PROPOSED

PERMIT APPLICATION REVIEW
COVERED/TEMPORARY COVERED SOURCE PERMIT NO. 0045-01-C/CT
Application for Minor Modification No. 0045-31

Company: Grace Pacific Corporation

Mailing Address: P.O. Box 78
Honolulu, Hawaii 96810

Facility: Aggregate Crushing and Screening Plants

Location:
1. Makakilo Quarry
   91-920 Farrington Highway
   Kapolei, Hawaii 96707
2. Various Temporary Sites, State of Hawaii (Rip-Rap Plant)

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

Responsible Official: Mr. Robert Creps
Senior Vice President, Administration
(808) 674-8383

Contact: Mr. Joseph Shacat
Environmental Compliance Manager
(808) 674-8383

Equipment:

1. This permit encompasses the following equipment and associated appurtenances:

   a. 380 TPH Non-Portable Plant with 600 TPH Recycled Aggregate Subfeed Plant

      Primary Plant
      i. Primary apron feeder, Universal Engineering model no. FDH-60C-24.0-8.5, manufactured 2011;
      ii. 2-deck 6' x 20' scalping screen, Terex/Simplicity model no. 6202 M160BS, serial no. TBD, manufactured 2011;
      iii. 1100 TPH primary jaw crusher, Terex/Cedarapids model no. 4248, serial no. TBD manufactured 2011;

      Secondary Plant
      iv. Secondary apron feeder, Universal Engineering model no. FD4-60C-12.0-6.5, manufactured 2011;
      v. 3-deck 8' x 20' scalping screen, Terex/Simplicity model no. 8203 DM140DS, serial no. TBD, manufactured 2011;
      vi. 810 TPH secondary cone crusher, Terex/Cedarapids model no. MVP550, serial no. TBD, manufactured 2011;

A-Rock Finish Plant

vii. Two (2) RECLAIM apron feeders, Universal Engineering model no. FL4-36F-9.5-5.5, manufactured 2011;
viii. Two (2) 3-deck 8' x 24' screens, Terex/Simplicity model no. 8243 DM140DS, serial no. TBD, manufactured 2011;
ix. Two (2) 810 TPH tertiary cone crushers, Terex/ Cedarapids model no. MVP550, serial no. TBD, manufactured 2011;
x. 500 TPH VSI crusher, Canica model no. 2300, serial no. TBD, manufactured 2011;
xi. Two (2) 3-deck 8' x 20' screens, Terex/ Cedarapids model no. TSH-8203-38, serial no. TBD, manufactured 2011;

B-Rock Finish Plant

xii. Three (3) RECLAIM apron feeders, Universal Engineering model no. FL4-36F-9.5-5.5, manufactured 2011;
xiii. 3-deck 8' x 20' screen, Terex/ Cedarapids model no. TSH-8203-38, serial no. TBD, manufactured 2011;
xiv. 810 TPH cone crusher, Terex/Cedarapids model no. MVP550, serial no. TBD, manufactured 2011;
xv. 2-deck 8' x 20' screen, Thunderbird II model no. 8202-C6-D04682, serial no. 2437-06, manufactured 2002;

Recycled Aggregate Subfeed Plant

xvi. Grizzly feeder, Thunderbird II model no. 5020VGF-G4-C3314, serial no. 2152-03, manufactured 2002;
xvii. 600 TPH primary jaw crusher, Terex/Cedarapids model no. 3054, serial no. 51636, manufactured 2002;
xviii. 3-deck 6' x 20' screen, Terex/Cedarapids model no. 6203-32, serial no. 51455, manufactured 2002;
xix. 400 TPH HSI impact crusher, Cedarapids model no. 5064, serial no. 51687, manufactured 2002;

Miscellaneous Equipment

xx. Donaldson Torit baghouse, model no. DLMV 30/15 Type W, serial no. TBD;
xxi. Assorted surge bins;
xxii. Assorted conveyor belts; and
xxiii. Water sprays.

b. 300 TPH Washed Aggregate Plant

i. Grizzly bin feeder, Thunderbird II model no. 3613BFH-D4153, serial no. 2438-06;
ii. 2-deck 6' x 16' screen, Thunderbird II model no. 6162-16-D3730, serial no. 2153-03, manufactured 2002;
iii. 300 TPH VSI crusher, Canica model no. 100S HD, manufactured 1993;
iv. Assorted conveyor belts; and
v. Water sprays.

c. 576 TPH Rip-Rap Plant

i. 576 TPH Lippmann rip-rap plant, model no. 6224, manufactured June 2008;
ii. 62" x 24" vibrating grizzly feeder;

iii. 203 hp Volvo Penta diesel engine, model no. TAD720GE, serial no. 5310187672; and
iv. Assorted conveyor belts.

d. 600 TPH Screening Plant

The Read Corporation screening plant, model no. RD 90A, serial no. 648388, manufactured 1988, with exempt 24.8 hp Lister Petter diesel engine, model no. TR3.

BACKGROUND

Grace Pacific Corporation has submitted an application for minor modification to upgrade the aggregate handling and processing equipment at Makakilo Quarry. The existing 400 TPH Non-Portable Plant and 600 TPH Recycled Aggregate Plant will be redesigned with various new crushers and screens. A new 300 TPH Washed Aggregate Plant will be installed. Fugitive emissions will be controlled with an improved dust suppression system. The existing 1,000 kW diesel engine generator associate with the recycled aggregate plant will be removed, with power being provided from the grid.

The total production of the proposed 380 TPH Non-Portable Plant will be limited to 2,400,000 tons per year. The existing operating hour limits of the 600 TPH Screening Plant (2,080 hours/year) and 576 TPH Rip-Rap Plant (4,380 hours/year) will remain the same.

Overall emissions of the proposed facility will decrease compared to the existing facility due to the efficiencies created with the modification, improved fugitive dust control technology, and removal of the 1,000 kW diesel engine generator.

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 plants because the maximum capacity of the facility is greater than 25 tons/hour, and the plants were manufactured after August 31, 1983. Equipment that commence construction, modification, or reconstruction on or after April 22, 2008, have more stringent fugitive emission opacity limits.

The baghouse is exempt from the applicable stack PM concentration limit (and associated performance testing) because the baghouse controls emissions from only an individual, enclosed storage bin, but is subject to the 7% opacity limit for stack emissions.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the 203 hp diesel engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not nonroad engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61
This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP) (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 203 hp diesel engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not nonroad engines.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21
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.

Although the facility is considered a “major source” as defined in HAR §11-60.1-1, it is not considered a “major stationary source” as defined in HAR §11-60.1-131. Fugitive emissions are not included in determining if this source is a major stationary source because this source does not belong to any of the 26 source categories listed under HAR §11-60.1-131, or any other stationary source category which, as of August 7, 1980, is being regulated pursuant to Section 111 or 112 of the Clean Air Act. 40 CFR 60 Subpart OOO was not in effect as of August 7, 1980.

Compliance Assurance Monitoring (CAM), 40 CFR 64
This source is not subject to CAM because the facility is not subject to an emissions limit or standard. 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), 40 CFR Part 51, Subpart A
CERR is not applicable because emissions from the facility do not exceed CERR thresholds.

DOH In-house Annual Emissions Reporting
The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)
This source is not subject to BACT analysis because there is no net increase in potential emissions due to the modification. Overall emissions of the proposed facility will decrease. BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §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 this facility is classified as a major source.

Greenhouse Gas Tailoring Rule
Title V or PSD permitting for greenhouse gas (GHG) emissions is not applicable to this facility because the potential to emit of CO_2 equivalent (CO_2e) emissions is less than 100,000 tons per year. Under the Tailoring Rule, in no event are sources with the potential to emit less than 100,000 tons per year CO_2e subject to PSD or Title V permitting for GHG emissions before 2016. Total GHG emissions on a CO_2e basis using the global warming potential (GWP) of each GHG are determined in the table below.

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO_2e Based Emissions (TPY)
Carbon Dioxide (CO_2)	1	463	463
Total Emissions:			463

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

595 hp Diesel Engine Generator
The 595 hp diesel engine generator servicing a water pump during blasting activities was exempt from permitting requirements in a July 11, 2002, letter. The exemption assumed the diesel engine generator is operated as follows:

1. Fired on fuel oil no. 2 with a sulfur content not to exceed 0.5% by weight.
2. Used only to power the water pump, which provides dust control during blasting.
3. Activated prior to blasting and shut down immediately after blasting.
4. Used approximately 30 hours per year.

24.8 hp Diesel Engine
The 24.8 hp diesel engine servicing the 600 TPH screening plant is rated at 0.262 MMBtu/hour. It is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(2) because the heat input capacity is less than one MMBtu/hr.

Storage Tanks
The following storage tank is less than 40,000 gallons and is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(1):

1. 6,000 gallon fuel oil no. 2 storage tank.

Wet Screening Station
The Wet Screening Station of the 300 TPH Washed Aggregate Plant is considered an insignificant activity in accordance with HAR §11-60.1-82(f)(7) because emissions are assumed to be negligible. The Wet Screening Station, consisting of a screen and conveyors, will be operated such that the product is saturated with water at all times. In accordance with 40 CFR §60.670(a)(2), the Wet Screening Station is not subject to Subpart OOO.

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine
The permittee may replace the 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

The plants are equipped with water spray systems to control fugitive dust. A water truck will be used as necessary to minimize fugitive dust from plant operations, material transfer points, stockpiles, and plant roads. A sprinkler system will be used on stockpiles to maintain adequate moister. A Donaldson Torit baghouse connected to the surge bin of the secondary plant will be used to control emissions.

PROJECT EMISSIONS

Emissions were based on the plant layout proposed in the application. Crushing and screening emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing. Storage pile emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) – Aggregate Handling and Storage Piles.

380 TPH Non-Portable Plant
The 380 TPH Non-Portable Plant is divided into the Primary and Secondary Plant, A-Rock Finish Plant, B-Rock Finish Plant, and Recycle Subfeed Plant. The plant will be limited in production to 2,400,000 tons/year. Water sprays will be used to control PM emissions.

380 TPH Non-Portable Plant				
Pollutant	Plant Emissions (TPY)		Storage Pile Emissions (TPY)	
	2,400,000 ton/yr	8,760 hr/yr	2,400,000 ton/yr	8,760 hr/yr
PM	36.2	121.8	47.9	142.3
PM-10	12.9	42.9	22.7	67.3
PM-2.5	1.8	5.8	3.4	10.2

300 TPH Washed Aggregate Plant

Emissions from the Wet Screening Station section of the plant are assumed to be negligible because material are saturated with water at all times. Water sprays will be used to control PM emissions.

300 TPH Washed Aggregate Plant		
Pollutant	Plant Emissions (TPY)	Storage Pile Emissions (TPY)
	8,760 hr/yr	8,760 hr/yr
PM	5.3	5.6
PM-10	1.9	2.6
PM-2.5	0.3	0.4

576 TPH Rip-Rap Plant with 203 hp Diesel Engine

The operating hours of the 576 TPH Rip-Rap Plant and diesel engine will be limited to 4,380 hours in any rolling 12-month period. Emissions were based on the maximum capacity of the plant. Water spray systems will be used to control PM emissions.

576 TPH Rip-Rap Plant				
Pollutant	Plant Emissions (TPY)		Storage Pile Emissions (TPY)	
	4,380 hr/yr	8,760 hr/yr	4,380 hr/yr	8,760 hr/yr
PM	3.1	6.2	10.7	21.5
PM-10	1.0	2.1	5.1	10.2
PM-2.5	0.1	0.2	0.8	1.5

The diesel engine is fired on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight. Emissions were based on EPA Tier 2 emission standards. The mass balance method was used to determine SO_2 emissions. TOC and HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) – Gasoline and Diesel Industrial Engines.

203 hp Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [4,380 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	1.15	2.52	5.04
NO_X	2.17	4.75	9.50
SO_2	0.67	1.46	2.92
PM	0.07	0.14	0.29
PM-10	0.07	0.14	0.29
PM-2.5	0.07	0.14	0.29
TOC	0.46	1.02	2.03
HAPs	0.005	0.011	0.021

600 TPH Screening Plant

The operating hours of the 600 TPH Screening Plant will be limited to 2,080 hours in any rolling 12-month period. Emissions were based on the maximum capacity of the plant. Water spray systems will be used to control PM emissions.

600TPH Screening Plant				
Pollutant	Plant Emissions (TPY)		Storage Pile Emissions (TPY)	
	2,080 hr/yr	8,760 hr/yr	2,080 hr/yr	8,760 hr/yr
PM	1.5	6.2	5.3	22.4
PM-10	0.5	2.1	2.5	10.6
PM-2.5	0.1	0.2	0.4	1.6

Vehicle Travel on Unpaved Roads

Emissions were based on the production limit of the 380 TPH Non-Portable 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 Roads		
Pollutant	Emissions (TPY) [2,400,000 ton/yr]	Emissions (TPY) [8,760 hr/yr]
PM	18.2	79.5
PM-10	4.4	19.4
PM-2.5	0.4	1.9

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	2.5	5.0	100	2,500 / 1000	250
NO_X	4.7	9.5	40	2,500 / 100	25
SO_2	1.5	2.9	40	2,500 / 100	25
PM	133.8	411.0	25	-	25
PM-10	53.8	159.3	15	250 / 100	25
PM-2.5	7.8	22.4	-	250 / 100	-
VOC	1.0	2.0	40	250 / 100	25
HAPs	0.01	0.02	-	-	5

Comparison of Facility Emissions (TPY)			
Pollutant	Current Emissions	Proposed Emissions	Net Change
CO	7.4	2.5	-4.9
NO_X	53.0	4.7	-48.3
SO_2	14.9	1.5	-13.4
PM	184.0	133.8	-50.2
PM-10	59.0	53.8	-5.2
PM-2.5	14.6	7.8	-6.8
VOC	2.2	1.0	-1.2
HAPs	0.05	0.01	-0.04

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) is generally required for new or modified sources to demonstrate compliance with State and National ambient air quality standards. An ambient air quality impact analysis is not required for this modifications because emissions are fugitive in nature. The Department of Health air modeling guidance generally does not require an ambient air quality impact analysis for fugitive emissions.

SIGNIFICANT PERMIT CONDITIONS

1. Production Limits

   The total production of the 380 TPH Non-Portable Plant shall not exceed 2,400,000 tons in any rolling twelve-month (12-month) period.

2. Operating Hour Limits

   a. The total operating hours of the 576 TPH Rip-Rap Plant with 203 hp diesel engine, as represented by the total operating hours of the 203 hp diesel engine, shall not exceed 4,380 hours in any rolling twelve-month (12-month) period.
   b. The total operating hours of the 600 TPH Screening Plant, as represented by its exempt diesel engine, shall not exceed 2,080 hours in any rolling twelve-month (12-month) period.

3. Fuel Limits

   The 203 hp diesel engine shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 0.5% by weight.

4. Fugitive and Stack Emission Limits

   a. For equipment that commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008:

      i. The permittee shall not cause to be discharged into the atmosphere from any crusher, fugitive emissions which exhibit greater than fifteen (15) percent opacity.

ii. The permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors, screening operation, or from any other affected facility, fugitive emissions which exhibit greater than ten (10) percent opacity.

b. For equipment that commenced construction, modification, or reconstruction on or after April 22, 2008:

i. The permittee shall not cause to be discharged into the atmosphere from any crusher, fugitive emissions which exhibit greater than twelve (12) percent opacity.
ii. The permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors, screening operation, or from any other affected facility, fugitive emissions which exhibit greater than seven (7) percent opacity.
iii. The permittee shall not cause to be discharged into the atmosphere from the baghouse, stack emissions which exhibit greater than seven (7) percent opacity.

c. The permittee shall not cause or permit fugitive dust to become airborne without taking reasonable precautions and shall not cause or permit the discharge of visible emissions of fugitive dust beyond the lot line of the property boundary on which the emissions originate.

CONCLUSION

Grace Pacific Corporation submitted an application for minor modification to upgrade and modify the aggregate handling and processing facility at Makakilo Quarry. Overall facility emissions will decrease compared to the existing facility. Water sprays will be used to control fugitive emissions. Recommend issuance of the covered source permit subject to the incorporation of the significant permit conditions and 45-day Environmental Protection Agency review period.

Mark Saewong
October 7, 2011