

COVERED SOURCE PERMIT RENEWAL REVIEW

Covered Source Permit (CSP) No. 0540-01-C
Renewal Application No. 0540-02
Significant Modification No. 540-03

Applicant: Black Plumeria, LLC

Location: 248 Sand Island Access Road, Oahu
UTM Coordinates 615,119 E / 2,358,802 N (NAD 83)

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SICC 2951

Project Description:

This permit application renew encompasses the following applications:

- Application 0540-02 is for the renewal of existing CSP 0540-01-C. The renewal application was submitted on January 28, 2008. No changes to the existing permit were proposed.
- Application 0540-03, submitted on November 16, 2010, is for a significant modification. The modification seeks to replace the existing 1,085 hp diesel engine generator (DEG) with a 1,322 hp DEG. Also, an additional hot oil heater is to be added to the list of permitted equipment. The new hot oil heater is identical to the existing hot oil heater, and is intended for use as a backup. The application states that the hot oil heaters will not be operated at the same time.

The facility will be subject to the following operational fuel limits. All limits are based on 3,000 hours of operation per year. The fuel limits were obtained by multiplying the maximum fuel consumption rate for each piece of equipment (gal/hr) with 3,000 hr/yr operational limit.

- 2,142,000 gal/yr (F.O. # 2 and spec oil) for the drum mixer,
- 191,700 gal/yr (F.O. # 2) for the diesel engine generator (previous limit 159,000 gal/hr)
- 60,000 gal/yr (F.O. # 2) total for both hot oil heaters.

Equipment to be removed from permit:

- 1,085 hp Cummins diesel engine generator model QST30-G2;

Equipment to be added to permit:

- 1,322 hp Cummins model QST30-G5-NR2 diesel engine generator
- CMI Hot Oil Heater model CEI-2000, 2.82 MMBtu/hr

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Updated equipment list:

Upon replacement of the DEG, the equipment list is as follows:

1. 300 TPH CMI Drum mixer; model PTD-3; with ESII100 burner
2. 1,322 hp Cummins model QST30-G5-NR2 diesel engine generator
3. Roto-Aire Baghouse servicing Drum-Mixer
4. (2) CMI Hot Oil Heaters model CEI-2000, 2.82 MMBtu/hr
5. 20 Ton Capacity Reclaimed Asphalt Paving (RAP) Bin with Rollers (Crusher) for Aggregate Sizing, Model PRB-120
6. 4' x 10' Scalping Screen
7. Aggregate Bins
8. Asphalt Storage Silo; and
9. Various Conveyor Belts

Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11, Chapter 59, Ambient Air Quality Standards

Title 11, Chapter 60, 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 Emissions

11-60.1.37 Process Industries

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

Subchapter 8, Standards of Performance for Stationary Sources

11-60.1-161 New Source Performance Standards

Subchapter 10, Field Citations

New Source Performance Standards (NSPS), 40 CFR, Part 60:

The facility is currently subject to the following NSPS:

- Subpart A - General Provisions
- Subpart I - Standards of Performance for Hot Mix Asphalt Facilities
- Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plant

The replacement DEG is subject to the following:

- Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 63

The replacement DEG is subject to the following NESHAP regulations:

- 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A - General Provisions; and

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- Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63 Subpart ZZZZ is an applicable requirement for the diesel engine generator because it is a stationary reciprocating internal combustion engine (RICE) located at an area source of HAPs. However, pursuant to §63.6590, a new or reconstructed stationary RICE located at an area source will satisfy the requirements of this subpart by meeting the requirements of 40 CFR subpart IIII for compression ignition engines. No further requirements for such engines are required by 40 CFR 63 Subpart ZZZZ.

Since 40 CFR 60 Subpart IIII is an applicable requirement for the black-start diesel engine generator pursuant to 40 CFR 63 Subpart ZZZZ, §63.6590, the applicable requirements are as follows:

Pursuant to §60.4204(b), “Owners and operators of 2007 model year and later non-emergency stationary compression-ignition internal combustion engine (CI ICE) with a displacement of of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.”

§60.4201(a) states: “Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (HP)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.

However, pursuant to §60.4211:

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

Since the generator is subject to the emission standards specified in §60.4204(b), conditions will be added to the permit to require that the engine purchased must be certified to the emission standards in §60.4204(b), and that the engine be installed and configured according to the manufacturers specifications.

Non-applicable Requirements:

Consolidated Emissions Reporting Rule (CERR):

40 CFR Part 51, Subpart A - Emissions Inventory Reporting Requirements, determines CER based on facility-wide emissions of each air pollutant at the CER triggering level(s). The following table demonstrates that CERR is not an applicable requirement.

Pollutant	Facility Emissions (tpy)	CERR Triggering Levels (tpy)	
		1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)
VOC	22.13	≥ 250	≥ 100
PM ₁₀	17.54	≥ 250	≥ 100
PM _{2.5}	1.25	≥ 250	≥ 100
NO _x	42.84	≥ 2,500	≥ 100
SO _x	28.25	≥ 2,500	≥ 100
CO	62.33	≥ 2,500	≥ 1,000
HAPs (total)	5.5	n/a	n/a

Compliance Assurance Monitoring (CAM), 40 CFR 64:

The purpose of CAM is to provide reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control 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. The facility is not a major source, is not subject to an emission limit or standard and does not use a control device to achieve compliance. Therefore, the facility is not subject to CAM.

Prevention of Significant Deterioration (PSD):

PSD is not an applicable requirement because the facility is not a major stationary source of air pollution (criteria air pollutant ≥ 100 TPY for listed sources or ≥ 250 TPY for all other sources).

Maximum Achievable Control Technology (MACT):

MACT is not an applicable requirement because facility total HAP emissions (5.51 TPY) do not exceed the MACT threshold of 25 TPY total HAP emissions or 10 TPY individual HAP emissions.

Greenhouse Gas Tailoring Rule (GGTR):

Due to the fact the greenhouse gas emissions is now classified as a regulated pollutant, the GGTR was promulgated. The GGTR “tailors” the applicability threshold for PSD and Title V permit programs to

- ≥ 100,000 short tons/yr of potential CO₂e emissions for the PSD/Title V Major Source level, and
- ≥ 75,000 short tons/yr of potential CO₂e emissions for the PSD/Title V significance level.

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The CO₂e emissions from the existing facility before and after the modification is:

Emissions comparison

Scenario	Total CO ₂ (MTPY)	Total CO ₂ e (MTPY)	Total CO ₂ (TPY)	Total CO ₂ e (TPY)
New	24,431	24,514	26,931	27,022
Existing	24,097	24,179	26,563	26,652
Increase	334	335	368	369

Since both the existing and proposed plant configurations do not exceed applicability thresholds, the modification is not subject to any additional regulation due to greenhouse gases.

Insignificant Activities:

Insignificant activities at the facility consists of the following:

Description	Basis for Insignificant Activity
8,000 gallon diesel fuel tank for mixer drum	HAR 11-60.1 - 82(f)(1)
8,000 gallon diesel fuel tank for diesel engine generator	HAR 11-60.1 - 82(f)(1)
8,000 gallon spec used oil tank for mixer drum	HAR 11-60.1 - 82(f)(1)

Alternate Operating Scenarios:

Applicant proposes a temporary replacement diesel engine generator of same size or smaller with equal or lesser emissions if the permitted generator warrants a removal for a determined period of time.

Project Emissions:

The emissions from the existing facility are summarized in the following table:

Existing Facility Criteria Pollutant Emissions Summary (TPY)

Pollutant	Drum Mix	Diesel Engine	Hot Oil Heater	Loadout	Silo Filling	Aggregate Handling	Storage Piles	RAP Bin	Total
CO	58.50	1.44	0.15	0.61	0.53				61.23
NO _x	24.75	22.61	0.60						47.96
SO ₂	26.10	5.62	2.13						33.85
TSP	14.85	0.36	0.06	0.23	0.26	9.08	1.50	2.42	28.76
PM ₁₀	10.35	0.36	0.03	0.23	0.26	4.33	0.71	1.15	17.42
PM _{2.5}	0.8	0.32	0.02						1.14
VOC	14.40	0.53	0.02	1.87	5.49				22.31
Pb	6.75E-03		3.90E-05						6.79E-03
HAPs	4.5557	4.63E-02	0.8112	0.039	0.0847				5.54

The change in emissions as a result of the modification consists entirely of the change in emissions from the replacement of the DEG. existing DEG is compared with the calculated emissions for the new DEG. The emissions from the new oil heater will not increase facility emissions because the make and model of the new backup Hot Oil Heater is identical to the existing Hot Oil Heater, and the applicant has proposed a permit condition which allows only one hot oil heater to be operated at any time

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DEG emission comparison (TPY)

Pollutant	New DEG	Old DEG	Gain (loss)
SOx	0.02	5.62	(5.60)
NOx	17.49	22.60	(5.11)
CO	2.54	1.44	1.10
TOC	0.35	0.54	(0.19)
PM ₁₀	0.48	0.36	0.12
PM _{2.5}	0.43	0.32	0.11
HAPs			
BENZENE	0.010	0.009	0.001
TOLUENE	0.004	0.003	0.001
XYLENES	0.003	0.002	0.001
NAPHTHALENE	0.002	0.001	0.001
PROPYLENE	0.037	0.031	0.006
FORMALDEHYDE	0.001	0.001	0.000
ACETALDEHYDE	0.000	0.000	0.000
ACROLEIN	0.000	0.000	0.000
Total HAPs	0.06	0.05	0.010

The emissions for the facility upon completion of the modification is:

Pollutant	Drum Mix	Diesel Engine	Hot Oil Heater	Loadout	Silo Filling	Aggregate Handling	Storage Piles	RAP Bin	Total (tpy)
CO	58.50	2.54	0.15	0.61	0.53				62.33
NO _x	24.75	17.49	0.60						42.84
SO ₂	26.10	0.02	2.13						28.25
TSP	14.85	0.48	0.06	0.23	0.26	9.08	1.50	2.42	28.88
PM ₁₀	10.35	0.48	0.03	0.23	0.26	4.33	0.71	1.15	17.54
PM _{2.5}	0.8	0.43	0.02						1.25
VOC	14.40	0.35	0.02	1.87	5.49				22.13
Pb	6.75E-03		3.90E-05						6.79E-03
HAPs	4.5557	0.06	0.8112	0.039	0.0847				5.55

Best Available Control Technology (BACT):

BACT analysis is required for new covered sources and significant modifications to covered sources that have the potential to emit or increase emissions above significant levels, as defined in HAR 11-60.1-1. BACT determination includes all fugitive emissions except for vehicle traffic emissions. For this facility, NSPS (CAA Section 111) is applicable and therefore vehicle emissions (PM emissions from paved roads) are included per 11-60.1-1 Definitions for a "major source" (AA). Facility emissions are compared with significant levels in the following table:

BACT Significant Level Trigger Levels (TPY)

Pollutant	Facility Emissions After Mod	Facility Emissions Before Mod	Emissions Change	Significant Levels
CO	62.33	61.23	1.100	100
NO _x (as NO ₂)	42.84	47.96	(5.120)	40
SO ₂	28.26	33.85	(5.590)	40
TSP	28.88	28.76	0.120	25
PM ₁₀	17.54	17.42	0.120	15
VOC	22.13	22.31	(0.180)	40
Pb	3.78E-05	3.78E-05	0.00	0.6
HAPs	5.55	5.54	0.010	0.1

The change in emissions due to the proposed modifications for not exceed BACT significant levels. Therefore, a BACT analysis is not required for the modification.

Synthetic Minor Applicability:

A facility is considered a synthetic minor facility if the emissions from permitted equipment, when operated continuously for one year (8,760 hours), exceeds 100 tons per year. This facility is a synthetic minor source since annual emissions would exceed 100 tons per year if operated continuously.

Air Quality Assessment:

To demonstrate that the addition of a larger diesel engine generator and a backup hot oil heater will not exceed ambient air quality standards, an ambient air quality analysis was performed. The applicant used the EPA-approved AERMOD program to predict maximum impacts. The following stack parameters were used in the modeling program for the diesel engine generator each emission source modeled:

Air Modeling Source Parameters							
Source ID	Location			Stack Parameters			
	Elevation (m)	East (m)	North (m)	Height (m)	Temperature (K)	Diameter (m)	Exit Velocity (m/sec)
GEN1	2	615,119	2,358,777	6.10	740	0.254	64.7
HOH2	2	615,095	2,358,814	5.49	450	0.273	7.3

The emission rates used in the model are:

AERMOD Emission Rate Parameters (g/s)					
Source	SO ₂	NO _x	CO	PM ₁₀	PM _{2.5}
GEN1	0.0017	1.4689	0.2130	0.0404	0.0364
HOH1	0.001	0.051	0.013	0.003	0.002

The modeling for CO, PM₁₀ and PM_{2.5} used 2009 data for both surface air data (Honolulu Airport) and upper air station data (Lihue Airport). The modeling for NO_x and SO₂ utilized 5 years (2005-2009) of surface air data (Honolulu Airport) and upper air station data (Lihue Airport). A total of 1,253 receptors were located were along the facility fence-line and at 30 meter spacing beyond the fence-line. In addition, the “urban” land-use option was selected since greater than 50% of the surrounding land use are

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industrial, commercial or high density residential (40 CFR, Appendix W, paragraph 8.2.3). The ozone-limiting method was also used in determining the hourly NO_x concentrations.

The air model also assumes that the in-stack NO₂/NO_x ratio is 0.1 rather than the EPA-recommended value of 0.5. The permittee will be required to do a performance test to demonstrate that the assumed ratio of 0.1 is appropriate for the new DEG. If the test demonstrates that the ratio is greater than 0.1, an updated ambient air quality analysis demonstrating compliance with State and Federal Ambient Air Quality Standards will be required.

The predicted air impacts as determined by AERMOD are:

AMBIENT AIR QUALITY IMPACT ANALYSIS

Pollutant	Averaging Period	CONCENTRATION				% of std.
		Conc.	Background ^b	Total	Std	
NO _x	1-hr (µg/m ³)	134.61	48.88	183.49	188	97.60
	1-hr (ppb)	71.6	26	97.60	100	
	Annual (µg/m ³)	17.8	15.04	32.84	100	32.84
	Annual (ppb)	9.47	8	17.47	53	
SO ₂	1-hr (µg/m ³)	2.82	44.37	47.19	195.75	24.11
	1-hr (ppb)	1.08	17	18.08	75	
	24-Hour (µg/m ³)	0.26	29	29.26	365	8.02
	24-hour (ppb)	0.0996	11.1	11.20	140	
	Annual (µg/m ³)	0.05	3	3.05	80	3.81
	Annual (ppb)	0.0192	1.15	1.17	30	
PM ₁₀ ^a	24-Hour (µg/m ³)	5.83	33	38.83	150	25.89
	Annual (µg/m ³)	0.76	14	14.76	50	29.52
PM ₂₅	24-Hour (µg/m ³)	5.24	13	18.24	65	28.06
	Annual (µg/m ³)	0.68	4.7	5.38	15	35.87
CO	1-hour (µg/m ³)	113	2402	2515	10,000	25.15
	1-hour (ppm)	00987	2.1	989.10	8.734	
	8-hour (µg/m ³)	44.2	1,144	1188.20	5,000	23.76
	8-hour (ppm)	0.04	1.0	1.04	4.37	

^a assumes all particulate is PM₁₀

^b NO_x background levels obtained from Kapolei monitoring station, 2008. The remaining background levels obtained from the Honolulu monitoring station, 2008.

Conclusion and Recommendation:

Applicant has demonstrated compliance with SAAQS. Measures will be taken to control fugitive dust from paved roads and storage piles with the use of a water truck. Conditions are stipulated in the permit to meet applicable state (Hawaii Administrative Rules) and federal regulations (BACT, NSPS, etc.). As such, issuance of the initial covered source permit is recommended upon completion of public comment period and EPA review.

Kevin Kihara
August 11, 2011