PROPOSED
Reviewed by: CS
August 25, 2006

Temporary Covered Source Permit (CSP) No. 0627-01-CT Review
Initial Application No. 0627-01

Applicant: P.B. Sullivan Construction, Inc.

Equipment Description:

1. 507 tph Mobile Komatsu Crusher (model no. BR550JG-1, serial no. 1088);
2. 400 tph stand alone power screen (model no. and serial no. to be provided upon arrival) powered by an exempt diesel engine; and
3. water truck

The crusher includes:

4. 306 HP Komatsu diesel engine (model no. SAA6D125, serial no. 211670, 11.4 gal/hr fuel rate);
5. jaw crusher;
6. screen;
7. six (6) conveyors; and
8. water sprays

Air Pollution Controls:

The water sprays and water trucks are proposed to control fugitive dust near the equipment and work site. The efficiency factor for water suppression is generally 70%.

Initial Equipment Location / Mailing Address:

1777 Pi'ilani Highway
Kihei, HI 96753 (Maui)

Responsible Official / Point of Contact:

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Proposed Project:

The applicant is proposing to operate a mobile crusher at various locations. A power screen with stacking conveyors may also be used in the future, therefore this review includes that scenario. Power screens have been assumed to have a maximum production capacity of 400 tph due to the limitation of front end loaders. Please refer to the permit review in NSP No. 0428-01-NT for the power screen determination. This plant will process stone and concrete only. Soil will not be processed at this time. The processing of soil would increase potential fugitive emissions and thus require a permit modification. The mobile crusher also has the ability to remove rebars that may be imbedded in the concrete. This permit review also assumes a specific terrain with enclosed fencing. Therefore, future relocations may require a new ambient air quality assessment. The Standard Industrial Classification Code (SICC) for this facility is 1429 - Crushed and Broken Stone, Not Elsewhere Classified.

This permit review is based on the application dated June 1, 2006 and revisions dated July 11, 12, 14, and 19, 2006. The check for the application fee of $1,000.00 for an initial non-air toxic temporary covered source permit will be processed and the receipt will be enclosed with the issued permit.

Applicable Requirements:

Hawaii Administrative Rules (HAR) Title 11 Chapter 59
Hawaii Administrative Rules (HAR) Title 11 Chapter 60.1
- 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, Sections 111 -115
- Subchapter 8 - Standards of Performance for Stationary Sources
  - 11-60.1-161 New Source Performance Standards
- Subchapter 10 - Field Citations

40 CFR Part 60 - New Source Performance Standard (NSPS) Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants since the manufacture date of the equipment is after August 1983 and the portable plant has a maximum capacity of greater than 150 tph.

A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net significant emissions increase as defined in HAR, Section 11-60.1-1. This is a new source with a significant increase in PM emissions. Therefore, a BACT analysis is required. This stone processing facility uses water sprays to control fugitive dust. Since the water sprays' control efficiency is 70% and cost effective compared to other methods (such as enclosures) they are considered BACT. Water sprays are considered BACT for other sources that have similar activities.

Non-Applicable Requirements:

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) because there is no standard for diesel engines or stone processing equipment.

40 CFR Part 63 - Maximum Achievable Control Technology (MACT) since the facility is not a major source of hazardous air pollutants (HAPS) emissions (10 tpy of individual or 25 tpy of a combination of HAPs) and there is no standard for diesel engines or stone processing equipment.

Prevention of Significant Deterioration (PSD) since this is not a major stationary source.

Compliance Assurance Monitoring (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 precontrol emissions that are greater than the major source level [>100 tpy]; and (5) not otherwise be exempt from CAM. CAM is not applicable to the plant since item 1 does not apply.

Synthetic Minor requirements since this is not a major source (>100 tpy) if the facility operated continuously (8,760 hr/yr) at maximum capacity.

Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the facility are less than reporting levels pursuant to 40 CFR 51, Subpart A (see **Table 1**).

Table 1 - CERR

Pollutant	Facility Emissions (tpy)	CERR Triggering Levels (tpy)		Internal Reporting Threshold (tpy)
		1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	1.65	≥ 250	≥ 100	≥25
PM	27.83	n/a	n/a	≥25
$PM_{10}/PM_{2.5}$	9.21	≥ 250	≥ 100	≥25
NO_x	18.37	≥ 2,500	≥ 100	≥25
SO_x	0.78	≥ 2,500	≥ 100	≥25
CO	2.35	≥ 2,500	≥ 1,000	≥250
HAPs (total)	0.044	n/a	n/a	≥5

Also, the internal reporting requirement is to sum the individual emissions sources and if the sum of an individual pollutant exceeds the threshold limits, then annual emissions reporting is required. Internal reporting does apply since this facility is a covered source. For details and calculations see **ENCLOSURES 1** through **4**.

Insignificant Activities/Exemptions:

None proposed.

Alternative Operating Scenarios:

None proposed.

Project Emissions:

The project emissions were calculated by the Department of Health (DOH) using the manufacturer's data for the criteria pollutants for the diesel engine (point source) and current AP-42 emission factors for diesel engine HAPs (point source); and stone processing, unpaved roads, and handling/storage piles (fugitive sources). The maximum potential annual emissions for the facility were calculated using continuous (8,760 hr/yr) operation. The DOH calculated emissions were similar to those provided in the application and are shown in **Table 2** below. However, the application calculations were not used since they were conservative and included mobile source point and fugitive emissions.

The emissions for the stand alone power screen, that may be used in the future, were also calculated and included with this review. **ENCLOSURE 4** show two screens with a maximum production rate of 507 tph (the stand alone and the Komatsu screens). It is conservative, since the stand alone power screens are assumed to be limited to 400 tph based on using front end loaders (see NSP No. 0428-01-NT for the power screen determination). The diesel engines for stand alone power screens are usually less than 1 MMBtu/hr in size and therefore are exempt.

For detailed emission factors, hourly emission rates, and calculations see **ENCLOSURES 1** through **4**.

Table 2 – Potential Facility Emissions

	Diesel Engine (tpy)	Stone Processing (tpy)	Unpaved Roads (tpy)	Handling / Storage Piles (tpy)	Total (tpy)	Sig Level (tpy)
SO_2	0.78				0.78	≥40
NOx	18.37				18.37	≥40
CO	2.35				2.35	≥100
PM	0.49	15.68	10.38	1.28	27.83	≥25
$PM_{10}/PM_{2.5}$	0.49	5.57	2.54	0.61	9.21	≥15
VOC	1.65				1.65	≥40
HAPs	0.044				0.044	n/a

Note:

1. All emissions were based on maximum production rate at 8,760 hr/yr of operation.
2. The criteria pollutants for the DEG were based on manufacturer's data in the July 12, 2006 revision to application. All other pollutants were based on the latest AP-42 emission factors.
3. All fugitive emissions include 70% efficiency for water sprays.

Ambient Air Quality Analysis:

An ambient air quality analysis (AAQA) was conducted for the diesel engine (point source) to ensure compliance with state and national ambient air quality standards (SAAQS and NAAQS). The model (SCREEN3 version dated 95250), methodology and assumptions employed in the AAQA have been determined to be consistent with State and Federal guidelines and are discussed below.

The model included regulatory default options and rural dispersion parameters.

Receptors were placed at zero elevation and at distances of 100 m apart starting from the nearest fence line at 607 m from the stack. The surrounding terrain has a slope, therefore, the terrain height was set at 3 m above the stack base. The receptor with the highest concentration was located at the fence line with a terrain height of 3 m.

The SCREEN meteorological data is conservative and was used in the model.

The Komatsu mobile crusher that houses the diesel engine was considered for downwash effects. The dimensions of the Komatsu were used and the model confirmed that it would create downwash.

Table 3 presents the proposed potential to emit emission rates and stack parameters of the diesel engines used in the AAQA. The derivation of SO_2, NO_x, CO, and PM_{10} emission rates were based on the manufacturer's data in the July 12, 2006, revision to application.

The predicted concentrations presented in **Table 4** include operating continuously (8,760 hr/yr) at maximum potential for annual concentrations. Also, using Tier 2 guidelines, a factor of 0.75 (ratio of NO_x converted to NO_2) was used. Based on these assumptions, the facility shows compliance with SAAQS and NAAQS for SO_2, NO_2, CO, and PM_{10}. No results were provided for Pb and H_2S because it was assumed to be negligible. For details, see the revision to application dated July 11, 2006

Table 3
Source Emission Rates and Stack Parameters for Air Modeling

SOURCE		EMISSION RATES					STACK PARAMETERS			
Equipment	Stack No.	SO_2 (g/s)	NO_x (g/s)	CO (g/s)	PM_{10} (g/s)	Pb (g/s)	Height (m)	Temp (K)	Velocity (m/s)	Diam (m)
DEG	1	0.017	.396	0.051	0.011	0.000	3.46	477.44	10.31	0.200

Table 4
Predicted Ambient Air Quality Impacts

AIR POLLUTANT	AVERAGING TIME	IMPACT ($\mu g/m^3$)	BACKGROUND [1] ($\mu g/m^3$)	TOTAL IMPACT ($\mu g/m^3$)	AIR STANDARD ($\mu g/m^3$)	PERCENT STANDARD	IMPACT LOCATION (m) [2]
SO_2	3-Hour	10.17	17	27.17	1300	2%	607
	24-Hour	4.52	7	11.52	365	3%	607
	Annual [3]	2.26	1	3.26	80	4%	607
NO_2	Annual [3,4]	53.28	9	62.28	70	89%	607
CO	1-Hour	34.03	2394	2428.03	10000	24%	607
	8-Hour	23.82	983	1006.82	5000	20%	607
PM_{10}	24-Hour	1.86	65	66.86	150	45%	607
	Annual [3]	0.93	19	19.93	50	40%	607
Pb	Calendar Quarter	0	--	0	1.5	0%	--
H_2S	1-Hour	0	--	0	35	0%	--

Note:
1. The background concentrations are taken from the 2004 Hawaii Air Quality Data, Kihei for PM10 and Kapolei monitoring station for all others.
2. The impact locations are at 3m elevation and distance from stack in meters (the nearest fence line at this location).
3. The Annual concentrations are based on operating continuously (8,760 hrs/yr).
4. All NO_x is assumed to convert to NO_2.

Other Issues:

None.

New Permit Conditions:

1. Standard DEG conditions;
2. Standard stone processing conditions
3. NSPS Subpart OOO conditions;
4. Visible Emissions (V.E.) monitoring conditions; and
3. A minimum distance of 607m to the nearest fence line is required (a new AAQA should be conducted to alter this condition or relocation of equipment).

Conclusion and Recommendation:

In conclusion, it is the Department of Health's preliminary determination that the facility will comply with all State and Federal laws, rules, regulations, and standards with regards to air pollution. This determination is based on the application submitted by P. B. Sullivan Construction, Inc. Therefore, an Initial Temporary Covered Source Permit for P. B. Sullivan Construction, Inc. subject to the above permit conditions, 30-day public review and 45-day EPA review periods is recommended.