

**PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT NO. 0794-01-C**

Company: Ala Imua, LLC.

Mailing Address: 2836 Awaawaloa Street
Kapolei, Hawaii 96819

Facility: 160 TPH Hot Mix Asphalt Plant

Location: Malakole Street, Kapolei, Oahu

SIC Code: 2951 (Asphalt Paving Mixtures and Blocks)

Responsible Official: Mr. Erik Rhineland
Plant Manager
2836 Awaawaloa Street
Kapolei, Hawaii 96819
(808) 478-5101

Contact: CFM Environmental LLC
95-109 Waikalani Drive
Mlilani, Hawaii 968789
Ref# 1105021

Equipment:

160 TPH Hot Mix Asphalt Plant with:

1. 160 TPH ADM (Asphalt Drum Mixers Inc.), 2005, model no. RB-160, serial no. DM 713-05;
2. 49.3 MMBtu/hr Hauck burner, 2005, model no. Star-Jet 260;
3. 30,000 acfm ADM baghouse, 2005, model no. BHS345-05, serial no. BH713-05;
4. Five (5) ADM cold feeders, 2005, model no. CFB20, serial no. CFB 713-05;
5. 25,000 gallon CEI asphalt tank 1, 2005, serial no. T 648 96;
6. 20,000 gallon ADM asphalt tank 2, 2005, serial no. ACT 713-05;
7. 2.82 MMBtu CEI hot oil heater, 2005, model no. CEI 2400, serial no. H 116096;
8. 30 hp Saylor Bell compressor, 2005, serial no. 1077879;
9. 15 hp Saylor Bell compressor, 2005, Serial no. 527963;
10. 546 hp / 365 kw Caterpillar diesel engine generator, 2005, model no. 3456 DITA; and
11. Various conveyors.

Backup Equipment:

1. 0.45 MMBtu ADM hot oil heater, 2005; and
2. 13.2 kw Yanmar diesel engine generator, 2005, model no. 3TNV82A, serial no. 42666.

BACKGROUND

On July 25, 2013 Ala Imua LLC. submitted an application for an initial covered permit for a 160 TPH asphalt plant, owned and operated by Ala Imua LLC. On December 17, 2013, an

addendum was submitted with updated equipment locations and modified ambient air quality impact assessment model. The proposed plant will be located at Malakole Street, Kapolei, Oahu, Hawaii, on the site of the former raceway park.

For this application, the permit will show the primary diesel engine generator powering the asphalt plant. The intent is for the plant to be later powered by electricity from Hawaiian Electric. When this happens, the primary diesel engine generator will provide backup power for the plant. The smaller exempt diesel engine generator will provide power during the night hours.

A 3,500 hours/year total operating hours is being proposed by the permittee for the asphalt plant and diesel engine generator to reduce emissions below significant levels. There will be no operational limit placed on the hot oil asphalt heater.

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.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the 546 hp diesel engine generator because the engine was manufactured prior to April 1, 2006.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 Code of Federal Regulations (CFR) Part 61

This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

NESHAP (Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE) is applicable to the 546 hp diesel engine generator because the engine is an existing stationary RICE. For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006. The permittee must comply with the applicable emission limitations and operating limitations at startup.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21

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 because 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 CFR 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.

Air Emissions Reporting Rule (AERR), 40 CFR Part 51, Subpart A

AERR is not applicable because emissions from the facility do not exceed AERR thresholds. See table, Total Facility Emissions and Trigger Levels (TPY), for results.

DOH In-house Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because there is no potential emissions above 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. See table, Total Facility Emissions and Trigger Levels (TPY), for results.

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 a synthetic minor source because potential CO emissions exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year. See table, Total Facility Emissions and Trigger Levels (TPY), for results.

Greenhouse Gas Tailoring Rule

Title V permitting for greenhouse gas (GHG) emissions is not applicable because the potential to emit of CO₂ equivalent (CO₂e) emissions are less than 100,000 tons per year. Total GHG emissions on a CO₂e basis using the global warming potential (GWP) of the GHG are shown in the table below. See Greenhouse Gas Table, for results.

Greenhouse Gas Table			
GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	12268.6	12268.6
Methane (CH ₄)	21	3.47	72.8
Nitrous Oxide (N ₂ O)	310	0.02	6.2
Total Emissions:			12347.7

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Hot Oil Heater

The 0.45 MMBtu/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 1 MMBtu/hr.

Diesel Engine Generator

The 13.2 kW diesel engine generator is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(2) because the heat input capacity is less than 1 MMBtu/hr.

Storage Tanks

One (1) 25,000 and one (1) 20,000 gallon oil (asphalt) storage tanks are less than 40,000 gallons and are considered insignificant activities in accordance with HAR §11-60.1-82(f)(1).

ALTERNATIVE OPERATING SCENARIOS

The permittee may replace the diesel engine generator with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel engine generator from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

AIR POLLUTION CONTROLS

Air pollution control consists of a baghouse for the control of particulates from the drum-mixer/dryer. The ADM baghouse has a maximum design flow rate of 30,000 acfm. The 345 bags each have a diameter of 6” and a length of ten (10) feet.

PROJECT EMISSIONS

160 TPH Drum-Mixer/Dryer

Emissions were based on the maximum capacity of the drum-mixer/dryer, which is equipped with a baghouse to control PM emissions. The drum-mixer/dryer will be fired on propane, #2 diesel, or waste oil and factors from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants. Highest emission data used in calculations.

160 TPH Drum-Mixer/Dryer			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,500hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	20.8	36.4	91.1
NO _x	8.8	15.4	38.54
SO ₂	0.81	1.41	3.54
PM	5.28	9.24	23.1
PM-10	3.68	6.44	16.1
PM-2.5	2.56	4.48	11.21
VOC	5.12	8.96	22.4
HAPs	1.68	2.94	7.36

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) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
Total PM	0.16	0.41
Organic PM	0.07	0.18
TOC	3.41	8.54
CO	0.33	0.83
PM-10	0.16	0.41
PM-2.5	0.16	0.41
VOC	3.41	8.54
HAP's	0.05	0.13

HMA Truck Load-Out Operation		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
Total PM	.015	0.37
Organic PM	0.10	0.24
TOC	1.16	2.91
CO	0.38	0.95
PM-10	0.15	0.37
PM-2.5	0.15	0.37
VOC	1.09	2.74
HAP's	0.02	0.06

546 hp Caterpillar Diesel Engine Generator

The 546 hp diesel engine generator is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions were based on manufacturer’s data. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) – Gasoline and Diesel Industrial Engines. SO₂ emissions are based on a mass balance equation.

546 hp Caterpillar Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	3.14	5.5	13.75
NO _x	5.8	10.15	25.4
SO ₂	0.01	0.01	0.02
PM	1.12	1.95	4.89
PM-10	1.12	1.95	4.89
PM-2.5	1.12	1.95	4.89
VOC	1.3	2.27	5.67
HAPs	0.14	0.02	0.06

1. Emissions based on manufacture’s data for CO and NO_x.
2. Manufacture’s fuel flow rate is 26 gallons/hour.

2.82 MMBtu CEI Hot Oil Heater

The hot oil heater is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions were based on emission factors from AP-42 Section 1.3 (05/10) – Fuel Oil Combustion. SO₂ emissions are based on present sulfur in fuel.

2.82 MMBtu CEI Hot Oil Heater		
Pollutant	Emissions (lb/hr)	Emissions (TPY) [8,760 hr/yr]
CO	0.10	0.45
NO _x	0.41	1.79
SO ₂ (lb/10 ³ gal)	0.21	0.02
PM	0.04	0.18
PM-10	0.02	0.10
PM-2.5	0.02	0.07
VOC	0.01	0.05
HAP’s	0.001	0.006

1. Manufacture’s fuel flow rate is 20 gallons/hour.

Storage Piles

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) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	2.38	5.96
PM-10	1.13	2.82
PM-2.5	0.17	0.43

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (With Limits)	Emissions (No Limits)	BACT Significant Level	AERR Threshold	DOH Level
CO	43.06	107.1	100	1000	250
NO _x	27.34	65.73	40	100	25
SO ₂	3.2	7.97	40	100	25
PM	14.21	35.33	25	-	25
PM-10	9.93	24.17	15	100	25
PM-2.5	6.98	17.39	-	100	-
VOC	15.78	39.4	40	100	25
HAPs	3.0	7.6	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) was conducted for the drum-mixer/dryer, diesel engine generator, and hot oil heater to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, Version 8.0.0, was used for the modeling analysis.

Terrain

USGS National Elevation Dataset. Oahu.DEM, WGS72, 1 deg.

Meteorological data

Meteorological data from Honolulu Airport (2005 – 2009) was used for the analysis.

Receptor Grid

Receptor grid spacing was set at 30 meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

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

Ozone Limiting Method

The ozone limiting method was used for the NO_x to NO₂ conversion. An in-stack NO₂/NO_x ratio of 20% was used for the model. The hourly ozone background concentrations obtained from the Sand Island, Oahu, air monitoring station for the years 2008 through 2012.

PROPOSED

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Exhaust Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
Baghouse	2.6208	1.1088	0.4637	0.3226	0.2218	12	0.509	14.2	449.9
DEG	0.3956	0.7308	0.1405	0.1405	0.0007	8	0.127	1.423	978.5
Hot Oil	0.0129	0.0515	0.0028	0.0021	0.0005	3.5	0.254	0.233	449.8

Results

The Impact results are based on highest values outside of fence line. The table below shows the predicted ambient air quality impacts from the drum-mixer/dryer should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background ¹ (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to lower limit of SAAQS or NAAQS
CO	1-hr	110.2	1718	1828.2	10000	40000	18.2%
	8-hr	89.0	1217	1306	5000	10000	26.1%
NO ₂	1-hr	132.7	36	168.7	-	188	89.7%
	Annual	25.4	5	30.4	70	100	43.4%
PM-10	24-hr	13.1	40	43.1	150	150	28.7%
	Annual	4.4	16	20.44	50	-	40.9%
PM-2.5	24-hr	11.8	14.8	26.6	-	35	76.0%
	Annual	4.0	5.6	9.6	-	15	64.0%
SO ₂	1-hr	3.49	30	33.49	-	196	17.1%
	3-hr	3.23	18	21.23	1300	1300	1.6%
	24-hr	1.7	10	11.7	365	365	3.2%
	Annual	0.44	4	4.4	80	80	5.5%

1. Background concentrations (2012 Hawaii Air Quality Data) from Kapolei. NO₂ (1-hr) and PM-2.5 (24-hr) are the 98th percentile averaged over 3 years. PM-2.5 (annual) is the annual mean averaged over 3 years.
2. Annual data was calculated at 8760 hours per year for all equipment.

SIGNIFICANT PERMIT CONDITIONS

1. Operating Hour Limits

The total operating hours of the hot mix asphalt concrete batch plant, as represented by the total operating hours of the diesel engine generator, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.

Reason: Limit set by permittee to control emissions.

2. Fuel Limits

- a. The drum-mixer/dryer shall be fired only on ultra low diesel fuel, specification oil, or propane.
- b. The diesel engine generator and hot oil heater shall be fired only on ultra low sulfur diesel fuel with:
 - 1) A maximum sulfur content not to exceed 0.0015% by weight; and
 - 2) A minimum cetane index of forty (40) or a maximum aromatic content of thirty-five (35) volume percent.

Reason: Fuel types proposed by the applicant. Beginning May 3, 2013, 40 CFR Part 63, Subpart ZZZZ fuel requirement for diesel engine generator.

3. Particulate Matter Emission Limit

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 ninety (90) mg/dscm (0.04 gr/dscf).

Reason: 40 CFR Part 60, Subpart I particulate matter emission limit.

4. Emission Limits

Beginning May 3, 2013, except during periods of startup, the diesel engine generator shall comply with one of the following emission limits:

- a. Limit concentration of CO in the engine exhaust to twenty-three (23) ppmvd at 15% O₂;
or
- b. Reduce CO emissions by seventy (70) percent or more.

Reason: 40 CFR 63, Subpart ZZZZ requirement.

5. Diesel Engine Generator Operating Limitations and Requirements

- a. An oxidation catalyst shall be installed, operated, and maintained on the diesel engine generator to comply with the applicable emission limit specified in Attachment II, Special Condition No. C.6, the permittee shall:
 - i. Except during startup, maintain the catalyst so that the pressure drop across the catalyst does not change by more than two (2) inches of water from the pressure drop across the catalyst that was measured during the initial performance test;
 - ii. Except during startup, maintain the temperature of the diesel engine generator's exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F; and
- b. The permittee shall install, operate, and maintain an open crankcase filtration emission control system, for the Caterpillar diesel engine generator, that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and

PROPOSED

metals. The permittee shall follow the manufacturer's specified maintenance requirements for operating and maintaining the open crankcase ventilation systems.

Reason: 40 CFR Part 63, Subpart ZZZZ requirements.

6. Baghouse

- a. The baghouse servicing the drum-mixer/dryer shall be operated at all times during operation of the drum-mixer/dryer. The permittee shall not operate the drum-mixer/dryer if a problem affecting baghouse control efficiency is observed at any time. The permittee shall investigate and correct the problem before resuming drum-mixer/dryer operation.
- b. The baghouse shall be operated within the manufacturer's recommended Pressure drop range of two (2) to six (6) inches of water.
- c. The permittee shall follow a regular maintenance schedule as recommended by the manufacturer to ensure the following items of the baghouse are operating properly:
 - i. The filter bags are checked for any tears, holes, abrasions and scuffs, and are replaced as needed;
 - ii. The cleaning system is maintained and operated, as needed, to minimize particulate buildup or caking on the filter bags;
 - iii. The hopper is discharged in a timely manner to prevent excessive particulate buildup which could cause compaction, overflow, or plugging; and
 - iv. Other miscellaneous items/equipment essential for effective baghouse operation are maintained.

Reason: To ensure the baghouse is operating properly.

7. Incorporate provisions of 40 CFR 63, Subpart ZZZZ.

Reason: The 546 hp diesel engine generator is subject to 40 CFR, Subpart ZZZZ.

CONCLUSION

Actual emissions should be lower than estimated because the hot mix asphalt concrete batch plant will not be operating at its maximum capacity continuously at its permitted hourly limit. The 546 hp diesel engine generator is subject to 40 CFR Part 63, Subpart ZZZZ. The ambient air quality impact assessment of the drum-mixer/dryer, diesel engine generator, and hot oil heater demonstrates compliance with State and National Ambient Air Quality Standards. Recommend issuance of the 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.

Joseph Baumgartner
January 31, 2014