PROPOSED

PERMIT APPLICATION REVIEW
RENEWAL & SIGNIFICANT MODIFICATION
Covered Source Permit (CSP) No. 0258-01-CT

Application No.: 0258-03

Applicant: Grace Pacific Corporation

Facility: 325 TPH Drum Mix Asphalt Plant with 795 kW Diesel Engine Generator

SIC Code: 2951 (asphalt paving mixtures and blocks)

Location: Honokohau Quarry, Kona, HI

UTM Coordinates: 813,326 East - 2,179,328 North (baghouse stack)

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I. Background

Grace Pacific Corporation (Grace Pacific) submitted a CSP renewal application dated 10/12/04 for its 325 TPH drum mix asphalt plant, and revised the application on October 7, 2005 and December 20, 2005. The application proposes that a significant modification be incorporated in the permit renewal with the following changes:

- Revise the permit type from a temporary to a standard CSP since the facility has never been moved from its original location.
- Increase the asphalt production limit from 275 to 325 tons per hour.
- Increase the asphalt production limit from 150,000 to 260,000 tons per rolling 12-month period.
- Add an alternate operating scenario to allow replacement of a similar-sized diesel engine generator (DEG) in the event that the current DEG is in need of repair to function properly.

On October 7, 2005, the applicant submitted an amendment to the application which proposed to:

- Replace the existing load-out silo with two new silos. The production rate (260,000 tons per rolling 12-month period) remains the same.

- Decrease the diesel engine generator operating limit from 4,261 hr/yr to 3,000 hr/yr, and the volume of fuel fired from 230,115 gal/yr to 153,000 gal/yr.

On December 20, 2005, the applicant submitted a request for a minor modification to replace the existing 1,085 hp diesel engine generator with a more efficient one rated at 1,065 hp.

II. Equipment Description

There are no physical changes to the plant equipment except for the new Cummins 795 kW DEG, which is listed in the following table.

Table 1: Facility Equipment

Item	Manufacturer	Model No.	Serial No.	Maximum Capacity
Drum mixer	Stansteel	DM732	732	325 TPH
Drum mixer burner	Stansteel	-	-	12.9 MMBTUH
Drum mixer cyclone	Stansteel	-	-	-
Baghouse	Astec	RBH-43-SP	93-154-437	-
DEG (to be replaced)	Cummins	KTA38-G2	1920485813	1085 hp (800 kW)
DEG (new replacement)	Cummins	QST30-G5 NR2	TBD	1065 hp (795 kW)
Hot oil heater	Heatec	HCS-120	94268	1.25 MMBTUH
Vibrating scalper screen	-	Type P, Design D	P-18G311NYS	-
HMA storage silo	-	-	-	80 tons
RAP bin	-	-	-	30 tons

Note: A dash indicates information unavailable.

III. Air Pollution Controls

A baghouse and cyclone are used to control PM emissions from the HMA drum mixer. Sulfur dioxide emissions are controlled using fuel containing no more than 0.5% sulfur by weight.

IV. Applicable Requirements

1. Hawaii Administrative Rules (HAR), Title 11
    - 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
            - 11-60.1-33 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 10 - Field Citations

2. NSPS Requirements

Applicable subparts in 40 Code of Federal Regulations, Part 60, Standards of Performance for New Stationary Sources (NSPS):

- Subpart A - General Provisions
- Subpart I - Standards of Performance for Hot Mix Asphalt Facilities

Subpart I applies because the 325 TPH HMA plant was constructed or modified after June 11, 1973.

3. Synthetic Minor & Major Source applicability

A synthetic minor 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 a synthetic minor of CO and NOx based on potential emissions that exceed the major source threshold level when the facility is operated at its maximum capacity continuously for 8,760 hr/yr. (See Table 4)

V. Non-Applicable Requirements

1. PSD Requirements

PSD requirements do not apply because the facility is not considered a major stationary source and is not proposing any modifications to trigger a major modification as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

2. NESHAP Requirements

These requirements do not apply because no standard covering the facility's operation or equipment has been promulgated under 40 CFR 61.

3. MACT Requirements

These requirements do not apply because the facility is not a major source of hazardous air pollutants and the facility does not belong to a source category or subcategory for which a standard has been promulgated under 40 CFR 63.

4. BACT Requirements

A BACT review is required for new or modified sources which will result in a "significant" net emissions increase as defined in HAR §11-60.1-1. Since the net emissions increase from the proposed modification is not at the significant level (as shown in the following Table 2), a BACT analysis is not required.

Table 2: Emissions and Triggering Levels

Pollutant	Potential Emissions (tpy)	Past Potential Emissions (tpy)	Net Emissions Increase (tpy)	Significant Level (tpy)	CER Reporting Level (tpy)
CO	19.02	15.70	3.32	100	1000
NOx	21.79	63.50	-41.7	40	100
PM *	6.09	5.50	0.6	25	N/A
PM10 *	4.03	3.20	0.8	15	100
SO2	1.32	6.80	-5.5	40	100
TOC/VOC	4.61	4.20	0.4	40	100
Pb	0.002	0.001	0.001	0.6	5

* Does not include PM emissions from vehicle travel on unpaved roads.

Note: Current and past potential emissions were compared instead of current potential compared to past actual emissions because of differences in emission calculations and assumptions for past actual calcualations.

5. CAM Requirements (40 CFR 64)

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 devices to meet an emissions limit or standard. CAM applies if the emissions unit:

1. is located at a major source;
2. is subject to an emissions limit or standard;
3. uses a control device to achieve compliance;
4. has potential pre-control emissions that are 100% of the major source level; AND
5. is not otherwise exempt from CAM.

CAM does not apply because this facility does not meet all of the above requirements. (See Table 4)

6. CER/Requirements & DOH Reporting
Consolidated Emissions Reporting (CER) requirements apply if facility emissions equal or exceed levels specified in 40 CFR 51, Subpart A, Appendix A, shown in the previous table. CER requirements do not apply because facility emissions do not equal or exceed the CER threshold levels. (See Table 2) However, DOH requests annual emissions reporting for all covered sources.

VI. Insignificant Activities

Table 3: Insignificant Activities

Description	HAR Reference
50 kW Onan DEG and Asphalt tank burner rated at less than 1.0 MMBTUH.	11-60.1-82(f)(2) Other than smoke house generators and gasoline fired industrial equipment, fuel burning equipment with a heat input capacity less than on million BTUH, or a combination of fuel burning equipment operated simultaneously as a single unit having a total combined heat input capacity of less than one million BTUH.
3 fuel oil tanks with capacities of 500, 2000, & 9000 gallons 2 asphalt storage tanks both with capacities of 25,000 gallons	11-60.1-82(f)(1) Any storage tank, reservoir, or other container of capacity equal to or **less than 40,000 gallons** storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 and 112 of the Act.

VII. Alternative Operating Scenarios

The applicant proposed an alternate temporary replacement for the 1,065 hp diesel engine if any situation reasonably warrants removal of the diesel engine; for example, engine failure, or a need for engine overhaul. The replacement engine shall have equal or less emissions than the original engine. The replacement diesel engine shall comply with the same terms and conditions as the initial DE. The permittee shall submit the necessary information to the Department, with the Department's approval, prior to installing the replacement.

VIII. Project Emissions

Emission point sources include the drum mixer baghouse, HMA silo loading operations, the DEG, and the hot oil heater. Fugitive emission sources include asphalt concrete load-out, aggregate storage, and travel on unpaved roads. Emission calculations are contained in the appendix, and results are shown in Table 4.

The applicant proposed utilizing a new 1,065 kW DEG for the HMA plant and proposed reducing the maximum operating hours from 4,261 hr/yr to 3,000 hr/yr. The applicant indicated that the new DEG complies with the US EPA emission regulations under the provisions of 40 CFR 89, Non-Road (Mobile Off Highway) Tier 2 emissions limits when tested per ISO 8189 D2. The emissions from the DEG were calculated using manufacturer's test data for NOx, CO, PM, SO2

and HC. All other pollutant emissions were calculated using emission factors from AP 42, Chapter 3.4, Large Stationary Diesel Engines.

Changes proposed by the applicant which affected project emissions are tabulated below:

Equipment	Previous Permit 11/1/2000	Renewal Appl 10/12/04	Rev. Appl. 10/7/05	Units
Drum Mixer	275	325	325	tph
	150,000	260,000	260,000	tpy
	545	800	800	hr/yr
DEG *	4,350	4,261	3,000	hr/yr
	230,115	230,115	153,000	gal/yr

* Applicant proposed on 12/20/05 to replace the existing 810 kW DEG with a more efficient 795 kW DEG.

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Table 4: Facility-Wide Emissions (tpy)																	
	Point Source Emissions							**Fugitive Emissions**								**Total Emissions**	
	Drum Mixer		New DEG		Oil heater	Silo Fill & Stor.		Load-Out		Agg. Handling		Unpaved Rds		Screening			
Pollutant	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit 3000 hr/yr	Unltd. 8760 hr/yr	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit 800 hr/yr	Unltd. 8760 hr/yr	Limit (various hr/yr)
CO	185.06	16.90	4.63	1.59	0.20	1.68	0.15	1.92	0.18							**193.50**	**19.02**
NOx	78.29	7.15	40.42	13.84	0.80											**119.50**	**21.79**
PM	46.98	4.29	1.23	0.42	0.08	0.83	0.08	0.74	0.07	2.97	0.27	31.10	2.80	9.61	0.88	93.60	**8.89**
PM-10	32.74	2.99	1.22	0.42	0.04	0.83	0.08	0.74	0.07	1.41	0.13	9.20	0.80	3.34	0.31	49.50	**4.83**
PM-2.5	4.13	0.38	1.22	0.42	0.03	0.83	0.08	0.74	0.07	0.44	0.04	1.40	0.10	3.34	0.31	12.10	**1.42**
SO2	15.66	1.43	1.03	0.35	2.83											19.50	**4.61**
VOC	45.55	4.16	0.93	0.32	0.02	17.35	1.58	5.92	0.54							69.80	**6.62**
Pb	0.02	0.002														0.00	**0.00**
HAPs	12.69	1.17	0.13	0.05	1.08	0.27	0.02	0.12	0.01							14.30	**2.33**

IX. Air Quality Assessment

Because the changes in operation for the permit renewal involves an increase in emissions of certain pollutants, Ambient Air Quality Impact Assessment (assessment) was performed using the U.S. EPA's recommended Industrial Source Complex Short-Term 3 (ISCST3) refined model. Since a significant modification (increasing the production rate of asphalt drum mixer from 275 to 325 tons per hour and from 150,000 to 260,000 tons per rolling 12-month period) has been proposed, a modeling analysis of the drum mixer was required. In addition, the applicant proposed to replace the plant's existing 1,085 hp DEG with a 1,065 hp DEG, so the new DEG was included in the model. Because the hot oil heater is not being modified, it was excluded from the assessment.

For the air modeling assessment, the following was assumed:

a. Rural dispersion parameters;

b. Simple and complex terrain effects;

c. Terrain elevation data using USGS DEM maps for terrain data in the NAD27 coordinate system.

d. Background concentrations from Hawaii Electric Light Company's station in Kona.

e. Meteorological data from file K32.ASC.

f. A total of 1,092 receptors were placed in a 1,166 m by 812 m grid. All receptors were placed at 0 m height.

g. Twelve building dimensions and locations in UTM code, as well as the two source information were entered into the BPIP program fro determination of building downwash. The BPIP results were automatically included in the AERMOD View program.

The tables below presents the stack parameters, emission rates for SO_2, NO_x, CO and PM-10 used in the model, and the maximum concentrations as determined by the air quality impact analysis. Lead (for only the DEG) and hydrogen sulfide (for all sources) emission factors were not available in AP-42 and therefore, these pollutants were not evaluated in the air modeling.

SOURCE STACK PARAMETERS FOR AIR MODELING					
	Stack	SOURCE STACK PARAMETERS			
Equipment	No.	Hgt (m)	Temp (K)	Vel. (m/s)	Diam. (m)
HMA Drum Mixer	1	10.66	351.3	12.24	1.18
Cummins DEG	2	5.0	701.3	57.91	.254

Equipment	Emission Rates (g/s)			
	SO_2	NOx	CO	PM-10
Cummins DEG	0.03	1.163	0.133	0.036

HMA Drum Mixer	0.450	2.252	5.323	0.942

The predicted concentrations assume that annual operations will be restricted to 800 hours per year for the AC plant drum mixer dryer, while the DEG will be restricted to 3,000 hr/yr. Based on these assumptions, the emissions impact from the HAC plant will comply with State and Federal ambient air quality standards as shown in the table below.

PREDICTED AMBIENT AIR QUALITY IMPACTS						
Pollutant	Averaging Time	Modeled Conc. ($\mu g/m^3$)	Backgrd Conc. ($\mu g/m^3$)	Total ($\mu g/m^3$)	SAAQS ($\mu g/m^3$)	% of Standard
CO	1-HR	2,420.17	969	3,389.17	10,000	33.89
	8-HR [1]	1,694.12	736	2,430.12	5,000	48.60
NO_X	1-HR	1,025.17				
	Annual [2]	52.66	2	54.66	70	78.09
PM10	1-HR	428.31				
	24-HR [3]	58.67	27	85.67	150	57.11
	Annual [4]	29.34	12	41.34	50	82.67
SO2	1-HR	264.82				
	3-HR [5]	238.34	87	325.34	1,300	25.03
	24-HR [6]	105.93	34	139.93	365	38.34
	Annual [7]	52.96	4	56.96	80	71.21

1: (1-HR modeled concentration)*(0.7 scaling factor)

2: (1-HR modeled concentration)*(0.2 scaling factor)*(0.75 NOx to NO_2 conversion factor)*(3000 HR/year operating restriction)/(8760 HRS/year)

3: (1-HR modeled concentration)*(0.4 scaling factor)*(3000 HR/year operating restriction)/(8760 HRS/year)

4: (1-HR modeled concentration)*(0.2 scaling factor)*(3000 HR/year operating restriction)/(8760 HRS/year)

5: (1-HR modeled concentration)*(0.9 scaling factor)

6: (1-HR modeled concentration)*(0.4 scaling factor)

7: (1-HR modeled concentration)*(0.2 scaling factor)

X. Significant Permit Conditions

1. The temporary CSP will be converted to a stationary CSP.

   Purpose: Since facility relocation has not occurred and is not anticipated, the permit will be designated as a stationary CSP, rather than temporary CSP.

2. The 325 TPH hot mix asphalt plant is subject to requirements of NSPS, Subparts A and I.

   Purpose: This federal standard applies to a hot mix asphalt facility that commences construction or modification after June 11, 1973.

3. Asphalt production shall not exceed 260,000 tons per rolling 12-month period.

   Purpose: Emission calculations and AAQIA are based on this limit, proposed by the applicant.

4. The DEG and hot oil heater shall only be fired on fuel oil no. 2 with a maximum sulfur content of 0.5% by weight.

   Purpose: Per HAR §11-60.1-38(a), no person shall burn any fuel containing an excess of 2% by weight, except for fuel used in ocean-going vessels. Emission calculations and the air quality assessment are based on use fuel oil no. 2.

5. Fuel use for the DEG shall be limited to 153,000 gallons per rolling 12-month period.

   Purpose: Emission calculations and AAQIA are based on this limit, proposed by the applicant.

XI. Conclusion

Grace Pacific Corp. proposes to increase its HMA production limit from 275 to 325 tons per hour and from 150,000 to 260,000 tons per rolling 12-month period. The applicant also proposes to replace the existing 1,085 hp DEG with a more efficient 1,065 hp DEG. Therefore, NOx and SO2 net emissions are significantly reduced when compared to the existing facility and only slight increases in emissions of other pollutants are expected, as shown in the table below.

Pollutant	Potential Emissions (tpy)	Past Potential Emissions (tpy)	Net Emissions Increase (tpy)
CO	19.02	15.70	3.3
NOx	21.79	63.50	-41.7
PM	6.09	5.50	0.6
PM10	4.03	3.20	0.8
SO2	1.32	6.80	-5.5
TOC/VOC	4.61	4.20	0.4
Pb	0.002	0.001	0.001

Based on the information submitted by Grace Pacific Corporation, it is the determination of the Department of Health (DOH) that the proposed project will be in compliance with the Hawaii Administrative Rules (HAR), Chapter 11-60.1 and State and Federal ambient air quality standards. Therefore, recommend the issuance of the Covered Source Permit to Grace Pacific Corporation subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day review by EPA.