphalt plant (Table 1). The minimum setback distance shall be defined as the minimum distance from the nearest edge of any regulated emissions source (Table 1) to any area outside of a building where the general public has access.*

When operating at 5040 South Apple Street, the permittee shall comply with the following limits instead of the statewide production and setback limits (Permit Condition 10):

- *The daily and annual production rates of the hot mix asphalt plant shall not exceed the limits in Table 9.*

TABLE 9 APPLE STREET YARD PRODUCTION LIMITS AND SETBACKS

Production Limits	
T/day[a]	T/yr[b]
9,600	309,366

a) T/day is tons of material processed per calendar day.
b) T/yr is tons of material processed per consecutive 12-calendar month period, and is the total material processed for all operating scenarios combined.

- *The HMA plant shall process only aggregate, asphalt cement, and/or recycled asphalt cement (RAP) as raw materials. RAP used as part of the aggregate shall not exceed 50 percent by weight of the aggregate.*

Using the same reasoning discussed previously (refer to the discussion above concerning Permit Conditions 5, 6, and 40), these permit conditions have been revised to separate the requirements associated with the Apple Street Yard operating scenarios and the statewide operating scenarios.

Because the existing equipment has been operating at the Apple Street Yard location for more than five years, the short-term source limitations were removed from the permit, while the remaining Apple Street Yard throughput limits have been preserved. Statewide operating scenario throughput limits were revised based upon the emission estimates provided in the proposed operating scenarios, and setback distance requirements were included based on the ambient air impact analysis results for the statewide operating scenario.

Existing Permit Conditions 3.3, 4, and 4.2

When the HMA facility is to be collocated with another portable HMA plant, rock-crushing plant, or concrete batch plant, the permittee must comply with the collocation requirements in Permit Condition 4.

The permittee shall comply with the conditions in Permit Condition 2 and the following permit conditions when the HMA facility is to be collocated with another portable HMA plant, rock-crushing plant, or concrete batch plant within the state of Idaho. The HMA facility may only collocate with either one portable rock-crushing plant, one portable concrete batch plant, or one other portable HMA plant that has been permitted to specifically allow collocation.

The HMA facility may only collocate with either one portable rock-crushing plant, one portable concrete batch plant, or one other portable HMA plant. Each portable source must be permitted to specifically allow collocation.

Revised Apple Street Yard Section and Permit Conditions 30 and 43

This facility may co-locate with up to one (1) rock crushing facility that is permitted by rule (PBR) in accordance with IDAPA 58.01.01.500 and IDAPA 58.01.01.794.01.

With the exception of one (1) PBR rock crushing facility, the emission sources listed in Table 1 may not co-locate with any other stationary source of emissions.

An emission source listed in Table 1 shall be defined as co-located:

- *if the emission source is operating, and*
- *the distance between the emission source and another stationary source that is operating and not listed in Table 1 is less than 1,000 feet (305 meters).*

To ensure compliance with this requirement, the permittee shall physically measure and record the minimum distance from each emission source listed in Table 1 to the nearest stationary source not listed in Table 1. This measurement shall be conducted and recorded each time the minimum setback distance changes or is required to be measured (as required by Permit Condition 25). Measurements greater than 1,100 feet may be recorded as >1,100 feet.

The permittee shall comply with the following conditions when the HMA plant is operated at 5040 South Apple Street. Unless otherwise specified in Permit Conditions 40 through 44, the permittee shall also comply with the requirements in the Statewide Requirements section when the HMA plant is operated at 5040 South Apple Street.

When operating at 5040 South Apple Street, the permittee shall comply with the following limit instead of complying with the statewide co-location requirements (Permit Condition 30):

- *The HMA facility may only co-locate with either one portable rock crushing plant, one portable concrete batch plant, or one other portable HMA plant that has been permitted to specifically allow co-location.*

These permit conditions were updated to reflect the relocation of Apple Street Yard and statewide requirements into separate sections of the permit. The Apple Street Yard co-location requirements have been preserved while statewide operating scenario co-location requirements were revised based upon the emission estimates and modeling analyses developed for the proposed operating scenarios.

Co-contribution of emissions from a portable sand and gravel and crushed stone operation (PBR crusher) in addition to the hot mix asphalt plant and generators was evaluated in the ambient air quality impact analysis. Refer to the Ambient Air Quality Impact Analyses section and Appendix B for additional information concerning the ambient air quality impact analyses.

Existing Permit Conditions 3.5, 4.5, and 4.6

When operating as a short-term source (less than five years in one location), the generator hours of operation shall not exceed 3,233 hr/yr when located in any attainment or unclassifiable area. When operating as a short-term source, the facility may not operate in the same location for a period exceeding five years.

When the HMA facility may operate for more than five years in one location, the generator(s) shall not be operated more than 773 hr/yr when collocated with another HMA plant, concrete batch plant, or rock-crushing plant.

When operating as a short-term source (less than five years in one location), the generator hours of operation shall not exceed 1,616 hr/yr when collocated in any attainment or unclassifiable area. When operating as a short-term source, the facility may not operate in the same location for a period exceeding five years.

Revised Permit Conditions 16 and 42

The operating hours of the GEN2 engine shall not exceed 16 hours per calendar day.

The GEN1 engine shall not be operated at 5040 South Apple Street.

These permit conditions were updated to reflect the relocation of Apple Street Yard and statewide requirements into separate sections of the permit. Because the existing equipment (including the GEN2 engine) has been operating at the Apple Street Yard location for more than five years, the short-term source limitations were removed from the permit, while the remaining Apple Street Yard generator operating hour limits have been preserved. Statewide operating scenario generator operating hour limits were revised based upon the emission estimates provided for the proposed operating scenarios.

The permittee has requested that the proposed nighttime generator engine (GEN1) not be used at the Apple Street Yard.

Existing Permit Condition 4.1

The permittee shall not collocate in a PM_{10} nonattainment area, or proposed PM_{10} nonattainment area, without obtaining a permit which specifically allows for collocation in a nonattainment area.

Revised Permit Conditions 31 and 44

Except as specified for the Apple Street Yard (Permit Condition 44), the permittee shall not relocate and operate any source listed in Table 1 in any $PM_{2.5}$ or PM_{10} nonattainment area.

The location and boundaries of nonattainment areas in Idaho may be found at the DEQ website or by contacting DEQ (Permit Condition 39).

With regard to nonattainment area operation, the permittee is not restricted by this permit from operating any sources listed in Table 1 at 5040 South Apple Street.

These permit conditions were updated to clarify that operation of the facility in any particulate matter nonattainment area is not permitted with the exception of operation at the Apple Plant Yard, if it were to become a particulate matter nonattainment area.

Deleted Existing Permit Condition 5

The permittee shall comply with the requirements in Permit Condition 2 and the following permit conditions when the HMA facility is operated in any CO nonattainment area within the state of Idaho.

This facility may operate under the same restrictions as in attainment and unclassifiable areas when located in a CO nonattainment area or proposed CO nonattainment area. This facility may collocate with another source that has been specifically permitted to collocate. While collocated the facility must comply with the collocation requirements for attainment and unclassifiable areas.

This permit condition was removed because Idaho does not currently have carbon monoxide nonattainment areas.

Added Permit Condition 9

This permit condition incorporates rules for control of odors in accordance with IDAPA 58.01.01.776.01.

Compliance with this requirement is ensured by complying with monitoring and recordkeeping requirements (Permit Condition 28).

Added Permit Condition 18

This permit condition limits sulfur content of fuels corresponding to sulfur content measurements provided in the application verifying sulfur content levels below 0.02% by weight for reprocessed fuel oil. This limit was also used to demonstrate compliance with sulfur content limits in IDAPA 58.01.01.725.

Compliance with this requirement is ensured by complying with monitoring and recordkeeping requirements (Permit Condition 26).

Added Permit Condition 19

This permit condition incorporates used oil specifications in accordance with 40 CFR 279, Subpart B.

Compliance with this requirement is ensured by complying with monitoring and recordkeeping requirements (Permit Condition 27).

Added Permit Condition 25

This permit condition requires monitoring and recordkeeping of setback distance to ensure compliance with air quality standards and the corresponding setback distance limit established (Permit Condition 10).

The emission rate limits and setback distance requirements were used as the basis for preconstruction modeling compliance demonstrations (NAAQS). Refer to the Emission Inventories and the Ambient Air Quality Impact Analyses sections for additional information.

Added Permit Condition 26

This permit condition requires monitoring and recordkeeping of fuel sulfur content to demonstrate compliance with fuel specifications (Permit Conditions 17 and 18).

Added Permit Condition 27

This permit condition requires monitoring and recordkeeping of reprocessed fuel oil parameters to demonstrate compliance with fuel specifications (Permit Condition 19).

Added Permit Condition 28

This permit condition requires monitoring and recordkeeping of odor complaints to ensure compliance with the odor limit (Permit Condition 9).

Added Permit Condition 37

This permit condition specifies that with regard to permit conditions referenced in accordance with federal requirements (i.e., NSPS requirements), or with regard to incorporation of requirements by reference, should there be a conflict between the language of the permit condition and the language of the requirement, the language of the requirement shall govern. Federal requirements are incorporated by reference in accordance with IDAPA 58.01.01.107.

Added Permit Condition 38

This permit condition incorporates a summary of general provisions from NSPS Subpart A and as required by NSPS Subpart I. Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Added Permit Condition 39

This permit condition provides DEQ agency contact information.

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 was not a request for a public comment period on DEQ's proposed action. During this time, there was one comment received suggesting that "the use of diesel fuel and used oil as aggregate dryer burner fuels, and to use two (dielsel) gnerators for electrical power...would be far too polluting to our air and cause damage to the environment." No supporting emission estimates or ambient air quality analysis was provided with this comment to demonstrate that the applicant has not complied with pre-construction air quality requirements in accordance with IDAPA 58.01.01.200-228 or to otherwise substantiate these statements. Refer to the Application Chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES FOR STATEWIDE OPERATING SCENARIO AND ENGINE CERTIFICATION

Facility: Central Paving Co., Inc.
2/28/2011 17:07 **Permit/Facility ID:** 0

EMISSION INVENTORY
POUNDS PER HOUR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant **450** Tons/hour 1,067 Hours/year **480,000** Tons/year **7,200** Tons/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater **1.4100** MMBtu/hr **8,760** Hours/year **24** hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil
C1. Generator G1 **5.75** gal/hour **2920** Hours/year Generator < 600hp #2 Fuel Oil **8** hrs/day
C2. Generator G2 **61.79** gal/hour **5840** Hours/year Generator > 600hp #2 Fuel Oil **16** hrs/day

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C Generator G1 + G2 Max Emission Rate for Pollutant (lb/hr)	D Load-out & Silo Filling Emission Rate for Pollutant (lb/hr)	E TOTAL of Max Emission Rates from A, B, C & D (lb/hr)
PM (total)	14 85	3.40E-02	1.13E+00	4.99E-01	16 51
PM-10 (total)	10 35	3.40E-02	1.13E+00	4.99E-01	12 01
P.M.-2.5	0 00	0 00E+00	0 00E+00	0.00E+00	0 00
CO	58 50	5.14E-02	2 36E+01	1.14E+00	83 29
NOx	24.75	2.06E-01	1 95E+01		44.47
SO_2	1 53	2.92E-02	1.80E-01		1.74
VOC	14.40	5.72E-03	2 87E+00	1.81E+00	19 09
Lead	6.75E-03	1.55E-05	0 00E+00		6.77E-03
HCl [e]	9.45E-02	0 00E+00	0 00E+00		9.45E-02
Dioxins[e]					
2,3,7,8-TCDD	1.15E-11				**1.15E-11**
Total TCDD	5.10E-11				**5.10E-11**
1,2,3,7,8-PeCDD	1.70E-11				**1.70E-11**
Total PeCDD	1 21E-09				**1.21E-09**
1,2,3,4,7,8-HxCDD	2 30E-11	7.10E-12			**3.01E-11**
1,2,3,6,7,8-HxCDD	7.12E-11				**7.12E-11**
1,2,3,7,8,9-HxCDD	5 37E-11	7.82E-12			**6.15E-11**
Total HxCDD	6 58E-10				**6.58E-10**
1,2,3,4,6,7,8-Hp-CDD	2 63E-10	1.54E-10			**4.17E-10**
Total HpCDD	1 04E-09	2.06E-10			**1.25E-09**
Octa CDD	1 37E-09	1.65E-09			**3.02E-09**
Total PCDD[h]	4 33E-09	2.06E-09			**6.39E-09**
Furans[e]					
2,3,7,8-TCDF	5 32E-11				**5.32E-11**
Total TCDF	2 03E-10	3.40E-11			**2.37E-10**
1,2,3,7,8-PeCDF	2 36E-10				**2.36E-10**
2,3,4,7,8-PeCDF	4 60E-11				**4.60E-11**
Total PeCDF	4 60E-09	4.94E-12			**4.61E-09**
1,2,3,4,7,8-HxCDF	2.19E-10				**2.19E-10**
1,2,3,6,7,8-HxCDF	6 58E-11				**6.58E-11**
2,3,4,6,7,8-HxCDF	1 04E-10				**1.04E-10**
1,2,3,7,8,9-HxCDF	4 60E-10				**4.60E-10**
Total HxCDF	7.12E-10	2.06E-11			**7.33E-10**
1,2,3,4,6,7,8-HpCDF	3 56E-10				**3.56E-10**
1,2,3,4,7,8,9-HpCDF	1.48E-10				**1.48E-10**
Total HpCDF	5.48E-10	9.98E-11			**6.48E-10**
Octa CDF	2 63E-10	1.23E-10			**3.86E-10**
Total PCDF[h]	2.19E-09	3.19E-10			**2.51E-09**
Total PCDD/PCDF[h]	6 58E-09	2.37E-09	0 00E+00		**8.94E-09**
Non-PAH HAPs					
Acetaldehyde[e]	7.12E-02		4.53E-03		**7.58E-02**
Acrolein[e]	7 80E-03		5.46E-04		8 35E-03
Benzene[e]	2.14E-02	0 00E+00	4.63E-03	3.32E-04	**2.63E-02**
1,3-Butadiene[e]			2.31E-04		**2.31E-04**
Ethylbenzene[e]	7 20E-02			4.88E-03	7 69E-02
Formaldehyde[e]	1.70E-01	3.60E-05	6.97E-03	4.81E-03	**1.82E-01**
Hexane[e]	2.76E-01	0 00E+00		5.53E-03	2 82E-01
Isooctane	1 20E-02			3.38E-05	1 20E-02
Methyl Ethyl Ketone[e]	6 00E-03			2.04E-03	8 04E-03
Pentane[e]		0 00E+00			0.00E+00
Propionaldehyde[e]	3 90E-02				3 90E-02
Quinone[e]	4 80E-02				4 80E-02
Methyl chloroform[e]	1.44E-02				1.44E-02
Toluene[e]	8.70E-01	0 00E+00	1.69E-03	4.89E-03	8.77E-01
Xylene[e]	6 00E-02		1.16E-03	2.45E-02	8 57E-02
POM (7-PAH Group)[e]	3 00E-05	1 03E-06	2.63E-05	6.22E-05	**1.20E-04**
TOTAL PAH HAPs	4 85E-02	2 37E-04	1.24E-03	2.70E-03	**5.27E-02**

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C Generator G1 + G2 Max Emission Rate for Pollutant (lb/hr)	D Load-out & Silo Filling Emission Rate for Pollutant (lb/hr)	E TOTAL of Max Emission Rates from A, B, C & D (lb/hr)
PAH HAPs					
2-Methylnaphthalene	9 32E-03	0.00E+00		1.18E-03	**1.05E-02**
3-Methylchloranthrene[e]	0.00E+00	0.00E+00			**0.00E+00**
Acenaphthene	7 67E-05	5.45E-06	2.68E-05	1.14E-04	**2.23E-04**
Acenaphthylene	1 21E-03	2.06E-06	5.34E-05	7.18E-06	**1.27E-03**
Anthracene	1.70E-04	1.85E-06	7.43E-06	3.12E-05	**2.10E-04**
Benzo(a)anthracene[e]	1.15E-05	0.00E+00	3.95E-06	1.13E-05	**2.68E-05**
Benzo(a)pyrene[e]	5 37E-07	0.00E+00	1.50E-06	4 30E-07	**2.47E-06**
Benzo(b)fluoranthene[e]	5.48E-06	1.03E-06	6.29E-06	1.42E-06	**1.42E-05**
Benzo(e)pyrene	6 03E-06	0.00E+00		2.78E-06	**8.81E-06**
Benzo(g,h,I)perylene	2.19E-06	0.00E+00	3.27E-06	3 55E-07	**5.81E-06**
Benzo(k)fluoranthene[e]	2 25E-06	0.00E+00	1.27E-06	4.11E-07	**3.93E-06**
Chrysene[e]	9 86E-06	0.00E+00	8.73E-06	4 85E-05	**6.70E-05**
Dibenzo(a,h)anthracene[e]	0.00E+00	0.00E+00	2.11E-06	6 91E-08	**2.18E-06**
Dichlorobenzene	0.00E+00	0.00E+00			**0.00E+00**
Fluoranthene	3 34E-05	4.53E-07	2.47E-05	3 02E-05	**8.88E-05**
Fluorene	6 03E-04	3.29E-07	7.99E-05	2 84E-04	**9.67E-04**
Indeno(1,2,3-cd)pyrene[e]	3 84E-07	0.00E+00	2.44E-06	8.78E-08	**2.91E-06**
Naphthalene[e]	3 56E-02	1.75E-04	7.56E-04	4 87E-04	**3.70E-02**
Perylene	4 82E-07	0.00E+00		8 28E-06	**8.77E-06**
Phenanthrene	1 26E-03	5.04E-05	2.38E-04	4 02E-04	**1.95E-03**
Pyrene	1 64E-04	3.29E-07	2.22E-05	8 92E-05	**2.76E-04**
Non-HAP Organic Compounds					
Acetone[e]	2.49E-01	0.00E+00		2 59E-03	2.52E-01
Benzaldehyde	3 30E-02	0.00E+00			3.30E-02
Butane	2 01E-01	0.00E+00			2.01E-01
Butyraldehyde	4 80E-02	0.00E+00			4.80E-02
Crotonaldehyde[e]	2 58E-02	0.00E+00			2.58E-02
Ethylene	2.10E+00	0.00E+00		4 91E-02	2.15E+00
Heptane	2.82E+00	0.00E+00			2 82E+00
Hexanal	3 30E-02	0.00E+00			3.30E-02
Isovaleraldehyde	9 60E-03	0.00E+00			9.60E-03
2-Methyl-1-pentene	1.20E+00	0 00E+00			1 20E+00
2-Methyl-2-butene	1.74E-01	0 00E+00			1.74E-01
3-Methylpentane	5.70E-02	0 00E+00			5.70E-02
1-Pentene	6 60E-01	0 00E+00			6.60E-01
n-Pentane	6 30E-02	0 00E+00			6.30E-02
Valeraldehyde[e]	2 01E-02	0.00E+00			2.01E-02
Metals					
Antimony[e]	5.40E-05	5.40E-05			1.08E-04
Arsenic[e]	3 07E-05	1.36E-05			**4.43E-05**
Barium[e]	1.74E-03	2.64E-05			1.77E-03
Beryllium[e]	0.00E+00	2.86E-07			**2.86E-07**
Cadmium[e]	2 25E-05	4.10E-06			**2.66E-05**
Chromium[e]	1 65E-03	8.69E-06			1.66E-03
Cobalt[e]	7 80E-06	6.19E-05			6.97E-05
Copper[e]	9 30E-04	1.81E-05			9.48E-04
Hexavalent Chromium[e]	2.47E-05	2.55E-06			**2.72E-05**
Manganese[e]	2 31E-03	3.09E-05			2.34E-03
Mercury[e]	7 80E-04	1.16E-06			7.81E-04
Molybdenum[e]	0.00E+00	8.10E-06			8.10E-06
Nickel[e]	3.45E-03	8.69E-04			**4.32E-03**
Phosphorus[e]	8.40E-03	9.73E-05			8.50E-03
Silver[e]	1.44E-04	0.00E+00			1.44E-04
Selenium[e]	1 05E-04	7.03E-06			1.12E-04
Thallium[e]	1 23E-06	0.00E+00			1.23E-06
Vanadium[e]	0.00E+00	3.27E-04			3.27E-04
Zinc[e]	1 83E-02	2.99E-04			1.86E-02

e) DAPA Toxic Air Pollutant

Criteria Pollutant lb/hr emissions are maximum 1-hr averages
TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.
Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant 450 Tons/hour 1,067 Hours/year 480,000 Tons/year HMA throughput 7,200 hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater 1.4100 MMBtu/hr 8,760 Hours/year 24 hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. Generator G1 5.75 gal/hour 2920 Hours/year #2 Fuel Oil Generator < 600hp 8 hrs/day
C2. Generator G2 61.79 gal/hour 5840 Hours/year #2 Fuel Oil Generator > 600hp 16 hrs/day

Pollutant	A Drum Mix Max Emission Rate for Pollutant (lb/hr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (lb/hr)	C Generator Max Emission Rate for Pollutant (lb/hr)	D Load-out & Silo Filling Emission Rate for Pollutant (lb/hr)	E TOTAL of Max Emission Rates from A, B, C & D (lb/hr)
non-PAH HAPs					
Bromomethane*				2.99E-04	2.99E-04
2-Butanone (see Methyl Ethyl Ketone)					
Carbon disulfide*				7.47E-04	7.47E-04
Chloroethane (Ethyl chloride*)				1.49E-04	1.49E-04
Chloromethane (Methyl chloride*)				1.03E-03	1.03E-03
Cumene				1.37E-03	1.37E-03
n-Hexane					
Methylene chloride (Dichloromethane*)				9.87E-06	9.87E-06
MTBE					
Styrene*				2.89E-04	2.89E-04
Tetrachloroethene (Tetrachloroethylene*)				9.61E-05	9.61E-05
1,1,1-Trichloroethane (Methyl chloroform*)					
Trichloroethene (Trichloroethylene*)					
Trichlorofluoromethane				1.62E-05	1.62E-05
m-/p-Xylene*				1.24E-02	1.24E-02
o-Xylene*				1.21E-02	1.21E-02
Phenol*/				1.21E-03	1.21E-03
Non-HAP Organic Compounds					
Methane				1.03E+00	1.03E+00

e) DAPA Toxic Air Pollutant

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Facility: Central Paving Co., Inc.
2/28/2011 17:07 Permit/Facility ID: 0 0

EMISSION INVENTORY
TONS PER YEAR

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant 450 Tons/hour 1,067 Hours/year 480,000 Tons/year HMA throughput 7,200 hrs/day
Maximum emission for each pollutant from any fuel-burning options selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater 1.4100 MMBtu/hr 8,760 Hours/year 24 hrs/day
Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil
C1. Generator G1 5.75 gal/hour 2920 Hours/year Generator <600hp #2 Fuel Oil 8 hrs/day
C2. Generator G2 61.79 gal/hour 5840 Hours/year Generator > 600hp #2 Fuel Oil 16 hrs/day

Pollutant	A Drum Mix Max Emission Rate for Pollutant (T/yr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (T/yr)	C Generator G1 + G2 Max Emission Rate for Pollutant (T/yr)	D Load-out & Silo Filling Emission Rate for Pollutant (T/yr)	E POINT SOURCE TOTAL of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PM (total)	7.92	1.49E-01	3.22E+00	2.66E-01	11.29
PM-10 (total)	5.52	1.49E-01	3.22E+00	2.66E-01	8.89
P.M.-2.5					
CO	31.20	2.25E-01	6.75E+01	6.07E-01	98.97
NOx	13.20	9.01E-01	5.52E+01		69.31
SO_2	0.82	1.28E-01	5.00E-01		1.44
VOC	7.68	2.51E-02	7.96E+00	9.68E-01	15.67
Lead	3.60E-03	6.81E-05	0.00E+00		3.67E-03
HCl*	5.04E-02	0.00E+00	0.00E+00		5.04E-02
Dioxins*					
2,3,7,8-TCDD	5.04E-11				5.04E-11
Total TCDD	2.23E-10				2.23E-10
1,2,3,7,8-PeCDD	7.44E-11				7.44E-11
Total PeCDD	5.28E-09				5.28E-09
1,2,3,4,7,8-HxCDD	1.01E-10	3.11E-11			1.32E-10
1,2,3,6,7,8-HxCDD	3.12E-10				3.12E-10
1,2,3,7,8,9-HxCDD	2.35E-10	3.43E-11			2.69E-10
Total HxCDD	2.66E-09				2.66E-09
1,2,3,4,6,7,8-Hp-CDD	1.15E-09	6.76E-10			1.83E-09
Total HpCDD	4.56E-09	9.01E-10			5.46E-09
Octa CDD	6.00E-09	7.21E-09			1.32E-08
Total PCDD[h]	1.90E-08	9.01E-09			2.80E-08
Furans*					
2,3,7,8-TCDF	2.33E-10				2.33E-10
Total TCDF	8.88E-10	1.49E-10			1.04E-09
1,2,3,7,8-PeCDF	1.03E-09				1.03E-09
2,3,4,7,8-PeCDF	2.02E-10				2.02E-10
Total PeCDF	2.02E-08	2.16E-11			2.02E-08
1,2,3,4,7,8-HxCDF	9.60E-10				9.60E-10
1,2,3,6,7,8-HxCDF	2.88E-10				2.88E-10
2,3,4,6,7,8-HxCDF	4.56E-10				4.56E-10
1,2,3,7,8,9-HxCDF	2.02E-09				2.02E-09
Total HxCDF	3.12E-09	9.01E-11			3.21E-09
1,2,3,4,6,7,8-HpCDF	1.56E-09				1.56E-09
1,2,3,4,7,8,9-HpCDF	6.48E-10				6.48E-10
Total HpCDF	2.40E-09	4.37E-10			2.84E-09
Octa CDF	1.15E-09	5.41E-10			1.69E-09
Total PCDF[h]	9.60E-09	1.40E-09			1.10E-08
Total PCDD/PCDF[h]	2.88E-08	1.04E-08			3.92E-08
Non-PAH HAPs					
Acetaldehyde*	3.12E-01		1.98E-02		3.32E-01
Acrolein*	6.24E-03		2.39E-03		8.63E-03
Benzene*	9.36E-02	0.00E+00	2.03E-02	1.45E-03	1.14E-01
1,3-Butadiene*	0.00E+00		1.01E-03		1.01E-03
Ethylbenzene*	5.76E-02			3.91E-03	5.76E-02
Formaldehyde*	7.44E-01	1.58E-04	3.05E-02	2.11E-02	7.75E-01
Hexane*	2.21E-01	0.00E+00		4.42E-03	2.21E-01
Isooctane	9.60E-03			2.70E-05	9.60E-03
Methyl Ethyl Ketone*	4.80E-03			1.63E-03	4.80E-03
Pentane*	0.00E+00	0.00E+00			0.00E+00
Propionaldehyde*	3.12E-02				3.12E-02
Quinone*	3.84E-02				3.84E-02
Methyl chloroform*	1.15E-02				1.15E-02
Toluene*	6.96E-01	0.00E+00	7.42E-03	3.91E-03	7.03E-01
Xylene*	4.80E-02	0.00E+00	5.10E-03	1.96E-02	5.31E-02
TOTAL Federal HAPs (T/yr)=					2.68E+00

Pollutant	A Drum Mix Max Emission Rate for Pollutant (T/yr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (T/yr)	C Generator G1 + G2 Max Emission Rate for Pollutant (T/yr)	D Load-out & Silo Filling Emission Rate for Pollutant (T/yr)	E POINT SOURCE TOTAL of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
PAH HAPs					
2-Methylnaphthalene	4.08E-02	0.00E+00		5.16E-03	4.08E-02
3-Methylchloranthrene*	0.00E+00	0.00E+00			0.00E+00
Acenaphthene	3.36E-04	2.39E-05	1.17E-04	4.99E-04	4.77E-04
Acenaphthylene	5.28E-03	9.01E-06	2.34E-04	3.14E-05	5.52E-03
Anthracene	7.44E-04	8.11E-06	3.26E-05	1.36E-04	7.85E-04
Benzo(a)anthracene*	5.04E-05	0.00E+00	1.73E-05	4.97E-05	6.77E-05
Benzo(a)pyrene*	2.35E-06	0.00E+00	6.57E-06	1.88E-06	8.92E-06
Benzo(b)fluoranthene*	2.40E-05	4.51E-06	2.76E-05	6.22E-06	5.61E-05
Benzo(e)pyrene	2.64E-05	0.00E+00		1.22E-05	2.64E-05
Benzo(g,h,i)perylene	9.60E-06	0.00E+00	1.43E-05	1.55E-06	2.39E-05
Benzo(k)fluoranthene*	9.84E-06	0.00E+00	5.57E-06	1.80E-06	1.54E-05
Chrysene*	4.32E-05	0.00E+00	3.82E-05	2.12E-04	8.14E-05
Dibenzo(a,h)anthracene*	0.00E+00	0.00E+00	9.23E-06	3.03E-07	9.23E-06
Dichlorobenzene	0.00E+00	0.00E+00			0.00E+00
Fluoranthene	1.46E-04	1.98E-06	1.08E-04	1.32E-04	2.57E-04
Fluorene	2.64E-03	1.44E-06	3.50E-04	1.25E-03	2.99E-03
Indeno(1,2,3-cd)pyrene*	1.00E-06	0.00E+00	1.07E-06	0.00E-07	1.23E-06
Naphthalene*	1.56E-01	7.66E-04	3.31E-03	2.13E-03	1.60E-01
Perylene	2.11E-06	0.00E+00		3.63E-05	2.11E-06
Phenanthrene	5.52E-03	2.21E-04	1.04E-03	1.76E-03	6.78E-03
Pyrene	7.20E-04	1.44E-06	9.72E-05	3.91E-04	8.19E-04
Non-HAP Organic Compounds					
Acetone*	1.99E-01	0.00E+00		2.08E-03	1.99E-01
Benzaldehyde	2.64E-02	0.00E+00			2.64E-02
Butane	1.61E-01	0.00E+00			1.61E-01
Butyraldehyde	3.84E-02	0.00E+00			3.84E-02
Crotonaldehyde*	2.06E-02	0.00E+00			2.06E-02
Ethylene	1.68E+00	0.00E+00		3.93E-02	1.68E+00
Heptane	2.26E+00	0.00E+00			2.26E+00
Hexanal	2.64E-02	0.00E+00			2.64E-02
Isovaleraldehyde	7.68E-03	0.00E+00			7.68E-03
2-Methyl-1-pentene	9.60E-01	0.00E+00			9.60E-01
2-Methyl-2-butene	1.39E-01	0.00E+00			1.39E-01
3-Methylpentane	4.56E-02	0.00E+00			4.56E-02
1-Pentene	5.28E-01	0.00E+00			5.28E-01
n-Pentane*	5.04E-02	0.00E+00			5.04E-02
Valeraldehyde*	1.61E-02	0.00E+00			1.61E-02
Metals					
Antimony*	4.32E-05	2.37E-04			2.80E-04
Arsenic*	1.34E-04	5.95E-05			1.94E-04
Barium*	1.39E-03	1.16E-04			1.51E-03
Beryllium*	0.00E+00	1.25E-06			1.25E-06
Cadmium*	9.84E-05	1.79E-05			1.16E-04
Chromium*	1.32E-03	3.81E-05			1.36E-03
Cobalt*	6.24E-06	2.71E-04			2.78E-04
Copper*	7.44E-04	7.93E-05			8.23E-04
Hexavalent Chromium*	1.08E-04	1.12E-05			1.19E-04
Manganese*	1.85E-03	1.35E-04			1.98E-03
Mercury*	6.24E-04	5.09E-06			6.29E-04
Molybdenum*	0.00E+00	3.55E-05			3.55E-05
Nickel*	1.51E-02	3.81E-03			1.89E-02
Phosphorus*	6.72E-03	4.26E-04			7.15E-03
Silver*	1.15E-04	0.00E+00			1.15E-04
Selenium*	8.40E-05	3.08E-05			1.15E-04
Thallium*	9.84E-07				9.84E-07
Vanadium*	0.00E+00	1.43E-03			1.43E-03
Zinc*	1.46E-02	1.31E-03			1.60E-02

Max Controlled Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant 450 Tons/hour 1,067 Hours/year 480,000 Tons/year 7,200 Tons/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil Used Oil Natural Gas LPG/Propane
B. Tank Heater 1.4100 MMBtu/hr 8,760 Hours/year 24 hrs/day
Maximum emission for each pollutant from any fuel-burning option selected. Fuels Selected = #2 Fuel Oil
C1. Generator G1 5.75 gal/hour 2920 Hours/year #2 Fuel Oil Generator <600hp 8 hrs/day
C2. Generator G2 61.79 gal/hour 5840 Hours/year #2 Fuel Oil Generator > 600hp 16 hrs/day

Pollutant	A Drum Mix Max Emission Rate for Pollutant (T/yr)	B Asphalt Tank Heater Max Emission Rate for Pollutant (T/yr)	C Generator Max Emission Rate for Pollutant (T/yr)	D Load-out, Silo Filling, & Tank Storage Emission Rate for Pollutant (T/yr)	E POINT SOURCE TOTAL of Max Emission Rates from A, B, & C (T/yr) Exclude Fugitives (D)
non-PAH HAPs[e]					
Bromomethane[e]				2.39E-04	0.00E+00
2-Butanone (see Methyl Ethyl Ketone)					0.00E+00
Carbon disulfide[e]				5.98E-04	0.00E+00
Chloroethane (Ethyl chloride[e])				1.19E-04	0.00E+00
Chloromethane (Methyl chloride[e])				8.22E-04	0.00E+00
Cumene				1.10E-03	0.00E+00
n-Hexane				0.00E+00	0.00E+00
Methylene chloride (Dichloromethane[e])				7.90E-06	0.00E+00
MTBE					0.00E+00
Styrene[e]				2.31E-04	0.00E+00
Tetrachloroethene (Tetrachloroethylene[e])				7.69E-05	0.00E+00
1,1,1-Trichloroethane (Methyl chloroform[e])				0.00E+00	0.00E+00
Trichloroethene (Trichloroethylene[e])				0.00E+00	0.00E+00
Trichlorofluoromethane				1.30E-05	0.00E+00
m-/p-Xylene[e]				9.94E-03	0.00E+00
o-Xylene[e]				9.65E-03	0.00E+00
Phenol[e,f]				9.00E-04	0.00E+00
Non-HAP Organic Compounds					
Methane				8.25E-01	0.00E+00

e) DAPA Toxic Air Pollutant

Facility	Central Paving Co., Inc.			**TAPs EL Screen - ALL SOURCES**
3/1/2011 11 48	Permit/Facility ID	0	0	586 pollutants are shown in bold —

Max Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: **450** Tons/hour 1,067 Hours/year **480,000** Tons/year **7,200** Tons/day

Maximum emission for each pollutant from any fuel-burning option selected on "Facility Data" worksheet

B. Tank Heater: MMBtu Rated Hours/year **D. Include all emissions from Load-out/Silo Filling? Yes**

Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet Short Term Source Factor 586 ELs? 1

C1. Generator G1: **5.75** gal/hour **2920** Hours/year Generator <600hp #2 Fuel Oil **8** hrs/day

C2. Generator G2: gal/hour Hours/year Generator > 600hp #2 Fuel Oil hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
HCl[e]	0.095	0.05	Exceeds	
Dioxins		**Toxic Equivalency Factor[c]**	**Adjusted Emission Rate (lb/hr)**	
2,3,7,8-TCDD	0.00E+00	1.0	0.00E+00	
Total TCDD	0.00E+00	n/a		
1,2,3,7,8-PeCDD	0.00E+00	1.0	0.00E+00	
Total PeCDD	0.00E+00	n/a		
1,2,3,4,7,8-HxCDD	0.00E+00	0.1	0.00E+00	
1,2,3,6,7,8-HxCDD	0.00E+00	0.1	0.00E+00	
1,2,3,7,8,9-HxCDD	0.00E+00	0.1	0.00E+00	
Total HxCDD	0.00E+00	n/a		
1,2,3,4,6,7,8-Hp-CDD	0.00E+00	0.01	0.00E+00	
Total HpCDD	0.00E+00	n/a		
Octa CDD	0.00E+00	0.0003	0.00E+00	
Total PCDD	0.00E+00	n/a		
Furans				
2,3,7,8-TCDF	0.00E+00	0.1	0.00E+00	
Total TCDF	0.00E+00	n/a		
1,2,3,7,8-PeCDF	0.00E+00	0.03	0.00E+00	
2,3,4,7,8-PeCDF	0.00E+00	0.3	0.00E+00	
Total PeCDF	0.00E+00	n/a		
1,2,3,4,7,8-HxCDF	0.00E+00	0.1	0.00E+00	
1,2,3,6,7,8-HxCDF	0.00E+00	0.1	0.00E+00	
2,3,4,6,7,8-HxCDF	0.00E+00	0.1	0.00E+00	
1,2,3,7,8,9-HxCDF	0.00E+00	0.1	0.00E+00	
Total HxCDF	0.00E+00	n/a		
1,2,3,4,6,7,8-HpCDF	0.00E+00	0.01	0.00E+00	
1,2,3,4,7,8,9-HpCDF	0.00E+00	0.01	0.00E+00	
Total HpCDF	0.00E+00	n/a		
Octa CDF	0.00E+00	0.0003	0.00E+00	
Total PCDF	0.00E+00	n/a		
Total PCDD/PCDF	0.00E+00	n/a		
TOTAL	Adjusted lb/hr	TAPs EL for 2,3,7,8 TCDD	**Exceeds TAPs EL?**	**Modeled?**
Dioxin/Furans[c]	0.00E+00	1.50E-10	No	
Non-PAH HAPs				
Acetaldehyde	7.14E-02	3.00E-03	Exceeds	
Acrolein	7.82E-03	0.017	No	
Benzene	2.45E-04	8.00E-04	No	
1,3-Butadiene	1.03E-05	2.40E-05	No	
Ethylbenzene	0.00E+00	29	No	
Formaldehyde	3.10E-04	5.10E-04	No	
Hexane	0.00E+00	12	No	
Isooctane	0.00E+00			
Methyl Ethyl Ketone	6.00E-03	39.3	No	
Pentane	0.00E+00	118	No	
Propionaldehyde	3.90E-02	0.0287	Exceeds	
Quinone	4.80E-02	0.027	Exceeds	
Methyl chloroform	0.00E+00	127	No	
Toluene	1.08E-04	25	No	
Xylene	7.49E-05	29	No	

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
PAH HAPs				
2-Methylnaphthalene	0.00E+00	9.10E-05	No	
3-Methylchloranthrene	0.00E+00	2.50E-06	No	
Acenaphthene	3.73E-07	9.10E-05	No	
Acenaphthylene	1.33E-06	9.10E-05	No	
Anthracene	4.92E-07	9.10E-05	No	
Benzo(a)anthracene	4.42E-07			see POM
Benzo(a)pyrene	4.94E-08	2.00E-06	No	see POM
Benzo(b)fluoranthene	2.60E-08			see POM
Benzo(e)pyrene	0.00E+00	9.10E-05	No	
Benzo(g,h,I)perylene	1.29E-07	9.10E-05	No	
Benzo(k)fluoranthene	4.07E-08			see POM
Chrysene	9.28E-08			see POM
Dibenzo(a,h)anthracene	1.53E-07			see POM
Dichlorobenzene	0.00E+00	9.10E-05	No	
Fluoranthene	2.00E-06	9.10E-05	No	
Fluorene	7.67E-06	9.10E-05	No	
Indeno(1,2,3-cd)pyrene	9.86E-08			see POM
Naphthalene[e]	2.23E-05	9.10E-05	No	
Perylene	0.00E+00	9.10E-05	No	
Phenanthrene	7.73E-06	9.10E-05	No	
Pyrene	1.26E-06	9.10E-05	No	
PolycyclicOrganicMatter[d]	9.02E-07	2.00E-06	No	
Non-HAP Organic Compounds				
Acetone	2.49E-01	119	No	
Benzaldehyde	3.30E-02			
Butane	0.00E+00			
Butyraldehyde	4.80E-02			
Crotonaldehyde	2.58E-02	0.38	No	
Ethylene	0.00E+00			
Heptane	0.00E+00	109	No	
Hexanal	3.30E-02			
Isovaleraldehyde	9.60E-03			
2-Methyl-1-pentene	0.00E+00			
2-Methyl-2-butene	0.00E+00			
3-Methylpentane	0.00E+00			
1-Pentene	0.00E+00			
n-Pentane[e]	0.00E+00	118	No	
Valeraldehyde (n-Valeraldehyde)	2.01E-02	11.7	No	
Metals				
Antimony[e]	0.00E+00	0.033	No	
Arsenic	0.00E+00	1.50E-06	No	
Barium	0.00E+00	0.033	No	
Beryllium	0.00E+00	2.80E-05	No	
Cadmium	0.00E+00	3.70E-06	No	
Chromium	0.00E+00	0.033	No	
Cobalt	0.00E+00	0.0033	No	
Copper	0.00E+00	0.013	No	
Hexavalent Chromium	0.00E+00	5.60E-07	No	
Manganese	0.00E+00	0.067	No	
Mercury	0.00E+00	0.003	No	
Molybdenum	0.00E+00	0.333	No	
Nickel	0.00E+00	2.70E-05	No	
Phosphorus	0.00E+00	0.007	No	
Silver	0.00E+00	0.007	No	
Selenium	0.00E+00	0.013	No	
Thallium	0.00E+00	0.007	No	
Vanadium	0.00E+00	0.003	No	
Zinc	0.00E+00	0.667	No	

a) Reserved.

b) Toxic Air Pollutants, IDAPA 58.01.01.585 and .586, levels in effect as of February 25, 2009

c) 2005, Van den Berg, et al, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds, *Toxicological Sciences* 93(2), 223-241 (2006). Accessible at http://toxsci.oxfordjournals.org/cgi/reprint/93/2/223.
Use of the 2005 WHO toxic equivalency factors (TEFs) is consistent with current EPA recommendations for TRI reporting (72 FR 26544, May 10, 2007)
n/a = not available. IDAPA 58.01.01.586, TAPs Carcinogenic Increments: Total of adjusted emission rates are treated as a single TAP (2,3,7,8 TCDD)

d) IDAPA 58.01.01.586, Polycyclic Organic Matter: Emissions of highlighted PAHs h shall be considered together as one TAP equivalent in potency to benzo(a)pyrene.

e) Naphthalene is listed as a noncarcinogenic TAP in IDAPA 58.01.01.585 (EL = 3.33 lb/hr), but must also be considered as a carcinogenic PAH (EL = 9.10E-05 lb/hr)

TAPs lb/hr rates are 24-hr averages except for those in bold text. Lb/hr rates for bold TAPs (carcinogens) are annual averages.

Pollutants shown in blue text are emitted only when burning Used Oil, but not when burning #2 Fuel Oil or Natural Gas

Facility	Central Paving Co., Inc.			TAPs EL Screen - ALL SOURCES
3/1/2011 11 48	Permit/Facility ID	0	0	Page 2 of 2

Max Emissions of Any Pollutant from Drum Mix HMA Plant Fabric Filter, Tank Heater, Generator, Silo Fill/Load-out

A. Drum Mix Plant: 450 Tons/hour 1,067 Hours/year 480,000 Tons/year 7,200 Tons/day
Maximum emission for each pollutant from any fuel-burning option selected in "Facility Data" worksheet.

B. Tank Heater: MMBtu Rated Hours/year **D. Include all emissions from Load-out/Silo Filling? Yes**
Maximum emission for each pollutant for heater burning any fuel selected in "Facility Data" worksheet.

C1. Generator G1: 5.75 gal/hour 2920 Hours/year #2 Fuel Oil 8 hrs/day
C2. Generator G2: 0.00 gal/hour 0 Hours/year #2 Fuel Oil 0 hrs/day

Pollutant	TOTAL of Max Emission Rates from A, B, C & D (lb/hr)	TAPs Screening Emission Limit (EL) Increment[b] (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled?
non-PAH HAPs[a]				
Bromomethane (Methyl bromide[e])	0.00E+00	1.27	No	
2-Butanone (see Methyl Ethyl Ketone)				
Carbon disulfide[e]	0.00E+00	2	No	
Chloroethane (Ethyl chloride[e])	0.00E+00	176	No	
Chloromethane (Methyl chloride[e])	0.00E+00	6.867	No	
Cumene[e]	0.00E+00	16.3	No	
n-Hexane[e] (see Hexane[e])				
Methylene chloride (Dichloromethane[e])	0.00E+00	1.60E-03	No	
MTBE	0.00E+00			
Styrene[e]	0.00E+00	6.67	No	
Tetrachloroethene (Tetrachloroethylene[e])	0.00E+00	1.30E-02	No	
1,1,1-Trichloroethane (see Methyl chloroform[e])				
Trichloroethene (Trichloroethylene[e])	0.00E+00	17.93	No	
Trichlorofluoromethane	0.00E+00			
m-/p-Xylene[e] (added into Xylene[e])				
o-Xylene[e] (added into Xylene[e])				
Phenol[e,f]	0.00E+00	1.27	No	
Non-HAP Organic Compounds				
Methane	0.00E+00			

a) For HMA facilities subject to NSPS (40 CFR 60, Subpart I), PTE includes fugitive emissions of PM from load-out, silo filling & storage tank operations.
e) IDAPA Toxic Air Pollutant, 58.01.01.585 or .586

EXHAUST EMISSION DATA SHEET

MQ POWER GENERATOR SET

Model: DCA85USJ

The engine used in this generator set is certified to comply with United States EPA Tier 2 and CARB Mobile Off-Highway emission regulations.

ENGINE DATA

Model:	JOHN DEERE 4045TF275		Bore:	4.19 in.	(106 mm)
Type:	4-Cycle, In-Line, 4-Cylinder, Diesel		Stroke:	5.00 in.	(127 mm)
Aspiration:	Turbocharged		Displacement:	4.5 L	(274.5 cu.in.)
			Compression Ratio:		17:1

PERFORMANCE DATA

SAE Gross HP @ 1800 RPM (60 Hz)	113
Rated Load Fuel Consumption (gal/Hr)	5.7
Rated Load Exhaust Gas Flow (cfm)	674
Rated Load Exhaust Gas Temperature (F)	1094

United States EPA - Mobile Off-Highway Tier 2 Limits - ≥100 BHP - ≤173 BHP

Criteria Pollutant	Emission Requirements	Certified Engine Emissions
NOx (Oxides of Nitrogen as NO2)	4.92 gr/bhp-hr	4.70 gr/bhp-hr
HC (Total Unburned Hydrocarbons)	(NOx + HC)* Combined	(NOx + HC)* Combined
CO (Carbon Monoxide)	3.73 gr/bhp-hr	0.82 gr/bhp-hr
PM (Particulate Matter)	0.22 gr/bhp-hr	0.18 gr/bhp-hr

EPA Engine Family: 6JDXL06.8041

EPA Certificate of Conformance: JDX-NRCI-06-19

Effective Date: Year 2006

Note: Engine operation with excessive air intake or exhaust restriction beyond factory published maximum limits, or with improper service maintenance, may result in higher emission levels.

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: February 28, 2011

TO: Morrie Lewis, Air Program

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

PROJECT: P-2011.0018 PROJ60715 PTC Application for a modification to the Central Paving Portable Hot Mix Asphalt Plant No. 3

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

1.0 Summary

Central Paving Co., Inc. (Central Paving) submitted a Permit to Construct (PTC) application for modifications to their portable hot mix asphalt (HMA) Plant No. 3 operated in Idaho. Non-site-specific air quality impact analyses involving atmospheric dispersion modeling of emissions associated with the HMA plant were performed by DEQ to demonstrate that the facility 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]). Central Paving submitted applicable information and data enabling DEQ to perform non-site-specific ambient air impact analyses.

DEQ performed non-site-specific air quality impact analyses to assure compliance with air quality standards for the proposed modification of the Central Paving HMA plant. Results from DEQ's atmospheric dispersion modeling 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 emissions 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 information, 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. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
Maximum HMA throughput does not exceed 450 ton HMA/hour, 7,200 ton HMA/day, and 480,000 ton HMA/year.	Short-term and annual modeling was performed assuming these production rates.
Emissions, stack parameters, and facility layout will not change from the current conditions as stated in PTC P-030020 when operating at 5040 South Apple Street, Boise.	The setback distances, etc. associated with analyses described in this memorandum apply only when the plant is operating at locations other than the Apple Street, Boise, site.
Maintain a 129 meter (423 foot) setback distance between emissions points and the nearest property boundary when operating at locations in Idaho other than the Apple Street site in Boise, Idaho. This also assumes a diesel-fired generator is operated at the site as described below.	This setback distance is necessary to assure compliance with applicable air quality standards at all ambient air locations in Idaho.
HMA production is half the stated value for the winter season (December 1 through March 31).	Substantially greater setback distances would be needed if full production was assumed for the winter season.
The HMA plant will not locate to a site where there are co-contributing emissions sources such as other HMA plants, concrete batch plants, or rock crushing plants within 1,000 feet of emissions points, except as noted below for a rock crushing plant with a processing rate of less than 500,000 ton/year.	Emissions are considered co-contributing if they occur within 1,000 feet (305 meters) of each other. Once the HMA plant is established at a specific site, that facility is not responsible for controlling other facilities from locating nearby, provided they are not on the same property. Neighboring facilities would be required to account for the HMA impacts for their permitting analyses.
If the HMA plant is co-located with a rock crushing plant, one of the following conditions are assumed: 1) the HMA is not operating on any day when the rock crushing plant is operating; 2) daily HMA throughput is half that otherwise allowed in the permit if the HMA plant is operating during a day when the rock crushing plant is operating.	Decreased HMA throughput will offset potential impacts of a nearby crushing plant.
Large diesel engines powering generators for generator operational scenarios listed above: powered by engines rated at >175 bhp and have a combined power rating of less than 1,210 bhp; are EPA Tier I Certified or better; operate a maximum of 16 hours/day.	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Small diesel engines powering generators for generator operational scenarios listed above: powered by engines having a combined power rating of less than 113 bhp; are EPA Tier II Certified or better; operate a maximum of 8 hour/day.	Different combinations can be used if it is demonstrated that total emissions from generators are less than those modeled for these sources.
Fugitive emissions from material handling and vehicle traffic are controlled to a high degree.	Control of conveyor transfers and screening are equivalent to that achieved by a water spray.
The HMA plant may not locate in any non-attainment areas.	All analyses performed assumed the facility will be located in areas attaining air quality standards.
Emissions rates for applicable averaging periods are not greater than those used in the modeling analyses, as listed in this memorandum.	NAAQS compliance for emissions rates greater than those listed in this memorandum have not been demonstrated.
Stack heights for the drum dryer, tank heater, and generator are as listed in this memorandum or higher.	NAAQS compliance is still assured if actual stack heights are greater than those listed in this memo.
NAAQS compliance is assured provided stack parameters of exhaust temperature and flow rate are not 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.
T-RACT is used for all TAP emissions sources.	Setback distances would be substantially greater if DEQ does not concur that T-RACT was used to control TAP emissions.

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

2.1.2 Significant and Cumulative NAAQS Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the proposed facility exceed the significant impact levels (SILs) of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules), then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled value that must be used for comparison to the NAAQS.

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been completed and promulgated into regulation. EPA has asserted through a policy memorandum (October 23, 1997) that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding PM_{10} standard. DEQ allows a direct surrogate use of PM_{10} modeling results and does not require the adjustments and justifications for surrogate use as suggested by the EPA March 23, 2010, Stephen Page Memo (Memorandum from Stephan Page, Director of Office of Air Quality Planning and Standards, EPA, *Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS*, March 23, 2010). Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard.

New NO_2 and SO_2 short-term standards have recently been promulgated by EPA. The standards will not be applicable for permitting purposes in Idaho until they are incorporated by reference *sine die* into Idaho Air Rules (Spring 2011).

DEQ used non-site-specific cumulative NAAQS impact analyses to demonstrate compliance with Idaho Air Rules Section 203.02. Established setback distances are minimal distances between any emissions points and the ambient air boundary (usually the property boundary) needed to assure compliance with standards, considering the impact of the HMA plant, any co-contributing sources, and a conservative background value.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual[f]	1.0	50[g]	Maximum 1st highest[h]
	24-hour	5.0	150[i]	Maximum 6th highest[j]
$PM_{2.5}$[k]	Annual	0.3	15[l]	Use PM_{10} as surrogate
	24-hour	1.2	35[m]	Use PM_{10} as surrogate
Carbon monoxide (CO)	8-hour	500	10,000[n]	Maximum 2nd highest[h]
	1-hour	2,000	40,000[n]	Maximum 2nd highest[h]
Sulfur Dioxide (SO_2)	Annual	1.0	80[g]	Maximum 1st highest[h]
	24-hour	5	365[n]	Maximum 2nd highest[h]
	3-hour	25	1,300[n]	Maximum 2nd highest[h]
	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[g]	Maximum 1st highest[h]
	1-hour	4 ppb[o] (7.5 $\mu g/m^3$)	100 ppb[r] (188 $\mu g/m^3$)	Mean of maximum 8th highest[s]
Lead (Pb)	Quarterly	NA	1.5[g]	Maximum 1st highest[h]
	3-month[t]	NA	0.15[g]	Maximum 1st highest[h]

[a] Idaho Air Rules Section 006.
[b] Micrograms per cubic meter.
[c] Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
[d] The maximum 1st highest modeled value is always used for the significant impact analysis.
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers.
[f] The annual PM_{10} standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a PM_{10} analysis that demonstrates compliance with the revoked PM_{10} standard.
[g] Not to be exceeded in any calendar year.
[h] Concentration at any modeled receptor.
[i] Never expected to be exceeded more than once in any calendar year.
[j] Concentration at any modeled receptor when using five years of meteorological data.
[k] Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
[l] 3-year average of annual concentration.
[m] 3-year average of the upper 98th percentile of 24-hour concentrations.
[n] Not to be exceeded more than once per year.
[o] Interim SIL established by EPA policy memorandum.
[p] 3-year average of the upper 99th percentile of the distribution of maximum daily 1-hour concentrations.
[q] Mean (of 5 years of data) of the maximum of 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled.
[r] 3-year average of the upper 98th percentile of the distribution of maximum daily 1-hour concentrations.
[s] Mean (of 5 years of data) of the maximum of 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled.
[t] 3-month rolling average.

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 the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated. If DEQ determines T-RACT is used to control emissions of carcinogenic TAPs, then modeled concentrations of 10 times the AACC are considered acceptable, as per Idaho Air Rules Section 210.12.

2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Table 3 lists appropriate background concentrations for rural Idaho areas.

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations in the DEQ non-site-specific analyses were based on DEQ default values for rural/agricultural areas.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	73
	Annual	26
Carbon monoxide (CO)	1-hour	3,600
	8-hour	2,300
Sulfur dioxide (SO_2)	3-hour	34
	24-hour	26
	Annual	8
Nitrogen dioxide (NO_2)	Annual	17
Lead (Pb)	Quarterly	0.03

[a] Micrograms per cubic meter.

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

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.

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

3.1.1 Overview of Analyses

DEQ performed non-site-specific analyses that were determined to be reasonably representative of the proposed HMA plant, and the results demonstrated compliance with applicable air quality standards to DEQ's satisfaction.

Because of the portable nature of HMA plants, DEQ performed non-site-specific modeling to establish setback distances between locations of emissions points and the property boundary of the modified HMA plant.

The proposed project is a modification to allow the HMA plant to operate as a portable source using diesel and re-processed fuel oil (RFO), to allow the use of two diesel-fired gen-sets to produce power for the potable HMA plant, and to allow co-location with a rock crushing plant. Operations at the Apple Street site in Boise are not being modified, and the operational restrictions and setback distances described in this memorandum are not applicable to operations at that site. Operations at the Apple Street site are supported by the analyses performed at the time the permit was issued for operations at that site.

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 structure of 3 m X 2.5 m X 3 m high was assumed for downwash consideration, representing a large generator.
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 rather than the applicant. 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 HMA plant, DEQ performed non-site-specific modeling to establish setback distances between locations of emissions points and the property boundary for the modified HMA plant.

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 to evaluate impacts of the HMA plant.

3.1.4 Meteorological Data

Because of the portable nature of HMA plants, 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. Assuming flat terrain is not a critical limitation of the analyses because most emissions points associated with HMA plants 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

Downwash effects caused by the generator housing were accounted for by including the generator structure as a building with dimensions of 3.0 meter by 2.5 meter by 3.0 meter high.

Downwash effects from other structures at the site were not accounted for because of the following:

- Determining a building configuration is extremely difficult given the portable nature of the facility.
- Much of the equipment is porous with regard to wind, thereby minimizing downwash effects.

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 points and the property boundary or the established boundary to ambient air (if not the same as the property boundary). Ambient air is any area where the general public (anyone not under direct control of the HMA plant) has access. The issued permit will specify throughput restrictions and an emissions point setback from ambient air.

3.1.9 Receptor Network and Generation of Setback Distances

Setback distances were determined by first modeling the plant using a dense receptor grid. Results were then reviewed to find the receptor furthest from any emissions source that shows an exceedance of the standard when combined with a background value. The setback distance was calculated as the maximum distance between the next furthest receptor and any emissions point.

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

1) Trigger values for the modeling analyses were determined. 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:

PM_{10}	24-hour	77 $\mu g/m^3$
	annual	24 $\mu g/m^3$
SO_2	3-hour	1266 $\mu g/m^3$
	24-hour	339 $\mu g/m^3$
	annual	72 $\mu g/m^3$
CO	1-hour	36400 $\mu g/m^3$
	8-hour	7700 $\mu g/m^3$
NO_2	annual	83 $\mu g/m^3$

The trigger value for TAPs is simply the AAC or AACC, since background concentrations are not used in the analyses.

2) For the operational configuration, 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 calculated. This was the furthest distance between an emissions point and the controlling receptor.

Figure 1 shows an example of how setback distances are determined for a specific modeling run. Emissions points are grouped in a cluster at the center within a 5.0 meter square area. The outer-most contour line shows POM concentrations at the AACC for that TAP. POM would be the controlling pollutant if T-RACT were not implemented, and the resulting setback distance would be very large. Accounting for T-RACT results in a substantially smaller contour (allowable concentrations at a factor of ten larger), as indicated by the inner-most contour. The middle contour line shows the extent of modeled concentrations exceeding the trigger value for 24-hour PM_{10}. The point on the contour line that is the furthest from the emissions points is identified, and then the controlling receptor is identified as the next furthest receptor beyond that point. The distance is determined from the coordinates of the controlling receptor according to the following (with the center of the emissions sources group at 0.0 m Northing and 0.0 m Easting):

$$\text{Distance} = \sqrt{(|\text{Northing Coordinate}| + 3)^2 + (|\text{Easting Coordinate}| + 3)^2}$$

The factor of 3 in the equation accounts for an emissions point located on the opposite side of the facility center from where the maximum impact is (at -2.5 meters Easting, -2.5 meters Northing if the maximum setback distance is in the direction of positive easting and northing coordinates).

3.2 Emission Rates

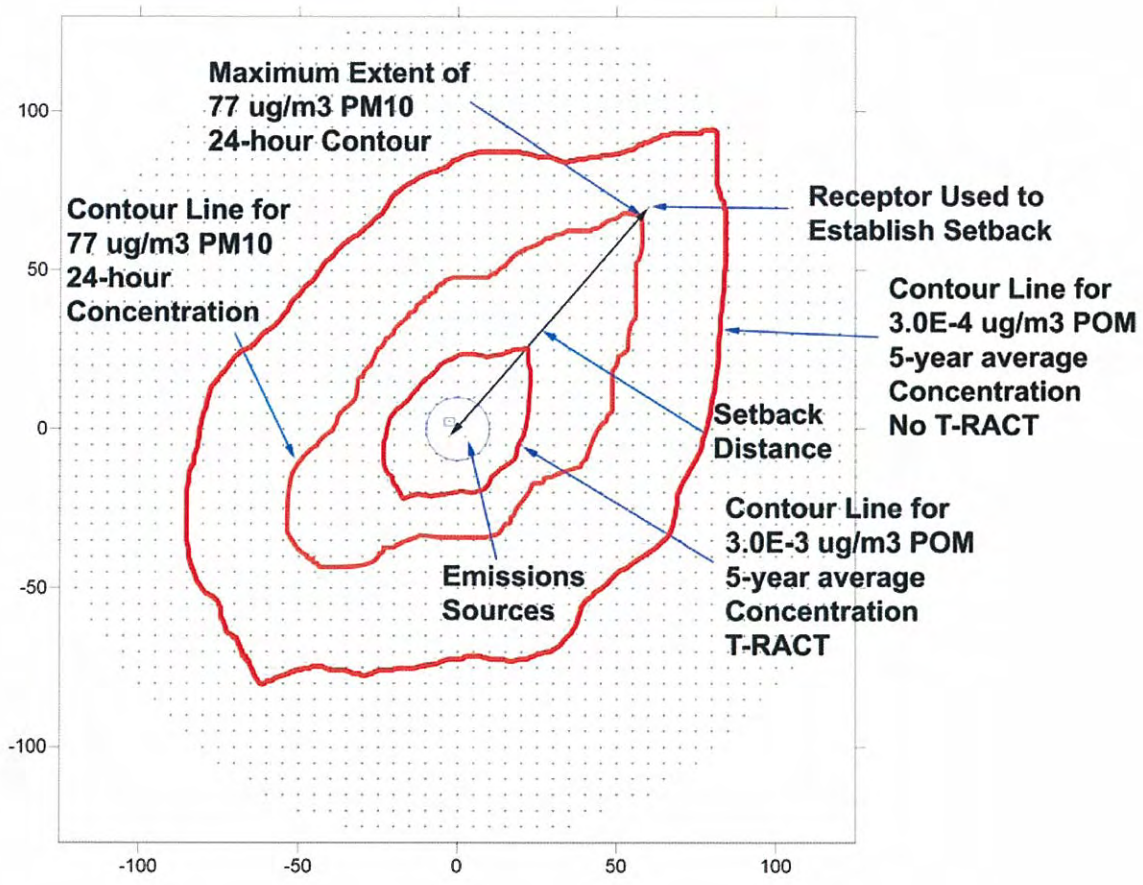
Emissions rates of criteria pollutants and TAPs were calculated for the modified HMA plant production rate and operational configuration for various applicable averaging periods.

3.2.1 Criteria Pollutant Emissions Rates

Table 6 lists criteria pollutant emissions rates used in the DEQ non-site-specific modeling analyses for the HMA plant production rate, operational configuration, and for all applicable averaging periods. Attachment 1 provides additional details of DEQ emissions calculations used in the modeling analyses.

DEQ evaluated required setback distances for criteria pollutants on the basis of total facility-wide emissions, rather than only the emissions increase.

Figure 1 - Determination of Setback Distance for a Modeling Run



Fugitive particulate emissions from frontend loader handling of aggregate materials for the HMA plant were designated as emissions point MATHNDHI in the model. Two transfers were included for the source: 1) transfer of aggregate from truck unloading to a storage pile; 2) transfer of aggregate from the storage pile to a hopper. Emissions rates are a function of wind speed and were varied in the model according to wind speed. Attachment 1 provides details on emissions calculations.

Emissions from screening of aggregate and three conveyor transfers were combined into one source (emissions point CONVEY in the model). DEQ used emissions factors for controlled screening and conveyor transfers. Controlled emissions, based on use of water sprays, were used for screening and conveyor transfers because compliance with the 24-hour PM_{10} standard could not be demonstrated with a reasonable setback distance when using uncontrolled screening and conveyor transfer emissions.

Table 6. EMISSIONS USED IN DEQ ANALYSES				
Emissions Point in Model	**Pollutant**	**Averaging Period**	**Emissions Rate (lb/hr)**	
			450 ton/hr 7,200 ton/day[a] 480,000 ton/yr	**3,600 ton/day[b]**
DRYER – drum dryer/mixer - emissions controlled by a baghouse	PM_{10}	24-hour	6.900	3.450
		annual	1.260	
	CO	1-hour 8-hour	58.50	
	SO_2	3-hour	0.5220	
		24-hour	0.3480	0.1740
		Annual	0.09269	
	NOx	annual	3.014	
SILO – asphalt storage silo filling	PM_{10}	24-hour	0.1758	0.08790
		annual	0.03210	
	CO	1-hour 8-hour	0.5310	
LOAD – asphalt loadout from silo	PM_{10}	24-hour	0.1566	0.07830
		annual	0.02860	
	CO	1-hour 8-hour	0.6072	
HOTOIL – asphalt oil heater	PM_{10}	24-hour	0.03396	0.03396
		annual	0.03396	
	CO	1-hour 8-hour	0.05145	
	SO_2	3-hour	0.002192	
		24-hour	0.002192	0.002192
		Annual	0.002192	
	NOx	annual	0.2058	
GEN1 – electrical generator - 1210 hp diesel engine - 16 hr/day - 0.0015% sulfur diesel - Not operated at Apple St. site - Tier I certified	PM_{10}	24-hour	0.7161	0.7161
		annual	0.7161	
	CO	1-hour 8-hour	22.67	
	SO_2	3-hour	0.01468	0.01468
		24-hour	0.009789	0.009789
		Annual	0.009789	
	NOx	annual	12.20	
GEN2 – electrical generator - 113 hp diesel engine - 8 hr/day - 0.0015% sulfur diesel - Not operated at Apple St. site - Tier II certified	PM_{10}	24-hour	0.01858	0.01858
		annual	0.01858	
	CO	1-hour 8-hour	0.926	
	SO_2	3-hour	0.001371	0.001371
		24-hour	4.571E-4	4.571E-4
		Annual	4.571E-4	
	NOx	annual	0.4089	
MATHNDHI[c] – aggregate handling by frontend loader	PM_{10}	24-hour	0.4404	0.2202
		annual	0.08044	
CONVEY – conveyors, scalping screen	PM_{10}	24-hour	0.2529	0.1265
		annual	0.04619	

[a] Emissions for April 1 through November 31. During December 1 through March 31 throughput and resulting emissions levels will be half that listed.

[b] Emissions for December 1 through March 31.

[c] Emissions are varied in the model according to wind speed category. Emissions listed are based on a 10 mph wind speed.

DEQ's air impact analyses assumed that daily operations and resulting emissions during the period of December 1 through March 31 were at half those otherwise listed in Table 6. The reductions in emissions were only applied to sources where emissions are a direct function of throughput. Reductions were not applied to generators and the asphalt oil tank heater.

3.2.2 TAP Emissions Rates

Facility-wide TAP emissions were used in the modeling analyses rather than increases associated with only the modification. This approached was used because DEQs performed the analyses, and DEQ had an established method to evaluate emissions on a facility-wide basis. Table 8 is a summary of TAP emissions and a comparison to the applicable ELs.

Table 7. TAP EMISSIONS USED IN DEQ ANALYSES

Emissions Point in Model	Pollutant	Averaging Period	Emissions Rate for 480,000 ton HMA/yr (lb/hr)
DRYER – drum dryer/mixer - emissions controlled by a baghouse	Arsenic	period	3.068E-5
	Cadmium	period	2.247E-5
	Chromium 6+	period	2.466E-5
	Nickel	period	3.452E-3
	Acetaldehyde	period	7.123E-2
	Benzene	period	2.137E-2
	Dioxins/furans	period	1.626E-10
	Formaldehyde	period	1.699E-1
	PAH (naphthalene)	period	3.562E-2
	POM	period	3.002E-5
	HCl	24-hour	6.300E-2
SILO – asphalt storage silo filling	Benzene	period	2.137E-4
	Formaldehyde	period	4.608E-3
	PAH(naphthalene)	period	2.5332E-4
	POM	period	3.701E-5
LOAD – asphalt loadout from silo	Benzene	period	1.185E-4
	Formaldehyde	period	2.005E-4
	PAH(naphthalene)	period	2.335E-4
	POM	period	2.521E-5
HOTOIL – asphalt tank heater	Arsenic	period	1.358E-5
	Cadmium	period	4.095E-6
	Chromium 6+	period	2.552E-6
	Nickel	period	8.695E-4
	Dioxins/furans	period	3.566E-12
	Formaldehyde	period	3.601E-5
	PAH (naphthalene)	period	1.749E-4
	POM	period	1.029E-6
GEN1[a] – electrical generator	Acetaldehyde	period	1.422E-4
	Benzene	period	4.380E-3
	Formaldehyde	period	4.454E-4
	PAH (naphthalene)	period	7.338E-4
	POM	period	2.538E-5
GEN2[b] – electrical generator	Acetaldehyde	period	2.016E-4
	Benzene	period	2.452E-4
	Formaldehyde	period	3.102E-4
	PAH (naphthalene)	period	2.229E-5
	POM	period	9.024E-7

[a] Assumes 5,840 hr/year of actual operation (16 hr/day).
[b] Assumes 2,920 hr/year of actual operation (8 hr/day).

Table 8. SUMMARY OF FACILITY-WIDE TAP EMISSIONS USED FOR MODELING				
TAP	Averaging Period	Emissions	EL	Modeling Required (10 x EL for AACCs)
Acetaldehyde	period	7.16E-2	3.0E-3	Yes
Arsenic	period	4.43E-5	1.5E-6	Yes
Benzene	period	2.63E-2	8.0E-4	Yes
Cadmium	period	2.66E-5	3.7E-6	Yes
Chromium 6+	period	2.72E-5	5.6E-7	Yes
Dioxins/furans	period	1.66E-10	1.5E-10	Yes
Formaldehyde	period	1.76E-1	5.1E-4	Yes
Nickel	period	4.32E-3	2.7E-5	Yes
PAH(naphthalene)	period	3.74E-2	9.1E-5	Yes
POM	period	1.20E-4	2.0E-6	Yes
HCl	24-hour	6.30E-2	5E-2	Yes

Section 2.1.3 of this memorandum describes how carcinogenic TAP impacts of 10 times the AACC are allowed if the source utilizes T-RACT for controls. DEQ has determined a baghouse is T-RACT for particulate carcinogenic TAPs from the drum dryer and no additional control beyond good combustion is T-RACT for other carcinogenic TAPs.

DEQ conservatively used facility-wide TAP emissions to evaluate compliance, rather than modeling only the emissions increase. This was done for the ease of calculation, and results did not affect setbacks since impacts above 10 times the AACC were inside the setbacks needed for PM_{10}.

3.3 Emission Release Parameters and Plant Criteria

Table 9 lists the characteristics of the Central Paving HMA plant used in DEQ's non-site-specific air impact analyses.

Table 10 provides emissions release parameters for the analyses including stack height, stack diameter, exhaust temperature, and exhaust velocity. Additional details are provided in Attachment 1.

Asphalt silo filling and asphalt loadout were modeled as point sources, rather than volume sources, to account for thermal buoyancy of the emissions. Release parameters for silo filling and asphalt loadout were based on the following:

- Release point of silo filling was established as the top of the storage silo and the release point of asphalt loadout operations was set to correspond to the top of a truck bed.
- Stack diameter of 3.0 meters was used to approximately correspond to a typical silo. Model-calculated stack tip downwash will account for downwash affects potentially caused by the silo.
- Stack gas temperature of 346K was calculated by assuming the gas temperature would be half that of the default asphalt temperature of 325°F (1/2 of 325° F = 163° F = 346 K).
- Flow velocity of 0.1 m/sec was used to establish a reasonably conservative total flow from the source of 1,500 actual cubic feet per minute, caused by convection.

Table 9. CHARACTERISTIC OF HMA PLANT USED IN DEQ ANALYSES	
Parameter	**Value or Description**
HMA Throughput Rates	450 ton/hr, 7,200 ton/day[a], 480,000 ton/yr
Co-Contributing Sources	The emissions points of the HMA plant are not located within 1,000 feet of other permittable emissions sources. A rock crushing plant could be operated at the site provided it is not operated during any day when the HMA plant is operated and annual throughput is less than 500,000 ton/yr. Alternatively, a rock crusher could be operated simultaneously (both operating in a given day) with the HMA plant provided the HMA throughput for that day does not exceed a value of half that otherwise allowed.
Drum Dryer	Drum dryer fueled by natural gas, diesel, or RFO, with a baghouse for emissions control.
Dryer Stack Parameters	Stack height ≥10.7 m, stack diameter ≈1.4 m, gas temp ≥ 380 K, flow velocity ≥16 m/sec.
Asphalt Silo Filling	Model as a point source. Stack height = 9 m, stack diameter = 3.0 m, gas temp = 346 K (163° F), flow velocity = 0.1 m/sec. These parameters were developed by the modeling group to represent the nature of released emissions from this source in most all applications.
Asphalt Loadout	Model as a point source. Stack height = 5 m, stack diameter = 3.0 m, gas temp = 346 K (163° F), flow velocity = 0.1 m/sec. These parameters were developed by the modeling group to represent the nature of released emissions from this source in most all applications.
Tank Heater	1.4 MMbtu/hr tank heater fueled by natural gas or diesel
Tank Heater Stack Parameters	Stack height ≥3.5 m, stack diameter ≈0.23 m, gas temp ≥ 543 K, flow velocity ≥13.4 m/sec.
Electrical Power	Line power or diesel-fired generators with the following characteristics: 1) a large generator powered by a engine between 175 bhp and 1,210 bhp, EPA Tier I Certified, burning 0.0015% sulfur fuel, operating less than 16 hr/day; 2) a small generator powered by a engine of less than 113 bhp, EPA Tier II Certified, burning 0.0015% sulfur fuel, operating less than 8 hr/day. Other generators or combination of generators can be used provided emissions are not greater than those modeled for these sources.
Large Generator Stack Parameters	Stack height ≥4.1 m, stack diameter ≈ 0.20 m, gas temp ≥500 K, flow velocity ≥40 m/sec.
Small Generator Stack Parameters	Stack height ≥2.2 m, stack diameter ≈ 0.11 m, gas temp ≥500 K, flow velocity ≥46 m/sec.
Conveyor Transfers	≤3 transfers for any given quantity of material processed. Emissions controlled to a point equivalent to use of a water spray.
Scalping Screen	≤1 screen for any given quantity of material processed. Emissions controlled to a point equivalent to use of a water spray.
Frontend Loader Transfers	≤2 transfers for any given quantity of material processed. Typically involves: 1) aggregate to storage pile; 2) aggregate from pile to hopper.
Seasonal Restriction	Throughput is restricted to half allowable rates during the period between December 1 and March 31.

[a] Half the listed value for December 1 through March 31.

3.4 Results for Cumulative NAAQS Impact Analyses and TAPs Analyses

DEQ determined required setback distances from the non-site-specific modeling results for each proposed operating scenario, criteria pollutant and TAP, and averaging period. Table 11 lists setback distances for each scenario and averaging period. Setback distances are the closest distance between the property boundary and the emissions release point of any emissions source (HMA plant stack, asphalt loadout point, aggregate hoppers, generator stacks, scalping screen, or conveyor transfer points).

Table 10. EMISSIONS RELEASE PARAMETERS					
Release Point /Location	**Source Type**	**Stack Height (m)[a]**	**Modeled Diameter (m)**	**Stack Gas Temp. (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**
DRYER	Point	10.7	1.4	380	16.3
SILO	Point	9.0	3.0	346	0.1
LOADOUT	Point	5.0	3.0	346	0.1
GEN1	Point	4.1	0.20	500	40
GEN2	Point	2.2	0.11	500	46
HOTOIL	Point	3.5	0.23	543	13.4
Volume Sources					
Release Point /Location	**Source Type**	**Release Height (m)**	**Initial Horizontal Dispersion Coefficient σ_{y0} (m)**	**Initial Vertical Dispersion Coefficient σ_{z0} (m)**	
MATHNDHI	Volume	2.5	4.65	1.16	
CONVY	Volume	5.0	4.65	1.16	

[a] Meters
[b] Kelvin
[c] Meters per second

Table 11. SETBACK DISTANCES AS A FUNCTION OF THROUGHPUT AND OPERATIONAL CONFIGURATION					
HMA Configuration Scenario	**Setback (m)**	**Controlling Pollutant**	**HMA Configuration Scenario**	**Setback (m)**	**Controlling Pollutant**
All Locations in Idaho: Setbacks for 7,200 ton HMA/day, 480,000 ton HMA/year not operating with a co-contributing rock crushing plant					
Scenario 1[a]: mod fugitive dust control, baghouse on dryer, diesel generator	129	24hr-PM_{10}	Scenario 2[b]: mod fugitive dust control, baghouse on dryer, no generator	125	24hr-PM_{10}

[a] Scenario 1: moderate control of fugitives from material handling; electric asphalt heater; 1,210 bhp and 113 bhp engine for generator; control on conveyors and screen equal to water spray.
[b] Scenario 2: moderate control of fugitives from material handling; electric asphalt heater; control on conveyors and screen equal to water spray.

3.5 Locating with Other Facilities/Equipment

The air impact analyses performed by DEQ assume there are no other emissions sources in the immediate area that measurably contribute to pollutant concentrations in a way not adequately accounted for by the background concentrations used. Such emissions sources could include a rock crushing plant, another HMA plant, a ready-mix concrete plant, or other permitted facility. DEQ modeling staff established a rule-of-thumb distance of 1,000 feet from emissions sources at the HMA plant where emissions from a nearby facility would need to be considered in the air impact analyses for the HMA plant. Emissions sources located beyond 1,000 feet are considered to be too distant to have a measureable impact on receptors substantially impacted by the HMA plant.

HMA plants commonly co-locate with rock crushing plants. Since the 24-hour PM_{10} impacts are the governing criteria for the Central Paving facility (governing for criteria pollutants – contributions of TAPs from other facilities are not considered in permitting analyses for the HMA plant), simultaneously operation on an annual basis is not a large concern. DEQ modeling staff determined NAAQS compliance is still assured when a rock crushing plant co-locates with the HMA plant, provided the HMA plant does

not operate during any day when the rock crushing plant is operating and the annual actual throughput of the rock crushing plant is not greater than 500,000 tons. DEQ modeling staff also determined NAAQS compliance is assured when operating the HMA plant during the same day as the rock crushing plant, provided the throughput of the HMA plant is half that assumed for the modeling analyses used to generate setback distances for the scenario of no co-location.

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 ambient air quality standard.

ATTACHMENT 1

EMISSIONS CALCULATIONS AND MODELING PARAMETERS FOR DEQ'S AIR IMPACT ANALYSES

HMA Plant Modeled Emissions Rates

Setback requirements are linked to throughput levels and the equipment configuration.

Drum Dryer Emissions

The DEQ HMA plant emissions calculation spreadsheet was used to generate emissions quantities for applicable averaging periods. Emissions calculations assume worst-case fuels of either used oil, diesel, natural gas, or LPG. Emissions also assume control by a baghouse.

Asphalt Loadout

The DEQ HMA plant emissions calculation spreadsheet was used to generate emissions quantities for applicable averaging periods.

Asphalt Silo Filling

The DEQ HMA plant emissions calculation spreadsheet was used to generate emissions quantities for applicable averaging periods.

Asphalt Tank Heater Emissions

The DEQ HMA plant emissions calculation spreadsheet was used to generate emissions quantities for applicable averaging periods.

Power Generator

The application indicated two diesel engines may be operated at the HMA plant to power electrical generators: 1) an EPA Tier I certified 1,210 bhp diesel engine operating up to 16 hr/day; 2) an EPA Tier II certified 113 bhp diesel engine operating up to 8 hr/day. Emissions estimates were calculated assuming the 1,210 bhp engine will combust diesel with a maximum 0.0015% sulfur content and the 113 bhp engine will combust diesel with a maximum 0.0015% sulfur content.

Emissions for 1,210 bhp Tier I EPA Certified diesel engine. PM_{10} and NOx emissions based on emissions standards in 40 CFR 85:

PM assumed to be equal to PM_{10}, kW > 560, PM = 0.54 g/kW-hr

$$\frac{0.54\ g\ PM_{10}}{kW\text{-}hr} \left| \frac{kW}{1.341\ hp} \right| \frac{1210\ hp}{} \left| \frac{lb}{453.59\ g} \right. = \frac{1.074\ lb}{hr}$$

$$\frac{0.9597\ lb\ PM_{10}}{hr} \left| \frac{16\ hr}{24\ hr} \right. = \frac{0.7161\ lb}{hr}$$

NOx equal to, kW > 560, NOx = 9.2 g/kW-hr

$$\frac{9.2\ g\ PM_{10}}{kW\text{-}hr} \left| \frac{kW}{1.341\ hp} \right| \frac{1210\ hp}{} \left| \frac{lb}{453.59\ g} \right. = \frac{18.30\ lb}{hr}$$

$$\frac{18.30\ lb\ PM_{10}}{hr} \left| \frac{16\ hr}{24\ hr} \right. = \frac{12.20\ lb}{hr}$$

SO_2 emissions are based on the sulfur content of the fuel and were calculated according to the factor in Table 3.4-1 of AP-42: 8.09E-3S lb SO_2 / hp-hr, where S is the percent sulfur in the fuel

$$\frac{\text{8.09E-3 (0.0015) lb}}{\text{hp - hr}} \mid \frac{\text{1210 hp}}{} = \frac{\text{0.01468 lb}}{\text{hr}}$$

$$\frac{\text{0.01468 lb } SO_2}{\text{hr}} \mid \frac{\text{16 hr}}{\text{24 hr}} = \frac{\text{0.009789 lb}}{\text{hr}}$$

Emissions for 113 bhp Tier II EPA Certified diesel engine. PM_{10} and NOx emissions based on emissions standards in 40 CFR 85:

PM assumed to be equal to PM_{10}, 75 ≤ kW ≤ 130, PM = 0.30 g/kW-hr

$$\frac{\text{0.30 g } PM_{10}}{\text{kW - hr}} \mid \frac{\text{kW}}{\text{1.341 hp}} \mid \frac{\text{113 hp}}{} \mid \frac{\text{lb}}{\text{453.59 g}} = \frac{\text{0.05573 lb}}{\text{hr}}$$

$$\frac{\text{0.05573 lb } PM_{10}}{\text{hr}} \mid \frac{\text{8 hr}}{\text{24 hr}} = \frac{\text{0.01858 lb}}{\text{hr}}$$

HMHC + NOx assumed to be equal to NOx, 75 ≤ kW ≤ 130, NOx = 6.6 g/kW-hr

$$\frac{\text{6.6 g } PM_{10}}{\text{kW - hr}} \mid \frac{\text{kW}}{\text{1.341 hp}} \mid \frac{\text{113 hp}}{} \mid \frac{\text{lb}}{\text{453.59 g}} = \frac{\text{1.227 lb}}{\text{hr}}$$

$$\frac{\text{1.227 lb } PM_{10}}{\text{hr}} \mid \frac{\text{8 hr}}{\text{24 hr}} = \frac{\text{0.4089 lb}}{\text{hr}}$$

SO_2 emissions are based on the sulfur content of the fuel and were calculated according to the factor in Table 3.4-1 of AP-42: 8.09E-3S lb SO_2 / hp-hr, where S is the percent sulfur in the fuel

$$\frac{\text{8.09E-3 (0.0015) lb}}{\text{hp - hr}} \mid \frac{\text{113 hp}}{} = \frac{\text{0.001371 lb}}{\text{hr}}$$

$$\frac{\text{0.001371 lb } SO_2}{\text{hr}} \mid \frac{\text{8 hr}}{\text{24 hr}} = \frac{\text{4.571E-4 lb}}{\text{hr}}$$

Aggregate Handling Emissions

Emissions from aggregate handling by frontend loaders were calculated for the following transfers: 1) aggregate to a storage pile; 2) aggregate from a pile to a hopper.

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	=	5% for aggregate
U	=	wind speed (mph)

A moisture content of 3% to 7% was estimated as a typical moisture content of aggregate entering the dryer, per STAPPA-ALAPCO-EPA, Emission Inventory Improvement Program, Volume II, Chapter 3, Preferred and Alternative Methods for Estimating Air Emissions from Hot Mix Asphalt Plants, Final Report, July 1996.

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 – use 10 mph wind: $0.35(0.0032)\frac{(10/5)^{1.3}}{(5/2)^{1.4}} = 7.646\ E-4$ lb/ton

Adjustment factors to put in the model:

Cat 1: $(1.72/5)^{1.3}$ (3.105 E-4) = 7.756 E-5 lb/ton
Factor = 7.756 E-5/7.646 E-4 = 0.1014

Cat 2: $(5.18/5)^{1.3}$ (3.105 E-4) = 3.251 E-4 lb/ton
Factor = 3.251 E-4/ 7.646 E-4 = 0.4253

Cat 3: $(9.20/5)^{1.3}$ (3.105 E-4) = 6.861 E-4 lb/ton
Factor = 6.861 E-4/7.646 E-4 = 0.8974

Cat 4: $(14.95/5)^{1.3}$ (3.105 E-4) = 1.290 E-3 lb/ton
Factor = 1.290 E-3/7.646 E-4 = 1.687

Cat 5: $(21.28/5)^{1.3}$ (3.105 E-4) = 2.041 E-3 lb/ton
Factor = 2.041 E-3/7.646 E-4 = 2.669

Cat 6: $(27.74/5)^{1.3}$ (3.105 E-4) = 2.881 E-3 lb/ton
Factor = 2.881 E-3/7.646 E-4 = 3.768

For the operational scenario for 7,200 ton/day HMA and 480,000 ton/year HMA, emissions are as follows:

Daily PM_{10}:

$$\frac{7.646\ E\text{-}4\ lb\ PM_{10}}{ton} \left| \frac{6{,}912\ ton}{day} \right| \frac{day}{24\ hr} \left| \frac{2\ transfers}{} \right. = \frac{0.4404\ lb}{hr}$$

Annual PM_{10}:

$$\frac{7.646\ E\text{-}4\ lb\ PM_{10}}{ton} \left| \frac{460{,}800\ ton}{yr} \right| \frac{yr}{8{,}760\ hour} \left| \frac{2\ transfers}{} \right. = \frac{0.08044\ lb}{hr}$$

Daily and annual throughputs were based on aggregate being 96% of the total HMA production.

These sources were modeled as a single volume source with a 20-meter square area, 5.0 meters thick, with a release height of 2.5 meters. The initial dispersion coefficients were calculated as follows:

σ_{yo} = 20 m / 4.3 = 4.65 m

σ_{zo} = 5 m / 4.3 = 1.16 m

Conveyors and Screens Emissions

These sources include the scalping screen and conveyor transfers. Controlled emissions factors for the conveyor transfers and the scalping screen were used, assuming the control measures used would be equivalent to the application of water sprays.

Daily and annual throughputs were based on aggregate being 96% of the total HMA production.

For the operational scenario for 7,200 ton/day HMA and 480,000 ton/year HMA, emissions are as follows:

Scalping Screen (controlled emissions):

Daily PM_{10}:

$$\frac{0.00074 \text{ lb } PM_{10}}{\text{ton}} \left| \frac{6{,}912 \text{ ton}}{\text{day}} \right| \frac{\text{day}}{24 \text{ hour}} = \frac{0.2131 \text{ lb}}{\text{hr}}$$

Annual PM_{10}:

$$\frac{0.00074 \text{ lb } PM_{10}}{\text{ton}} \left| \frac{460{,}800 \text{ ton}}{\text{yr}} \right| \frac{\text{yr}}{8{,}760 \text{ hour}} = \frac{0.03893 \text{ lb}}{\text{hr}}$$

Conveyor Transfers (controlled emissions):

Daily PM_{10}:

$$\frac{4.60 \text{ E-5 lb } PM_{10}}{\text{ton}} \left| \frac{6{,}912 \text{ ton}}{\text{day}} \right| \frac{\text{day}}{24 \text{ hour}} \left| \frac{3 \text{ transfers}}{} \right. = \frac{0.03974 \text{ lb}}{\text{hr}}$$

Annual PM_{10}:

$$\frac{4.60 \text{ E-5 lb } PM_{10}}{\text{ton}} \left| \frac{460{,}800 \text{ ton}}{\text{yr}} \right| \frac{\text{yr}}{8{,}760 \text{ hour}} \left| \frac{3 \text{ transfers}}{} \right. = \frac{0.007259 \text{ lb}}{\text{hr}}$$

Total Daily Emissions (unloading, screening, conveyors) = 0.2528 lb/hr

Total Annual Emissions (unloading, screening, conveyors) = 0.04619 lb/hr

These sources were modeled as a single volume source with a 20-meter square area, 5.0 meters thick, with a release height of 5.0 meters. The initial dispersion coefficients are calculated as follows:

σ_{yo} = 20 m / 4.3 = 4.65 m

σ_{zo} = 5 m / 4.3 = 1.16 m

HMA Plant Modeling Parameters

Dryer Baghouse Stack

Release height = 10.7 meters; effective diameter of release area = 1.37 meters;
typical stack gas temperature = 380 K; typical flow velocity = 16.3 meters/second

Asphalt Silo Filling

DEQ modeled this source as a point source.
- release height of 9 meters (equal to height of silo)
- stack diameter of 3 meters, corresponding to the approximate diameter of the silo
- gas temperature was estimated at half the AP42 default asphalt temperature: 325° F / 2 = 163° F
- stack velocity of 0.1 m/sec to account for convective air flow.

Asphalt Loadout

DEQ modeled this source as a point source.
- release height of 5 meters (equal to height of silo)
- stack diameter of 3 meters, corresponding to the approximate diameter of the silo
- gas temperature was estimated at half the AP42 default asphalt temperature: 325° F / 2 = 163° F
- stack velocity of 0.1 m/sec to account for convective air flow.

Aggregate to and from Storage

Release emissions in model from a 20 m X 20 m area 5 m high, released at 2.5 m

Initial dispersion coefficients:

σ_{y0} = 20 m / 4.3 = 4.65 m

σ_{z0} = 5 m / 4.3 = 1.16 m

Sources include: two transfers, equivalent in emissions to that of a frontend loader, from the point of aggregate delivery to transfer to the HMA plant hopper.

Conveyor Transfers and Scalping Screen

Release emissions in model from a 20 m X 20 m area 5 m high, released at 5 m

Initial dispersion coefficients:

σ_{y0} = 20 m / 4.3 = 4.65 m

σ_{z0} = 5 m / 4.3 = 1.16 m

Sources include: all conveyor transfers associated with HMA operations

Asphalt Oil Heater

Parameters for the 1.41 MMBtu/hr diesel-fired heater were provided by the applicant and are as follows:

Stack height = 3.5 m; stack diameter = 0.23 meters; stack gas temperature = 543 K; flow velocity = 13.4 meters/second

Power Generator

Stack gas temperatures and flow rates are often overestimated by permit applicants, likely because values reported by manufacturers are often based on values measured at the exhaust manifold rather than at the point of release to the atmosphere.

DEQ modeled all generator emissions at an exit gas temperature of 500 K. A 40 m/sec flow velocity for the 1,210 hp engine was based on an exhaust flow of 2,762 acfm at 500 K, and a 46 m/sec flow velocity for the 113 hp engine was based on an exhaust flow of 1009 acfm.

The final point source parameters for the 1,210 hp engine were as follows:

> Stack height = 4.1 m; stack diameter = 0.20 meters; stack gas temperature = 500 K; flow velocity = 40 meters/second.

The final point source parameters for the 113 hp engine were as follows:

> Stack height = 2.2 m; stack diameter = 0.11 meters; stack gas temperature = 500 K; flow velocity = 46 meters/second.

APPENDIX C – PROCESSING FEE

Emissions Inventory			
Pollutant	Permitted Emissions P-2011.0018 (T/yr)	Permitted Emissions P-030020 (T/yr)	Annual Emissions Change (T/yr)
NO_X	99.0 [a]	91.9	7.1
SO_2	17.4 [b]	16.0	1.4
CO	99.0 [a]	99.0	0.0
PM_{10}	25.8 [a]	16.7	9.2
VOC	15.7 [a]	0.0	15.7
TAP/HAP	4.7 [a]	3.0	1.7
Total:	**261.6**	**226.6**	**35.1**
Fee Due	**$ 5,000.00**		

Comments:

[a] maximum value of the following:
(1) P-2011.0018 new operating scenario emission estimates
(2) 480,000 / 309,366 x P-030020 permitted emissions
(ratio of throughput limits)
(3) 99 T/yr maximum allowable for synthetic minor classification

[b] sum of P-030020 permitted emissions and P-2011.0018 estimates