

**PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0730-01-CT
Initial Application No. 0730-01**

Company: Keauhou Kona Construction Corporation

Mailing Address: P.O. Box 9007
Kailua-Kona, Hawaii 96745

Facility: 120 TPH Portable Drum Mix Asphalt Plant

Location: Various Temporary Sites, State of Hawaii

Initial Location: Palamanui Hiluhilu Development Site, Kailua-Kona, Hawaii
UTM: 812,980 Meters East, 2,186,017 Meters North, Zone 4 (NAD 83)

SIC Code: 2951 (Asphalt Paving Mixtures and Blocks)

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Equipment:

Facility Equipment			
Equipment	Manufacturer	Model No.	Serial No.
120 TPH Drum Mixer with 32 MMBtu/hr Burner	Almix	6630 "UF"	1060
Baghouse	Almix	20KSPA	46B7533
50 ton Silo			
RAP Bin			
3 Compartment Cold Feed Bin			
Various Conveyors			
0.95 MMBtu/hr Hot Oil Heater (insignificant activity)	Riello	PRESS 1G	

BACKGROUND

Keauhou Kona Construction Corporation has submitted an application for an initial temporary covered source permit to operate a 120 TPH portable drum mix asphalt plant. The drum mixer will be fired on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight. A baghouse servicing the drum mixer will be used to control particulate emissions. The facility will be limited to 1,800 hours in any rolling twelve-month (12-month) period. Power will be supplied by a diesel engine permitted under covered source permit no. 0549-01-CT.

Process

Raw materials include aggregate, recycled asphalt pavement (RAP), and liquid asphalt. Aggregate types are proportioned by calibrated belt feeders onto a common collecting belt which transports the combined material into the drum. Hot liquid asphalt is added to the aggregate in the drum. Resulting mix is 93-95% aggregate and 5-7% liquid asphalt.

The drum mixer is of the counter flow design where the gas stream moves in the opposite direction to the aggregate. The burner is located at the discharged end of the drum mixer and the heated gases are pulled through a knock-out box at the material inlet of the drum, before entering the baghouse. The captured aggregate dust is returned to the drum via pneumatic conveyor. The final product is conveyed via a drag conveyor to the holding silo for truck load-out.

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)

Title 11 Chapter 59, Ambient Air Quality Standards

Title 11 Chapter 60.1, Air Pollution Control

 Subchapter 1, General Requirements

 Subchapter 2, General Prohibitions

 11-60.1-31, Applicability

 11-60.1-32, Visible Emissions

 11-60.1-33, Fugitive Dust

 11-60.1-38, Sulfur Oxides from Fuel Combustion

 Subchapter 5, Covered Sources

 Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

 11-60.1-111, Definitions

 11-60.1-112, General Fee Provisions for Covered sources

 11-60.1-113, Application Fees for Covered sources

 11-60.1-114, Annual Fees for Covered sources

 11-60.1-115, Basis of Annual Fees for Covered Sources

 Subchapter 8, Standards of Performance for Stationary Sources

 11-60.1-161, New Source Performance Standards

 Subchapter 9, Hazardous Air Pollutant Sources

 Subchapter 10, Field Citations

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60

Subpart I - Standards of Performance for Hot Mix Asphalt Facilities is applicable to the 120 TPH hot mix asphalt facility because the facility commenced construction or modification after June 11, 1973.

National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61

This source is not subject to NESHAPS as no hazardous air pollutants are emitted at significant levels and there are no NESHAPS requirements in 40 CFR Part 61.

National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

There are no MACT requirements for this source.

Prevention of Significant Deterioration (PSD)

This source is not subject to PSD requirements because it is not a major stationary source as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM since the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Consolidated Emissions Reporting Rule (CERR)

This source is not subject to CERR since 40 CFR Part 51, Subpart A - Emissions Inventory Reporting Requirements, determines CERR based on facility wide emissions of each air pollutant at the CERR triggering levels. Emissions do not exceed respective CERR threshold levels.

DOH Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting level(s) and for all covered sources. Internal annual emissions reporting will be required because this is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because the potential to emit emissions are below significant levels. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

Synthetic Minor Source

A synthetic minor source is a facility that is potentially major as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is not a synthetic minor source because potential emissions do not exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Hot Oil Heater

The 0.95 MMBtu/hour (7 gal/hr) hot oil heater is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(2) because the heat input capacity is less than one MMBtu/hr.

Storage Tanks

The following storage tanks are considered insignificant activities in accordance HAR §11-60.1-82(f)(1) because the capacities are less than 40,000 gallons each.

1. 1,000 gallon diesel fuel storage tank.
2. Two 10,000 gallon asphalt cement storage tanks.

ALTERNATIVE OPERATING SCENERIOS

The applicant did not propose any alternate operating scenarios.

AIR POLLUTION CONTROLS

Baghouse

The drum mixer/dryer is equipped with a baghouse to control PM emissions.

PROJECT EMISSIONS

120 TPH Drum Mixer

Emissions were based on the maximum capacity of the drum mixer, which is equipped with a baghouse to control PM emissions. The drum mixer will be fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight. Emission factors were taken from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants.

120 TPH Drum Mixer			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	15.60	14.04	68.33
NO _x	6.60	5.94	28.91
SO ₂	1.32	1.19	5.78
PM	3.96	3.56	17.34
PM-10	2.76	2.48	12.09
PM-2.5	0.35	0.31	1.52
VOC	3.84	3.46	16.82
HAPs	1.06	0.95	4.63

HMA Silo Filling and Truck Load-Out Operations

Emissions for HMA silo filling and truck load-out operations were based on emission factors from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants.

HMA Silo Filling Operation		
Pollutant	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.15	0.71
PM	0.06	0.27
PM-10	0.06	0.27
PM-2.5	0.06	0.27
VOC	0.42	2.05
HAPs	0.009	0.046

HMA Truck Load-Out Operation		
Pollutant	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.13	0.62
PM	0.06	0.31
PM-10	0.06	0.31
PM-2.5	0.06	0.31
VOC	1.32	6.41
HAPs	0.020	0.098

Storage Piles

Emissions were based on the maximum capacity of the drum mixer. Emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles.

Storage Piles		
Pollutant	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	3.06	14.91
PM-10	1.45	7.05
PM-2.5	0.22	1.07

Aggregate Processing

Emissions due to conveyor transfer points were based on the maximum capacity of the drum mixer. Emissions were based on emission factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing.

Aggregate Processing		
Pollutant	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.65	3.15
PM-10	0.24	1.16
PM-2.5	0.10	0.47

Hot Oil Heater (insignificant activity)

The hot oil heater is fired on fuel oil No. 2 with a maximum sulfur content of 0.5% by weight. The maximum fuel consumption is 7 gallons/hour. Emissions were based on emission factors from AP-42 Section 1.3 (9/98), Errata (4/00) - Fuel Oil Combustion.

Hot Oil Heater			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [1,800 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.04	0.03	0.15
NO _x	0.14	0.13	0.61
SO ₂	0.50	0.45	2.18
PM	0.01	0.01	0.06
PM-10	0.01	0.01	0.03
PM-2.5	0.01	0.01	0.03
VOC	0.00	0.00	0.02
HAPs	0.000	0.000	0.002

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (Limited)	Emissions (No Limits 8,760 hr/yr)	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	14.3	69.8	100	2,500 / 1000	250
NO _x	6.1	29.5	40	2,500 / 100	25
SO ₂	1.6	8.0	40	2,500 / 100	25
PM	7.4	36.0	25	-	25
PM-10	4.3	20.9	15	250 / 100	25
PM-2.5	0.8	3.7	-	250 / 100	-
VOC	5.2	25.3	40	250 / 100	25
HAPs	1.0	4.8	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) was performed for the 120 TPH drum mixer with baghouse to demonstrate compliance with State and National ambient air quality standards. The SCREEN3 screening model was used for the analysis to determine maximum pollutant impacts.

SCREEN3 Model Parameters

1. Unit emission rate of 1 g/s.
2. Ambient temperature of 293 °K.
3. Rural dispersion parameters.
4. Default meteorology.
5. Flat terrain and simple elevated/complex terrain.
6. Building downwash from baghouse (LxWxH = 9 meters x 7 meters x 8.5 meters).

PROPOSED

The area around the plant will be graded to allow vehicle traffic. It is assumed that the graded area will be at least 100 meters radius around the plant. The distance from the source to 700 meters out is approximately 40 meters in elevation. This results in an elevation increase of 0.057 meters per 1 meter distance. Receptors for elevated and complex terrain heights were placed from 100 meters to 700 meters with 25 meter spacing.

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below. The emission rates were adjusted to account for the 1,800 hours/year limit when modeling annual impacts.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
Drum Mixer	1.9656	0.8316	0.3478	0.0438	0.1663	10	0.8	9.576	421.9

Equivalent stack diameter based on cross sectional area of 32 in by 24 in.

Results

The annual concentrations assume an annual hourly limit of 1,800 hours/year for the drum mixer. The table below shows the predicted ambient air quality impacts from the drum mixer should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	876.9	2508	3384.9	10000	40000	33.8%
	8-hr	613.8	798	1411.8	5000	10000	28.2%
NO ₂	Annual	15.2	8	23.2	70	100	33.2%
PM-10	24-hr	62.1	61	123.1	150	150	82.0%
	Annual	6.4	18	24.4	50	-	48.8%
PM-2.5	24-hr	7.8	21	28.8	-	35	82.3%
	Annual	0.8	5	5.8	-	15	38.7%
SO ₂	3-hr	66.8	325	391.8	1300	1300	30.1%
	24-hr	29.7	142	171.7	365	365	47.0%
	Annual	3.0	23	26.0	80	80	32.6%

notes:

1. EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations are used, respectively. State of Hawaii scaling factor of 0.2 is used for annual concentrations.
2. Background concentrations from 2008 Hawaii Air Quality Data. Maximum background concentrations for SO₂ from Hilo, Hawaii, and CO, NO₂, and PM from Kapolei, Oahu.
3. Assume total conversion of NO_x to NO₂.

SIGNIFICANT PERMIT CONDITIONS

1. The 120 TPH Portable Drum Mix Asphalt Plant is subject to the provisions of 40 CFR Part 60, Subpart A and Subpart I.
2. Drum Mixer
 - a. The total operating hours of the drum mixer shall not exceed 1,800 hours in any rolling twelve-month (12-month) period.
 - b. The drum mixer shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.
3. The baghouse pressure differential shall be maintained within the range of three (3) to five (5) inches of water.

CONCLUSION

Actual emissions should be less than those estimated. Emission calculations were based on the maximum capacities of the equipment. The ambient air quality assessment demonstrates compliance with State and National Ambient Air Quality Standards.

Based on the information submitted Keauhou Kona Construction Corporation, it is the determination of the Department of Health that the proposed project will be in compliance with Hawaii Administrative Rules, Chapter 11-60.1, and State and National ambient air quality standards. Recommend issuance of the temporary covered source permit subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Mark Saewong
May 13, 2010