

**PERMIT APPLICATION REVIEW  
 TEMPORARY COVERED SOURCE PERMIT NO. 0727-01-CT  
 Initial Application No. 0727-01**

**Company:** Jas W. Glover, Ltd.

**Mailing Address:** P.O. Box 579  
 Honolulu, Hawaii 96809

**Facility:** 300 TPH Portable Drum Mix Asphalt Plant

**Location:** Various Temporary Sites, State of Hawaii

**Initial Location:** Kona Quarry (Honokohau), Kailua-Kona, Hawaii  
 UTM: 813,425 Meters East, 2,179,215 Meters North, Zone 4 (NAD 83)

**SIC Code:** 2951 (Asphalt Paving Mixtures and Blocks)

**Responsible Official:** Mr. John Romanowski  
 Vice President  
 (808) 591-8977

**Consultant:** Mr. J. W. Morrow  
 Environmental Management Consultant  
 1481 South King Street, Suite 548  
 Honolulu, Hawaii 96814  
 Ph: (808) 942-9096

**Equipment:** The 300 TPH Portable Drum Mix Asphalt Plant encompasses the following equipment and associated appurtenances.

<b>Facility Equipment</b>				
<b>Equipment</b>	<b>Capacity</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.*</b>
Drum Mixer/Dryer	300 TPH	Terex	E3-300P	TBD
Drum Mixer Burner	100 MMBtu/hr	Hauck	ESII-100	TBD
Baghouse		CMI	RA-318P	TBD
Hot Oil Heater	2.8 MMBtu/hr	CEI	CEI-2400	TBD
4'x10' Scalping Screen	300 TPH	SMICO	4810-ID-OGY	TBD
RAP Bin/Crusher	20 ton/300 TPH	CMI	PRB-120	TBD
Diesel Engine Generator	1,065 bhp	Cummins	QST30-G5-NR2	TBD
Portable Aggregate Bin	(4x) 32 ton compartments	CMI	PAB-432	
Surge Bin/Silo	95 tons	CMI	SE-195	

\* Equipment have not been purchased. Serial numbers will be submitted when available.

**BACKGROUND**

Jas W. Glover, Ltd. has submitted an application for an initial temporary covered source permit to operate a 300 TPH portable drum mix asphalt plant. The drum mixer/dryer will be fired on fuel oil no. 2 and spec used oil with a maximum sulfur content not to exceed 0.5% by weight. The 1,065 bhp Cummins diesel engine generator will be fired on fuel oil no. 2 with a maximum sulfur content not to exceed 0.05% by weight. The hot oil heater 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/dryer will be used to control particulate emissions.

The following operating limits will be applied on a rolling twelve-month (12-month) basis (equivalent to 3,000 hours/year operating at maximum capacity):

1. 2,142,000 gal/yr combined fuel oil no. 2 and spec used oil for the drum mixer/dryer.
2. 153,000 gal/yr of fuel oil no. 2 for the diesel engine generator.
3. 60,000 gal/yr of fuel oil no. 2 for the hot oil heater.

Process

Virgin aggregate is conveyed from the aggregate bins to the scalping screen to remove oversized and foreign objects. Aggregate is continuously weighed as it is conveyed to the drum mixer/dryer. It is heated and dried by the heat released from combustion of fuel in the burner. When reclaimed asphalt pavement (RAP) is used, it is crushed to reduce lumps, metered at the required rate, and transported to the drum mixer to be mixed with the hot aggregate. The aggregate and RAP is then mixed with asphalt cement. Asphalt cement is stored in heated storage tanks, and pumped to the drum mixer/dryer at the required quantity. The hot mix asphalt is conveyed and stored in the silo to await 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

1. Subpart I - Standards of Performance for Hot Mix Asphalt Facilities is applicable to the 300 TPH HMA facility because the facility commenced construction or modification after June 11, 1973.
2. Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable to the diesel engine generator because the engine was manufactured after April 1, 2006. Manufacturer's specifications indicate the diesel engine generator is EPA Tier 2 certified.
3. Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the RAP crusher, associated conveyors, and any other affected facility (as defined in 40 CFR §60.670 for hot mix asphalt facilities) because the maximum capacity of the RAP crusher is greater than 150 tons/hour, and the equipment was manufactured after August 31, 1983.

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

Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is applicable to the diesel engine generator because the engine is classified as a new source (constructed on or after June 12, 2006). A new stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under this part.

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. The emissions do not exceed respective CERR threshold levels. As such, emissions data will not be required to be inputted into the National Emissions Inventory (NEI) database.

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 (excluding unpaved roads) are below significant levels. BACT analysis is required for new sources or significant modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, Section 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 a synthetic minor source because potential emissions exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

**INSIGNIFICANT ACTIVITIES / EXEMPTIONS**

Storage Tanks

The following storage tanks are less than 40,000 gallons and are considered insignificant in accordance with HAR 11-60.1-82(f)(1):

1. 8,000 gallon fuel oil no. 2 storage tank for drum mixer.
2. 8,000 gallon spec used oil storage tank for drum mixer.
3. 8,000 gallon fuel oil no. 2 storage tank for diesel engine generator.
4. 420 gallon fuel oil no. 2 storage tank for hot oil heater.
5. Two 30,000 gallon CEI portable asphalt cement tanks.

**ALTERNATIVE OPERATING SCENERIOS**

Diesel Engine Generator

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**

Baghouse

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

Water Suppression

Water sprays will be used as necessary to minimize fugitive emissions from screening and crushing operations, material transfer points, stockpiles, and plant roads.

**PROJECT EMISSIONS**

300 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 fuel oil No. 2 and/or spec used oil, with a maximum sulfur content of 0.5% by weight. Total combined fuel consumption will be limited to 2,142,000 gal/yr. Emission factors were taken from AP-42 Section 11.1 (3/04) - Hot Mix Asphalt Plants. Waste oil emission factors were assumed for spec used oil. The maximum emission factors of fuel oil no. 2 and waste oil was used.

<b>300 TPH Drum Mixer/Dryer</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	39.00	58.50	170.82
NO <sub>x</sub>	16.50	24.75	72.27
SO <sub>2</sub>	17.40	26.10	76.21
PM	9.90	14.85	43.36
PM-10	6.90	10.35	30.22
PM-2.5	0.87	1.31	3.81
VOC	9.60	14.40	42.05
HAPs	3.21	4.82	14.08

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.

<b>HMA Silo Filling Operation</b>		
Pollutant	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.53	1.55
PM	0.26	0.77
PM-10	0.26	0.77
PM-2.5	0.26	0.77
VOC	5.48	16.01
HAPs	0.084	0.246

<b>HMA Truck Load-Out Operation</b>		
Pollutant	Emissions (TPY) [2,142,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.61	1.77
PM	0.23	0.69
PM-10	0.23	0.69
PM-2.5	0.23	0.69
VOC	1.76	5.14
HAPs	0.039	0.114

Hot Oil Heater

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 20 gallons/hour. Fuel consumption will be limited to 60,000 gal/yr. Emissions were based on emission factors from AP-42 Section 1.3 (9/98), Errata (4/00) - Fuel Oil Combustion.

<b>Hot Oil Heater</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [60,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.10	0.15	0.44
NO <sub>x</sub>	0.40	0.60	1.75
SO <sub>2</sub>	1.42	2.13	6.22
PM	0.04	0.06	0.18
PM-10	0.02	0.03	0.09
PM-2.5	0.02	0.02	0.07
VOC	0.01	0.02	0.05
HAPs	0.001	0.002	0.006

Fugitive Emissions

Emissions due to aggregate and RAP handling and processing, storage piles, and vehicle travel on unpaved roads are summarized in the tables below. Aggregate processing includes the scalping screen, and RAP processing includes the RAP crusher. A 70% control efficiency was assumed for water suppression for the storage piles and vehicle travel on unpaved roads. It was assumed that 95% of hot mix asphalt content is aggregate. Emissions were based on emission factors from the following:

- AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing
- AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles
- AP-42 Section 13.2.2 (11/06) - Unpaved Roads

<b>Aggregate Processing</b>		
Pollutant	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	1.18	3.45
PM-10	0.40	1.15
PM-2.5	0.04	0.13

<b>RAP Processing</b>		
Pollutant	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.63	1.85
PM-10	0.27	0.79
PM-2.5	0.05	0.16

<b>Storage Piles</b>		
Pollutant	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	3.64	10.62
PM-10	1.72	5.02
PM-2.5	0.26	0.76

<b>Vehicle Travel on Unpaved Roads</b>		
Pollutant	Emissions (TPY) [3,000 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	16.13	47.11
PM-10	3.94	11.52
PM-2.5	0.39	1.15

1,065 bhp Diesel Engine Generator

The diesel engine generator is fired on fuel oil No. 2 with a maximum sulfur content of 0.05% by weight. The maximum fuel consumption is 51.0 gallons/hour. Fuel consumption will be limited to 153,000 gal/yr. CO, NO<sub>x</sub>, PM, and TOC emissions were based on manufacturer's data. SO<sub>2</sub> and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) - Large Stationary Diesel and All Stationary Dual-fuel Engines.

<b>1,065 bhp Diesel Engine Generator</b>			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [153,000 gal/yr]	Emissions (TPY) [8,760 hr/yr]
CO	1.06	1.58	4.63
NO <sub>x</sub>	9.23	13.84	40.42
SO <sub>2</sub>	0.36	0.54	1.58
PM	0.28	0.42	1.23
PM-10	0.27	0.41	1.18
PM-2.5	0.25	0.38	1.11
TOC	0.21	0.32	0.93
HAPs	0.011	0.016	0.047

Total Emissions

Total facility emissions are summarized in the table below.

<b>Total Facility Emissions and Trigger Levels (TPY)</b>					
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	61.4	179.2	100	2,500 / 1000	250
NO <sub>x</sub>	39.2	114.4	40	2,500 / 100	25
SO <sub>2</sub>	28.8	84.0	40	2,500 / 100	25
PM	37.4 (21.3*)	109.3	25	-	25
PM-10	17.6 (13.7*)	51.4	15	250 / 100	25
PM-2.5	3.0	8.6	-	250 / 100	-
VOC	22.0	64.2	40	250 / 100	25
HAPs	5.0	14.5	-	-	5

\* Excluding unpaved roads.

**AIR QUALITY ASSESSMENT**

An ambient air quality impact assessment (AAQIA) was performed for the baghouse servicing the drum mixer/dryer, diesel engine generator, and hot oil heater to demonstrate compliance with State and National ambient air quality standards. The ISC-PRIME model was used for the analysis to determine maximum pollutant impacts. Lakes Environmental AERMOD View, Version 6.4.0, was used for the ISC-PRIME modeling analysis.

Terrain

A USGS 7.5 min digital elevation model (DEM) with 10 meter spacing from the Keahole Point, Hawaii quadrangle was used to model the elevated terrain heights.

Meteorological data

Default SCREEN3 meteorological data.

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-PRIME) 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 adjusted to account for the 3,000 hour/year equivalent limit when modeling annual impacts.

## PROPOSED

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO <sub>x</sub>	PM-10	PM-2.5	SO <sub>2</sub>	Height (m)	Diameter (m)	Flow Rate (m <sup>3</sup> /s)	Temp (°K)
Drum Mixer/Dryer	4.9140	2.0790	0.8694	0.1096	2.1924	9.75	1.421	25.21	422
Diesel Engine Generator	0.1331	1.1626	0.0341	0.0320	0.0454	6.10	0.23	2.94	701
Hot Oil Heater	0.0126	0.0504	0.0027	0.0021	0.1789	5.49	0.273	0.41	450

### Results

The annual concentrations assume annual fuel limits equivalent to 3,000 hours/year. The table below shows the predicted ambient air quality impacts from the baghouse servicing the drum mixer/dryer, diesel engine generator, and hot oil heater should comply with State and National ambient air quality standards

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	SAAQS (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )	Compared to SAAQS
CO	1-hr	807.4	2508	3315.4	10000	40000	33.2%
	8-hr	565.2	798	1363.2	5000	10000	27.3%
NO <sub>2</sub>	Annual	37.6	8	45.6	70	100	65.1%
PM-10	24-hr	57.1	61	118.1	150	150	78.8%
	Annual	9.8	18	27.8	50	-	55.6%
PM-2.5	24-hr	8.8	21	29.8	-	35	85.1%
	Annual	1.5	5	6.5	-	15	43.4%
SO <sub>2</sub>	3-hr	333.9	89	422.9	1300	1300	32.5%
	24-hr	148.4	29	177.4	365	365	48.6%
	Annual	25.4	10	35.4	80	80	44.3%

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 2007/2008 Hawaii Air Quality Data. Maximum background concentrations for CO, NO<sub>2</sub>, and PM taken from Kapolei, Oahu (2008), and SO<sub>2</sub> from Kona, Hawaii (2007). For 2008, the Kona station was designated a special purpose monitoring station. Therefore, SO<sub>2</sub> data from the Kona monitoring station from 2007 was used for background. PM-2.5 98<sup>th</sup> percentile used.
3. Assume total conversion of NO<sub>x</sub> to NO<sub>2</sub>.

### SIGNIFICANT PERMIT CONDITIONS

1. The 300 TPH Portable Drum Mix Asphalt Plant is subject to the provisions of 40 CFR Part 60, Subpart A and Subpart I.

## PROPOSED

2. The RAP crusher, associated conveyor belts, and any other affected facility (as defined in 40 CFR §60.670 for hot mix asphalt facilities) are subject to the provisions of 40 CFR Part 60, Subpart A and Subpart OOO.
3. The 1,065 bhp diesel engine generator is subject to the provisions of 40 CFR Part 60, Subpart A and Subpart IIII.
4. Drum Mixer/Dryer
  - a. The drum mixer/dryer shall be fired only on the following fuels:
    - i. Fuel oil no. 2 with a maximum sulfur content of 0.5% by weight;
    - ii. Specification used oil; or
    - iii. Any combination thereof.
  - b. The total combined fuel oil no. 2 and specification used oil consumption for the drum mixer/dryer shall not exceed 2,142,000 gallons in any rolling twelve-month (12-month) period.
  - 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).
5. Diesel Engine Generator
  - a. The diesel engine generator shall be fired only on the following fuels:
    - i. Up until and through September 30, 2010, fuel oil no. 2 with:
      - 1) A maximum sulfur content not to exceed 0.05% by weight; and
      - 2) A cetane index or aromatic content as follows:
        - a) Minimum cetane index of 40; or
        - b) Maximum aromatic content of 35 volume percent.
    - ii. Beginning October 1, 2010, fuel oil no. 2 with:
      - 1) A maximum sulfur content not to exceed 0.0015% by weight; and
      - 2) A cetane index or aromatic content as follows:
        - a) Minimum cetane index of 40; or
        - b) Maximum aromatic content of 35 volume percent.
  - b. The total fuel consumption for the diesel engine generator shall not exceed 153,000 gallons in any rolling twelve-month (12-month) period.
6. Hot Oil Heater
  - a. The hot oil heater shall be fired only on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight.

- b. The total fuel consumption for the hot oil heater shall not exceed 60,000 gallons in any rolling twelve-month (12-month) period.

**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 by Jas W. Glover, Ltd., 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, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Mark Saewong  
March 11, 2010