

Technical Support Document

Clark County Department of Air Quality

PROPOSED

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Term
Air Quality	Clark County Department of Air Quality
AQR	Clark County Air Quality Regulations
AST	Aboveground Storage Tank
CF	Control Factor
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
DOM	Date of Manufacture
EF	Emission Factor
EPA	United States Environmental Protection Agency
EU	Emission Unit
HAP	Hazardous Air Pollutant
HMA	Hot Mix Asphalt
HP	Horse Power
IA	Insignificant Activity
kW	kiloWatt
Lbs	Pounds
MMBtu	Millions of British Thermal Units
NAICS	North American Industry Classification System
NO _x	Nitrogen Oxides
PM _{2.5}	Particulate Matter less than 2.5 microns
PM ₁₀	Particulate Matter less than 10 microns
ppm	Parts per Million
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RAP	Recycled Asphalt Product
RAS	Recycled Asphalt Shingles
scf	Standard Cubic Feet
SCC	Source Classification Codes
SCR	Selective Catalytic Reduction
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
TSD	Technical Support Document
VAEL	Voluntarily Accepted Emission Limitation
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

The PTE and allowable operational condition for each emission unit in the permit are summarized in the table below. This table can be used to prepare *Annual Emissions Inventory Reports* with forms available on Air Quality's Website at <http://www.clarkcountynv.gov>. The values below should be entered as the PTE for each respective emission unit when using the annual emission inventory reporting forms provided by Air Quality.

Source-Wide Emission Unit PTE Summary (tons per year)

EU	Operation	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
A01 through A03, A06 through A13, A16, and A17	1,800,000 tons/yr	59.40	0	0	0	0	0	0	0
A18	900,000 tons/yr	2.25	0	0	0	0	0	0	0
A19	900,000 tons/yr	0	0	0	0	0	0	0	0
B01	15 Acres	4.54	0	0	0	0	0	0	0
B02	25,000 VMT/yr	9.46	0	0	0	0	0	0	0
C01	4,200 hrs/yr	0.34	0.34	15.87	5.14	0.03	0.61	0	0
C02	4,200 hrs/yr	0.42	0.42	14.58	14.58	0.03	1.67	0	0
C03	2,000 hrs/yr	0.36	0.36	23.88	1.97	0.02	0.87	0	0
C04	8,760 hrs/yr	0.01	0.01	0.26	3.24	0.01	0.12	0	0
C05	1,000 hrs/yr	0.08	0.08	1.64	1.44	0.01	0.63	0	0
D01	150,000 tons/yr	0.38	0	0	0	0	0	0	0
D02	150,000 tons/yr	0.08	0	0	0	0	0	0	0
D03	150,000 tons/yr	0.38	0	0	0	0	0	0	0
D04	150,000 tons/yr	0.08	0	0	0	0	0	0	0
D05	150,000 tons/yr	0.60	0	0	0	0	0	0	0
D06	2,000 tons/yr	0.01	0	0	0	0	0	0	0
D07	152,000 tons/yr	0.24	0	0	0	0	0	0	0
D08	47,500 tons/yr	0.12	0	0	0	0	0	0	0
D09	47,500 tons/yr	0.02	0	0	0	0	0	0	0
D10	47,500 tons/yr	0.19	0	0	0	0	0	0	0
D11	200,000 tons/yr	2.46	2.30	5.50	13.00	1.10	3.20	0	0
D12	200,000 tons/yr	0.06	0	0	0.12	0	1.22	0	0
D13	200,000 tons/yr	0.05	0	0	0.13	0	0.39	0	0
D14	8,760 hrs/yr	0.19	0.19	1.15	0.29	0.01	0.02	0	0
D15	8,760 hrs/yr	0.31	0.31	1.88	0.47	0.02	0.03	0	0
D16	1,000 tons/yr	0.02	0	0	0	0	0	0	0
D17	8,760 hrs/yr	0	0	0	0	0	0	0	0
D18	8,760 hrs/yr	0	0	0	0	0	0	0	0
Totals		82.05	4.01	64.76	40.38	1.23	8.76	0	0

Technical Support Document

This TSD establishes the methodology related to the terms and conditions of its Minor Source Permit issued pursuant to AQR 12.1. The TSD shall not serve as the operating authority.

Preparer: Ross Davis
Action Received: August 19, 2016
TSD Date: September 6, 2016
Company: Fisher Sand & Gravel Company
Responsible Official: Todd Mack
Consultant: Broadbent & Associates, Inc.: Sarah Cole
Source: 17716
Source Name: Fisher Sand & Gravel Company
Source Address: Various Locations in Clark County, Nevada

Source Description

Fisher Sand & Gravel Company is a portable aggregate plant which is categorized under SIC code 1442: Construction Sand and Gravel and NAICS code 212321: Construction Sand and Gravel Mining. This is a synthetic minor source of regulated air pollutants which consists of an aggregate processing plant made up of several crushers, screens, conveyor systems and stackers, a feed hopper associated with a wash plant, and a hot mix asphalt plant made up of a drum dryer, pugmill, two screens, two silos, two diesel-fired hot oil tanks, a rubberized asphalt plant, and several conveyors and feeders. The source also includes disturbed surfaces/stockpiles, an unpaved haul road, and five continuous duty diesel-powered generators, as well as a wash plant (a wet process), two aboveground diesel fuel storage tanks, and an aboveground asphaltic cement storage tank classified as insignificant emission units.

The source has taken a VAEL by limiting the throughput of material processed in the aggregate plant (EUs: A01 through A03, A06 through A13, A16, and A17) and the amount of asphalt produced by the HMA plant (EUs: D01 through D18) to avoid becoming a major source of PM₁₀. In addition, the source has taken a VAEL by limiting the hours of operation of the 945 kW diesel-powered generator (EU: C03) and the amount of asphalt produced by the HMA plant (EUs: D01 through D18) to avoid becoming a major source of NO_x. The source has also taken a VAEL by limiting the consecutive 12 month production of asphalt by the HMA plant (EUs: D01 through D18) to avoid becoming a major source of CO. This source is subject to 40 CFR Part 60, Subpart I, 40 CFR Part 60, Subpart OOO, 40 CFR Part 60, Subpart IIII, and 40 CFR Part 63, Subpart ZZZZ. By complying with 40 CFR Part 60, Subpart IIII, the source meets the requirements of 40 CFR Part 63, Subpart ZZZZ.

Permitting Action

The source submitted an application for a significant revision to its AQR 12.1 portable synthetic minor source permit. The source proposed the addition of a hot mix asphalt plant made up of a drum dryer, pugmill, two screens, two silos, two diesel-fired hot oil tanks, a rubberized asphalt plant, and several conveyors and feeders (EUs: D01 through D18), as well as three continuous duty diesel-powered generators (EUs: C03 through C05). In addition, the source proposed to add an aboveground diesel fuel storage tank, and an aboveground asphaltic cement storage tank as insignificant emission units. All of these requests will be addressed with this permitting action. The wash plant, which was previously permitted as an insignificant activity, is being reclassified as an emission unit with no quantified emissions as it is a wet process (EU: A19).

Emission Units

Table 1: List of Existing Emission Units

EU	Description	Capacity/Rating ¹	Make	Model No.	Serial No.	SCC
Aggregate Plant						
A01	Chain Feeder					30502506
A02	Jaw Crusher	≤600 tons/hr	TBD	TBD	TBD	30502510
A03	Screen 1	800 tons/hr	JCI	3620	PO60327/ S061718	30502511
A10	Vibrating (Buzzer) Screen	600 tons/hr	Lippman	6224	1967-1654- 1980	30502511
A06	Twin Screen	≤500 tons/hr	TBD	TBD	TBD	30502511
A08	K400 Cone Crusher (Recirculation)	300 tons/hr	JCI	K400	CP-183- 614031	30502510
A07	Conveyor System (2 Belts – Recirculation)					30502503
A09	Conveyor System (3 Belts)					30502503
A11	Conveyor/Stacker System (2 Belts/1 Stacker)					30502505
A12	Conveyor/Stacker System (4 Belts/1 Stacker)					30502505
A13	Conveyor/Stacker System (3 Belts/1 Stacker)					30502505

EU	Description	Capacity/Rating ¹	Make	Model No.	Serial No.	SCC
A16	Conveyor/Stacker System (2 Belts/1 Stacker)					30502505
A17	Conveyor/Stacker System (3 Belts/1 Stacker)					30502505
Wash Plant						
A18	Wash Plant Feed Hopper w/ Belt Conveyor (DOM: 2013)					30502506
A19	Wash Plant with Associated Conveyor/Stacker Transfers (All Wet Processes)	500 TPH			WP-86-613023	30502511
Miscellaneous Emission Units						
B01	Disturbed Surfaces/Stockpiles	15.0 Acres				30502507
B02	Unpaved Haul Road	0.5 miles R.T.				30502504
Continuous Duty Generators						
C01	Genset – Continuous Duty	725 kW	Caterpillar	C27	SCT00733	20200102
	Engine – Diesel; DOM: 2012	1,207 HP			ZRS00294	
C02	Rental Genset – Continuous Duty	Various	Caterpillar	Various	Various	20200102
	Engine – Diesel; DOM: 2011 or Later	1,207 HP		Various	Various	

¹Where specific manufacturer rated capacities have not been provided, the installed equipment cannot exceed the values shown.

Table 2: List of New Emission Units

EU	Description	Capacity/ Rating	Make	Model No.	Serial No.	DOM ¹	SCC
Hot Mix Asphalt Plant							
D01	4-Bin Feeder with Underbelts	400 TPH	CMI	PAB432	188	1996	30500216
D02	Conveyor Belt					1996	30500217
D03	2-Bin Feeder with Underbelts	400 TPH	CMI	CFB220	896214	1996	30500216
D04	Conveyor Belt					1996	30500217
D05	Scalping Screen with Belt	400 TPH	CMI	SC-3030	114	1996	30500298

EU	Description	Capacity/ Rating	Make	Model No.	Serial No.	DOM ¹	SCC
D06	Lime Silo with Enclosed Screw Conveyor	75 TPH	75T		20740-97	1997	30500298
D07	Pugmill with Belt	400 TPH	Davis	500-B	1220-500B	1997	30500298
D08	2-Bin RAP Feeder with Underbelts	400 TPH	GSS	TWN 16 YD	6-30-2483-60832	2009	30500216
D09	Conveyor Belt					Post-2008 ²	30500217
D10	RAP Screen with Belt	400 TPH	GSS	1410 BZR	P-410-116-60347	2004	30500298
D11	Drum Dryer, Diesel-Fired	400 TPH	CMI	PTD-400 (Drum)	132 (Drum)	1996	30500258
				RA-4186 (Plant)	120 (Plant)		
D12	Asphalt Elevator						30500221
D13	Storage Silo, Hot Mix Asphalt		CMI	MPS-700P4	150	1997	30500213
D14	Asphaltic Cement Heated Tank, Diesel-Fired	25,000 gallons	CEI	1500A	H119296	1996	30500212
		1.84 MMBtu/hr					
Rubberized Asphalt Plant							
D15	Hot Oil Heated Tank, Diesel-Fired	35,000 gallons	Heatec	HCS-250	H04-113/C04-048	2004	30500212
		3.00 MMBtu/hr					
D16	Rubber Crumb Feed Hopper						30500298
D17	Mixer (Enclosed)						30500298
D18	Dual Compartment Split Blend Tank (Enclosed)	50 tons/Compartment					30500298
Continuous Duty Generators							
C03	Genset – Continuous Duty (HMA Plant)	945 kW	Caterpillar	SR4B	G5B00079	2005	20200102
	Engine – Diesel; DOM: 2005	1,341 HP		3508	1FZ03377		
C04	Genset – Continuous Duty (HMA Plant)	ND ³	Marathon Electric	362PSL1606	MX200793	2014	20200102
	Engine – Diesel; DOM: 2014	90 HP	John Deere	4045HF285	PE4045L2 24786		

EU	Description	Capacity/ Rating	Make	Model No.	Serial No.	DOM ¹	SCC
C05	Genset – Continuous Duty (Rubberized Asphalt Plant)	385 kW	Caterpillar	LC6	TBD	April 2006	20200102
	Engine – Diesel; DOM: April 2006	500 HP		C15	FSE00187		

¹In the absence of information pertaining to the date construction commenced for this equipment, date of manufacture is being used for regulatory applicability purposes.

²The date of manufacture of this equipment is unknown; for regulatory applicability purposes, a post-2008 date of manufacture was conservatively proposed by the source.

³No Data is available regarding the maximum electrical output rating of this genset (EU: C04).

The source proposed the addition of the following new units/activities with this action and requested that they be classified as insignificant:

- Two 15,000 gallon capacity aboveground diesel fuel storage tanks;

These units, when grouped as an activity with existing units, do not have the potential to emit greater than two tons per year of any criteria pollutant, five tons per year of a combination of criteria pollutants, five hundred pounds per year of any HAP, or one ton per year of a combination of HAP, making these activities eligible to be deemed insignificant. In accordance with Air Quality’s treatment of these activities at similar sources in Clark County, these units/activities are being deemed insignificant and will be added to the source’s list of insignificant units with this permitting action.

The following units or activities are present at this source and have been deemed as insignificant activities pursuant to AQR Section 12.1. The emissions from these units or activities, when added to the PTE of the source, will not make the source major for any pollutant.

Table 3: Insignificant Emission Units or Activities

IU Number	Description
Diesel Fuel Storage	
IU01	Diesel Fuel AST, 10,000 gallon capacity
IU02	Diesel Fuel AST, 15,000 gallon capacity
IU03	Diesel Fuel AST, 15,000 gallon capacity

Calculation of PTE and Emission Increase

AQR 12.1 Applicability

The modifications proposed by the source do not cause the source’s unlimited and uncontrolled PTE to fall below the AQR 12.1 applicability thresholds for all regulated pollutants. As a result, this source remains subject to the permitting requirements of AQR 12.1.

Unlimited PTE/Source Status Evaluation

The modifications proposed by the source with the current action necessitate the recalculation of the unlimited PTE of the source.

The source did not propose any operational or equipment changes for the aggregate plant (A01 through A03, A06 through A13, A16, and A17), the wash plant (EU: A18 and A19), or the two existing diesel-powered generators (EUs: C01 and C02). The unlimited PTE of these units remains unchanged from the values calculated during the last permit revision issued on August 24, 2016. The wash plant and associated conveyor/stacker transfers are all wet processes, they have no quantified emissions. Therefore, the reclassification of this process as an emission unit does not alter the previously calculated PTE of the plant.

The source proposed to increase the maximum stockpile area permitted onsite to 15.0 acres from the previously permitted area of 10.0 acres with this permitting action (EU: B01). In addition, the source proposed to increase the allowable vehicle miles traveled by haul trucks on the unpaved haul road onsite from 22,500 to 25,000 miles during any consecutive 12 month period (EU: B02). The PTE of these units incorporating the operational limitations proposed by the source with this action is shown below in Table 4.

Table 4: Fugitive Dust Sources PTE (EUs: B01 and B02)

EU	Description	Area Limitations	EF	CF	PM ₁₀ PTE
					tons/year
Fugitive Dust Sources					
B01	Disturbed Surfaces/ Stockpiles	15.0 acres	1.66 lbs/ acre- day		4.54
B02	Unpaved Haul Road, 0.5 miles R.T.	25,000 VMT/yr	7.57 lbs/VMT	0.10	9.46
PM₁₀ Subtotal					14.00

The source has proposed the addition of a HMA plant with this permitting action. For this plant, the drum dryer (EU: D11), which has a manufacturer's maximum rated capacity of 400 TPH, acts as a bottleneck on all preceding processes in the plant. The PTE of the preceding processes was calculated using the ratios of different material inputs (aggregate, lime, RAP) proposed by the source to produce asphalt product.

The PTE calculation methodology utilized for each of the proposed units/processes associated with the HMA plant are as follows:

- corresponding DAQ default sand and gravel emission factors incorporating the DAQ default moisture control efficiency of 90 percent of PM₁₀ emissions were used for all processes related to loading, transferring, or screening aggregate or RAP material (EUs: D01 through D05 and D08 through D10);

- the controlled emission factor for pneumatic cement unloading to an elevated storage silo presented in Table 11.12-2 of EPA AP-42 Section 11.12 was used in order to calculate the PTE associated with loading lime into the storage silo (EU: D06);
- the source proposed the use of the DAQ default sand and gravel conveyor transfer point emission factor incorporating the DAQ default moisture control efficiency of 90 percent of PM₁₀ emissions in order to calculate the PTE associated with the processing of aggregate material in the pugmill (EU: D07), as well as the transfer of this material into and out of the pugmill. Given the relatively high moisture content of the material processed, Air Quality accepts the factor proposed as adequate to conservatively represent emissions, despite the fact that it does not necessarily directly correspond to the processes it represents. No PTE is being attributed to the transfer of lime from the storage silo to the pugmill since an enclosed screw conveyor is the means of transfer;
- corresponding emission factors presented in Tables 11.1-3, 11.1-7, and 11.1-8 of EPA AP-42 were used to calculate the PTE of the diesel-fired drum dryer (EU: D11). The source proposed and Air Quality accepts the use of the DAQ default sand and gravel conveyor transfer point emission factor incorporating the DAQ default moisture control efficiency of 90 percent of PM₁₀ emissions for the aggregate and RAP material transfer into the drum dryer;
- emission factors were calculated using the corresponding equations presented in Table 11.1-14 of EPA AP-42 using default values for variables V and T in order to calculate the PTE of the transfer of asphalt product from the drum dryer to the storage elevator (for this process, the asphalt silo filling equation was used), asphalt silo filling and asphalt loadout to trucks from the silo (EUs: D11, D12 and D13);
- regarding the rubberized asphalt plant proposed with this action, the source proposed the use of the DAQ default sand and gravel loading emission factor with no control efficiency attributed for material moisture in order to estimate PM₁₀ emissions resulting from the loading of rubber crumb into the feed hopper (EU: D16). Air Quality accepts the factor proposed as adequate to conservatively represent emissions, despite the fact that it does not necessarily directly correspond to the processes it represents. Rubber crumb loaded into the hopper is mixed with asphalt cement oil in an enclosed mixer, and the resulting product is blended in an enclosed dual compartment blend tank before being ultimately transferred to the drum dryer (EU: D11). As both the mixer and blend tank are enclosed, no PTE is being attributed to these processes. The source maintains that the addition of crumb rubber to an asphalt mix does not have a significant impact on plant emissions, and did not submit a quantified emissions analysis addressing additional emissions due to producing a rubberized asphalt product;

- the source proposed the use of corresponding emission factors presented in Tables 1.3-1 and 1.3-2 of EPA AP-42 for an uncontrolled distillate/No. 2 oil-fired boiler in order to calculate the combustion PTE of the diesel-fired heated tanks (EU: D14 and D15). Air Quality accepts the factors proposed as adequate to conservatively represent emissions, despite the fact that they do not necessarily directly correspond to the equipment and process they represent. The SO₂ emission factor proposed by the source was amended to incorporate the mandated 15 ppm maximum sulfur content of present day diesel fuel. The source did not present VOC and/or HAP PTE calculations pertaining to working and breathing losses from the tanks. As both tanks store asphaltic cement oil, which is known to have a relatively low vapor pressure, VOC and HAP emissions from each tank are considered negligible, and quantified potential emissions are not being addressed in this TSD; and
- the source identified that the mixer and split blend tank which are part of the rubberized asphalt plant are both enclosed units and therefore have no quantifiable PTE (EUs: D17 and D18).

The PTE of the hot mix/rubberized asphalt plants at unlimited operation is shown in Tables 5, 6, and 7 below.

Table 5: PM₁₀ PTE of Hot Mix/Rubberized Asphalt Plants at Unlimited Operation (EUs: D01 through D13 and D16)

EU	Description	Throughput		EF	CF	PM ₁₀ PTE	
		tons/hour	tons/year	lbs/ton		tons/year	
HMA Plant							
D01	Loader to 4-Bin Feeder	300	2,628,000	0.04	0.10	5.26	
	4-Bin Feeder to Underbelts	300	2,628,000	0.01		1.31	
D02	Underbelts to Conveyor	300	2,628,000	0.01	0.10	1.31	
D03	Loader to 2-Bin Feeder	300	2,628,000	0.04	0.10	5.26	
	2-Bin Feeder to Underbelts	300	2,628,000	0.01		1.31	
D04	Underbelt to Conveyor	300	2,628,000	0.01	0.10	1.31	
D05	Conveyor to Scalping Screen	300	2,628,000	0.08	0.10	10.51	
	Conveyor to Scalping Screen	300	2,628,000				
	Scalping Screen	300	2,628,000				
	Scalping Screen to Conveyor	300	2,628,000				
D06	Lime Silo with Screw Conveyor (Loading)	4	35,040	0.00034		0.01	
D07	Conveyor to Pugmill	300	2,628,000	0.01	0.10	1.31	
	Lime Screw Conveyor to Pugmill	4	35,040	Enclosed Process			
	Pugmill	304	2,663,040	0.01			1.33
	Pugmill to Conveyor	304	2,663,040	0.01			1.33
D08	Loader to 2-Bin RAP Feeder	95	832,200	0.04	0.10	1.66	
	2-Bin RAP Feeder to Underbelt	95	832,200	0.01		0.42	
D09	Underbelts to Conveyor	95	832,200	0.01	0.10	0.42	

EU	Description	Throughput		EF	CF	PM ₁₀ PTE
		tons/hour	tons/year	lbs/ton		tons/year
D10	Conveyor to RAP/RAS Screen	95	832,200	0.08	0.10	3.33
	RAP/RAS Screen	95	832,200			
	RAP/RAS Screen to Conveyor	95	832,200			
D11	Aggregate Conveyor to Drum Dryer	304	2,663,040	0.01	0.10	1.33
	RAP Conveyor to Drum Dryer	95	832,200	0.01	0.10	0.42
	Baghouse Fines Return to Drum Dryer	1	8,760	Enclosed Process		
	Drum Dryer	400	3,504,000	0.023		40.30
	Drum Dryer to Silo Elevator	400	3,504,000	0.000586		1.03
D12	Silo Elevator to Storage Silo	400	3,504,000	0.000586		1.03
D13	Storage Silo to Truck Loadout	400	3,504,000	0.000522		0.91
Rubberized Asphalt Plant						
D16	Rubber Crumb Hopper Loading	50	438,000	0.04		8.76
D17	Rubber Crumb to Mixer	50	438,000	Enclosed Process		
	Mixer	Not Determined		Enclosed Process		
D18	Mixer to Blend Tank	Not Determined		Enclosed Process		
	Blend Tank	Not Determined		Enclosed Process		
	Blend Tank to Drum Dryer (EU: D11)	Not Determined		Enclosed Process		
PM₁₀ Subtotal						89.86

Table 6: PTE of Drum Dryer and Asphalt Transfer/Loadout (excluding PM₁₀ PTE) at Unlimited Operation with All Applicable Controls (EUs: D11 through D13)

EU	Throughput	PM ₁₀	PM _{2.5} ¹	NO _x	CO	SO ₂	VOC	H ₂ S	Pb	HAP
D11	3,504,000 tons/yr	See Table 5	40.30	96.36	227.76	19.27	56.06	0	0	15.24
D12	3,504,000 tons/yr	See Table 5	0	0	2.07	0	21.35	0	0	0.33
D13	3,504,000 tons/yr	See Table 5	0	0	2.36	0	6.85	0	0	0.15
Totals		See Table 5	40.30	96.36	232.19	19.27	84.26	0	0	15.72

¹The PM₁₀ emission factor presented in Table 11.1-3 of EPA AP-42 of 0.023 lbs/ton for an uncontrolled drum dryer (EU: D11) was conservatively used as the PM_{2.5} emission factor as proposed by the source.

Table 7: PTE of Heated Asphaltic Cement/Oil Tanks at Unlimited Operation with All Applicable Controls (EUs: D14 and D15)

EU	Condition	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb	HAP
D14	8,760 hrs/yr	0.19	0.19	1.15	0.29	0.01	0.02	0	0	0.01
D15	8,760 hrs/yr	0.31	0.31	1.88	0.47	0.02	0.03	0	0	0.01

The source proposed the addition of three diesel-powered continuous duty generators with this permitting action.

When calculating the PTE of the 945 kW Caterpillar diesel-powered generator (EU: C03), manufacturer's emission guarantees were used as proposed by the source for PM₁₀, PM_{2.5} (assumed equivalent to PM₁₀), NO_x, CO, and VOC, as well as Air Quality's default SO₂ emission factor which reflects a 15 ppm maximum sulfur content.

When calculating the PTE of the John Deere diesel-powered generator (EU: C04), Tier 4 Interim emission standards applicable to the engine powering the unit based on its maximum HP rating and date of manufacture were used as proposed by the source for PM₁₀, PM_{2.5} (assumed equivalent to PM₁₀), NO_x, CO, and VOC, as well as Air Quality's default SO₂ emission factor which reflects a 15 ppm maximum sulfur content.

When calculating the PTE of the 385 kW Caterpillar diesel-powered generator (EU: C05), EPA Tier 3 emission standards which the engine is certified to meet were used as emission factors for PM₁₀, PM_{2.5} (assumed equivalent to PM₁₀), NO_x, and CO, along with the corresponding VOC emission factor from EPA AP-42 and Air Quality's default SO₂ emission factor as requested by the source.

Table 8 below shows the PTE of the three generators being added with this permitting action (EUs: C03 through C05).

Table 8: PTE of Generators Being Added with This Action at Unlimited Operation with All Applicable Controls (EUs: C03 through C05)

EU	Condition	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb	HAP
C03	8,760 hrs/yr	1.58	1.58	104.59	8.63	0.07	3.81	0	0	0.18
C04	8,760 hrs/yr	0.01	0.01	0.26	3.24	0.01	0.12	0	0	0.02
C05	8,760 hrs/yr	0.72	0.72	14.40	12.60	0.03	5.51	0	0	0.10
Totals		2.31	2.31	119.25	24.47	0.11	9.44	0	0	0.30

Table 9 shows the source's PTE compared to the major source permitting thresholds. At unlimited operation with all applicable controls, the source's PM₁₀ (excluding fugitive dust sources), NO_x, and CO PTE exceed the Title V major source thresholds of 100 tons per year for each pollutant. The source's PTE of all other criteria air pollutants is below the major source permitting thresholds.

The source's total HAP PTE is 16.36 tons per year, which is below the major source permitting threshold of 25 tons per year. Of the source's HAP PTE of 16.36 tons per year, 15.74 tons per year is attributed to the HMA plant. The source did not submit any analysis of its HAP emissions from the units associated with the HMA plant.

Utilizing corresponding emission factors from EPA AP-42, the drum dryer (EU: D11) was determined to be the main HAP-emitting unit at the source. The five HAP emitted in the greatest amounts by this unit are formaldehyde (5.43 tons per year), toluene (5.08 tons per year), hexane (1.61 tons per year), benzene (0.68 tons per year), and ethylbenzene (0.42 tons per year). If, for the purposes of this cursory evaluation, it was assumed that the source's remaining total HAP PTE of 3.14 tons per year consisted entirely of formaldehyde emissions, the resulting value (8.57 tons per year) would be below the major source permitting threshold of 10 tons per year of any single HAP, which demonstrates that the source is a true minor source of HAP. While detailed calculations

are not being included in this TSD, it is worth mentioning that the HAP PTE of the source which was not speciated in this analysis is made up of several different HAP, and therefore the source's PTE of any single HAP is lower than the value suggested in this cursory analysis.

Table 9: Source PTE at Unlimited Operation with All Applicable Controls and Source Status Analysis (tons per year)

	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb	HAP
PTE of Aggregate and Wash Plants at Unlimited Operation with All Applicable Controls	165.98	0	0	0	0	0	0	0	0
PTE of Existing Generators (EUs: C01 and C02) at Unlimited Operation with All Applicable Controls	1.57	1.57	63.52	41.14	0.12	4.76	0	0	0.32
PTE of New Generators (EUs: C03 and C04) at Unlimited Operation with All Applicable Controls	2.31	2.31	119.25	24.47	0.11	9.44	0	0	0.30
PTE of Hot Mix/Rubberized Asphalt Plants (EUs: D01 through D18) at Unlimited Operation with All Applicable Controls	90.36	40.80	99.39	232.95	19.30	84.31	0	0	15.74
Source PTE at Unlimited Operation with All Applicable Controls (excluding Fugitive Dust Sources)	260.22	44.68	282.16	298.56	19.53	98.51	0	0	16.36
Title V and/or Major Source Permitting Thresholds	100	100	100	100	100	100	100	100	10¹
Fugitive Dust Source PTE (EUs: B01 and B02)	14.00	0	0	0	0	0	0	0	0
Source PTE at Unlimited Operation with All Applicable Controls	274.22	44.68	282.16	298.56	19.53	98.51	0	0	

¹The Major Source Threshold for HAP is 10 tons per year for any single HAP and 25 tons per year for a combination of HAP.

The source is establishing a VAEL through previously permitted and new operational limitations to avoid the major source threshold for PM₁₀. The VAEL includes the consecutive 12 month production limitations of the asphalt plant (EUs: D01 through D13 and D16), the aggregate plant (EUs: A01 through A03, A06 through A13, A16, and A17), and the wash plant (EU: A18 and A19).

The source is establishing a VAEL through previously permitted and new operational limitations to avoid the major source permitting threshold for NO_x. The VAEL includes the consecutive 12 month hours of operation of each generator set with an operational limitation (EUs: C01 through C03 and C05), as well as the consecutive 12 month production of asphalt by the asphalt plant (EUs: D01 through D18).

The source is establishing a VAEL through previously permitted and new operational limitations to avoid the major source permitting threshold for CO. The VAEL includes the consecutive 12 month hours of operation of each generator set with an operational

limitation (EUs: C01 through C03 and C05), as well as the consecutive 12 month production of asphalt by the asphalt plant (EUs: D01 through D18).

The source's PTE incorporating the proposed VAELs remains below the Title V major source permitting threshold of PM₁₀ and is below the Title V major source permitting thresholds of NO_x and CO. The source remains classified as a synthetic minor source of PM₁₀, is being classified as a synthetic minor source of NO_x and CO, and remains a true minor source of all other regulated air pollutants

Source Allowable PTE

The PTE and permitted operational limitations of the aggregate plant (EUs: A01 through A03, A06 through A13, A16, and A17), wash plant (EUs: A18 and A19), and existing generators (EUs: C01 and C02) remain unchanged from the values calculated during the last permit revision issued on August 24, 2016.

The source proposed the following new operational limitations with this action:

- 15.0 Acres of disturbed surfaces/stockpiles onsite at any given time (EU: B01);
- 25,000 vehicle miles traveled by haul trucks on the unpaved haul road per consecutive 12 month period (EU: B02);
- 2,000 hours of operation of the generator per consecutive 12 month period (EU: C03);
- 1,000 hours of operation of the generator per consecutive 12 month period (EU: C05); and
- 200,000 tons of total asphalt produced by the asphalt plant (EUs: D01 through D18) per any consecutive 12 months.

The source did not propose operational limitations for the John Deere diesel-powered generator (EU: C04), the diesel-fired heated asphaltic concrete/oil tanks (EUs: D14 and D15), the enclosed mixer (EU: D17), or split blend tank (EU: D18).

The PTE of the units being added or modified with this action incorporating all operational limitations proposed is shown below in Tables 10 through 14.

Table 10: Fugitive Dust Sources PTE (EUs: B01 and B02)

EU	Description	Area Limitations	EF	CF	PM ₁₀ PTE
					tons/year
Fugitive Dust Sources					
B01	Disturbed Surfaces/ Stockpiles	15.0 acres	1.66 lbs/ acre- day		4.54
B02	Unpaved Haul Road, 0.5 miles R.T.	25,000 VMT/yr	7.57 lbs/VMT	0.10	9.46

PM₁₀ Subtotal	14.00
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Table 11: PM₁₀ Allowable PTE of Hot Mix/Rubberized Asphalt Plants (EUs: D01 through D13 and D16)

EU	Description	Throughput	EF	CF	PM ₁₀ PTE		
		tons/year	lbs/ton		tons/year		
Aggregate Plant							
D01	Loader to 4-Bin Feeder	150,000	0.04	0.10	0.30		
	4-Bin Feeder to Underbelts	150,000	0.01				
D02	Underbelts to Conveyor	150,000	0.01	0.10	0.08		
D03	Loader to 2-Bin Feeder	150,000	0.04	0.10	0.30		
	2-Bin Feeder to Underbelts	150,000	0.01				
D04	Underbelt to Conveyor	150,000	0.01	0.10	0.08		
D05	Conveyor to Scalping Screen	150,000	0.08	0.10	0.60		
	Conveyor to Scalping Screen	150,000					
	Scalping Screen	150,000					
	Scalping Screen to Conveyor	150,000					
D06	Lime Silo with Screw Conveyor (Loading)	2,000	0.00034		0.01		
D07	Conveyor to Pugmill	150,000	0.01	0.10	0.08		
	Lime Screw Conveyor to Pugmill	2,000	Enclosed Process				
	Pugmill	152,000	0.01				
	Pugmill to Conveyor	152,000	0.01				
D08	Loader to 2-Bin RAP Feeder	47,500	0.04	0.10	0.10		
	2-Bin RAP Feeder to Underbelt	47,500	0.01				
D09	Underbelts to Conveyor	47,500	0.01	0.10	0.02		
D10	Conveyor to RAP/RAS Screen	47,500	0.08	0.10	0.19		
	RAP/RAS Screen	47,500					
	RAP/RAS Screen to Conveyor	47,500					
D11	Aggregate Conveyor to Drum Dryer	152,000	0.01	0.10	0.08		
	RAP Conveyor to Drum Dryer	47,500	0.01				
	Baghouse Fines Return to Drum Dryer	500	Enclosed Process				
	Drum Dryer	200,000	0.023			2.30	
	Drum Dryer to Silo Elevator	200,000	0.000586			0.06	
D12	Silo Elevator to Storage Silo	200,000	0.000586		0.06		
D13	Storage Silo to Truck Loadout	200,000	0.000522		0.05		
Rubberized Asphalt Plant							
D16	Rubber Crumb Hopper Loading	1,000	0.04		0.02		
D17	Rubber Crumb to Mixer	1,000	Enclosed Process				
	Mixer	Not Determined	Enclosed Process				
D18	Mixer to Blend Tank	Not Determined	Enclosed Process				
	Blend Tank	Not Determined	Enclosed Process				
	Blend Tank to Drum Dryer (EU: D11)	Not Determined	Enclosed Process				
PM₁₀ Subtotal					4.69		

Table 12: Allowable PTE of Drum Dryer and Asphalt Transfer/Loadout (excluding PM₁₀ PTE) (EUs: D11 through D13)

EU	Throughput	PM ₁₀	PM _{2.5} ¹	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
D11	200,000 tons/yr	See Table 6	2.30	5.50	13.00	1.10	3.20	0	0
D12	200,000 tons/yr	See Table 6	0	0	0.12	0	1.22	0	0

EU	Throughput	PM ₁₀	PM _{2.5} ¹	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
D13	200,000 tons/yr	See Table 6	0	0	0.13	0	0.39	0	0
Totals		See Table 6	2.30	5.50	13.25	1.10	4.81	0	0

¹The PM₁₀ emission factor presented in Table 11.1-3 of EPA AP-42 of 0.023 lbs/ton for an uncontrolled drum dryer was conservatively used as the PM_{2.5} emission factor as proposed by the source.

Table 13: PTE of Asphaltic Cement/Oil Heated Tanks (EUs: D14 and D15)

EU	Condition	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
D14	8,760 hrs/yr	0.19	0.19	1.15	0.29	0.01	0.02	0	0
D15	8,760 hrs/yr	0.31	0.31	1.88	0.47	0.02	0.03	0	0

Table 14: Allowable PTE of Generators Being Added with This Action (EUs: C03 and C04)

EU	Condition	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
C03	2,000 hrs/yr	0.36	0.36	23.88	1.97	0.02	0.87	0	0
C04	8,760 hrs/yr	0.01	0.01	0.26	3.24	0.01	0.12	0	0
C05	1,000 hrs/yr	0.08	0.08	1.64	1.44	0.01	0.63	0	0
Totals		0.45	0.45	25.78	6.65	0.04	1.62	0	0

The Allowable PTE of the source is shown in Table 15 below.

Table 15: Source Allowable PTE (tons per year)

	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
PTE of Aggregate Plant (EUs: A01 through A03, A06 through A13, A16, and A17)	59.40	0	0	0	0	0	0	0
PTE of Wash Plant (EUs: A18 and A19)	2.25	0	0	0	0	0	0	0
PTE of Existing Generators (EUs: C01 and C02)	0.76	0.76	30.45	19.72	0.06	2.28	0	0
PTE of New Generators (EUs: C03 through C05)	0.45	0.45	25.78	6.65	0.04	1.62	0	0
PTE of Hot Mix/Rubberized Asphalt Plant (EUs: D01 through D18)	5.19	2.80	8.53	14.01	1.13	4.86	0	0
Source PTE (excluding Fugitive Dust Sources)	68.05	4.01	64.76	40.38	1.23	8.76	0	0
Fugitive Dust Source PTE (EUs: B01 and B02)	14.00	0	0	0	0	0	0	0
Source PTE	82.05	4.01	64.76	40.38	1.23	8.76	0	0

AQR 12.1 Significance Evaluation

The source requested several modifications with this action which resulted in an increase in the source's PTE, including the addition of an asphalt plant (EUs: D01 through D18), the addition of three continuous duty diesel-powered generators (EUs: C03 through C05), and an increase to the total stockpile area and VMT by haul trucks on the haul road (EUs:

B01 and B02).

The source submitted the current application on August 19, 2016, before a previously submitted significant revision to the source's permit was issued on August 24, 2016. Modifications addressed in the previous revision consisted primarily of increasing the throughput limitations of the existing equipment. Given the source's history and overall scope of its intended operation, Air Quality has determined it appropriate to evaluate the source's PTE associated with the current permitting action (and not strictly the emission increase from the previously permitted source PTE) when determining if any of the emission increases proposed are significant by definition under Section 12.1.

Table 16: AQR 12.1 Significance Evaluation (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	H ₂ S	Pb
Source PTE of the Current Permitting Action	82.05	4.01	64.76	40.38	1.23	8.76	0	0
AQR 12.1 Significance Thresholds	7.5	7.5	20	35	40	20	5	0.6

As shown in Table 16, the source's PTE exceeds the AQR 12.1 significance thresholds for PM₁₀, NO_x, and CO. As a result, a RACT analysis is required for each of these pollutants.

Operational Limits

The following operational limitations are part of the VAELs proposed by the source to avoid the major source thresholds for PM₁₀, NO_x, and/or CO:

- The Permittee shall limit the throughput of material of the aggregate plant (EUs: A01 through A03, A06 through A13, A16, and A17) to 1,800,000 tons per any consecutive 12 months.
- The Permittee shall limit the throughput of material to the wash plant (EUs: A18 and A19) to 900,000 tons per any consecutive 12 months.
- The Permittee shall limit the hours of operation of the generator (EU: C01) to 4,200 hours per any consecutive 12 months.
- The Permittee shall limit the hours of operation of the rental generator set (EU: C02) to 4,200 hours per any consecutive 12 months.
- The Permittee shall limit the hours of operation of the generator (EU: C03) to 2,000 hours per any consecutive 12 months.

- The Permittee shall limit the operation of the generator to 1,000 hours of per consecutive 12 month period (EU: C05).
- The Permittee shall limit the total asphalt production of the asphalt plant (EUs: D01 through D18) to 200,000 tons per any consecutive 12 months.

In addition, the source has proposed the modification or addition of the following operational limitations:

- The Permittee shall limit the total stockpile area (EU: B01) to 15.0 acres at any given time.
- The Permittee shall limit the VMT on the unpaved haul road (EU: B02) to 25,000 miles per any consecutive 12 months.
- The Permittee shall not operate the generator set (EU: C03) at a location for more than 12 consecutive months.
- The Permittee shall not operate the generator set (EU: C04) at a location for more than 12 consecutive months.
- The Permittee shall not operate the generator set (EU: C05) at a location for more than 12 consecutive months.

All other previously permitted operational limitations are being retained with this permitting action.

Review of Applicable Regulations

The source identified that the wash plant (EU: A18 and A19) may process material produced by the aggregate plant (EUs: A01 through A17), making it part of the same process line. The conveyor belt between the wash plant feed hopper (EU: A18) and the wet screen is therefore an affected facility subject to 40 CFR 60 Subpart OOO. The source has identified that the wet screen and all subsequent conveyor transfers in the plant are wet processes and are therefore not applicable to the requirements of 40 CFR 60 Subpart OOO.

The source has proposed to operate each of the three diesel-powered generators proposed with this action (EUs: C03 through C05) according to the definition of a nonroad engine. All units are portable in nature and will not remain at a location for more than 12 consecutive months. As nonroad engines, the engines are not subject to any of the regulations applicable to stationary engines. The source will be required to comply with the nonroad engine regulation applicable to each engine based on the engine type, maximum HP rating, and date of manufacture of each unit.

The hot mix asphalt facility (EUs: D01 through D13) is subject to 40 CFR 60 Subpart I.

Control Technology

The emission increases proposed by the source exceed the AQR 12.1 significance thresholds for PM₁₀, NO_x and CO. As a result, a RACT analysis for each pollutant is required with this action.

The source proposed to maintain adequate material moisture content via water sprays to ensure compliance with the applicable opacity limitations of the material processed in the aggregate and wash plant (EUs: A01 through A18), as well as cold aggregate processing within the asphalt plant (EUs: D01 through D05, D07 through D10). The five diesel-powered generators at the source (EUs: C01 through C05) are each certified to meet the nonroad or stationary engine particulate matter emission standard that is applicable based on the engine type, maximum HP rating, and date of manufacture of each unit. The lime silo (EU: D06) is equipped with a binvent and transfers material to the pugmill (EU: D07) via an enclosed screw conveyor. The drum dryer (EU: D11) is controlled by a baghouse. In addition, the source operates under a Naturally Occurring Asbestos Management Plan for controlling fugitive dust emissions. Air Quality accepts the controls proposed by the source as satisfying RACT for PM₁₀.

The five diesel-powered generators at the source (EUs: C01 through C05) are each certified to meet the nonroad or stationary engine NO_x emission standard that is applicable based on the engine type, maximum HP rating, and date of manufacture of each unit. The other NO_x-emitting emission units at the source include the diesel-fired drum dryer (EU: D11) and the two diesel-fired asphaltic cement/oil heated tanks (EUs: D14 and D15). Modifying these units to lower NO_x emissions, such as converting them to natural gas combustion, or utilizing add-on controls, is considered cost prohibitive. Therefore, Air Quality accepts the controls proposed by the source as satisfying RACT for NO_x.

The five diesel-powered generators at the source (EUs: C01 through C05) are each certified to meet the nonroad or stationary engine carbon monoxide emission standard that is applicable based on the engine type, maximum HP rating, and date of manufacture of each unit. The other CO-emitting emission units at the source include the diesel-fired drum dryer (EU: D11) and the two diesel-fired asphaltic cement/oil heated tanks (EUs: D14 and D15). Modifying these units or utilizing add-on controls to lower CO emissions is considered cost prohibitive. Therefore, Air Quality accepts the controls proposed by the source as satisfying RACT for CO.

Control requirements for the asphalt plant (EUs: D01 through D18) and the generators (EUs: C03 through C05) which are being added with this action are standard for this equipment type and will be detailed in the permit.

The source provided a pressure drop range for the baghouse controlling particulate emissions from the drum dryer (EU: D11) based on the manufacturer's recommendations and the previous operation of this unit. This range is being included in the permit.

Monitoring

All previously permitted monitoring conditions are being retained with this action.

Monitoring conditions pertaining to the production of the asphalt plant (EUs: D01 through D18), as well as the operation and maintenance of the binvent on the lime silo (EU: D06) and the baghouse on the drum dryer (EU: D11).

Testing

Testing requirements for affected facilities under 40 CFR 60 Subpart OOO within the wash plant are being added with this action.

Testing requirements for affected facilities under 40 CFR 60 Subpart I within the asphalt plant are being added with this action. The source submitted performance test results to Air Quality which were conducted on May 27, 2015 (prior to the plant being permitted in Clark County) demonstrating that the initial performance testing requirements (opacity and particulate matter concentration) pertaining to this plant have been satisfied. As a result, only subsequent performance testing requirements will be added to the permit with this action.

Increment

Increment modeling is not required for portable sources until the operation is stationary for a period of equal to or greater than 2 years.

Public Notice

Public notice is required with this permitting action as the source proposed PM₁₀, NO_x, and CO emission increases which exceed the AQR 12.1 significance thresholds for these pollutants.

Permitting History

1. The last permit was issued on August 25, 2015.
2. A significant revision was issued on August 24, 2016.
3. An application was received on August 19, 2016.
4. The application was deemed incomplete on August 25, 2016.
5. The application was deemed complete on December 15, 2016.
6. The draft permit and TSD was sent for review on December 15, 2016.

Attachments

Table 17: Unlimited PTE Calculation (EU: C03)

EU#	C03	Horsepower:	1,341	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions			
						lb/hr	lb/day	ton/yr	
Make:	Caterpillar	Hours/Day:	24.0	PM10	2.68E-04	0.00%	0.36	8.64	1.58
Model:	3508	Hours/Year:	8760	NOx	1.78E-02	0.00%	23.88	573.12	104.59
S/N:	1FZD3377			CO	1.47E-03	0.00%	1.97	47.28	8.63
Manufacturer Guarantees				SOx	1.21E-05	0.00%	0.02	0.39	0.07
PM10	0.36	lb/hr	▼	VOC	6.49E-04	0.00%	0.87	20.88	3.81
NOx	23.88	lb/hr	▼	HAP	3.05E-05	0.00%	0.04	0.98	0.18
CO	1.97	lb/hr	▼						
SOx		lb/hr	▼						
VOC	0.87	lb/hr	▼						
Engine Type:	Diesel		▼	Diesel Fuel Sulfur Content is 15 ppm (0.0015%)					

Table 18: PTE Calculation with Operational Limitation (EU: C03)

EU#	C03	Horsepower:	1,341	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions			
						lb/hr	lb/day	ton/yr	
Make:	Caterpillar	Hours/Day:	24.0	PM10	2.68E-04	0.00%	0.36	8.64	0.36
Model:	3508	Hours/Year:	2000	NOx	1.78E-02	0.00%	23.88	573.12	23.88
S/N:	1FZD3377			CO	1.47E-03	0.00%	1.97	47.28	1.97
Manufacturer Guarantees				SOx	1.21E-05	0.00%	0.02	0.39	0.02
PM10	0.36	lb/hr	▼	VOC	6.49E-04	0.00%	0.87	20.88	0.87
NOx	23.88	lb/hr	▼	HAP	3.05E-05	0.00%	0.04	0.98	0.04
CO	1.97	lb/hr	▼						
SOx		lb/hr	▼						
VOC	0.87	lb/hr	▼						
Engine Type:	Diesel		▼	Diesel Fuel Sulfur Content is 15 ppm (0.0015%)					

Table 19: Unlimited PTE Calculation (EU: C04)

EU#	C04	Horsepower:	90	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions		
						lb/hr	ton/yr	
Make:	John Deere	Hours/Day:	24.0	PM10	3.29E-05	0.00%	0.01	0.01
Model:	TBD	Hours/Year:	8760	NOx	6.58E-04	0.00%	0.06	0.26
S/N:	PE4045L224786			CO	8.22E-03	0.00%	0.74	3.24
Manufacturer Guarantees				SOx	1.21E-05	0.00%	0.01	0.01
PM10	0.02	g/kW-hr	▼	VOC	3.12E-04	0.00%	0.03	0.12
NOx	0.4	g/kW-hr	▼	HAP	4.52E-05	0.00%	0.01	0.02
CO	5	g/kW-hr	▼					
SOx		g/kW-hr	▼					
VOC	0.19	g/kW-hr	▼					
Engine Type:	Diesel		▼	Diesel Fuel Sulfur Content is 15 ppm (0.0015%)				

Table 20: Unlimited PTE Calculation (EU: C05)

EU#	C05		Horsepower:	500	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions		
Make:	Caterpillar		Hours/Day:	24.0			lb/hr	ton/yr	
Model:	C15		Hours/Year	8760	PM10	3.29E-04	0.00%	0.16	0.72
S/N:	FSE00187				NOx	6.58E-03	0.00%	3.29	14.40
					CO	5.75E-03	0.00%	2.88	12.60
Manufacturer Guarantees					SOx	1.21E-05	0.00%	0.01	0.03
PM10	0.2	<input type="text" value="0.2"/> g/kW-hr			VOC	2.51E-03	0.00%	1.26	5.51
NOx	4	<input type="text" value="4"/> g/kW-hr			HAP	4.52E-05	0.00%	0.02	0.10
CO	3.5	<input type="text" value="3.5"/> g/kW-hr							
SOx		<input type="text" value=""/> g/kW-hr							
VOC		<input type="text" value=""/> g/kW-hr							
Engine Type:				<input type="text" value="Diesel"/>	Diesel Fuel Sulfur Content is 15 ppm (0.0015%)				

Table 21: PTE Calculation with Operational Limitation (EU: C05)

EU#	C05		Horsepower:	500	Emission Factor (lb/hp-hr)	Control Efficiency	Potential Emissions		
Make:	Caterpillar		Hours/Day:	24.0			lb/hr	ton/yr	
Model:	C15		Hours/Year	1000	PM10	3.29E-04	0.00%	0.16	0.08
S/N:	FSE00187				NOx	6.58E-03	0.00%	3.29	1.64
					CO	5.75E-03	0.00%	2.88	1.44
Manufacturer Guarantees					SOx	1.21E-05	0.00%	0.01	0.01
PM10	0.2	<input type="text" value="0.2"/> g/kW-hr			VOC	2.51E-03	0.00%	1.26	0.63
NOx	4	<input type="text" value="4"/> g/kW-hr			HAP	4.52E-05	0.00%	0.02	0.01
CO	3.5	<input type="text" value="3.5"/> g/kW-hr							
SOx		<input type="text" value=""/> g/kW-hr							
VOC		<input type="text" value=""/> g/kW-hr							
Engine Type:				<input type="text" value="Diesel"/>	Diesel Fuel Sulfur Content is 15 ppm (0.0015%)				

Table 22: Unlimited PTE Calculation excluding PM₁₀ (EUs: D11 through D13)

EU	SCC	Description	Throughput		Pollutant	EF (lb/ton)	Control Eff. %	Emissions	
			ton/hr	ton/yr				lb/hr	ton/yr
D11	30500205	Asphalt Drum Mixer, #2 Oil Fired	400	3504000	NOx	0.055	0.00%	22.00	96.36
					CO	0.13	0.00%	52.00	227.76
					SOx	0.011	0.00%	4.40	19.27
					VOC	0.032	0.00%	12.80	56.06
					HAP	0.0087	0.00%	3.48	15.24
D12	30500213	Silo Filling	400	3504000	NOx	0	0.00%	0.00	0.00
					CO	1.18E-03	0.00%	0.47	2.07
					SOx	0	0.00%	0.00	0.00
					VOC	1.22E-02	0.00%	4.87	21.35
					HAP	1.87E-04	0.00%	0.07	0.33
D13	30500214	Truck Loadout	400	3504000	NOx	0	0.00%	0.00	0.00
					CO	1.35E-03	0.00%	0.54	2.36
					SOx	0	0.00%	0.00	0.00
					VOC	3.91E-03	0.00%	1.56	6.85
					HAP	8.66E-05	0.00%	0.03	0.15
							NOx	22.00	96.36
							CO	53.01	232.19
							Sox	4.40	19.27
							VOC	19.23	84.26
							HAP	3.58	15.72
Drum mixer AP-42 emission factors: CO, NOx, SOx - Table 11.1-7; VOC - Table 11.1-8; HAP - Table 11.1-10 (fuel oil-fired w/ff, nat gas fired w/ff)									
Silo/Truck AP-42 emission factors from Table 11.1-14, 11.1-15, and 11.1-16.									
Silo loading speciation:		PM HAP =	11.40%	Org. PM =	2.54E-04				
		VOC =	100.00%	TOC EF =	1.22E-02				
		VOC HAP =	1.30%						
Loadout speciation:		PM HAP =	7.11%	Org. PM =	3.41E-04				
		VOC =	94.00%	TOC EF =	4.16E-03				
		VOC HAP =	1.50%						
Asphalt volatility:				-0.5					
HMA Temperature (F):				325					

Table 23: PTE Calculation excluding PM₁₀ with Operational Limitation (EUs: D11 through D13)

EU	SCC	Description	Throughput		Pollutant	EF (lb/ton)	Control Eff. %	Emissions	
			ton/hr	ton/yr				lb/hr	ton/yr
D11	30500205	Asphalt Drum Mixer, #2 Oil Fired	400	200000	NOx	0.055	0.00%	22.00	5.50
					CO	0.13	0.00%	52.00	13.00
					SOx	0.011	0.00%	4.40	1.10
					VOC	0.032	0.00%	12.80	3.20
					HAP	0.0087	0.00%	3.48	0.87
D12	30500213	Silo Filling	400	200000	NOx	0	0.00%	0.00	0.00
					CO	1.18E-03	0.00%	0.47	0.12
					SOx	0	0.00%	0.00	0.00
					VOC	1.22E-02	0.00%	4.87	1.22
					HAP	1.87E-04	0.00%	0.07	0.02
D13	30500214	Truck Loadout	400	200000	NOx	0	0.00%	0.00	0.00
					CO	1.35E-03	0.00%	0.54	0.13
					SOx	0	0.00%	0.00	0.00
					VOC	3.91E-03	0.00%	1.56	0.39
					HAP	8.66E-05	0.00%	0.03	0.01
							NOx	22.00	5.50
							CO	53.01	13.25
							Sox	4.40	1.10
							VOC	19.23	4.81
							HAP	3.58	0.90
Drum mixer AP-42 emission factors: CO, NOx, SOx - Table 11.1-7; VOC - Table 11.1-8; HAP - Table 11.1-10 (fuel oil-fired w/ff, nat gas fired w/ff)									
Silo/Truck AP-42 emission factors from Table 11.1-14, 11.1-15, and 11.1-16.									
Silo loading speciation:		PM HAP =	11.40%	Org. PM =	2.54E-04				
		VOC =	100.00%	TOC EF =	1.22E-02				
		VOC HAP =	1.30%						
Loadout speciation:		PM HAP =	7.11%	Org. PM =	3.41E-04				
		VOC =	94.00%	TOC EF =	4.16E-03				
		VOC HAP =	1.50%						
Asphalt volatility:		-0.5							
HMA Temperature (F):		325							

Table 24: Unlimited PTE Calculation (EU: D14)

EU#:	D14		Emission Factor (lb/mmBtu)	Potential Emissions		
				lb/hr	lb/day	ton/yr
Make:	CEI					
Model:	1500A		PM10	0.0236	0.04	0.19
S/N:	H119296		NOx	0.1429	0.26	1.15
			CO	0.0357	0.07	0.29
	1.84 mmBtu/hr		SOx	0.0015	0.01	0.01
	24.0 hr/day		VOC	0.0024	0.01	0.02
	8760 hr/yr		HAP	6.000E-04	0.01	0.01
PPM		%Oxygen				
	ppm NOx	3.0				
	ppm CO	3.0				
Fuel:	Diesel <input type="button" value="v"/>					

Table 25: Unlimited PTE Calculation (EU: D15)

EU#:	D15		Emission Factor (lb/mmBtu)	Potential Emissions		
				lb/hr	lb/day	ton/yr
Make:	Heatec					
Model:	HCS-250		PM10	0.0236	0.07	0.31
S/N:	H04-113/C04-048		NOx	0.1429	0.43	1.88
			CO	0.0357	0.11	0.47
	3.0 mmBtu/hr		SOx	0.0015	0.01	0.02
	24.0 hr/day		VOC	0.0024	0.01	0.03
	8760 hr/yr		HAP	6.000E-04	0.01	0.01
PPM		%Oxygen				
	ppm NOx	3.0				
	ppm CO	3.0				
Fuel:	Diesel <input type="button" value="v"/>					