

**PERMIT APPLICATION REVIEW
 TEMPORARY COVERED SOURCE PERMIT NO. 0696-01-CT
 Application for Significant Modification No. 0696-03**

Company: Delta Construction Corporation

Mailing Address: 91-255 Oihana Street
 Kapolei, Hawaii 96707

Facility: Crushing and Screening Plants

Location: Various Temporary Sites, State of Hawaii

Initial Location: Waipahu, Oahu
 UTM: 599,719 Meters East, 2,365,222 Meters North, Zone 4 (NAD 83)

SIC Code: 1429 (Crushed and Broken Stone, Not Elsewhere Classified)

Responsible Official: Mr. Kenneth Kobatake
 President
 (808) 682-1315

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

Equipment:

Facility Equipment				
Equipment	Manufacturer	Model No.	Serial No.	Manuf. Date
455 TPH Cone Crusher with integrated 4'x10' screen 440 hp Diesel Engine	Extec	X44SBS	11606	Jan. 2008
	Caterpillar	C-13	LGK07082	May 2007
460 TPH Jaw Crusher 228 kW Diesel Engine	Komatsu	BR500JG-1	1212	2000
	Komatsu	SA6D125E-2		
400 TPH Screen 111 hp Diesel Engine (insignificant activity)	Extec	Turbo Trac	7300	2000
	Deutz	BFM1012		
Water Spray Systems				
Various Conveyors				

BACKGROUND

Delta Construction Corporation has submitted an application for significant modification to add a 460 TPH mobile jaw crusher with 228 kW diesel engine and 400 TPH mobile screen with insignificant 111 hp diesel engine to its existing covered source permit. The crusher and screen are currently permitted under temporary noncovered source permit no. 0486-01-NT. Delta Construction wants the ability to operate the existing cone crusher with the proposed jaw crusher and screen together or independently.

The operating hours of the existing and proposed crushing and screening plants will be limited to 3,500 hours in any rolling 12-month period. The diesel engines will be fired on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

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

Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the crushing and screening plants because the maximum capacity of the facility is greater than 150 tons/hour, and the plants were manufactured after August 31, 1983.

Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the diesel engines because the engines are considered nonroad engines as defined in 40 CFR 1068.30. Subpart IIII applies to stationary internal combustion engines that are not mobile/nonroad engines.

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 not applicable to the diesel engines because the engines are considered nonroad engines as defined in 40 CFR 1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not mobile/nonroad engines.

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 due to the modifications 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 not a synthetic minor source because potential emissions do not exceed major source thresholds when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

The 111 hp Deutz diesel engine on the 400 TPH screen is considered an insignificant activity in accordance with HAR 11-60.1-82(f)(2) because the heat input capacity is less than 1 MMBtu/hr.

ALTERNATIVE OPERATING SCENERIOS

Diesel Engines

The permittee may replace each diesel engine with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel engine from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation).

AIR POLLUTION CONTROLS

Water Suppression

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

PROJECT EMISSIONS

The operating hours of the crushing and screening plants and diesel engines will be limited to 3,500 hours/year. Emission calculations are attached to this review.

Crushing and Screening Plants

Emissions were based on the maximum capacities of each crusher and screen. Water spray systems will be used to control PM emissions. The emissions factors from AP-42 Section 11.19.2 (08/04) - Crushed Stone Processing and Pulverized Mineral Processing were used to calculate emissions.

Crushing and Screening Plants		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	7.3	18.3
PM-10	2.7	6.7
PM-2.5	0.4	1.1

228 kW Komatsu Diesel Engine

The diesel engine is fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. The maximum fuel consumption is 16.2 gallons/hour. CO, NO_x, PM, and TOC emissions were based on manufacturer's data. The mass balance method was used to determine SO₂ emissions. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines.

228 kW Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.20	0.35	0.88
NO _x	3.77	6.60	16.51
SO ₂	1.15	2.01	5.03
PM	0.07	0.11	0.29
PM-10	0.07	0.11	0.29
PM-2.5	0.07	0.11	0.29
TOC	0.15	0.26	0.66
HAPs	0.009	0.015	0.038

440 hp Caterpillar Diesel Engine

The diesel engine is fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight. The maximum fuel consumption is 22.7 gallons/hour. CO, NO_x, and TOC emissions were based on manufacturer's data. PM emissions were based on EPA Tier 3 emission standards. The mass balance method was used to determine SO₂ emissions. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines.

440 hp Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	2.47	4.32	10.82
NO _x	3.04	5.32	13.32
SO ₂	1.61	2.82	7.05
PM	0.14	0.25	0.63
PM-10	0.14	0.25	0.63
PM-2.5	0.14	0.25	0.63
TOC	0.10	0.18	0.44
HAPs	0.012	0.021	0.053

Storage Piles

Emissions were based on the maximum capacities of each crushing and screening plant. A 70% control efficiency was assumed for water suppression to control fugitive dust. Emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles.

Storage Piles		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	4.9	12.3
PM-10	2.3	5.8
PM-2.5	0.4	0.9

Vehicle Travel on Unpaved Road

Emissions were based on the maximum capacities of each crushing and screening plant. A 70% control efficiency was assumed for water suppression to control fugitive dust. Emissions were based on emission factors from AP-42 Section 13.2.2 (11/06) - Unpaved Roads.

Vehicle Travel on Unpaved Road		
Pollutant	Emissions (TPY) [3,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	10.8	27.0
PM-10	3.2	8.0
PM-2.5	0.3	0.8

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
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	4.7	11.7	100	2,500 / 1000	250
NO _x	11.9	29.8	40	2,500 / 100	25
SO ₂	4.8	12.1	40	2,500 / 100	25
PM	23.4	58.5	25	-	25
PM-10	8.6	21.5	15	250 / 100	25
PM-2.5	1.5	3.7	-	250 / 100	-
VOC	0.4	1.1	40	250 / 100	25
HAPs	0.04	0.09	-	-	5

AIR QUALITY ASSESSMENT

An ambient air quality impact assessment (AAQIA) was conducted for the 440 hp Caterpillar and 228 kW Komatsu diesel engines to demonstrate compliance with State and National ambient air quality standards. An 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 modeling analysis.

Terrain

A USGS 7.5 min digital elevation model (DEM) with 10 meter spacing from the Schofield Barracks, Oahu 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 3,500 hour/year limit when modeling annual impacts.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
440 hp DE	0.3112	0.3830	0.0182	0.0182	0.2028	3.51	0.152	1.30	769
228 kW DE	0.0253	0.4750	0.0082	0.0082	0.1447	3.96	0.086	0.85	731

Results

The annual concentrations assume an annual hour limit of 3,500 hours/year. The table below shows the predicted ambient air quality impacts from the diesel engines should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	245.8	2508	2753.8	10000	40000	27.5%
	8-hr	172.1	798	970.1	5000	10000	19.4%
NO ₂	Annual	32.2	8	40.2	70	100	57.4%
PM-10	24-hr	5.8	61	66.8	150	150	44.5%
	Annual	1.1	18	19.1	50	-	38.3%
PM-2.5	24-hr	5.8	21	26.8	-	35	76.4%
	Annual	1.1	5	6.1	-	15	41.0%
SO ₂	3-hr	144.2	47	191.2	1300	1300	14.7%
	24-hr	64.1	20	84.1	365	365	23.0%
	Annual	12.8	4	16.8	80	80	21.0%

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 2008 Hawaii Air Quality Data. Maximum background concentrations for CO, NO₂, and PM from Kapolei, Oahu, and SO₂ from Makaiwa, Oahu.
3. Assume total conversion of NO_x to NO₂.

SIGNIFICANT PERMIT CONDITIONS

1. The crushing and screening plants are subject to the provisions of 40 CFR Part 60, Subpart A and Subpart OOO.
2. Operating Hour Limits
 - a. The total operating hours of the 455 TPH cone crusher, as represented by the total operating hours of the 440 hp diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
 - b. The total operating hours of the 460 TPH jaw crusher, as represented by the total operating hours of the 228 kW diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.
 - c. The total operating hours of the 400 TPH screen, as represented by the total operating hours of the exempt 111 hp Deutz diesel engine, shall not exceed 3,500 hours in any rolling twelve-month (12-month) period.

2. Fuel Limits

The diesel engines shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

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 Delta Construction Corporation, it is the determination of the Department of Health that the proposed project will be in compliance with 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
April 21, 2010