**PROPOSED**

**PERMIT APPLICATION REVIEW**
**TEMPORARY COVERED SOURCE PERMIT (NSP) NO. 0694-01-CT**
**Initial Permit Application No. 0694-01**

**Applicant:** American Hauling, Inc.

**Initial Location:** 67-241 Farrington Highway, Waialua, Oahu
**UTM:** 589meters East and 2,385,481 meters North

**Mailing Address:** P.O. Box 75506
Kapolei, Hawaii 96707-0506

**Equipment:** The facility operates the following equipment:

a. 200 TPH Jones Company jaw crushing plant with the following associated equipment:

   1) Lippman Grizzly King primary jaw crusher, model no. 1836, serial no. 5912107 (18" x 36" jaw size);
   2) Grizzly feeder (18' x 12');
   3) Two-deck screen (5' x 9.6' top deck) and (5' x 8' bottom deck);
   4) Various conveyors; and
   5) Water spray system.

b. 220 TPH Powerscreen screening plant, model no. Mark II, serial no. C2741872, with various conveyors and water spray system.
c. 800 TPH Powerscreen Powergrid screening plant, model no. Mark II, serial no. 7213725, with various conveyors and water spray system.
d. 390 hp Caterpillar diesel engine generator, model no. 3408B, serial no. 67U6256, servicing the jaw crushing plant, conveyors, and two-deck screen without engine.

| | | | |
|---|---|---|---|
| **Responsible Official:** | Mr. David Kaahaaina | **Consultant**: | Mr. Fred Peyer |
| **Title:** | President | **Address:** | 94-520 Uke'e Street, Suite A |
| **Company:** | American Hauling, Inc. | | Waipahu, Hawaii |
| **Phone:** | (808) 682-0697 | **Phone:** | (808) 671-8383 |

## 1. Background

1.1 American Hauling, Inc. has submitted an initial temporary covered source permit application to operate a jaw crushing plant and two portable screening plants for processing aggregate and screening soil. The applicant proposes a 2,080 hour per year operating limit for the diesel engine generator, 200 TPH jaw crushing plant, and 220 TPH screening plant. The applicant proposes a 1,900 hour per year operating limit for the 800 TPH screening plant. Water spray systems will be used by the applicant to control fugitive dust from the jaw crushing and soil screening plants. A water truck will also be used to control fugitive dust at each temporary work site. The standard industrial classification code (SICC) for this facility is 1429 (Crushed and Broken Stone, Not Elsewhere Classified).

1.2 Pictures from a July 25, 2008 site inspection of the facility are shown in Enclosure (1).

## 2. Applicable Requirements

2.1 Hawaii Administrative Rules (HAR)
Chapter 59, Ambient Air Quality Standards
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
11-60.1-38, Sulfur Oxides From Fuel Combustion
Subchapter 4 - Noncovered Sources
Subchapter 6 - Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
11-60.1-111, Definitions
11-60.1-117, General Fee Provisions for Noncovered Sources
11-60.1-118, Application Fees for Noncovered Sources
11-60.1-119, Annual Fees for Noncovered Sources
Subchapter 10 – Field Citations

2.2 40 Code of Federal Regulations (CFR) Part 60 – New Source Performance Standards (NSPS), Subpart OOO, Standards of Performance for Non-Metallic Mineral Processing Plants is applicable to the conveyors and screening plants that will be located at the same site as the crushing plant as worst-case scenario. Although the jaw crusher was manufactured before August 31, 1983, equipment associated with the jaw crushing plant was manufactured after 1983 and the jaw crusher is greater than 150 TPH in capacity. As such, pieces of equipment at the same site as the jaw crushing plant that were manufactured after 1983 are subject to 40 CFR Part 60, Subpart OOO. Equipment listed without a manufacturing date was assumed to be manufactured after 1983 as worst case.

2.3 The facility is not a major source for hazardous air pollutants (HAPs) and is not subject to National Emissions Standards for Hazardous Air Pollutants (NESHAPS) or Maximum Achievable Control Technology (MACT) requirements under 40 CFR, Parts 61 and 63.

2.4 The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission 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 greater than the major source level; and (5) not otherwise be exempt from CAM. CAM is not applicable because this facility is not a major source.

2.5 Prevention of Significant Deterioration (PSD) review applies to new major stationary sources and major modifications to these types of sources. The facility is not a major source for any single air pollutant. As such, PSD review is not required.

2.6 Annual emissions reporting will be required because the plant is subject to covered source permitting requirements.

2.7 The consolidated emissions reporting rule (CERR) is not applicable because emissions from the facility do not exceed reporting levels pursuant to 40 CFR 51, Subpart A. See table below.

| CERR APPLICABILITY | | | |
|---|---|---|---|
| Pollutant | Facility Emissions (2,080 hr/yr with water sprays and water truck) | CERR Triggering Levels (TPY) | |
| | | 1 year cycle (type A sources) | 3 year cycle (type B sources) |
| $PM_{10}$ | 10.9 | ≥ 250 | ≥ 100 |
| $SO_2$ | 1.4 | ≥ 2,500 | ≥ 100 |
| $NO_X$ | 11.9 | ≥ 2,500 | ≥ 100 |
| VOC | 0.2 | ≥ 250 | ≥ 100 |
| CO | 2.7 | ≥ 2,500 | ≥ 1,000 |

2.8 A best available control technology (BACT) analysis is required because potential emissions of particulate from this facility exceed significant levels as defined in HAR, Section 11- 60.1. See table below. The applicant proposes water spray systems and use of a water truck as BACT for controlling particulate emissions.

| BACT APPLICABILITY | | |
|---|---|---|
| Pollutant | Emissions (TPY) | Significant Level (TPY) |
| | 2,080 hr/yr with water sprays and water truck | |
| $SO_2$ | 1.4 | 40 |
| $NO_X$ | 11.9 | 40 |
| CO | 2.7 | 100 |
| VOC | 0.2 | 40 |
| PM | 30.5 | 25 |
| $PM_{10}$ | 10.9 | 15 |

2.9 Operational limits and controls for the plant restrict air pollutants below major source thresholds. Therefore, this facility is a synthetic minor source.

## 3. Insignificant Activities

3.1 The following insignificant activities were identified:

a. The 150 gallon fuel tank for the 390 hp diesel engine generator is an insignificant activity in accordance with HAR §11-60.1-82(f)(1).

b. The 38 hp Lister-Petter diesel engine servicing the 220 TPH screening plant is an insignificant activity pursuant to HAR §11-60.1-82(d)(4).

c. The 70 hp Deutz diesel engine servicing the 800 TPH screening plant is an insignificant activity pursuant to HAR §11-60.1-82(d)(4).

## 4. Alternate Operating Scenarios

4.1 As an alternate operating scenario, the applicant wants the option to replace the 285 hp

diesel engine for the mobile jaw crushing plant with another diesel engine of the same or smaller size if equipment malfunction or overhaul is required for the permitted diesel engine.

## 5. Air Pollution Controls

5.1 Water spray systems with water spray bars located at following transfer points will be used to control fugitive dust:

a. Jaw crusher;
b. Main conveyor servicing jaw crusher;
c. 220 TPH screening plant; and
d. 800 TPH screening plant.

5.2 A water spray truck will be used by the applicant to control dust at each work site.

## 6. Project Emissions

6.1 Emissions from the diesel engine generator were estimated using emission factors from AP-42, Section 3.3 (10/96), Gasoline and Diesel Industrial Engines. A mass balance calculation was used to determine $SO_2$ emissions based on the maximum allowable fuel sulfur content of 0.5% by weight and maximum 19.6 gallon per hour fuel consumption at 100% load. It was assumed that 96% of the total particulate was $PM_{10}$ and 90% of the total particulate was $PM_{2.5}$ based on AP-42, Appendix B.2, Table B.2-2 for gasoline and diesel fired internal combustion engines. An operation limit of 2,080 hours per year was applied to determine emissions. Emission estimates are shown in Enclosure (2) and summarized below.

| DIESEL ENGINE GENERATOR | | | | |
|---|---|---|---|---|
| Pollutant | Engine Emission Rate | | Engine Emissions (TPY) | |
| | 390 hp engine | | 390 hp engine | 390 hp engine |
| | lb/hr | g/s | 2,080 hours | 8,760 hours |
| $SO_2$ | 1.38 | 0.174 | 1.4 | 5.9 |
| $NO_X$ | 11.85 | 1.496 | 11.9 | 50.1 |
| CO | 2.55 | 0.322 | 2.7 | 11.4 |
| VOC | ------- | -------- | 0.2 | 0.8 |
| PM | ------- | ------- | 0.9 | 3.8 |
| $PM_{10}$ | 0.31 | 0.105 | 0.9 | 3.8 |
| $PM_{2.5}$ | | | 0.8 | 3.4 |
| HAPs | ------- | ------- | 0.018 | 0.076 |

6.2 Particulate emissions from the jaw crushing and screening plants were based on emission factors from AP-42, Section 11.19.2 (8/04), Crushed Stone Processing and Pulverized Mineral. The controlled emission factors were used for crushing and conveyor transfer points. It was assumed that 51% PM was $PM_{10}$ and 15% PM was $PM_{2.5}$ based on information from AP-42, Appendix B.2.2. Uncontrolled emission factors were used for truck loading and unloading operations and a 70% control efficiency for water sprays was applied to determine emissions. An operating time of 2,080 hr/yr was

assumed for the jaw crushing plant and 220 TPH screening plant. A 1,900 hr/yr operating limit was assumed for the 800 TPH screening plant. The rated capacity of the equipment was used to determine maximum potential emissions. Emissions from the jaw crushing plant and two soil screening plants are shown in Enclosure (3) and summarized below.

| CRUSHING AND SCREENING PLANTS | | |
|---|---|---|
| Pollutant | Emissions (TPY) | Emissions (TPY) |
| | 2,080 hr/yr (200 TPH and 220 TPH plants with water sprays)<br>1,900 hr/yr (800 TPH plant with water spray) | 8,760 hr/yr with water sprays |
| PM | 2.0 | 8.8 |
| $PM_{10}$ | 1.0 | 4.2 |
| $PM_{2.5}$ | 0.1 | 0.4 |

6.3 Particulate emissions from stockpiles were determined using emission factors from AP-42, Section 13.2.4 (11/06), Aggregate Handling and Storage Piles. Emissions were based on the plant capacities and the hour restrictions for the plants. Emissions were also based on a 10.9 mile per hour wind speed, K value for $PM_{10}$ of 0.35, K value for PM of 0.74, K value for $PM_{2.5}$ of 0.053, and a mean 0.7% material moisture content. A 70% control efficiency was applied to account for use of a water truck to control fugitive dust. Emissions are shown in Enclosure (4) and summarized in the table below.

| STORAGE PILES | | | |
|---|---|---|---|
| Pollutant | Emission Factor (lb/ton) | Emission Rate (TPY) | |
| | | 2,080 hr/yr (200 TPH and 220 TPH plants with water truck)<br>1,900 hr/yr (800 TPH plant with water truck) | 8,760 hr/yr with water truck |
| PM | 0.028 | 10.1 | 39.5 |
| $PM_{10}$ | 0.013 | 4.7 | 18.4 |
| $PM_{2.5}$ | 0.002 | 0.7 | 2.7 |

6.4 Emissions from vehicle travel on unpaved roads were calculated using the emission factor equation for vehicles traveling on unpaved surfaces at industrial sites. The equation was obtained from AP-42, Section 13.2.2 (11/06) Unpaved Roads. Equation (1a) emission factor was extrapolated to annual average uncontrolled conditions using Equation (2). Emission rates were based on the following assumptions:

a. A distance of 28,495 vehicle miles traveled per year based the maximum plant capacities, operating hours for the various plants, an average truck capacity of 21 tons, and a 0.25 mile two way travel distance for the trucks;
b. A k value for PM, $PM_{10}$, and $PM_{2.5}$ of 4.9, 1.5, and 0.15, respectively based on data for industrial roads;
c. An a value for PM, $PM_{10}$, and $PM_{2.5}$ of 0.7, 0.9, and 0.9, respectively based on data for industrial roads;
d. A b value for PM, $PM_{10}$, and $PM_{2.5}$ of 0.45 based on data for industrial roads;
e. An s (silt content of road) value of 3.9% based on information from AP-42, Section 13.2.2 – Unpaved Roads Related Information
   www.epa.gov//ttn/chief/ap42/ch13/related/c13s02-2.html;
f. A W (mean vehicle weight) value of 26.5 tons;
g. A p (# of days with 0.01" of rain/year) value of 114 based on available data between

years 1949 and 2001 from the WAIALUA 847 station recording climate parameters;

h. A 70% control efficiency was applied to account for use of a water truck;

i. Vehicle travel emissions are listed as follows:

| VEHICLE TRAVEL | | | |
|---|---|---|---|
| Pollutant | Emission Factor (lb/VMT) | Emissions (TPY) | |
| | | 2,080 hr/yr (200 TPH and 220 TPH plants with water truck)<br>1,900 hr/yr (800 TPH plant with water truck) | 8,760 hr/yr with water truck |
| PM | 4.089 | 17.5 | 68.4 |
| $PM_{10}$ | 1.000 | 4.3 | 16.8 |
| $PM_{2.5}$ | 0.010 | 0.04 | 0.2 |

6.5 Total yearly emissions from operating the crushing and screening plants are listed below as follows:

| TOTAL EMISSIONS | | |
|---|---|---|
| Pollutant | Potential Emissions (TPY)<br>2,080 hr/yr (200 TPH and 220 TPH plants with water truck)<br>1,900 hr/yr (800 TPH plant with water truck) | Potential Emissions (TPY) (8,760 hr/yr with water sprays and water truck) |
| $SO_2$ | 1.4 | 5.9 |
| $NO_X$ | 11.9 | 50.1 |
| CO | 2.7 | 11.4 |
| VOC | 0.2 | 0.8 |
| PM | 30.5 | 120.5 |
| $PM_{10}$ | 10.9 | 43.2 |
| $PM_{2.5}$ | 1.6 | 6.7 |
| Total HAPS | 0.018 | 0.076 |

## 7. Air Quality Assessment

7.1 An ambient air quality impact analysis (AAQIA) was performed for the 390 hp diesel engine generator using an EPA SCREEN 3 model. Assumptions for the model included:

a. Simple terrain;
b. Rural dispersion parameters;
c. Wake affects from a structure that is 13 feet x 8 feet x 36 feet in size;
d. Default meteorology;
e. EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations, respectively;
f. State of Hawaii scaling factor of 0.2 for the annual concentrations; and
g. Default receptor placement from 1 to 5,000 meters.

7.2 The following background concentrations were used for the assessment:

a. $PM_{10}$ – collected in 2006 from the Kapolei air quality monitoring station. Data for $PM_{10}$ from the Pearl City air quality monitoring station was flagged due to fireworks.

b. $NO_X$ – collected in 2006 from the West Beach air quality monitoring station.

c. CO – collected in 2006 from the Kapolei air quality monitoring station.

d. $SO_2$ – collected in 2006 from the Makaiwa air quality monitoring station.

7.3 The table below lists the emission rates and stack parameters used in the AAQIA.

| SOURCE | STACK | EMISSION RATES (g/s) | | | | STACK PARAMETERS | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | $NO_X$ | $SO_2$ | CO | $PM_{10}$ | Height (ft) | Temp. $^oK$ ($^oF$) | Dia. (in) | Flow Rate ($ft^3$/min)[a] |
| 390 hp engine | 1 | 1.496 | 0.174 | 0.322 | 0.105 | 14.25 | 752 (895) | 6” | 1,633 |

a: Actual flow rate was multiplied by $\sin 45^O$ to account for the stack of the diesel engine generator that is angled at about 45 degrees.

7.4 Results from the AAQIA of the 390 hp diesel engine, shown in the table below, indicate compliance with the ambient air quality standards. Maximum 1-hour model output was determined to be **1744 ug/m$^3$ per g/s** at distance of 19 meters (62 feet).

| PREDICTED AMBIENT AIR QUALITY IMPACTS | | | | | | |
|---|---|---|---|---|---|---|
| AIR POLLUTANT | AVERAGING TIME | IMPACT (ug/m$^3$) | BACKGROUND (ug/m$^3$) | TOTAL IMPACT (ug/m$^3$) | AIR STANDARD | PERCENT STANDARD |
| $SO_2$ | 3 –Hour | 273 | 62 | 335 | 1,300 | 26 |
| | 24 – Hour | 121 | 17 | 138 | 365 | 38 |
| | Annual[a] | 14 | 6 | 20 | 80 | 25 |
| $NO_2$ | Annual[a,b] | 38 | 6 | 44 | 70 | 63 |
| CO | 1 – Hour | 562 | 1,596 | 2,158 | 10,000 | 22 |
| | 8 – Hour | 393 | 1,183 | 1,576 | 5,000 | 32 |
| $PM_{10}$ | 24 – Hour | 73 | 59 | 132 | 150 | 88 |
| | Annual[a] | 9 | 15 | 24 | 50 | 48 |

a: Annual concentration reduced by a factor of 2,080/8,760 to account for the diesel engine generator hour limitation.
b: The ozone limiting method was utilized to determine the nitrogen dioxide concentration as follows:
Annual concentration of $NO_X$ for the equipment is (2,609 ug/m$^3$s/g)(2,080/8,760)(0.2) = 123 ug/m$^3$.

123 ug/m$^3$ > 27 ug/m$^3$ (background ozone concentration from Sand Island in 2006). Therefore, the equipment is $O_3$ limited since there is insufficient ozone to convert all the NO to $NO_2$.

It was assumed that 90% of the nitrogen oxides discharged forms NO and 10% of the nitrogen oxides discharged form $NO_2$; therefore, the concentration of $NO_2$ emitted is as follows:

$$123(0.1) = 12.3 ug/m^3$$

It was additionally assumed that the $NO_2$ produced from the reaction between NO and background ozone is as follows:

(background $O_3$) ($NO_2/O_3$) = 27(46/48) = 25.9 ug/$m^3$

Total $NO_2$ = 12.3 ug/$m^3$ + 25.9 ug/$m^3$ = 38.2 ug/$m^3$

## 8. Significant Permit Conditions

8.1 The total operating hours of the jaw crushing plant with 390 hp diesel engine generator shall not exceed 2,080 hours in any rolling twelve-month (12-month) period.

8.2 The total operating hours of the 220 TPH screening plant shall not exceed 2,080 hours in any rolling twelve-month (12-month) period.

8.3 The total operating hours of the 800 TPH screening plant shall not exceed 1,900 hours in any rolling twelve-month (12-month) period.

Reason for 8.1 through 8.3: The applicant has proposed the hour operating limits for the various plants to prevent the facility from becoming a major source.

8.4 Incorporate minimum stack height requirements for the diesel engine generator that powers the jaw crushing plant.

Reason for 8.4: The AAQIA was based on stack height measured during the July 25, 2008 site investigation.

8.5: 40 CFR, Part 60, Subpart OOO provisions are applicable to equipment associated with the jaw crusher that is greater than 150 TPH and manufactured after 1983.

Reason for 8.5: Incorporated into the permit based on applicability to federal standards as indicated in Paragraph 2.2.

## 9. Conclusion and Recommendation:

Actual emissions from this facility should be lower than estimated. Maximum potential emissions were based on worst-case conditions assuming maximum rated capacity of the crushing and screening plants. Actual plant capacity will vary depending on product size and the type of material, but will likely be much lower than the maximum rated capacity. The permit requires the use of water spray systems for compliance with fugitive dust regulations. The permit also requires the use of a water truck to control fugitive dust at sites where the equipment is located. Recommend issuance of the temporary covered source permit subject to the significant permit conditions, the 30 day public comment period, and 45 day review by the Environmental Protection Agency.

July 28, 2008
Mike Madsen