

**Temporary Covered Source Permit Review Summary**

**Application No:** 0655-01

**Permit No.:** 0655-01-CT

**Applicant:** Kiewit Pacific Company

**Facility Title:** 357 TPH Portable Stone Quarrying and Processing Plant with One (1) 1,275 kW Diesel Engine Generator

**Location:** Various Temporary Sites, State of Hawaii  
Initial Location: Kapolei, Hawaii  
597,561 m E, 2,362,860 m N (NAD-83)

**Responsible Official:** Ben Prock  
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**Application Date:** July 20, 2007 and additional information dated September 6, 2007

**Proposed Project:**

SICC:1442 (Construction Sand and Gravel)

Kiewit Pacific Company is proposing an Initial Temporary Covered Source Permit, a 357 TPH portable stone quarrying and processing plant with a 1,275 kW diesel engine generator consisting of the following equipment:

- One (1) 357 TPH Pioneer primary jaw crusher;
- One (1) 300 TPH Torgensen impact crusher;
- One (1) 6' x 20' Cedarapids/Eljay vibrating screen;
- Various conveyors;
- One (1) 1,275 kW Caterpillar diesel engine generator.

The maximum operating hours of the portable stone quarrying and processing plant and diesel engine generator shall not exceed 2,080 hours/yr.

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This plant was previously permitted under Covered Source Permit No. 0626-01-CT, except for a new 1,275 kW Caterpillar diesel engine generator.

An application fee for an Initial Temporary Covered Source Permit of \$1000.00 was submitted and processed.

### Equipment Description:

**Table 1 – Stone Processing Operation**

Unit	Type	Manufacturer	Model	Year	Description	Capacity	Fuel
Portable Crushing Plant	Primary Jaw Crusher	Pioneer	30" x 42"; Serial # UHC3894	1990	30" x 42" feed opening, crushing of basalt rock, concrete, etc.	357 TPH	driven by diesel engine generator listed below
	Impact Crusher	Torgensen	500 HP w/ 40 HP screen back; Serial # CHX19	1989	secondary crushing	300 TPH	driven by diesel engine generator listed below
	Vibrating Screen	Cedarapids/ Eljay	6' x 20'		6' x 20'	300 TPH	driven by diesel engine generator listed below
	Various Conveyors	--	--	--	transports material to crushers and stockpiles	--	driven by diesel engine generator listed below
	Water spray system	--	--	--	nozzles located at material transfer points (see below)	--	N/A
	Diesel Engine Generator	Caterpillar	3512BDITA; Serial # 8RM00463	2000	drives crushers and conveyors	1,275 kW, 1,848 hp	Diesel # 2 max 91.8 gph <sup>a</sup>

<sup>a</sup> Based on manufacturer's specifications

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## Air Pollution Controls:

The facility will control particulate emissions by employing 10 water spray bars at the following material transfer points:

1. at the Pioneer primary jaw crusher;
2. at the transfer point from conveyor #1 to stacker #1;
3. at the transfer point from stacker #1 to stockpile;
4. at the transfer point from Pioneer primary jaw crusher to conveyor #2;
5. at the transfer point from conveyor #3 to conveyor #4;
6. at the transfer point from conveyor #5 to conveyor #3;
7. at the transfer point from Torgensen impact crusher to conveyor #5;
8. at Torgensen impact crusher;
9. at the transfer point from conveyor #6 to stacker #2;
10. at the transfer point from stacker #2 to stockpile

Stockpiles, crushing area, and unpaved truck access routes are controlled by a water truck.

Air pollution control is also achieved through the use of diesel 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
Subchapter 8	Standards of Performance for Stationary Sources
11-60.1-161(27)	Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants
Subchapter 10	Field Citations

### Federal Requirements

40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)  
    Subpart OOO - Standards of Performance for Non-metallic Mineral Processing Plants -

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applies to portable crushed stone plants with capacities greater than 150 TPH that commence construction, reconstruction, or modification after August 31, 1983. The Pioneer primary jaw crusher, Torgensen impact crusher, Cedarapids/Eljay vibrating screen, and various conveyors of the subject 357 TPH portable crushing plant are manufactured after this date, and thus are subject to Subpart OOO. The dates of manufacture for the equipment are shown in Table 1. Equipment for which dates are not provided were assumed to be after August 31, 1983 (worst case).

### Non-applicable Requirements:

#### Hawaii Administration Rules (HAR)

Title 11, Chapter 11-60.1	Air Pollution Control
Subchapter 7	Prevention of Significant Deterioration
Subchapter 9	Hazardous Air Pollutant Sources

#### Federal Requirements

40 CFR Part 60 - Standards of Performance for New Stationary Sources (NSPS)  
    Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – not applicable since the proposed 1275 kW diesel engine generator was manufactured before the applicability dates.

40 CFR Part 61 – National Emission Standards for Hazardous Air Pollutants (NESHAPS)  
    This source is not subject to NESHAPS as there are no standards in 40 CFR Part 61 applicable to this facility (stone processing plant operations).

40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories (Maximum Achievable Control Technologies (MACT) Standards)  
    Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines – not applicable since this facility is not a major source of HAP emissions

### Prevention of Significant Deterioration (PSD):

This source is not a major stationary source nor are there modifications proposed that by itself constitute a major stationary source that is subject to PSD review. Therefore, PSD is not applicable.

### Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is applicable only to new covered sources and significant modifications to covered sources that have the potential to emit or a net emissions increase above significant levels as defined in HAR §11-60.1-1. A BACT analysis is not applicable since the potential to emit is below the significant levels. See Table 2.

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### **Compliance Assurance Monitoring (CAM) Applicability:**

CAM is not applicable to this facility since the facility is not a major source of air pollutants.

### **Consolidated Emissions Reporting Rule (CERR):**

40 CFR Part 51, Subpart A - Emission Inventory Reporting Requirements, determines CER based on the emissions of criteria air pollutants from Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels as shown in Table 2. This facility does not emit at the CER triggering levels. Therefore, CER requirements are not applicable. However, annual emissions reporting is required since this is a covered source.

### **Insignificant Activities:**

Per HAR §11-60.1-82(f)(1): One (1) diesel fuel tank with a capacity of 500 gallons.

### **Alternative Operating Scenarios:**

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

### **Major Source Applicability:**

A major source as defined in HAR §11-60.1-1 has the potential to emit any HAP of 10 TPY or more, or 25 TPY or more of any combination of HAPs, or 100 TPY or more of any air pollutant. Calculated emissions do not meet these limits, and thus, this facility is not classified as a major source.

### **Synthetic Minor Applicability:**

A synthetic minor source is a facility that is potentially major (as defined in HAR §11-60.1-1), but is made nonmajor through federally enforceable permit conditions (e.g., limiting the facility's hours of operation and limiting the facility's production rate). This facility is a synthetic minor based on potential emissions of NO<sub>x</sub> of greater than "major" levels (> 100 TPY) when the facility is operated at 8,760 hr/yr. See enclosures for detailed calculations.

### **Project Emissions:**

The emissions calculations provided on Form S-1 were checked and modified using the most current AP-42 Factors (Tables 3.4-1, 3.4-2, 3.4-3, 10/96; 11.19.2-2, 8/04; and Sections 13.2.2, 12/03; and 13.2.4, 1/95). Emissions from the proposed facility are shown on Tables 2 and 3.

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**Table 2 – Proposed Facility Emissions Summary <sup>a</sup>**

Pollutant	Stone Processing Plant (TPY)	Agg Hand/Storage Piles (TPY)	Unpaved Roads (TPY)	1,275 kW Diesel Engine Generator (TPY)	Total Emissions including fugitive (TPY)	Significant Level (TPY)	Type B CERR Trigger Level <sup>b</sup> (TPY)	In-House Reporting Level <sup>c</sup> (TPY)
SO <sub>x</sub>	-	-	-	6.73	6.73	40	100	25
NO <sub>x</sub>	-	-	-	38.03	38.03	40	≥100	25
CO	-	-	-	6.12	6.12	100	≥1000	250
PM	2.23	3.16	3.06	0.39	8.84	25	-	25
PM <sub>10</sub>	0.84	1.49	0.90	0.39	3.62	15	≥100	25
PM <sub>2.5</sub>	0.15	0.47	0.14	0.39	1.15	-	≥100	
VOC	-	-	-	1.12	1.12	40	≥100	25
Pb	-	-	-			0.6	-	
Be	-	-	-			0.0004	-	
Hg	-	-	-			0.1	-	
HAPS	-	-	-	5.71 E-02 <sup>d</sup>	5.71 E-02	-	-	5

<sup>a</sup> TPY are calculated for 2,080 hr/yr of operation.

<sup>b</sup> Based on actual emissions.

<sup>c</sup> Based on potential emissions.

<sup>d</sup> See Table 3 for details.

**PROPOSED****Table 3 – Proposed Emissions Summary for Hazardous Air Pollutants (HAPS) and Other Trace Elements/Speciated Organic Compounds**

<b>POLLUTANT</b>	<b>1,275 kW Diesel Engine General Emissions (lb/hr)</b>	<b>1,275 kW Diesel Engine General Emissions at 2,080 hrs/yr (TPY)</b>
Benzene*	9.76 E-03	1.02 E-02
Toluene*	3.53 E-03	3.68 E-03
Xylenes*	2.43 E-03	2.52 E-03
Propylene*	3.51 E-02	3.65 E-02
Formaldehyde*	9.92 E-04	1.03 E-03
Acetaldehyde*	3.17 E-4	3.30 E-04
Acrolein*	9.91 E-05	1.03 E-04
Naphthalene*	1.63 E-03	1.70 E-03
PAH (Polycyclic Aromatic HC's)*	2.67 E-03	2.77 E-03
<b>TOTAL HAPS* (TPY)</b>		<b>5.71 E-02</b>

\* Hazardous air pollutants listed in the Clean Air Act and HAR 11-60.1 Subchapter 9.  
PAH includes Naphthalene.

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### Ambient Air Quality Impact Assessment:

The applicant conducted an ambient air quality impact analysis (AAQIA) to determine the emissions impact on the ambient air quality from the 1275 kW diesel engine generator. The analysis used the EPA SCREEN3 model to quantify ambient air pollutant impacts in the surrounding area. The assumptions used in the SCREEN3 model included the following:

- Simple terrain, complex terrain valley and complex terrain simple options
- Rural dispersion parameters
- Full meteorology
- Complex terrain valley – EPA scaling factors of 0.25, 0.9, and 0.7 for the 1-hr, 3-hr and 8-hr concentrations, respectively
- Complex terrain simple – EPA scaling factors of 0.4, 0.9, and 0.7 for the 1-hr, 3-hr and 8-hr concentrations, respectively
- State of Hawaii scaling factor of 0.2 for the annual concentration

Receptors were set at the locations and heights shown in the table below:

Simple Terrain		Complex Terrain	
Terrain Height (m)	Distance (m)	Terrain Height (m)	Distance (m)
1	135	12.2	304
2	140	24.4	369
3	145	36.6	477
4	150	48.8	654

A GEP analysis determined that the actual stack height of the diesel engine generator was insufficient to avoid downdraft for all the nearby structures within a 325 meter radius. The highest necessary stack height was determined for the jaw crusher, therefore, the jaw crusher dimensions were used for downdraft modeling. The table below show the dimensions of the nearby structures.

Building/Structure	Distance (m)	Height (m)	Width (m)	Length (m)
Diesel Housing	0	4.0	2.4	13.4
Jaw Crusher	7.3	7.6	2.4	13.7
Torgensen/Eljay	13.7	6.1	2.4	9.1

The table below presents the potential emission rates and stack parameters used in the modeling analysis.

#### Stack Parameters

Pollutant	Emission Rate (lb/hr)	Emission Rate (g/s)	Height Above Ground (m)	Direction	Diameter (m)	Velocity (m/s)	Flow Rate (m <sup>3</sup> /s)	Temp. (K)
NO <sub>x</sub>	36.57	4.61	4	Up	0.254	98.97	5.015	733.7
SO <sub>2</sub>	6.47	0.82	4	Up	0.254	98.97	5.015	733.7
CO	5.88	0.74	4	Up	0.254	98.97	5.015	733.7
PM	0.37	0.047	4	Up	0.254	98.97	5.015	733.7

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The table below shows the results of the modeling analysis.

Averaging Period	Simple Terrain		Complex Terrain Valley		Complex Terrain Simple	
	Conversion Factor	Normalized Concentration ( $\mu\text{g}/\text{m}^3$ per g/s)	Conversion Factor	Normalized Concentration ( $\mu\text{g}/\text{m}^3$ per g/s)	Conversion Factor	Normalized Concentration ( $\mu\text{g}/\text{m}^3$ per g/s)
1-hr	na	311.1	0.25	95.48	0.4	72.48
3-hr	0.9	280.0	0.9	85.93	0.9	65.23
8-hr	0.7	217.8	0.7	66.84	0.7	50.74
24-hr	0.4	124.4	na	23.87	na	28.99
Annual	0.2	62.2	0.2	19.1	0.2	14.5

The predicted impacts are shown in the table below and show that the maximum modeled concentrations plus background concentrations are below the State and Federal ambient air standards.

Pollutant	Averaging Period	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Background Concentration <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	SAAQs <sup>2</sup> ( $\mu\text{g}/\text{m}^3$ )	Percent of SAAQS (%)
NO <sub>x</sub>	Annual	51.06 <sup>3,4</sup>	9	60.1	70	85.9
SO <sub>2</sub>	3-hr	229.928	64	293.9	1300	22.6
	24-hr	102.190	21	123.2	365	33.8
	Annual	12.11 <sup>3</sup>	2	14.1	80	17.6
CO	1-hr	230.488	1710	1940.5	10,000	19.4
	8-hr	161.341	1055	1216.3	5,000	24.3
PM <sub>10</sub>	24-hr	5.801	53	58.8	150	39.2
	Annual	0.69 <sup>3</sup>	15	15.7	50	31.4

<sup>1</sup> Background air quality data was based on the Kapolei monitoring station data (2005) for NO<sub>x</sub>, SO<sub>2</sub>, CO and PM<sub>10</sub>.

<sup>2</sup> Only the State Ambient Air Quality Standards (SAAQs) are shown as they are equal to or more restrictive than the National Ambient Air Quality Standards (NAAQS).

<sup>3</sup> Based on annual operating hours of 2,080 hrs/yr

<sup>4</sup> Modeled NO<sub>2</sub> concentration is based on a NO<sub>x</sub> to NO<sub>2</sub> conversion using the Ambient Ratio Method (75% NO<sub>x</sub> = NO<sub>2</sub>).

### Significant Permit Conditions:

**Condition:** The total operating hours of the portable stone processing plant, including the diesel engine generator, shall not exceed 2,080 hours in any rolling twelve (12) month period.

**Purpose:** The applicant included an annual operating restriction on the diesel engine generator and plant to help ensure compliance with the State and Federal Ambient Air Quality Standards. The total operating hours will be monitored by a non-resetting hour meter on the diesel engine generator.

**Condition:** 40 CFR Part 60 Subpart OOO provisions are applicable to the 357 TPH portable stone processing plant, i.e., the Pioneer primary jaw crusher, 300 TPH Torgensen impact crusher, 6' x 20' Cedarapids/Eijay vibrating screen, and various conveyors. The permittee shall comply with all applicable provisions of these standards, including all emission limits, notification, testing, monitoring and reporting requirements.

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Purpose: To specify equipment subject to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants.

Condition: The permittee shall not cause to be discharged into the atmosphere from the 357 TPH Pioneer primary jaw crusher and 300 TPH Torgensen impact crusher, fugitive emissions which exhibit greater than fifteen (15) percent opacity.

Purpose: This condition is required by NSPS (40 CFR §60.672(a)).

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

Purpose: This condition is required by NSPS (40 CFR §60.672(b)).

**Conclusion and Recommendation:**

Based on the information submitted by the applicant, it is the determination of the Department of Health (DOH) that the proposed Temporary Covered Source Permit (CSP) No. 0655-01-CT will be in compliance with the all State and Federal air regulations. Therefore, recommend issuance of a new Temporary Covered Source Permit (CSP) No. 0655-01-CT subject to the incorporation of the significant permit conditions noted above, a 30-day public comment period and a 45-day EPA review period.

Darin Lum  
10/07