west virginia department of environmental protection

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Austin Caperton, Cabinet Secretary
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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3362A
Plant ID No.:	039-00020
Applicant:	West Virginia Paving, Inc.
Facility Name:	Plant #30 (Dunbar)
Location:	Dunbar, Kanawha County
SIC Code:	2951 (Asphalt Paving Mixture and Block Manufacturing)
NAICS Code:	324121
Application Type:	Modification
Received Date:	March 06, 2018
Engineer Assigned:	Thornton E. Martin Jr.
Fee Amount:	$2,000
Date Received:	March 08, 2018
Complete Date:	March 29, 2018
Applicant Ad Date:	March 13, 2018
Newspaper:	*Charleston Gazette Mail*
UTM's:	Easting: 433.551 km Northing: 4,247.035 km Zone: 17
Description:	The hot mix asphalt plant (HMA) and the portable fractionated reclaimed asphalt pavement (FRAP) system are currently permitted under General Permit G20-B187B. This application was submitted to move that equipment from the G20-B187B permit to a Regulation 13 Individual Permit and to permit an additional portable crushing and screening system which will be brought to the site as needed.

PROCESS DESCRIPTION (taken from the Application)

The facility description below outlines the three main operations: HMA plant, FRAP system, and the portable crushing and screening system.

HMA

Aggregates (sand, limestone, and slag) delivered to the site by barge and are unloaded by a

stationary clamshell powered by a compression ignition engine CE1/N (3E) which deposits material into a hopper H1/PE (TP1/MD). Material drops from the hopper onto a stationary conveyor belt, C1/N (TP2/PE). C1/N transfers material to one of two additional conveyor belts, C2/N or C4/N (TP3/PE).

Conveyor C2/N transfers material to conveyor C3/N (TP4/PE), then onto a radial stacker RS1/N (TP5/PE). From this radial stacker, material can either be placed in several stockpiles, OS1-OS6/N (TP6/MD) or material can transfer to another conveyor belt C5/N (TP6/PE). From C5/N, material is transferred to another radial stacker, RS2/N (TP6A/PE), which currently places material into stockpiles OS1-OS6/N (TP7/MD). This modification will add an additional radial stacker, RS5/N which will accept material transferred from RS2/N (TP7/PE) and move the material to stockpiles OS1-OS6/N (TP7A/MD).

Conveyor C4/N transfers material to radial stacker RS3/N (TP9/PE), which transports material to stockpile OS7/N or OS8/N (TP10/MD) or to conveyor C6/N (TP10/PE). Conveyor C6/N transfers material to radial stacker RS4/N (TP10A/PE), which transfers material to stockpile OS7/N or OS8/N (TP11/MD).

Recycled asphalt pavement (RAP) is trucked to the site and stored in stockpile OS9/CA (TP12/CA).

Aggregates from OS1/N through OS6/N transferred by a front-end loader to aggregate feed bins B1/PE through B5/PE (TP13/MD). This modification will add two additional aggregate bins, B5A/PE and B5B/PE (TP13/MD). From the bins, material drops onto conveyor belts located beneath each bin then onto a single conveyor belt; B1/PE to UC1/PE (TP14/PE) to UC6/PE (TP19/PE), B2/PE to UC2/PE (TP15/PE) to UC6/PE (TP20/PE), B3/PE to UC3/PE (TP16/PE) to UC6/PE (TP21/PE), B4/PE to UC4/PE (TP17/PE) to UC6/PE (TP22/PE), B5/PE to UC5/PE (TP18/PE) to UC6/PE (TP23/PE), B5A/PE to UC5A/PE (TP18A/PE) to UC6/PE (TP23A/PE), and B5B/PE to UC5B/PE (TP18B/PE) to UC6/PE (TP23B/PE).

Conveyor UC6/PE feeds an in-line scalping screen S1/PE (TP24/N). Oversized material drops to the ground (TP24A/PE) and properly sized material drops onto conveyor belt UC11/N (TP24B/PE) which feeds the new dryer/drum CFDM1/APCD1 & APCD2 (TP24C/FE).

RAP from OS9/CA is transferred by front-end loader to the existing RAP hopper B6/PE (TP29/CA), or the new RAP hopper B6A/PE (TP29/CA) that is being added as part of this modification. The RAP drops from the existing hopper B6/PE onto conveyor belt UC7A/PE+CA (TP29A/FE+CA) and then onto conveyor belt UC7/CA (TP30/PE+CA). From the new hopper B6A/PE, RAP drops onto new conveyor belt UC7B/PE+CA (TP29B/PE+CA) and then onto conveyor belt UC7/CA (TP30/PE+CA). Conveyor UC7/CA feeds conveyor belt UC7C/CA (TP30A/WS+CA), which feeds the RAP screen S6\PE (TP31/PE+CA). Oversized material from both screen decks drops onto conveyor belt UC9/N (TP34/PE), which feeds the RAP crusher CR1\FE (TP35/FE). RAP leaves the crusher and drops back onto conveyor belt UC7C/CA (TP36/FE), which returns the material to the RAP screen. A mister is located along this conveyor belt just after TP36/FE. Properly sized material leaves from the bottom deck of the screen only and drops onto conveyor belt UC8/N (TP32/FE), which transports the material to the new dryer/drum CFDM1/APCD1 & APCD2 (TP33/FE).

Liquid asphaltic cement from T1 and T4 is piped to CFDM1/APCD1 & APCD2, where the various materials are mixed to form hot mix asphalt (HMA) or warm mix asphalt (WMA). The dryer/drum is fired with natural gas, number 2 fuel oil from tank T2, or used oil from tank T3. The dryer/drum CFDM1 is vented to a baghouse equipped with an inertial separator APCD1 & APCD2.

Once mixed, the HMA/WMA leaves the drum and drops onto drag link conveyor DL1/FE (TP37/PE). HMA/WMA leaving drag link conveyor DL1/FE drops into asphalt silo BS1/FE or onto drag link conveyor DL2/FE via TP38/PE. From drag link conveyor DL2/FE, asphalt drops into asphalt silo BS2/FE or drag link conveyor DL3/FE via TP39/PE. From drag link conveyor DL3/FE, asphalt drops into BS3/FE (TP40/PE).

The HMA/WMA is transferred to trucks via the truck load-outs at the base of each of the silos (TP41/PE) and is shipped offsite.

Emissions from CFDM1 are vented to the inertial separator and baghouse APCD1 & APCD2 (1E). Collected particulate matter is returned to CFDM1/APCD1 & APCD2 via auger SC1/FE (TP42/FE and TP43/FE), where it becomes part of the product.

Asphaltic cement is trucked to the site and stored in heated tanks T1 and T4. Both tanks are heated via a natural gas-fired asphalt heater AH1/N (2E). Number 2 fuel oil is trucked to the site and stored in tank T2 and used oil is trucked to the site and stored in tank T3. Natural gas is piped to the facility. Asphalt emulsion (tack) is trucked to the site and stored in tank T5. This material is not used in the manufacture of HMA; rather it is transferred to asphalt paving contractor trucks for use off-site.

PORTABLE FRAP SYSTEM

West Virginia Paving, Inc. uses an ASTEC ProSizer® 3100 (a portable FRAP processing system), to process reclaimed asphalt pavement (RAP) at the site into high-quality, well-graded aggregate coated with asphaltic cement. The ASTEC ProSizer 3100 is equipped with a 200 tph double-deck screen and a 75 tph horizontal shaft impactor. The unit is powered by a John Deere 6068H 173 hp engine (F-ENG1/N [F-1E]) which is a non-road engine. A portable radial stacker is used with the system and is powered by the same engine. The unit is utilized for a short time before it is moved to another site and returns to the site as needed. FRAP is fed into the asphalt plant via the existing RAP feed system and the RAP throughput of the asphalt plant is not increased. There is no change in the permitted throughput or maximum storage capacity of the facility's raw and sized RAP stockpile (OS9/N).

RAP from existing RAP stockpile (OS9/N) is loaded into feed hopper F-H1/PE by an end loader [F-TP1/MD]. The feed bin feeds belt conveyor F-BC1/PE [F-TP2/FE], which transports the RAP to the double-deck screen F-S1/FE [F-TP3/PE]. Oversized material is fed to belt conveyor F-BC2/N [F-TP4/FE], which transports the material to the horizontal shaft impactor F-CR1/FE [F-TP5/FE]. The material drops from the crusher onto belt conveyor F-BC1/PE [F-TP7/FE], which transports it back to the screen. The crusher can also be arranged so that oversized material from the screen bypasses the crusher and returns to the RAP stockpile OS9/N [F-TP6/N].

The smaller fractions from the screen are discharged to belt conveyor F-BC3/N [F-TP8/PE] and F-BC4/N [F-TP10/PE]. F-BC3/N and F-BC4/N can transfer material directly to the sized RAP stockpiles OS9A/N [F-TP9/MD] and OS9B/N [F-TP11/MD] or to radial stacker F-RS1/N [F-TP9/MD or F-TP11/MD]. The radial stacker is only fed by one of the belt conveyors F-BC3/N or F-BC4/N at any given time; not both at the same time. Material from F-RS1/N is transferred to OS9A/N or OS9B/N [F-TP12/MD]. From stockpiles OS9A/N and OS9B/N, materials are transferred via end loader to the existing stationary RAP hopper B6/PE [TP-29/PE] or B6A/PE [TP-29PE].

When FRAP is transferred to the existing RAP system, the flop gate on the screen is opened so that the fractionated RAP passes through the screen and is not double-processed.

Sized FRAP stockpiles OS9A/N and OS9B/N will be part of the existing RAP stockpile OS9/N. The throughput of RAP will not be changed with this application, nor will additional storage be created. RAP will either be sized to a single size using the existing RAP equipment and there will be a single large RAP stockpile OS9/N or RAP will be sized to two different sizes with the portable FRAP equipment and there will be two smaller sized FRAP stockpiles OS9A/N and OS9B/N, but the capacity and base of the RAP/FRAP stockpile will remain unchanged.

PORTABLE CRUSHING AND SCREENING

West Virginia Paving, Inc. is submitting this application to have a Portable Crushing and Screening System for its Dunbar facility in Kanawha County permitted together with the HMA Plant and FRAP System under the same Regulation 13 Individual Permit. The portable unit crushes RAP and is powered by a diesel generator set (P-ENG1 [P-1E]). The portable system may be located anywhere at the existing RAP stockpile. RAP is transferred from the existing site pile permitted under G20-B187B by front endloader to RAP bin P-B1/PE (P-TP1/MD). P-B1/PE drops material onto belt conveyor P-C1/N (P-TP2/PE) to screen P-SCR1/PE (P-TP3/N). Oversized material transfers to belt conveyor P-C2/N (P-TP4/PE) and is transported to the RAP crusher P-CR1/FE (P-TP5/N). Material leaving the crusher transfers to belt conveyor P-C3/N (P-TP6/PE) and back to P-C1/N (P-TP7/N) then to P-SCR1/PE. Pass through RAP from P-SCR1/PE transfers to conveyor P-C4/N (P-TP8/PE) to OS1/N (P-TP9/N) and to conveyor P-C5/N (P-TP10/PE) to OS1/N (P-TP11/N). The diesel generator set (P-ENG1 [P-1E]) is a non-road engine. This genset is mounted in a trailer. When the portable crushing and screening facility is brought to this location, it will be powered by the non-road engine-genset. The genset is brought to the site and parked. The genset is not fastened to the ground or installed in any manner except being parked on the site.

The facility shall be constructed and operated in accordance with the following equipment and control device information taken from registration application R13-3362A:

Equipment ID No.	Year Installed / Modified	Description	Maximum Capacity		Control Equipment [1]
			TPH	TPY	
HMA Plant					
CE1	2000	Clamshell Engine - Komatsu PC750-6, 444 hp @ 1,800 RPM, Catalyst installled to meet 40CFR63 Subpart ZZZZ requirement to reduce CO emissions by at least 70%. Testing on October 19, 2017 demonstrated 89% average.	11 gal/hr	5,760 hrs/yr	SCR
H1	2001	200 Ton Aggregate Hopper	----	500,000	N

Equipment ID No.	Year Installed / Modified	Description	Maximum Capacity		Control Equipment [1]
			TPH	TPY	
C1	2001	Conveyor Belt	400	500,000	N
C2	2001	Conveyor Belt	400	500,000	N
C3	2001	Conveyor Belt	400	500,000	N
RS1	2001	Radial Stacker	400	500,000	N
C5	2001	Conveyor Belt	400	500,000	N
RS2	2001	Radial Stacker	400	500,000	N
RS5	2013	Radial Stacker	400	500,000	N
C4	2001	Conveyor Belt	400	500,000	N
RS3	2001	Radial Stacker	400	500,000	N
C6	2001	Conveyor Belt	400	500,000	N
RS4	2001	Radial Stacker	400	500,000	N
B1	2001	20 Ton Aggregate Bin	----	500,000 combined	PE
B2	2001	20 Ton Aggregate Bin	----		PE
B3	2001	20 Ton Aggregate Bin	----		PE
B4	2001	20 Ton Aggregate Bin	----		PE
B5	2001	20 Ton Aggregate Bin	----		PE
B5A	2001	20 Ton Aggregate Bin	----		PE
B5B	2001	20 Ton Aggregate Bin	----		PE
UC1	2001	Conveyor Belt	400	500,000	PE
UC2	2001	Conveyor Belt	400	500,000	PE
UC3	2001	Conveyor Belt	400	500,000	PE
UC4	2001	Conveyor Belt	400	500,000	PE
UC5	2001	Conveyor Belt	400	500,000	PE
UC5A	2001	Conveyor Belt	400	500,000	PE
UC5B	2001	Conveyor Belt	400	500,000	PE
UC6	2001	Conveyor Belt	400	500,000	N
S1	2001	Scalping Screen	400	500,000	PE
UC11	2001	Conveyor Belt	400	500,000	N
B6	2001	20 Ton RAP Bin	----	125,000 combined	PE
B6A	2013	20 Ton RAP Bin	----		PE
UC7A	2001	Conveyor Belt	100	500,000	PE+CA
UC7B	2013	Conveyor Belt	100	125,000	PE+CA
UC7	2001	Conveyor Belt	100	125,000	CA
UC7C	2001	Conveyor Belt	100	125,000	CA
S6	2001	RAP Screen	100	125,000	PE
UC8	2001	Conveyor Belt	100	125,000	N
UC9	2001	Conveyor Belt	100	500,000	N
CR1	2001	RAP Crusher	100	125,000	FE
CFDM1	2013	Counterflow Drum Mixer	400	500,000	APCD1 & APCD2
DL1	2001	Drag Link Conveyor	400	500,000	FE
DL2	2001	Drag Link Conveyor	400	500,000	FE
DL3	2001	Drag Link Conveyor	400	500,000	FE
SC1	2013	Screw Conveyor	400	50,000	FE
BS1	2001	200 Ton HMA Storage Silo	----	500,000 combined	FE
BS2	2001	200 Ton HMA Storage Silo	----		FE
BS3	2001	200 Ton HMA Storage Silo	----		FE
OS1	2001	25,000 Ton Aggregate Stockpile - Natural Sand, Slag Sand	----	75,000 10,000	N
OS2	2001	10,000 Ton Aggregate Stockpile	----	100,000	N
OS3	2001	8,500 Ton Aggregate Stockpile	----	50,000	N
OS4	2001	8,500 Ton Aggregate Stockpile	----	50,000	N
OS5	2001	10,000 Ton Aggregate Stockpile	----	200,000	N

Equipment ID No.	Year Installed / Modified	Description	Maximum Capacity		Control Equipment [1]
			TPH	TPY	
OS6	2001	3,000 Ton Aggregate Stockpile	----	10,000	N
OS7	2001	5,500 Ton Aggregate Stockpile	----	100,000	N
OS8	2001	3,000 Ton Aggregate Stockpile	----	10,000	N
OS9	2001	100,000 Ton RAP Stockpile	----	125,000	N
T1	2001	Asphaltic Cement Tank	35,000 gal	6,000,000*	N
T2	2001	No. 2 Fuel Oil Tank	20,000 gal	2,000,000	N
T3	2001	Used Oil Tank	22,000 gal	2,000,000	N
T4	2001	Asphaltic Cement Tank	30,000 gal	6,000,000*	N
T5	2013	Asphaltic Emulsion (Tack) Tank	5,000 gal	125,000	N
AH1	2001	Asphalt Heater	1,350 scf/hr	8,760 hrs/yr	N
Portable FRAP System					
F-H1	2015	25 Ton RAP Hopper	----	125,000	PE
F-CR1	2015	RAP Crusher	75	67,500	FE
F-S1	2015	Screen	200	125,000	FE
F-BC1	2015	Belt Conveyor	200	125,000	PE
F-BC2	2015	Belt Conveyor	75	46,875	N
F-BC3	2015	Belt Conveyor	200	125,000	N
F-BC4	2015	Belt Conveyor	200	125,000	N
F-RS1	2015	Belt Conveyor	200	125,000	N
F-ENG1	2015	FRAP Engine - (Non-Road), John Deere 6068HFC93A, 173 hp @ 2,400 RPM, Mfg. Date: 5/17/13	9.28 gal/hr	625 hrs/yr	N
Portable Crushing and Screening System					
P-B1	2018	20 Ton RAP Bin	----	125,000	PE
P-C1	2018	Belt Conveyor	100	187,500	N
P-SCR1	2018	Screen	100	187,500	PE
P-C2	2018	Belt Conveyor	100	62,500	N
P-CR1	2018	RAP Crusher	100	62,500	FE
P-C3	2018	Belt Conveyor	100	62,500	N
P-C4	2018	Belt Conveyor	100	125,000	N
P-C5	2018	Belt Conveyor	100	125,000	N
P-ENG1	2018	Gen Set - (Non-Road), Caterpillar 3412, 917 hp @1,836 RPM, Mfg. Date: 1989	47.5 gal/hr	120 hrs/yr	A/F

[1] PE - Partial Enclosure; FE - Full Enclosure; N - No Controls; CA - Crusting Agent; APCD1 - Inertial Separator; APCD2 - ASTEC RBH-76 Baghouse ; SCR - Selective Catalytic Reduction; A/F - Air-to-Fuel Ratio Control.

* T1 and T4 combined.

DESCRIPTION OF FUGITIVE EMISSIONS

The potential sources of fugitive emissions for this facility include emissions, which are not captured by pollution control equipment and emissions from open stockpiles and vehicular traffic on approximately 0.25 mile (round-trip) of unpaved haulroads and work areas.

Fugitive emissions occur during load-in and load-out of materials to the stockpiles, aggregate feed bins, and RAP bin, as well on the storage area and haulroad due to vehicle traffic. During load-in and load-out of the aggregate stockpiles and feed bins, minimization of drop height is used to control fugitives.

Load-in to the RAP bin is controlled by the inherent crusting quality of the asphalt associated with RAP. Load-out is controlled not only by the inherent crusting agent, but also by partial enclosures.

A dust suppression system made up fixed water sprays is used to control fugitive emissions from the vehicle traffic in the storage area and on the haulroad.

SITE INSPECTION

Roy F. Teel of the Compliance and Enforcement Section of the Division of Air Quality performed a Full, On-Site Inspection on July 21, 2016. The facility received a status code of 10 - Out of Compliance. A Notice of Violation (NOV) was issued on October 06, 2016 in regards to the clamshell engine being subject to 40 CFR 63 Subpart ZZZZ. The NOV response was received on October 17, 2016 and the NOV Closure Document was issued on March 03, 2017.

Directions: From I-64 West, take exit 53, turn right towards WV Route 25. Go 0.1 mile, turn right onto 10th street. Go 0.2 mile and turn right onto WV 25 (Fairlawn Avenue). Go 1.5 miles to stop light and turn left onto King Street. Go 0.5 miles and turn left onto Charles Avenue. Site is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Fugitive emission calculations for unpaved haulroads are based AP-42 Fifth Edition - 13.2.2 Unpaved Roads (12/03). Materials Handling emission calculations are based on AP-42 Section 13.2.4 Aggregate Handling and Storage Piles. Crushing and screening emission calculation are based on the Reference Document for General Permit G40-C. Emission calculations for the Drum Mixer are based on AP-42 Tables 11.1-4, 11.1-7, 11.1-8 and 11.1.10. The estimated emission calculations were performed by the applicant's consultant and were checked for accuracy and completeness by the writer.

Refer to the following tables for a complete summary of the proposed facility's emissions:

Table 1: Point Source Emissions *(including CE1 and AH1)*

Emissions Summary - *West Virginia Paving, Inc. Plant #30 (Dunbar)* ***R13-3362A***	**HMA Plant #30 Controlled Emissions**		**Portable FRAP System Controlled Emissions**		**Portable Crushing and Screening Controlled Emissions**	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
PM	84.93	54.54	11.93	3.74	9.66	6.12
PM10	26.40	17.86	3.78	1.19	63.45	2.20
PM2.5	4.53	4.05	0.43	0.15	0.45	0.35
VOC	34.38	22.74				
SO2	23.63	15.74				
NOx	28.61	32.97				
CO	55.92	38.50				
HCl	0.08	0.05				
Acetaldehyde	0.52	0.33				
Benzene	0.17	0.11				
Ethylbenzene	0.11	0.07				

Emissions Summary - *West Virginia Paving, Inc. Plant #30 (Dunbar)* ***R13-3362A***	**HMA Plant #30 Controlled Emissions**		**Portable FRAP System Controlled Emissions**		**Portable Crushing and Screening Controlled Emissions**	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Toluene	1.18	0.74				
Xylene	0.14	0.09				
1,3-Butadiene	0.0001	0.0003				
Formaldehyde	1.38	0.87				
Acrolein	0.0001	0.0003				
Napthalene	0.0001	0.0003				
PAH HAP's	0.35	0.22				
Total VOC HAP's	4.44	2.80				
Metal HAP's	0.05	0.03				
Total HAP's	4.49	2.83				

Table 2: Fugitive Emissions

Emissions Summary - *West Virginia Paving, Inc. Plant #30 (Dunbar)* ***R13-3362A***	**HMA Plant #30 Controlled Emissions**		**Portable FRAP System Controlled Emissions**		**Portable Crushing and Screening Controlled Emissions**	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
PM	36.59	22.90	10.26	3.21	5.24	3.68
PM10	10.40	6.74	3.03	0.95	1.57	1.17
PM2.5	1.20	0.79	0.30	0.10	0.16	0.14

Table 3: Total Point Source and Total Facility Emissions *(including CE1 and AH1)*

Emissions Summary - *West Virginia Paving, Inc.; Plant #30 (Dunbar)* ***R13-3362A***	**Point Source Controlled Emissions**		**Total Facility Controlled Emissions**	
	lb/hr	TPY	lb/hr	TPY
PM	106.52	64.40	158.61	94.19
PM10	33.63	21.25	48.63	30.11
PM2.5	5.41	4.55	7.07	5.58
VOC	34.38	22.74	34.38	22.74
SO2	23.63	15.74	23.63	15.74
NOx	28.61	32.97	28.61	32.97
CO	55.92	38.50	55.92	38.50
HCl	0.08	0.05	0.08	0.05
Acetaldehyde	0.52	0.33	0.52	0.33
Benzene	0.17	0.11	0.17	0.11
Ethylbenzene	0.11	0.07	0.11	0.07
Toluene	1.18	0.74	1.18	0.74
Xylene	0.14	0.09	0.14	0.09
1,3-Butadiene	0.0001	0.0003	0.0001	0.0003
Formaldehyde	1.38	0.87	1.38	0.87
Acrolein	0.0001	0.0003	0.0001	0.0003
Napthalene	0.0001	0.0003	0.0001	0.0003
PAH HAP's	0.35	0.22	0.35	0.22
Total VOC HAP's	4.44	2.80	4.44	2.80
Metal HAP's	0.05	0.03	0.05	0.03
Total HAP's	4.49	2.83	4.49	2.83

Table 4: Clamshell Engine *(CE1)* and Asphalt Heater *(AH1)* Emissions

Emissions Summary - *West Virginia Paving, Inc.; Plant #30 (Dunbar)* ***R13-3362A***	**Komatsu PC750-6 Controlled Emissions**		**Asphalt Heater Emissions**	
	lb/hr	TPY	lb/hr	TPY
PM/PM10/PM2.5	0.45	1.30	0.01	0.04
VOC	0.53	1.53	0.01	0.03
SOx	0.43	1.24	0.001	0.004
NOx	6.47	18.63	0.14	0.59
CO	1.39*	4.00*	0.11	0.50
Acetaldehyde	0.0011	0.0032	-	-
Benzene	0.0014	0.0040	2.84E-06	1.24E-05
Toluene	0.0006	0.0017	4.59E-06	2.01E-05
Xylene	0.0004	0.0012	-	-
1,3-Butadiene	0.0001	0.0003	-	-
Formaldehyde	0.0017	0.0049	1.01E-04	4.43E-04
Acrolein	0.0001	0.0003	-	-
Napthalene	0.0001	0.0003	8.24E-07	3.61E-06
Total HAP's	0.0055	0.0160	2.55E-03	1.12E-02

* The CO emissions shown are pre-catalyst installation. Testing results after catalyst installation indicate an 89% reduction of CO concentration at 15% O_2.

REGULATORY APPLICABILITY

The proposed installations and operation of the HMA plant is subject to the following state and federal rules:

45CSR2 To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

The purpose of this rule is to establish limitations for smoke and particulate matter which are discharged from fuel burning units. Per this rule, Section 2.14 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.10 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. The facility is exempt from sections 4, 5, 6, 8, and 9 because the asphalt heater classifies as a fuel burning unit(s) having a heat input under ten (10) million B.T.U.'s per hour. The facility will be subject to the opacity requirements in this rule, which is 10% opacity based on a six minute block average.

45CSR3 To Prevent and Control Air Pollution from the Operation of Hot Mix Asphalt Plants

The purpose of this rule is to establish emission limitations for hot mix asphalt plants and the plant property. The facility is subject to this rule because it meets the definition of Hot Mix Asphalt Plant as found in Section 2.14. The facility must meet visible emission limits of 40% opacity during start-up or shutdown and 20% opacity during operations of any fuel burning

equipment. The facility shall be operated and maintained in a manner as to prevent emission of particulate matter from any point other than a stack outlet. The facility will utilize water sprays, minimized drop heights, partial enclosures, full enclosures, and a baghouse to minimize particulate emissions. Opacity monitoring, recordkeeping, and reporting requirements are included in permit R13-3395.

45CSR7 To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The facility is subject to the requirements of 45CSR7 because it meets the definition of "Manufacturing Process" found in subsection 45CSR7.2.20. The facility should be in compliance with Subsection 3.1 (no greater than 20% opacity), Subsection 3.7 (no visible emissions from any storage structure pursuant to subsection 5.1 which is required to have a full enclosure and be equipped with a control device), Subsection 4.1 (PM emissions shall not exceed those allowed under Table 45-7A), Subsection 5.1 (manufacturing process and storage structures must be equipped with a system to minimize emissions), Subsection 5.2 (minimize PM emissions from haulroads and plant premises) when the particulate matter control methods and devices proposed within application R13-3362A are in operation.

According to Table 45-7A, for a type 'a' source with a maximum process weight rate of 800,000 lb/hour, the maximum allowable emission rate is 50 lb/hour of particulate matter. The maximum emission rate is 26.32 lb/hour of particulate matter for the counter flow drum mixer according to estimated emissions in fact sheet R13-3362A.

45CSR10 To Prevent and Control Air Pollution from Emissions of Sulfur Oxides

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. Per this rule, Section 2.9 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.8 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. This facility is exempt from sections 3 and 6 through 8 because the source operation classifies as a fuel burning unit(s) having a heat input under ten (10) million B.T.U.'s per hour. According to section 4.1., sulfur dioxide concentrations must fall below 2,000 parts per million by volume (this requirement should be met with natural gas as fuel for all burners).

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed installations and operation of the HMA plant is subject to the requirements of 45CSR13, Subsection 2.24.b. The HMA plant and various processing equipment have the potential to discharge more than six (6) pounds per hour and ten (10) tons per year of several regulated air pollutants. The applicant has submitted the application fee of $1,000 and the $1,000 NSPS fee. The Applicant published a Class I legal advertisement in the *Charleston Gazette Mail* on March 13, 2018.

45CSR16 Standards of Performance for New Stationary Sources

This rule establishes and adopts standards of performance for new stationary sources promulgated by the United States Environmental Protection Agency pursuant to section 111(b) of the federal Clean Air Act, as amended (CAA). The facility is subject to 40CFR60 Subparts I and OOO.

40CFR60 Subpart I: Standards of Performance for Hot Mix Asphalt Facilities

The facility is subject to this Subpart because it meets the definition of "hot mix asphalt facility" as defined in 60.91(a) – hot mix asphalt facility means any facility used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements and consisting of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems. Permit 13-3362A requires opacity testing, which must demonstrate opacity values of 20% or under.

40 CFR 60 Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants

In addition to nonmetallic minerals processing plants, provisions of this subpart also apply to crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart. The facility shall be in compliance with 60.672 (b) no greater than 7% opacity from any transfer point on belt conveyors or from any other affected facility (as defined in 60.670 and 60.671) and no greater than 12% opacity from any crusher when the particulate matter control methods and devices (all control methods shown in equipment table) proposed within application R13-3362A are in operation.

45CSR30 Requirements for Operating Permits

In accordance with 45CSR30 Major Source Determination, the HMA plant will be a non-major source which is subject to NSPS Subpart I and NSPS Subpart OOO. The facility's potential to emit will be 21.25 TPY of a regulated air pollutant (PM_{10}), not including fugitive emissions, which is less than the 45CSR30 threshold of 100 TPY. Therefore, the facility will be subject to 45CSR30 and classified as a Title V deferred non-major source.

40CFR63 Subpart ZZZZ—National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

West Virginia Paving, Inc. is subject to 40CFR63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because CE1 is considered an existing area source of HAPs since it was manufactured before June 12, 2006. CE1 has been retrofitted with a selective catalytic converter to meet the emission limitations of this subpart by limiting the concentration of CO in the stationary RICE exhaust to 49 pmvd at 15 percent O2; or reduce CO emissions by 70 percent or more.

The proposed installations and operation of the HMA plant will not be subject to the following state and federal rules:

45CSR14 *Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration*

In accordance with 45CSR14 Major Source Determination, the proposed Hot Mix Asphalt and portable RAP processing facilities are not listed in Table 1. The facilities will have a total potential to emit 51.29 TPY of a regulated air pollutant (PM), not including fugitive emissions, which is less than the 45CSR14 threshold of 250 TPY. This facility is not listed in Table 2, and so fugitive emissions are not included when determining source applicability. Therefore, the proposed construction is not subject to the requirements set forth within 45CSR14.

45CFR60 *Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

West Virginia Paving, Inc. is not subject to this subpart because the clamshell engine CE1 was manufactured prior to April 1, 2006. The FRAP engine (F-ENG1) and Gen-Set (P-ENG1) are both classified as Non-Road engines.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Acetaldehyde:

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals. It is ubiquitous in the environment and may be formed in the body from the breakdown of ethanol. Acute (short-term) exposure to acetaldehyde results in effects including irritation of the eyes, skin, and respiratory tract. Symptoms of chronic (long-term) intoxication of acetaldehyde resemble those of alcoholism. Acetaldehyde is considered a probable human carcinogen (Group B2) based on inadequate human cancer studies and animal studies that have shown nasal tumors in rats and laryngeal tumors in hamsters.

Benzene:

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Ethyl Benzene:

Ethyl benzene is mainly used in the manufacturing of styrene. Acute (short-term) exposure to ethyl benzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects, such as dizziness. Chronic (long-term) exposure to ethyl benzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation

exposure to ethyl benzene. Limited information is available on the carcinogenic effects of ethyl benzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethyl benzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethyl benzene as a Group D, not classifiable as to human carcinogenicity.

Formaldehyde:

Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

Toluene:

The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. `Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies.

Xylene:

Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

AIR QUALITY IMPACT ANALYSIS

Air dispersion modeling was not performed due to the size and location of this facility and the limit of the proposed construction. This plant is located in Kanawha County, WV, which is currently designated as attainment for $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter).

MONITORING OF OPERATIONS

Registrants will be required to perform the following monitoring and recordkeeping:

1. Monitor and record daily and monthly records of the amount of Hot Mix Asphalt processed.
2. Monitor and record daily and monthly records of the amount of nonmetallic minerals processed.
3. Monitor and record calendar annual quantity of organic liquid throughput in all registered storage tanks.
4. Conduct visual observations of all points listed in the registration that are subject to opacity limits.
5. Conduct annual preventative maintenance/inspection, and all routine maintenance service and repairs as required, to facilitate proper control device performance, for the control devices listed in the registration.
6. Perform are applicable required monitoring, recordkeeping, reporting and testing that is required under 40CFR63 Subparts ZZZZ.
7. These records shall be maintained on-site for a minimum of five (5) years from the date of record creation and shall be made available to the Director of the Division of Air Quality or his or her duly authorized representative upon request.

RECOMMENDATION TO DIRECTOR

The information contained in this relocation application indicates that compliance with all applicable regulations should be achieved when all proposed particulate matter control methods are in operation. Due to the location, nature of the process, and control methods proposed, adverse impacts on the surrounding area should be minimized. No comments were received. Therefore, the granting of a Permit to construct to West Virginia Paving, Inc. for the operation of a portable RAP processing plant to be located in Dunbar, Kanawha County, WV is hereby recommended.

Thornton E. Martin Jr.
Permit Engineer

April 04, 2018
Date