

**PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0745-01-CT
Initial Application No. 0745-01
Amendment 01, dated August 4, 2011**

Company: Maui Asphalt X-IV, LLC

Mailing Address: 92 Ting's Drive
Wailuku, Maui, Hawaii 96793

Facility: 110 TPH Portable Drum Mix Asphalt Plant

Location: Various Temporary Sites, State of Hawaii

Initial Location: Molokai Airport, Kaunakakai, Molokai, Maui
UTM: 697,774 Meters East, 2,340,712 Meters North, Zone 4 (NAD 83)

SIC Code: 2951 (Asphalt Paving Mixtures and Blocks)

Responsible Official: Mr. Duane Ting
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Consultant: J. W. Morrow PhD
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Equipment:

Facility Equipment			
Equipment	Manufacturer	Model No.	Serial No.
110 TPH Drum Mixer with 40.5 MMBtu/hr Burner	ADM-1993	SPL110	DM 269-93
Venturi Scubber	ADM	SPL110	TBD
30 ton Silo	ADM	SES30	SE269-95
Genset (427HP)	Cummins	QSM11-T2-TPEM	TBD
3 Compartment Cold Feed Bin	ADM	3CFB20	CFB 269-93
Various Conveyors	ADM		
0.45 MMBtu/hr Twin Stack Hot Oil Heater (insignificant activity)	ADM	Unknown	ACT 1073-10

Model and SN information per Jim Morrow email 8-4-2011

BACKGROUND

Maui Asphalt X-IV, LLC has submitted an application for an initial temporary covered source permit to operate a 110 TPH portable drum mix asphalt plant with 427 HP tier 3 diesel engine. To control SOx emissions the drum mixer, diesel engine generator and hot oil heater will be fired on ultra low sulfur diesel (ULSD) with a maximum sulfur content not to exceed 15 ppm by weight. A venturi scrubber servicing the drum mixer will be used to control particulate emissions. The diesel engine meets EPA tier 3 emission standards

Operating limits of 3,000 hours per year for all equipment will be applied on a rolling twelve-month (12-month) basis.

Process

Raw materials include aggregate 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 venture scrubber. The captured aggregate dust is collected within scrubber pond. 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 160 TPH hot mix asphalt facility because the facility commenced construction or modification after June 11, 1973.

40 CFR Part 60 – NSPS, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines does not apply to the portable diesel engine generators because the units will be operated as nonroad engines. Nonroad engines are exempt from 40 CFR Part 60, Subpart IIII.

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.

40 CFR Part 63 – NESHAPS, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is not applicable to the diesel engine generators because the units are nonroad engines. Nonroad engines are exempt from 40 CFR Part 63, Subpart ZZZZ.

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 exceed major source thresholds (100 TPY) when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Hot Oil Heater

The 0.45 MMBtu/hour (7 gal/hr) hot oil heater, twin stack, is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(2) because the heat input capacity is less than one (1) 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. 1,500 gallon diesel fuel storage tank.

ALTERNATIVE OPERATING SCENERIOS

As an alternate operating scenario, the applicant will be allowed to replace the diesel engine generator with another diesel engine generator of similar or smaller size if replacement is required for the diesel engine generator. The alternative engine will be allowed as a replacement for period not to exceed twelve (12) consecutive months.

AIR POLLUTION CONTROLS

Venturi Scubber

The drum mixer/dryer uses a venture scrubber and collection pond to control PM emissions.

Fuel Oil

ULSD (ultra low sulfur diesel, 15 ppm) is used for all equipment.

PROJECT EMISSIONS

427 HP Diesel Engine

Emissions were based on Tier 3 emissions standards (engine date 2008). The diesel engine will be fired on ULSD with a maximum sulfur content of 0.0015% by weight (15 ppm).

427 HP Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.38	0.38	1.65
NO _x	3.39	3.39	14.84
SO ₂	0.00	0.01	0.02
PM	0.08	0.11	0.33
PM-10	0.07	0.11	0.32
PM-2.5	0.07	0.10	0.30
VOC	0.1	0.14	0.41
HAPs	0.011	0.016	0.047

110 TPH Drum Mixer

Emissions were based on the maximum capacity of the drum mixer, which is equipped with a venture scrubber to control PM emissions. The drum mixer will be fired on ULSD with a maximum sulfur content of 0.0015% by weight (15 ppm). Emission factors were taken from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants.

110 TPH Drum Mixer			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.13	21.45	62.63
NO _x	0.055	9.08	26.50
SO ₂	0.00046	0.08	0.23
PM	0.045	4.43	21.68
PM-10	0.039	6.44	18.79
PM-2.5	0.035	5.78	16.86
VOC	0.032	5.28	15.42
HAPs	0.97	1.45	4.24

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) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.19	0.57
PM	0.10	0.28
PM-10	0.10	0.28
PM-2.5	0.10	0.28
VOC	2.01	5.87
HAPs	0.014	0.042

HMA Truck Load-Out Operation		
Pollutant	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.22	0.65
PM	0.09	0.25
PM-10	0.09	0.25
PM-2.5	0.09	0.25
VOC	0.65	1.88
HAPs	0.014	0.042

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) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	4.68	13.66
PM-10	2.21	6.46
PM-2.5	0.34	0.98

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) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	1.00	2.91
PM-10	0.37	1.07
PM-2.5	0.15	0.44

PROPOSED

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) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.02	0.02	0.07
NO _x	0.06	0.10	0.28
SO ₂	0.00	0.00	0.00
PM	0.01	0.01	0.03
PM-10	0.00	0.01	0.02
PM-2.5	0.00	0.00	0.01
VOC	0.00	0.00	0.01
HAPs	0.00	0.000	0.001

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	22.5	65.6	100	2,500 / 1000	250
NO _x	14.3	41.6	40	2,500 / 100	25
SO ₂	0.1	0.2	40	2,500 / 100	25
PM	13.4	39.1	25	-	25
PM-10	9.3	27.2	15	250 / 100	25
PM-2.5	6.5	19.1	-	250 / 100	-
VOC	8.1	23.6	40	250 / 100	25
HAPs	1.5	4.4	-	-	5

(Limited 3000 hours)

AIR QUALITY ASSESSMENT AERMOD

An ambient air quality impact assessment (AAQIA) was performed for the venturi scrubber servicing the drum mixer/dryer, diesel engine generator, and hot oil heater to demonstrate compliance with State and National ambient air quality standards. The AERMOD model was used for the analysis to determine maximum pollutant impacts. EPA AERMOD model, Version 11103, was used for the AERMOD modeling analysis. The ozone limiting method (OLM) for NO₂ was used within AERMOD.

Terrain

A USGS 7.5 min digital elevation model (USGS NED) with 10 meter spacing for Molokai airport area was used to model the elevated terrain heights.

PROPOSED

Meteorological data

2009 meteorological data from CAB data base for Molokai Airport (1 year) near facility.
2009 ozone data from CAB data base (1 year).

Receptor Grid

Receptor grid spacing was set at 30 meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

The EPA's Building Profile Input Program (BPIP) was used to evaluate downwash effects of nearby structures.

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 not adjusted to account for the 3,000 hour/year equivalent limit when modeling 8-hour, 24-hour and 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/Dryer	1.801	0.762	0.492	0.281	0.0078	9.14	1.032	8.50	355
Diesel Engine Generator	0.503	0.428	0.010	0.0088	0.0005 4	6.1	0.152	1.03	785
Hot Oil Heater (twin stack)	0.0020	0.0080	0.0004 3	0.0003 6	0.0000 85	4.11	0.165	0.034	450

Results

The table below shows the predicted ambient air quality impacts from the venture scrubber servicing the drum mixer/dryer, diesel engine generator, and hot oil heater should comply with State and National ambient air quality standards. Meteorological data for 2009 used in model from nearby Molokai Airport.

PROPOSED

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	SAAQS ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Compared to SAAQS
CO	1-hr	178	4233	4411	10000	40000	44.1%
	8-hr	137	1373	1510	5000	10000	30.2%
NO ₂	1-hr ⁴	64.4	26	90.4		100	90.4%
NO ₂	Annual	32	8	40	70	100	57.1%
PM-10	24-hr	27.6	37	64.6	150	150	43%
	Annual	9.5	16	25.6	50	-	51.2%
PM-2.5	24-hr	16	13	29	-	35	82.8%
	Annual	5.6	5.5	11.1	-	15	74%
SO ₂	1-hr ⁴	0.3	17	17.3		75	23%
SO ₂	3-hr	0.77	26	26.7	1300	1300	2%
	24-hr	0.49	8	8.5	365	365	2.3%
	Annual	0.02	5.8	5.8	80	80	7.2%

notes:

1. Results not corrected for 3000 hour per year limits for asphalt plant and diesel engine. An operating year of 8760 hours was used.
2. Background concentrations from 2009 Hawaii Air Quality Data. Maximum background concentrations for CO, NO₂, SO₂ and PM taken from Kapolei, Oahu (2009). PM-2.5 98th percentile used.
3. OLM used with NO_x conversion ratio of 0.20 for asphalt plant and 0.20 for diesel engine.
4. 1-hr NO₂ and SO₂ values in PPB.
5. AAQI from Amendment 01, dated August 4, 2011

SIGNIFICANT PERMIT CONDITIONS

1. The 110 TPH Portable Drum Mix Asphalt Plant is subject to the provisions of 40 CFR Part 60, Subpart A and Subpart I.
2. The 427 bhp diesel engine generator is not subject to the provisions of 40 CFR Part 60, Subpart A and Subpart IIII.
3. Drum Mixer/Dryer
 - a. The drum mixer/dryer shall be fired only on the following fuels:
 - i. Fuel oil no. 2 (ULSD) with a maximum sulfur content not to exceed 15 ppm by weight.
 - b. The total operating hours of the drum mixer shall not exceed 3,000 hours in any rolling twelve-month (12-month) period.

PROPOSED

- c. The permittee shall not discharge or cause the discharge into the atmosphere from the baghouse servicing the drum mixer/dryer, particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).
4. Diesel Engine Generator
 - a. The diesel engine generator shall be fired only on the following fuels (tier 3 engine):
 - i. Fuel oil no. 2 (ULSD) with a maximum sulfur content not to exceed 15 ppm by weight,
 - b. The total operating hours of the drum mixer shall not exceed 3,000 hours in any rolling twelve-month (12-month) period.
 5. Venturi Scrubber

The venturi scrubber pressure drop shall be operated with a minimum fifteen (15) inches across the venture throat.

The minimum water flow rate shall be determined at the first stack test of the venturi scrubber.

CONCLUSION

Actual emissions would be much 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 by Maui Asphalt X-IV, LLC it is the determination of the Department of Health that the proposed project will be in compliance with the 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, thirty-day (30-day) public comment period, and forty-five-day (45-day) Environmental Protection Agency review period.