

**PERMIT APPLICATION REVIEW
COVERED SOURCE PERMIT NO. 0041-01-CT
Application for Renewal No. 0041-06
Application for Significant Modification No. 0041-05
Application for Minor Modification No. 0041-04**

Company: West Oahu Aggregate Company, Incorporated

Mailing Address: 855 Umi Street
Honolulu, Hawaii 96819

Facility: Stone Processing Plants

Location: 1650 Paakea, Waianae, Oahu

SIC Code: 1411 (Dimension Stone)

Responsible Official: Mr. Joaquin Silva
President/Owner
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PROPOSED PROJECT

West Oahu Aggregate Company, Incorporated has submitted an application for permit renewal with modifications. The modifications include the following:

1. Add 350 TPH Eagle Ultramax Crusher with 550 hp Detroit Diesel engine generator;
2. Remove 500 TPH Powerscreen; and
3. 680 hp Cummins diesel engine generator status changed to nonroad engine.

The previously permitted 450 TPH Jaw crusher has been replaced in the main work yard by the new 350 TPH portable jaw crusher. The 450 TPH is currently inoperable and has been moved into storage along with the supporting 680 hp diesel engine generator. If the unit is fixed, it will be used as a mobile source at other locations.

EQUIPMENT DESCRIPTION

Equipment	Model No.	Serial No.	Date of Manuf.	Power Supply
350 TPH Eagle portable jaw crusher w/ 550 hp Detroit diesel engine generator	Ultramax 1400-45	31255	2014	550 hp
	6063HV33	06R1061570	2013	550 hp
200 TPH Simplicity pan and grizzly feeder	0A120C	5716-0F120C	1993	550 hp
200 TPH Simplicity 3-deck vibrating screen	Model 6' x 20'	3620-HS140D	1993	550 hp
450 TPH Eagle portable impact mill crusher	33D4200Jumbo1400	10930	1993	680 hp
680 hp Cummins diesel engine generator	KTA19-G4	37187800	Pre 2006	680 hp
Various conveyors				
Water spray system				

AIR POLLUTION CONTROLS

The crushing and screening plants are equipped with water spray systems to control fugitive dust. Water trucks/water sprays will be used as necessary to minimize fugitive dust from plant operations, material transfer points, stockpiles, and plant roads.

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 Code of Federal Regulations (CFR) Part 60

Subpart 000 – Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the stone processing plants because they were manufactured after August 31, 1983, and the maximum capacity of both crushers are greater than one-hundred and fifty (150) TPH. The screening plant is subject to Subpart 000 because it is connected to the 350 TPH stone processing plant. The 350 TPH crusher is subject to the post April 22, 2008 opacity requirements and the 450 TPH crusher is subject to the pre April 22, 2008 opacity requirements based on their date of manufacture.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

1. The 550 hp diesel engine generator is subject to Subpart IIII because the engine was manufactured after April 1, 2006.
2. The 680 hp diesel engine generator is not subject to Subpart IIII because the engines was manufactured before April 1, 2006.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

This source is not subject to NESHAPs because there are no standards in 40 CFR Part 61 applicable to this facility.

NESHAPs 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)

1. The 550 hp diesel engine generator is considered a new source and is subject to Subpart ZZZZ because the engine was manufactured after June 12, 2006. This diesel engine generator must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII.
2. The 680 hp diesel engine generator is not subject 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.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM because 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 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 100% of the major source level; and (5) not otherwise be exempt from CAM.

Air Emissions Reporting Requirements (AERR), 40 CFR Part 51, Subpart A

AERR is not applicable because potential emissions from the facility do not exceed AERR 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.

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 without limitations for 8,760 hours/year.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis because potential emissions from the proposed modification are below significant levels. 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.

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

None

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine Generators

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

PROJECT EMISSIONS

350 TPH Crushing and Screening Plants

The maximum capacity of the plant was used to calculate emissions. Water sprays will be used to control PM emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing.

350 TPH Portable Crushing Plant		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	1.48	6.23
PM-10	0.56	2.35
PM-2.5	0.11	0.45

450 TPH Portable Stone Processing Plant

The maximum capacity of the plant was used to calculate emissions. Water sprays will be used to control PM emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing.

450 TPH Portable Stone Processing Plant		
Pollutant	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	0.86	3.64
PM-10	0.37	1.56
PM-2.5	0.08	0.34

550 hp Detroit Diesel Engine Generator

The 550 hp diesel engine generator is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions were based on manufacturer’s data. SO₂ and HAP emissions were based on emission factors from AP-42 Section 3.4 (10/96) – Large Stationary Diesel and All Stationary Dual-fuel Engines.

550 hp Detroit Diesel Engine Generator			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	3.27	3.40	14.34
NO _x	0.99	1.03	4.33
SO ₂	0.01	0.01	0.03
PM	0.16	0.17	0.71
PM-10	0.16	0.16	0.68
PM-2.5	0.15	0.15	0.64
VOC	0.09	0.09	0.38
HAPs	0.01	0.01	0.03

680 hp Cummins Diesel Engine

The 680 hp diesel engine is fired on fuel oil no. 2 with a maximum sulfur content of 0.0015% by weight. Emissions were based on manufacturer’s data. SO₂ and HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) – Gasoline and Diesel Industrial Engines.

680 hp Cummins Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	3.77	3.92	16.52
NO _x	14.20	14.77	62.20
SO ₂	0.01	0.01	0.03
PM	0.44	0.46	1.94
PM-10	0.43	0.44	1.87
PM-2.5	0.40	0.42	1.75
VOC	0.40	0.42	1.75
HAPs	0.007	0.007	0.031

Wind Erosion from Storage Piles

Emissions were based on emission factors from AP-42 Section 8.19.1 (4th ed.) - Sand and Gravel Processing

Wind Erosion from Storage Piles	
Pollutant	Emissions (TPY) [8,760 hr/yr]
PM	29.81
PM-10	14.10
PM-2.5	2.14

Vehicle Travel on Unpaved Roads

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) [2,080 hr/yr]	Emissions (TPY) [8,760 hr/yr]
PM	16.27	68.51
PM-10	3.98	16.75
PM-2.5	0.40	1.67

Greenhouse Gas (GHG) Emissions

Total GHG emissions are summarized in the table below:

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	1420.456	1420.46
Methane (CH ₄)	25	0.012	3.43
Nitrous Oxide (N ₂ O)	298	0.058	1.44
Total Emissions:			1425.33

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)						
Pollutant	Emissions ¹ (With Limits)	Emissions ¹ (No Limits)	BACT Significant Levels	AERR Thresholds (Type B Sources)	DOH Levels	Wind Erosion and Vehicle Travel Emissions
CO	7.32	30.86	100	1000	250	0
NO _x	15.80	66.53	40	100	25	0
SO ₂	0.02	0.06	40	100	25	0
PM	2.97	12.52	25	-	25	16.3
PM-10	1.53	6.46	15	100	25	4.0
PM-2.5	0.76	3.18	10	100	-	0.4
VOC	0.51	2.13	40	100	25	0
HAPs	0.017	0.061	-	-	5	0

¹ Excluding emissions from wind erosion from storage piles and vehicle travel on unpaved roads.

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) was conducted for the 550 hp diesel engine generator to demonstrate compliance with State and National ambient air quality standards. The AERMOD modeling system using Lakes Environmental AERMOD View, Version 9.0.0, was used for the modeling analysis.

An ambient air quality impact analysis (AAQIA) is not required for the crushing and screening plants 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.

An AAQIA was performed for the 680 hp diesel engine generator during the initial permit application process.

Terrain

USGS National Elevation Dataset. Oahu.DEM, WGS72, 1 deg.

Meteorological data

Meteorological data from Honolulu Airport (2008 – 2012) was used for the analysis.

Receptor Grid

Receptor grid spacing was set at 30 meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

EPA's Building Profile Input Program (BPIP-PRIME) was used to evaluate downwash effects of nearby structures.

NOx Emissions

NOx emissions were based on full conversion.

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (lb/hr)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (ft)	Exhaust Diameter (in)	Flow Rate (ft ³ /min)	Temp (°F)
DEG	3.274	0.989	0.155	0.145	0.006	12	8	3,090	963

Results

The Impact results are based on highest values outside of fence line. The table below shows the predicted ambient air quality impacts from the 550 hp diesel engine generator should comply with State and National ambient air quality standards.

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background ¹ (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to lower limit of SAAQS or NAAQS
CO	1-hr	189.9	3092	1678.9	10000	40000	32.82%
	8-hr	148.9	1450	1331.9	5000	10000	31.98%
NO ₂	1-hr	46.2	47	89.2	-	188	49.57%
	Annual	6.7	7	11.7	70	100	19.57%
PM-10	24-hr	4.3	32	43.3	150	150	24.20%
	Annual	1.0	15	16	50	-	32.00%
PM-2.5	24-hr	4.0	10.7	16.0	-	35	42.00%
	Annual	0.1	3.9	5.2	-	15	26.67%
SO ₂	1-hr	0.3	62	41.3	-	196	31.79%
	3-hr	0.3	50	30.3	1300	1300	3.87%
	24-hr	0.2	20	13.2	365	365	5.53%
	Annual	0.03	4	5.03	80	80	5.04%

1. Background concentrations (2014 Hawaii Air Quality Data) from Kapolei. NO₂ (1-hr) and PM-2.5 (24-hr) are the 98th percentile averaged over 3 years. PM-2.5 (annual) is the annual mean averaged over 3 years.
2. Annual data was calculated at 8760 hours per year for all equipment.

SIGNIFICANT PERMIT CONDITIONS

1. Operating Hour Limits

- a. The total operating hours of the 350 TPH portable crushing plant, as represented by the total operating hours of the 550 hp diesel engine, shall not exceed 2,080 hours in any rolling twelve-month (12-month) period.
- b. The total operating hours of the 450 TPH portable stone quarrying plant, as represented by the total operating hours of the 680 hp diesel engine generator, shall not exceed 2,080 hours in any rolling twelve-month (12-month) period.

Reason: Permittee established limits.

2. Incorporate provisions of 40 CFR 60, Subpart OOO for the stone quarrying and processing plant, including fugitive emission limits and source performance tests.

Reason: The stone processing plants are subject to 40 CFR 60, Subpart OOO.

CONCLUSION

West Oahu Aggregates has submitted applications for permit renewal and modifications. Potential emissions were based on the maximum rated capacities of the equipment. Recommend issuance of the covered source permit subject to the incorporation of the significant permit conditions, thirty-day (30-day) public comment period, and forty-five-day (45-day) Environmental Protection Agency review period.

Joseph Baumgartner / January 6, 2016