



Air Quality Permitting Statement of Basis

July 6, 2007

Permit No. P-2007.0068

**H-K Contractors, Inc., Portable
(139 Hot Plant)**

Facility ID No. 777-00028

Prepared by:

A handwritten signature in purple ink, appearing to read "MP", is written over the printed name.

**Marcia Porter, Permit Writer
AIR QUALITY DIVISION**

Final

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Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAPs	hazardous air pollutants
HMA	hot-mix asphalt
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIC	Standard Industrial Classification
SM	synthetic minor
SO ₂	sulfur dioxide
TAP	toxic air pollutant
T/yr	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose of this PTC is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, Procedures and Requirements for Permits to Construct (PTC).

2. FACILITY DESCRIPTION

The facility is a portable, hot-mix asphalt plant (HMA). Stockpiled aggregate is transferred to feed bins, then conveyed to the drum mix dryer. Heated asphalt oil from a storage tank is then introduced to the middle of the drum unit, and mixed with the aggregate. The resulting asphalt product is stored and later loaded into trucks and hauled offsite.

3. FACILITY / AREA CLASSIFICATION

The HK Contractors, Inc., facility is defined as a Synthetic Minor (SM) facility because criteria pollutant emissions could exceed 100 T/yr, without limits on the facility's potential to emit. The facility is not a Prevention of Significant Deterioration (PSD) major source, because emissions do not exceed the PSD threshold of 250 T/yr. The SIC code defining the facility is 2951 (Asphalt Paving Mixtures and Blocks). The AIRS classification is for the facility is "SM".

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant for the HK Contractors, Inc. portable HMA facility. This information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

HK Contractors, Inc. are requesting to modify their current HMA drum-mix asphalt plant to enable them more flexibility in fuel use type and to change out the burner in the HMA with a used burner of similar type. HK is requesting a change in the permit allowing them to burn natural gas, Grade 1 or Grade 2 fuel oil, a mix of Grades #1 and #2, used oil, or propane. These changes result in an increase in emissions thus requiring the permit modification. Additionally, this permit has been reformatted and updated for consistency with other HMA air permits recently issued by DEQ.

4.1 Application Chronology

April 23, 2007	DEQ received the PTC application to modify an existing permit and the \$1000.00 application fee.
May 21, 2007	PTC application determined incomplete.
May 30, 2007	Facility's consulting firm responds to the incompleteness by completing the modeling to the satisfaction of DEQ.
May 31, 2007	PTC application determined complete.
July 6, 2007	Final permit issued.

5. PERMIT ANALYSIS

5.1 Equipment Listing

Table 5.1 SUMMARY OF EQUIPMENT

<p><u>HMA Plant:</u> Manufacturer: Barber Greene Burner Model: Hauck 360 Type of HMA plant: Parallel flow Rated heat input capacity: 60 MMBtu/hr</p>	<p>Emission Controls <u>Wet Venturi Scrubber:</u> Manufacturer: Barber Greene Model: CV-70</p>
<p><u>(2)Asphalt Storage Tanks:</u> 30,000 gallon capacity 15,000 gallon capacity</p>	None
<p><u>Distillate Fuel Oil Tank:</u> 8,000 gallon capacity; Grade 2 Diesel</p>	None
<p><u>Used Oil Fuel Tank:</u> 10,000 gallon capacity</p>	None

5.2 Emissions Inventory

The facility's consultant has provided an emissions inventory for criteria pollutants, hazardous air pollutants (HAPs) and state-only toxic air pollutants (TAPs). Emission estimates were based on emission factors from AP-42 Section 11.1, Hot Mix Asphalt Plants, March 2004. AP-42 emissions factors for drum mix asphalt plants are not dependent on whether the drum mix plant is a parallel flow or counter flow design. Consequently, emissions estimates developed for the drum mix plant would be applicable for either parallel flow drum mix plants or for counter flow drum mix plants. The emissions inventory is included in Appendix B.

Facility Design and Operational Limits

Emission estimates from the HMA plant were based on the operational limits shown in Table 5.2.

Table 5.2. OPERATIONAL CONSTRAINTS USED FOR EMISSION ESTIMATES¹

Emission Unit	Throughput or Fuel Usage		Hours of Operation	
	Drum Dryer	Throughput: 250 T/hr	Throughput: 950,000 T/yr	24 hours/day

T/hr = tons per hour

T/yr = tons per year

¹Annual throughput and annual hours of operation are based upon use of used fuel oil.

Emissions for Changed Fuel

The emission units and fuels evaluated for this PTC are summarized in Table 5.2.1 Emissions estimates were calculated and the change in emissions was based on the difference between running on propane and running on used oil. A detailed emissions inventory is included as Appendix B.

Table 5.2.1 EMISSION SOURCES, FUEL TYPES, AND EMISSION FACTORS

Emission Source	Fuel Type(s) Evaluated	Emission Factor Source
HMA Drum Dryer with Wet Venturi Scrubber	Propane Fuel	AP-42, Section 11.1
	Used Oil (max 0.5% S)	AP-42, Section 11.1

Additional Pollutants for Used Oil

Used oil burned for energy recovery must meet specifications as listed in Permit Condition 2.7. Permit Condition 2.19 requires a used oil certification to demonstrate compliance with the specifications. The used oil specifications and certification requirements ensure that only the pollutants accounted for in the emissions inventory are actually emitted.

The emissions of the remaining nine new pollutants—all of which are regulated as Idaho TAPS, five of which are also federally regulated HAPs—are shown in Table 5.2.2, and represent new TAPs emissions associated with this PTC. The emissions estimates from the additional used oil pollutants were based on 250 T/hr as the change in emissions. Additionally, AP-42 has a different emission factor for SO₂ when combusting used oil in the drum dryer (0.058 is the EF for SO₂ for used oil; 0.011 is the EF for SO₂ for ASTM Grade 2 fuel oil). Therefore, SO₂ emissions are estimated to be higher when burning used oil.

Table 5.2.2 ADDITIONAL REGULATED EMISSIONS FROM COMBUSTING USED OIL

Pollutant	Drum Dryer Used Oil (lb/hr)
SO ₂ ^a	17.4
Hydrogen chloride (HCl)	0.06
Non-Polycyclic Aromatic Hydrocarbon Hazardous Air Pollutants (non-PAH HAPs)	
Acetaldehyde	0.390
Acrolein	0.0078
Methyl Ethyl Ketone	0.0060
Propionaldehyde	0.0390
Quinone	0.0480
Non-HAP Organic Compounds	
Acetone	0.249
Crotonaldehyde	0.0258
Valeraldehyde	0.0201

^aSO₂ was included in the table because the emission factor is different for used oil than for No. 2 fuel oil.

5.3 Modeling

DEQ reviewed the SCREEN3 modeling analysis submitted with the application and determined that the ambient air analysis demonstrated that the emissions increase associated with the proposed project will not cause or significantly contribute to a violation of any air quality standard.

The model assumed flat terrain, no downwash, and that ambient air was located immediately adjacent to the facility in a rural area. The modeling results for the increase in criteria pollutants and TAPs are summarized in Tables 5.3 and 5.3.1. The ambient impact analysis and SCREEN3 modeling input and output files are included as Appendix C.

Table 5.3 SCREEN3 MODELING RESULTS FOR AMBIENT IMPACTS – CRITERIA POLLUTANTS

Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m ³)	Background (µg/m ³)	Total Ambient Impact (µg/m ³)	NAAQS (µg/m ³)	Percent of NAAQS
PM ₁₀	24-hour	(No increase)	73	(No increase)	150	---
	Annual	(No increase)	26	(No increase)	50	---
CO	1-hour	(No increase)	3600	(No increase)	40,000	---
	8-hour	(No increase)	2300	(No increase)	10,000	---
NO ₂	Annual	0.024	17	17	100	17%
SO _x	3-hour	19.43	34	53.4	1,300	4.1%
	24-hour	8.64	26	35	365	9.5%
	Annual	0.40	8	8.4	80	10.5%
Ozone (as VOCs/TOCs)	8-hour	(No increase)	---	(No increase)	0.08 ppm	---
Lead	Quarterly	1.1E-03	3.00E-02	0.031	1.5	2.1%

Table 5.3.1 SCREEN3 MODELING RESULTS FOR AMBIENT IMPACTS – TAPS

Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m ³)	AAC (mg/m ³) or AACC (µg/m ³)	Percent of AAC or AACC
Hydrogen chloride(HCl)	24-hour	1.11E-01	0.375	0.03%
Propionaldehyde	24-hour	6.85E-02	0.0215	0.32%
Quinone	24-hour	8.44E-02	0.020	0.42%
Acetaldehyde	Annual	1.07E-01	4.5E-01	23.8%
Dioxins/Furans	Annual	1.46E-10	1.50E-10	97.0%

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.209.04 Procedure For Issuing Permits—Revisions of Permits to Construct

IDAPA 58.01.01.209.03.....Ambient Air Quality Standards

This facility has demonstrated to DEQ’s satisfaction that its emissions will not cause or contribute to a violation of any ambient air quality standard. As long as HK complies with the terms and conditions of the permit, all applicable air quality standards will be met.

40 CFR 279Standards for the Management of Used Oil

Part 279.11 contains specifications for used oil which include allowable levels for arsenic, cadmium, chromium, lead, the flash point, and total halogens. The limit for total halogens is listed at 4,000 ppm maximum. However, used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under § 279.10(b)(1). Such used oil is subject to subpart H of part 266 of this chapter rather than this part when burned for energy recovery unless the presumption of mixing can be successfully rebutted. Therefore, the permit limits the total halogens to 1,000 ppm. This permit condition is consistent with previous permits issued for hot-mix asphalt plants¹.

Permit Condition 2.7 states that, in accordance with 40 CFR 279.11, used oil burned for energy recovery shall not exceed any of the allowable levels of the constituents and property listed in Table 2.2 of the

¹ PTC-030138 Interstate Concrete, Hayden Lake, 2/18/05 & PTC-040101 Interstate Concrete, Rathdrum, 2/18/05

permit. These permit conditions are considered reasonable permit conditions because they inherently limit air pollution emissions.

TABLE 5.4 USED OIL SPECIFICATIONS¹

Constituent/property	Allowable Level for On Specification Used Oil
Arsenic	5 ppm ² maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100°F minimum
Total halogens	1,000 ppm maximum
PCBs ³	< 2 ppm

¹The specification does not apply to mixtures of used oil and hazardous waste that continue to be regulated as hazardous waste (see 40 CFR 279.10(b)).

²Parts per million

³Applicable standards for the burning of used oil containing PCBs are imposed by 40 CFR 761.20(e)

This table is based on Table 1 from 40 CFR 279.11, incorporating the 1,000 ppm limit for total halogens as explained above.

DEQ’s Waste Program has reviewed and approved the above discussions regarding regulating used oil.

IDAPA 58.01.01.210.....Demonstration of Preconstruction Compliance with Toxic Standards

The TAP requirements for PTCs are specified in IDAPA 58.01.01.210. TAPs emissions increases from a modification that exceed screening emission levels (ELs) of IDAPA 58.01.01.585 or 586 must have an ambient impact assessment for the increase in emissions. Compliance with these TAP requirements are demonstrated if the results of the ambient impact estimate for the applicable TAPs are below Acceptable Ambient Concentrations (AACs) for non-carcinogens of TAPs listed in IDAPA 58.01.01.585 or Acceptable Ambient Concentrations for Carcinogens (AACCs) for carcinogenic TAPs listed in IDAPA 58.01.01.586.

The change in the facility’s estimated toxics emissions from this PTC include nine additional TAPs that are emitted when using used oil instead of distillate fuel oil in the drum dryer. Additionally, the change in existing TAPs emissions was based on 250 tons per hour and the increase in emissions from burning used oil. The annual production of 1,015,750 tons was a decrease, therefore, the only annual increase in TAPs resulted from the nine additional TAPs and the increased SO₂ emissions emitted from the burning of used oil.

Compliance with applicable TAP increments were demonstrated by modeling uncontrolled TAP emissions increases resulting from the facility modifications (the TAPs emissions calculated as uncontrolled was a conservative inventory since the facility uses a wet venturi scrubber is used as a control device). TAPs that exceeded the EL were modeled and were determined to be below their respective AACs or AACCs. The toxic air pollutant emissions inventory can be seen in Appendix B and results of toxic air pollutant modeling can be seen in the Modeling section of this document (Section 5.3) and Appendix C.

Compliance with IDAPA 58.01.01.210 has been demonstrated by the facility to DEQ’s satisfaction. In accordance with IDAPA 58.01.01.203.03, preconstruction compliance with IDAPA 58.01.01.161 has also been demonstrated. In addition to the demonstrated compliance with the toxic standards discussed in this section, production limits have been set in the PTC to protect human health and the environment. This project involves changing a burner in the drum dryer and the ability to burn used oil as well as Grade 1 or 2 fuel oil (or a mix that meets sulfur standards of Grade 2 fuel oil) therefore a PTC revision is required.

5.5 Permit Conditions Review

This section describes permit conditions that have been renumbered, modified or deleted as a result of this permit action. The modified PTC has been reformatted, includes new requirements and conditions specific to the processes at the facility. Additionally, the General Provisions have been updated in the modified PTC.

PTC Change in Emissions

Only the changes in estimated emissions are required to be demonstrated in the PTC resulting from:

- Burning used oil with a sulfur content limit of 0.5% in the drum dryer in addition to distillate fuel oil.
- Operating at 250 tons per hour asphalt production or annual production limit of 1,015,750 tons per calendar year.
- When burning natural gas, operating at 250 tons per hour asphalt production or annual production limit of 1,015,770 tons per calendar year.
- The emissions estimates needed only to be based on the change in annual throughput requested in the PTC. However, to be conservative, the applicant's consultant estimated emissions for No. 2 fuel oil and used oil on the total emissions of 250 T/hr. The detailed emission estimates are included in Appendix B.

New Permit Conditions

Permit Conditions 2.1 through 2.2 contain emission limits for criteria pollutants.

Permit Condition 2.4 and 2.18 requires an odor management plan to be developed if multiple complaints are received. This new permit condition was included in the modified PTC based on alternate used oil combustion as requested in the modified PTC.

Permit Condition 2.6 through 2.8 lists the requirements for used oil specifications and sulfur content of all fuels except natural gas.

Permit Condition 2.9 establishes new throughput requirements.

Permit Condition 2.10 requires the wet venturi scrubber pressure drop to be maintained within manufacturer and O&M manual specifications

Permit Condition 2.15 addresses collocation. The existing permit does not address collocation. The modified PTC prohibits collocation with any other HMA plant.

Permit Condition 2.19 requires obtaining certification that used oil meets specifications as listed in new permit condition 2.7 and to maintain certification records on site for the most recent five years.

Permit Conditions 2.21 and permit section 3 list specific relocation requirements for the portable facility.

This permit has been reformatted, renumbered and updated as appropriate for consistency with recently issued permits for hot-mix asphalt plants. The changes in this PTC include the following:

- Five year record-keeping requirements
- Operation is allowed only in attainment areas of Idaho.
- Collocation with any other HMA plant is not allowed.
- Collocation with other equipment such as rock crushers and concrete batch plants is allowed only if the other equipment is specifically permitted to be collocated.

6. PERMIT FEES

H-K Contractors paid the \$1,000 permit to construct application fee as required in IDAPA 58.01.01.224 on April 23, 2007.

A permit to construct processing fee of \$2500.00 is required in accordance with IDAPA 58.01.01.225, because the increase in emissions from the changes associated with this PTC is less than one ton per year. The processing fee was paid on June 28, 2007.

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	7.8	5.94	1.9
SO ₂	8.3	0.52	8.3
CO	18.5	19.81	-1.3
PM10	14.70	15.74	-1.0
VOC	4.6	4.88	-0.3
TAPS/HAPS	2.1	0	2.4
Total:	9.1	0.18	9.1
Fee Due	\$ 2,500.00		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

On June 4, 2007, the Idaho Falls Regional Office was provided a draft of the permit for review and comment. No comments were received.

7.2 Facility Review of Draft Permit

The facility was provided the draft permit for review on June 21, 2007. The facility had one issue that needed clarification concerning foot notes.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from June 13, 2007, through June 27, 2007, in accordance with IDAPA 58.01.01.209.01.c. A request for a public comment period was not received.

8. RECOMMENDATION

Based on the review of the application materials and all applicable state and federal regulations, staff recommends that DEQ issue the final PTC No. P-2007.0068 to H-K Contractors, Inc., for its portable HMA plant.

MP/slm P-2007.0068

APPENDIX A
AIRS Information
P-2007.0068

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: H-K Contractors, Inc.
Facility Location: Portable
AIRS Number: 777-00028

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO ₂	B						B	U
NO _x	B						B	U
CO	SM						SM	U
PM ₁₀	SM						SM	U
PT (Particulate)	SM						SM	U
VOC	B						B	U
THAP (Total HAPs)	SM						SM	
			APPLICABLE SUBPART					

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX B
Emissions Inventory
P-2007.0068

PTC Fee Calculation

Instructions:

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

Company: HK Contractors; Teton Facility
Address: P.O. Box 51450
City: Idaho Falls
State: Idaho
Zip Code: 83405
Facility Contact: Larry Ritter
Title: Asphalt General Superintendent
AIRS No.: 777-00028

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

Y Did this permit require engineering analysis? Y/N

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

Emissions Inventory			
Pollutant	Annual Emissions Burning Used Oil (T/yr)	Annual Emissions Burning Propane (T/yr){previous permit emissions}	Annual Emissions Change (T/yr)
NO _x	7.8	5.94	1.9
SO ₂	8.3	0.52	7.8
CO	18.5	19.81	-1.3
PM10	14.7	15.74	-1.0
VOC	4.6	4.88	-0.3
TAPS/HAPS	2.1	0	2.1
Total:	9.1		9.1
Fee Due	\$ 2,500.00		

Comments:

Facility:

HK Contractors

Permit/Facility ID: P-2007.0068

777-00028

06/05/2007

Drum Mix Asphalt Plant AP-42 Section 11.1, FACILITY CLASSIFICATION EMISSIONS (UNCONTROLLED, 8760 HRS/YR)

Fuel Type Toggle = 1
 Hourly Throughput = 250 T/hr
 Proposed Operations = 8,760 hrs/yr
 Permitted Production (nat gas/propane) = 2,190,000 Tons/yr
 Proposed Production (No. 2/used oil) = 2,190,000 Tons/yr

Weight % Sulfur = 0.50%
 For %S greater than 0.5%, SO2 emissions have been multiplied by a factor:
 (AP-42, 1.3 emissions at 5%)/(AP-42, 1.3 emissions at 0.5%)

Pollutant	Propane Emission Factor (lb/ton)	Used Oil Emission Factor ^a (lb/ton)	Adjustment for Uncontrolled Emissions	Permitted Emissions (T/yr)	Proposed Emissions (T/yr)
PM (total) ^b w/scrubber	0.045	0.045	3.33	164.25	164.25
PM-10 (total) ^b For scrubber, presume same ratio as for baghouse					
0.023 PM10 /0.033 PM	0.031	0.031	3.33	113.15	113.15
PM-2.5 ^c filterable, baghouse	0.0029	0.0029	100.00	317.55	317.55
CO ^e	0.13	0.13	1.00	142.35	142.35
NOx ^e (Propane NOx ~ 1.5x Nat Gas NOx)	0.039	0.055	1.00	42.71	60.23
SO ₂ ^e	0.0034	0.058	1.00	3.72	63.51
VOC ^d	0.032	0.032	1.00	35.04	35.04
Lead	6.20E-07	1.50E-05	100.00	6.79E-02	1.64
HCl ^f	No Data	0.00021	3.33	---	2.30E-01
Dioxins^g					
2,3,7,8-TCDD		2.10E-13	1.00E+00	0.00	2.30E-10
Total TCDD		9.30E-13	1.00E+00	0.00	1.02E-09
1,2,3,7,8-PeCDD		3.10E-13	1.00E+00	0.00	3.39E-10
Total PeCDD		2.20E-11	1.00E+00	0.00	2.41E-08
1,2,3,4,7,8-HxCDD		4.20E-13	1.00E+00	0.00	4.60E-10
1,2,3,6,7,8-HxCDD		1.30E-12	1.00E+00	0.00	1.42E-09
1,2,3,7,8,9-HxCDD		9.80E-13	1.00E+00	0.00	1.07E-09
Total HxCDD		1.20E-11	1.00E+00	0.00	1.31E-08
1,2,3,4,6,7,8-HpCDD		3.40E-11	1.00E+00	0.00	3.72E-08
Total HpCDD		7.10E-11	1.00E+00	0.00	7.77E-08
Octa CDD		2.70E-09	1.00E+00	0.00	2.96E-06
Total PCDD ^h		2.80E-09	1.00E+00	0.00	3.07E-06
Furans^g					
2,3,7,8-TCDF		9.70E-13	1.00E+00	0.00	1.06E-09
Total TCDF		3.30E-11	1.00E+00	0.00	3.61E-08
1,2,3,7,8-PeCDF		4.30E-12	1.00E+00	0.00	4.71E-09
2,3,4,7,8-PeCDF		8.40E-13	1.00E+00	0.00	9.20E-10
Total PeCDF		8.40E-11	1.00E+00	0.00	9.20E-08
1,2,3,4,7,8-HxCDF		5.40E-12	1.00E+00	0.00	5.91E-09
1,2,3,6,7,8-HxCDF		1.20E-12	1.00E+00	0.00	1.31E-09
1,2,3,7,8,9-HxCDF		1.90E-12	1.00E+00	0.00	2.08E-09
1,2,3,7,8,9-HxCDF		8.40E-12	1.00E+00	0.00	9.20E-09
Total HxCDF		1.30E-11	1.00E+00	0.00	1.42E-08
1,2,3,4,6,7,8-HpCDF		1.10E-11	1.00E+00	0.00	1.20E-08
1,2,3,4,7,8,9-HpCDF		2.70E-12	1.00E+00	0.00	2.96E-09
Total HpCDF		3.80E-11	1.00E+00	0.00	4.16E-08
Octa CDF		4.80E-12	1.00E+00	0.00	5.26E-09
Total PCDF ^h		1.50E-10	1.00E+00	0.00	1.64E-07
Total PCDD/PCDF ^h		3.00E-09	1.00E+00	0.00	3.29E-06
Non-PAH HAPsⁱ					
Acetaldehyde ^e		1.30E-03	1.00E+00	0.00	1.42
Acrolein ^e		2.60E-05	1.00E+00	0.00	0.03
Benzene ^e		3.90E-04	1.00E+00	0.43	0.43
1,3-Butadiene ^e					
Ethylbenzene ^e		2.40E-04	1.00E+00	0.26	0.26
Formaldehyde ^e		3.10E-03	1.00E+00	3.39	3.39
Hexane ^e		9.20E-04	1.00E+00	1.01	1.01
Isocetane ^e		4.00E-05	1.00E+00	0.04	0.04
Methyl Ethyl Ketone ^e		2.00E-05	1.00E+00	0.00	0.02
Pentane ^e					
Propionaldehyde ^e		1.30E-04	1.00E+00	0.00	0.14
Quinone ^e		1.60E-04	1.00E+00	0.00	0.18
Methyl chloroform ^e		4.80E-05	1.00E+00	0.05	0.05
Toluene ^e		1.50E-04	2.90E-03	0.16	3.18
Xylene ^e		2.00E-04	1.00E+00	0.22	0.22

Pollutant	Propane Emission Factor (lb/ton)	Used Oil Emission Factor ^a (lb/ton)	Adjustment for Uncontrolled Emissions	Permitted Emissions (T/yr)	Proposed Emissions (T/yr)
PAH HAPs^f					
2-Methylnaphthalene	7.40E-05	1.70E-04	1.00E+00	8.10E-02	1.86E-01
3-Methylchloranthrene ^e					
Acenaphthene	1.40E-06	1.40E-06	1.00E+00	1.53E-03	1.53E-03
Acenaphthylene	8.60E-06	2.20E-05	1.00E+00	9.42E-03	2.41E-02
Anthracene	2.20E-07	3.10E-06	1.00E+00	2.41E-04	3.39E-03
Benzo(a)anthracene	2.10E-07	2.10E-07	1.00E+00	2.30E-04	2.30E-04
Benzo(a)pyrene ^e	9.80E-09	9.80E-09	1.00E+00	1.07E-05	1.07E-05
Benzo(b)fluoranthene	1.00E-07	1.00E-07	1.00E+00	1.10E-04	1.10E-04
Benzo(e)pyrene	1.10E-07	1.10E-07	1.00E+00	1.20E-04	1.20E-04
Benzo(g,h)perylene	4.00E-08	4.00E-08	1.00E+00	4.38E-05	4.38E-05
Benzo(k)fluoranthene	4.10E-08	4.10E-08	1.00E+00	4.49E-05	4.49E-05
Chrysene	1.80E-07	1.80E-07	1.00E+00	1.97E-04	1.97E-04
Dibenzo(a,h)anthracene					
Dichlorobenzene					
Fluoranthene	6.10E-07	6.10E-07	1.00E+00	6.68E-04	6.68E-04
Fluorene	3.80E-06	1.10E-05	1.00E+00	4.16E-03	1.20E-02
Indeno(1,2,3-cd)pyrene	7.00E-09	7.00E-09	1.00E+00	7.67E-06	7.67E-06
Naphthalene ^e	9.00E-05	6.50E-04	1.00E+00	9.86E-02	7.12E-01
Perylene	8.80E-09	8.80E-09	1.00E+00	9.64E-06	9.64E-06
Phenanthrene	7.60E-06	2.30E-05	1.00E+00	8.32E-03	2.52E-02
Pyrene	5.40E-07	3.00E-06	1.00E+00	5.91E-04	3.29E-03
Non-HAP Organic Compoundsⁱ					
Acetone ^e		8.30E-04	1.00E+00	0.00E+00	9.09E-01
Benzaldehyde		1.10E-04	1.00E+00	0.00E+00	1.20E-01
Butane	6.70E-04	6.70E-04	1.00E+00	7.34E-01	7.34E-01
Butyraldehyde		1.60E-04	1.00E+00	0.00E+00	1.75E-01
Crotonaldehyde ^e		8.60E-05	1.00E+00	0.00E+00	9.42E-02
Ethylene	7.00E-03	7.00E-03	1.00E+00	7.67E+00	7.67E+00
Heptane	9.40E-03	9.40E-03	1.00E+00	1.03E+01	1.03E+01
Hexanal		1.10E-04	1.00E+00	0.00E+00	1.20E-01
Isovaleraldehyde		3.20E-05	1.00E+00	0.00E+00	3.50E-02
2-Methyl-1-pentene	4.00E-03	4.00E-03	1.00E+00	4.38E+00	4.38E+00
2-Methyl-2-butene	5.80E-04	5.80E-04	1.00E+00	6.35E-01	6.35E-01
3-Methylpentane	1.90E-04	1.90E-04	1.00E+00	2.08E-01	2.08E-01
1-Pentene	2.20E-03	2.20E-03	1.00E+00	2.41E+00	2.41E+00
n-Pentane ^e	2.10E-04	2.10E-04	1.00E+00	2.30E-01	2.30E-01
Valeraldehyde ^e		6.70E-05	1.00E+00	0.00E+00	7.34E-02
Metals^j					
Antimony ^e		1.80E-07	1.80E-07	1.97E-02	1.97E-02
Arsenic ^e		5.60E-07	5.60E-07	6.13E-02	6.13E-02
Barium ^e		5.80E-06	5.80E-06	6.35E-01	6.35E-01
Beryllium ^e		0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium ^e		4.10E-07	4.10E-07	4.49E-02	4.49E-02
Chromium ^e		5.50E-06	5.50E-06	6.02E-01	6.02E-01
Cobalt ^e		2.60E-08	2.60E-08	2.85E-03	2.85E-03
Copper ^e		3.10E-06	3.10E-06	3.39E-01	3.39E-01
Hexavalent Chromium ^e		4.50E-07	4.50E-07	4.93E-02	4.93E-02
Manganese ^e		7.70E-06	7.70E-06	8.43E-01	8.43E-01
Mercury ^e		2.40E-07	2.40E-07	2.63E-02	2.63E-02
Molybdenum ^e					
Nickel ^e		6.30E-05	6.30E-05	6.90E+00	6.90
Phosphorus ^e		2.80E-05	2.80E-05	3.07E+00	3.07E+00
Silver ^e		4.80E-07	4.80E-07	5.26E-02	5.26E-02
Selenium ^e		3.50E-07	3.50E-07	3.83E-02	3.83E-02
Thallium ^e		4.10E-09	4.10E-09	4.49E-04	4.49E-04
Vanadium ^e					
Zinc ^e		6.10E-05	6.10E-05	6.68E+00	6.68E+00

HAPS TOTAL = 30.93 T/yr
 MAX ANY HAP = 6.90 T/yr

- a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
 - b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
 - b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers (Emission Rating Factor E - "Poor")
 - c) AP-42, Table 11.1-7, Emission Factors for CO, CO2, NOx, and SO2 from Drum Mix Hot Asphalt Plants, 3/04
 - d) AP-42, Table 11.1-8, Emission Factors for VOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
 - e) IDAPA Toxic Air Pollutant
 - f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
 - g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Asphalt Plants, 3/04
 - h) Compound is classified as polycyclic organic matter, as defined in the 1990 CAAA. Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is the sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.
- Pollutants shown in bold/orange text are emitted when using Used Oil but not when using #2 Fuel Oil or Natural Gas.
 Pollutants shown in magenta are emitted when using Used Oil or #2 Fuel Oil, but not when using Natural Gas.
 Dioxin/Furan emission factors are for using a baghouse, except EFs shown in green are based on uncontrolled emissions.
 CO, NOx, SO2, VOC METAL PARTICULATES ADJUSTED BY 1/(1-Baghouse %)

Baghouse: 99.00%

Drum Mix Asphalt Plant AP-42 Section 11.1, Change in Emissions: Propane to Natural Gas/No 2 Fuel Oil/Used Oil, with Scrubber
 Fuel Type Toggle = 1
 Hourly Throughput = 250 T/hr
 Proposed Operations = 3,800 hrs/yr
 Permitted Production (propane) = 1,015,777 Tons/yr
 Proposed Production (No. 2/used oil) = 950,000 Tons/yr
 Weight % Sulfur = 0.50%
 For %S greater than 0.5%, SO₂ emissions have been multiplied by a factor: (AP-42, 1.3 emissions at 5%)/(AP-42, 1.3 emissions at 0.5%)

Pollutant	Propane Emission Factor (lb/ton)	Used Oil Emission Factor ^a (lb/ton)	Change in Emissions (lb/hr)	Permitted Emissions (T/yr)	Proposed Emissions (T/yr)
PM (total) ^b w/scrubber	0.045	0.045	0	22.85	21.38
PM-10 (total) ^b For scrubber, presume same ratio as for baghouse	0.031	0.031	0.00	15.74	14.73
PM-2.5 ^b	0.0029	0.0029	0.00	1.47	1.38
CO ^c	0.13	0.13	0.00	19.81	18.53
NOx ^c (Propane NOx = 1.5x Nat Gas NOx)	0.039	0.055	1.20	5.94	7.84
SO ₂ ^c	0.0034	0.058	4.10	0.52	8.27
VOC ^c	0.032	0.032	0	4.88	4.56
Lead	6.20E-07	1.50E-05	1.08E-01	9.45E-03	2.14E-01
HCl ^d	No Data	0.00021	5.25E-02	---	9.98E-02
Dioxins^{e,f}					
2,3,7,8-TCDD		2.10E-13	5.25E-11	0.00	9.98E-11
Total TCDD		9.30E-13	2.33E-10	0.00	4.42E-10
1,2,3,7,8-PeCDD		3.10E-13	7.75E-11	0.00	1.47E-10
Total PeCDD		2.20E-11	5.50E-09	0.00	1.05E-08
1,2,3,4,7,8-HxCDD		4.20E-13	1.05E-10	0.00	2.00E-10
1,2,3,6,7,8-HxCDD		1.30E-12	3.25E-10	0.00	6.18E-10
1,2,3,7,8,9-HxCDD		9.80E-13	2.45E-10	0.00	4.66E-10
Total HxCDD		1.20E-11	3.00E-09	0.00	5.70E-09
1,2,3,4,6,7,8-HpCDD		3.40E-11	8.50E-09	0.00	1.62E-08
Total HpCDD		7.10E-11	1.78E-08	0.00	3.37E-08
Octa CDD		2.70E-09	6.75E-07	0.00	1.28E-06
Total PCDD ^g		2.80E-09	7.00E-07	0.00	1.33E-06
Furans^{e,f}					
2,3,7,8-TCDF		9.70E-13	2.43E-10	0.00	4.61E-10
Total TCDF		3.30E-11	8.25E-09	0.00	1.57E-08
1,2,3,7,8-PeCDF		4.30E-12	1.08E-09	0.00	2.04E-09
2,3,4,7,8-PeCDF		8.40E-13	2.10E-10	0.00	3.99E-10
Total PeCDF		8.40E-11	2.10E-08	0.00	3.99E-08
1,2,3,4,7,8-HxCDF		5.40E-12	1.35E-09	0.00	2.57E-09
1,2,3,6,7,8-HxCDF		1.20E-12	3.00E-10	0.00	5.70E-10
2,3,4,6,7,8-HxCDF		1.90E-12	4.75E-10	0.00	9.03E-10
1,2,3,7,8,9-HxCDF		8.40E-12	2.10E-09	0.00	3.99E-09
Total HxCDF		1.30E-11	3.25E-09	0.00	6.18E-09
1,2,3,4,6,7,8-HpCDF		1.10E-11	2.75E-09	0.00	5.23E-09
1,2,3,4,7,8,9-HpCDF		2.70E-12	6.75E-10	0.00	1.28E-09
Total HpCDF		3.80E-11	9.50E-09	0.00	1.81E-08
Octa CDF		4.80E-12	1.20E-09	0.00	2.28E-09
Total PCDF ^g		1.50E-10	3.75E-08	0.00	7.13E-08
Total PCDD/PCDF ^g		3.00E-09	7.50E-07	0.00	1.43E-06
Non-PAH HAPs^h					
Acetaldehyde ⁱ		1.30E-03	3.25E-01	0.00	0.62
Acrolein ⁱ		2.60E-05	6.50E-03	0.00	0.01
Benzene ⁱ	3.90E-04	3.90E-04	0.00E+00	0.20	0.19
1,3-Butadiene ⁱ					
Ethylbenzene ⁱ	2.40E-04	2.40E-04	0.00E+00	0.12	0.11
Formaldehyde ⁱ	3.10E-03	3.10E-03	0.00E+00	1.57	1.47
Hexane ⁱ	9.20E-04	9.20E-04	0.00E+00	0.47	0.44
Isocrotonene ⁱ	4.00E-05	4.00E-05	0.00E+00	0.02	0.02
Methyl Ethyl Ketone ⁱ		2.00E-05	5.00E-03	0.00	0.01
Pentane ⁱ					
Propionaldehyde ⁱ		1.30E-04	3.25E-02	0.00	0.06
Quinone ⁱ		1.60E-04	4.00E-02	0.00	0.08
Methyl chloroform ⁱ	4.80E-05	4.80E-05	0.00E+00	0.02	0.02
Toluene ⁱ	1.50E-04	2.90E-03	6.88E-01	0.08	1.38
Xylene ⁱ	2.00E-04	2.00E-04	0.00E+00	0.10	0.10

Pollutant	Propane Emission Factor (lb/ton)	Used Oil Emission Factor ^a (lb/ton)	Change in Emissions (lb/hr)	Permitted Emissions (T/yr)	Proposed Emissions (T/yr)
PAH HAPsⁱ					
2-Methylnaphthalene	7.40E-05	1.70E-04	2.40E-02	3.76E-02	8.08E-02
3-Methylchloranthrene ⁱ					
Acenaphthene	1.40E-06	1.40E-06	0.00E+00	7.11E-04	6.65E-04
Acenaphthylene	8.60E-06	2.20E-05	3.35E-03	4.37E-03	1.05E-02
Anthracene	2.20E-07	3.10E-06	7.20E-04	1.12E-04	1.47E-03
Benzo(a)anthracene	2.10E-07	2.10E-07	0.00E+00	1.07E-04	9.98E-05
Benzo(a)pyrene ⁱ	9.80E-09	9.80E-09	0.00E+00	4.98E-06	4.66E-06
Benzo(b)fluoranthene	1.00E-07	1.00E-07	0.00E+00	5.08E-05	4.75E-05
Benzo(e)pyrene	1.10E-07	1.10E-07	0.00E+00	5.59E-05	5.23E-05
Benzo(g,h,i)perylene	4.00E-08	4.00E-08	0.00E+00	2.03E-05	1.90E-05
Benzo(k)fluoranthene	4.10E-08	4.10E-08	0.00E+00	2.08E-05	1.95E-05
Chrysene	1.80E-07	1.80E-07	0.00E+00	9.14E-05	8.55E-05
Dibenzo(a,h)anthracene					
Dichlorobenzene					
Fluoranthene	6.10E-07	6.10E-07	0.00E+00	3.10E-04	2.90E-04
Fluorene	3.80E-06	1.10E-05	1.80E-03	1.93E-03	5.23E-03
Indeno(1,2,3-cd)pyrene	7.00E-09	7.00E-09	0.00E+00	3.56E-06	3.33E-06
Naphthalene ⁱ	9.00E-05	6.50E-04	1.40E-01	4.57E-02	3.09E-01
Perylene	8.80E-09	8.80E-09	0.00E+00	4.47E-06	4.18E-06
Phenanthrene	7.60E-06	2.30E-05	3.85E-03	3.86E-03	1.09E-02
Pyrene	5.40E-07	3.00E-06	6.15E-04	2.74E-04	1.43E-03
Non-HAP Organic Compoundsⁱ					
Acetone ⁱ		8.30E-04	2.08E-01	0.00E+00	3.94E-01
Benzaldehyde		1.10E-04	2.75E-02	0.00E+00	5.23E-02
Butane	6.70E-04	6.70E-04	0.00E+00	3.40E-01	3.18E-01
Butyraldehyde		1.60E-04	4.00E-02	0.00E+00	7.60E-02
Crotonaldehyde ⁱ		8.60E-05	2.15E-02	0.00E+00	4.09E-02
Ethylene	7.00E-03	7.00E-03	0.00E+00	3.56E+00	3.33E+00
Heptane	9.40E-03	9.40E-03	0.00E+00	4.77E+00	4.47E+00
Hexanal		1.10E-04	2.75E-02	0.00E+00	1.52E-02
Isovaleraldehyde		3.20E-05	8.00E-03	0.00E+00	5.23E-02
2-Methyl-1-pentene	4.00E-03	4.00E-03	0.00E+00	2.03E+00	1.90E+00
2-Methyl-2-butene	5.80E-04	5.80E-04	0.00E+00	2.95E-01	2.76E-01
3-Methylpentane	1.90E-04	1.90E-04	0.00E+00	9.65E-02	9.03E-02
1-Pentene	2.20E-03	2.20E-03	0.00E+00	1.12E+00	1.05E+00
n-Pentane ⁱ	2.10E-04	2.10E-04	0.00E+00	1.07E-01	9.98E-02
Valeraldehyde ⁱ		6.70E-05	1.68E-02	0.00E+00	3.18E-02
Metals^j					
Antimony ^k	1.80E-07	1.80E-07	0.00E+00	2.74E-03	2.57E-03
Arsenic ^k	5.60E-07	5.60E-07	0.00E+00	8.53E-03	7.98E-03
Barium ^k	5.80E-06	5.80E-06	0.00E+00	8.84E-02	8.26E-02
Beryllium ^k	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium ^k	4.10E-07	4.10E-07	0.00E+00	6.25E-03	5.84E-03
Chromium ^k	5.50E-06	5.50E-06	0.00E+00	8.38E-02	7.84E-02
Cobalt ^k	2.60E-08	2.60E-08	0.00E+00	3.96E-04	3.71E-04
Copper ^k	3.10E-06	3.10E-06	0.00E+00	4.72E-02	4.42E-02
Hexavalent Chromium ^k	4.50E-07	4.50E-07	0.00E+00	6.86E-03	6.41E-03
Manganese ^k	7.70E-06	7.70E-06	0.00E+00	1.17E-01	1.10E-01
Mercury ^k	2.40E-07	2.40E-07	0.00E+00	3.66E-03	3.42E-03
Molybdenum ^k					
Nickel ^k	6.30E-05	6.30E-05	0.00E+00	9.60E-01	8.98E-01
Phosphorus ^k	2.80E-05	2.80E-05	0.00E+00	4.27E-01	3.99E-01
Silver ^k	4.80E-07	4.80E-07	0.00E+00	7.31E-03	6.84E-03
Selenium ^k	3.50E-07	3.50E-07	0.00E+00	5.33E-03	4.99E-03
Thallium ^k	4.10E-09	4.10E-09	0.00E+00	6.25E-05	5.84E-05
Vanadium ^k					
Zinc ^k	6.10E-05	6.10E-05	0.00E+00	9.29E-01	8.69E-01

a) Emission factors are from AP-42 11.1.1, Hot Mix Asphalt Plants, 3/04
 b) AP-42, Table 11.1-3, Particulate Matter Emission Factors for Drum Mix Hot Asphalt Plants, 3/04
 b1) AP-42, Table 11.1-4, Summary of Particle Size Distribution for Drum Mix Dryers (Emission Rating Factor E - "Poor")
 c) AP-42, Table 11.1-7, Emission Factors for CO, CO₂, NO_x, and SO₂ from Drum Mix Hot Asphalt Plants, 3/04
 d) AP-42, Table 11.1-8, Emission Factors for TOC, Methane, VOC, and HCl from Drum Mix Hot Asphalt Plants, 3/04
 e) IDAPA Toxic Air Pollutant
 f) AP-42, Table 11.1-10, Emission Factors for Organic Pollutant Emissions from Drum Mix Hot Asphalt Plants, 3/04
 g) AP-42, Table 11.1-12, Emission Factors for Metal Emissions from Drum Mix Hot Mix Asphalt Plants, 3/04
 h) Compound is classified as polycyclic organic matter, as defined in the 1990 CAAA. Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.
 Pollutants shown in bold/orange text are emitted when using Used Oil but not when using #2 Fuel Oil or Natural Gas.
 Pollutants shown in magenta are emitted when using Used Oil or #2 Fuel Oil, but not when using Natural Gas.
 Dioxin/Furan emission factors are for using a baghouse (essentially uncontrolled), except EFs shown in green are based on uncontrolled emissions.
 CO, NO_x, SO₂, and VOC EFs are based on source tests for plants with a baghouse (essentially uncontrolled emissions). Multiply by (1-Scrubber%).
 Metal EFs presume a baghouse. Multiply by (1-Scrubber%) / (1-Baghouse%)
 Estimated Capture Efficiencies: Baghouse: 99.00% Scrubber: 70.00%

Facility: HK Contractors
 Permit/Facility ID: P-2007.0068 777-00028

06/05/2007

CURRENT PTC ESTIMATES

TAPs EL Screen

Drum Mix Asphalt Plant AP-42 Section 11.1, Change in Emissions: Propane to Natural Gas/No 2 Fuel Oil/Used Oil, with Scrubber
 A. Drum Mix Plant: 250 Tons/hour 3,800 Hours/year 950,000 Tons/year HMA throughput

Pollutant	Change in Emission Rates (lb/hr, 24 or annual avg)	TAPs Screening Emission Limit (EL) Increment ^b (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?	Pollutant	Change in Emission Rates (lb/hr, 24 or annual avg)	TAPs Screening Emission Limit (EL) Increment ^b (lb/hr)	TAPs Emissions Exceed EL Increment?	Modeled? Meets AAC or AACC?
PAH HAPs					2-Methylnaphthalene	2.40E-02			
					3-Methylchloranthrene^e	0.00E+00	2.50E-06	No	No
					Acenaphthene	0.00E+00			
					Acenaphthylene	3.35E-03			
					Anthracene	7.20E-04			
					Benzo(a)anthracene	0.00E+00			
					Benzo(a)pyrene^e	-7.36E-08	2.00E-06	No	see POM
					Benzo(b)fluoranthene	0.00E+00			
HCl ^a	0.05	0.05	Exceeds		Benzo(e)pyrene	0.00E+00			
Dioxins ^a		Toxic Equivalency Factor ^c	Adjusted Emission Rate (lb/hr)		Benzo(a,b)perylene	0.00E+00			
2,3,7,8-TCDD	2.28E-11	1.0	2.28E-11		Benzo(k)fluoranthene	0.00E+00			
Total TCDD	1.01E-10	n/a			Chrysene	0.00E+00			
1,2,3,7,8-PeCDD	3.36E-11	0.5	1.68E-11		Dibenzo(a,h)anthracene	0.00E+00			
Total PeCDD	2.39E-09	n/a			Dichlorobenzene	0.00E+00			
1,2,3,4,7,8-HxCDD	4.55E-11	0.1	4.55E-12		Fluoranthene	0.00E+00			
1,2,3,6,7,8-HxCDD	1.41E-10	0.1	1.41E-11		Fluorene	1.80E-03			
1,2,3,7,8,9-HxCDD	1.06E-10	0.1	1.06E-11		Indeno(1,2,3-cd)pyrene	0.00E+00			
Total HxCDD	1.30E-09	n/a			Naphthalene^e	1.40E-01	3.33	No	No
1,2,3,4,6,7,8-HpCDD	3.69E-09	0.01	3.69E-11		Perylene	0.00E+00			
Total HpCDD	7.70E-09	n/a			Phenanthrene	3.85E-03			
Octa CDD	2.93E-07	n/a			Pyrene	6.15E-04			
Total PCDD ^d	3.04E-07	n/a			PolycyclicOrganicMatter^{d,e}	0.00E+00	2.00E-06	No	No
Furans ^a					Non-HAP Organic Compounds				
2,3,7,8-TCDF	1.05E-10	0.1	1.05E-11		Acetone ^e	2.08E-01	119	No	No
Total TCDF	3.58E-09	n/a			Benzaldehyde	2.75E-02			
1,2,3,7,8-PeCDF	4.66E-10	0.05	2.33E-11		Butane	0.00E+00			
2,3,4,7,8-PeCDF	9.11E-11	0.5	4.55E-11		Butylaldehyde	4.00E-02			
Total PeCDF	9.11E-09	n/a			Crotonaldehyde ^e	2.15E-02	0.38	No	No
1,2,3,4,7,8-HxCDF	5.86E-10	0.1	5.86E-11		Ethylene	0.00E+00			
1,2,3,6,7,8-HxCDF	1.30E-10	0.1	1.30E-11		Heptane	0.00E+00	109	No	No
2,3,4,6,7,8-HxCDF	2.06E-10	0.1	2.06E-11		Hexanal	2.75E-02			
1,2,3,7,8,9-HxCDF	9.11E-10	0.1	9.11E-11		Isovaleraldehyde	8.00E-03			
Total HxCDF	1.41E-09	n/a			2-Methyl-1-pentene	0.00E+00			
1,2,3,4,6,7,8-HpCDF	1.19E-09	0.01	1.19E-11		2-Methyl-2-butene	0.00E+00			
1,2,3,4,7,8,9-HpCDF	2.93E-10	0.01	2.93E-12		3-Methylpentane	0.00E+00			
Total HpCDF	4.12E-09	n/a			n-Pentene	0.00E+00			
Octa CDF	5.21E-10	n/a			n-Pentane ^e	0.00E+00	118	No	No
Total PCDF ^d	1.63E-08	n/a			Valeraldehyde (n-Valeraldehyde ^e)	1.68E-02	11.7	No	No
Total PCDD/PCDF ^d	3.25E-07	n/a			Metals				
TOTAL Dioxin/Furans ^a	1.66E-10	TAPs EL for 2,3,7,8 TCDD	Exceeds TAPs EL?	Modeled?	Antimony ^e	0.00E+00	0.033	No	No
Non-PAH HAPs					Arsenic ^e	-1.26E-04	1.50E-06	No	No
Acetaldehyde ^e	1.41E-01	3.00E-03	Exceeds		Barium ^e	0.00E+00	0.033	No	No
Acrolein ^e	6.50E-03	0.017	No	No	Beryllium ^e	0.00E+00	2.80E-05	No	No
Benzene ^e	-2.93E-03	8.00E-04	No	No	Cadmium ^e	-9.24E-05	3.70E-06	No	No
1,3-Butadiene ^e					Chromium ^e	0.00E+00	0.033	No	No
Ethylbenzene ^e	0.00E+00	29	No	No	Cobalt ^e	0.00E+00	0.0033	No	No
Formaldehyde ^e	-2.33E-02	5.10E-04	No	No	Copper ^e	0.00E+00	0.013	No	No
Hexane ^e	0.00E+00	12	No	No	Hexavalent Chromium ^e	-1.01E-04	5.60E-07	No	No
Isocane ^e	0.00E+00				Manganese ^e	0.00E+00	0.067	No	No
Methyl Ethyl Ketone ^e	5.00E-03	39.3	No	No	Mercury ^e	0.00E+00	0.003	No	No
Pentane ^e	0.00E+00	118	No	No	Molybdenum ^e	0.00E+00	0.333	No	No
Propionaldehyde ^e	3.25E-02	0.0287	Exceeds		Nickel ^e	-1.42E-02	2.70E-05	No	No
Quinone ^e	4.00E-02	0.027	Exceeds		Phosphorus ^e	0.00E+00	0.007	No	No
Methyl chloroform ^e	0.00E+00	127	No	No	Silver ^e	0.00E+00	0.007	No	No
Toluene ^e	6.88E-01	25	No	No	Selenium ^e	0.00E+00	0.013	No	No
Xylene ^e	0.00E+00	29	No	No	Thallium ^e	0.00E+00	0.007	No	No
TOTAL PAH HAPs (lb/hr, annual) =		1.05E+00			Vanadium ^e	0.00E+00	0.003	No	No
TOTAL Federal HAPs (lb/hr) =		1.10E+00			Zinc ^e	0.00E+00	0.667	No	No
TOTAL Idaho TAPs (lb/hr) =		1.17E+00							

a) Reserved.
 b) Toxic Air Pollutants, IDAPA 58.01.01.585 and .586, levels in effect as of January 27, 2006
 c) Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and Dibenzofurans (CDDs and CDFs), 1989 update, EPA/625/3-89/016, March 1989 (Source: Mike Dubois, IDEQ State Office, April 2005)
 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 PAHs shown in bold shall be considered together as one TAP equivalent in potency to benzo(a)pyrene.
 e) IDAPA Toxic Air Pollutant, 58.01.01.585 or .586
 Compounds shown in RED & BOLD are carcinogens with an annual standard (lb/hr is annual average) All others are noncarcinogens subject to a 24-hour standard (lb/hr is 24-hr average)

APPENDIX C
Dispersion Modeling
P-2007.0068

MODELING FOR CHANGE IN ALLOWABLE EMISSIONS
(PTC EMISSION INVENTORY MINUS OLD PERMIT LIMITS)

Facility: **HK Contractors** P-2007.0068 777-00028
 06/05/2007 Permit/Facility ID:

Ambient Impacts - (based on Screening Modeling, NO CO-LOCATION)
 A. Drum Mix Plant: 250 Tons/hour 3,800 Hours/year 24 hrs/day
 Maximum emission for each pollutant from any fuel-burning option selected on "Facility Data" worksheet. Fuels Selected = Used Oil Natural Gas LPG/Propane
 B. Tank Heater: MMBtu Rated 950,000 Tons/year HMA throughput 24 hrs/day
 Maximum emission for each pollutant for heater burning any fuel selected on "Facility Data" worksheet. Fuels Selected = #2 Fuel Oil (diesel)
 C. Generator: 0 Gall/hour 0 Hours/year 24 hrs/day

4. Memo, March 14, 2003, Rick Hardy & Kevin Schilling to Mary Anderson (all DEQ State Office Air Division), "Background Concentrations for Use in New Source Review Dispersion Modeling"

5. Non-Carcinogenic (585) impacts converted to 24-hr average using persistence factor x (hrs/day)/24

6. Carcinogenic (586) impacts converted to annual average for dryer using persistence factor x (T/yr)/(T/hr * 8760) and persistence factor x (hrs/yr)/8760 for heater and generator

Pollutant	Averaging Period	Drum Dryer	Tank Heater	Generator	Load-out/ Silo/ Storage	HMA FACILITY TOTAL	Background Concentration (µg/m3) ⁴	Total Ambient Impact (µg/m3)	NAAQS (µg/m3)	Percent of NAAQS
		Maximum Predicted Ambient Impact (µg/m3)	Maximum Predicted Ambient Impact (µg/m3)	Maximum Predicted Ambient Impact (µg/m3)	Maximum Predicted Ambient Impact (µg/m3)	Maximum Predicted Ambient Impact (µg/m3)				
PM-10	24-hour	0.00	0.00	0.00	0.00	0.00	73	73	150	48.7%
	Annual	-0.054	0.00	0.00	0.00	-0.05	26	26	50	51.9%
	1-hour	0.0	0.00	0.00	0.0	0.0	3,600	3,600	40,000	9.0%
CO	8-hour	0.0	0.00	0.00	0.0	0.0	2,300	2,300	10,000	23.0%
	Annual	0.069	0.00	0.00	0.0	0.07	17	17	100	17.1%
	3-hour	16.92	0.00	0.00	0.0	16.9	34	51	1,300	3.9%
SO ₂	24-hour	7.52	0.00	0.00	0.0	7.5	26	34	365	9.2%
	Annual	0.28	0.00	0.00	0.0	0.28	8	8	80	10.4%
	8-hour	0.0	0.00	0.00	0.0	0.00	0	0	0.08 ppm	
Ozone (as VOCs/TOCs) Lead	Quarterly	7.58E-04	0.00E+00	0.00E+00		7.55E-04	3.00E-02	0.03	1.5	2.1%
									AAC (mg/m ³) (24 hr avg)	Percent of AAC
Non-Carcinogenic (585) HCl *	24-hour	9.64E-02	0.00E+00	0.00E+00		9.64E-02		9.64E-02	0.375	0.026%
	24-hour	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	0.005	0.000%
	24-hour	5.97E-02	0.00E+00	0.00E+00		5.97E-02		5.97E-02	0.0215	0.278%
	24-hour	7.34E-02	0.00E+00	0.00E+00		7.34E-02		7.34E-02	0.020	0.367%
Carcinogenic (586) Acetaldehyde*							T-RACT Factor:	1	AACC (µg/m ³) (Annual Avg x T- RACT Factor)	Percent of AACC
	Annual	8.09E-02	0.00E+00	0.00E+00	0.00E+00	8.09E-02		8.09E-02	4.50E-01	18.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	2.3E-04	0.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	1.2E-01	0.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	5.6E-04	0.0%
	Annual	9.54E-11	0.00E+00	0.00E+00		9.54E-11		9.54E-11	1.50E-10	63.6%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	8.3E-05	0.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	7.7E-02	0.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	4.2E-03	0.0%
	Annual	0.00E+00	0.00E+00	0.00E+00		0.00E+00		0.00E+00	3.0E-04	0.0%

05/29/07
16:13:36

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

H K Contractors Teton Facility HMA Plant Dryer Drum Dispersion Factor

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .126000
STACK HEIGHT (M) = 10.9700
STK INSIDE DIAM (M) = 1.0200
STK EXIT VELOCITY (M/S) = 25.7000
STK GAS EXIT TEMP (K) = 325.9300
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = 1.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = .0000
MIN HORIZ BLDG DIM (M) = .0000
MAX HORIZ BLDG DIM (M) = .0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 6.623 M**4/S**3; MOM. FLUX = 154.436 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
50.	.2866E-01	2	5.0	5.0	1600.0	28.55	11.08	6.99	NO
100.	1.653	3	10.0	10.1	3200.0	19.73	12.65	7.75	NO
200.	4.546	3	8.0	8.1	2560.0	21.92	23.83	14.37	NO
300.	4.342	3	5.0	5.0	1600.0	28.50	34.66	20.94	NO
400.	4.008	4	8.0	8.1	2560.0	21.87	29.62	15.58	NO
500.	3.727	4	5.0	5.1	1600.0	28.42	36.49	18.96	NO
600.	3.609	4	5.0	5.1	1600.0	28.42	43.01	21.79	NO
700.	3.377	4	4.5	4.6	1440.0	30.35	49.50	24.66	NO
800.	3.161	4	4.0	4.1	1280.0	32.78	55.92	27.50	NO
900.	2.970	4	3.5	3.5	1120.0	35.89	62.29	30.31	NO
1000.	2.794	4	3.0	3.0	960.0	40.05	68.63	33.15	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 50. M:
215. 4.585 3 8.0 8.1 2560.0 21.92 25.55 15.37 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 4.585	----- 215.	----- 0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
