

**007A Temporary Covered Source Permit (CSP) No. 0661-01-CT Review
Renewal/Modification Application No. 0661-03**

APPLICANT: Frank Coluccio Construction Company

**RESPONSIBLE
OFFICIAL:/POC** Mr. Franco Coluccio
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CURRENT LOCATION UTM Coordinates (Zone 4)
615,761 Meters East
2,356,240 Meters North

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SIC 1429

PROPOSED PROJECT:

The subject application is for the renewal of temporary covered source permit 0661-01-C. In addition to a permit renewal, the applicant is also seeking a permit modification to add a 265 ton per hour (tph) mobile screening unit to the permitted equipment list. The screening unit is powered by a 48 horsepower (hp) diesel engine.

The crushing unit is limited to 2,080 hours of operation in any rolling 12-month period, and is fueled with fuel oil no. 2 (15 ppm sulfur content). The screening unit will use similar fuel, and will also have 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.

Existing Equipment:

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. Manufacture date 2006.

New Equipment:

Powerscreen 800 Series Powergrid Screener, 265 tph, s/n 7212798, with Deutz 48 hp diesel engine model F3L912, s/n XDZXL03.8016, fired with diesel fuel no. 2, 2.8 gallons per hour, Manufacture date 1999.

Air Pollution Controls:

Air pollution control consists of a water spray nozzles located at the main conveyor belt. Therefore, a control efficiency of 70% will be credited to the affected emission points.

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

FEDERAL REQUIREMENTS

40 CFR Part 60 Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to both mobile units since the manufacture date of each mobile unit is after August 1983, each mobile unit has a maximum capacity greater than 150 tph, and the equipment is to be operated in series. The standard includes stricter visible emissions requirements and annual source testing to verify compliance with the stricter requirements.

The diesel engine of each mobile unit is subject to the following Federal regulations:

- 40 CFR Part 60 Standards of Performance for New Stationary Sources, Subpart A, *General Provisions*;
- 40 CFR Part 60 Standards of Performance for New Stationary Sources, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*;
- 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A - *General Provisions*; and
- 40 CFR Part 63 - National Emission Standards For Hazardous Air Pollutants For Source Categories, 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 engines because it is a new or reconstructed stationary reciprocating internal combustion engine (RICE) located at an area source of HAPs. However, pursuant to §63.6590(c)(1), 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 diesel engines, pursuant to 40 CFR 63 Subpart ZZZZ, §63.6590, the applicable requirements are as follows:

Pursuant to §60.4204(a), “Owners and operators of pre-2007 model year non-emergency stationary compression-ignition internal combustion engine (CI ICE) with a displacement of less than 10 liters per cylinder must comply with the emission standards in Table 1 of this subpart. The portion of Table 1 that applies to the diesel engines is:

TABLE 1 TO SUBPART IIII OF PART 60-EMISSION STANDARDS FOR STATIONARY PRE-2007 MODEL YEAR ENGINES WITH A DISPLACEMENT OF <10 LITERS PER CYLINDER
[As stated in §§ 60.4204(a), you must comply with the following emission standards]

Maximum engine power	Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder in g/kW-hr (g/hp-hr)				
	NMHC + NO _x	HC	NO _x	CO	PM
19≤KW<37 (25≤HP<50)	9.5 (7.1)	N/A	N/A	5.5 (4.1)	0.80 (0.60)
225<KW<450 (300≤HP>600)	N/A	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)

Additional details on the requirements to comply with the emission standards is covered in the discussion on §60.4211.

Pursuant to §60.4207(b), beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.5(b) for nonroad diesel fuel.

(§80.510 What are the standards and marker requirements for NRLM [nonroad locomotive or marine] diesel fuel?

(b) Beginning June 1, 2010. Except as otherwise specifically provided in CFR 80 Subpart I, all NR and LM diesel fuel is subject to the following per-gallon standards:

- (1) Sulfur content.*
 - (i) 15 ppm maximum for NR diesel fuel.*
 - (ii) 500 ppm maximum for LM diesel fuel.*
- (2) Cetane index or aromatic content, as follows:*
 - (i) A minimum cetane index of 40; or*
 - (ii) A maximum aromatic content of 35 volume percent.)*

Due to the new fuel standards, a permit condition will be added requiring the diesel engines to use fuel with a maximum sulfur content of 15 parts per million (ppm) and a minimum cetane index of 40, or a maximum aromatic content of 35 volume percent.

Pursuant to §60.4209, if you are an owner or operator of a stationary CI internal combustion engine, you must meet the monitoring requirements of this section and also meet the monitoring requirements specified in §60.4211.

The monitoring requirements specified in §60.4211 are:

§60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

- (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.

- (b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(a), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.
 - (1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.
 - (2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and
 - (3) Keeping records of engine manufacturer data indicating compliance with the standards.
 - (4) Keeping records of control device vendor data indicating compliance with the standards.
 - (5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

To demonstrate compliance, engine manufacturer data was provided by applicant. The data provided demonstrates compliance with the applicable standards. Refer to permit application for documentation of manufacturer engine test data.

§60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

- (a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.
 - (1) Submit an initial notification as required in Sec. 60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.
 - (i) Name and address of the owner or operator;
 - (ii) The address of the affected source;
 - (iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;
 - (iv) Emission control equipment; and
 - (v) Fuel used.
 - (2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.
 - (i) All notifications submitted to comply with this subpart and all documentation supporting any notification.
 - (ii) Maintenance conducted on the engine.
 - (iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

- (iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

The requirements of §60.4214 will be incorporated into the permit in Section D, Monitoring and Recordkeeping Requirements.

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 adding the mobile screening unit do not exceed significant levels. Therefore, a BACT analysis is not required for this permit. Refer to table 1 for additional details.

NON-APPLICABLE REQUIREMENTS:

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) is not an applicable requirement because the facility does not emit hazardous air pollutants in excess of the HAP major source triggering levels (25 tpy total HAP or 10 tpy individual HAP).

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; ≥ 250 TPY for all other sources), with the exception of CO₂. CO₂ emissions are addressed pursuant to the Greenhouse Gas Tailoring Rule.

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

The CO₂e emissions from the facility are less than the triggering levels and are summarized in the following table:

Pollutant	CO ₂ e (MTPY)	CO ₂ e (TPY)
CO ₂	211	232
CH ₄	0.23	0.254
N ₂ O	0.68	0.750
Total	211.91	253.00

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 facility because it is not a major source.

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 & BACT Comparison

Pollutant	Facility Emissions (tpy)	Continuous Emissions (tpy) ^a	CERR Triggering Levels (tpy)		BACT Significant Levels (tpy)
			1-yr Reporting Cycle (Type A Sources)	3-yr Reporting Cycle (Type B Sources)	
VOC	0.14	0.60	≥ 250	≥ 100	≥40
PM ₁₀	2.64	11.12	≥ 250	≥ 100	≥15
NO _x	2.23	9.39	≥ 2,500	≥ 100	≥40
SO _x	0.73	3.07	≥ 2,500	≥ 100	≥40
CO	0.46	1.92	≥ 2,500	≥ 1,000	≥100
HAPs (total)	0.14	0.60	n/a	n/a	≥5

^a Emissions @ 8,760 hours per year.

Synthetic Minor Applicability

The facility is not a synthetic minor source because the facility does not exceed the 100 ton per year major source threshold for all pollutants other than CO₂ if operated continuously (8,760 hr/yr) at maximum capacity. Refer to Table 1 for continuous emission estimates.

Insignificant Activities/Exemptions:

No insignificant activities were listed by the applicant.

Alternative Operating Scenarios:

No alternate operating scenarios have been proposed by the applicant.

Project Emissions:

Emissions from the addition of the screen were determined using AP-42 emission factors. The AP-42 sections used included:

- §1.19.2, Crushed Stone Processing (8/04)
- §13.2.4, Aggregate handling and Storage Piles (11/06)
- §13.2.2, Unpaved Road (11/06)
- §3.3, Gasoline and Diesel Industrial Engines (10/96)

Emission factors and fuel consumption data for the screener engine were provided by the manufacturer. Other assumptions used are:

- 2,080 hours of operation annually
- Sulfur content of fuel is 15 ppm

The increase in emissions due to the addition of the mobile screening unit is:

Pollutant	EMISSIONS	
	Max (TPY)	Limited (TPY)
SO ₂	3.05	0.73
NO ₂	5.99	1.42
CO	0.84	0.20
TOC	0.33	0.08
PM ₁₀		
Screen Engine	0.20	0.05
Screen	4.21	1.00
Total PM ₁₀	4.41	1.05
HAPs	0.60	0.14

PROPOSED

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

Total (crusher and screen)

Pollutant	EMISSIONS			
	(lb/hr)	(g/s)	Max (TPY)	Limited (TPY)
SO2				
Crusher Engine	0.6973	0.088	3.05	0.73
Screen Engine	0.0047	0.00059	0.02	0.00
TOTAL SO2	0.702	0.088	3.07	0.73
NO2				
Crusher Engine	1.367	0.172	5.99	1.42
Screen Engine	0.778	0.098	3.41	0.81
TOTAL NO2	2.145	0.270	9.39	2.23
CO				
Crusher Engine	0.192	0.024	0.84	0.20
Screen Engine	0.247	0.031	1.08	0.26
TOTAL CO	0.439	0.055	1.92	0.46
TOC				
Crusher Engine	0.075	0.009	0.33	0.08
Screen Engine	0.062	0.008	0.27	0.06
TOTAL TOC	0.137	0.017	0.60	0.14
PM10				
Crusher Engine	0.068	0.009	0.30	0.07
Crusher	1.463	0.184	6.41	1.52
Screen Engine	0.046	0.006	0.20	0.05
Screen	0.96	0.121	4.21	1.00
TOTAL PM10	2.54	0.32	11.12	2.64
HAPs				
Crusher Engine	2.231E-04	2.812E-05	0.46	0.11
Screen Engine	6.311E-05	7.952E-06	0.13	0.03
TOTAL HAPs	2.86E-04	3.61E-05	0.60	0.14

HAP emissions are:

Operational limit	2080	hours/yr
Max heat input, existing	1.39	MMBtu/hr
Max heat input, new	2.10	MMBtu/hr
Total heat input, all	3.49	MMBtu/hr

HAP	Emission Factor (lb/MMBtu)	EMISSIONS			
		(lb/hr)	(g/s)	Max (TPY)	Limited (TPY)
Aldehydes	7.00E-02	2.44E-01	3.07E-02	1.07E+00	2.54E-01
BENZENE	9.33E-04	3.25E-03	4.10E-04	1.42E-02	3.38E-03
TOLUENE	4.09E-04	1.43E-03	1.80E-04	6.24E-03	1.48E-03
XYLENES	2.85E-04	9.94E-04	1.25E-04	4.35E-03	1.03E-03
PROPYLENE	2.58E-03	8.99E-03	1.13E-03	3.94E-02	9.35E-03
1,3-BUTADIENE	3.91E-05	1.36E-04	1.72E-05	5.97E-04	1.42E-04
FORMALDEHYDE	1.18E-03	4.11E-03	5.18E-04	1.80E-02	4.28E-03
ACETALDEHYDE	7.67E-04	2.67E-03	3.37E-04	1.17E-02	2.78E-03
ACROLEIN	9.25E-05	3.22E-04	4.06E-05	1.41E-03	3.35E-04
Total PAH	1.68E-04	5.86E-04	7.38E-05	2.57E-03	6.09E-04

TOTAL 1.17 0.28

For detailed calculations, refer to the attached emissions spreadsheets.

Air Quality Assessment:

To demonstrate the impact of the mobile screener and diesel engine addition on ambient air quality, an ambient air quality analysis was performed. The EPA-approved AERMOD program was used to predict maximum impacts. New crusher emissions are fugitive in nature and are not included in the model. The following stack parameters were used in the modeling program for the diesel engine:

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)
Crusher	1	615,761	2,356,240	3.66	435.7	0.089	20.94
Screen	1	615,874	2,356,215	2.13	768.15	0.051	81.465

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}
Crush_Stkr	0.088	0.172	0.024	0.009	0.009
Screen_Stk	0.0047	0.098	0.031	0.006	0.006

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 1,225 receptors were located at 30 meter spacing. The ozone-limiting method was also used to determine 1-hour NO_x concentrations.

The air impacts as predicted by AERMOD are:

AMBIENT AIR QUALITY IMPACT ANALYSIS							
Pollutant	Averaging Period	Units	CONCENTRATION, µg/m ³				% of std.
			Conc.	Background ^b	Total	Std ²	
NO _x	1-hr	µg/m ³	102.36	63.92	166.28	188.00	88.45%
		ppb	54.45	34.00	88.45	100.00	
	Annual	µg/m ³	18.12	8.00	26.12	70.00	37.31%
		ppb	9.64	4.26	13.89	37.23	
SO ₂	1-hr	µg/m ³	127.17	44.37	171.54	195.75	87.63%
		ppb	48.72	17.00	65.72	75.00	
	3-Hour	µg/m ³	117.53	29.00	146.53	1,300.00	11.27%
		ppb	45.03	11.11	56.14	498.08	
PM ₁₀ ^a	24-Hour	µg/m ³	5.99	34.00	39.99	150.00	26.66%
PM ₂₅	24-Hour	µg/m ³	5.99	23.00	28.99	65.00	44.60%
	Annual	µg/m ³	2.56	6.90	9.46	15.00	63.07%
CO	1-hour	µg/m ³	70.52	2,402.00	2,472.52	10,000.00	24.73%
		ppm	0.06	2.10	2.16	8.73	
	8-hour	µg/m ³	46.78	1,144.00	1,190.78	5,000.00	23.82%
		p[pm	0.04	1.00	1.04	4.37	

^a assumes PM₁₀=PM₂₅

^b NO_x background levels obtained from Kapolei monitoring station, 2009. The remaining background levels obtained from the Honolulu monitoring station, 2009.

Other Issues:

None

Significant New Permit Conditions:

None

Conclusion and Recommendation:

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

Kevin Kihara
April 23, 2012