Temporary Covered Source Permit (CSP) No. 0660-01-CT Review
Application No. 0660-01

APPLICANT:	Bacon Universal Company, Inc.
RESPONSIBLE OFFICIAL:/POC	Mr. Caroll M. Nielsen Vice President - Operations (808) 839-7202
INITIAL LOCATION	UTM Coordinates (Zone 4) 592,384 Meters East 2,358,002 Meters North Campbell Industrial Park Kapolei, HI 966707
MAILING ADDRESS	918 Ahua Street Honolulu, HI 96819
CONSULTANT	Fred Peyer / EMET Services, Inc. 94-250 Ukee Street Waipahu, HI 96767 808-671-8383
SIC	1429

PROPOSED PROJECT:

The subject application is for an initial covered source temporary permit. The application seeks to permit a 265 ton per hour portable jaw crusher powered by a 192 hp diesel engine. The equipment is fueled with fuel oil no. 2. The applicant has proposed an operational limit of 2,080 hours per rolling 12-month period. The Standard Industrial Classification Code (SICC) for this facility is 1429 - Crushed and Broken Stone, Not Elsewhere Classified.

Equipment Description:

1. 265 tph Komatsu Jaw Crusher Model BR 380 JG-1, s/n 1381 with 192 hp Komatsu diesel engine Model SAA6D125E-2, s/n 26394576 fired with Diesel fuel No. 2, 9.9 gallons per hour.

Air Pollution Controls:

Air pollution control consists of a water spray nozzle located at the main conveyor belt. Therefore, a control efficiency of 70% will be credited to the emission points after the material has been crushed.

Initial Equipment Location:

The initial location for the equipment is Campbell Industrial Park. This location is to house several portable crusher units, so a permit condition limiting operation at the site to one crusher/diesel engine unit at a time has been added to the 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,
- 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 10 - Field Citations

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

Best Available Control Technology (BACT)
A 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. The emissions from the equipment are less than significant levels. Therefore, a BACT analysis is not required for this permit.

NON-APPLICABLE REQUIREMENTS:
40 CFR Part 60 Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* does not apply because the diesel engine is classified as a non-road engine. The diesel engine is also exempt from the requirements of 40 CFR part 89.

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) does not apply since there is no standard for diesel engines or stone processing equipment.

40 CFR Part 63 - Maximum Achievable Control Technology (MACT) does not apply since there is no standard for diesel engines or stone processing equipment.

Prevention of Significant Deterioration (PSD) does not apply 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 pre-control 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.

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)	Continuous Emissions (tpy)[a]	CERR Triggering Levels (tpy)		Internal Reporting Threshold (tpy)
			1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	0.08	0.33	≥ 250	≥ 100	≥25
PM_{10}	10.72	45.14	≥ 250	≥ 100	≥25
NO_x	1.42	5.99	≥ 2,500	≥ 100	≥25
SO_x	0.73	3.05	≥ 2,500	≥ 100	≥25
CO	0.20	0.84	≥ 2,500	≥ 1,000	≥250
HAPs (total)	0.11	0.46	n/a	n/a	≥5

[a] Emissions @ 8,760 hours per year.

Internal reporting is required for the facility because the facility is a covered source. The annual emissions reporting will also help in verifying compliance with the annual operational limits.

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. Since this is a covered source, internal reporting does apply.

Synthetic Minor Applicability
The facility is not a synthetic minor source because the facility would not be a major source (>100 tpy) if operated continuously (8,760 hr/yr) at maximum capacity. Refer to table 1 for continuous emission estimates.

Insignificant Activities/Exemptions:
Insignificant activities listed in the application consists of one (1) diesel fuel tank with a 105.7 gallon capacity.

Alternative Operating Scenarios:
The permit contains an alternate operating scenario for the replacement of the diesel engine, subject to the following conditions:

1. The permittee may replace the 192 HP diesel engine with a temporary diesel engine if repair work reasonably warrants removal (i.e., equipment failure, engine overhaul, or any other major problems requiring maintenance of the engine for efficient operation) of the diesel engine, provided the following provisions are adhered to:

    a. A written request is submitted and approved by the Department of Health prior to exchanging the 192 HP diesel engine with a temporary replacement engine.

    b. The temporary replacement engine has equal or lower emissions with similar stack parameters.

    c. The temporary replacement engine complies with all applicable conditions required for the existing equipments including all operating restrictions and emission limits.

d. Written notification for returning the original engine to service is submitted to the Department of Health.

e. The diesel engine shall be repaired and returned to service in a timely manner.

Project Emissions:
The emission estimates provided by the applicant cannot be justified due to insufficient information. Therefore, emissions were calculated using the most conservative emission estimates. Emissions from crushing were determined using AP-42,sections 11.19.2, Crushed Stone Processing (8/04), 13.2.4, Aggregate handling and Storage Piles, and 13.2..2, Unpaved Roads. Hazardous Air Pollutant emissions factors for the diesel engine were obtained from AP-42 section 3.3, Gasoline and Diesel Industrial Engines. Criteria pollutant emission factors and fuel consumption data were provided by the manufacturer.

A summary of the emissions from the permitted equipment is shown in the following table.

Criteria Pollutant	Emissions			
	lb/hr	g/s	Limited[1] (TPY)	Max (TPY)
SO_2	0.6973	0.088	0.73	3.05
NO_2	1.367	0.172	1.42	5.99
CO	0.192	0.024	0.20	0.84
PM_{10}				
Diesel Engine	0.068	0.009	0.07	0.30
Crusher	1.46	0.184	1.52	6.41
Unpaved Roads	8.78	1.106	9.13	38.44
TOTAL PM_{10}	10.31	1.30	10.72	45.14

Hazardous Air Pollutant Emissions (from Diesel Engine)

HAP	Emissions			
	lb/hr	g/s	Limited[1] (TPY)	Max (TPY)
Aldehydes	9.70e-02	1.22e-02	1.01e-01	4.25e-01
Benzene	1.29e-03	1.63e-04	1.34e-03	5.66e-03
Toluene	5.67e-04	7.14e-05	5.90e-04	2.48e-03
Xylenes	3.95e-04	4.98e-05	4.11e-04	1.73e-03
Propylene	3.58e-03	4.51e-04	3.72e-03	1.57e-02
1,3 Butadiene	5.42e-05	6.83e-06	5.64e-05	2.37e-04
Formaldehyde	1.64e-03	2.06e-04	1.70e-03	7.16e-03
Acetaldehyde	1.06e-03	1.34e-04	1.11e-03	4.66e-03
Acrolein	1.28e-04	1.62e-05	1.33e-04	5.62e-04
Total PAH	2.33e-04	2.93e-05	2.42e-04	1.02e-03
Total			0.11	0.46

[1] Limited to 2,080 hours of operation annually

For detailed calculations, refer to the attached emissions spreadsheets.

AIR QUALITY ASSESSMENT:

An ambient air quality analysis was performed on the diesel engine exhaust stack to demonstrate compliance with State and Federal ambient air quality standards. An analysis was not performed on the crusher due to the fugitive nature of crusher emissions.

Ambient air concentrations were determined using the EPA-approved SCREEN3 modeling program. The modeling program used an emission rate of one (1) gram per second in conjunction with the stack parameters listed in the following table:

SCREEN3 Air Modeling Input Parameters								
Emission Rates (g/s)					Stack Parameters			
SO_2	NO_x	CO	PM_{10}	Pb	Height (m)	Temp. (k)	Velocity (m/s)	Diameter (m)
0.088	0.172	0.024	0.009	N/A	3.66	435.7	58.7	0.089

In addition to the stack parameters, the following structure data was used to determine if the crusher will impact the ambient air analysis.

Distance (m)	Height (m)	Width (m)	Length (m)	Projected Width (m)	H_g[a]	Downwash
0	3.4	2.3	6.1	6.52	8.5	Yes

[a] H_g= Height + 1.5 (lesser of height or projected width) – GEP stack height

The results indicate that the downwash from the crusher will impact the analysis, since the stack height (3.66 m) is less than the calculated good engineering practice (GEP) stack height of 8.5 meters. Therefore, the building parameters were incorporated into the model.

Other assumptions used in the analysis include:

- Screening Met data used;
- flat terrain assumed
- Ambient rate method ratio of 0.75 for conversion of NO_x to NO_2
- Worst-case background concentrations from available monitoring stations (2006)

The modeling results demonstrate that operation of the equipment will not violate State or Federal ambient air quality standards. Refer to the following table for detailed results

SCREEN3 Modeling Results – Komatsu Diesel Engine								
Modeled Conc.	2444	$\mu g/m^3$ per g/s						
Pollutant	**Avg. Time**	**Emission Rate (g/s)**	**Time Factor**	**Impact**	**Background**	**Total Impact**	**Std.**	**% of std.**
SO_2	3-hr	0.088	0.9	194	451	645	1,300	49.62
	24-hr	0.088	0.4	86	161	247	365	67.67
	Ann	0.088	0.2	10	11	21	80	26.25
NO_2	Ann	0.172	0.2	15	9	24	70	34.29
PM_{10}	24-hr	0.009	0.4	9	59	68	150	45.33
	Ann	0.009	0.2	1	16	17	50	34.00
CO	1-hr	0.024	1.0	59	2850	2,909	10,000	29.09
	8-hr	0.024	0.7	41	1967	2,008	5,000	40.16

Other Issues:
None

Significant New Permit Conditions:

1. A condition has been added to the permit that restricts the use of more than one mobile crusher at the Campbell Industrial Park location.

Conclusion and Recommendation:
The facility is in compliance with all State and Federal laws, rules, regulations, and standards with regards to air pollution. Recommend issuance of temporary covered source permit.

Kevin Kihara
January 28, 2008