PROPOSED

PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT (CSP) NO. 0355-02-CT
Permit Application Renewal No. 0355-05

Applicant: West Hawaii Concrete

Facility: Crushing and Screening Plants

Locations: 1) Waikoloa Quarry, Waimea Quarry (Kamuela Quarry), Kona Quarry, and West Hawaii Sanitary Landfill
2) Other Temporary Sites, State of Hawaii

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Equipment:

1. The 800 TPH processing plant (615 plant) encompasses the following equipment and associated appurtenances:

   a. Grizzly feeder;
   b. 800 TPH Cedarapids jaw crusher, model no. 3042, serial no. 43383;
   c. 460 TPH JCI cone crusher, model no. K300, serial no. J-16897 (54”);
   d. 5’ x 16’ El-Jay screen, serial no. 34C2292;
   e. Various conveyors;
   f. Water spray system; and
   g. 635 kW/976 hp Caterpillar diesel engine generator, model no. C-27, serial no. MJE00634.

2. The 1,130 TPH processing plant (618 and 620 plants) encompasses the following equipment and associated appurtenances:

   a. Grizzly feeder;
   b. 1,130 TPH Cedarapids jaw crusher, model no. 4248, serial no. 52073;
   c. 400 TPH Canica vertical shaft impactor, model no. 100, serial no. 100368-03;
   d. 645 Cedarapids cone crusher, model no. MVP 450, serial no. 52074;
   e. 8’ x 20’ Cedarapids triple-deck screen, serial no. 52075;
   f. 8’ x 20’ Cedarapids triple-deck screen, serial no. 52076;
   g. Various conveyors;
   h. Water spray system; and
   i. 1,000 kW/1,350 hp Cummins diesel engine generator, model no. QST30-G5, serial no. 2177-03.

3. Additional pieces of equipment (613 and 618 plants) are listed as follows:

   a. 400 TPH Canica vertical shaft impactor, model no. 100, serial no. 10012590;
   b. 6’ x 18’ Vari-Vibe triple-deck screen, serial no. 961224;
   c. 8’ x 20’ Diester triple-deck screen, serial no. 1030566; and
   e. 545 kW/810 hp Caterpillar diesel engine generator, model no. 3412, serial no. 81Z09675; and
   d. 160 kW/245 hp Caterpillar diesel engine generator, model no. 3306, serial no. 66D17769.

Responsible Official: Mr. George Purdy
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Contact: Ms. Kathleen Brooks
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Company: West Hawaii Concrete
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Contact: Dr. Jim Morrow
Title: Consultant
Company: J. W. Morrow, DrPH
Phone: (808) 942-9096

1. Background

1.1 West Hawaii Concrete has submitted a permit application renewal to operate crushing and screening plants at various temporary locations. For the permit renewal, the applicant proposes to add a 976 hp/635 kW diesel engine generator to the permit that replaces a 810 hp/545 kW diesel engine generator powering the 615 plant. Also, provisions will be incorporated into the permit to allow pre-approved location changes for plant equipment that continually moves to and from the same site. The plants require water spray systems to control fugitive dust emissions. A water truck is used for additional control of fugitive dust from operations to process aggregate at each location. The standard industrial classification code (SICC) for this facility is 1429 (Crushed and Broken Stone, Not Elsewhere Classified).

1.2 For location changes, the applicant requested that sites at the Kona Quarry, Waimea Quarry, Waikoloa Quarry, and West Hawaii Sanitary Landfill be pre-approved for plant equipment. Air modeling assessments of the pre-approved quarry locations; however, showed an exceedance of the ambient air quality standards for $PM_{2.5}$ over the 24-hour averaging period. For compliance with the air standards, Kathleen Brooks indicated that a 12 hour per day operational limit would be acceptable for operating diesel engine generators at all pre-approved quarry locations.

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

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 crushing and screening plants because the capacity of the crushers are greater than 150 TPH and crushing and screening equipment was manufactured after 1983.

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 facility is a covered source.

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 (proposed limits with water sprays and water truck)[a]	CERR Triggering Levels (TPY)	
		1 year cycle (type A sources)	3 year cycle (type B sources)
PM_{10}	30.8	≥ 250	≥ 100
SO_2	21.1	≥ 2,500	≥ 100
NO_X	90.4	≥ 2,500	≥ 100
VOC	2.2	≥ 250	≥ 100
CO	8.9	≥ 2,500	≥ 1,000

a: Based on maximum potential emissions from operating equipment at all locations.

2.8 A best available control technology (BACT) analysis is not required because potential emissions from the modification to the facility does not cause an exceedance of the significant emission levels as defined in HAR, Section 11- 60.1. The modification is to add a 976 hp/635 kW diesel engine generator with 138,000 gallon per year fuel limit. The added generator replaces an existing 810 hp/545 kW diesel engine generator with 225,000 gallon per year fuel limit.

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

3. Insignificant Activities

3.1 Fuel tanks servicing the diesel engine generators are considered an insignificant activity in accordance with HAR §11-60.1-82(f)(1).

4. Alternate Operating Scenarios

4.1 As an alternate operating scenario, the applicant will be allowed to replace each diesel engine generator with another diesel engine of the similar or smaller size if replacement is required for the primary diesel engine generator.

5. Air Pollution Controls

5.1 The permit requires water spray systems and water trucks to control fugitive dust from processing aggregate at each temporary work site.

6. Project Emissions

6.1 Emissions of NO_X, CO, VOC, PM, PM_{10}, and $PM_{2.5}$ were based on emissions data from manufacturer's specifications for the 1,000 kW, 635 kW, and 545 kW diesel engine generators. Emissions of NO_X, CO, VOC, PM, PM_{10}, and $PM_{2.5}$ were based on emissions factors from AP-42, Section 3.3 (10/96), Gasoline and Diesel Industrial Engines for the 155 kW diesel engine generator. The hazardous air pollutant (HAP) emissions were estimated using emission factors from AP-42, Section 3.3 for equipment under 600 hp. The HAP emissions were estimated using AP-42, Section 3.4 (10/96), Large Stationary Diesel and all Stationary Dual-fuel Engines for equipment above 600 hp. A mass balance calculation was used to determine SO_2 emissions based on the maximum fuel sulfur content of 0.5% by weight and the 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. The applicable operating limits were used to determine emissions for each diesel engine generator. Emission estimates are shown in Enclosure (1) and summarized below.

1,000 kW DIESEL ENGINE GENERATOR					
Pollutant	Engine Emission Rate		Engine Emissions (TPY)		
	lb/hr	g/s	189,900 gal/yr (each site)	305,000 gal/yr (all sites)	8,760 hours
SO_2	4.46	0.563	6.7	10.7	19.5
NO_X	16.04	2.025	24.1	38.7	70.2
CO	1.63	0.206	2.5	3.9	7.2
VOC	-------	--------	0.5	0.8	1.5
PM	-------	-------	0.3	0.5	0.9
PM_{10}	0.21	0.027	0.3	0.5	0.9
$PM_{2.5}$	0.19	0.024	0.3	0.5	0.8
HAPs	-------	-------	0.047	0.075	0.136

635 kW DIESEL ENGINE GENERATOR					
Pollutant	Engine Emission Rate		Engine Emissions (TPY)		
	lb/hr	g/s	138,000 gal/yr (each site)	138,000 gal/yr (all sites)	8,760 hours
SO_2	3.24	0.409	4.9	4.9	14.2
NO_X	10.89	1.375	16.3	16.3	47.7
CO	0.65	0.082	1.0	1.0	2.8
VOC	-------	--------	0.1	0.1	0.2
PM	-------	-------	0.1	0.1	0.2
PM_{10}	0.048	0.006	0.1	0.1	0.2
$PM_{2.5}$	0.045	0.006	0.1	0.1	0.2
HAPs	-------	-------	0.034	0.034	0.099

545 kW DIESEL ENGINE GENERATOR					
Pollutant	Engine Emission Rate		Engine Emissions (TPY)		
	lb/hr	g/s	118,800 gal/yr (each site)	225,000 gal/yr (all sites)	8,760 hours
SO_2	2.79	0.352	4.2	8.0	12.2
NO_X	13.61	1.718	20.4	38.6	59.6
CO	0.48	0.061	0.7	1.3	2.1
VOC	-------	--------	0.2	0.4	0.6
PM	-------	-------	1.2	2.3	3.6
PM_{10}	0.80	0.101	1.2	2.3	3.5
$PM_{2.5}$	0.75	0.094	1.1	2.1	3.3
HAPs	-------	-------	0.029	0.055	0.085

160 kW DIESEL ENGINE GENERATOR					
Pollutant	Engine Emission Rate		Engine Emissions (TPY)		
	lb/hr	g/s	37,800 gal/yr (each site)	37,800 gal/yr (all sites)	8,760 hours
SO_2	0.89	0.112	1.3	1.3	3.9
NO_X	7.76	0.980	11.6	11.6	34.0
CO	1.67	0.211	2.5	2.5	7.3
VOC	-------	--------	1.0	1.0	2.8
PM	-------	-------	0.8	0.8	2.5
PM_{10}	0.55	0.069	0.8	0.8	2.4
$PM_{2.5}$	0.51	0.064	0.8	0.8	2.2
HAPs	-------	-------	0.014	0.014	0.041

6.2 Particulate emissions from the 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. A 2,000,000 ton per year aggregate processing limit was assumed for the emission estimates. Emissions from the crushing and screening plants are shown in Enclosure (2) and summarized below.

CRUSHING AND SCREENING PLANTS		
Pollutant	Emissions (TPY)	Plant Emissions (TPY)
	2,000,000 ton/yr with water sprays	8,760 hr/yr with water sprays (3,504,000 ton/yr, see note a)
PM	10.1	17.7
PM_{10}	3.7	6.5
$PM_{2.5}$	0.7	1.2

a: Based on 400 TPH average primary jaw crusher capacity for the plants and 8,760 hr/yr operation.

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 a production limit of 2,000,000 tons per year. 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 (3) and summarized in the table below.

STORAGE PILES			
Pollutant	Emission Factor (lb/ton)	Emission Rate (TPY)	
		2,000,000 ton/yr with water truck	8,760 hr/yr with water truck (3,504,000 ton/yr, see note a)
PM	7.13×10^{-3}	2.1	3.7
PM_{10}	3.37×10^{-3}	1.0	1.8
$PM_{2.5}$	5.10×10^{-4}	0.2	0.4

a: Based on 400 TPH average primary jaw crusher capacity for the plants and 8,760 hr/yr operation.

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 (12/03) 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 22,096 vehicle miles traveled per year based the maximum plant capacity, 2,000,000 tons per year production, an average truck capacity of 24 tons, and a 700 feet one way mile travel distance for the trucks;
b. A k value for PM, PM_{10}, and $PM_{2.5}$ of 4.9, 1.5, and 0.23, 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 10%
f. A W (mean vehicle weight) value of 27 tons;
g. A p (# of days with 0.01" of rain/year) value of 105 based on available data from Kona Airport;
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)	
		2,000,000 ton/yr with water truck	8,760 hr/yr with water truck (3,504,000 ton/yr, see note a)
PM	8.253	27.4	48.0
PM_{10}	2.436	8.1	14.2
$PM_{2.5}$	0.374	1.2	2.1

a: Based on 400 TPH average primary jaw crusher capacity for the plants and 8,760 hr/yr operation.

6.5 Total yearly emissions from operating the crushing plant are listed below as follows:

TON PER YEAR EQUIPMENT EMISSIONS						
Pollutant	Diesel Engine Generators			Crushing and Screening Plants		
	Each site	All Sites	8,760 hr/yr	Each Site	All Sites	8,760 hr/yr
SO_2	17.1	24.9	49.8			
NO_X	72.4	105.2	221.5			
CO	6.7	8.7	21.9			
VOC	1.8	2.3	5.3			
PM	2.9	3.1	8.5	39.6	69.4	69.4
PM_{10}	2.8	3.0	8.3	12.8	22.5	22.5
$PM_{2.5}$	2.6	2.8	7.8	2.1	3.7	3.7
Total HAPS	0.124	0.178	0.361			

TON PER YEAR FACILITY EMISSIONS			
	Each site	All Sites	8,760 hr/yr
SO_2	17.1	24.9	49.8
NO_X	72.4	105.2	221.5
CO	6.7	8.7	21.9
VOC	1.8	2.3	5.3
PM	42.0	73.1	77.9
PM_{10}	15.2	26.2	29.5
$PM_{2.5}$	4.4	7.2	10.2
Total HAPS	0.124	0.178	0.361

7. Air Quality Assessment

7.1 An ambient air quality impact analysis (AAQIA) was performed for pre-approved locations that include Waikoloa Quarry, Waimea Quarry (Kamuela Quarry), Kona Quarry, and the West Hawaii Sanitary Landfill. An ISCST3 model was run with BEE-Line software to determine air impacts for the various locations. Default SCREEN3 meteorological data was used for the modeling assessments. The modeling assumptions are listed below.

a. Simple and complex terrain were assumed for all pre-approved locations (10 meter DEM files for Anaehoomalu, Keahole Point, Nohonaohae, and Puu Hinai were entered into the modeling program for the applicable location).
b. Receptor grid for the West Hawaii Landfill overlapped the Anaehoomalu and Puu Hinai topographic quads. Therefore, receptor elevations were identified from a special grid covering one of the topographic quads. Special grid receptors were then converted to discrete receptors after generating receptor elevations. Receptor elevations were generated with the other terrain file for receptors on the other topographic quad prior to running the model.
c. A 990 x 990 meter receptor grid with 30 meter spacing between receptors was used around the Waikoloa Quarry, Waimea Quarry, and Kona Quarry. A 656 feet x 656 feet fence line was assumed for each quarry location.
d. A 1,795 x 2,190 meter receptor grid with 30 meter spacing between receptors was used around the West Hawaii Sanitary Landfill. Approximate fence line boundary for the landfill was determined using an aerial photograph from Google Earth.
e. Rural dispersion parameters were used for the model runs.
f. The EPA building profile input program prime (BPIP) was used to evaluate effects of downwash from diesel engine generator containers that house the equipment.
g. EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations, respectively, were applied to determine the short-term impacts.
h. State of Hawaii scaling factor of 0.2 was used to determine the annual impacts.

7.2 The following background concentrations were used for the assessment:

a. PM_{10} and $PM_{2.5}$ – collected in 2007 from the Maui air quality monitoring station (air monitoring station that is closest to Kona with PM_{10} and $PM_{2.5}$ data).

b. NO_X - collected in 2007 from the Kapolei air quality monitoring station (air monitoring station that is closest to Kona with NO_X data).

c. CO – collected in 2007 from the Honolulu air quality monitoring station (air monitoring station that is closest to Kona with CO data).

d. SO_2 – collected in 2007 from the Kona 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} $PM_{2.5}$	Height (ft)	Temp. ^oK (^oF)	Dia. (in)	Flow Rate (ft^3/min)
Cummins QST30-G5 1,000 kW/1,350 hp	1	0.694[a]	0.564 0.193[a]	0.206	0.028 0.009[a] 0.026 0.008[a]	23	766 (920)	10	6,960
Caterpillar C-27 635 kW/976 hp	2	0.591[a]	0.409 0.140[a]	0.154	0.012 0.005[a] 0.011 0.004[a]	17	944 (780)	8	4,880
Caterpillar 3412 545 kW/810 hp	3	0.588[a]	0.352 0.120[a]	0.061	0.101 0.034[a] 0.094	17	774 (685)	8	4,587

					0.032[a]				
Caterpillar 3306 160 kW/ 245 hp	4	0.336[a]	0.111 0.038[a]	0.212	0.069 0.023[a] 0.064 0.021[a]	13	1,008 (815)	4	1,419

a: Annual emissions rate.

7.4 Results from the AAQIA of the diesel engine generators, shown in the tables below, indicate compliance with the ambient air quality standards.

PREDICTED AMBIENT AIR QUALITY IMPACTS (Waimea Quarry)						
AIR POLLUTANT	AVERAGING TIME	IMPACT (ug/m^3)	BACKGROUND (ug/m^3)	TOTAL IMPACT (ug/m^3)	AIR STANDARD	PERCENT STANDARD
SO_2 see notes a & d	3 –Hour 24 – Hour Annual	222 50 15	83 47 13	305 97 28	1,300 365 80	23 27 35
NO_2 see notes a & c	Annual	46	9	55	70	79
CO see note b	1 – Hour 8 – Hour	123 86	2,280 1,235	2,403 1,321	10,000 5,000	24 26
PM_{10} see notes a & d	24 – Hour Annual	18 5	93 26	111 31	150 50	74 62
$PM_{2.5}$ see notes a & d	24 – Hour Annual	17 4	11 5	28 9	35 15	80 60

a: Model was re-run to determine maximum impact from combination of worst-case engines.
b: Impact predicted by applicant's consultant.
c: Total impact reduced by 25% to account for partial conversion of NO_X to NO_2. Reduced impact = impact (0.75)
d: The 24-hour impact was reduced by 12/24 to account for a 12 hour per day operating limit.

PREDICTED AMBIENT AIR QUALITY IMPACTS (Waikoloa Quarry)						
AIR POLLUTANT	AVERAGING TIME	IMPACT (ug/m^3)	BACKGROUND (ug/m^3)	TOTAL IMPACT (ug/m^3)	AIR STANDARD	PERCENT STANDARD
SO_2 see notes a & d	3 –Hour 24 – Hour Annual	267 60 20	83 47 13	350 107 33	1,300 365 80	27 29 41
NO_2 see notes a & c	Annual	33	9	42	70	60
CO see notes b	1 – Hour 8 – Hour	127 89	2,280 1,235	2,407 1,324	10,000 5,000	24 26
PM_{10} see notes a & d	24 – Hour Annual	12 4	93 26	105 30	150 50	70 60
$PM_{2.5}$ see notes a & d	24 – Hour Annual	11 4	11 5	22 9	35 15	63 60

a: Model was re-run to determine maximum impact from combination of worst-case engines.
b: Impact predicted by applicant's consultant.
c: The ozone limiting method was utilized to determine the nitrogen dioxide concentration as follows:
Annual concentration of NO_X for the equipment is:

$(427\ ug/m^3 s/g)(0.2) = 85.4\ ug/m^3$

(85.4) ug/m^3 > 25.5 ug/m^3 (background ozone concentration from Sand Island in 2007). 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 from the stacks form NO and 10% of the nitrogen oxides discharged from the stacks form NO_2; therefore, the concentration of NO_2 emitted from the stacks is as follows:

$$85.4(0.1) = 8.5 \text{ ug/m}^3$$

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

$$(\text{background } O_3)\ (NO_2/O_3) = 25.5(46/48) = 24.4 \text{ ug/m}^3$$

$$\text{Total } NO_2 = 8.5 \text{ ug/m}^3 + 24.4 \text{ ug/m}^3 = \underline{32.9 \text{ ug/m}^3}$$

d: The 24-hour impact was reduced by 12/24 to account for a 12 hour per day operating limit.

PREDICTED AMBIENT AIR QUALITY IMPACTS (Kona Quarry)						
AIR POLLUTANT	AVERAGING TIME	IMPACT (ug/m^3)	BACKGROUND (ug/m^3)	TOTAL IMPACT (ug/m^3)	AIR STANDARD	PERCENT STANDARD
SO_2 see notes a & d	3 –Hour 24 – Hour Annual	171 38 15	83 47 13	254 85 28	1,300 365 80	20 23 35
NO_2 see note a & c	Annual	46	9	55	70	79
CO see notes a & d	1 – Hour 8 – Hour	112 78	2,280 1,235	2,392 1,313	10,000 5,000	24 26
PM_{10} see notes a & d	24 – Hour Annual	11 3	93 26	104 29	150 50	69 58
$PM_{2.5}$ see notes a & d	24 – Hour Annual	10 3	11 5	21 8	35 15	56 53

a: Model was re-run to determine maximum impact from combination of larger engines.
b: Impacts predicted by applicant's consultant.
c: Total impact reduced by 25% to account for partial conversion of NO_X to NO_2. Reduced impact = impact (0.75).
d: The 24-hour impact was reduced by 12/24 to account for a 12 hour per day operating limit.

PREDICTED AMBIENT AIR QUALITY IMPACTS (West Hawaii Sanitary Landfill)						
AIR POLLUTANT	AVERAGING TIME	IMPACT (ug/m^3)	BACKGROUND (ug/m^3)	TOTAL IMPACT (ug/m^3)	AIR STANDARD	PERCENT STANDARD
SO_2 see note a	3 –Hour 24 – Hour Annual	118 52 9	83 47 13	201 99 22	1,300 365 80	15 27 28
NO_2 see note a	Annual	34	9	43	70	61
CO see note a	1 – Hour 8 – Hour	50 35	2,280 1,235	2,330 1,270	10,000 5,000	23 25
PM_{10} see note a	24 – Hour Annual	4 1	93 26	97 27	150 50	65 54
$PM_{2.5}$ see note a	24 – Hour[b] Annual	4 1	11 5	15 6	35 15	43 40

a: Model was re-run to determine maximum impacts.

8. Significant Permit Conditions

8.1 The total production shall not exceed 2,000,000 tons in any rolling twelve-month (12-month) period at any one location.

Reason for 8.1: This limit was carried over from the previous permit. The condition prevents the facility from exceeding the major source threshold for particulate. The major source threshold is site specific.

8.2. The maximum number of diesel engine generators operating at any one location shall be limited to three (3). At no time shall more than three (3) diesel engine generators operate simultaneously at any one site.

Reason for 8.2: The limit was carried over from the previous permit. The condition ensures compliance with the air standards for operating the diesel engine generators.

8.3 The total fuel consumption of the 1,000 kW/1,350 hp diesel engine generator shall not exceed 189,900 gallons at any one location in any rolling twelve-month (12-month) period.

8.4 The total combined fuel consumption of the 1,000 kW/1,350 hp diesel engine generator shall not exceed 305,000 gallons at all locations in any rolling twelve-month (12- month) period.

8.5 The total fuel consumption of the 545 kW/810 hp diesel engine generator shall not exceed 118,800 gallons at any one location in any rolling twelve-month (12-month) period.

8.6 The total combined fuel consumption of the 545 kW/810 hp diesel engine generator shall not exceed 225,000 gallons at all locations in any rolling twelve-month (12-month) period.

8.7 The total combined fuel consumption of the 160 kW/245 hp diesel engine generator shall not exceed 37,800 gallons at all locations in any rolling twelve-month (12-month) period.

Reason for 8.3 to 8.7: These conditions were carried over from the previous permit. The conditions ensure that BACT thresholds are not exceeded. BACT thresholds are not site specific. The conditions also ensure compliance with the air standards.

8.8 The total combined fuel consumption of the 635 kW/976 hp diesel engine generator shall not exceed 138,000 gallons at all locations in any rolling twelve-month (12-month) period.

Reason for 8.8: The fuel limit was proposed by the applicant for the new diesel engine generator that replaces a 545 kW diesel engine generator. As a result of the fuel limit, BACT thresholds are not exceeded. The limit also ensures compliance with the ambient air quality standards for operating the diesel engine generators.

8.9 Incorporate minimum stack height requirements for the diesel engine generators.

Reason for 8.9: The AAQIAs were based on the stack heights reported by the applicant.

8.10 Incorporate 40 CFR, Part 60, Subpart OOO provisions for the crushing and screening equipment.

Reason for 8.10: Incorporate into the permit based on applicability to federal standards as indicated in Paragraph 2.2.

8.11 The total operation of each diesel engine generator shall not exceed 12 hours per day at the Kona, Waikoloa, and Waimea quarry locations.

Reason for 8.11: This condition is necessary for the facility to comply with the ambient air quality standard for $PM_{2.5}$ over the 24-hour averaging period as a worst-case scenario for operating the diesel engine generators at all quarry locations.

9. Conclusion and Recommendation:

9.1 Potential emissions from the facility are reduced with fuel and production limits specified in the permit. The permit requires the use of a water spray systems for compliance with the fugitive dust regulations that apply to the various crushing and screening equipment. The permit also requires the use of a water truck to control fugitive dust at sites where the crushing and screening equipment is operated. Air modeling assessments of the diesel engine generators predicted compliance with the ambient air quality standards based on the proposed fuel limits and operation restrictions incorporated into the permit. 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.

Mike Madsen January 30, 2009