



# **Air Quality Permitting Statement of Basis**

**June 13, 2005**

**Permit to Construct No. P-050408**

**Debco Construction, Orofino**

**Facility ID No. 777-00353**

Prepared by:

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AIR QUALITY DIVISION**

**FINAL**

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## Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
HMA	hot-mix asphalt facility
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MMBtu/hr	million British thermal units per hour
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>x</sub>	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
RAP	Recycled asphalt pavement
SIC	Standard Industrial Classification
SO <sub>2</sub>	sulfur dioxide
TAP	toxic air pollutant
T/yr	tons per year
µg/m <sup>3</sup>	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

## 1. PURPOSE

The purpose for this document is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

## 2. FACILITY DESCRIPTION

The facility consists of a drum mix asphalt plant and electrical generator engine. Drum mix asphalt plants may be of either parallel flow design or the counterflow design. In either design aggregate (gravel) is dried in the drum and mixed with liquid asphalt cement to produce hot-mix asphalt which is used primarily for road and parking lot construction. The production of hot-mix asphalt includes aggregate handling operations which may include front end loaders, storage bins, conveyance systems, stock piles and haul trucks.

## 3. FACILITY / AREA CLASSIFICATION

Debco Construction is defined as a synthetic minor facility because, without permit limits on the potential to emit, the PM<sub>10</sub>, NO<sub>x</sub>, and CO emissions would exceed 100 tons per year each. The AIRS classification is "SM".

The facility is a portable facility and may locate anywhere in the state of Idaho except the Sandpoint PM<sub>10</sub> nonattainment area.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant for the Debco Construction facility. This information is entered into the EPA AIRs database.

## 4. APPLICATION SCOPE

This permit to construct is for a new hot-mix asphalt plant with the capability to use recycled asphalt pavement (RAP), associated material handling equipment and an electrical generator engine.

### 4.1 Application Chronology

March 16, 2005	DEQ received a standard permit to construct application form for HMA's
April 5, 2005	DEQ determined the application complete
April 6, 2005	DEQ received additional application materials

## 5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

### 5.1 Equipment Listing

#### Hot-Mix Asphalt Plant

Manufacturer: Aesco/Madsen

Type of HMA plant: Drum mix

Design capacity: 200 T/hr

HMA burner fuel type: Propane, Natural gas, used oil, and fuel oil

Emissions Control device: Baghouse, Aesco/Madsen, HRB-384

### **Generator Set**

Manufacturer: Caterpillar 3412 TA, 730 HP

## **5.2 Emissions Inventory**

Emission estimates for the hot-mix asphalt plant were made using AP-42 Section 11.1 emissions factors. Emissions estimates for the generator engine were made using AP-42 Section 3.4 emission factors for engines greater than 600 horse-power. Emission estimates for criteria and toxic air pollutants may be seen in Appendix B. Emission estimates from the asphalt plant are based on the requested hourly production rate of 200 tons per hour and 200,000 tons per year (which corresponds roughly 1000 hours of operation per year). The generator engine was assumed to have a maximum operational design capacity of no more than 2,080 hours per year, slightly more than twice as long as the asphalt plant is allowed to operate. It should be noted that emission estimates provided by the applicant were based on an annual asphalt plant production of 720,000 tons per year and 8760 hours of operation for the generator engine. The facility ultimately did not want to pay the \$7,500 permit processing fee that was associated with the emissions for a facility permitted at that proposed rate. Therefore, the facility opted to reduce production from 720,000 to 200,000 tons per year to reduce the permit processing fee from \$7,500 to \$5,000.

It is not known if the proposed drum mix asphalt plant is a parallel flow or counter flow, for emission estimation purposes it is not necessary to determine which type it is because AP-42 emissions factors for drum mix asphalt plants are not dependent on whether the drum mix plant is parallel flow or counter flow. Consequently emissions estimates in Appendix B are accurate for either parallel flow drum mix plants or for counter flow drum mix plants.

AP-42 states that a counter flow drum mix plant can normally process 50% recycled asphalt with little or no observed effect upon emissions. Because data are not available to distinguish significant emissions differences between the parallel flow and counter flow process designs recycled asphalt processing in parallel flow drum mixers is also assumed to have little or no observed effect upon emissions. Because of these findings the permit allows recycled asphalt use up to 50% of the asphalt plants production capacity.

Table 5.1 gives a summary of the criteria air pollutant emissions from the hot-mix asphalt plant and the electrical generator set.

**Table 5.1 EMISSIONS ESTIMATES  
(Controlled Potential to Emit)**

<b>Pollutant</b>	<b>Maximum T/yr</b>
PM (total)	3.9
PM-10 (total)	2.9
CO	18
NOx	24.2
SO <sub>2</sub>	8.8
VOC	3.7
Lead	1.50E-03

## **5.3 Modeling**

DEQ performed air pollutant dispersion modeling using SCREEN3 model. The model assumed flat terrain, no downwash and that ambient air was located immediately adjacent to the facility in a rural area. The SCREEN3 modeling results may be seen in Appendix C.

Stack parameters used in the modeling analysis are given in Table 5.2

**Table 5.2 STACK PARAMETERS**

Stack Parameter	Generator	HMA
Height	4.78 m	7.62 m
Diameter	0.2 m	1.04 m
Velocity	47 m/s	18.9 m/s
Temperature	750 K	449 K
Emission Rate	0.126 g/s	0.126 g/s

In determining facility wide ambient impacts each emission unit was modeled to determine the maximum ambient impact. Then the maximum ambient impact from each emission unit were added together to obtain the facility wide ambient impact. This methodology to determine facility wide ambient impact is conservative in part because it assumes that maximum impacts occur at the same ambient receptor.

For modeling purposes each emission units air pollutant emission rate was set to be one pound per hour (0.126 g/s). Using this method SCREEN3 model gives an air pollutant dispersion coefficient in micrograms per cubic meter per pound of emissions. The linear relationship between emission rate and ambient impact is then used to predict actual ambient impact by multiplying the dispersion coefficient by the actual emission rate. The predicted ambient impact is then multiplied by a persistence factor to convert the models one hour concentration to the averaging periods of the ambient standards or toxic air pollutant increments. Appendix C contains a spread sheet that shows the results of these calculations.

Table 5.3 shows the predicted ambient impacts for criteria air pollutants from the facility. Modeling was not conducted for lead emissions because emission estimates were below the State of Idaho modeling threshold of 0.6 tons per year.

**Table 5.3 AMBIENT POLLUTANT CONCENTRATIONS**

Pollutant	Averaging period	Maximum Predicted Ambient Impact ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Ambient Impact ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	Percent of NAAQS
CO	8-hour	128.9	7300	7428.9	10000	74.3
	1-hour	184.1	12200	12384.1	40,000	31.0
NO <sub>2</sub>	Annual	7.3	40	47.3	100	47.3
SO <sub>2</sub>	3-hour	86.9	372	458.9	1300	35.3
	24-hour	38.6	122	160.6	365	44.0
	Annual	1.5	21	22.5	80	28.1
PM-10	24-hour	10.7	103	113.7	150	75.8
	Annual	1.6	34.5	36.1	50	72.3

<sup>a)</sup> Background concentration DEQ modeling coordinator, May 25, 20005

<sup>b)</sup> National Ambient Air Quality Standard

The modeled concentrations, including the background, are less than the NAAQS.

Toxic air pollutant emissions ambient impacts are summarized in Table 5.4 for those toxic air pollutants that are estimated to be emitted above the toxic air pollutant screening emission rate listed in IDAPA 58.01.01.585 and IDAPA 58.01.01.586. All other toxic air pollutants emissions are below the screening emissions rate and modeling is not required. All toxic air pollutants comply with the toxic air pollutant increments listed IDAPA 58.01.01.585 and IDAPA 58.01.01.586.

**Table 5.4 TOXIC AIR POLLUTANT AMBIENT IMPACT ASSESSMENT.**

Pollutant	Generator Emissions (lb/hr)	HMA Emissions (lb/hr)	Generator Impact (µg/m3)	HMA Impact (µg/m3)	Total Impact (µg/m3)	Allowable Increment (µg/m3)	Averaging period	Acceptable Impact?	Uncontrolled Emissions Exceed Increment ?
Benzene	4.37E-03	8.00E-04	1.11E-02	3.81E-05	1.11E-02	0.12	Annual	YES	no
Formaldehyde	4.44E-04	5.10E-04	1.13E-03	2.43E-05	1.15E-03	7.70E-02	Annual	YES	no
Benzo(a)pyrene	1.45E-06	2.00E-06	3.67E-06	9.53E-08	3.77E-06	3.00E-04	Annual	YES	no
Quinone	na	2.70E-02	na	3.61E-02	3.61E-02	20	24-hour	YES	no
PAH	4.50E-06	2.60E-06	1.14E-05	1.24E-07	1.16E-05	3.00E-04	Annual	YES	no
Arsenic	na	1.20E-04	na	5.72E-06	5.72E-06	2.30E-04	Annual	YES	no
Cadmium	na	8.20E-05	na	3.91E-06	3.91E-06	5.60E-04	Annual	YES	no
Chromium VI	na	9.00E-05	na	4.29E-06	4.29E-06	8.30E-05	Annual	YES	no
Nickel	na	1.26E-02	na	6.01E-04	6.01E-04	4.20E-03	Annual	YES	yes
2,3,7,8-TCDD	na	7.02E-10	na	3.35E-11	3.35E-11	2.20E-08	Annual	YES	no

<sup>na</sup> - emission factors not available

## 5.4 Regulatory Review

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

IDAPA 58.01.01.201 ..... Permit to Construct Required

Debco Construction has requested a permit to construct a hot-mix asphalt plant to operate as a portable source within the State of Idaho. This is an initial permit to construct for this facility.

40 CFR 60 Subpart I..... Standards of Performance for Hot-Mix Asphalt Facilities

The facility has certified that the asphalt plant is an affected facility as defined by 40 CFR 60 Subpart I. This certification is accepted by DEQ and the 40 CFR 60 Subpart I requirements are included in the permit.

40 CFR 279 ..... Standards 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 plants<sup>1</sup>.

Permit Condition 2.9 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 2.3. These permit conditions are considered reasonable permit conditions because they inherently limit air pollution emissions.

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

**TABLE 2.3 USED OIL SPECIFICATIONS<sup>1</sup>**

<b>Constituent/property</b>	<b>Allowable level</b>
Arsenic	5 ppm <sup>2</sup> maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 deg. F minimum
Total halogens	1,000 ppm maximum

<sup>1</sup> The 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)).

<sup>2</sup> Parts per million

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 58.01.01.2.....Demonstration of Preconstruction Compliance with Toxic Standards

With a daily limitation of production of the asphalt plant set at 4,800 tons and an annual production limitation of 200,000 tons the facilities emissions caused ambient impact less than any toxic air pollutant increment listed in IDAPA 58.01.01.585 and IDAPA 58.01.01.586. No limitations on the operation of the generator engine are required for toxic air pollutant compliance purposes because the toxic air pollutant emission assessment was done at maximum operating capacity. 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.

In accordance with IDAPA 58.01.01.210.08, if a toxic air pollutant emissions need to be controlled to comply with the toxic increment DEQ "shall include an emission limit for the toxic air pollutant in the permit to construct that is equal to or, if requested by the applicant, less than the emission rate that was used in the modeling". The only toxic air pollutant that uncontrolled emission exceed an toxic air pollutant increment is nickel. Therefore, an emission limit is included in the permit for nickel at 126 pounds per year which equals an average emission rate of 0.126 pounds per hour which was used in modeling.

## **5.5 PERMIT FEES**

Debco Construction paid the \$1,000 permit to construct application fee as required in IDAPA 58.01.01.224 on March 10, 2005.

A permit to construct processing fee of \$5,000 is required in accordance with IDAPA 58.01.01.225 because the increase in emissions from the addition of the new facility is between 10 and 100 tons per year. The fee calculation spread sheet can be found in Appendix D. The \$5,000 processing fee was received on June 13, 2005.

The Debco Construction Company is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration fees to support the Tier I operating permit program are not applicable in accordance with IDAPA 58.01.01.387.

## **6. PERMIT CONDITIONS**

### **Permit Condition 1 through 2.2**

Permit Conditions 1 through 2.2 contains the Purpose of the Permit, listing of the regulated sources and process description.

### **Permit Condition 3.1**

The 40 CFR 60.90 NSPS 20% opacity limit for Hot-Mix Asphalt Facilities is given as a reasonable permit condition.

#### **Compliance Assurance**

Permit Condition 3.19.1 requires visible emissions testing to demonstrate compliance with the NSPS opacity limit.

Permit Condition 3.19.2 requires visible emissions testing to demonstrate compliance with the NSPS opacity limit once each five years. This testing is not required by NSPS but is a reasonable permit condition in accordance with IDAPA 58.01.01.211.01.

### **Permit Condition 3.2**

This permit condition is the IDAPA 58.01.01.625 20% opacity limit. The 40 CFR 60.90 NSPS opacity limit and the IDAPA 58.01.01.625 opacity limit are different. The IDAPA 58.01.01.625 20% opacity limit is for a period or periods aggregating more than three minutes in any 60-minutes, the NSPS 20% opacity limitation is for all periods.

#### **Compliance Assurance**

Permit Condition 3.19.1 requires visible emissions testing to demonstrate compliance with the IDAPA opacity limit.

Permit Condition 3.19.2 requires visible emissions testing to demonstrate compliance with the IDAPA opacity limit once each five years.

### **Permit Condition 3.3**

This permit condition contains the NSPS 0.04 grains per dry standard cubic foot (gr/dscf) limit in accordance with 40 CFR Part 60.92(a)(1).

#### **Compliance Assurance**

Permit Condition 3.19.1 contains the NSPS performance test, which is a one time performance test. If the one time NSPS performance test has already been conducted on the facility, this permit condition requires, as a reasonable permit condition (IDAPA 58.01.01.211), that the facility conduct a performance test within 60 days after achieving the maximum production rate at which the affected facility will operate but not later than 180 days after initial start up of the source.

Permit Condition 3.19.2 requires emissions testing to demonstrate compliance with the NSPS grain loading limit once each five years as a reasonable permit condition (IDAPA 58.01.01.211).

### **Permit Condition 3.4**

The PM, PM<sub>10</sub>, NO<sub>x</sub>, and CO limits are established to protect ambient air quality standards and to limit the facilities potential to emit below major source thresholds. Annual emissions limits are placed on PM, PM<sub>10</sub>, NO<sub>x</sub>, and CO because uncontrolled emissions of each of these pollutants are greater than 100 tons per year.

### **Compliance Assurance**

Permit Condition 3.8 limits the type of fuel that may be combusted, Permit Condition 3.10 limits the amount of sulfur that may be present in the fuel oil and Permit Condition 3.11 limits both daily and annual production limits to limit emissions to permitted levels.

Permit Conditions 3.19.1 and 3.19.2 requires performance testing to demonstrate compliance with PM emission limits. For permitting purposes it is assumed that compliance with the PM emissions limit is also compliance with the PM<sub>10</sub> emissions limitation.

Particulate matter emissions are controlled by a baghouse. In order to assure the baghouse is operated as designed Permit Conditions 3.12 through 3.14 require that the facility write an O&M manual that will include baghouse pressure drop requirements, require the installation of a pressure drop monitor and requirements for monitoring and record the pressure drop.

### **Permit Condition 3.5**

Nickel emissions are limited to 126 pounds per year.

In accordance with IDAPA 58.01.01.210.08 if a toxic air pollutant emissions need to be controlled to comply with the toxic increment, DEQ “shall include an emission limit for the toxic air pollutant in the permit to construct that is equal to or, if requested by the applicant, less than the emission rate that was used in the modeling”. The only toxic air pollutant that uncontrolled emissions exceed an toxic air pollutant increment is nickel. An emission limit is included in the permit for nickel which equals the rate which was used in modeling (126 pounds per year, or 0.13 lb/hr averaged over 1000 hours).

### **Compliance Assurance**

Permit Condition 3.11 limits both daily and annual production limitations to restrict nickel emissions to permitted levels.

### **Permit Condition 3.6**

Visible fugitive dust emissions are limited so that they shall not be observed leaving the property boundary for a period or periods aggregating more than three minutes in any 60 minute period as determined by Method 22.

### **Compliance Assurance**

Permit Condition 3.17 requires monthly monitoring to assure fugitive emissions are being reasonably controlled. There is not a permit condition that explicitly requires the permittee to conduct a method 22 visible emissions observation to determine compliance with this Permit Condition.

Permit Condition 3.6 is a means of setting a quantifiable emission limitation on fugitive dust emissions so that DEQ can without ambiguity determine if fugitive emissions are being reasonably controlled.

### **Permit Condition 3.7**

Is a recitation of the rules to reasonably control fugitive dust.

## **Compliance Assurance**

Permit condition 3.17 requires monthly monitoring to assure fugitive emissions are being reasonably controlled

## **Permit Conditions of Section 4**

Permit Conditions of Section 4 limit the facilities operations in PM<sub>10</sub> nonattainment areas. Daily production limits are set at 1,900 tons of hot-mix asphalt per day to assure that the plant would not significantly contribute to a violation of the PM<sub>10</sub> ambient standards. Permit Condition 4.3 prohibits the plant from operating in the Sandpoint PM<sub>10</sub> nonattainment area because the PM<sub>10</sub> maintenance plan requires modeling of fugitive emissions and this permit analysis dose not include modeling of fugitive emissions.

## **Remaining Permit Conditions**

The permit conditions that have not been discussed in this document are self explanatory and are not included in this statement of basis.

## **7. PERMIT REVIEW**

### **7.1 *Regional Review of Draft Permit***

On June 15, 2005 the Twin Falls Regional Office was given a draft of the permit and statement of basis for review. On this same day the region responded saying they had no proposed changes to the permit.

### **7.2 *Facility Review of Draft Permit***

The facility initially requested a draft of the permit be given to them for review. On May 31, 2005 the facility changed this position and decided they do not want a draft permit. The facility also changed its proposal to reduce emissions so that the processing fee changes from the original proposal (\$7,500) to a new lesser emitting proposal (\$5,000). This caused additional work and processing time.

### **7.3 *Public Comment***

A notice for an opportunity to request a public comment period was published in a paper of general circulation in the area the facility proposes to locate. The opportunity to request a public comment period ran from April 15, 2005 to May 16, 2005. No comments were provided and no requests for a public comment were received.

## **8. RECOMMENDATION**

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Debco Construction be issued final PTC No. P-050408 for the asphalt plant. The project does not involve PSD requirements nor were any public comments provided.

DP/sd                      Permit No. P-050408

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**APPENDIX A**  
**AIRS INFORMATION**  
**P-050408**

# AIRS/AFS<sup>a</sup> FACILITY-WIDE CLASSIFICATION<sup>b</sup> DATA ENTRY FORM

**Facility Name:** Debco Construction  
**Facility Location:** Portable  
**AIRS Number:** 777-00353

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 <sub>2</sub>	B							
NO <sub>x</sub>	SM							
CO	SM							
PM <sub>10</sub>	SM							
PT (Particulate)			SM					
VOC	B							
THAP (Total HAPs)	B							
			<b>APPLICABLE SUBPART</b>					

<sup>a</sup> Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

<sup>b</sup> 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-050408**

**Debco Construction**

**Natural Gas Fired Drum Mix Asphalt Plant With Fabric Filter**

Hourly Throughput                    200 T/hr  
 Annual Throughput                200000 hr/yr

Pollutant	Emission Factor <sup>a</sup> (lb/ton) <sup>b</sup>	Emissions (lb/hr) <sup>c</sup>	Emissions (T/yr) <sup>d</sup>
PM (total)	0.033	6.6	3.3
PM-10 (total)	0.023	4.6	2.3
CO	0.13	26	13
NOx	0.026	5.2	2.6
SO <sub>2</sub>	0.0034	0.68	0.34
VOC	0.032	6.4	3.2
Hcle	No Data		
Benzene <sup>e</sup>	0.00039	0.078	0.039
Ethylbenzene <sup>e</sup>	0.00024	0.048	0.024
Formaldehyde <sup>e</sup>	0.0031	0.62	0.31
Hexane <sup>e</sup>	0.00092	0.184	0.092
Isocotane	4.00E-05	8.00E-03	4.00E-03
Methyl chloroform <sup>e</sup>	4.80E-05	9.60E-03	4.80E-03
Toluene <sup>e</sup>	0.00015	3.00E-02	1.50E-02
Xylene <sup>e</sup>	0.0002	4.00E-02	2.00E-02
2-Methylnaphthalene	7.40E-05	1.48E-02	7.40E-03
Acenaphthene	1.40E-06	2.80E-04	1.40E-04
Acenaphthylene	8.60E-06	1.72E-03	8.60E-04
Anthracene	2.20E-07	4.40E-05	2.20E-05
Benzo(a)anthracene	2.10E-07	4.20E-05	2.10E-05
Benzo(a)pyrene <sup>e</sup>	9.80E-09	1.96E-06	9.80E-07
Benzo(b)fluoranthene	1.00E-07	2.00E-05	1.00E-05
Benzo(e)pyrene	1.10E-07	2.20E-05	1.10E-05
Benzo(g,h,i)perylene	4.00E-08	8.00E-06	4.00E-06
Benzo(k)fluoranthene	4.10E-08	8.20E-06	4.10E-06
Chrysene	1.80E-07	3.60E-05	1.80E-05
Fluoranthene	6.10E-07	1.22E-04	6.10E-05
Fluorene	3.80E-06	7.60E-04	3.80E-04
Indeno(1,2,3-cd)pyrene	7.00E-09	1.40E-06	7.00E-07
Naphthalene <sup>e</sup>	9.00E-05	1.80E-02	9.00E-03

Pollutant	Emission Factor <sup>a</sup> (lb/ton) <sup>b</sup>	Emissions (lb/hr) <sup>c</sup>	Emissions (T/yr) <sup>d</sup>
Perylene	8.80E-09	1.76E-06	8.8E-07
Phenanthrene	7.60E-06	1.52E-03	7.60E-04
Pyrene	5.40E-07	1.08E-04	5.40E-05
Butane	0.00067	1.34E-01	6.70E-02
Ethylene	0.007	1.40E+00	7.00E-01
Heptane	0.0094	1.88E+00	9.40E-01
2-Methyl-1-pentene	0.004	8.00E-01	4.00E-01
2-Methyl-2-butene	0.00058	1.16E-01	5.80E-02
3-Methylpentane	0.00019	3.80E-02	1.90E-02
1-Pentene	0.0022	4.40E-01	2.20E-01
n-Pentane	0.00021	4.20E-02	2.10E-02
Antimony <sup>e</sup>	1.80E-07	3.60E-05	1.80E-05
Arsenic <sup>e</sup>	5.60E-07	1.12E-04	5.60E-05
Barium <sup>e</sup>	5.80E-06	1.16E-03	5.80E-04
Beryllium <sup>e</sup>	0	0.00E+00	0.00E+00
Cadmium <sup>e</sup>	4.10E-07	8.20E-05	4.10E-05
Chromium <sup>e</sup>	5.50E-06	1.10E-03	5.50E-04
Cobalt <sup>e</sup>	2.60E-08	5.20E-06	2.60E-06
Copper <sup>e</sup>	3.10E-06	6.20E-04	3.10E-04
Hexavalent Chromium <sup>e</sup>	4.50E-07	9.00E-05	4.50E-05
Lead	6.20E-07	1.24E-04	6.20E-05
Manganese <sup>e</sup>	7.70E-06	1.54E-03	7.70E-04
Mercury <sup>e</sup>	2.40E-07	4.80E-05	2.40E-05
Nickel <sup>e</sup>	6.30E-05	1.26E-02	6.30E-03
Phosphorus <sup>e</sup>	2.80E-05	5.60E-03	2.80E-03
Silver <sup>e</sup>	4.80E-07	9.60E-05	4.80E-05
Selenium <sup>e</sup>	3.50E-07	7.00E-05	3.50E-05
Thallium <sup>e</sup>	4.10E-09	8.20E-07	4.10E-07
Zinc <sup>e</sup>	6.10E-05	1.22E-02	6.10E-03

- a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
- b) Pounds per ton
- c) Pounds per hour
- d) Tons per year
- e) IDAPA Toxic Air Pollutant

Debco Construction

#2 Fuel Oil Fired Drum Mix Asphalt Plant With Fabric Filter

Hourly Throughput 200 T/hr  
 Annual Throughput 200000 hr/yr

Pollutant	Emission Factor <sup>a</sup> (lb/ton) <sup>b</sup>	Emissions <sup>c</sup> (lb/hr) <sup>c</sup>	Emissions <sup>d</sup> (T/yr) <sup>d</sup>
PM (total)	0.033	6.6	3.3
PM-10 (total)	0.023	4.6	2.3
CO	0.13	26	13
NOx	0.055	11	5.5
SO <sub>2</sub>	0.011	2.2	1.1
VOC	0.032	6.4	3.2
HCL <sup>e</sup>	No Data		
Benzene <sup>a</sup>	0.00039	0.078	0.039
Ethylbenzene <sup>a</sup>	0.00024	0.048	0.024
Formaldehyde <sup>a</sup>	0.0031	0.62	0.31
Hexane	0.00092	0.184	0.092
Isocotane	4.00E-05	8.00E-03	4.00E-03
Methyl chloroform <sup>a</sup>	4.80E-05	9.60E-03	4.80E-03
Toluene <sup>a</sup>	0.0029	5.80E-01	2.90E-01
Xylene <sup>a</sup>	0.0002	4.00E-02	2.00E-02
2-Methylnaphthalene	0.00017	3.40E-02	1.70E-02
Acanaphthene	1.40E-06	2.80E-04	1.40E-04
Acanaphthylene	2.20E-05	4.40E-03	2.20E-03
Anthracene	3.10E-06	6.20E-04	3.10E-04
Benzo(a)anthracene	2.10E-07	4.20E-05	2.10E-05
Benzo(a)pyrene <sup>a</sup>	9.80E-09	1.96E-06	9.80E-07
Benzo(b)fluoranthene	1.00E-07	2.00E-05	1.00E-05
Benzo(e)pyrene	1.10E-07	2.20E-05	1.10E-05
Benzo(g,h,i)perylene	4.00E-08	8.00E-06	4.00E-06
Benzo(k)fluoranthene	4.10E-08	8.20E-06	4.10E-06
Chrysene	1.80E-07	3.60E-05	1.80E-05
Fluoranthene	6.10E-07	1.22E-04	6.10E-05
Fluorene	1.10E-05	2.20E-03	1.10E-03
Indeno(1,2,3-cd)pyrene	7.00E-09	1.40E-06	7.00E-07
Naphthalene <sup>a</sup>	0.00065	1.30E-01	6.50E-02
Perylene	8.80E-08	1.76E-06	8.80E-07
Phenanthrene	2.30E-05	4.60E-03	2.30E-03
Pyrene	3.00E-06	6.00E-04	3.00E-04
Butane	0.00067	1.34E-01	6.70E-02
Ethylene	0.007	1.40E+00	7.00E-01
Heptane	0.0094	1.88E+00	9.40E-01
2-Methyl-1-pentene	0.004	8.00E-01	4.00E-01
2-Methyl-2-butene	0.00058	1.16E-01	5.80E-02
3-Methylpentane	0.00019	3.80E-02	1.90E-02
1-Pentene	0.0022	4.40E-01	2.20E-01
n-Pentane	0.00021	4.20E-02	2.10E-02

Pollutant	Emission Factor <sup>a</sup> (lb/ton) <sup>b</sup>	Emissions <sup>c</sup> (lb/hr) <sup>c</sup>	Emissions <sup>d</sup> (T/yr) <sup>d</sup>
<b>Dioxins<sup>a</sup></b>			
2,3,7,8-TCDD	2.10E-13	4.2E-11	2.1E-11
Total TCDD	9.30E-13	1.86E-10	9.3E-11
1,2,3,7,8-PeCDD	3.10E-13	6.2E-11	3.1E-11
Total PeCDD	2.20E-11	4.4E-09	2.2E-09
1,2,3,4,7,8-HxCDD	4.20E-13	8.4E-11	4.2E-11
1,2,3,6,7,8-HxCDD	1.30E-12	2.6E-10	1.3E-10
1,2,3,7,8,9-HxCDD	9.80E-13	1.96E-10	9.8E-11
Total HxCDD	1.20E-11	2.4E-09	1.2E-09
1,2,3,4,6,7,8-HpCDD	4.80E-12	9.6E-10	4.8E-10
Total HpCDD	1.90E-11	3.8E-09	1.9E-09
Octa CDD	2.50E-11	5E-09	2.5E-09
Total PCDD	7.90E-11	1.58E-08	7.9E-09
<b>Furans<sup>a</sup></b>			
2,3,7,8-TCDF	9.70E-13	1.94E-10	9.7E-11
Total TCDF	3.70E-12	7.4E-10	3.7E-10
1,2,3,7,8-PeCDF	4.30E-12	8.6E-10	4.3E-10
2,3,4,7,8-PeCDF	8.40E-13	1.68E-10	8.4E-11
Total PeCDF	8.40E-11	1.68E-08	8.4E-09
1,2,3,4,7,8-HxCDF	4.00E-12	8E-10	4E-10
1,2,3,6,7,8-HxCDF	1.20E-12	2.4E-10	1.2E-10
2,3,4,6,7,8-HxCDF	1.90E-12	3.8E-10	1.9E-10
1,2,3,7,8,9-HxCDF	8.40E-12	1.68E-09	8.4E-10
Total HxCDF	1.30E-11	2.6E-09	1.3E-09
1,2,3,4,6,7,8-HpCDF	6.50E-12	1.3E-09	6.5E-10
1,2,3,4,7,8,9-HpCDF	2.70E-12	5.4E-10	2.7E-10
Total HpCDF	1.00E-11	2E-09	1E-09
Octa CDF	4.80E-12	9.6E-10	4.8E-10
Total PCDF	4.00E-11	8E-09	4E-09
Total PCDD/PCDF	1.20E-10	2.4E-08	1.2E-08
Antimony <sup>a</sup>	1.80E-07	3.60E-05	1.80E-05
Arsenic <sup>a</sup>	5.60E-07	1.12E-04	5.60E-05
Barium <sup>a</sup>	5.80E-06	1.16E-03	5.80E-04
Beryllium <sup>a</sup>	0	0.00	0.00
Cadmium <sup>a</sup>	4.10E-07	8.20E-05	4.10E-05
Chromium <sup>a</sup>	5.50E-06	1.10E-03	5.50E-04
Cobalt <sup>a</sup>	2.60E-08	5.20E-06	2.60E-06
Copper <sup>a</sup>	3.10E-06	6.20E-04	3.10E-04
Hexavalent Chromium <sup>a</sup>	4.50E-07	9.00E-05	4.50E-05
Lead	1.50E-05	3.00E-03	1.50E-03
Manganese <sup>a</sup>	7.70E-06	1.54E-03	7.70E-04
Mercury <sup>a</sup>	2.60E-06	5.20E-04	2.60E-04
Nickel <sup>a</sup>	6.30E-05	1.26E-02	6.30E-03
Phosphorus <sup>a</sup>	2.80E-05	5.60E-03	2.80E-03
Silver <sup>a</sup>	4.80E-07	9.60E-05	4.80E-05
Selenium <sup>a</sup>	3.50E-07	7.00E-05	3.50E-05
Thallium <sup>a</sup>	4.10E-09	8.20E-07	4.10E-07
Zinc <sup>a</sup>	6.10E-05	1.22E-02	6.10E-03

- a) Emission factors are from AP-42 11.1, Hot Mix Asphalt Plants, 3/04
- b) Pounds per ton
- c) Pounds per hour
- d) Tons per year
- e) IDAPA Toxic Air Pollutant

g 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.

Debco Construction

Large Diesel Engines greater than 600 horse power

Engine	Fuel Usage Rate (gal/hr) <sup>4</sup>	Annual Hours of Operation
Cat 3412 TA	39.9	2080

Heat Content <sup>2</sup> Btu/gallon	141000
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Pollutant	Emission Factor (lb/MMBtu)(1)	(lb/hr)	(ton/yr)	Toxic Screen (lb/hr)	Exceeds Screen?
TOC	0.09	0.506	0.527		
NOx	3.2	18.003	18.723		
CO	0.85	4.782	4.973		
SOx	0.505	2.841	2.955		
PM-10	0.1	0.563	0.585		
Aldehydes	0	0.000E+00	0.000		
Benzene	7.76E-04	4.366E-03	4.540E-03	8.00E-04	yes
Toluene	2.81E-04	1.581E-03	1.644E-03	2.50E+01	no
Xylenes	1.93E-04	1.086E-03	1.129E-03	2.90E+01	no
Propylene	2.79E-03	1.570E-02	1.632E-02		
				2.40E-05	no
Formaldehyde	7.89E-05	4.439E-04	4.616E-04	5.10E-04	no
Acetaldehyde	2.52E-05	1.418E-04	1.474E-04	3.00E-03	no
Acrolein	7.88E-06	4.433E-05	4.611E-05	1.70E-02	no
Naphthalene	1.30E-04	7.314E-04	7.606E-04	3.33E+00	no
Acenaphthylene	9.23E-06	5.193E-05	5.400E-05		
Acenaphthene	9.23E-06	5.193E-05	5.400E-05		
	0.00E+00	0.000E+00	0.000E+00		
Phenanthrene	4.08E-05	2.295E-04	2.387E-04		
Fluoranthene	4.03E-06	2.267E-05	2.358E-05		
Pyrene	3.71E-06	2.087E-05	2.171E-05		
Benzo(a)anthracene <sup>+</sup>	6.22E-07	3.499E-06	3.639E-06		
Chrysene <sup>+</sup>	1.53E-06	8.608E-06	8.952E-06		
Benzo(b)fluoranthene <sup>+</sup>	1.11E-06	6.245E-06	6.495E-06		
Benzo(k)fluoranthene <sup>+</sup>	2.18E-07	1.226E-06	1.276E-06		
Benzo(a)pyrene <sup>+</sup>	2.57E-07	1.446E-06	1.504E-06	2.00E-06	no
Indeno(1,2,3-cd)pyrene <sup>+</sup>	4.14E-07	2.329E-06	2.422E-06		
Dibenz(a, h)anthracene <sup>+</sup>	3.46E-07	1.947E-06	2.024E-06		
Benzo(g, h, i)perylene	5.56E-07	3.128E-06	3.253E-06		
PAH <sup>3</sup>		4.50E-06			

- 1) Emission factors are from EPA, AP-42, Section 3.4, 10/96
- 2) Combustion Evaluation in Air Pollution Control, US EPA, March 1994
- 3) Compounds which makeup PAH a noted by "+"
- 4) #2 fuel oil

Total TAPS = 8.731E-03 Tons/yr

Deboo Construction

Maximums Emissions From Fuels Used While Producing Asphalt

Drum Mix with Baghouse

Hourly Throughput 200

Pollutant	Maximum lb/hr	EL (lb/hr)	Exceeds EL?
PM (total)	6.8		
PM-10 (total)	4.8		
CO	28		
NOx	11		
SO <sub>2</sub>	11.8		
VOC	6.4		
HCl*	0.042	0.05	no
Benzene*	0.078	8.00E-04	yes
Ethylbenzene*	0.048	29	no
Formaldehyde*	0.62	5.10E-04	yes
Hexane*	0.184	12	no
Isooctane	8.00E-03		
Methyl chloroform*	9.60E-03	127	no
Toluene*	5.80E-01	25	no
Xylene*	4.00E-02	29	no
2-Methylnaphthalene	3.40E-02		
Acenaphthene	2.80E-04		
Acenaphthylene	4.40E-03		
Anthracene	6.20E-04		
Benzo(a)anthracene <sup>(*)</sup>	4.20E-05		
Benzo(a)pyrene <sup>(*)</sup>	1.98E-06	2.00E-06	no
Benzo(b)fluoranthene <sup>(*)</sup>	2.00E-05		
Benzo(e)pyrene <sup>(*)</sup>	2.20E-05		
Benzo(g,h,i)perylene	8.00E-06		
Benzo(k)fluoranthene <sup>(*)</sup>	8.20E-06		
Chrysene <sup>(*)</sup>	3.80E-05		
Fluoranthene	1.22E-04		
Fluorene	2.20E-03		
Indeno(1,2,3-cd)pyrene <sup>(*)</sup>	1.40E-06		
Naphthalene*	1.30E-01	3.33	no
Perylene	8.00E-04		
Phenanthrene	4.80E-03		
Pyrene	8.00E-04		
Butane	1.34E-01		
Ethylene	1.40E+00		
Heptane*	1.88E+00	108	no
2-Methyl-1-pentene	8.00E-01		
2-Methyl-2-butene	1.16E-01		
3-Methylpentane	3.80E-02		
1-Pentene	4.40E-01		
n-Pentane	4.20E-02		
Acetaldehyde*	0.28	3.00E-03	yes
Acrolein*	0.0052	0.017	no
Methyl Ethyl Ketone*	0.004	39.3	no
Propionaldehyde*	0.028	0.0287	no
Quinone*	0.032	0.027	yes
Methyl chloroform*	0.0086	127	no
Acetone*	1.88E-01	118	no
Benzaldehyde	2.20E-02		
Butyraldehyde	3.20E-02		
Crotonaldehyde*	1.72E-02	0.38	no
Hexanal	2.20E-02		
Isovaleraldehyde	6.40E-03		
Valeraldehyde	1.34E-02		
PAH	1.32E-04	2.60E-06	yes

e - State Toxic Air pollutant

(\*) - compounds which make up PAH

Pollutant	Maximum lb/hr	EL (lb/hr)	Exceeds EL?
Dioxins*			
2,3,7,8-TCDD	4.2E-11		
Total TCDD	1.86E-10		
1,2,3,7,8-PeCDD	1.86E-10		
Total PeCDD	4.4E-09		
1,2,3,4,7,8-HxCDD	8.4E-11		
1,2,3,6,7,8-HxCDD	2.6E-10		
1,2,3,7,8,9-HxCDD	1.96E-10		
Total HxCDD	2.4E-09		
1,2,3,4,6,7,8-Hp-CDD	3.8E-09		
Total HpCDD	3.8E-09		
Octa CDD	5.00E-09		
Total PCDD	1.58E-08		
Furans*			
2,3,7,8-TCDF	1.84E-10		
Total TCDF	7.4E-10		
1,2,3,7,8-PeCDF	8.8E-10		
2,3,4,7,8-PeCDF	1.88E-10		
Total PeCDF	1.88E-08		
1,2,3,4,7,8-HxCDF	8E-10		
1,2,3,6,7,8-HxCDF	2.4E-10		
2,3,4,6,7,8-HxCDF	3.8E-10		
1,2,3,7,8,9-HxCDF	1.68E-09		
Total HxCDF	2.6E-09		
1,2,3,4,6,7,8-HpCDF	1.3E-09		
1,2,3,4,7,8,9-HpCDF	5.4E-10		
Total HpCDF	2.00E-09		
Octa CDF	9.8E-10		
Total PCDF	8.00E-09		
Total PCDD/PCDF	2.40E-08		
Antimony*	3.80E-05	0.033	no
Arsenic*	1.12E-04	1.50E-06	yes
Barium*	1.18E-03	0.033	no
Beryllium*	0.00E+00	2.80E-05	no
Cadmium*	8.20E-05	3.70E-06	yes
Chromium*	1.10E-03	3.30E-02	no
Cobalt*	5.20E-08	3.30E-03	no
Copper*	6.20E-04	1.30E-02	no
Hexavalent Chromium*	9.00E-05	5.60E-07	yes
Lead	3.00E-03		
Manganese*	1.54E-03	6.70E-02	no
Mercury*	5.20E-04	3.00E-03	no
Nickel*	1.28E-02	2.70E-05	yes
Phosphorus*	5.60E-03	7.00E-03	no
Silver*	9.60E-05	7.00E-03	no
Selenium*	7.00E-05	1.30E-02	no
Thallium*	8.20E-07	7.00E-03	no
Zinc*	1.22E-02	6.67E-01	no

TAP Total = 2.1 Ton/yr

Annual Emission of Criteria Pollutants

Pollutant	Maximum T/yr
PM (total)	3.3
PM-10 (total)	2.3
CO	13
NOx	5.5
SO <sub>2</sub>	5.8
VOC	3.2
Lead	1.50E-03

**Deeco Construction**

**Maximum TAPs Emissions from HMA and Generator (If emissions estimated for generator)**  
(for comparison to toxic screening values)

State Toxic Air Pollutant	HMA+GEN (Maximums) (lb/hr)	Toxic Screen (lb/hr)	Exceeds Screen Level ?
HCL <sup>a</sup>	0.042	5.00E-02	No
Benzene <sup>a</sup>	0.078	8.00E-04	YES
Ethylbenzene <sup>a</sup>	4.80E-02	29	No
Formaldehyde <sup>a</sup>	6.20E-01	5.10E-04	YES
Hexane <sup>a</sup>	1.84E-01	12	No
Methyl chloroform <sup>a</sup>	9.60E-03	127	No
Toluene <sup>a</sup>	5.82E-01	25	No
Xylene <sup>a</sup>	4.11E-02	29	No
Benzo(a)pyrene <sup>a(c)</sup>	3.41E-06	2.00E-06	YES
Naphthalene <sup>a</sup>	1.31E-01	3.33	No
Heptane <sup>a</sup>	1.88E+00	1.09E+02	No
Acetaldehyde <sup>a</sup>	2.60E-01	3.00E-03	YES
Acrolein <sup>a</sup>	5.24E-03	0.017	No
Methyl Ethyl Ketone <sup>a</sup>	4.00E-03	39.3	No
Propionaldehyde <sup>a</sup>	2.60E-02	0.0287	No
Quinone <sup>a</sup>	3.20E-02	0.027	YES
Methyl chloroform <sup>a</sup>	9.60E-03	127	No
Acetone <sup>a</sup>	1.66E-01	119	No
Crotonaldehyde <sup>a</sup>	1.72E-02	0.38	No
PAH	1.36E-04	2.60E-06	YES
Antimony <sup>a</sup>	3.60E-05	0.033	No
Arsenic <sup>a</sup>	1.12E-04	1.5E-06	YES
Barium <sup>a</sup>	1.16E-03	0.033	No
Beryllium <sup>a</sup>	0.00E+00	0.000028	No
Cadmium <sup>a</sup>	8.20E-05	3.7E-06	YES
Chromium <sup>a</sup>	1.10E-03	0.033	No
Cobalt <sup>a</sup>	5.20E-06	0.0033	No
Copper <sup>a</sup>	6.20E-04	0.013	No
Hexavalent Chromium <sup>a</sup>	9.00E-05	5.6E-07	YES
Lead	3.00E-03	NA	No
Manganese <sup>a</sup>	1.54E-03	0.067	No
Mercury <sup>a</sup>	5.20E-04	0.003	No
Nickel <sup>a</sup>	1.26E-02	0.000027	YES
Phosphorus <sup>a</sup>	5.60E-03	0.007	No
Silver <sup>a</sup>	9.60E-05	0.007	No
Selenium <sup>a</sup>	7.00E-05	0.013	No
Thallium <sup>a</sup>	8.20E-07	0.007	No
Zinc <sup>a</sup>	1.22E-02	0.667	No

a - State Toxic Air Pollutant

	Emissions (lb/hr)	Toxic Equivalency Factor <sup>T</sup>	Adjusted Emission Rate
<b>Dioxins<sup>a</sup></b>			
2,3,7,8-TCDD	4.2E-11	1	4.2E-11
Total TCDD	1.86E-10	na	
1,2,3,7,8-PeCDD	1.86E-10	0.5	9.3E-11
Total PeCDD	4.4E-09		
1,2,3,4,7,8-HxCDD	8.4E-11	0.1	8.4E-12
1,2,3,6,7,8-HxCDD	2.6E-10	0.1	2.6E-11
1,2,3,7,8,9-HxCDD	1.96E-10	0.1	1.96E-11
Total HxCDD	2.4E-09	na	
1,2,3,4,6,7,8-Hp-CDD	3.8E-09	0.01	3.8E-11
Total HpCDD	3.8E-09	na	
Octa CDD	5E-09	na	
Total PCDD	1.58E-08	na	
<b>Furans<sup>a</sup></b>			
2,3,7,8-TCDF	1.94E-10	0.1	1.94E-11
Total TCDF	7.4E-10	na	
1,2,3,7,8-PeCDF	8.6E-10	0.05	4.3E-11
2,3,4,7,8-PeCDF	1.68E-10	0.5	8.4E-11
Total PeCDF	1.68E-08	na	
1,2,3,4,7,8-HxCDF	8E-10	0.1	8E-11
1,2,3,6,7,8-HxCDF	2.4E-10	0.1	2.4E-11
2,3,4,6,7,8-HxCDF	3.8E-10	0.1	3.8E-11
1,2,3,7,8,9-HxCDF	1.68E-09	0.1	1.68E-10
Total HxCDF	2.6E-09	na	
1,2,3,4,6,7,8-HpCDF	1.3E-09	0.01	1.3E-11
1,2,3,4,7,8,9-HpCDF	5.4E-10	0.01	5.4E-12
Total HpCDF	2E-09	na	
Octa CDF	9.6E-10	na	
Total PCDF	8E-09	na	
Total PCDD/PCDF	2.4E-08	na	

Total emission of dioxin/furan equivalent to 2,3,7,8-TCDD **7.018E-10** EL (lb/hr)<sup>a</sup> 1.50E-10 Exceeds EL, must mo

na - not available

T- EPA Toxic Equivalency Factor, EPA/89, (Source -Mike Dubois, IDEQ, April 2005)

I - Total of adjusted emission rates to be compared to the toxicity of 2,3,7,8-TCDD

\* - EL is for 2,3,7,8-TCDD

**Annual Emissions of Criteria Pollutants (total)**

Pollutant	Maximum Tpr
PM (total)	3.89
PM-10 (total)	2.89
CO	17.97
NOx	24.22
SO <sub>2</sub>	8.75
VOC	3.73
Lead	1.50E-03

TAP/HAP Total = 2.1 Tons/year

**APPENDIX C**  
**AIR DISPERSION MODEL**  
**P-050408**

Generator Model

\*\*\*\*\* SCREEN3 MODEL \*\*\*\*\*  
 \*\*\*\* VERSION DATED 95250 \*\*\*\*

ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):  
 DEBCO - Generator

ENTER SOURCE TYPE: P FOR POINT  
 F FOR FLARE  
 A FOR AREA  
 V FOR VOLUME

p  
 ENTER EMISSION RATE (G/S):  
 .126  
 ENTER STACK HEIGHT (M):  
 4.78  
 ENTER STACK INSIDE DIAMETER (M):  
 .2  
 ENTER STACK GAS EXIT VELOCITY OR FLOW RATE:  
 OPTION 1 : EXIT VELOCITY (M/S):  
 DEFAULT - ENTER NUMBER ONLY  
 OPTION 2 : VOLUME FLOW RATE (M\*\*3/S):  
 EXAMPLE "VM=20.00"  
 OPTION 3 : VOLUME FLOW RATE (ACFM):  
 EXAMPLE "VF=1000.00"

47  
 ENTER STACK GAS EXIT TEMPERATURE (K):  
 750  
 ENTER AMBIENT AIR TEMPERATURE (USE 293 FOR DEFAULT) (K):  
 293  
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR FLAGPOLE RECEPTOR) (M):  
 1  
 ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):  
 r  
 CONSIDER BUILDING DOWNWASH IN CALCS? ENTER Y OR N:  
 n  
 USE COMPLEX TERRAIN SCREEN FOR TERRAIN ABOVE STACK HEIGHT?  
 ENTER Y OR N:  
 n  
 USE SIMPLE TERRAIN SCREEN WITH TERRAIN ABOVE STACK BASE?  
 ENTER Y OR N:  
 n  
 ENTER CHOICE OF METEOROLOGY;  
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND SPEEDS)  
 2 - INPUT SINGLE STABILITY CLASS  
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED  
 1  
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:  
 y  
 ENTER MIN AND MAX DISTANCES TO USE (M):  
 5, 1000

\*\*\*\*\*  
 \*\*\* 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
5.	.0000	1	1.0	1.0	320.0	51.26	3.40	3.00	NO
100.	20.09	3	8.0	8.0	2560.0	10.59	12.57	7.62	NO
200.	17.57	4	8.0	8.0	2560.0	10.59	15.65	8.66	NO

				Generator Model						
300.	15.06	4	4.5	4.5	1440.0	15.11	22.80	12.45	NO	
400.	12.70	4	3.5	3.5	1120.0	18.06	29.70	15.73	NO	
500.	10.92	4	3.0	3.0	960.0	20.27	36.42	18.82	NO	
600.	9.628	4	2.5	2.5	800.0	23.37	43.05	21.87	NO	
700.	8.620	4	2.0	2.0	640.0	28.02	49.63	24.93	NO	
800.	7.754	4	2.0	2.0	640.0	28.02	55.97	27.59	NO	
900.	7.075	4	1.5	1.5	480.0	35.77	62.51	30.77	NO	
1000.	6.565	4	1.5	1.5	480.0	35.77	68.70	33.29	NO	

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5. M:  
 85. 20.33 3 10.0 10.0 3200.0 9.43 10.91 6.60 NO

USE DISCRETE DISTANCES? ENTER Y OR N:

n

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	20.33	85.	0.

\*\*\*\*\*  
 \*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
 \*\*\*\*\*

DO YOU WANT TO PRINT A HARDCOPY OF THE RESULTS? ENTER Y OR N:

y

HMA Model

\*\*\*\*\* SCREEN3 MODEL \*\*\*\*\*  
 \*\*\*\* VERSION DATED 95250 \*\*\*\*

ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):  
 DEBCO - Asphalt Plant

ENTER SOURCE TYPE: P FOR POINT  
 F FOR FLARE  
 A FOR AREA  
 V FOR VOLUME

p  
 ENTER EMISSION RATE (G/S):  
 .126

ENTER STACK HEIGHT (M):  
 7.62

ENTER STACK INSIDE DIAMETER (M):  
 1.04

ENTER STACK GAS EXIT VELOCITY OR FLOW RATE:

OPTION 1 : EXIT VELOCITY (M/S):  
 DEFAULT - ENTER NUMBER ONLY

OPTION 2 : VOLUME FLOW RATE (M\*\*3/S):  
 EXAMPLE "VM=20.00"

OPTION 3 : VOLUME FLOW RATE (ACFM):  
 EXAMPLE "VF=1000.00"

18.9  
 ENTER STACK GAS EXIT TEMPERATURE (K):  
 449

ENTER AMBIENT AIR TEMPERATURE (USE 293 FOR DEFAULT) (K):  
 293

ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR FLAGPOLE RECEPTOR) (M):  
 1

ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):  
 r

CONSIDER BUILDING DOWNWASH IN CALCS? ENTER Y OR N:  
 n

USE COMPLEX TERRAIN SCREEN FOR TERRAIN ABOVE STACK HEIGHT?  
 ENTER Y OR N:  
 n

USE SIMPLE TERRAIN SCREEN WITH TERRAIN ABOVE STACK BASE?  
 ENTER Y OR N:  
 n

ENTER CHOICE OF METEOROLOGY;  
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND SPEEDS)  
 2 - INPUT SINGLE STABILITY CLASS  
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED  
 1

USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:  
 y

ENTER MIN AND MAX DISTANCES TO USE (M):  
 5, 1000

\*\*\*\*\*  
 \*\*\* 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
5.	.0000	1	1.0	1.0	320.0	190.24	5.58	5.35	NO
100.	.3242	4	20.0	20.0	6400.0	15.60	8.30	4.82	NO
200.	3.015	4	20.0	20.0	6400.0	15.60	15.69	8.74	NO

					HMA Model				
300.	3.223	4	20.0	20.0	6400.0	15.60	22.76	12.37	NO
400.	2.698	4	15.0	15.0	4800.0	19.30	29.66	15.66	NO
500.	2.312	4	15.0	15.0	4800.0	19.30	36.31	18.62	NO
600.	2.115	4	10.0	10.0	3200.0	25.88	43.03	21.84	NO
700.	1.922	4	8.0	8.0	2560.0	30.45	49.62	24.90	NO
800.	1.766	4	8.0	8.0	2560.0	30.45	55.95	27.57	NO
900.	1.605	4	8.0	8.0	2560.0	30.45	62.23	30.18	NO
1000.	1.466	4	5.0	5.0	1600.0	44.14	68.92	33.75	NO

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5. M:  
 255. 3.341 4 20.0 20.0 6400.0 15.60 19.68 10.80 NO

USE DISCRETE DISTANCES? ENTER Y OR N:  
 n

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3.341	255.	0.

\*\*\*\*\*  
 \*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
 \*\*\*\*\*

DO YOU WANT TO PRINT A HARDCOPY OF THE RESULTS? ENTER Y OR N:

DEBCO Construction

Generator Dispersion Coefficient = 20.33  $\mu\text{g}/\text{m}^3$  per lb/hr (From SCREEN3 Modeling)  
 HMA Dispersion Coefficient = 3.34  $\mu\text{g}/\text{m}^3$  per lb/hr (From SCREEN3 Modeling)

Generator annual hours = 2080 hrs  
 HMA annual hours or operation = 1000 hrs

Pollutant	Generator Emissions (lb/hr)	HMA Emissions (lb/hr)	Generator Impact ( $\mu\text{g}/\text{m}^3$ )	HMA Impact ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Allowable increment ( $\mu\text{g}/\text{m}^3$ )	Averaging period	Acceptable impact?	Uncontrolled Emissions Exceed Increment ?
Benzene	4.37E-03	8.0E-04	1.11E-02	3.81E-05	1.11E-02	0.12	Annual	YES	no
Formaldehyde	4.44E-04	5.1E-04	1.13E-03	2.43E-05	1.15E-03	7.70E-02	Annual	YES	no
Benzo(a)pyrene	1.45E-06	2.0E-06	3.67E-06	9.53E-08	3.77E-06	3.00E-04	Annual	YES	no
Quinone		2.7E-02		3.61E-02	3.61E-02	20	24-hour	YES	no
PAH	4.50E-08	2.9E-06	1.14E-05	1.24E-07	1.16E-05	3.00E-04	Annual	YES	no
Arsenic		1.2E-04		5.72E-06	5.72E-06	2.30E-04	Annual	YES	no
Cadmium		6.2E-05		3.91E-06	3.91E-06	5.60E-04	Annual	YES	no
Chromium VI		9.0E-05		4.29E-06	4.29E-06	8.30E-05	Annual	YES	no
Nickel		1.3E-02		6.01E-04	6.01E-04	4.20E-03	Annual	YES	yes
2,3,7,8-TCDD		7.0E-10		3.35E-11	3.35E-11	2.20E-08	Annual	YES	no

Attainment Area Impacts

Pollutant	Generator Emissions (lb/hr)	HMA Emissions (lb/hr)	Total 24-Hour Impact ( $\mu\text{g}/\text{m}^3$ )	Total Annual Impact ( $\mu\text{g}/\text{m}^3$ )	Total Quarterly Impact ( $\mu\text{g}/\text{m}^3$ )
PM-10	0.563	1.80	6.98	5.264617	
SO <sub>2</sub>	2.84	1.67	25.33	23.73162	
Nox	18	25.50	180.44	156.0986	
CO	0.85	5.50	14.26	9.009232	
Pb		3.00E-03			1.30E-03

Nonattainment Area Impacts (HMA and generator limited to 10 hr/day)

Pollutant	Generator Emissions (lb/hr)	HMA Emissions (lb/hr)	Total 24-Hour Impact ( $\mu\text{g}/\text{m}^3$ )	Total Annual Impact ( $\mu\text{g}/\text{m}^3$ )	Total Quarterly Impact ( $\mu\text{g}/\text{m}^3$ )
PM-10	0.563	1.80	5.58	6.225439	
SO <sub>2</sub>	2.84	1.67	25.33	24.62304	
Nox	18	25.50	180.44	169.7102	
CO	0.85	5.50	14.26	11.94508	
Pb		3.00E-03			1.99E-07

a) applicant proposed limitations on hours of operation in nonattainment areas

Required Hours of operation for PM10 to be below 5  $\mu\text{g}/\text{m}^3$  =  hours/day

Debco

**Generator Ambient Impacts for Attainment Areas**

Hours of operation = 2080

Dispersion Coefficient for generator from SCREEN3 =

20.33 (µg/m<sup>3</sup>/lb/hr)

Pollutant	Averaging period	Actual Emission Rate (lb/hr)	Dispersion Coefficient (µg/m <sup>3</sup> /lb/hr)	Persistence Factor (unitless)	Maximum Predicted Ambient Impact (µg/m <sup>3</sup> )
CO	8-hour	4.782015	20.33	0.7	68.1
	1-hour	4.782015	20.33	1	97.2
NO <sub>2</sub>	Annual	18.00288	20.33	0.08	7.0
SO <sub>2</sub>	3-hour	2.84108	20.33	0.9	52.0
	24-hour	2.84108	20.33	0.4	23.1
	Annual	2.84108	20.33	0.08	1.1
PM-10	24-hour	0.56259	20.33	0.4	4.6
	Annual	0.56259	20.33	0.08	0.2

**HMA Ambient Impacts for Attainment Areas**

Hours of Operation = 1000

Dispersion Coefficient for HMA from SCREEN3 =

3.341 (µg/m<sup>3</sup>/lb/hr)

Pollutant	Averaging period	Actual Emission Rate (lb/hr)	Dispersion Coefficient (µg/m <sup>3</sup> /lb/hr)	Persistence Factor (unitless)	Maximum Predicted Ambient Impact (µg/m <sup>3</sup> )
CO	8-hour	26	3.341	0.7	60.8
	1-hour	26	3.341	1	86.9
NO <sub>2</sub>	Annual	11	3.341	0.08	0.3
SO <sub>2</sub>	3-hour	11.6	3.341	0.9	34.9
	24-hour	11.6	3.341	0.4	15.5
	Annual	11.6	3.341	0.08	0.4
PM-10	24-hour	4.6	3.341	0.4	6.1
	Annual	4.6	3.341	0.08	1.4

**Facility Wide Ambient Impact**

Pollutant	Averaging period	Maximum Predicted Ambient Impact (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> )	Total Ambient Impact (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )	Percent of NAAQS
CO	8-hour	128.9	7300	7428.9	10000	74.3
	1-hour	184.1	12200	12384.1	40,000	31.0
NO <sub>2</sub>	Annual	7.3	40	47.3	100	47.3
SO <sub>2</sub>	3-hour	86.9	372	458.9	1300	35.3
	24-hour	38.6	122	160.6	365	44.0
	Annual	1.5	21	22.5	80	28.1
PM-10	24-hour	10.7	103	113.7	150	75.8
	Annual	1.6	34.5	36.1	50	72.3

**APPENDIX D**  
**PERMIT PROCESSING FEE ASSESSMENT**  
**P-050408**

## 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:** Debco Construction  
**Address:** P.O. Box 363  
**City:** Orfino  
**State:** Idaho  
**Zip Code:** 83544  
**Facility:** Murray C. Carkuff  
**Contact:**  
**Title:** Asphalt Manager  
**AIRS No.:** 777-00353

- N** Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
- Y** Did this permit require engineering analysis? Y/N
- N** Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

<b>Emissions Inventory</b>			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO <sub>x</sub>	24.2	0	24.2
SO <sub>2</sub>	8.8	0	8.8
CO	18.0	0	18.0
PM10	2.9	0	2.9
VOC	3.7	0	3.7
TAPS/HAPS	2.1	0	2.1
<b>Total:</b>	<b>0.0</b>	<b>0</b>	<b>59.7</b>
<b>Fee Due</b>	<b>\$ 5,000.00</b>		

Fee Amount (based on emisissions)  
**\$ 5000**

Comments: