PROPOSED

TEMPORARY COVERED SOURCE PERMIT REVIEW - NO. 0627-01-CT

Application for Permit Renewal with Modification No. 0627-04
Addendum dated June 8, 2012

Significant Modification – Addition of one 496 TPH Mobile Terex Pegson Jaw Crusher with 385 HP Caterpillar C-13 Tier 3 Diesel Engine

Applicant: PB Sullivan Construction, Inc.
Facility: 507 TPH Komatsu Mobile Jaw Crusher, 386 TPH Terex Pegson Mobile Cone Crusher, and two (2) 500 TPH Powerscreen Mobile Screens and Mobile MGL Conveyor

Initial Location: 1367 South Kihei Road, Kihei, Maui

Responsible Official: Peter Sullivan
Title: President
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Applicant's Mailing Address: 2662 Wai Wai Place, No. 201
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SICC: 1429

Background:

PB Sullivan (PBS) owns and operates an existing rock processing plant consisting of a **507 TPH Mobil Jaw Crusher, 386 TPH Mobile Cone Crusher with two 500 TPH Mobile three-deck Screens and Stacking Conveyor** at various locations throughout Maui. The crusher is used to process stone and waste concrete. The jaw crusher has the ability to remove rebar embedded in the waste concrete. Raw materials and waste are dropped into a hopper which feeds the primary crusher via conveyor. Additional conveyors carry the processed material to storage piles.

Due to the size and manufacture date of the crushers, the crushers and screens are subject to 40 CFR Part 60, Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants.

Proposed Project:

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PBS is proposing to add a **496 TPH Mobil Powerscreen Terex Pegson Jaw Crusher** to the mobile stone processing plant. These added pieces of equipment may operate together with the existing 507 TPH jaw crusher and 386 TPH cone crusher or may operate alone at different jobsites. The increase in the number of allowable jobsites increases the potential emissions from the equipment covered by this permit. However, each jobsite is considered a facility because by definition, a facility needs a location. This modification is a significant change because the potential emission increase at each jobsite is greater than two (2) tons , HAR § 11-60.1-81.

The stone processing equipment currently is under operating hour limitations in order to comply with the ambient air standards. PBS proposes to operate the mobile stone processing plant for a maximum of 2,000 hours per site per rolling twelve-month (12-month) period.

The proposed 496 TPH Powerscreen mobile jaw crusher is powered by a 385 HP Caterpillar C-13 Tier 3 diesel engine. The crusher is track mounted and self-propelled. The mobile jaw crusher is subject to NSPS Subpart OOO when it operates either separately or with either or both of the existing crushers.

Equipment Description:

The following is a list of the equipment covered under this temporary covered source permit. The equipment listed in bold are being added under this modification.

a. 507 TPH Mobile Jaw Crusher, Komatsu model no. BR550JG-1, serial no. 1088 with a 306 hp diesel engine, Komatsu model no. SAA6D125, serial no. 211670;
b. 386 TPH Mobile Cone Crusher, Terex Pegson, model no. Maxtrax 1300, serial no. 130173EA with 440 HP Caterpillar Diesel Engine, model no. CAT-13, serial no. LGK03104;
c. 500 TPH Mobile 3-deck Screen, Powerscreen model no. Chieftain 2100, serial no.PID00124J75D05040 with 100 hp Deutz Diesel Engine, model no. BF4M2012, serial no.1038293;
d. 500 TPH Mobile 2-deck Screen, Powerscreen model no. Warrior 1800, serial no. PID00123VDGAC1834 with 100 hp Caterpiller diesel engine, model no. C4.4ATAAC serial no. 44605156;

e. Stacking Conveyor, MGL Engineering, Inc., model 7436, serial no. 746229 with an

85 hp Cummins diesel engine, model no. B3.3-85, serial no. 68065542**.**

f. **496 TPH Terex Pegson Premiertrak Mobil Jaw Crusher (serial number to be provided upon arrival) with 385 HP Caterpillar C-13 Tier 3 diesel engine (serial number to be provided upon arrival)**;

g. various waterspray systems.

Air Pollution Controls:

Water sprays are located at the crushers, screen, conveyors, and stockpiles to control fugitive dust from the crushing operations. Manual watering, including the use of water trucks, will control fugitive dust from the stockpiles and unpaved roads.

Applicable Requirements:

Hawaii Administrative Rules (HAR):

Chapter 11-59, Ambient Air Quality Standards

Chapter 11-60.1 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

11-60.1-37 Process Industries

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 10, Field Citations

NSPS:

40 CFR Part 60, Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants - states that fixed stone processing plants with capacities greater than twenty-five (25) TPH and portable stone processing plants with capacities greater than 150 TPH, that commence construction, reconstruction, or modification after August 31, 1983 are subject to the requirements of the subpart. Both of the existing and the modification crushers are greater than 150 TPH and were built after August 31, 1983. As such, the crushers are subject to Subpart OOO.

Non-Applicable Requirements:

BACT:

A Best Available Control Technology (BACT) analysis is required for each new or modified emissions unit located within a stationary source that has a net emissions increase equal to or greater than the significant levels defined in HAR §11-60.1-1. By definition, an emissions unit is part of a stationary source. A stationary source is a structure, facility, or installation located on one (1) or more contiguous or adjacent properties that are under common ownership or control. Since a stationary source must have a location, each temporary location is a stationary source.

The table below shows the net emissions from the proposed modification does not trigger BACT.

Table 1 - Emissions Rates, BACT

Pollutant	Existing Plant Emissions (TPY)	Proposed (net) Emissions (TPY)	Total Emissions (TPY)	BACT Trigger (TPY)
PM	43.8	20.0	63.8	25
PM_{10}	26	10.1	36.1	15
SO_x	2.1	0.6	2.7	40
NO_x	22.8	12	34.8	40

PROPOSED

Pollutant	Existing Plant Emissions (TPY)	Proposed (net) Emissions (TPY)	Total Emissions (TPY)	BACT Trigger (TPY)
VOC[1]	1.5	0	1.5	40
CO	6.2	5	11.2	100

Without operating hours limits

CAM:

The purpose of 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 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. Since the facility is not a major source, CAM does not apply.

CERR (Consolidated Emission Reporting Rule):

40 CFR Part 51, Subpart A – Emission Inventory Reporting Requirements, determines the annual emissions reporting frequency based on the actual emissions of each pollutant from any individual emission point within the facility that emits at or above the triggering levels. Since the trigger levels are at or above the major source levels and by definition, a temporary source cannot be a major source, the facility is not subject to annual emission reporting under CERR.

NSPS:

40 CFR Part 60, Standards of Performance for New Stationary Sources, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. The diesel engines on the new equipment being added to PBS's inventory are not subject to Subpart IIII for the following reasons. The 385 HP Tier 3 diesel engines used to power the 496 TPH mobile jaw crusher is a nonroad engines as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not mobile/nonroad engines.

PROPOSED

NESHAP/MACT:

Stone processing is not a NESHAP source.

40 CFR 63, Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines is not applicable to the diesel engines because the facility is not a major source of HAPs.

PSD:

PSD does not apply since this facility is not a major stationary source as defined in 40 CFR §52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

Synthetic minor:

A synthetic minor is a facility that without limiting conditions, physical or operational, emits above the major triggering levels as defined by HAR 11-60.1-1 for either criteria pollutant(s) or hazardous air pollutant(s). 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 existing 100 HP Caterpillar diesel engine on the 500 TPH mobile two-deck (2-deck) screen and the 85 HP Cummins diesel engine on the mobile conveyor are both insignificant activities because the heat input is less than one (1) MMBtu/hr. HAR§11-60.1-82(f)(2)

Alternate Operating Scenarios:

No new alternate operating scenarios were proposed.

Project Emissions:

Emissions from the mobile stone processing plant were estimated using AP-42 and manufacturer emission factors. PM_{10} emissions from the crushing operations were

estimated using AP-42 section 11.19.2, revised 8/04. AP-42 section 3.3, revised 10/96, was used to estimate the emissions from the proposed diesel engines. The table below lists the maximum emissions from the mobile stone processing plant with the addition of the proposed modification.

Table 2 - Emissions for the Mobile Stone Processing Plant

Pollutant	Existing Facility[2] Emissions 2,000 hrs (TPY)	Modification[3,4] Emissions 2,000 (TPY)	Total Emissions 2,000 hrs (TPY)
PM_{10}	26	2.2	28.2
SO_x	2.1	0.1	2.2
NO_x	22.8	2.8	25.6
VOC[1]	1.5	0	1.5
CO	6.2	1.2	7.4

1 - Total Organic Compounds (TOC) as volatile organic compounds (VOC)

2- Existing facility consists of 507 TPH Mobile Jaw Crusher, 386 TPH Mobile Cone Crusher, 500 TPH Mobile three-deck (3-deck) screen, 500 TPH Mobile two-deck (2-deck) screen and Mobile Conveyor.

3- Modification equipment consists of 496 TPH Mobile Jaw Crusherr. Emissions include storage piles.

4- Mobile screen diesel engines are insignificant activities and not included in the calculations.

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	1.2	1.2
Methane (CH_4)	0	0	0
Nitrous Oxide (N_2O)	310	2.8	868
Total Emissions:			869.2

With 2000 hrs/yr operating limits

Air Quality Assessment:

AIR QUALITY ASSESSMENT

The applicant used Aerscreen for the air quality assessment in amendment dated June 8, 2012. Aerscreen is a first tier review that uses worst case meteorological assumptions and site-specific land use parameters to provide a more conservative result. Aermod uses terrain information from USGS and actual meteorological data to provide a more accurate expression of the ambient air quality impact. DOH ran check runs utilizing Aermod (terrain and met data) and the screening level capability within Aermod (terrain). The results of the check runs were generally lower than the applicants Aerscreen results.

An ambient air quality impact assessment (AAQIA), screening level, was performed for the 385 HP diesel engine powering the 496 TPH mobile jaw crusher to demonstrate compliance with State and National ambient air quality standards. The AERSCREEN model was used for the analysis to determine maximum pollutant impacts. US EPA AERSCREEN , Version 11126, was used for the screening level modeling analysis. The ozone limiting method (OLM) for NO_2 was used within AERSCREEN with the NOx ratio set at 0.20. Downwash was also used within AERSCREEN. A nominal maximum operating rate at 75% capacity was used. ULSD fuel oil no. 2 is used to control SOx.

MAKEMET subprogram addresses meteorology and surface characteristics
Surface terrain was flat with no terrain elevations
Surface characteristics Albedo=0.28 , Bowen ratio=6.0 and Roughness length=0.30 meter
Minimum temperature=290K, Maximum temperature=304K
Minimum wind speed=0.5m/s, default
Anemometer height= 10.00meter, default

Receptor Grid
Receptor grid spacing was set at twenty-five (25) meters out to 5,000 meter distance.
Workspace area around crushing plant set at twenty-five (25) meters

Dispersion Coefficient
Rural dispersion coefficient was selected.

Building Downwash
The EPA's Building Profile Input Program (BPIP) was used to evaluate downwash effects based on the plants dimensions.
Height 4.3m
Length 9.1m
Width 2.4m

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 (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)
Diesel Engine Generator	0.17	0.17	0.0012	0.0012	0.098	3.66	0.127	1.13	718

Results

The annual concentrations assume annual fuel limits equivalent to 2,000 hours/year. The table below shows the predicted ambient air quality impacts from the mobile crusher with diesel engine generator should comply with State and National ambient air quality standards

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	SAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Compared to SAAQS
CO	1-hr	136.8	1832	1968	10000	40000	19%
	8-hr	95.7	1145	1240	5000	10000	25%
NO_2	1-hr[4]	119	56	175		188	93%
NO_2	Annual	31.2	3.8	35	70	100	50%
PM-10	24-hr	6.45	57	63.4	150	150	42%
	Annual	2.21	12	14.2	50	-	28%
PM-2.5	24-hr	6.4	14	20.4	-	35	58%
	Annual	2.21	5	7.2	-	15	47%
SO2[5]	1-hr[4]	78.5	26.1	98		195	50%
SO_2	3-hr	70.7	29	99.7	1300	1300	7.6%
	24-hr	31.4	11	42.4	365	365	11.7%
	Annual	17.9	3	20.9	80	80	26%

notes:

1. EPA scaling factors of 0.9, 0.7, and 0.4 for the three-hour (3-hour), eight-hour (8-hour), and twenty-four-hour (24-hour) concentrations are used, respectively. State of Hawaii scaling factor of 0.2 is used for annual concentrations.

2. Background concentrations from 2010 Hawaii Air Quality Data. Maximum background concentrations for CO, NO_2, SO_2 and PM taken from Kapolei, Oahu (2010).
   PM-2.5 98th percentile used.

3. NO_X ratio of 0.20 used for one-hr 1(-hr) OLM analysis.

4. One-hr (1-hr) NO_2 and SO_2 values also in ug/m^3.

5. Vendor low sulfur diesel analysis for 2011 S<500ppm. Typical ULSD S<15ppm

Conclusion and Recommendation:

PBS is proposing to increase their inventory of equipment covered under this permit with the addition of the mobile jaw crusher with Tier 3 diesel engine. The emission estimates and modeling of the stone processing facility operating with the new equipment predicted that the facility will remain a non-major source and will operate

within the limits of the ambient air quality standards provided operations are limited to 2000 hours per year. To ensure compliance, the operating hours must be monitored by the use of a non-resetting hour meter on the diesel engines. Air pollution controls at the facility consist of installing, operating, and maintaining waterspray systems and water trucks.

Issuance of a Temporary Covered Source Permit is recommended based on the information provided by the applicant and the conservative nature of the calculations.

Appendices

TOTAL FACILITY EMISSIONS CALCULATIONS 0627CTmod201209