Amended
application
8/4/16



Received

Enviva Pellets Northampton LLC 874 Lebanon Church Road Garysburg, NC 27381

DEC 2 1 2016

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Air Permits Section

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December 20, 2016

Via FedEx Overnight Delivery

Ms. Yukiko Puram NCDEQ-DAQ Air Permitting Section 1641 Mail Service Center Raleigh, NC 27699-1641

Re: Additional Information Request for Permit Application Submitted August 9, 2016

(Application ID No. 6600167.14B) Enviva Pellets Northampton, LLC Garysburg, North Carolina

Ms. Puram:

Enviva Pellets Northampton, LLC (Enviva) would like to provide the requested information that was requested on November 29, 2016. Please find Enviva's response below:

- 1. Please submit additional documents to support the control efficiencies for the cyclones CD-DC, CD-HM-CYC 1 through 8, and CD-CLR 1 through 6.
 - a. For the CD-DC, the 98.5% refers to the cyclone and WESP's combined control efficiencies. In Form C4 for Dryer, the manufacturer is listed Lundberg E-Tube 115719, which is the WESP manufacturer.
 - b. For CD-HM-CYC 1 through 8, the control efficiency document is attached. The ES-HM 1 through 8 cyclones are in series with a process ending <u>bag</u> filter equipment, Aircon 16 RAB 412-10. The control efficiency of the cyclones is not included in the emission calculations.
 - c. For CD-CYC-1 through 6, the control efficiency document is attached.
- 2. Please update Table B-1 of your application to include emissions from missing emission sources. The sources that are missing from the table are: ES-DLB, ES-DLC-1, ES-BCS-2, ES-BCS-3, ES-BSB-1, and ES-BSB-2.
 - a. For ES-DLB, ES-DLC-1, ES-BSC-2, ES-BSC-3, ES-BSB-1, and ES-BSB-2, are represented in the emission calculations for ES-DWH in Table B-14: 13
 - b. All of the emission sources listed above are fugitive emissions from handling dry wood.
 - c. From NCDEQ request for more information letter, ES-BCS-2 and ES-BCS-3 were incorrectly named. They are ES-BSC-2 and ES-BSC-3 in the application, which are included in the ES-DWH emissions calculations.



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- 3. There are inconsistent source ID numbers throughout the application, with ES-DLH, Dry Line Hopper and ES-DLB, Dry Line Feed Bin are the same source. ES-PFB-1, Pellet Fines Bin and ES-FB are the same source.
 - a. Attached are the edited forms and tables that will list ES-DLB, Dry Line Bin and ES-PFB-1, Pellet Fines Bin.

If you have any questions or require additional information, please contact me at 252-370-3181.

Sincerely.

Joe Harrell

Corporate EHS Manager

cc: Royal Smith, Enviva Executive VP-Operations

BAGFILTER AND CYCLONE EMISSIONS ENVIVA PELLETS NORTHAMPTON TABLE-BA2

PM				Filter. Vent -or-		Pollutant	Annual					Emissions	sions		
Source ID ID (cfm) (gycf) (hours) PM ₁₀ PM ₂₅ (lbhr) (tpy) (lbhr) (lbhr) <th< th=""><th></th><th></th><th>Emission</th><th>Cyclone</th><th>Flow rate¹</th><th>Loading²</th><th>Operation</th><th>% PM</th><th>that is</th><th>PN</th><th>4</th><th>PM</th><th>103</th><th>PM_{2.5}</th><th>es ed</th></th<>			Emission	Cyclone	Flow rate ¹	Loading ²	Operation	% PM	that is	PN	4	PM	103	PM _{2.5}	es ed
ES-HM-1 through 3 CD-HM-BF-1 45000 0.004 8,760 100% 1.54 6.76 1.54		Emission Unit	Source ID	(I)	(cfm)	(gr/cf)	(hours)	PM_{10}	PM _{2.5}	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
ES-HM-7 and 8, ES-HM-7 through 6 CD-HM-BF-2 45000 0.004 8,760 100% 1.54 6.76 1.54 6.75 1.54	63	Hammermills 1-3	ES-HM-1 through 3	CD-HM-BF-1	45000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
ES-HMA7 and 8, ES-NDS, DLC CD-HM-BF-3 45,000 0.004 8,760 100% 154 6.76 1.54 6.76 ES-PMFS CD-PMFS-BV 2,500 0.004 8,760 100% 100% 0.12 0.58 0.09 0.38 ES-PMFS CD-PMFS-BV-1 3,600 0.004 8,760 100% 0.12 0.54 0.12 0.54 ES-CIR-1 CD-CIR-2 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-3 CD-CIR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-3 CD-CIR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-4 CD-CIR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-5 CD-CIR-4 17,100 0.01 8,760 91% 55% </td <td>5</td> <td>Hammermills 4-6</td> <td>ES-HM-4 through 6</td> <td>CD-HM-BF-2</td> <td>45000</td> <td>0.004</td> <td>8,760</td> <td>100%</td> <td>100%</td> <td>1.54</td> <td>92.9</td> <td>1.54</td> <td>92.9</td> <td>1.54</td> <td>92.9</td>	5	Hammermills 4-6	ES-HM-4 through 6	CD-HM-BF-2	45000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
ES-PMFS CD-PMFS-BV 2,500 0.004 8,760 100% 100% 0.09 0.38 0.09 0.38 ES-PFB-1 CD-PR-BV-1 3,600 0.004 8,760 100% 100% 0.12 0.54 0.12 0.54 ES-CLR-1 CD-CLR-2 17,100 0.01 8,760 91% 55% 1.47 6,42 1.33 5.84 ES-CLR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6,42 1.33 5.84 ES-CLR-3 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6,42 1.33 5.84 ES-CLR-4 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6,42 1.33 5.84 ES-CLR-5 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6,42 1.33 5.84 ES-CLR-6 CD-CLR-7 17,100 0.01 8,760 91% </td <td></td> <td>Hammermills 7, 8, NDS</td> <td>ES-HM-7 and 8, ES-NDS, DLC</td> <td>CD-HM-BF-3</td> <td>45,000</td> <td>0.004</td> <td>8,760</td> <td>100%</td> <td>100%</td> <td>1.54</td> <td>92.9</td> <td>1.54</td> <td>92.9</td> <td>1.54</td> <td>92.9</td>		Hammermills 7, 8, NDS	ES-HM-7 and 8, ES-NDS, DLC	CD-HM-BF-3	45,000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
Vent ES-PFB-1 CD-PFB-BV-1 3,600 0.004 8,760 100% 100% 0.12 0.54 0.12 0.54 ES-CLR-1 CD-CLR-1 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-4 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-5 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-6 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI, ES-PBI-12 CD-CLR-5 17,100		Pellet Mill Feed Silo Bin Vent Filter	ES-PMFS	CD-PMFS-BV	2,500	0.004	8,760	100%	100%	0.09	0.38	0.09	0.38	60:0	0.38
ES-CLR-1 CD-CLR-1 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-2 CD-CLR-2 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-3 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-4 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-5 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI, ES-BS-1 CD-FPH-BV 35,500 0.004 8,760 91% 55% 1.87 6.42 1.33 5.84 Screens ES-BSC-1, ES-BS-1 CD-FPH-BV 35,5		Pellet Mill Fines Bin Bin Vent Filter	ES-PFB-1	CD-PFB-BV-1	3,600	0.004	8,760	100%	100%	0.12	0.54	0.12	0.54	0.12	0.54
ES-CLR-2 CD-CLR-2 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-4 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-5 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-6 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-6 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-6 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-6 CD-FPH-BV 35,500 0.004 8,760 91% 55% 3.86 16.89 3.51 15.37 ES-BSC-1,		Pellet Coolers Cyclone 1	ES-CLR-1	CD-CLR-1	17,100	0.01	8,760	%16	55%	1.47	6.42	1.33	5.84	0.81	3.53
ES-CIR-3 CD-CLR-3 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-4 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-4 CD-CLR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CLR-5 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI,2, ES-PBI-12 CD-FPH-BV 35,500 0.004 8,760 91% 55% 1.22 5.33 1.11 4.85 Screens ES-BSC-I, ES-BSS-1 CD-BS-BF-1 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 Screens ES-BSC-I, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 Accens <td></td> <td>Pellet Coolers Cyclone 2</td> <td>ES-CLR-2</td> <td>CD-CLR-2</td> <td>17,100</td> <td>0.01</td> <td>8,760</td> <td>%16</td> <td>55%</td> <td>1.47</td> <td>6.42</td> <td>1.33</td> <td>5.84</td> <td>0.81</td> <td>3.53</td>		Pellet Coolers Cyclone 2	ES-CLR-2	CD-CLR-2	17,100	0.01	8,760	%16	55%	1.47	6.42	1.33	5.84	0.81	3.53
ES-CIR-4 CD-CLR-4 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-5 CD-CIR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 CD-CIR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI,2, ES-PB-1-2 CD-FPH-BV 35,500 0.004 8,760 91% 55% 1.22 5.33 1.11 4.85 Screens ES-BSC-I, ES-BS-1 CD-BS-BF-1 45,000 0.01 8,760 91% 55% 1.89 3.51 15.37 Screens ES-BSC-I, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 Acreens ES-BSC-I, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 8,760 91.84 1 Acreens ES-BSC-I, ES-BSS-2 CD-BS		Pellet Coolers Cyclone 3	ES-CLR-3	CD-CLR-3	17.100	0.01	8,760	%16	25%	1.47	6.42	1.33	5.84	0.81	3.53
ES-CIR-5 CD-CIR-5 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 ES-CIR-6 CD-CIR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI,2, ES-PB1-12 CD-FPH-BV 35,500 0.004 8,760 91% 55% 1.22 5.33 1.11 4,85 Screens ES-BSC-I, ES-BS-1 CD-BS-BF-1 45,000 0.01 8,760 91% 55% 1.89 3.51 15.37 Screens ES-BSC-I, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 1.89 3.51 15.37 Acreens ES-BSC-I, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 1.89 3.51 15.37		Pellet Coolers Cyclone 4	ES-CLR-4	CD-CLR-4	17 100	0.01	8 760	%16	25%	1.47	6.42	1.33	5.84	0.81	3.53
ES-CIR-6 CD-CLR-6 17,100 0.01 8,760 91% 55% 1.47 6.42 1.33 5.84 Screens ES-FPH, ES-PLI, ES-PBI-12 CD-PH-BV 35,00 0.004 8,760 91% 55% 1.22 5.33 1.11 4.85 Screens ES-BSC-1, ES-BSS-1 CD-BS-BF-1 45,000 0.01 8,760 91% 55% 1.88 1.83 15.37 Sorcens ES-BSC-1, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 All Solutions ES-BSC-1, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37		Pellet Coolers Cyclone 5	ES-CLR-5	CD-CLR-5	17,100	0.01	8,760	91%	25%	1.47	6.42	1.33	5.84	0.81	3.53
ES-FPH, ES-PL1,2, ES-PB1-12 CD-FPH-BV 35,500 0.004 8,760 91% 55% 1.22 5.33 1.11 4.85 ES-BSC-1, ES-BSS-1 CD-BS-BF-1 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 ES-BSC-1, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 TOTAL TOTAL 22,56 98,83 20,97 91,84 1		Pellet Coolers Cyclone 6	ES-CLR-6	CD-CLR-6	17,100	0.01	8,760	61%	55%	1.47	6.42	1.33	5.84	0.81	3.53
ES-BSC-1, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8.760 91% 55% 3.86 16.89 3.51 15.37 ES-BSC-1, ES-BSC-1, ES-BSC-2, ES-BSC-3, ES-BSC-1, ES-BSC-3, ES-BSC-1, ES-BSC-3, ES-BSC-1, ES-BSC-3, ES-BSC-1, ES-BSC-3, ES-BSC-3		Finished Product Handing	ES-FPH, ES-PL1,2, ES-PB1-12	CD-FPH-BV	35,500	0.004	8,760	61%	25%	1.22	5.33	1.11	4.85	19.0	2.93
ES-BSC-1, ES-BSS-2 CD-BS-BF-2 45,000 0.01 8,760 91% 55% 3.86 16.89 3.51 15.37 17.37 17.41 10.01		Finished Product Bagging Screens		CD-BS-BF-1	45,000	0.01	8 760	%16	55%	3.86	16.89	3.51	15.37	2.12	9.29
22.56 98.83 20.97 91.84		Finished Product Bagging Screens		CD-BS-BF-2	45,000	0.01	8,760	%16	55%	3.86	16.89	3.51	15.37	2.12	9.29
									TOTAL	22.56	98.83	20.97	91.84	14.59	63.89

Filter, Vent, and Cyclone inlet flow rate (cfm) provided by design engineering firm (Mid-South Engineering Co.). The exit flowrate was conservataively assumed to be the same as the inlet flowrate.

² Pollutant loading provided by Aircon.

³ Pellet cooler cyclone and finished product handling bagfilter speciation based on AP-42 factors for wet wood combustion (Section 1.6) controlled by a mechanical separator. Since the particle size of particles in a pellet cooler is anticipated to be larger than flyash, this factor is believed to be a conservative indicator of speciation.



Facility Totals 161219 ENV NOR T5 App Emiss Calcs Rev2

TABLE B-1 FACILITY-WIDE CRITERIA POLLUTANT SUMMARY ENVIVA PELLETS NORTHAMPTON

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	Total VOC (tpy)	CO _{2e biomass} deferral (tpy)	CO _{2e} (tpy)
Drycr System Emergency Generator Fire Water Pump	ES-DRYER ES-EG ES-FWP	60.95 0.50 0.43	125.50 0.58 0.49	29.84 0.03 0.02	29.84 0.03 0.02	29.84 0.03 0.02	19.20 0.0010 0.0008	209.88 0.0015 0.0013	3,341.43 93.35 80.02	162,118.83 93.35 80.02
Hammermills/Nuisance Dust System	ES-HM-1 thru 8/ ES-NDS (see note)	•	ı	20.27	20.27	20.27	ı	24.71	ı	ι
Pellet Mill Feed Silo Pellet Fines Bin	ES-PMFS ES-PFB-1	1 1		0.38	0.38	0.38	, ,			
Pellet Presses and Coolers Finished Product Handling & Loadout	ES-CLR1 thru -6 ES-FPH, PL1,2 PB1-12			38.52	35.05 4.85	21.19		142.86	()	t i
Finished Product Bagging Screening Dried Wood Handling	ES-BSC-1, ES-BSS-1, 2 ES-DWH (see note), ES-PP	1 1	1 1	33.79 0.12	30.75 0.06	18.58 0.01	1 1	9 8	1 1	1 1
Diesel Storage Tanks	TK1 & TK2		1	-	-	-	1	9.10E-04	-	
Fugitive (Non-PSD Sources)	Total PSD Emissions	61.88	126.57	128.84	121.79	93.79	19.20	377.46	3,514.80	162,292.20
Bark-Hog	ES-BARK ES EDWC							0.30		1
Green Hammermills	ES-RCHIP - 1 and 2	,						1.25		1 1
Green Wood Handling Green Wood Piles	ES-GWH S ES-GWSP1 G WH S?	, ,		0.03 2.65	0.01	0.00		2.93	1 1	1 1
	Total Facility Emissions:	61.88	126.57	131.52	123.13	93,99	19.20	382.89	3,514.80	162,292,20

Note: DWH (Dried wood handling) includes several miscellaneous dried wood transfer sources as detailed in Table B-14 (including ES-DLB, ES-BSC-1, ES-BSC-2, ES-BSB-1, and ES-BSB-2). Note: NDS represents the Nuisance Dust System source which includes the transfer of materials from the Dry Line Conveyor (ES-DLC-1).

TABLE B-14 BRIED WOOD HANDLING DROP POINTEMISSIONS ENVIVA PELLETS NORTHAMPTON

	The state of the s
%hL	Pellet Mill Outsut Moisture Content
17%	Dryer Output Moisture Content:
000:09	Max Bagging System Throughput (ODT/hr)
81.710	Max Hammermill and Pellet Press Throughput (ODT/hr)
10,000	Dry-line Feed Throughput (ODT/hr)
71.710	Max Dryer Short-Term Throughput (ODT/hr)
625,225	Pellet Press Throughput (ODT/yr)
531,441	Annual Hammermill Throughput (ODT/yr)
15.0%	Amount of Fines Diverted from Hammermills
625,225	Dryer Throughput Plus Dry-line Throughput (ODT/yr)
87,600	Maxium Dry Line Annual Throughput (ODT/yr)
537,625	Annual Dryer Output Throughput (ODT/yr)

					Thro	Throughput						
8	Emission Source Group	Description	Confrol	Control Description	Max. Hourly ²	Annual	Potential U Emission	Potential Uncontrolled Emissions for PM ³	Potential U Emissions	Potential Uncontrolled Potential Uncontrolled Emissions for PM ₁₀ Emissions for PM ₂ ,	Potential U Emissions	Potential Uncontrolled Emissions for PM, 3
					(tph)	(tpy)	(lb/hr)	(fpy)	(lb/hr)	(tpy)	(IP/hr)	(tpy)
DP1	ES-DWH	Dryer Discharger to Dryer Collection Conveyor Belt	Enclosed	Reduction to 2 mph mean wind speed	86.40	647,741	3.1E-03	1.2E-02	1.5E-03	5.5E-03	2.2E-04	8.3E-04
DP2	ES-DWH	Pre-screen Feeder Fines Overs to Hammermills Infeed and Distribution	Enclosed	Reduction to 2 mph mean wind speed	14.77	112,992	5.3E-04	2.0E-03	2.5E-04	9.6E-04	3.8E-05	1.5E-04
DP3	ЕЅ-DWН	Hammermills Cyclone Diverter Gates to Hammermills System Discharge Collection Conveyor Belt	Enclosed	Reduction to 2 mph mean wind speed	83.68	640,291	3.0E-03	1.2E-02	1.4E-03	5,4E-03	2.2E-04	8.2E-04
DP4	ES-DWH	Hammermills System Discharge Collection Conveyor Belt to Pellet Mill Feed Silo Infeed Screw	Enclosed	Reduction to 2 mph mean wind speed	98,45	753,283	3.5E+03	1,4E-02	1.7E-03	6.4E-03	2.5E-04	9.7E-04
DP5	ES-DWH	Drop Point for Dry Line Transfer from Dry Line Bin to Dry Line	Enclosed	Reduction to 2 mph mean wind speed	12.05	105,542	4.3E-04	1.9E-03	2.0E-04	9.0E-04	3.1E-05	1.4E-04
DP6	ЕS-PP	Drop Emissions from Pellet Presses to Pellet Press Collection Conveyors	Enclosed	Reduction to 2 mph mean wind speed	87.86	672,285	1.15-02	4.2E-02	5.2E-03	2.0E-02	7.8E-04	3.0E-03
DP7	ЕЗ-DWН	Drop Emissions from Bagging System Coneyors to Bagging System Bins	Enclosed	Enclosed Reduction to 2 mph mean wind speed	64.52	625,225	8.0E-03	3.9E-02	3.8E-03	1.8E-02	5,8E-04	2.8E-03
1		121966		6,2258		TOTAL	3,0E-02	1.2E-01	1.4E-02	5.7E-02	2.1E-03	8.7E-03

¹ Progitive emissions are not included in facility-wide PTE because the Northampton Pellet Mill does not belong to one of the listed 28 source categories.

² Max hourly rates based upon maximum calculated throughput rates provided in mass balance provided by Mid-South Engineering Company, June 17, 2011; updated for 13% moisture content on December 29, 2011

Bessed emission factors calculated per AP-42 Section 13.2.4, September 2006. $k = particle size multiplier (dimensionless) for PM = 0.74 \\ k = particle size multiplier (dimensionless) for PM = 0.35 \\ k = particle size multiplier (dimensionless) for PM = 0.35 \\ k = particle size multiplier (dimensionless) for PM = 0.35 \\ U = mean wind speed (mph) = 2.00 \\ Dryer Exit Peller Press Exit M = material moisture content (%) = 17 \\ E for PM (lohton) = 3.65-05 = 1.26-05 \\ E for PM (obtion) = 2.66-05 = 8.95-05 \\ E for PM (obtion) = 2.66-06 = 8.95-05 \\ E for PM = 0.25 \\ E fo$

= 0.45 (8:0032) (2.9) = 0.50001702 16/ton 6.00112 6.3039 (27) x x x x x 12.05 21100.0

FORM B9

EMISSION SOURCE (OTHER)

REVISED. 12/01/01 NCDENR/DIVISION OF AIR QUAIR	y - Application	for Air Permit to Construct/Oper	ate B9
EMISSION SOURCE DESCRIPTION: Dry Line Bin		EMISSION SOURCE ID NO: E	S-DLB
		CONTROL DEVICE ID NO(S): N	I/A- Fugitive
OPERATING SCENARIO:1 OF1	_	EMISSION POINT (STACK) ID N	O(S): N/A - Fugitive
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):			
Dried wood materials are transferred to Dry Line Conveyor (ES-DLC).			
DLB-3			
VOV			
MATERIALS ENTERING PROCESS - CONTINUOUS PRO	CESS	MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood Materials	ODT	10 tph	
	+	 	
	_		
	+		
MATERIALS ENTERING PROCESS - BATCH OPERAT		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)
			-
	1		
MAYIMI IM DECICAL (BATCHES / HOLID)			
MAXIMUM DESIGN (BATCHES / HOUR): REQUESTED LIMITATION (BATCHES / HOUR):	/DATOUEOR	(D)	
	(BATCHES/)		
FUEL USED: N/A		IMUM FIRING RATE (MILLION BT	
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTE	D CAPACITY ANNUAL FUEL USE:	N/A
COMMENTS:			

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Divisio	n of Air Quality -	Application f	or Air Permit	to Construct	/Operate		В
EMISSION SOURCE DESCRIPTION: Dry Line Feed Cor	nveyor		EMISSION S	OURCE ID N	O:	IES-DLC	
			CONTROL D	EVICE ID NO)(S):	CD-HM-BF-3	
OPERATING SCENARIO1OF	1		EMISSION F	OINT (STACE	K) ID NO(S):	EP-2	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROC Dried wood materials are transferred from the dry line fee				nill pre-screens	s in-feed conv	әуог.	
TYPE OF EMISSION SOURCE (CHEC	K AND COMPLET	E APPROPR	IATE FORM E	1-B9 ON THE	FOLLOWING	G PAGES):	
	dworking (Form B				s/coatings/ink		
	ting/finishing/printir age silos/bins (For		☐ Incinerat				
START CONSTRUCTION DATE: 2014 OPERAT	TION DATE:		DATE MANU		2014		
MANUFACTURER / MODEL NO.: Enviva Built			OP. SCHEDU				2 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):_		HAP (SUBPAI			(SUBPART?)		
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEE			JUN-A		SEP-N		
	,760 VISIBLE STA	CK EMISSIO					OPACITY
CRITERIA AIR POLLU	JTANT EMISS	IONS INFO	RMATION	FOR THIS	SOURCE		
	SOURCE OF		D ACTUAL			L EMSSIONS	
	EMISSION	(AFTER CONT		(BEFORE CONT	TROLS / LIMITS)	ř	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emission	Calculations		3			
PARTICULATE MATTER<10 MICRONS (PM ₁₀)							
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							
HAZARDOUS AIR POL	LUTANT EMIS	SIONS INF	ORMATIO	N FOR THI	S SOURCE		
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS	
	EMISSION	(AFTER CONTI	ROLS / LIMITS)	(BEFORE CONT	FROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
TOXIC AIR POLLUT							
INDICATE EXPECT	ED ACTUAL EMIS	SSIONS AFT	ER CONTROL	S / LIMITATIO	ONS		
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/	/hr	lb/d	day	lb.	/yr
N/A							
Attachments: (1) emissions calculations and supporting documenta describe how these are monitored and with what frequency; and (3)	tion; (2) indicate all re describe any monitor	equested state a ring devices, ga	and federal enfor uges, or test po	ceable permit lir	mits (e.g. hours o	of operation, emi	ission rates) and

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

	ENR/Division of		Application f	or Air Permit	to Construct	/Operate		В
EMISSION SOURCE DESCRIPTION: Dry L	ine Hopper Bir	1		EMISSION S	OURCE ID N	O:	ES-DLB	
				CONTROL D	EVICE ID NO)(S):	N/A	
OPERATING SCENARIO1_	OF	1		EMISSION P	OINT (STACE	K) ID NO(S):	N/A - Fugitive	
DESCRIBE IN DETAILTHE EMISSION SOL Dried wood materials aretransferred to the D			OW DIAGRA	M):				
TYPE OF EMISSION SOU	RCE (CHECK A	ND COMPLET	E APPROPR	ATE FORM E	1-B9 ON THE	E FOLLOWING	PAGES):	
Coal,wood,oil, gas, other burner (Form B		orking (Form B				s/coatings/inks		
☐ Int.combustion engine/generator (Form B☐ Liquid storage tanks (Form B3)		finishing/printir silos/bins (For		Incinerat			,	
	14 OPERATION			DATE MANU		2014		
MANUFACTURER / MODEL NO.: Enviva Bu				OP. SCHEDU			DAY/WK 52	2 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (S			HAP (SUBPA			(SUBPART?):		
PERCENTAGE ANNUAL THROUGHPUT (9		25 MAR-		JUN-A		SEP-NO		
EXPECTED ANNUAL HOURS OF OPERAT		VISIBLE STA						OPACITY
	VIR POLLUTA							
		SOURCE OF					. EMSSIONS	
		EMISSION		ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTR	ROLS/LIMITS)
AIR POLLUTANT EMITTED		FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)				in Appendix E		tono.y.	137111	tonory
PARTICULATE MATTER<10 MICRONS (PM10)								
PARTICULATE MATTER<2.5 MICRONS (PM2								
SULFUR DIOXIDE (SO2)								
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
LEAD								
OTHER								
HAZARDOUS	AIR POLLU	TANT EMIS	SIONS INF	ORMATIO	N FOR TH	IS SOURCE		No de la
		SOURCE OF		D ACTUAL			EMSSIONS	
		EMISSION		ROLS / LIMITS)	(BEFORE CONT	TROLS / LIMITS)	(AFTER CONTR	ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS	NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A						turiory.	12111	toriory
							1	
TOXIC AII	RPOLLUTAN	IT EMISSIO	NS INFOR	MATION F	OR THIS S	OURCE		
INDICA	ATE EXPECTED	ACTUAL EMI	SSIONS AFT	ER CONTROL	S / LIMITATI	ONS		
TOXIC AIR POLLUTANT AND CAS NO.		EF SOURCE	lb.	/hr	lb/	day	lb/	/уг
N/A								
Attachments: (1) emissions calculations and suppor describe how these are monitored and with what fre	ting documentation quency; and (3) des	(2) indicate all rescribe any monito	equested state a ring devices, ga	and federal enfo	rceable permit li	mits (e.g. hours de.	of operation, emis	ssion rates) and

7, 7, 4,

OPERATION, INSTALLATION, & MAINTENANCE MANUAL

for

Aircon HE (High-Efficiency)

Pellet Cooler Cyclone Units



Aircon Corporation
P.O. Box 80446
2873 Chelsea Avenue
Memphis, TN 38108-0446
Telephone: (901) 452-0230
FAX: (901) 452-0264

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OPERATING PRINCIPLE

- A. Dust-laden air enters the cyclone at the inlet section. Typically, it is directly from the pellet cooler.
- B. As air is collected in the body section of the unit, the weight of this rotating mass of air begins to drop into the cone section. The deceleration of particles striking the inside surface of the cone section causes the heavier particulate matter to drop from the air stream into the cone discharge. Hence, the cone section contributes most to the action of mechanical separation inside the cyclone.
- C. The swirl of air in this cone section creates a low pressure area in the center area of the cyclone body. Consequently, the lighter (cleaner) air in the center of this vortex rises into the tube and into the plenum section.
- D. A smaller cone called a "vortex cone" or "vortex breaker" sits directly under the bottom of the main cone. Its purpose is to lower the final discharge of the cyclone below the profile of the vortex, so that material can be allowed to flow out of the unit without being pulled back up into the unit.
- E. A pressure drop occurs as air swirls through the unit. Every rotation of air within the unit requires energy to cause it to constantly change direction. The average amount of pressure drop through the cyclone will typically range from 5 inches to 7 inches [water gage]. Given different air velocities and temperatures, a chart in the Appendix is available for more precise estimates.
- F. There is a practical upper and lower design limit to the capacity of any cyclone unit or cyclone set. The best range is based on an inlet velocity of between 3,500 and 4,000 feet per minute. However, the upper range can be extended to 4,300 feet per minute without any measurable loss of efficiency.

EFFICIENCY

The efficiency of any cyclone is nearly proportional to the mean size of suspended particles entering the unit. Because an Aircon pellet cooler cyclone has a relatively large height-to-width ratio, it is the most efficient type of mechanical separator used in the feed industry.

According to an EPA publication AP-42, a high-efficiency pellet cooler cyclone of this type will emit a maximum of 0.15 lbs. of PM-10 particulate per one ton of material entering the pellet cooler. {Source: EPA publication AP-42, Chapter 9 (for the food and agricultural industries), at their website: http://www.epa.gov/ttn/chief/ap42/ch09/final/c9s0909-1.pdf, page 24.}

For example, a 60-ton per hour counter-flow pellet cooler system will have the following *maximum* emissions rate:

$$\frac{60 \text{ process tons}}{\text{hr}} \quad \text{x} \quad \frac{0.15 \text{ lbs emissions}}{\text{process ton}} = 9 \text{ lbs/hr}$$

The chart in the Appendix can help determine the capture percent efficiency of a correctly sized pellet cooler cyclone for any one particular size of dust. A correctly sized cyclone typically will be sized for an inlet velocity of between 3,500 and 4,300 (actual) feet per minute.

The new EPA emission standard concerning manganese and chromium (40 CFR Part 63, Subpart DDDDDDD) states that air pollution control equipment must achieve 95% or greater (by weight) reduction in particulate matter (PM₁₀) emissions. This efficiency is guaranteed by Aircon provided that the cyclones are adequately sized for the system. The ideal range design inlet range for any HE cyclone is from 3,500 to 4,000 fpm. However, a system can be adequately sized and still allow air velocity to be as high 4,300 feet per minute.

The lower recommended range for a cyclone of 3,500 feet per minute is based on maintenance concerns and not necessarily on emission concerns. If the velocity in a cyclone inlet falls below 3,500 fpm, there may be buildup of material in the inlet duct. However, this will not adversely affect emissions at the point of the cyclone. Nevertheless, it is possible that the lack of adequate ventilation on the pellet cooler exhaust may allow the unvented emissions to show up somewhere else in the process.

OPERATING INSTRUCTIONS

RECEIVING

Depending upon the request of the installer, the cyclone may be shipped in several sections. Therefore, a quick inspection should be performed on each section for damage that may have occurred in transit. Also, both the quantity and quality of any parts that may have been shipped loosely should be checked. Boxes containing these parts should be inspected for signs of improper handling that may have caused damage. Any missing or damaged parts should be noted with the shipper before accepting the shipment. Aircon is not responsible for any damage that occurs during shipping. The purchaser should bring all damage claims against the carrier.

INSPECTION

Upon accepting the shipment a closer inspection of the cyclone is necessary. Care should be taken to thoroughly inspect each section of the cyclone for dents or cracks. Aircon should be notified of any inconsistencies between the unit and any certified drawings containing Aircon specifications. No changes should be made without the consent of Aircon.

INSTALLATION

Most pellet cooler cyclones are installed inside a mill. The available space will determine how the cyclones and related ductwork are installed.

START-UP CHECKLIST

- A. Unit body sections, supports, and compressed air piping secured with all bolts adequately tightened.
- B. Any unused optional or auxiliary NPT connections plugged and sealed airtight.
- C. Clean-out door secured.
- D. Any access doors in place and properly secured.
- E. At the conclusion of an operating period, turn off the process equipment and other related process equipment twenty (20) minutes before the system fan. This routine will allow the system to be purged after each use. Remember to discharge all related auxiliary equipment, such as the screw conveyor and rotary airlock.

TROUBLESHOOTING

A. Observation: Visible dust leakage (not steam)

Problem: Fan oversized, too much airflow, or damper open too much.

B. Observation: Flow rate of air through system too low

Problem: System blower or fan (fan undersized; fan running backwards; fan belt slippage)

System blockage (blockage in duct leading up to filter)

RECOMMENDED MAINTENANCE

INSPECTION

Daily

- A. Check exhaust from the system fan to make sure there are no visible dust emissions.
- B. Check solid discharge from the cyclones.
- C. Check to see if there is any visible water (condensate) leaking from the ductwork.
- D. Check system fan amperage draw, calculated brake horsepower, and compare to estimated brake horsepower.

Quarterly (every three months)

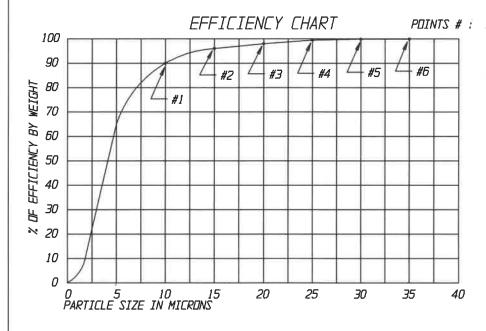
- A. Remove any access doors (if equipped with them) to observe if there is any dust accumulation in the plenum.
- B. Do a thorough examination of the cyclones and ductwork to see if there are any air leaks, rust, or corrosion. In some cases, insulation may need to be removed to check affected areas.

SAFETY

Before removing any access doors, please observe the following safety precautions:

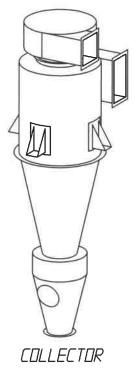
- A. Turn off the system fan or blower and lock out all electrical disconnects for all associated and auxiliary equipment.
- B. Depending upon the size of the access door, two operators may be required to remove it. Access doors are to be removed completely.
- C. Do not enter a cyclone without a confined space permit or without observing required safety protocol at the site.

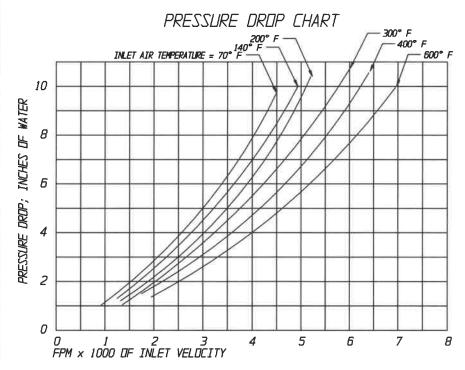
EFFICIENCY CHART FOR HIGH EFFICIENCY CYCLONES



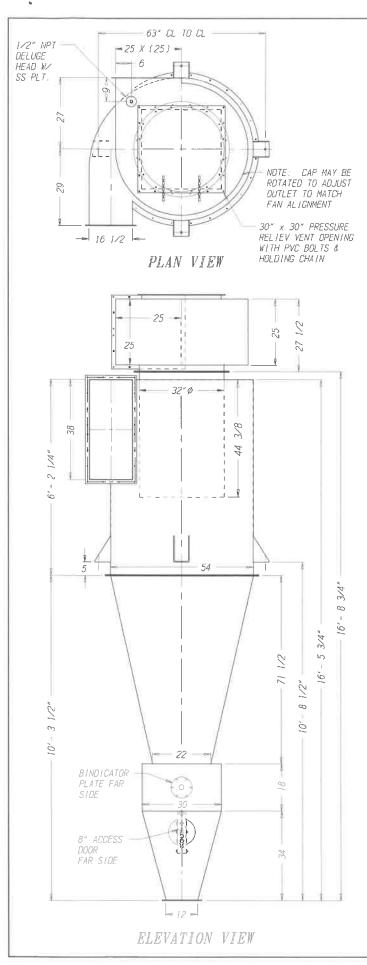
PDINTS # : EFFICIENCY @ MICRON (SIZE OF PARTICLE)
#1 90% @ 10
#2 96% @ 15
#3 98% @ 20
#4 99.5% @ 25
#5 99.85% @ 30
#6 99.9% @ 35

AIRCON MODEL



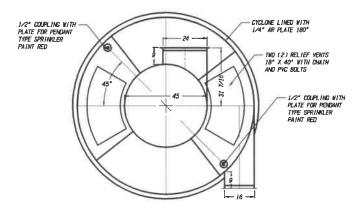


SUITABLE IMPLEMENTATION OF AIRCON H-STYLE COLLECTORS CAN ACHIEVE UP TO 99.9% COLLECTOR EFFICIENCY ON PARTICLES GREATER THAN 34 MICRONS. PARTICLES SMALLER THAN 34 MICRONS CAN BE COLLECTED WITH EFFICIENCIES RANGING FROM 90% TO 99.85%.

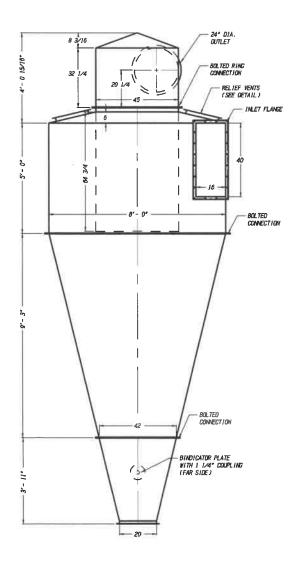


A	Corrected top view to shop exp vent	12/13/12	JT
NO.	REVISION - DESCRIPTION	DATE	BY
	00000011011	DRAWN	
/	1. CURPURALIUNI	dp∕jt	
	P.O. BOX 80446 MEMPHIS, TN 38108-0446	SCALE	
$(\mathbf{v}$	MEMPHIS, TN 38108-0446 PHONE:(901) 452-0230	3/16" = 1	0"
/	FAX: (901) 452-0264	DATE	
	E-MAIL:dorand@aircon-corboration.com	12/12/12	
		PROJ.NO.	
	AUD PA COLINODOD UNIUD	2012-5620)
	1HE-54 COLLECTOR UNIT	DWG.NO.	
		5620-HE54	1

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PLAN VIEW

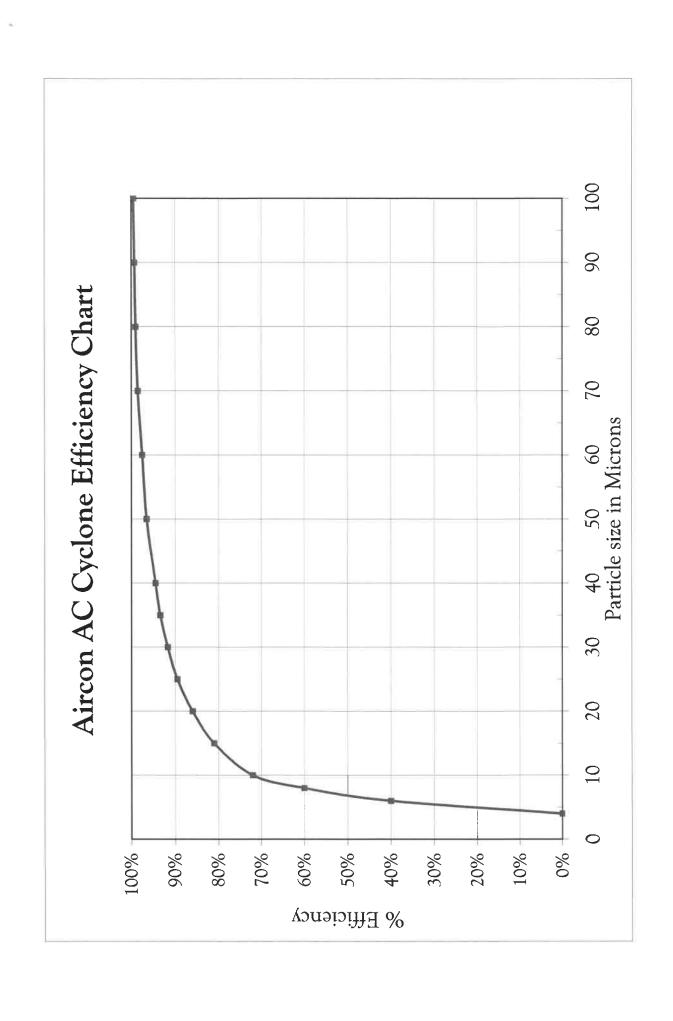


ELEVATION VIEW

NOTE: 1) TWO (2) SPRINKLER TAPS DELUGE
PER CYCLONE 1/2" FULL COUPLING
WITH PLATE AND PENDANT SPRINKLER
(DO NOT USE UPRIGHT) PAINT RED

NO.	REV1S1	DATE B	
_	ircon	CORPORATION F.G. BOX 80446 MEMPHIS, TN 38108-0446 PHONE: (901) 452-0230 FAX: (901) 452-0264 page iron-corporation.co	SCALE
	AC96	CYCLONE	DATE 12/12/1 PROJ.NO. 2012-562 DWG.NO. ACSG-0V8FG

			= -



90 1 1 4

Puram, Yukiko

From:

Joe Harrell <joe.harrell@envivabiomass.com>

Sent:

Friday, June 30, 2017 3:44 PM

To:

Puram, Yukiko

Cc:

Voelker, Joseph; Wike, Will; Christopher Seifert; Michael H Carbon

Subject:

RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Yuki,

Thanks for preparing the summary of our recent discussions I found it very helpful. As a follow-up to your questions please find the below responses and associated attachment for your review.

Best regards,

Joe



Joe Harrell

Corporate EHS Manager

Enviva Pellets Ahoskie, LLC 142 NC Route 561 East Ahoskie, NC 27910 USA www.envivabiomass.com +1 (252) 209 6032 x(2202) cell (252) 370 3181 fax (252) 364 3428 joe.harrell @envivabiomass.com

From: Puram, Yukiko [mailto:yuki.puram@ncdenr.gov]

Sent: Tuesday, June 13, 2017 9:33 AM

To: Joe Harrell < joe.harrell@envivabiomass.com>

Cc: Voelker, Joseph <joseph.voelker@ncdenr.gov>; Wike, Will <will.wike@ncdenr.gov>; Christopher Seifert

<Christopher.Seifert@envivabiomass.com>

Subject: RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Joe,

Do you think three weeks be sufficient? How about by July 5th?

Yuki

Yuki Puram

Environmental Engineer
Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8470 office yuki.puram@ncdenr.gov

217 West Jones Street 1641 Mail Service Center Raleigh, NC 27699



Nothing Compares ~

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From: Joe Harrell [mailto:joe.harrell@envivabiomass.com]

Sent: Tuesday, June 13, 2017 9:29 AM

To: Puram, Yukiko < yuki.puram@ncdenr.gov >

Cc: Voelker, Joseph < joseph.voelker@ncdenr.gov >; Wike, Will < will.wike@ncdenr.gov >; Christopher Seifert

<Christopher.Seifert@envivabiomass.com>

Subject: RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Yuki,

When will you need this by? I'm speaking with my support team on Friday, so we can address your comments and questions below.

Thank you, Joe



Joe Harrell

Corporate EHS Manager

Enviva Pellets Ahoskie, LLC 142 NC Route 561 East Ahoskie, NC 27910 USA www.envivabiomass.com +1 (252) 209 6032 x(2202) cell (252) 370 3181 fax (252) 364 3428 joe.harrell @envivabiomass.com

From: Puram, Yukiko [mailto:yuki.puram@ncdenr.gov]

Sent: Monday, June 12, 2017 2:43 PM

To: Joe Harrell < joe.harrell@envivabiomass.com >

Cc: Voelker, Joseph < joseph.voelker@ncdenr.gov >; Wike, Will < will.wike@ncdenr.gov > Subject: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Joe.

So here's a summary of what we discussed...

Based on the stack test conducted on October 3, 2013, the dryer was controlled by the WESP with 1000 amp of secondary current and 62 kV of secondary voltage. Even though the margin of compliance from the stack test result was pretty large (3.07 lb/hr for the 48.0 lb/hr limit), I'm not sure how you can demonstrate the compliance with the 2D .0515 standard at 200 amp and 20kV, which is drastically different than what it was tested. I don't think you can use the emission factor from the stack test (3.07 lb/hr) unless you operate the WESP with the same parameters.

Enviva has performed a detailed review of the October 3, 2013 stack test results and vendor performance specifications of the WESP and have concluded that the emissions from the dryer comply with the process weight rate rule particulate matter (PM) emissions limit of 2D .0515 without use of the WESP. Therefore, CAM does not apply and the proposed operating parameters above are not required. Please see below for a detailed discussion of the emissions review and documentation of CAM applicability.

Based on the vender's letter dated on May 10, 2017, the proposed minimum voltage was 20kV. The equation that was used for the calculation was based on the input rate of 54.91 lb/hrl am a little concerned about this input rate as the before control emission rate was never tested during the stack testing. The permit application indicated that the before control emission rate was 150 lb/hr, which is not consistent with the vendor's letter. The equation that the vender used to calculate the PM emissions from the WESP is clearly dependent of the input rate. Therefore, I cannot approve to use the vender's calculation unless I can confirm the validity of the input rate.

Based on the October 3, 2013 stack test results and vendor performance specifications for WESP control efficiency, the inlet PM emission rate to the WESP during the test is calculated to be 35.47 lb/hr. Therefore, as stated above, CAM does not apply and the WESP is not required to comply with the 2D.0515 standard. Please see below for a detailed discussion of the emissions review and documentation of CAM applicability.

Another issue that I'm concerned is the applicability of CAM. The following are the three criteria to be subject to CAM:

- 1. be subject to an emission limitation or standard, and
- 2. use a control device to achieve compliance, and
- 3. have potential pre-control emissions that exceed 100 tpy.

It's pretty clear that the dryer satisfies the first two conditions. It appears to me that the dryer also meets the third criteria. Based on the application, the befor e control emission rate was 150 lb/hr, which is equivalent to 657 tpy. If we use the input rate indicated on vender's letter (54.92 lb/hr), it would be 236 tpy. Either way, the pre-control emissions exceeds 100 tpy. Therefore, the dryer is subject to CAM.

As discussed above, Enviva reviewed the October 3, 2013 stack test results and vendor specifications of WESP control efficiency to determine the WESP inlet PM emission rate (uncontrolled dryer emission rate). The October 3, 2013 stack test resulted in an outlet WESP PM emission rate of 3.07 lb/hr. Based on the vendor specifications of the WESP and actual flow rate measured during the test (109,700 acfm) the control efficiency corresponding to the test was 91.35%. The resulting uncontrolled dryer PM emission rate during the test was calculated to be 35.47 lb/hr.

As stated by Lundberg in the May 10, 2017 letter, WESP control efficiency is based on WESP collection area, effective migration velocity, and actual gas flow rate. Page 2 of the attached document includes the control efficiency of the WESP based on the vendor's calculation.

Enviva also evaluated potential uncontrolled PM emissions from the dryer at the maximum design throughput rate of 71.71 odt/hr. The process throughput during the October 3, 2013 stack test was 60 odt/hr. The resulting uncontrolled dryer PM emission factor is 0.59 lb/odt (35.47 lb/hr divided by 60 odt/hr). This factor multiplied by the maximum design throughput rate of 71.71 odt/hr results in an uncontrolled dryer PM emission rate of 42.40 lb/hr, which is less than the PM limit calculated in accordance with 2D .0515. Therefore, condition 2 above is not met and the dryer is not subject to

CAM. Page 1 of the attached document includes the process throughput information, PM emission limit, and potential PM emissions.

We then need to determine if the WESP is considered to be a large PSEU. If the potential post control **PM10** emission is larger than 100 tpy, the WESP will be a large PSEU. Even though the stack test from 2013 shows PM emission factor was 1.54 lb/hr, which is equivalent of 6.74 tpy, this emission factor is not relevant unless you want to operate the WESP at the same parameters used at the stack test. If we use the emission rate of 42 lb/hr at 20 kV from the vender's letter, the emission would be about 42.00 lb/hr, which is equivalent to 183.96 tpy, and would make it as a large PSEU.

As documented above and in the attached, CAM is not applicable.

The difference between small and large PSEU is the deadline for submitting a CAM plan. If the WESP is a small PSEU, we can wait to for the next. If it's large, we have to address CAM for this permit.

It is up to you which minimum voltage and current you want to use, but it will also affect CAM depending on how you operate the WESP. Based on the information I have (and I don't have), I think we need to include a test requirement on the permit. I think we need to test for emissions at 20 kV and 200 amp to show the compliance. We need to measure the before and after the control so that we know the control efficiency of the WESP (this was on the permit when the testing was conducted, but they did not test for the efficiency for some reason.) Also, we need to incorporate CAM at this time as I think this would be considered as a large PSEU. For more information regarding CAM, please review this page:

https://ncdenr.s3.amazonaws.com/s3fs-public/Air%20Quality/enf/cam/CAM Overview.pdf

As documented above and in the attached, CAM is not applicable. Enviva does not believe testing of the WESP inlet and outlet for control efficiency is warranted. As stated above and in the May 10, 2017 letter provided by Lundberg, WESP control efficiency is dependent on WESP collection area, effective migration velocity, and gas flow rate. The WESP collection area is fixed, effective migration velocity is proportional to the secondary voltage, and gas flow rate was measured during the October 3, 2013 stack test. Therefore, all values required to calculate WESP control efficiency are known and WESP inlet testing should not be required.

Please fill out this Form E6 to submit a CAM plan.

https://ncdenr.s3.amazonaws.com/s3fs-public/Air%20Quality/permits/files/2016 Permit Application Forms/E6.pdf

If you have further questions, please let me know.

Thanks. Yuki Puram

Yuki Puram

Environmental Engineer Division of Air Quality North Carolina Department of Environmental Quality

919 707 8470 office yuki.puram@ncdenr.gov

217 West Jones Street 1641 Mail Service Center Raleigh, NC 27699



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Puram, Yukiko

From:

Joe Harrell < joe.harrell@envivabiomass.com>

Sent:

Tuesday, July 11, 2017 7:47 AM

To:

Puram, Yukiko

Cc:

Willets, William; Voelker, Joseph; Christopher Seifert; Roland Burnett; Heath Lucy

Subject:

RE: Enviva Northampton First Time Title V Permit

Hi Yuki,

We agree with the department that stack test needs to be performed, which will be a condition of the Title V air permit.

Thank you, Joe



Joe Harrell

Corporate EHS Manager

Enviva Pellets Ahoskie, LLC
142 NC Route 561 East
Ahoskie, NC 27910 USA
www.envivabiomass.com
+1 (252) 209 6032 x(2202)
cell (252) 370 3181
fax (252) 364 3428
joe.harrell @envivabiomass.com

From: Puram, Yukiko [mailto:yuki.puram@ncdenr.gov]

Sent: Friday, July 07, 2017 2:29 PM

To: Joe Harrell < joe.harrell@envivabiomass.com>

Cc: Willets, William <william.willets@ncdenr.gov>; Voelker, Joseph <joseph.voelker@ncdenr.gov>

Subject: Enviva Northampton First Time Title V Permit

Hi Joe,

Hope you had a great 4th of July!

I've discussed the issues that were raised in the draft Enviva Northampton First Time Title V permit with my supervisors. We came to a conclusion that it is necessary to request a stack test in order to establish the WESP operation parameters. Since this is a First Time Title V permit, it is critical to ensure your operation is in compliance with all the applicable regulations. Although theoretical calculations are useful designing pollution controls, they do not demonstrate compliance with <u>actual</u> emissions. The only way to ensure compliance is through a stack test in this case.

Unfortunately, the stack test that was conducted in October 2013 does not represent Enviva Northampton's current operation since the voltage of the WESP during the testing was much higher than your typical operations. Other than

the stack test, we don't have any emission data we can rely on at the voltage that you are requesting. Therefore, I am going to insert a performance test requirement in the permit. I recommend testing the emissions with various operation scenarios in order to have flexibility in the WESP operations. Some examples of alternative scenarios could be operating with one or two fields only or operating at different voltage/current values. The more you can demonstrate compliance in different ways, the more flexibility we can give with operation parameters. In addition, these data can be used for other Enviva facilities. I believe additional stack test data would be beneficial to your facilities in order to maximize the control efficiency.

You stated that Enviva Northapmton is not subject to CAM because the dryer emissions will be able to meet the 02D .0515 PM emissions standard without a control. However, you still need to demonstrate the inapplicability of CAM through a stack test. In addition to the 02D .0515 standard, you also need to show that the dryer can meet the opacity standard without a control in order to avoid the CAM applicability. Otherwise, DAQ will assume the WESP is subject to CAM. After you conduct a stack test to measure the outlet with certain WESP parameters, we can then determine whether the WESP is either large or small PSEU. If it's a small PSEU (post control emissions are less than 100 tpy), then we can address CAM during the next permit cycle. If it's a large PSEU, then the permit needs to be modified to include CAM.

I hope this explained why we need to include a stack test condition in the permit. I will send you a copy of the draft as soon as I update it. If you need further questions or concerns, please contact me or William Willets at 919-707-8726.

Thank you. Have a great weekend.

Yuki

Yuki Puram

Environmental Engineer
Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8470 office yuki.puram@ncdenr.gov

217 West Jones Street 1641 Mail Service Center Raleigh, NC 27699



Nothing Compares ~

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June 30, 2017

Will Wike NCDEQ-DAQ-Compliance Officer Raleigh Regional Office 217 West Jones St. Raleigh, NC 27603

RE: Request for Extension of Deadline for Emission Testing, Enviva Pellets Northampton, LLC (Permit #10386R05)

Dear Mr. Wike:

Enviva Pellets Northampton (the "Facility") filed a request to process up to 45% softwood through the dry hammermill (ES-HM-1 through 8) dated December 21, 2016. DAQ approved the request with emission testing in 180 days, which the facility received on January 19, 2017. In the last six months the facility has been unable to process above 20% pine through the system and meet our customer's requirements. At this time, we request to perform emissions testing, when we achieve 45% softwood instead of being subject to a specific due date, because at this time we are unsure when we will achieve 45% softwood. I've attached the facility 12 month rolling average for your review.

Once we achieve the 45% softwood content through the dry hammermills the facility will submit an emissions testing protocol immediately. When the emission testing protocol has been approved by NCDEQ-DAQ, the facility will perform emissions testing to establish VOC emission factors for the dry hammermills at the 45% softwood content.

Please contact me if you have any questions regarding this matter, and thank you for your consideration of this request.

Sincerely

Joe Harrell

Environmental, Health, and Safety Manager

Cc: Chris Seifert, EHS Director

Yukiko Puram, NCDEQ-DAQ, air permit section



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11425.69 2572.10 8853.59 17214.18 43709.87 41137.77 22% 16 2	16 2 10	US.	63 21.30 ZO.22	2 35765.70	44.00 2202	22022.70 44.00	38.11%
Jun 17							
12 months 95,547,00 27,948,13 67,598,87 474,957,12 570,504.12 542,555,99 1777,899,48 131,509,43 42,561,93 88,947,50 688,951,98 820,461,41 777,899,48				548,649.78	44.00 81,335.52	5.52 44.1	14.10
Dryer SW% Rolling 12 Month Avg. 12.46% Dryer SW% Rolling 17 Month Avg. 11.48 DHM Press SW% Rolling 17 Month Avg. 16.75% DHM Press SW% Rolling 17 Month Avg. 16.75%	Dryer SWN Rolling 17 Mon	rth Avg. 11.43%					

ţμ Official Start Date: April 22, 2013
Total VOC Limit 463 t
Emission Factors
10% Pine

0.72 Detober 28, 2013 stack test results 0.23 October 18, 2013 stack test results Ib/ODT 400: Bryer Ib/ODT 40: Bryer 0.781 Ahoskie Stack Test June 2014, used in the above calculations 0.093 Ahoskie Stack Test June 2014, used in the above calculations

0.167 45% softwood content through the DHMs as of January 19, 2017, not used in the above calculations, will use once achieve above 30% softwood content 0.457 Ahoskie Stack Test tune 2014, used in the above calculations 30% Pine lb/001 VOC: 0HM 45% Pine lb/001 VOC: 0HM lb/001 VOC: C.R

Puram, Yukiko

From:

Joe Harrell <joe.harrell@envivabiomass.com>

Sent:

Friday, June 30, 2017 3:44 PM

To:

Puram, Yukiko

Cc:

Voelker, Joseph; Wike, Will; Christopher Seifert; Michael H Carbon

Subject:

RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Yuki,

Thanks for preparing the summary of our recent discussions I found it very helpful. As a follow-up to your questions please find the below responses and associated attachment for your review.

Best regards,

Joe



Joe Harrell

Corporate EHS Manager

Enviva Pellets Ahoskie, LLC 142 NC Route 561 East Ahoskie, NC 27910 USA www.envivabiomass.com +1 (252) 209 6032 x(2202) cell (252) 370 3181 fax (252) 364 3428 joe.harrell @envivabiomass.com

From: Puram, Yukiko [mailto:yuki.puram@ncdenr.gov]

Sent: Tuesday, June 13, 2017 9:33 AM

To: Joe Harrell < joe.harrell@envivabiomass.com>

Cc: Voelker, Joseph <joseph.voelker@ncdenr.gov>; Wike, Will <will.wike@ncdenr.gov>; Christopher Seifert

<Christopher.Seifert@envivabiomass.com>

Subject: RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Joe,

Do you think three weeks be sufficient? How about by July 5th?

Yuki

Yuki Puram

Environmental Engineer
Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8470 office yuki.puram@ncdenr.gov

217 West Jones Street 1641 Mail Service Center Raleigh, NC 27699



Nothing Compares ___

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From: Joe Harrell [mailto:joe.harrell@envivabiomass.com]

Sent: Tuesday, June 13, 2017 9:29 AM

To: Puram, Yukiko < yuki.puram@ncdenr.gov>

Cc: Voelker, Joseph < joseph.voelker@ncdenr.gov >; Wike, Will < will.wike@ncdenr.gov >; Christopher Seifert

<Christopher.Seifert@envivabiomass.com>

Subject: RE: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Yuki,

When will you need this by? I'm speaking with my support team on Friday, so we can address your comments and questions below.

Thank you, Joe



Joe Harrell

Corporate EHS Manager

Enviva Pellets Ahoskie, LLC 142 NC Route 561 East Ahoskie, NC 27910 USA www.envivabiomass.com +1 (252) 209 6032 x(2202) cell (252) 370 3181 fax (252) 364 3428 joe.harrell @envivabiomass.com

From: Puram, Yukiko [mailto:yuki.puram@ncdenr.gov]

Sent: Monday, June 12, 2017 2:43 PM

To: Joe Harrell < joe.harrell@envivabiomass.com >

Cc: Voelker, Joseph < joseph.voelker@ncdenr.gov >; Wike, Will < will.wike@ncdenr.gov > Subject: Enviva Northampton WESP and Compliance Assurance Monitoring (CAM) Plan

Hi Joe,

So here's a summary of what we discussed...

Based on the stack test conducted on October 3, 2013, the dryer was controlled by the WESP with 1000 amp of secondary current and 62 kV of secondary voltage. Even though the margin of compliance from the stack test result was pretty large (3.07 lb/hr for the 48.0 lb/hr limit), I'm not sure how you can demonstrate the compliance with the 2D .0515 standard at 200 amp and 20kV, which is drastically different than what it was tested. I don't think you can use the emission factor from the stack test (3.07 lb/hr) unless you operate the WESP with the same parameters.

Enviva has performed a detailed review of the October 3, 2013 stack test results and vendor performance specifications of the WESP and have concluded that the emissions from the dryer comply with the process weight rate rule particulate matter (PM) emissions limit of 2D .0515 without use of the WESP. Therefore, CAM does not apply and the proposed operating parameters above are not required. Please see below for a detailed discussion of the emissions review and documentation of CAM applicability.

Based on the vender's letter dated on May 10, 2017, the proposed minimum voltage was 20kV. The equation that was used for the calculation was based on the input rate of 54.91 lb/hrl am a little concerned about this input rate as the before control emission rate was never tested during the stack testing. The permit application indicated that the before control emission rate was 150 lb/hr, which is not consistent with the vendor's letter. The equation that the vender used to calculate the PM emissions from the WESP is clearly dependent of the input rate. Therefore, I cannot approve to use the vender's calculation unless I can confirm the validity of the input rate.

Based on the October 3, 2013 stack test results and vendor performance specifications for WESP control efficiency, the inlet PM emission rate to the WESP during the test is calculated to be 35.47 lb/hr. Therefore, as stated above, CAM does not apply and the WESP is not required to comply with the 2D.0515 standard. Please see below for a detailed discussion of the emissions review and documentation of CAM applicability.

Another issue that I'm concerned is the applicability of CAM. The following are the three criteria to be subject to CAM:

- 1. be subject to an emission limitation or standard, and
- 2. use a control device to achieve compliance, and
- 3. have potential pre-control emissions that exceed 100 tpy.

It's pretty clear that the dryer satisfies the first two conditions. It appears to me that the dryer also meets the third criteria. Based on the application, the befor e control emission rate was 150 lb/hr, which is equivalent to 657 tpy. If we use the input rate indicated on vender's letter (54.92 lb/hr), it would be 236 tpy. Either way, the pre-control emissions exceeds 100 tpy. Therefore, the dryer is subject to CAM.

As discussed above, Enviva reviewed the October 3, 2013 stack test results and vendor specifications of WESP control efficiency to determine the WESP inlet PM emission rate (uncontrolled dryer emission rate). The October 3, 2013 stack test resulted in an outlet WESP PM emission rate of 3.07 lb/hr. Based on the vendor specifications of the WESP and actual flow rate measured during the test (109,700 acfm) the control efficiency corresponding to the test was 91.35%. The resulting uncontrolled dryer PM emission rate during the test was calculated to be 35.47 lb/hr.

As stated by Lundberg in the May 10, 2017 letter, WESP control efficiency is based on WESP collection area, effective migration velocity, and actual gas flow rate. Page 2 of the attached document includes the control efficiency of the WESP based on the vendor's calculation.

Enviva also evaluated potential uncontrolled PM emissions from the dryer at the maximum design throughput rate of 71.71 odt/hr. The process throughput during the October 3, 2013 stack test was 60 odt/hr. The resulting uncontrolled dryer PM emission factor is 0.59 lb/odt (35.47 lb/hr divided by 60 odt/hr). This factor multiplied by the maximum design throughput rate of 71.71 odt/hr results in an uncontrolled dryer PM emission rate of 42.40 lb/hr, which is less than the PM limit calculated in accordance with 2D .0515. Therefore, condition 2 above is not met and the dryer is not subject to

CAM. Page 1 of the attached document includes the process throughput information, PM emission limit, and potential PM emissions.

We then need to determine if the WESP is considered to be a large PSEU. If the potential post control **PM10** emission is larger than 100 tpy, the WESP will be a large PSEU. Even though the stack test from 2013 shows PM emission factor was 1.54 lb/hr, which is equivalent of 6.74 tpy, this emission factor is not relevant unless you want to operate the WESP at the same parameters used at the stack test. If we use the emission rate of 42 lb/hr at 20 kV from the vender's letter, the emission would be about 42.00 lb/hr, which is equivalent to 183.96 tpy, and would make it as a large PSEU.

As documented above and in the attached, CAM is not applicable.

The difference between small and large PSEU is the deadline for submitting a CAM plan. If the WESP is a small PSEU, we can wait to for the next. If it's large, we have to address CAM for this permit.

It is up to you which minimum voltage and current you want to use, but it will also affect CAM depending on how you operate the WESP. Based on the information I have (and I don't have), I think we need to include a test requirement on the permit. I think we need to test for emissions at 20 kV and 200 amp to show the compliance. We need to measure the before and after the control so that we know the control efficiency of the WESP (this was on the permit when the testing was conducted, but they did not test for the efficiency for some reason.) Also, we need to incorporate CAM at this time as I think this would be considered as a large PSEU. For more information regarding CAM, please review this page:

https://ncdenr.s3.amazonaws.com/s3fs-public/Air%20Quality/enf/cam/CAM Overview.pdf

As documented above and in the attached, CAM is not applicable. Enviva does not believe testing of the WESP inlet and outlet for control efficiency is warranted. As stated above and in the May 10, 2017 letter provided by Lundberg, WESP control efficiency is dependent on WESP collection area, effective migration velocity, and gas flow rate. The WESP collection area is fixed, effective migration velocity is proportional to the secondary voltage, and gas flow rate was measured during the October 3, 2013 stack test. Therefore, all values required to calculate WESP control efficiency are known and WESP inlet testing should not be required.

Please fill out this Form E6 to submit a CAM plan. https://ncdenr.s3.amazonaws.com/s3fs-public/Air%20Quality/permits/files/2016 Permit Application Forms/E6.pdf

If you have further questions, please let me know.

Thanks. Yuki Puram

Yuki Puram

Environmental Engineer
Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8470 office yuki.puram@ncdenr.gov

217 West Jones Street 1641 Mail Service Center Raleigh, NC 27699

Enviva Northampton Dryer Particulate Matter Emissions Estimate

Process Information (1)		
Dryer Throughput	71.71	ODT/hr
Moisture Content	17%	
Wet Process Weight	83.90	tons/hr
15A NCAC 02D .0515		
Particulate Limit: (2)	49.53	lb/hr
October 2013 Test Data		
WESP Outlet PM Emissions Rate	3.07	lb/hr
Secondary Voltage	63.5	kV
WESP Efficiency (3)	91.35	%
Uncontrolled PM Emission Rate	35.47	lb/hr
Dryer Throughput	60	ODT/hr
Uncontrolled PM Emissions per ODT	0.59	lb/ODT
Uncontrolled Emissions @ Maximum Dryer Throughput ⁽⁴⁾	42.40	lb/hr
Uncontrolled Emissions Less Than Applicable Limit?	Υ	Y/N

Notes:

⁽¹⁾ Dryer throughput represents the design maximum process rate of oven dried tons (ODT) per hour. Moisture content represents the average outlet moisture content of dried wood. Wet process weight is based on the maximum process rate of 71.71 ODT/hr and the average outlet moisture content.

 $^{^{(2)}}$ Particulate Limit is based on the process weight rate equation from 15A NCAC 02D.0515.

⁽³⁾ WESP efficiency during the October 2013 based on vendor efficiency calculations.

 $^{^{(4)}}$ Uncontrolled emissions at the maximum dryer throughput is calculated by multiplying the October 2013 uncontrolled PM emission factor of 0.59 lb/ODT and the maximum dryer throughput of 71.71 ODT/hr.

ENVIVA NORTHAMPTON WESP CONTROL EFFICIENCY

EMV (ft/min)	Voltage (kV)	Penetration	Outlet Rate (lb/hr)	Inlet Rate (lb/hr)	Flow (acfm)	Area (ft²)	Control Efficiency (%)
15.5	67	0.066	2.33	35.47	109,700	19,278	93.44
15.1	66	0.071	2.52	35.47	109,700	19,278	92.90
14.6	65	0.077	2.73	35.47	109,700	19,278	92.31
14.2	64	0.083	2.95	35.47	109,700	19,278	91.68
13.9	63.5	0.087	3.07	35.47	109,700	19,278	91.35
13.7	63	0.090	3.19	35.47	109,700	19,278	91.00
12.8	61	0.105	3.74	35.47	109,700	19,278	89.45
12	59	0.121	4.31	35.47	109,700	19,278	87.86
11.2	57	0.140	4.96	35.47	109,700	19,278	86.03
10.4	55	0.161	5.70	35.47	109,700	19,278	83.92
9.7	53	0.182	6.45	35.47	109,700	19,278	81.82
9	51	0.206	7.29	35.47	109,700	19,278	79.44
8.3	49	0.233	8.25	35.47	109,700	19,278	76.74
7.6	47	0.263	9.33	35.47	109,700	19,278	73.70
7	45	0.292	10.37	35.47	109,700	19,278	70.77
6.4	43	0.325	11.52	35.47	109,700	19,278	67.52
5.8	41	0.361	12.80	35.47	109,700	19,278	63.91
5.2	39	0.401	14.22	35.47	109,700	19,278	59.90
4.7	37	0.438	15.53	35.47	109,700	19,278	56.22
4.2	35	0.478	16.96	35.47	109,700	19,278	52.20
3.8	33	0.513	18.19	35.47	109,700	19,278	48.72
3.3	31	0.560	19.86	35.47	109,700	19,278	44.01
2.9	29	0.601	21.31	35.47	109,700	19,278	39.93
2.5	27	0.644	22.86	35.47	109,700	19,278	35.55
2.2	25	0.679	24.10	35.47	109,700	19,278	32.06
1.8	23	0.729	25.85	35.47	109,700	19,278	27.12
1.5	21	0.768	27.25	35.47	109,700	19,278	23.17
1.2	19	0.810	28.73	35.47	109,700	19,278	19.01
1	17	0.839	29.76	35.47	109,700	19,278	16.12
0.8	15	0.869	30.82	35.47	109,700	19,278	13.12
0.6	13	0.900	31.92	35.47	109,700	19,278	10.01
0.4	11	0.932	33.07	35.47	109,700	19,278	6.79
0.3	9	0.949	33.65	35.47	109,700	19,278	5.14
0.2	7	0.965	34.25	35.47	109,700	19,278	3.45
0.1	5	0.983	34.86	35.47	109,700	19,278	1.74

Control Efficiency calculated using LUNDBERG's equation. E = 1-e $^{-(Aw/Q)}$

A = Collecting Area (ft²)

Q = Gas Flow Rate (acfm) = 109,700 acfm as measured during October 2013 Stack Test

w = effective migration velocity (ft/min), as provided by LUNDBERG in letter dated 5/10/2017



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Process Information (1)		
Dryer Throughput	71.71	ODT/hr
Moisture Content	17%	
Wet Process Weight	83.90	tons/hr
15A NCAC 02D .0515		
Particulate Limit: (2)	49.53	lb/hr
October 2013 Test Data		
WESP Outlet PM Emissions Rate	3.07	lb/hr
Secondary Voltage	63.5	kV
WESP Efficiency (3)	91.35	%
Uncontrolled PM Emission Rate	35.47	lb/hr
Dryer Throughput	60	ODT/hr
Uncontrolled PM Emissions per ODT	0.59	lb/ODT
Uncontrolled Emissions @ Maximum Dryer Throughput ⁽⁴⁾	42.40	lb/hr
Uncontrolled Emissions Less Than Applicable Limit?	Υ	Y/N

Notes:

⁽¹⁾ Dryer throughput represents the design maximum process rate of oven dried tons (ODT) per hour. Moisture content represents the average outlet moisture content of dried wood. Wet process weight is based on the maximum process rate of 71.71 ODT/hr and the average outlet moisture content.

 $^{^{}m (2)}$ Particulate Limit is based on the process weight rate equation from 15A NCAC 02D.0515.

⁽³⁾ WESP efficiency during the October 2013 based on vendor efficiency calculations.

 $^{^{(4)}}$ Uncontrolled emissions at the maximum dryer throughput is calculated by multiplying the October 2013 uncontrolled PM emission factor of 0.59 lb/ODT and the maximum dryer throughput of 71.71 ODT/hr.

ENVIVA NORTHAMPTON WESP CONTROL EFFICIENCY

EMV (ft/min)	Voltage (kV)	Penetration	Outlet Rate (lb/hr)	Inlet Rate (lb/hr)	Flow (acfm)	Area (ft²)	Control Efficiency (%)
15.5	67	0.066	2.33	35.47	109,700	19,278	93.44
15.1	66	0.071	2.52	35.47	109,700	19,278	92.90
14.6	65	0.077	2.73	35.47	109,700	19,278	92.31
14.2	64	0.083	2.95	35.47	109,700	19,278	91.68
13.9	63.5	0.087	3.07	35.47	109,700	19,278	91.35
13.7	63	0.090	3.19	35.47	109,700	19,278	91.00
12.8	61	0.105	3.74	35.47	109,700	19,278	89.45
12	59	0.121	4.31	35.47	109,700	19,278	87.86
11.2	57	0.140	4.96	35.47	109,700	19,278	86.03
10.4	55	0.161	5.70	35.47	109,700	19,278	83.92
9.7	53	0.182	6.45	35.47	109,700	19,278	81.82
9	51	0.206	7.29	35.47	109,700	19,278	79.44
8.3	49	0.233	8.25	35.47	109,700	19,278	76.74
7.6	47	0.263	9.33	35.47	109,700	19,278	73.70
7	45	0.292	10.37	35.47	109,700	19,278	70.77
6.4	43	0.325	11.52	35.47	109,700	19,278	67.52
5.8	41	0.361	12.80	35.47	109,700	19,278	63.91
5.2	39	0.401	14.22	35.47	109,700	19,278	59.90
4.7	37	0.438	15.53	35.47	109,700	19,278	56.22
4.2	35	0.478	16.96	35.47	109,700	19,278	52.20
3.8	33	0.513	18.19	35.47	109,700	19,278	48.72
3.3	31	0.560	19.86	35.47	109,700	19,278	44.01
2.9	29	0.601	21.31	35.47	109,700	19,278	39.93
2.5	27	0.644	22.86	35.47	109,700	19,278	35.55
2.2	25	0.679	24.10	35.47	109,700	19,278	32.06
1.8	23	0.729	25.85	35.47	109,700	19,278	27.12
1.5	21	0.768	27.25	35.47	109,700	19,278	23.17
1.2	19	0.810	28.73	35.47	109,700	19,278	19.01
1	17	0.839	29.76	35.47	109,700	19,278	16.12
0.8	15	0.869	30.82	35.47	109,700	19,278	13.12
0.6	13	0.900	31.92	35.47	109,700	19,278	10.01
0.4	11	0.932	33.07	35.47	109,700	19,278	6.79
0.3	9	0.949	33.65	35.47	109,700	19,278	5.14
0.2	7	0.965	34.25	35.47	109,700	19,278	3.45
0.1	5	0.983	34.86	35.47	109,700	19,278	1.74

Control Efficiency calculated using LUNDBERG's equation. E = $1-e^{-(Aw/Q)}$

A = Collecting Area (ft²)

Q = Gas Flow Rate (acfm) = 109,700 acfm as measured during October 2013 Stack Test

w = effective migration velocity (ft/min), as provided by LUNDBERG in letter dated 5/10/2017

Enviva Northampton Wet ESP Performance Model for 0.1 grains/scfd

EMV (ft/min)	Voltage (kV)	Penetration (fraction)	Outlet Rate (lb/h)	Inlet Rate (lb/h)	Flow (acfm)	Area (ft²)
15.5	67	0.066	3.62	54.9	109,700	19,278
15.0	66	0.072	3.93	54.9	109,700	19,278
14.6	65	0.078	4.25	54.9	109,700	19,278
14.1	64	0.084	4.60	54.9	109,700	19,278
13.7	63	0.091	4.97	54.9	109,700	19,278
13.2	62	0.098	5.36	54.9	109,700	19,278
12.8	61	0.105	5.77	54.9	109,700	19,278
12.4	60	0.113	6.21	54.9	109,700	19,278
12.0	59	0.122	6.67	54.9	109,700	19,278
11.6	58	0.131	7.16	54.9	109,700	19,278
11.2	57	0.140	7.68	54.9	109,700	19,278
10.8	56	0.150	8.22	54.9	109,700	19,278
10.4	55	0.160	8.79	54.9	109,700	19,278
10.0	54	0.171	9.39	54.9	109,700	19,278
9.7	53	0.183	10.02	54.9	109,700	19,278
9.3	52	0.195	10.68	54.9	109,700	19,278
9.0	51	0.207	11.36	54.9	109,700	19,278
8.6	50	0.220	12.08	54.9	109,700	19,278
8.3	49	0.234	12.83	54.9	109,700	19,278
7.9	48	0.248	13.60	54.9	109,700	19,278
7.6	47	0.263	14.41	54.9	109,700	19,278
7.3	46	0.278	15.24	54.9	109,700	19,278
7.0	45	0.294	16.10	54.9	109,700	19,278
6.7	44	0.310	16.99	54.9	109,700	19,278
6.4	43	0.327	17.91	54.9	109,700	19,278
6.1	42	0.344	18.86	54.9	109,700	19,278
5.8	41	0.362	19.83	54.9	109,700	19,278
5.5	40	0.380	20.83	54.9	109,700	19,278
5.2	39	0.398	21.85	54.9	109,700	19,278
5.0	38	0.417	22.89	54.9	109,700	19,278
4.7	37	0.437	23.95	54.9	109,700	19,278
4.5	36	0.456	25.03	54.9	109,700	19,278
4.2	35	0.476	26.13	54.9	109,700	19,278
4.0	34	0.497	27.25	54.9	109,700	19,278
3.8	33	0.517	28.38	54.9	109,700	19,278
3.5	32	0.538	29.51	54.9	109,700	19,278
3.3	31	0.559	30.66	54.9	109,700	19,278
3.1	30	0.580	31.81	54.9	109,700	19,278
2.9	29	0.601	32.97	54.9	109,700	19,278
2.7	28	0.622	34.13	54.9	109,700	19,278

1	2.5	27	0.643	35.28	54.9	109,700	19,278
1	2.3	26	0.664	36.43	54.9	109,700	19,278
1	2.2	25	0.685	37.57	54.9	109,700	19,278
1	2.0	24	0.706	38.71	54.9	109,700	19,278
	1.8	23	0.726	39.82	54.9	109,700	19,278
	1.7	22	0.746	40.92	54.9	109,700	19,278
	1.5	21	0.766	42.00	54.9	109,700	19,278
1	1.4	20	0.785	43.06	54.9	109,700	19,278
1	1.2	19	0.804	44.08	54.9	109,700	19,278
1	1.1	18	0.822	45.08	54.9	109,700	19,278
1	1.0	17	0.840	46.05	54.9	109,700	19,278
1	0.9	16	0.856	46.98	54.9	109,700	19,278
	0.8	(15)	0.873	47.87	54.9	109,700	19,278
	0.7	14	0.888	48.71	54.9	109,700	19,278
	0.6	13	0.903	49.52	54.9	109,700	19,278

Based on Deutsch Equation; $LnP = -A\omega/Q$ where A = Collection area of ESP, Q = flow through ESP, P=Penetration (1-efficiency) and $\boldsymbol{\omega}$ is the effective migration velocity (EMV)

48.71 1b/p

71.71 ODT/hr

E=55 × 71.71 - 40 = 48.00 16/hr.

13201 Bel-Red Road Bellevue, Washington 98005

tel: 425.283.5070 fax: 425.283.5081

May 10, 2017

Attention: Mr. Joe Harrell

Corporate EHS Manager

Subject:

Use of Secondary Voltage (kV)

as an Indicator of Wet Electrostatic Precipitator (WESP) Performance

Enviva Pellets Ahoskie, LLC 142 NC Route 561 East Ahoskie, NC 27910 USA

Dear Mr. Harrell:

Thank you for your inquiry regarding the use of secondary voltage (kV) as an indicator of the performance of WESPs manufactured by our company and installed at Enviva's Northampton, North Carolina pellet facility. As we have discussed, the most important factor in precipitator performance is the electrostatic field strength (kV/inch). This value is maximized when secondary voltage is maximized.

In short, the efficiency of a wet precipitator is defined by the following equation:

$$E = 1 - e^{-(A\omega/Q)}$$

Where:

E = Efficiencv

 $A = Collecting Area (ft^2)$

 $Q = Gas Flow Rate (actual ft^3/min)$

 ω = effective migration velocity (ft/min)

(Stated alternatively

 $P = e^{-(A\omega/Q)}$

or

In $P = -A\omega/Q$

Where:

P = Penetration = 1- Efficiency)

To increase WESP performance, the options are to either increase A, increase W, or decrease Q. Obviously, the WESP collecting area (A) and gas flow rate (Q) are constants in the Northampton WESP application. Therefore, the only option is to increase the migration velocity (W).

The migration velocity is directly proportional to the charging field strength times the collecting field strength. In effect, this means that the migration velocity is proportional to the secondary voltage, squared. Thus, the secondary voltage of the WESP is clearly the best option as a parametric monitoring data point to indicate performance.

Our review of emissions test data from the subject plant shows that the Lundberg Model 567 WESP in operation at Northampton is operating within the expected design parameters for the airflow and other conditions observed. Based on this, we have developed the table below to describe WESP total grid average control efficiency over a range of secondary kV in the Northampton application. (Note: The WESP inlet concentration used in the table below is assumed to be 0.10 grains/scfd.)

Enviva Northampton Wet ESP Performance Model

EMV (ft/min)	Voltage (kV)	Penetration (fraction)	Outlet Rate (lb/h)	Inlet Rate (lb/h)	Flow (acfm)	Area (ft²)
15.5	67	0.066	3.62	54.9	109,700	19,278
14.6	65	0.078	4.25	54.9	109,700	19,278
13.7	63	0.091	4.97	54.9	109,700	19,278
12.8	61	0.105	5.77	54.9	109,700	19,278
12.0	59	0.122	6.67	54.9	109,700	19,278
11.2	57	0.140	7.68	54.9	109,700	19,278
10.4	55	0.160	8.79	54.9	109,700	19,278
9.7	53	0.183	10.02	54.9	109,700	19,278
9.0	51	0.207	11.36	54.9	109,700	19,278
8.3	49	0.234	12.83	54.9	109,700	19,278
7.6	47	0.263	14.41	54.9	109,700	19,278
7.0	45	0.294	16.10	54.9	109,700	19,278
6.4	43	0.327	17.91	54.9	109,700	19,278
5.8	41	0.362	19.83	54.9	109,700	19,278
5.2	39	0.398	21.85	54.9	109,700	19,278
4.7	37	0.437	23.95	54.9	109,700	19,278
4.2	35	0.476	26.13	54.9	109,700	19,278
3.8	33	0.517	28.38	54.9	109,700	19,278
3.3	31	0.559	30.66	54.9	109,700	19,278
2.9	29	0.601	32.97	54.9	109,700	19,278
2.5	27	0.643	35.28	54.9	109,700	19,278
2.2	25	0.685	37.57	54.9	109,700	19,278
1.8	23	0.726	39.82	54.9	109,700	19,278
1.5	21	0.766	42.00	54.9	109,700	19,278
1.2	19	0.804	44.08	54.9	109,700	19,278
1.0	17	0.840	46.05	54.9	109,700	19,278
0.8	15	0.873	47.87	54.9	109,700	19,278
0.6	13	0.903	49.52	54.9	109,700	19,278
0.4	11	0.929	50.98	54.9	109,700	19,278
0.3	9	0.952	52.23	54.9	109,700	19,278
0.2	7	0.971	53.25	54.9	109,700	19,278
0.1	5	0.985	54.03	54.9	109,700	19,278

From this table Enviva can infer the WESP outlet emission rate at a given total average of all grids at a kV value.

Thank you for contacting Lundberg regarding this important matter. If you have any questions or comments regarding this matter please do not hesitate to contact me at (425) 283-5070. Sincerely,



Steve A. Jaasund, P.E. Manager, Geoenergy Products Lundberg



20 KV //200 amp. / ________________________________arerage of 3 grid.

B.3 WET ELECTROSTATIC PRECIPITATORS^{1,2,7,8,22,23}

B.3.1. Background

A wet electrostatic precipitator (WESP) typically is used to control PM emissions in exhaust gas streams containing sticky, condensible hydrocarbon pollutants, or where the potential for explosion is high. A WESP may be used to control a variety of emission points and pollutants, such as wood chip dryers; sulfuric acid mist; coke oven off-gas; blast furnaces; detarring operations; basic oxygen furnaces; cupolas; and aluminum potlines. In the wood products industry, WESPs often are used in combination with wet scrubbers or regenerative thermal oxidizers (RTOs) to control both PM and gaseous emissions. The general operating principles and components of ESPs and the specific features of dry ESPs are discussed in section B.2; this section focuses on the components and operation of WESPs that differ from those of dry ESPs.

The two primary differences between dry ESP and WESP design are the use of a prequench and the collector plate cleaning method. Unlike dry ESPs, WESP control systems typically incorporate a prequench (water spray) to cool and saturate the gases prior to entering the electrical fields. As PM accumulates on the collector plates of a WESP, the plates are cleaned by a continuous or intermittent film or spray of water. Major differences in the types of WESPs available include: the shape of the collector; orientation of the gas stream (vertical or horizontal); use of preconditioning water sprays; and whether the entire ESP is operated wet. Configurations include circular plate, concentric plate, tubular, and flat plate WESPs.

In circular-plate WESPs, the circular plates are irrigated continuously; this provides the electrical ground for attracting the particles and also removes them from the plates. Concentric-plate WESPs have an integral, tangential prescrubbing inlet chamber, followed by a vertical wetted-wall concentric ring ESP chamber. The discharge electrode system is made of expanded metal, with corona points on a mesh background.

Tube-type WESPs typically have vertical collecting pipes; electrodes are typically in the form of discs placed along the axis of each tube. The particles are charged by the high-intensity electric field, and, as they travel farther down the tube, they are forced to the tube walls by the electrostatic field. The tube walls remain wet because the fine mist entrained in the saturated gas is also collected on the tube surfaces and flows down along the tube walls. Flushing is performed periodically to clean the tube surfaces. The water is collected in a settling tank, and this water is used to quench the gaseous stream prior to its entering the WESP.

In rectangular plate WESPs (horizontal flow), water sprays precondition the incoming gas and provide some initial PM removal. Because the water sprays are located over the top of the electrostatic fields, collection plates are also continuously irrigated. The collected water and PM flow downward into a sloped trough. The last section of this type of WESP is sometimes operated dry to remove entrained water droplets from the gas stream.

The conditioning of the incoming gas stream and continual washing of the internal components with water eliminate re-entrainment problems common to dry ESPs. Efficiency is affected by particle size, gas flow rate, and gas temperature. Common problems with WESPs include: poor gas flow; high gas flow; poor water flow; low voltage; low current; and high dissolved solids in the flush or prequench water. Other common mechanical-type problems include: poor alignment of electrodes; bowed or distorted collecting plates; full or overflowing hoppers; plugged water sprays; corrosion of electrodes; and air inleakage.

B.3.2 Indicators of WESP Performance

The primary indicators of WESP performance are opacity, secondary corona power, secondary voltage, and secondary current. Other indicators of WESP performance are the spark rate, primary current, primary voltage, inlet gas temperature, gas flow rate, inlet water flow rate, solids content of flush water (when recycled water is used), and field operation. section B-2 describes each of these indicators with the exception of the inlet water flow rate and the flush water solids content, which are described below. For some systems, mist may be entrained in the exhaust gas. In such cases, opacity measurements would be misleading. Table B-3 lists these indicators and illustrates potential monitoring options for WESPs.

Inlet water flow rate. Because WESPs use water to clean collector plates, the water flow rate is an indicator that the cleaning mechanism is operating properly. If flow rates decrease, sections of the WESP may not be as effective. As a result, PM collection rates would decrease as material built up on the collectors. In addition, low flow rates increase the likelihood of ineffective spraying and distribution of water, as well as nozzle plugging.

<u>Flush water solids content</u>. When recycled water is used, the solids content of the water increases with each recycling. If the solids content becomes excessive, the effectiveness of the cleaning mechanism is reduced. Increased solids content also can lead to plugging of spray nozzles.

B.3.3. Illustrations

The following illustrations present examples of compliance assurance monitoring for WESPs:

- 3a: Monitoring secondary current, secondary voltage, spark rate, and inlet water flow rate.
- 3b: Monitoring secondary current, secondary voltage, inlet water flow rate, and flush water solids content.

B.3.4 <u>Bibliography</u>

TABLE B-3. SUMMARY OF PERFORMANCE INDICATORS FOR WESPS

		Approach No.	1	2	3	4	S	9
		Illustration No.	3a	3b				
		Example CAM Submittals					A9a	A9b
Parameter	Performance indication	Comment		>	7	7		
Primary Indicators of Performance	of Performance							
Opacity	Increased opacity or VE denotes performance degradation. COMS, opacity observations, or visible/no visible emissions. If mist is entrained in exhaust gas or a condensed plume is present, opacity measurements may be misleading.	OMS, opacity observations, or s or a condensed plume is			×			
Secondary corona power	Performance usually increases as power input increases; indicates work done by WESP to remove PM. Product of voltage and current; can help identify any fields that are not operating.	ates work done by WESP to any fields that are not	g	æ		es .		
Secondary current	Partial indicator of power consumption; too low indicates malfunction. Can help identify any fields that are not operating properly.	function. Can help identify	×	×		×		
Secondary voltage	Partial indicator of power consumption; too low indicates problem such as grounded electrodes. Can help identify any fields that are not operating properly.	olem such as grounded properly.	×	×	X	×	×	×
Other Performance Indicators	Indicators							
Inlet water flow rate	Indicates cleaning mechanism is working properly; if low, can indicate plugging. As an alternative to water flow, the water pressure can be monitored.	indicate plugging. As an	×	×	×	×		
Flush water solids	High solids may cause plugging, reduce collection efficiency. Applies to systems that use	Applies to systems that use		×				

Comments:

Inlet/outlet gas temperature Approach No. 2 also corresponds to 40 CFR 60, subpart PPP (Wool Fiberglass).

resistivity of particulate.

recycled water.

content

· Approach No. 3 includes monitoring the voltage to indicate that the WESP is collecting particulate, VE as an indicator of PM emissions, water flow to indicate PM being removed, and outlet temperature to indicate sufficient water.

×

×

Indicates water sprays and prequench (if applicable) are working. Also, temperature affects

Monitoring both secondary current and voltage is essentially the same as monitoring secondary corona power. Monitoring of corona power is not appropriate for WESPs with a large number of fields.

No Part 63 rules refer to WESP.

CAM ILLUSTRATION No. 3a. WET ELECTROSTATIC PRECIPITATOR FOR PM

1. APPLICABILITY

- 1.1 Control Technology: Wet electrostatic precipitator (WESP) [010, 011, 012]
- 1.2 Pollutants

Primary: Particulate matter (PM)

Other:

1.3 Process/Emission units: Wood products dryers

2. MONITORING APPROACH DESCRIPTION

- 2.1 Parameters to be Monitored: Secondary current, secondary voltage, and inlet water flow rate.
- 2.2 Rationale for Monitoring Approach
 - Secondary current: Current is generally constant and low; increase or drop in current indicates a malfunction. The current directly affects collection efficiency.
 - Secondary voltage: Voltage is maintained at high level; drop in voltage indicates a malfunction. When the voltage drops, less particulate is charged and collected. The voltage directly affects collection efficiency.
 - Inlet water flow rate: Indicates sufficient water flow for proper removal of particulate from the collection plates.
- 2.3 Monitoring Location
 - Secondary current and secondary voltage: Measure after each transformer/rectifier set.
 - Inlet water flow rate: Water line.
- 2.4 Analytical Devices
 - Secondary current: Ammeter.
 - Secondary voltage: Voltmeter.
 - Inlet water flow rate: Liquid flow meter or other device for liquid flow; see section 4 for more information on specific types of instruments.
- 2.5 Data Acquisition and Measurement System Operation
 - Frequency of measurement: Hourly, or continuously by strip chart or data acquisition system.
 - Reporting units:
 - Current: Amps.
 - Voltage: Volts.
 - Inlet water flow rate: Gallons per minute (gpm) or cubic feet per minute (ft³/min)
 - Recording process: Operators log data manually, or recorded automatically on strip chart or data acquisition system.
- 2.6 Data Requirements
 - Baseline secondary current, secondary voltage, and inlet water flow rate measurements concurrent with emission test.

- Historical plant records on secondary current, secondary voltage, and inlet water flow rate measurements.
- 2.7 Specific QA/QC Procedures: Calibrate, maintain, and operate instrumentation using procedures that take into account manufacturer's specifications.
- 2.8 References: 7, 8, 9, 13.

3. COMMENTS

Data Collection Frequency: For large emission units, a measurement frequency of once per hour would not be adequate; collection of four or more data points each hour is required. (See Section 3.3.1.2.)

CAM ILLUSTRATION No. 3b. WET ELECTROSTATIC PRECIPITATOR FOR PM

1. APPLICABILITY

- 1.1 Control Technology: Wet electrostatic precipitator (WESP) [010, 011, 012]
- 1.2 Pollutants

Primary: Particulate matter (PM)

Other:

1.3 Process/Emission units: Insulation manufacturing, dryers

2. MONITORING APPROACH DESCRIPTION

- 2.1 Parameters to be Monitored: Secondary voltage and current, inlet water flow rate, and solids content of flush water.
- 2.2 Rationale for Monitoring Approach
 - Secondary current:
 - Secondary voltage: Low voltage or current indicates a problem in the WESP.
 - Inlet water flow rate: Indicates sufficient water flow for proper removal of particulate from the collection plates.
 - Flush water solids content: High solids content of recycled water reduces the efficiency of cleaning.
- 2.3 Monitoring Location
 - Secondary current and secondary voltage: Measure after each transformer/rectifier set.
 - Inlet water flow rate: Measure at inlet water inlet line or pump discharge.
 - Flush water solids content: Measure at inlet line or recycle water tank.
- 2.4 Analytical Devices:
 - · Secondary current: Ammeter.
 - Secondary voltage: Voltmeter.
 - Inlet water flow rate: Liquid flow meter or other device for liquid flow; see section 4 for more information on specific types of instruments.
 - Flush water solids content: Manual sampling of water.
- 2.5 Data Acquisition and Measurement System Operation
 - Frequency of measurement: Hourly, or continuously on strip chart or data acquisition system; flush water solids, weekly.
 - Reporting units:
 - Current: Amps.
 - Voltage: Volts.
 - Inlet water flow rate: Gallons per minute (gpm) or cubic feet per minute (ft³/min).
 - Flush water solids content: Percent solids.
 - Recording process: Operators log data manually, or recorded automatically on strip chart or data acquisition system.

- 2.6 Data Requirements
 - Baseline secondary current, secondary voltage, inlet water flow rate, and solids content measurements concurrent with emission test.
 - Historical plant records on secondary current, secondary voltage, inlet water flow rate, and solids content measurements.
- 2.7 Specific QA/QC Procedures: Calibrate, maintain, and operate instrumentation using procedures that take into account manufacturer's specifications.
- 2.8 References: 7, 8, 9, 11, 13.

3. COMMENTS

3.1 Data Collection Frequency: For large emission units, a measurement frequency of once per hour would not be adequate; collection of four or more data points each hour is required. (See Section 3.3.1.2.)



Enviva Pellets Northampton LLC 874 Lebanon Church Road Garysburg, NC 27381

Air Permits Section

+1 (252) 541 2631 fax (252) 541 2632

www.envivabiomass.com

August 4, 2016

Via FedEx Overnight Delivery

Ms. Yukiko Puram NCDENR-DAQ Air Permitting Section 1641 Mail Service Center Raleigh, NC 27699-1641

Re:

Enviva Pellets Northampton, LLC

Title V Air Permit Application Amendment

Ms. Puram:

Enviva Pellets Northampton, LLC (Enviva) submitted a Title V Air Permit Application for its Northampton, NC wood pellet manufacturing facility in April 2014. In May 2015, Enviva subsequently submitted a State Operating Permit Application requesting physical modifications to the facility and an increase in the allowable VOC emissions at the facility. This permit modification request was approved by the NCDEQ Division of Air Quality (DAQ) and a revised Operating Permit No. 10203R04 was issued on October 12, 2015.

Enviva is submitting attached, amendments to its Title V Air Permit Application to include the changes made in Permit 10203R04. Included attached are copies of the Air Permit Forms for all existing and proposed units at the facility (Appendix A), a copy of the facility-wide emissions calculations representing the revised operating scenarios from the May 2015 State Operating Permit Application (Appendix B), and a process flow diagram reflecting the new equipment configuration (Appendix C).

As part of the May 2015 State Operating Permit Application, Enviva requested a facility-wide VOC emissions limit of 456.4 tons per year. The emissions calculated as detailed in Appendix B represent the maximum potential VOC emissions from the facility at the maximum throughput capacities and a softwood content of 30%. As shown in Appendix B, the facility-wide emissions at 30% softwood are well below the permitted maximum of 456.4 tons per year. As detailed in the May 2015 State Operating Permit Application, Enviva proposes the potential use of even higher softwood content provided that appropriate emission factors are derived and approved by DAQ, as detailed in Section 2.1, Condition 4.c of the newly issued Air Permit 10203R04.



•

Ms. Yukiko Puram August 3, 2016 Page 2

North Carolina Air Toxics Air Dispersion Modeling was initially submitted as part of the April 2014 Title V Air Permit Application and updated modeling for two pollutants was submitted in May 2015. There are no additional changes to the existing air dispersion modeling and therefore, the modeling demonstrations are not reproduced in this Title V Air Permit Amendment Application.

If you have any questions or require additional information, please contact Michael Deyo at 804-937-0377 or Joe Harrell at 252-370-3181.

Sincerely,

Steven Steigerwald

Corporate EHS Director

cc: Royal Smith, Enviva

Joe Harrell, Enviva

Michael Deyo, Deyo and Associates, LLC



APPENDIX A

Enviva Pellets Northampton, LLC

Amended North Carolina DAQ Title V

Air Permit Application Forms

FORM A1

AUG 0 9 2016

FACILITY (General Information)

REVISED 05/25/12	NCDENR/E	Division of Air Qualit	y - Applicat	tion for Air Permit to Construct/Operate AIF Permits Section A1	
	NOTE- APPLIC	CATION WILL NO	T BE PR	OCESSED WITHOUT THE FOLLOWING:	
_	ocal Zoning Consistency Determ	nination (if required)	d) acility Reduction & Recycling Survey Form (Form A4) splication Fee		
	Responsible Official/Authorized	Contact Signature	✓ \ppropr	riate Number of Copies of Application E. Seal (if required)	
		GE	NERAL IN	NFORMATION	
Legal Corporate/Owne	r Name: Enviva P	ellets Northampton, L	LC		
Site Name: Enviva Pe	llets Northampton, LLC				
Site Address (911 Addre	ess) Line 1: 874 Leba	non Church Road			
Site Address Line 2:				· · · · · · · · · · · · · · · · · · ·	
City: Garysburg				State: North Carolina	
Zip Code:	27866			County: Northampton	
ESTABLISHED		CO	NTACT IN	NFORMATION	
Permit/Technical Cont.	act:			Facility/Inspection Contact:	
Name/Title: Joe Harre	I, Corporate Environmental Heal	th & Safety Manager		Name/Title: Heath Lucy, Environmental Health & Safety Manager	
Mailing Address Line 1:	142 N.C. Route 561 East	, , , , , , , , , , , , , , , , , , , ,		Mailing Address Line 1: 874 Lebanon Church Road	
Mailing Address Line 2:				Mailing Address Line 2:	
City: Ahoskie	State: NC	Zip Code:	27910		
Phone No. (area code)	· 1	area code) N/		Phone No. (area code) (910) 318-2743	
Email Address:	Joe.Harrell@envivabio			Email Address: heath.lucy@envivabiomass.com	
Responsible Official/A				Invoice Contact:	
	th, Vice President Operations			Name/Title: Same as Permit/Technical Contact	
Mailing Address Line 1:	7200 Wisconsin Avenue			Mailing Address Line 1:	
Mailing Address Line 2:	Suite 1000			Mailing Address Line 1:	
City: Bethesda	State: MD	Zin Cada	20014		
		Zip Code:	20814		
Phone No. (area code) Email Address:	1555	area code)		Phone No. (area code) Fax No. (area code)	
Email Address,	royal.smith@envivabio		I SI MOIT	Email Address: BEING MADE FOR	
	ew Non-permitted Facility/Green			acility (permitted) Renewal with Modification	
□ N	•		_	NT TO INITIAL TITLE V APPLICATION	
				R APPLICATION (Check Only One)	
General	Small Prohibitor				
General			-		
Describe notice of (-1	- it-)			ite) INFORMATION	
Describe nature of (plan Wood pellet manufacture		No.:	6600167		
Trood police managed	ng racinty				
0.0000000000000000000000000000000000000				T	
	e: 2499 (Wood Products, Not E			Current/Previous Air Permit No. 10203R04 Expiration Date 2/28/20	
Facility Coordinates:	Latitude: 256,700 l			Longitude: 4,042,900 UTM N	
Does this application of data?	YES [_]	NO 🖭 (S	ee Instruction	•	
		PERSON OR FIR	M THAT F	PREPARED APPLICATION	
Person Name:	Michael Deyo			Firm Name: Deyo & Associates, LLC	
Mailing Address Line 1:	12325 Morning Creek Rd.			Mailing Address Line 2:	
City: Glen Allen	State:	VA		Zip Code: 23059 County: Henrico	
Phone No. (area code)	(804) 937-0377 Fax No. (area code) (804) 44	1-8272	Email Address: mtdeyo@aol.com	
	SIGNATU	JRE OF RESPON	ISIBLE O	FFICIAL/AUTHORIZED CONTACT	
Name (typed):	Royal Smith			Title: Vice President, Operations	
X Signature(Blue lnk):	230	>		Date: 8/4/16	

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2 112r APPLICABILITY INFORMATION - A3

EMISSION SOURCE LISTING: New, Modified, Previously Unpermitted, Replaced, Deleted CONTROL DEVICE DESCRIPTION DESCRIPTION DEVICE DESCRIPTION DEVICE DESCRIPTION DESCRIPTIO	REVISED 04/10/07	NCDENR/Division of Air Quality -	Application for Air Permit to Const	truct/Operate	A2
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement) N/A - Title V Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Existing Permitted Equipment To Be MODIFIED By This Application N/A - Title V Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Equipment To Be DELETED By This Application Equipment To Be DELETED By This Application Equipment To Be DELETED By This Application 112(r) APPLICABILITY INFORMATION No. please specify in detail how your facility wooled applicability: Invited Pellets Northampton, LLC will not handle any of the substances subject to 112(r) your facility is Subject to 112(r), please complete the following: A 1eway out insertly submitted at fixe Management Plan (RIPP) to EPA Pursuant to 40 CPR Part 88.10 or Pa	7	EMISSION SOURCE LISTING: New, M	odified, Previously Unpermi	tted, Replaced, Deleted	
Equipment To Be ADDED By This Application (New, Previously Unpermitted, or Replacement) N/A - Title V Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Existing Permit Application, as Approved in Operating Permit No. 10203R04. Existing Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Equipment To Be DELETED By This Application 112(r) APPLICABILITY INFORMATION A 3 your facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(r) of the Federal Clean Air Act? No. please specify in detail how your facility avoided applicability. Environmental Clean Air Act? No. please specify in detail how your facility avoided applicability. Environmental Clean Air Act? Yes No. A Specify required RNP submitted date: If submitted, RNP submitted date.	EMISSION SOURCE	EMISSION SOURCE	CONTROL DEVICE	CONTROL DEVICE	
N/A - Title V Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Existing Permit Application as Approved in Operating Permit No. 10203R04. Existing Permit Application Update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application update to Incorporate Facility Modifications Included in Enviva's May 2015 State Operating Permit Application, as Approved in Operating Permit No. 10203R04. Equipment To Be DELETED By This Application Equipment To Be DELETED By This Application Equipment To Be DELETED By This Application Vov. facility subject to 40 CFR Part 68 "Prevention of Accidental Releases" - Section 112(f) of the Federal Clean Air Act? Yes (No.) No, please specify in detail how your facility avoided applicability. Invitor Pellets Northampion, LLC will not handle any of the substances subject to 112(f) poyrum facility is allocated and the Area of Specify required RMP submitted date: If submitted, RMP submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.10 or Part 68.1507 A Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.10 or Part 68.1507 A Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.1507 A Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.1507 A Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.1507 A Have you already submitted a Risk Management Plan (RMP) to EPA Pursuant to 40 CFR Part 68.10 or Part 68.1507	ID NO.	DESCRIPTION	ID NO.	DESCRIPTION	
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		iministrative controls to subject your facility to a lesser 112(r) No If yes, please specify:	program standard?		

FORM A4	1						
SURVE	Y OF AIR EMISSIO	NS AND FACILITY - W	DE REDUCTION &	RECYCLING ACTIVIT	IFS		
DATE:					IO If so, is facility ISO 140	00 Certified? () YES (X)	NO
Facility Name:	Enviva Pellets Nor	thampton, LLC			Permit Number:	10203R04	
Facility ID:	N/A (to be	County:	Northampton		Environmental Contact:	Joe Harrell	
Mailing Address	Line 1:	874 Lebanon Church	Road		Phone No. ()	(252) 209-6032	Fax No. ()
Mailing Address	Line 2:				Zip Code:	27866	County: Northampton
City:	Garysburg	State:	North Carolina		Email Address:	Joe.Harrell@envivabiom	ass.com
AID EMISSIONS	SOURCE REDUCTI	2008	Anu Air Eminatan	Carres Dad attack	n the past year? () YES /	IVI NO	
		Enter Code for	Date Reduction	Quantity Emitted	Quantity Emitted	Has reduction activity been	Addition detail about source
Source Description and ID	Air Pollutant	Emission Reduction	Option Implemented	from prior annual	from current annual	discontinued? If so, when	
"		Option (See Codes)	(mo/yr)	report to DAQ (lb/yr)	report to DAQ (lb/yr)	was it discontinued?	
N/A						(make)	
Comments:							
FACILITY - WIDE	PEDLICTIONS & P	ECYCLING ACTIVITIES		Any Reductions of R	ecycling Activities in the p	art 10022 / 1 VEC / V 1 NO	
	Pollutant	Enter Code for	Date Reduction	Quantity Emitted	Quantity Emitted	Has reduction activity been	Addition detail about source
Source Description or Activity	or	Emission Reduction	Option Implemented	from prior annual	from current annual	discontinued? If so, when	
	Recycled or Reduced Materials	Option (See Codes)	(mo/yr)	report	report	was it discontinued? (mo/yr)	
N/A							

The requested information above shall be used for fulfilling the requirements of North Carolina General Statute 143-215.108(g). The permit holder shall submit to the Department a written description of current and projected plans to reduce the emissions of air pollutants by source reduction or recycling. The written description shall accompany any application for a new permit, modification of an existing permit and for each annual air quality permit fee payment. Source reduction is defined as reducing the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal. If no activity has taken place since the previous report, simply indicate so by checking the no box in that section. Once completed, this form should be submitted along with your fee payment. Examples are listed on the first line of each section of the form for your benefit.



REVISED 1/07



FORM D1

FACILITY-WIDE EMISSIONS SUMMARY

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate **D1 CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE** EXPECTED ACTUAL EMISSIONS POTENTIAL EMISSIONS POTENTIAL EMISSIONS (AFTER CONTROLS / (BEFORE CONTROLS / (AFTER CONTROLS / LIMITATIONS) LIMITATIONS) LIMITATIONS) AIR POLLUTANT EMITTED tons/yr tons/yr tons/yr PARTICULATE MATTER (PM) See Emissions Calculations in Appendix B PARTICULATE MATTER < 10 MICRONS (PM₁₀) PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5}) SULFUR DIOXIDE (SO2) NITROGEN OXIDES (NOx) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE **EXPECTED ACTUAL EMISSIONS** POTENTIAL EMISSIONS POTENTIAL EMISSIONS (AFTER CONTROLS / (BEFORE CONTROLS / (AFTER CONTROLS / LIMITATIONS) LIMITATIONS) LIMITATIONS) HAZARDOUS AIR POLLUTANT EMITTED CAS NO. tons/yr tons/yr tons/yr See Emissions Calculations in Appendix B TOXIC AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE INDICATE REQUESTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS. EMISSIONS ABOVE THE TOXIC PERMIT EMISSION RATE (TPER) IN 15A NCAC 2Q .0711 MAY REQUIRE AIR DISPERSION MODELING. USE NETTING FORM D2 IF NECESSARY. Modeling Required? CAS NO. TOXIC AIR POLLUTANT EMITTED lb/hr lb/day lb/year Yes No See Emissions Calculations in Appendix B COMMENTS:

1 N N

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED: 12/01/01

NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate

D4

ACTIVITIES EXEMPTED PER 2Q .0102 OR INSIGNIFICANT ACTIVITIES PER 2Q .0503 FOR TITLE V SOURCES

	interesting to the first the first terms of the fir	SIZE OR PRODUCTION	BASIS FOR EXEMPTION OR INSIGNIFICANT
	DESCRIPTION OF EMISSION SOURCE	RATE	ACTIVITY
1.	Green Wood Handling and Sizing Operations IES-GWHS	N/A	15A NCAC 02Q .0102 (c)(2)(E) -low emissions, see Appendix B
2.	Dried Wood Handling and Sizing Operations IES-DWHS	N/A	15A NCAC 02Q .0102 (c)(2)(E) -negligible emissions, enclosed
3.	Emergency Generator Diesel Fuel Storage Tank TK-1	Up to 2,500 gallons	15A NCAC 02Q .0102 (c)(1)(D)
4.	Firewater Pump Diesel Fuel Storage Tank TK-2	Up to 500 gallons	15A NCAC 02Q .0102 (c)(1)(D)
3.	Green Wood Storage Piles IES-GWSP1 and IES-GWSP2	N/A	15A NCAC 02Q .0102 (c)(2)(E) -low emissions, see Appendix B
6.	Debarker IES-DEBARK-1	N/A	15A NCAC 02Q .0102 (c)(2)(E) -negligible emissions
7	Green Wood Fuel Bin IES-GWFB	13.93 ODT/hr	15A NCAC 02Q .0102 (c)(2)(E) -no quantifiable emissions
8.	Dry Line Hopper (ES-DLH)	10 ODT/hr	15A NCAC 02Q .0102 (c)(2)(E) - negligible emissions,
9.	Dry Line Conveyor (ES-DLC-1)	10 ODT/hr	15A NCAC 02Q .0102 (c)(2)(E) - negligible emissions,
10.	Bagging System Conveying (ES-BSC-2, ES-BSC-3, ES-BSB-1 and ES-BSB-2)	60 tph (ES-BSC-2), 30 tph (ES-BSC-3, ES-BSB-1, ES-BSB-2)	15A NCAC 02Q .0102 (c)(2)(E) - negligible emissions,



FORM D

PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY

AUG 0 9 2016

TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION Permits Section

REVISED: 12/01/01

NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate

D5

DEMONSTRATIONS MADE IN THIS APPLICATION. INCLUDE A COMPREHENSIVE PROCESS FLOW DIAGRAM AS NECESSARY TO SUPPORT AND CLARIFY CALCULATIONS AND ASSUMPTIONS. ADDRESS THE FOLLOWING SPECIFIC ISSUES ON SEPARATE PAGES: SPECIFIC EMISSIONS SOURCE (EMISSION INFORMATION) (FORM B) - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL BALANCES, AND/OR OTHER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL BEFORE AND, WHERE APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT MATERIAL BALANCE CALCULATIONS. SPECIFIC EMISSION SOURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) - PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL SOURCES AND THE FACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING WITH APPLICABLE REGULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. PROVIDE JUSTIFICATION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE STANDARDS (NSPS), NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL REGULATIONS WHICH WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED TO DOCUMENT COMPLIANCE WITH ANY REGULATIONS. INCLUDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE CALCULATIONS. CONTROL DEVICE ANALYSIS (FORM C) - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES LISTED ON SECTION C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS (e.g. OPERATING CONDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER PERFORMANCE OF THE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT THIS FACILITY. DETAIL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE PERFORMED. PROCESS AND OPERATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY) - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, OPERATIONAL, OR OTHER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE APPROPRIATE. LIST ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REGULATIONS. PROFESSIONAL ENGINEERING SEAL -PURSUANT TO 15A NCAC 2Q .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL," A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR NEW SOURCES AND MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY). , attest that this application for <u>Enviva Pellets, Northampton, LLC</u> has been reviewed by me and is accurate, complete and consistent with the information supplied in the engineering plans, calculations, and all other supporting documentation to the best of my knowledge. I further attest that to the best of my knowledge the proposed design has been prepared in accordance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design. Note: In accordance with NC General Statutes 143-215.6A and 143-215.6B, any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed \$10,000 as well as civil penalties up to \$25,000 per violation. (PLEASE USE BLUE INK TO COMPLETE THE FOLLOWING) PLACE NORTH CAROLINA SEAL HERE NAME: J. Rusty Field 7-25-2016 DATE: COMPANY: ONE Environmental Group 1508 Willow Lawn Drive, Suite 200. Richmond, VA 23230 ADDRESS: 804-303-8784 TELEPHONE: SIGNATURE: PAGES CERTIFIED: Entire Application

(IDENTIFY ABOVE EACH PERMIT FORM AND ATTACHMENT THAT IS BEING CERTIFIED BY THIS SEAL)

	8
8	

TITLE V GENERAL INFORMATION

REVISED: 12/01/01

Division of Air Quality - Application for Air Permit to Construct/Operate

E1

IF YOUR F	ACILITY IS CLASSIFIE	D AS "MAJOR" I	FOR TITLE V YOU MUST COMPLETE	
THIS FORM	AND ALL OTHER REQU	IRED "E" FORM	IS (E2 THROUGH E5 AS APPLICABLE)	
Indicate here if your facility is s	ubject to Title V by:	Emissions	Other ∴	
If subject to Title V by other, ch	eck or specify: 🦸 NSPS	d NESHA	APS (MACT) 🕴 TITLE IV	
Other, specify:				
If you are or will be subject to a 112(d) of the Clean Air Act, spe		ontrol technology sta	andards (MACT) issued pursuant to section	
112(d) of the Olean All Act, spe	EMISSION SOURCE			
EMISSION SOURCE ID	DESCRIPTION		MACT	
IES-GN	Emergency Generator		Part 63, Subpart ZZZZ	
IES-FWP	Emergency Fire Water P	ump Generator	Part 63, Subpart ZZZZ	
1				
List any additional regulation w the shield should be granted: REGULATION	hich are requested to be inc		and provide a detailed explanation as to why EXPLANATION	
40 CFR Part DDDD	ES-Dryer		Facility is not defined as a "Plywood and Con	
	,		Wood Products (PCWP) Manufacturing Facil	lity"
			as Defined at 40 CFR Part 63.2292.	
	-			
		 -		
0				
Comments:				

EMISSION SOURCE APPLICABLE REGULATION LISTING

EMISSION SOURCE SOURCE DID NO. DESCRIPTION DESCRIPTION OF RAITERNATIVE (A) DESCRIPTION OF RAITERNATIVE (A) POLLUTANT REGULATION REGULATION (A) POLLUTANT REGULATION (A) POL	REVISED 12/01/01	Division of	Air Quality - Application f	or Air Permit to C	Construct/Operate	E2
ID NO. DESCRIPTION OR ALTERNATIVE (À) POLLUTANT REGULATION						
			INDICATE PRIMARY (P)		APPLICABLE	
See attached table following Form E3 for a summary of regulatory requirements and associated compliance requirements.						
	See attached ta	ible following Form E3 for a sui	mmary of regulatory re	quirements and	d associated compliance requireme	nts.
		Y				
	Y					
	7					
	1					
	7					
	-					

EMISSION SOURCE COMPLIANCE METHOD

REVISED 12/01/01		Quality - Application for	Air Permit to Construct/Operate	E3
	NO.: See attached table following Form of regulatory requirements and associated	Regulated Polluta	ant	V:
ompliance require		Applicable Regula	ation	
Alternative Operatin	ng Scenario (AOS) NO:			
	ATTACH A SEPARATE PAG	E TO EXPAND ON A	NY OF THE BELOW COMMENTS	
	MC	NITORING REQUIRE	MENTS	
le Compliane	ce Assurance Monitoring (CAM) 40 CFR Part (64 Applicable?	es 🖗 No	
	M Plan Attached (if applicable, CAM plan mus			
	nitoring Device Type:	t be attached)?	4 NO	
	nitoring Location:			
	oring Methods (Describe In Detail):	0		
-				
Donariba tha	n francisco and dispation of magnituding and ba	overthan data will be an anada	d (i.e	
	e frequency and duration of monitoring and no sen to produce an hourly average):	iw the data will be recorde	ed (i.e., every 15 minutes, 1 minute instantaneous	
readings tak	is it to produce an mounty average).			
-				
*				
<u> </u>				
-				
	RECO	ORDKEEPING REQUIR	REMENTS	
Data /Baram	notor\ hoing recording:			
Data (Param	eter) being recording:			
Frequency of	f recordkeeping (How often is data recorded?)):		
	, ,			
	N THE RESERVE OF THE	PORTING REQUIRE	TENTO.	
	RE	PORTING REQUIREM	MENIS	
Generally de	scribe what is being reported:			
-	•			a a
	·			
requency:		∮ QUARTERI	♠ EVERY 6 MONTHS	
	d OTHER (DESCRIBE):			
NOW HATE		TESTING		
ecify proposed re	rference test method:			
	est method rule and citation:			
ecify testing frequ				
	-	proval and possible c	hange during the test protocol process	



EMISSION SOURCE COMPLIANCE SCHEDULE

Revised 12/01/01

NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate

E4

	COMPLIANCE STATUS WITH RESPECT TO ALL APPLICABLE REQUIREMENTS				
	Will each emission source at your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements?				
	es No If NO, complete A through F below for each requirement for which compliance is not achieved.				
	Will your facility be in compliance with all applicable requirements taking effect during the term of the permit and meet such requirements on a timely basis?				
	Yes No If NO, complete A through F below for each requirement for which compliance is not achieved.				
	If this application is for a modification of existing emissions source(s), is each emission source currently in compliance with all applicable requirements?				
	Yes No If NO, complete A through F below for each requirement for which compliance is not achieved.				
A.	Emission Source Description (Include ID NO.)				
В.	Identify applicable requirement for which compliance is not achieved:				
1					
C.	Narrative description of how compliance will be achieved with this applicable requirements:				
-					
D.	Detailed Schedule of Compliance: Step(s) Date Expected				
E.	Frequency for submittal of progress reports (6 month minimum):				
F.	Starting date of submittal of progress reports:				

TITLE V COMPLIANCE CERTIFICATION (Required)

E5 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate Revised 01/01/07 In accordance with the provisions of Title 15A NCAC 2Q .0520 and .0515(b)(4) the responsible company official of: SITE NAME: Enviva Pellets Northampton, LLC SITE ADDRESS: 874 Lebanon Church Road CITY, NC: Garysburg, NC 27866 COUNTY: Northampton PERMIT NUMBER: 10203R04 CERTIFIES THAT(Check the appropriate statement(s): The facility is in compliance with all applicable requirements In accordance with the provisions of Title 15A NCAC 2Q .0515(b)(4) the responsible company official certifies that the proposed minor modification meets the criteria for using the procedures set out in 2Q .0515 and requests that these procedures be used to process the permit application. The facility is not currently in compliance with all applicable requirements If this box is checked, you must also complete form E4 "Emission Source Compliance Schedule" The undersigned certifies under the penalty of law, that all information and statements provided in the application, based on information and belief formed after reasonable inquiry, are true, accurate, and complete. Date: Signature of responsible company official (REQUIRED, USE BLUE INK) Royal Smith, Vice President of Operations Name, Title of responsible company official (Type or print)

FORM

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division	on of Air Quality - App	olication for	Air Permit to 0	Construct/Op	erate		В
EMISSION SOURCE DESCRIPTION:			EMISSION S	SOURCE ID N	10:	ES-EPWC	-
Chipper			CONTROL	DEVICE ID NO	7/6/-	N/A	
			CONTROLL	DEVICE ID 140	J(3).		
OPERATING SCENARIO 1 OF	1		EMISSION F	POINT (STAC	K) ID NO(S);	N/A	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS							
Green wood chips are screened and oversized chips will u	ındergo additional ch	ipping as re	quired.				
TYPE OF EMISSION SOURCE (CHEC	V AND COMPLETE	PPPOPPIAT	T FORM 04 F		0110111100	0.000	
Coal,wood,oil, gas, other burner (Form B1) Woodwo		APPROPRIA I					
		D.E.	_		s/coatings/inks	(Form B7)	
	finishing/printing (Form	1 B5)		ion (Form B8)		
	silos/bins (Form B6)		Other (F				
START CONSTRUCTION DATE: OPERATION		2013	DATE MANU				
MANUFACTURER / MODEL NO.: CEM 112" 15KN S IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	SUS Pellet Proces		OP. SCHEDU			DAY/WK 5	2 WK/YR
	NESHAP (SU			ACT (SUBPA			
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB EXPECTED ANNUAL HOURS OF OPERATION 8,760			N-AUG 25	% SEF	P-NOV 259		
CRITERIA AIR POLL	VISIBLE STACK EM	22ION2 ONE	DEK NURMAL	OPERATION	: <20 %	OPACITY	
ORITEMA AIN I DEL	SOURCE OF		ED ACTUAL	T THIS SC		L EMSSIONS	
	EMISSION		TROLS / LIMITS)	(BEEODE CON	ITROLS / LIMITS)		TROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/vr	lb/hr	tons/vr	lb/hr	tons/vr
PARTICULATE MATTER (PM)	See Emission Calcu			ID/HI	toris/yi	ID/III	toris/yi
PARTICULATE MATTER<10 MICRONS (PM10)	GGG Ellisosion Galou	lations in Ap	Pendix B		_		
PARTICULATE MATTER<2.5 MICRONS (PM)			1				
SULFUR DIOXIDE (SO2)				 			
NITROGEN OXIDES (NOx)			_		_		
CARBON MONOXIDE (CO)				-			
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD					_		
OTHER							
HAZARDOUS AIR POL	LUTANT EMISSI	ONS INFO	RMATION F	OR THIS	SOURCE		
	SOURCE OF		D ACTUAL	T		LEMSSIONS	
	EMISSION	(AFTER CONT	ROLS / LIMITS	(BEFORE CON	TROLS / LIMITS)		ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
TOXIC AIR POLLU	TANT CHICOLONG	MEODIA	TION FOR	TIMO OCI	(Doc		
	TED ACTUAL EMISSI						
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE					hr.	
N/A	EF SOURCE	10	/hr	lib.	/day	Iţ	Ууг
N/A							
Attachments: (1) emissions calculations and supporting documentation;	(2) Indicate all requested s	tate and federal	enforceable per	mit limits (e.a. b	ours of operation	emission rates	and describe
how these are monitored and with what frequency; and (3) describe any	monitoring devices, gauge	s, or test ports	or this source.	(0.9. 11	out or operation,	oisaion rates)	4 44301110
COMPLETE THIS EXPLINATION COMPLETE	AND ATTACILA	DEBABBL	THE R. P. WILLS	STATES TO SEC.	WALKET WALK	THE PROPERTY AND ADDRESS OF THE PARTY AND ADDR	

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary

not included in the permit

FORM B9 EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quali	ty - Applicatio	on for Air Permit to Construct/Ope	rate B9		
EMISSION SOURCE DESCRIPTION: Chipper	EMISSION SOURCE ID NO:	ES-EPWC			
	CONTROL DEVICE ID NO(S): N/A				
OPERATING SCENARIO: 1 OF 1		EMISSION POINT (STACK) ID N	O(S): N/A		
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):		LIVIGGION FOINT (STACK) ID N	O(3). IVA		
Green wood chips are screened and oversized chips will und					
MATERIALS ENTERING PROCESS - CONTINUOUS PROC		MAX. DESIGN	REQUESTED CAPACITY		
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)		
Green Wood	ODT	71.71			
	-				
MATERIALS ENTERING PROCESS - BATCH OPERATIO	N	MAX. DES!GN	DECLIFETED CARACITY		
TYPE	UNITS	CAPACITY (UNIT/BATCH)	REQUESTED CAPACITY		
1112	ONTO	CAPACITE (ONTINBATCH)	LIMITATION (UNIT/BATCH)		
			+		
			 		
MAXIMUM DESIGN (BATCHES / HOUR):	*				
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/Y	(R):			
FUEL USED: N/A	TOTAL MAX	MUM FIRING RATE (MILLION BTU	I/HR): N/A		
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTE	ED CAPACITY ANNUAL FUEL USE: N/A			
COMMENTS:					

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division o			or Air Permit			1110_0,	В		
EMISSION SOURCE DESCRIPTION:				EMISSION SOURCE ID NO: 7 ES-RCHP-1,					
Rechippers/ Green Wood Hammermills		N/A							
			CONTROL DEVICE ID NO(S):						
OPERATING SCENARIO 1 OF 1 EMISSION POINT (STACK) ID NO(S): N/A									
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):									
Green wood chips are screened and oversized chips will a	undergo additi	ional chippin	g as required						
TYPE OF EMISSION SOURCE (CHECK A	ND COMPLET	E ADDRADE	IATE EODM E	21 PG (N) TU	E FOLLOWBY	DAGES!			
TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): Coal,wood,oil, gas, other burner (Form B1) Woodworking (Form B4) Manufact. of chemicals/coatings/inks (Form B7)									
Int. combustion engine/generator (Form B2) Coating/finishing/printing (Form B5) Incineration (Form B8)									
	silos/bins (For		Other (F						
START CONSTRUCTION DATE: OPERATION		2013	DATE MANU						
MANUFACTURER / MODEL NO.: Williams #4			OP. SCHEDU		R/DAY 7	DAY/WK 5	2 WK/YR		
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		AP (SUBPAR			(SUBPART?):		· viid iii		
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB			JUN-AUC		SEP-NOV	25%			
EXPECTED ANNUAL HOURS OF OPERATION 8,760	VISIBLE STA	CK EMISSIO	NS UNDER N	ORMAL OPE	RATION: <2	0 % OPAC	ITY		
CRITERIA AIR POLLUT				FOR THIS			1. VIII NO.		
	SOURCE OF		D ACTUAL			AL EMSSIONS			
AID DOLLUTANT EMITTED	EMISSION		ROLS/LIMITS)	(BEFORE CONTROLS / LIMITS)		(AFTER CONTROLS / LIMITS)			
AIR POLLUTANT EMITTED PARTICULATE MATTER (PM)	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
PARTICULATE MATTER (PM)	See Emissio	n Calculation	is in Appendi	X B	_				
PARTICULATE MATTER<2.5 MICRONS (PM-4)	 				_				
SULFUR DIOXIDE (SO2)					_				
NITROGEN OXIDES (NOx)									
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COMPOUNDS (VOC)									
LEAD									
OTHER									
HAZARDOUS AIR POLLU				N FOR TH					
	SOURCE OF		EXPECTED ACTUAL (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIO				
HAZARDOUS AIR POLLUTANT AND CAS NO.	EMISSION				TROLS / LIMITS)		ROLS / LIMITS)		
N/A	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
1071									
				i =					
TOXIC AIR POLLUTAI	UT EUROSIA	MIC MEAN	MATION	OD TUIC O	OUDOE				
INDICATE EXPECTED	ACTUAL EN	CEIONIC ACT	EP CONTROL	S / I MAITATI	ONE	The state of the s			
TOXIC AIR POLLUTANT AND CAS NO.	IEF SOURCE		/hr			Ib.	hir		
N/A	LI COOKOL	16	ID/III		lb/day		lb/yr		
	_								
Attachments: (1) emissions calculations and supporting documents:	(2) indiacts = "	augustad -t-t-	al factors!	aabla accord o	the te e t		tere entered to t		
Attachments: (1) emissions calculations and supporting documentation; describe how these are monitored and with what frequency; and (3) des	(2) indicate all re-	quested state at	ia rederal enforc	eable permit lim	iits (ė.g. hours of	operation, emiss	ion rates) and		
COMPLETE THIS FORM AND COMPLETE A	ND ATTACK	APPROP	RIATE B1	THROUGH	B9 FORM I	OR FACH	SOURCE		

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE BITTHROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary



FORM B9 EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate								
EMISSION SOURCE DESCRIPTION: Green Wood Hammermills		EMISSION SOURCE ID NO:						
		CONTROL DEVICE ID NO(S):	N/A					
OPERATING SCENARIO: 1 OF 1	EMISSION POINT (STACK) ID NO(S): EP-6							
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Green wood chips are screened and oversized chips will undergo additional chipping as required.								
MATERIALS ENTERING PROCESS - CONTINUOUS PRO	MAX. DESIGN	REQUESTED						
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)					
Green Wood	ODT	71.71	-					
			-					
	_							
MATERIALS ENTERING PROCESS - BATCH OPERATI	ION	MAX. DESIGN	REQUESTED	CAPACITY				
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (U					
1112	DIVITO	CALAGIT (SITIABATOT)	LIMITATION	MINDATORI				
	_							
	1							
MAXIMUM DES:GN (BATCHES / HOUR):								
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHESA	(R):						
FUEL USED: N/A		IMUM FIRING RATE (MILLION BTU	HR): N/A					
MAX. CAPACITY HOURLY FUEL USE: N/A		REQUESTED CAPACITY ANNUAL FUEL USE: N/A						
COMMENTS:								

FORM B

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division	of Air Quality -	Application 1	or Air Permit	to Construct/	Operate		В	
EMISSION SOURCE DESCRIPTION: Green Wood Direct-Fired Dryer System			EMISSION S	OURCE ID NO	ES-DRYER			
			CONTROL DEVICE ID NO(S):			CD-DC; CD-WESP		
OPERATING SCENARIO1OF	_1 EMISSION POINT (STACK) ID NO(S):			EP-1				
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS Green wood is conveyed to a rotary dryer system. Direct conta by cyclones for bulk particulate removal and additional particular	act heat is provi	ided to the sys	: stem via a 175.	3 mmBtu/hr b	urner system.			
TYPE OF EMISSION SOURCE (CHECK A			ATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):		
Coal,wood,oil, gas, other burner (Form B1) Woodworking (Form B4) Manufact. of chemicals/coatings/inks (Form B7)								
☐ Int.combustion engine/generator (Form B2) ☐ Coating/finishing/printing (Form B5) ☐ Incineration (Form B8)								
☐ Liquid storage tanks (Form B3) ☐ Storage silos/bins (Form B6) ☐ Other (Form B9)								
START CONSTRUCTION DATE: 2012 OPERATION	DATE:	2013	DATE MANU	FACTURED:	2012			
MANUFACTURER / MODEL NO.: Buettner 5x26R			OP. SCHEDUL		R/DAY7_	DAY/WK _52	WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHA	P (SUBPART	?):	MACT (SL	JBPART?):			
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 2	5% MAR	R-MAY 25%	JUN	-AUG 25%	SE	P-NOV 25%		
	VISIBLE STA					% OPA	CITY	
CRITERIA AIR POLLUT	ANT EMISS	IONS INFO	RMATION	FOR THIS	SOURCE			
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIA	L EMSSIONS		
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)	
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
PARTICULATE MATTER (PM)	See Emission	Calculations	in Appendix B					
PARTICULATE MATTER<10 MICRONS (PM ₁₀)								
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})								
SULFUR DIOXIDE (SO2)								
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
LEAD ·								
OTHER								
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INF	ORMATIO	V FOR THIS	S SOURCE			
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	LEMSSIONS		
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTROLS / LIMITS)		
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
	See Emission	Calculations i	n Appendix B					
TOXIC AIR POLLUTAI							19 00077	
INDICATE EXPECTED			ER CONTROL	S / LIMITATIO	NS			
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb	/hr	lb/	day	lb	/yr	
	See Emission	Calculations i	n Appendix B					
Attachments: (1) emissions calculations and supporting documentation describe how these are monitored and with what frequency; and (3) des	(2) indicate all rescribe any monito	equested state a	and federal enfor	ceable permit lir	mits (e.g. hours o	of operation, emi	ssion rates) and	

FORM B1

EMISSION SOURCE (WOOD, COAL, OIL, GAS, OTHER FUEL-FIRED BURNER)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate							B1	
EMISSION SOURCE DESCRIPTION	d Dryer System		EMISSION SOURCE ID NO: ES-DRYER			ES-DRYER		
		[CONTROL DEVICE ID NO(S): CD-DC; CD-WESP					
OPERATING SCENARIO:1OF1			Ī	EMISSION POINT (STACK) ID NO(S): EP-1				
DESCRIBE USE: PROCESS HEAT & SPACE HEAT & ELECTRICAL GENERATION								
d CONTI	d CONTINUOUS USE d STAND BY/EMERGENCY d OTHER (DESCRIBE):							
HEATING MECHANISM:	∮ INDIRECT		DIRECT	\geq				
MAX. FIRING RATE (MMBTU/HOL	JR): 125	5						
WOOD-FIRED BURNER								
WOOD TYPE: ₫ BARK		WET WOO	COC	d DR	Y WOOD	ø	OTHER (DESCRIBE)	
PERCENT MOISTURE OF FUEL:~50%								
FUEL FEED METHOD: Air Swe	ept Fuel Feeders	HEAT TRANS	FER MEDIA:	ø ;	STEAM (AIR		OTHER	
METHOD OF TUBE CLEANING:	Scraping of Burner Floor	CLEANING SC	CHEDULE: A	Annual s	craping of burner	floor		
		Market Street	FIRED BUR			144		
TYPE OF BOILER	IF OTHER DESCR	IBE:						
PULVERIZED OVERFEED STO	KER UNDERFEED	STOKER	SPRE	EADER S	STOKER		FLUIDIZED BED	
☐ WET BED 🔞 UNCONTRO	LED 🛭 🖟 UNCONTROI	LED	d uncontr	ROLLED		ø	CIRCULATING	
☐ DRY BED 🤞 CONTROLLE	D d CONTROLLE	.D	e FLYASH F	REINJEC	CTION	ø	RECIRCULATING	
			NO FLYAS	SH REIN	JECTION			
METHOD OF LOADING:	CYCLONE & HANDE	IRED	d TRAVEL	LING GR	ATE d OTH	HER (C	ESCRIBE):	
METHOD OF TUBE CLEANING:			CLEANING SO	CHEDUL	.E:			
			-FIRED BU	RNER		TE	E MALAS	
TYPE OF BOILER: UTILITY INDUSTRIAL COMMERCIAL RESIDENTIAL								
TYPE OF FIRING: NORMAL TANGENTIAL LOW NOX BURNERS NO LOW NOX BURNER								
METHOD OF TUBE CLEANING: CLEANING SCHEDULE:								
		OTHER FU	EL-FIRED E	BURNE	R			
TYPE OF FUEL:		ENT MOISTURI			IDENITIAL			
TYPE OF BOILER: UTILITY INDUSTRIAL COMMERCIAL RESIDENTIAL								
TYPE OF FIRING: FUEL FEED METHOD:):		
METHOD OF TUBE CLEANING: CLEANING SCHEDULE: FUEL USAGE (INCLUDE STARTUP/BACKUP FUELS)								
	FUEL USA	IGE (INCLUD			KUP FUELS)		
FUEL TYPE	LIMITO	MAXIMUM DESIGN				REQUESTED CA		
	UNITS	CAPACITY (UNIT/HR)			LIMITATION (UN	III/HK)		
Bark/Wet Wood	ton		21					
FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)								
SPECIFIC SULFUR CONTENT ASH CONTEN						NTENT		
FUEL TYPE BTU CONTENT			CONTENT	(% BY WEIGHT) (% BY W		EIGHT)		
Wet Wood Nominal 4200 BTU/lb			BTU/lb		0.011			
SAMPLING PORTS, COMPLIANT	WITH EPA METHOD 1 WIL	L BE INSTALLE	D ON THE ST.	ACKS:	(d YES)	ø	NO	
COMMENTS:								

CONTE	201 DEVICE	0\/0\ 0\IE		RM C4			HOAL
REVISED 12/01/01	ROL DEVICE (,	Plication for Air	•		VICAL)
CONTROL DEVICE ID NO:	CD-DC						
EMISSION POINT (STACK) ID N				S FROM WHICH I	NO.	1 OF 2	ES-DRYER UNITS
MANUFACTURE Lundberg E-Tu	2-6-		MODEL N		110.	1 01 2	UNITS
DATE MANUFACTURED:	De 1107 13			ED OPERATION	DATE: 2012		
	G SCENARIO:			ED START CONS		E.	
	OF 1			REQUIRED (PE			. NO
DESCRIBE CONTROL SYSTEM Three identical simple cyclones Emissions from each the cyclo The parameters presented here	are equipped to the	discharge of t	he rotary	dryer system to	capture bulk PM		V 110
POLLUTANT(S) COLLECTED:			PM	PM ₁₀	PM _{2,5}		
BEFORE CONTROL EMISSION	RATE (LB/HR):						_
CAPTURE EFFICIENCY:			98.5	% 98.5	% 98.5	%	%
CONTROL DEVICE EFFICIENCY	/ :			%	%	%	%
CORRESPONDING OVERALL E	FFICIENCY:			%	%	%	
EFFICIENCY DETERMINATION	CODE:	•					_
TOTAL EMISSION RATE (LB/HR):						_
PRESSURE DROP (IN. H ₂ 0):	MIN MAX	5.0" WA	RNING A	LARM? # YES	# NO		
INLET TEMPERATURE (°F):	MIN MAX	Nominal 400		OUTLET TEMPE	RATURE (°F):	MIN MAX	Nominal 400
INLET AIR FLOW RATE (ACFM):	117,000			BULK PARTICLE	DENSITY (LB/F)	Γ ³): 3.43E-05	
POLLUTANT LOADING RATE (G	R/FT ³ 0.24						
SETTLING CHAMBER			YCLONE			I M	ULTICYCLONE
LENGTH (INCHES):	INLET VELOCITY (F	T/SEC):	95	d CIRCULAR	RECTANGLE	NO. TUBES:	
WIDTH (INCHES):	DIMENSIONS (IN		uctions	IF WET SPRA	AY UTILIZED	DIAMETER OF	TUBES:
HEIGHT (INCHES):	H:	Dd:		LIQUID USED:		HOPPER ASPIR	ATION SYSTEM?
VELOCITY (FT/SEC.):	W:		156"	FLOW RATE (GF		∮ YES	é NO
NO. TRAYS:	De: 79"		312"	MAKE UP RATE	(GPM):	LOUVERS?	
NO. BAFFLES:	D: 156"	S-	_			♦ YES	é NO
	TYPE OF CYCLONE	CONVENT	ONAL	€ HIGH	EFFICIENCY	OTHER	
DESCRIBE MAINTENANCE PRO						PARTICLE SIZE (
Periodic inspection of me	echanical integri	ty during pla	int outa	ges	SIZE	WEIGHT %	CUMULATIVE
as specified by manufact	urer				(MICRONS)	OF TOTAL	%
DESCRIBE INCOMING AIR STRE					0-1		Unknown
The flue gas from the dry					1-10		
three cyclones before ent	_		-	, ,	10-25		
stream will be combined	into a single duo	t and direct	ed to the	e WESP inlet	25-50		
point.					50-100		
					>100		
							TOTAL = 100
DESCRIBE ANY MONITORING E None	DEVICES, GAUGES,	TEST PORTS, I	=1 C :				

Attach Additional Sheets As Necessary

1 Final equipment selection has not yet occurred but will be similar in design to specifications shown.

FORM C2

CONTROL DEVICE (Electrostatic Precipitator)

REVISED 12/01/01	NCDENR/DIV	rision of Air Quality - Appl	ication for Air Permit to Construct/Oper	ate	C2	
CONTROL DEVICE ID NO	CD-WESP		CONTROLS EMISSIONS FROM WHICH	HEMISSION SOURCE ID N	ES-DRYER	
EMISSION POINT (STACE	K) ID NO(S): EP-1		POSITION IN SERIES OF CONTROLS:	NO. 2 OF 2	UNITS	
MANUFACTURER:	Lundberg E-Tube 115719		MODEL NO. Lundberg E	-Tube 115719		
MANUFACTURE DATE:			PROPOSED OPERATION DATE:	2013		
	OPERATING SCENARIO:		PROPOSED START CONSTRUCTION	DATE: TBD		
	OF		P.E. SEAL REQUIRED (PER 2Q .0112)	(d YES)d	NO	
E CONTRACTOR OF THE CONTRACTOR	QUIPMENT SPECIFICATIO	NS	GAS DISTRIBUTION GRIDS: C & Y	ES & NO		
TYPE:	WED 8	DRY (é	SINGLE-STAGE	TWO-STAGE		
TOTAL COLLECTION PLA	ATE AREA (FT ²):	29,904	NO. FIELDS 2 NO. COLLEC	CTOR PLATE PER FIELD:	567 tubes	
COLLECTOR PLATES SIZ	ZE (FT): LENGTH:	WIDTH:	SPACING BETWEEN COLLECTOR PLA	ATES (INCHES):	12" hextube	
TOTAL DISCHARGE ELEC	CTRODE LENGTH(FT):	19"-0"	GAS VISCOSITY (POISE):	2.054E-04 Poise		
NUMBER OF DISCHARGE	E ELECTRODES:	567	NUMBER OF COLLECTING ELECTROP	DE RAPPERS:	none	
MAXIMUM INLET AIR FLO	W RATE (ACFM):	117,000	PARTICLE MIGRATION VELOCITY (FT/	SEC):	0.234	
MINIMUM GAS TREATME	NT TIME (SEC):	2.3	BULK PARTICLE DENSITY (LB/FT3);	45 lb/cu. ft	•	
FIELD STRENGTH (VOLT	S) CHARGING: 83 kVA	COLLECTING: N/A	CORONA POWER (WATTS/1000 CFM)		4000	
ELECTRICAL USAGE (kw.	/HOUR): 141.5					
CLEANING PROCEDURE		₱ PLATE VIBRATING	WASHING OTHER			
OPERATING PARAM	THEODOTAE	DROP (IN. H20): MIN	2" MAX 2" WARNING ALAR	RM? (e YES) e	NO	
RESISTIVITY OF POLLUT	ANT (OHM-CM):	N/A	GAS CONDITIONING: Ø YES NO	TYPE OF AGENT (IF YES)		
INLET GAS TEMPERATUR			OUTLET GAS TEMPERATURE (°F):	180 °F nominal		
VOLUME OF GAS HANDL		117,000	INLET MOISTURE PERCENT:	MIN 40% MAX 50%		
POWER REQUIRE			NAGEMENT SYSTEM USED?	YES ∉ NO		
FIELD NO.	NO. OF SETS	CHARGING	EACH TRANSFORMER (kVA)	EACH RECTIFIER KV A	\ve/Peak Ma Dc	
1	1		118	83 / 1265		
2	1		118	83 / 1265		
POLLUTANT(S) COLLECT	ED: P	M / PM ₁₀ / PM _{2.5}				
BEFORE CONTROL EMIS	SION RATE (LB/HR):	150.00				
CAPTURE EFFICIENCY:		%	%	%	%	
CONTROL DEVICE EFFIC	IENCY:	%	%	%	%	
CORRESPONDING OVER	ALL EFFICIENCY:	%	%	%	%	
EFFICIENCY DETERMINA	TION CODE:					
TOTAL EMISSION RATE (LB/HR):	See calculations in Appen	dix B			
PA PA	ARTICLE SIZE DISTRIBUTION	ON	DESCRIBE STARTUP PROCEDURES:			
SIZE	WEIGHT %	CUMULATIVE	See attached			
(MICRONS)	OF TOTAL	%				
0-1	Unknown		DESCRIBE MAINTENANCE PROCEDUR	RES:		
1-10			See attached			
10-25						
25-50			DESCRIBE ANY AUXILIARY MATERIAL	S INTRODUCED INTO THE	CONTROL	
50-100			SYSTEM:			
>100			NOAH			
	TOTAL = 100					
DESCRIBE ANY MONITOR PLC	RING DEVICES, GAUGES, G	OR TEST PORTS AS ATTA	CHMENTS:			
ATTACH	A DIAGRAM OF THE TOP	VIEW OF THE ESP WITH I	DIMENSIONS (include at a minimum the p	late spacing and wire spacin	g	
		, AND THE RELATIONSHI	P OF THE CONTROL DEVICE TO ITS EF		-	
		Attach Additional	Sheets As Necessary	/41		

Note: Gas conditioning represents evaporative cooling.

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division o		Application f	or Air Permit	to Construct/	Operate		В	
EMISSION SOURCE DESCRIPTION: Eight (8) dry wood ham	mermills		EMISSION S	OURCE ID NO	D:	ES-HM-1 thru 8		
			CONTROLD	EVICE ID NO	(C)·	CD-HM-CYC-1 through 8		
			CONTROLD	EAICE ID NO	(3).	CD-HM-BF1,	2, 3	
OPERATING SCENARIO1OF	1			OINT (STACK	() ID NO(S):	EP-2 through	4	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS								
Dried materials are reduced to the approporitate size needed	for pelletizatio	n using eight o	lry wood hamn	nermills				
TYPE OF EMISSION SOURCE (CHECK A								
	rking (Form B		_		/coatings/inks	(Form B7)		
	finishing/printir			on (Form B8)				
Liquid storage tanks (Form B3)	silos/bins (For	m B6)	Other (Fo	orm B9)				
START CONSTRUCTION DATE: 2012 OPERATION	DATE:	2013	DATE MANU	FACTURED:	2012			
MANUFACTURER / MODEL NO.: Bliss, Model 44-60		EXPECTED	OP. SCHEDUL	.E:24 HF	R/DAY7_	DAY/WK _52	WK/YR	
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESH	AP (SUBPAR	Γ?):	MACT (S	UBPART?):			
		R-MAY 25%		N-AUG 25%		SEP-NOV 25%	%	
EXPECTED ANNUAL HOURS OF OPERATION: 8,760	VISIBLE STA	CK EMISSIO	NS UNDER NO	RMAL OPER	ATION:<20) % OPA	CITY	
CRITERIA AIR POLLUTA	ANT EMISS	IONS INFO	RMATION	FOR THIS	SOURCE			
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS		
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)	
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
PARTICULATE MATTER (PM)	See Emission	Calculations	in Appendix B					
PARTICULATE MATTER<10 MICRONS (PM ₁₀)								
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})								
SULFUR DIOXIDE (SO2)								
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC) LEAD								
OTHER								
HAZARDOUS AIR POLLU	TANT EMIC	CIONIC INIE	ODMATIO	I EOD TUI	COURCE		0.00	
TIAZANDOUS AIN FOLLU				V FUR INI				
	SOURCE OF EMISSION		D ACTUAL		- 1	AL EMSSIONS		
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	ROLS / LIMITS)	(BEFORE CONT		(AFTER CONTROLS / LIMITS)		
THE THE GOOD AIRT OLD TANK AND GAO NO.		Calculations	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
	OCC LIIIISSIOI	Calculations	n Appendix B					
TOXIC AIR POLLUTAN	T EMISSIO	NS INFOR	MATION FO	OR THIS SC	DURCE			
INDICATE EXPECTED								
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/	hr h	lb/d	day	lb/	/yr	
	See Emission	Calculations i	n Appendix B					
Attachments: (1) emissions calculations and supporting documentation; ((2) indicate all re	quested state ar	nd federal enforce	eable permit limi	its (e.g. hours of	operation, emiss	sion rates) and	

describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality	y - Application	for Air Permit to Construct/Op	erate	B9
EMISSION SOURCE DESCRIPTION: Eight (8) dry wood hammermills		EMISSION SOURCE ID NO:	ES-HM-1 through 8	
		CONTROL DEVICE ID NO(S):		nh 8
			CD-HM-BF1 through	
OPERATING SCENARIO:1 OF1		EMICCIONI DOINT (CTACIO ID		
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):		EMISSION POINT (STACK) ID	NO(S): EP-2 the	ougn 4
Dried materials are reduced to the approporitate size nee	eded for pell	etization using eight dry w	ood hammermills.	
=				
MATERIALS ENTERING PROCESS - CONTINUOUS PROC	ESS	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood	ODT	81.71		
	 			
MATERIALS ENTERING PROCESS - BATCH OPERATION	ON	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATC	
MAXIMUM DESIGN (BATCHES / HOUR):	H.			
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/Y	.B/.		
FUEL USED: N/A			E110 IES	
	1	MUM FIRING RATE (MILLION B		
MAX. CAPACITY HOURLY FUEL USE: N/A COMMENTS:	REQUESTED	CAPACITY ANNUAL FUEL USE	E: N/A	
SOMMENTS.				

FORM C4 CONTROL DEVICE (CYCLONE, MULTICYCLONE, OR OTHER MECHANICAL) NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate C4 CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): CONTROL DEVICE ID NO: CD-HM-CYC-1 thru -8 ES-HM-1 through-8 EMISSION POINT (STACK) ID NO(\$): POSITION IN SERIES OF CONTROLS UNITS MANUFACTURER: Aircon AC-96 MODEL NO: AC-96 DATE MANUFACTURED PROPOSED OPERATION DATE: 2013 **OPERATING SCENARIO:** PROPOSED START CONSTRUCTION I TBD P.E. SEAL REQUIRED (PER 2Q .0112)? YES ė NO DESCRIBE CONTROL SYSTEM One cyclone is equipped for each hammermill to capture bulk PM emissions. The emissions from the cyclone are then routed to one of three bagfilters. PM_{2.5} POLLUTANT(S) COLLECTED: PM₁₀ BEFORE CONTROL EMISSION RATE (LB/HR): See calculations in Appendix B CAPTURE EFFICIENCY: 98.0% % 98.0% % 98.0% % CONTROL DEVICE EFFICIENCY: CORRESPONDING OVERALL EFFICIENCY: EFFICIENCY DETERMINATION CODE: TOTAL EMISSION RATE (LB/HR): See calculations in Appendix B PRESSURE DROP (IN. H-0): WARNING ALARM? 6.0 e YES INLET TEMPERATURE (°F): MAX OUTLET TEMPERATURE (°F): **Ambient** MAX Ambient INLET AIR FLOW RATE (ACFM): 15,000 each cyclone BULK PARTICLE DENSITY (LB/FT3): 1.43E-03 POLLUTANT LOADING RATE (GR/FT3) 10 gr/cf inlet SETTLING CHAMBER CYCLONE MULTICYCLONE LENGTH (INCHES) INLET VELOCITY (FT/SEC): 114.65 @ CIRCULAR RECTANGLE NO. TUBES: WIDTH (INCHES): DIMENSIONS (INCHES) See instructions IF WET SPRAY UTILIZED DIAMETER OF TUBES: HEIGHT (INCHES) 60 Dd: H: 20 LIQUID USED: HOPPER ASPIRATION SYSTEM? VELOCITY (FT/SEC.) W: 32.25 Lb: 60 FLOW RATE (GPM): 4 YES e NO 45 Lc: NO. TRAYS: De: 120 MAKE UP RATE (GPM) LOUVERS? NO. BAFFLES: D: 64.75 YES TYPE OF CYCLONE **♦** CONVENTIONAL # HIGH EFFICIENCY & OTHER DESCRIBE MAINTENANCE PROCEDURES: PARTICLE SIZE DISTRIBUTION Periodic inspection of mechanical integrity during plant outages SIZE CUMULATIVE as specified by manufacturer (MICRONS) OF TOTAL DESCRIBE INCOMING AIR STREAM: Unknown The material will be pulled through the cyclone under negative pressure. The 1-10 cyclone will separate the material from the air stream and the air will 10-25 discharge to an associated bag filter prior to being discharge to atmosphere 25-50 via a discharge stack common to all fitlers in this area. 50-100 >100 TOTAL = 100 DESCRIBE ANY MONITORING DEVICES, GAUGES, TEST PORTS, ETC: None

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

	M C1 E (FABRIC FILTER)				
REVISED 12/01/01 NCDENR/Division of Air Quality -				C1	
CONTROL DEVICE ID NO: CD-HM-BF-1 and 2 CONTROLS EMIS EMISSION POINT (STACK) ID NO(S): EP-2 POSITION IN SER	SIONS FROM WHICH EMISSION S		ES-HM-1 through	h 6	
	IES OF CONTROLS	NO.	2 OF 2	UNITS	
MANUFACTURER: Aircon DATE MANUFACTURED:	MODEL NO: Aircon 16 RAI				
OPERATING SCENARIO:	PROPOSED OPERATION DATE: PROPOSED START CONSTRUCT	2013	TBD		
1 OF 1.	P.E. SEAL REQUIRED (PER 2Q .0		YES	é NO	
DESCRIBE CONTROL SYSTEM:	I .E. OEAE NEGOINED I EN 20.0	112)	TLO)	8 110	
Three (3) bagfilters will be utilized for emission control on eight hammermill cyclone: 7 and 8 cyclones will be routed routed to the third bagfilter along with hammermill ar		1, HMs 4-6 vent th	rough bagfilter 2	and the	
POLLUTANT(S) COLLECTED:	PM PM-10	PM-2,5			
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculations in Appendix B				
CAPTURE EFFICIENCY:	~99.9 % ~99.9	% -99.9	%	%	
CONTROL DEVICE EFFICIENCY:	%	%	%	%	
CORRESPONDING OVERALL EFFICIENCY:	%	%	%	%	
EFFICIENCY DETERMINATION CODE:		-			
TOTAL EMISSION RATE (LB/HR):	See calculations in Appendix B				
PRESSURE DROP (IN. H ₂ 0): MIN: MAX: 6" GAUGE?	YES NO W	ARNING ALARM?	YES &	NO	
BULK PARTICLE DENSITY (LB/FT³): 1.43E-05	INLET TEMPERATURE (°F): 12	0			
POLLUTANT LOADING RATE: 0.1 gr/cf inlet & LB/HR GR/P3	OUTLET TEMPERATURE (°F): 10	0			
INLET AIR FLOW RATE (ACFM): 45,000	FILTER MAX OPERATING TEMP.	(°F): N/A			
NO. OF COMPARTMENTS: 1 NO. OF BAGS PER COMPARTME	ENT: 412	LENGTH OF BAG	(IN.): 144		
DIAMETER OF BAG (IN.): 5.75 DRAFT: ₫ INDUCED/NEC	G. FORCED/POS	FILTER SURFACE AREA (FT2): 6,250			
AIR TO CLOTH RATIO: 7.20 FILTER MATERIAL: Polyester or	equivalent				
DESCRIBE CLEANING PROCEDURES:			LE SIZE DISTRI		
AIR PULSE SONIC		SIZE	WEIGHT %	CUMULATIVE	
€ REVERSE FLOW SIMPLE BAG C		(MICRONS)	OF TOTAL	%	
♠ MECHANICAL/SHAKER ♠ RING BAG CO ♣ ARING BAG CO ♣ ARI	DLLAPSE	0-1	Unk	nown	
⊕ OTHER		1-10			
DESCRIBE INCOMING AIR STREAM:		10-25			
The air stream will contain wood dust particles. Larger particles will have been		25-50			
removed by the upstream cyclone.		50-100 >100			
		>100	TOTA	L = 100	
METHOD FOR DETERMINING WHEN TO CLEAN:			1017	L - 100	
AUTOMATIO & TIMED & MANUAL					
METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:					
₫ ALARM ₫ INTERNAL INSPECTION ₫ VISIBLE EMISS	ION & OTHER				
SPECIAL CONDITIONS: None # MOISTURE BLINDING # CHEMICAL RESISTIVITY	OTHER				
EXPLAIN:	8 OTHER				
DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations					

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

Final equipment selection has not yet occurred but will be similar in design to specifications shown.

FORM C1 CONTROL DEVICE (FABRIC FILTER) REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate C1 CONTROL DEVICE ID NO: EMISSION POINT (STACK) ID NO(S) CD-HM-BF-3 CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-HM-7, HM-8, NDS, DLC POSITION IN SERIES OF CONTROLS NO. 2 OF 2 UNITS FP.2 MANUFACTURER: MODEL NO: 16 RAB 412-10 DATE MANUFACTURED PROPOSED OPERATION DATE: 2013 **OPERATING SCENARIO:** PROPOSED START CONSTRUCTION DATE: TBD P.E. SEAL REQUIRED (PER 2Q .0112)? e YES € NO DESCRIBE CONTROL SYSTEM: Three (3) bagfilters will be utilized for emission control on seven of the hammermill cyclones. HMs 1 - 3 vent through bagfilter 1, HMs 4-6 vent through bagfilter 2 and the 7 and 8 cyclones will be routed routed to the third bagfilter along with hammermill area emissions. POLLUTANT(S) COLLECTED: PM PM-10 PM-2.5 BEFORE CONTROL EMISSION RATE (LB/HR): See calculations in Appendix B CAPTURE EFFICIENCY: ~99.9 % ~99.9 % ~99.9 % CONTROL DEVICE EFFICIENCY: CORRESPONDING OVERALL EFFICIENCY: EFFICIENCY DETERMINATION CODE: TOTAL EMISSION RATE (LB/HR): See calculations in Appendix B PRESSURE DROP (IN. H20): MIN: NO NO YES & NO MAX: 6" GAUGE? YES BULK PARTICLE DENSITY (LB/FT3 1,43E-05 INLET TEMPERATURE (°F): POLLUTANT LOADING RATE: & GRAP 0.1 gr/cf inlet & LB/HR OUTLET TEMPERATURE (°F): 100 INLET AIR FLOW RATE (ACFM) FILTER MAX OPERATING TEMP. (°F): N/A NO. OF COMPARTMENTS: 1 NO. OF BAGS PER COMPARTMENT: 412 LENGTH OF BAG (IN.): 144 DIAMETER OF BAG (IN.): 5.75 DRAFT: INDUCED/NEG. FORCED/POS FILTER SURFACE AREA (FT2) WOVEN FELTED PARTICLE SIZE DISTRIBUTION AIR TO CLOTH RATIO: 7.20 FILTER MATERIAL: Polyester or equivalent # WOVEN DESCRIBE CLEANING PROCEDURES: AIR PULSE # SONIC SIZE WEIGHT % CUMULATIVE REVERSE FLOW (MICRONS) SIMPLE BAG COLLAPSE OF TOTAL MECHANICAL/SHAKER RING BAG COLLAPSE 0-1 Unknown **₫** OTHER 1-10 DESCRIBE INCOMING AIR STREAM: 10-25 The air stream will contain wood dust particles. Larger particles will have been 25-50 removed by the upstream cyclone. The filters will discharge to a common stack. This 50-100 stack will also accept the discharge air flow from a third bag filter (CD-HMA-BF) >100 (located in this area.) TOTAL = 100 METHOD FOR DETERMINING WHEN TO CLEAN: **CAUTOMATIO ₫** TIMED & MANUAL METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS: ALARM **♦** OTHER SPECIAL CONDITIONS: None MOISTURE BLINDING **♦ CHEMICAL RESISTIVITY** ਭੇ OTHER EXPLAIN: DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations

Attach Additional Sheets As Necessary

¹Final equipment selection has not yet occurred but will be similar in design to specifications shown.

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):



SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of	of Air Quality -	Application f	or Air Permit	to Construct/	Operate		В
EMISSION SOURCE DESCRIPTION: Nuisance Dust System			EMISSION S	OURCE ID N	0:	ES-NDS	
			CONTROL D	EVICE ID NO	(S):	CD-HM-BF-3	
OPERATING SCENARIO1OF	_1		EMISSION P	OINT (STACK	() ID NO(S):	EP-2	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS Hammermill area dust from the hammermill and screening op 3) to control particulate matter emissions.	•		•	be vented to t	he hammermil	l bagfilter No. 3	(CD-HM-8F-
TYPE OF EMISSION SOURCE (CHECK A	ND COMPLET orking (Form B4				FOLLOWING		
	finishing/printir silos/bins (Forr		Other (Fo	on (Form B8)			
START CONSTRUCTION DATE: 2013 OPERATION	I DATE:	2013	DATE MANU	FACTURED:	2012		
MANUFACTURER / MODEL NO.:		EXPECTED	OP. SCHEDUL	.E:24 HI	R/DAY7_	DAY/WK _52	WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESH	AP (SUBPAR	Γ?):	MACT (S	SUBPART?):		
		R-MAY 25%		N-AUG 25%		SEP-NOV 25%	6
	VISIBLE STA) % OPA	CITY
CRITERIA AIR POLLUT			RMATION	FOR THIS	SOURCE		
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIA	LEMSSIONS	
	EMISSION		ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTR	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emission	Calculations	in Appendix B				
PARTICULATE MATTER OF MICRONS (PM10)						-	
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5}) SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
	-						
CARBON MONOXIDE (CO)	-						
VOLATILE ORGANIC COMPOUNDS (VOC) LEAD	-						
OTHER						 	
HAZARDOUS AIR POLLU	TANT FMIS	SIONS INF	ORMATIO	N FOR THI	SSOURCE		
TIAZARDOOD AIR T CEEC	SOURCE OF		D ACTUAL	TON III		_ EMSSIONS	
	EMISSION		ROLS / LIMITS)	(REFORE CON	TROLS / LIMITS)	(AFTER CONTE	POLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	ib/hr	tons/yr
THE RESIDENCE OF THE PART OF T			in Appendix B	10/111	toris/yi	15/111	toris/yi
	Oce Lillission	Calculations	In Appendix B				
TOXIC AIR POLLUTAI	IT EMISSIO	NS INFOR	MATION FO	OR THIS S	OURCE		
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		/hr		day	lb/	'vr
			in Appendix B	107	aay	1.27	,
	GGG ZITTIGGIGT	Galodiadorio	птирропал в				
Attachments: (1) emissions calculations and supporting documentation;	(2) indicate all re	quested state a	nd federal enforc	eable permit lim	nits (e.g. hours of	operation, emiss	sion rates) and
describe how these are monitored and with what frequency; and (3) des	cribe any monito	ring devices, ga	uges, or test port	s for this source	e.	•	,

EMISSION SOURCE (OTHER)

MISSION SOURCE DESCRIPTION: Nuisance Dust System/Hammermi				
	II Area	EMISSION SOURCE ID NO:	E\$-NDS	
		CONTROL DEVICE ID NO(S):	CD-HM-BF-3	
PERATING SCENARIO:1 OF1		EMISSION POINT (STACK) ID N	O(S): EP-2	
ESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):		LIMIOGIOIA I GITA (GTAGIA) ID IA	O(0). LI 2	
ammermill area dust from the hammermill and screening	nonerations	and dry line conveyor tran	sfer will be vente	to the
ammermill bagfilter No. 3 (CD-HM-BF-3) to control partic	ulate matte	r emissions.		
MATERIALS ENTERING PROCESS - CONTINUOUS PROCE		MAX. DESIGN	REQUESTED	
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(L	JNIT/HR)
Dried Wood	ODT	81.71		
MATERIALS ENTERING PROCESS - BATCH OPERATIO	N	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UN	
		ì	, , ,	,
		1		
: : : : : : : : : : : : : : : : : : :				
XIMUM DESIGN (BATCHES / HOUR):				
	(BATCHES/Y	₹):		
AXIMUM DESIGN (BATCHES / HOUR): EQUESTED LIMITATION (BATCHES / HOUR): USED: N/A		R): MUM FIRING RATE (MILLION BT	J/HR): N/A	
EQUESTED LIMITATION (BATCHES / HOUR): JEL USED: N/A	TOTAL MAXIN			

Jan - See Jan -

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division	of Air Quality -	Application f	or Air Permit	to Construct/	Operate		В
EMISSION SOURCE DESCRIPTION: Pellet coolers			EMISSION S	OURCE ID NO	O:	ES-CLR 1 thr	rough 6
			CONTROL D	EVICE ID NO	(S):	CD-CLR-C1 t	through 6
OPERATING SCENARIO1OF	1		EMISSION P	OINT (STACK	() ID NO(S):	EP-10 through	h 15
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS Six pellet coolers follow the pellet presses to cool the newly for):				
TYPE OF EMISSION SOURCE (CHECK A	AND COMPLET	E APPROPRI	IATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):	
	orking (Form B4				s/coatings/inks		
☐ Int.combustion engine/generator (Form B2) ☐ Coating/	/finishing/printin	g (Form B5)	Incinerati	ion (Form B8)			
Liquid storage tanks (Form B3)	silos/bins (Forr	m B6)	Other (Fo				
START CONSTRUCTION DATE: 2012 OPERATION	N DATE:	2013	DATE MANU		2012)	
MANUFACTURER / MODEL NO.: Kahl Press 60-1250	Ditte.		OP. SCHEDUL			DAY/WK 52	WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHA	AP (SUBPART			JBPART?):	DAIMIN _C_	4910111
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 2		R-MAY 25%		I-AUG 25%		EP-NOV 25%	
	VISIBLE STA						
CRITERIA AIR POLLUT						7, 0,	
	SOURCE OF		D ACTUAL			L EMSSIONS	
	EMISSION	1	ROLS / LIMITS)	/RFFORE CON	ITROLS / LIMITS)	1	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	Ib/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)		Calculations i		10	toriory.	167.11	torrary:
PARTICULATE MATTER<10 MICRONS (PM ₁₀)			17.4		†		
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)					 		
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INF	ORMATIO	V FOR THIS	SOURCE		
	SOURCE OF		D ACTUAL			L EMSSIONS	
=	EMISSION		ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTROLS / LIMITS)	
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
THE OWN THE PARTY OF THE PARTY		Calculations i		80/111	tonory	137111	(Ulia/yi
	Occ Limone.	Calculations.	Appendix		—		
					 		
					\vdash		
TOXIC AIR POLLUTAI	NT EMISSIC	NS INFOR	MATION FO	OR THIS SO	DURCE	ALM STU	
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		/hr		day	- Ih	/yr
TONIO AIRT CELOTIATI AIRO CAO ITO		s Calculations			uay	ID/	/уг
	Gee Lillission	5 Calculations	in Appendix B				
	 						
	 			-			
Asset Control (A) control (A) and a set of a set	121 1 12 13 11 11			1.1			
Attachments: (1) emissions calculations and supporting documentation, describe how these are monitored and with what frequency; and (3) des	; (2) indicate all re scribe any monito	∍quested state a ring devices, ga	and federal enford uges, or test por	ceable permit lin	nits (e.g. hours o e.	of operation, emis	ssion rates) and

EMISSION SOURCE (OTHER)

EMISSION SOURCE DESCRIPTION: Pellet coolers OPERATING SCENARIO:1 OF1			ate	B9
OPERATING SCENARIO:1 OF1		EMISSION SOURCE ID NO:	ES-CLR 1 through 6	
OPERATING SCENARIO:1 OF1		CONTROL DEVICE ID NO(S):	CD-CLR-1 through 6	
		EMISSION POINT (STACK) ID N	O(S): EP-10 ti	nrough 15
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):				
Six pellet coolers follow the pellet presses to cool the new	ly formed p	ellets down to an acceptabl	e storage tempe	rature.
MATERIALS ENTERING PROCESS - CONTINUOUS PROCE	ESS	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Wood Pellets	ODT	81.71		
r -			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
MATERIALS ENTERING PROCESS - BATCH OPERATIO	N	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UI	
			•	
<				
		İ		
MAXIMUM DESIGN (BATCHES / HOUR):				
	(BATCHES/Y	'R)·		
		MUM FIRING RATE (MILLION BT	J/HR): N/A	
		CAPACITY ANNUAL FUEL USE:	N/A	
	INLIGOLOTEL	CAPACITT ANNOAL FULL USE.		

CONTI	ROL DEVIC	E (CY)	_	ORM			OTHER	MECI	HANICA	AI V	
REVISED 12/01/01		-	ion of Air Qual							·-,	C4
CONTROL DEVICE ID NO: CD-CLR-				•			MISSION SOU	<u> </u>		SE CLEAN	11,511.6
EMISSION POINT (STACK) ID NO(S):		15	POSITION IN				NO.	1	OF 1	UNITS	rougn 6
MANUFACTURER: Aircon HE54	Er - ro anough	-	I CONTON IN	MODEL N		NIKOLO		_	01 .	UNITS	
DATE MANUFACTURED:						PERATION D	Aircon H	E34	2013		
	G SCENARIO:						TRUCTION DAT	TE:	2013		
1	OF 1						R 2Q .0112)?	1 12.	YES) I NO	
DESCRIBE CONTROL SYSTEM: Six (6) Identical high efficiency cyclo cyclone. The cyclones will operate u	nes are to be use nder negative pro	d to capt essure.	ure bulk PM en					ooler v		e dedicated	
POLLUTANT(S) COLLECTED:				PM		PM ₁₀	PM _{2,5}			_	
BEFORE CONTROL EMISSION RATE	(LB/HR):			See Emis	sions	Calculation	s in Appendix I	В .			
CAPTURE EFFICIENCY:				90+	%	90+	% 90	+ %		%	
CONTROL DEVICE EFFICIENCY:					%		%	%		%	
CORRESPONDING OVERALL EFFICII	ENCY:				%		%	_%		_%	
EFFICIENCY DETERMINATION CODE	:							_ 5		_	
TOTAL EMISSION RATE (LB/HR):				See Emis	sions	Calculation	s in Appendix I	3			
PRESSURE DROP (IN. H ₂ 0): MIN	MAX 6.0'	,	WARNING ALA	RM?		é YES	₫ NO				
INLET TEMPERATURE (°F): MIN	MAX		Ambient		OUTL	ET TEMPE	RATURE (°F):	MIN	MAX	Ambient	
INLET AIR FLOW RATE (ACFM):	21,000 each				BULK	PARTICLE	DENSITY (LB/F	T ³):	2.86E-05		
POLLUTANT LOADING RATE (GR/FT):	0.	2								
SETTLING CHAMBER			CY	CLONE					N	IULTICYCLONE	
LENGTH (INCHES):	INLET VELOCIT	Y (FT/SE	C):	94.75	é C	IRCULAR 6	RECTANGLE	NO.	TUBES:		
WIDTH (INCHES):	DIMENSIO	NS (INCH	(IES) See instruc	ctions	IF	WET SPRA	Y UTILIZED	DIAM	TETER OF	TUBES:	
HEIGHT (INCHES):	H:	38	Dd:	22	LIQUI	D USED:		HOP	PER ASPIR	ATION SYSTEM	vI?
VELOCITY (FT/SEC.):	W:	25	Lb:	74.25	FLOV	V RATE (GP	M):	e	YES	₫ NO	
NO. TRAYS:	De:	32	Lc:	84.5	MAKE	UP RATE	GPM):	LOU	VERS?		
NO. BAFFLES:	D:	54	S:	44.38	L			•	YES	₫ NO	
	TYPE OF CYCLO	ONE:	€ CONVEN	TIONAL		HIGH E	FFICIENCY		OTHER		
DESCRIBE MAINTENANCE PROCEDU										DISTRIBUTION	
Periodic inspection of mechanical into as specified by manufacturer	egrity during plai	nt outage	S				SIZE (MICRONS)		IGHT % TOTAL		LATIVE %
DESCRIBE INCOMING AIR STREAM:							0-1			Unknown	
The cyclones used for particulate cap	ture the pellet co	olers wil	l be ducted to				1-10				
a discharge stack. The stack will be o	common to all co	oler aspí	ration systems.			Ī	10-25				
							25-50				
						1	50-100				
						Ī	>100				
						1		1		TOTAL = 100	
DESCRIBE ANY MONITORING DEVIC	ES, GAUGES, TE	ST PORT	S, ETC:								
None											

ON A SEPARATE PAGE, ATTACH A DIAGRAM OF THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

1 Final equipment selection has not yet occurred but will be similar in design to specifications shown.

FORM B SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

EMISSION SOURCE DESCRIPTION: OF CONTROL DEVICE DID NO; CENTRES SEVERS OF CONTROL DEVICE DID NO; CENTRES SEVERS OF EMISSION SOURCE (DEVICE DID NO; CENTRES SEVERS OF EMISSION SOURCE (DEVICE DID NO; CENTRES SEVERS OF EMISSION SOURCE (DEVICE DID NO; CENTRES SEVERS DEPGREE NO POINT (STACK; ID NO;S); EP-3 DESCRIBE NO POINT (STACK; ID NO;S); EP-3 EMISSION SOURCE (DEVICE DID NO;S); DEVICE DID NO; EMISSION SOURCE (DEVICE DID NO;S); EP-3 EMISSION SOURCE (DEVICE DID NO;S); DEVICE DID NO;S); EP-3 EMISSION SOURCE (DEVICE DEVINE) EP-3 EMISSION SOURCE (DEVICE DID NO;S); EP-3 EMISSION SOURCE (DEVICE	REVISED 12/01/01 NCDENR/Divisio	on of Air Quality -		for Air Permit		t/Operate	,	В
Pellet Mill Feed Silo CONTROL DEVICE ID NO(S): CD-PMFS-BV DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): A pellet press silo stores dried ground wood prior to transport to the pellet presses. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE A PPROPRIATE FORM B1-B8 ON THE FOLLOWING PAGES): Coal,wood, oil, gas, other burner (Form B1)			- de le in e a tre e i				FS-DMFS	
OPERATING SCENARIO 1 OF 1 EMISSION POINT (STACK) ID NOIS): EP-3 DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): A pellet press silo stores dried ground wood prior to transport to the pellet presses. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): □ Coal,wood.oil, gas, other burner (Form B1) □ Woodworking (Form B4) □ Indicambation (Form B6) □ Indicambation (Form B7) □ Indicambation (Form B								V
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM): A pellet press silo stores dried ground wood prior to transport to the pellet presses. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): Coal, wood, ali, gas, other burner (Form B1)		1						
A pellet press silo stores dried ground wood prior to transport to the pellet presses. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B8 ON THE FOLLOWING PAGES): Onlywood, oil, gas, other burner (Form B1) Woodworking (Form B4) Manufact. of chemicals/coatings/inks (Form B7) Liquid storage tanks (Form B3) Storage silos/bins (Form B6) Other (Form B8) Other (Fo			OW DIAGRA	MI.	OIITI (OIITO	ry ib itoloj.	E1 -0	
TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM 81-89 ON THE FOLLOWING PAGES): Coal wood, all, gas, other burner (Form 81) Woodworking (Form 84) Menufact of chemicals/coatings/inks (Form 87) Int. combustion engine/generator (Form 82) Coating/finishing/printing (Form 85) Chemicals/coatings/inks (Form 87) Liquid storage tanks (Form 83) Storage silosbinis (Form 85) Other (Form 88) Other (
□ Coal-wood,oil, gas, other burner (Form B1) □ Moodworking (Form B4) □ Manufact, of chemicals/coatings/inks (Form B7) □ Intonomulation engine/generator (Form B2) □ Coating/finishing/printing (Form B5) □ Other (Form B9) □ Other	, , , , , , , , , , , , , , , , , , , ,			-				
□ Coal-wood,oil, gas, other burner (Form B1) □ Moodworking (Form B4) □ Manufact, of chemicals/coatings/inks (Form B7) □ Intonomulation engine/generator (Form B2) □ Coating/finishing/printing (Form B5) □ Other (Form B9) □ Other								
□ Coal-wood,oil, gas, other burner (Form B1) □ Moodworking (Form B4) □ Manufact, of chemicals/coatings/inks (Form B7) □ Intonomulation engine/generator (Form B2) □ Coating/finishing/printing (Form B5) □ Other (Form B9) □ Other	TYPE OF EMISSION SOURCE (CHECK	AND COMPLET	E APPROPR	IATE FORM B	1-B9 ON TH	E FOLLOWING	3 PAGES):	
□ Under (Form B9) □ START CONSTRUCTION DATE: □ OFERATION DATE: □ MANUFACTURER / MODEL NO. □ Laidig \$33								
□ Under (Form B9) □ START CONSTRUCTION DATE: □ OFERATION DATE: □ MANUFACTURER / MODEL NO. □ Laidig \$33	Int.combustion engine/generator (Form B2) Coat	ting/finishing/printin	a (Form B5)	☐ Incinerat	tion (Form B8)		
START CONSTRUCTION DATE: OPERATION DATE: 2013 DATE MANUFACTURED: MANUF								
MANUFACTURER / MODEL NO.: Laidig 533 [EXPECTED OP SCHEDULE: 24 HR/DAY 7 DAY/NK 52 WK/YR STHIS SOURCE SUBJECT TO? NSPS (SUBPART?): NSHAP (SUBPARTATION: <20 % OPACITY (S								
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): PERCENTAGE ANNUAL THROUGHPUT (95). DECFEE 25% MARMAY 25% SEP-NOV 25% EXPECTED ANNUAL HOURS OF OPERATION 8,760 VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20 % OPACITY CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) LAFTER CONTROLS / LIMITS Ibb/r tons/yr Ibb/r tons/yr PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER 10 MIGRONS (PM ₁₋₂) SULFUR DIOXIDE (802) NITROGEN OXIDES (NOX) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE EXPECTED ACTUAL (BEFORE CONTROLS / LIMITS) LIMIT tons/yr FACTOR SOURCE OF EXPECTED ACTUAL (BFORE CONTROLS / LIMITS) LAFTER CONTROLS / LIMITS LAFTER CONTROLS / LIMI							DAY/WK !	2 WKMR
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 25% MAR-MAY 25% JUN-AUG 25% SEP-NOV 25% EXPECTED ANNUAL HOURS OF OPERATION 5.00 (VISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: <20 % OPACITY CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B PARTICULATE MATTER (PM) See Emission Calculations in Appendix B SULFUR DIXIDE (SO2) NITROGEN OXIDES (NOX) SULFUR DIXIDE (SO2) SULFUR DIXIDE (SO2) NITROGEN OXIDES (NOX) SULFUR DIXIDE (SO2) SULF								- 1777
EXPECTED ANNUAL HOURS OF OPERATION 8,760 IVISIBLE STACK EMISSIONS UNDER NORMAL OPERATION: 220 % OPACITY CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION FACTOR 10 Ib/In tonsyly 1 Ib/In tons	PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEE						25%	
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL EMISSION FACTOR FACTOR PARTICULATE MATTER (PM) PARTICU	EXPECTED ANNUAL HOURS OF OPERATION 8	760 VISIBLE STA	CK EMISSIC	NS UNDER N	ORMAL OPE	RATION: <		CITY
SOURCE OF EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMI	CRITERIA AIR POLLU	JTANT EMISS	ONS INFO	RMATION	FOR THIS	SOURCE		THE PARTY
AR POLLUTANT EMITTED FACTOR Ib/fir Ions/yr					T T		L EMSSIONS	
PARTICULATE MATTER (PM) PARTICULATE MATTER (PM) PARTICULATE MATTER (10 MICRONS (PM; 1) PARTICULATE MATTER (10 MICRONS (PM; 2) PARTICULATE MATTER (10 MICRONS (PM; 2) SULFUR DIOXIDE (SO2) NUTROGEN OXIDES (NOx) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE EMISSION FACTOR SOURCE OF EXPECTED ACTUAL (AFTER CONTROLS / LIMITS) ID/Int Itons/yr iD/Int It		EMISSION	(AFTER CON	TROLS / L:MITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
PARTICULATE MATTER<10 MICRONS (PM;) PARTICULATE MATTER 2.5 MICRONS (PM;) PARTICULATE MATTER 2.5 MICRONS (PM;) SULFUR DIOXIDE (SO2) NITROGEN OXIDES (NOx) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE POTENTIAL EMISSION FACTOR Ib/hr tons/yr i	AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER <2.5 MICRONS (PM; a) SULFUR DIOXIDE (SQ2) NITROGEN OXIDES (NOx) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) ID/Inr tons/yr	PARTICULATE MATTER (PM)	See Emissio	n Calculatio	ns in Appendi	xВ			2
SULFUR DIOXIDE (SO2) NITROGEN OXIDES (NOX) CARBON MONOXIDES (NOX) CARBON MONOXIDES (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EXPECTED ACTUAL EMISSION FACTOR Ib/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr Ib/hr tons/yr lb/hr tons/yr lb/hr tons/yr ID/hr tons/yr lb/hr tons/yr lb/hr tons/yr ID/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr ID/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr lb/hr tons/yr ID/hr tons/yr lb/hr tons/yr lb								
NITROGEN OXIDES (NOx) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION FACTOR HAZARDOUS AIR POLLUTANT AND CAS NO. N/A ID/Inr tons/yr ib/rr ib/day ib/yr Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g., hours of operation, emission rates) are								
CARBON MONOXIDÉ (CO) VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION (AFTER CONTROLS / LIMITS)								
VOLATILE ORGANIC COMPOUNDS (VOC) LEAD OTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION (AFTER CONTROLS / LIMITS) EMISSION FACTOR N/A FACTOR ID/Inr tons/yr								
DTHER HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION (AFTER CONTROLS / LIMITS) (BEFORE CONTRO	CARBON MONOXIDE (CO)							
Affachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g., hours of operation, emission rates) are	VOLATILE ORGANIC COMPOUNDS (VOC)							
HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS / LIMI								
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EMISSION (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER C	HAZARDOUS AIR POL				N FOR THE			
HAZARDOUS AIR POLLUTANT AND CAS NO. N/A TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO. EF SOURCE ID/hr Ib/hr Ib								
N/A TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO. EF SOURCE Ib/hr Ib/day Ib/yr N/A Affachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g., hours of operation, emission rates) are	HAZADDONG AID DON I WEARE AND GAO NO							
TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO. EF SOURCE Ib/hr Ib/day Ib/yr Aftachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g., hours of operation, emission rates) are		FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.	N/A	_						
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.				+	-			
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.		_				-		
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.								
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.			-			_		
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.					-	-		
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.				_		!		
INDICATE EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT AND CAS NO.	TOXIC AIR POLLUT	ANT EMISSIO	NS INFOR	MATION FO	OR THIS S	OURCE		
TOXIC AIR POLLUTANT AND CAS NO. EF SOURCE Ib/hr Ib/day Ib/yr N/A Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are	INDICATE EXPECT	ED ACTUAL EMIS	SIONS AFT	ER CONTROL	S/LIMITATIO	ONS		
N/A Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g., hours of operation, emission rates) are	TOXIC AIR POLLUTANT AND CAS NO.						lb.	fur
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are					120		·	.,.
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are								
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are								
Aftachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are			5					
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are								
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) are								
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) ar								
describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.	Attachments: (1) emissions calculations and supporting documentat	tion; (2) indicate all red	quested state a	nd federal enforc	eable permit lin	nits (e.g. hours of	operation, emis	sion rates) and

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary

FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	NCDENR/Divi	sion of Air Quality - Ap	plicatio	n for Air Permit to Co	onstruct/Operate		B6
EMISSION SOURCE DESCRIPTION: Pellet Mill Feed Silo				EMISSION SO	ES-PMFS		
				CONTROL DI	CD-PMFS-B\	,	
						EP-3	
DESCRIBE IN DETAIL THE PROCESS	S (ATTACH FLO	W DIAGRAM):					
A pellet press silo stores drie	d ground wood	prior to transport to th	e pelle	t presses.			
MATERIAL STORED: Pellet Mill Fee	d Material			DENSITY OF MATER	PIAL /I B/FT31· A	10	
	C FEET:			TONS:	NAC (CDA 15).	+0	
DIMENSIONS (FEET) HEIGH		DIAMETER:	(OR)	LENGTH:	WIDTH: HEIGH	IT:	
ANNUAL PRODUCT THROUGHP		ACTUAL:	()		SIGN CAPACITY:		
PNEUMATICALLY FILLED		MECHANICA	LLY FI	LLED		D FROM	
BLOWER	0	SCREW CONVEYOR			RAILCAR		
€ COMPRESSOR	(d)	BELT CONVEYOR		MOTOR HP:	d TRUCK		
Ø OTHER:	e e	BUCKET ELEVATOR			STORAGE PILE		
		OTHER:			OTHER	Conveyor	
NO. FILL TUBES:							
MAXIMUM ACFM:							
MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UN	LOADED FROM	1 SILO?					
MAXIMUM DESIGN FILLING RATE OF	MATERIAL (TO	NS/HR):	105				
MAXIMUM DESIGN UNLOADING RAT	<u> </u>		105				
COMMENTS:							
		ttach Additional	A 1	4- 4- 11			

Attach Additional Sheets As Necessary

FORM C1 CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate									
CONTROL DEVICE ID NO: CD-PMFS-BV CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PMFS									
EMISSION POINT (STACK) ID NO(S): EP-3 POSITION IN SERII			NO.	1 OF '	UNITS				
MANUFACTURER: Aircon BV25-6	MODEL NO:	Aircon BV25-6							
DATE MANUFACTURED: PROPOSED OPERATION DATE: 2013									
OPERATING SCENARIO: PROPOSED START CONSTRUCTION DATE:									
	P.E. SEAL REQUIP	RED (PER 2Q .0	1112)?	YĐS 8	NO				
DESCRIBE CONTROL SYSTEM:									
A bin vent filter is used to create a slight negative pressure on the Pellet Mill Feed from the air volume present in the silo. The bin vent is sized to offset the air displ									
feed to the silo.	acement created by	tne material							
POLLUTANT(S) COLLECTED:	PM	PM-10	PM-2.5		_				
BEFORE CONTROL EMISSION RATE (LB/HR):									
CAPTURE EFFICIENCY:	%		%	%	%				
CONTROL DEVICE EFFICIENCY:	~99.9 %	~99.9	% ~99.9	%	%				
CORRESPONDING OVERALL EFFICIENCY:	%		%	%	_%				
EFFICIENCY DETERMINATION CODE:			=: =:		-				
TOTAL EMISSION RATE (LB/HR):									
PRESSURE DROP (IN. H₂0): MIN: MAX: 4" GAUGE?	YES d	NO W	ARNING ALARM?	(YES)	10				
BULK PARTICLE DENSITY (LB/FT³): 1.43E-06	INLET TEMPERAT	URE (°F):	Ambient						
POLLUTANT LOADING RATE: 0.1 & LB/HR GR/FP	OUTLET TEMPERA	ATURE (°F):	Ambient						
INLET AIR FLOW RATE (ACFM):	FILTER MAX OPER	RATING TEMP.	(°F): N/A						
NO. OF COMPARTMENTS: 1 NO. OF BAGS PER COMPARTMENT	T: 1		LENGTH OF BAG	(IN.): 120					
DIAMETER OF BAG (IN.): 5.875 DRAFT: Ø INDUCED/NEG	> FORCED/	POS	FILTER SURFACE	AREA (FT ²):	377				
AIR TO CLOTH RATIO: 6 FILTER MATERIAL:									
DESCRIBE CLEANING PROCEDURES:				ICLE SIZE DISTR					
d AIR PULSE			SIZE	WEIGHT %	CUMULATIVE				
# REVERSE FLOW # SIMPLE BAG CO			(MICRONS)	OF TOTAL	%				
# MECHANICAL/SHAKER # RING BAG CO	0-1	Un	known						
€ OTHER			1-10						
DESCRIBE INCOMING AIR STREAM: 10-25									
The air stream will contain wood dust particulate emissions			25-50						
			50-100						
			>100	TOT	AL = 100				
METHOD FOR DETERMINING WHEN TO CLEAN:			,	101	AL - 100				
# AUTOMATIC # TIMED # MANUAL									
METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:									
	ON d OTI	HER							
SPECIAL CONDITIONS: None									
♦ MOISTURE BLINDING ♦ CHEMICAL RESISTIVITY ♦ OTHER									
EXPLAIN:									
DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations									
i i									
Salva									
ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF	THE CONTROL DEV	ICE TO ITS EM	ISSION SOURCE(S):					

Attach Additional Sheets As Necessary

¹Final equipment selection has not yet occurred but will be similar in design to specifications shown.

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division o					/Operate	J.1.5_0,	В		
EMISSION SOURCE DESCRIPTION:		. фриотич		OURCE ID N		ES-PFB			
Pellet Fines Bin				EVICE ID NO		CD-PFB-BV			
OPERATING SCENARIO 1 OF	1					EP-7			
OPERATING SCENARIO 1 OF 1 EMISSION POINT (STACK) ID NO(S): EP-7 DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DIAGRAM):									
Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin									
vent filter.	Acin and sore	orning operati	on is concor	ou in the pent	. IIIICS DIII VIII	illoir is contro	nea by a biii		
Valle 105001									
TYPE OF EMISSION SOURCE (CHECK AN	ID COMPLET	E APPROPRI	ATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):			
Coal,wood,oil, gas, other burner (Form B1) Woodwo									
Coal,wood,oil, gas, other burner (Form B1)									
	silos/bins (For		Other (F						
START CONSTRUCTION DATE: OPERATION		2013	DATE MANU						
MANUFACTURER / MODEL NO.: Aircon			OP. SCHEDU		Z/DAY 7	DAY/WK 5	2 WK/YR		
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		AP (SUBPAR			SUBPART?):	DATIVIK	Z VVICTIN		
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB			JUN-AUG		SEP-NOV	25%			
	VISIBLE STA						YTY		
CRITERIA AIR POLLUTA	NT EMISSI	ONS INFO	RMATION	FOR THIS	SOURCE	70 70 A	7111		
	SOURCE OF		D ACTUAL			EMSSIONS			
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTI	ROLS / LIMITS)		
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
PARTICULATE MATTER (PM)	See Emission	n Calculation	s in Appendi	хВ					
PARTICULATE MATTER<10 MICRONS (PM-11)				li)					
PARTICULATE MATTER<2.5 MICRONS (PM25)									
SULFUR DIOXIDE (SO2)									
NITROGEN OXIDES (NOx)									
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COMPOUNDS (VOC)									
LEAD									
OTHER									
HAZARDOUS AIR POLLU				N FOR THI					
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS			
	EMISSION		ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTI	ROLS / LIMITS)		
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr		
N/A									
		-							
TOXIC AIR POLLUTAN	T EMISSIO	NO INCOD	MATIONE	OD THIS C	OUDCE				
INDICATE EXPECTED									
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		/hr		day	lb.	yr .		
N/A	LI GOOKGE	- ID	7111	103	uay	ID.	yı		
I.W. S		•							
		-							
					-				
Attachments: (1) emissions calculations and supporting documentation;	(2) indicate all re-	quested state ar	nd federal enforc	eable permit lin	its (e.g. hours of	operation, emiss	sion rates) and		
describe how these are monitored and with what frequency; and (3) des	cribe any monitor	ing devices, gai	uges, or test por	ts for this source	L				

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary



FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

EMISSION SOURCE D ROIS: ES-PFB CONTROL DEVICE D NOIS: CD-PFB-BV DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Fine pellet material from hammermili pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter. MATERIAL STORED: Fine pellet material CAPACITY CUBIC FEET: 2200 TONS: DIMENSION POINT(STACK) D NOIS: EP-F WIDTH: HEIGHT: DIAMETER: 12 (PR) LENGTH: WIDTH: HEIGHT: MANUAL PRODUCT THROUGHPUT (TONS) BLOWER SCREW CONVEYOR MOTOR HP: GITCH CONVEYOR G OMPRESSOR G OTHER: G BUCKET ELEVATOR DENSITY OF MATERIAL (LB/FT3): 40 CAPACITY FILLED MACHAIN MOTOR HP: GITCH CONVEYOR BLOWER BELL'E CONVEYOR MOTOR HP: G TRUCK G OTHER: CONVEYOR OTHER CONVEYOR G OTHER: G BUCKET ELEVATOR DENSITY OF MATERIAL (LB/FT3): 40 CAPACITY FILLED FROM MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?	REVISED 12/01/01	NCDENR/Divi	ision of Air Qua	lity - Application	on for Air Permit to C	onstruct/Operate		B6
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter. MATERIAL STORED: Fine pellet material CAPACITY CUBIC FEET: 2200 DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT: ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 tph PNEUMATICALLY FILLED MECHANICALLY FILLED MECHANICALLY FILLED MOTOR HP: TRUCK STORAGE PILE OTHER: MAXIMUM ACFM: MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO?	EMISSION SOURCE DESCRIPTION	: Pellet Fines I	Bin		EMISSION S	OURCE ID NO:	ES-PFB	
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM): Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter. MATERIAL STORED: Fine pellet material CAPACITY CUBIC FEET: 2200 DIMMENSIONS (FEET) ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 1ph PNEUMATICALLY FILLED MECHANICALLY FILLED MECHANICALLY FILLED BELT CONVEYOR OTHER: OTHER: OTHER: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):					CONTROL	EVICE ID NO(S):	CD-PFB-BV	
Fine pellet material from hammermill pollution control system and screening operation is collected in the pellet fines bin which is controlled by a bin vent filter. MATERIAL STORED: Fine pellet material CAPACITY CUBIC FEET: 2200 DIMENSIONS (FEET) DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT: ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 tph PNEUMATICALLY FILLED MECHANICALLY FILLED MECHANICALLY FILLED MECHANICALLY FILLED BLOWER COMPRESSOR OTHER: BELT CONVEYOR BELT CONVEYOR BELT CONVEYOR OTHER: OTHER: OTHER: OTHER: OTHER: OTHER: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	OPERATING SCENARIO:	1	OF_	1			O(S): EP-7	
CAPACITY CUBIC FEET: 2200 TONS: DIMENSIONS (FEET) HEIGHT: DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT: ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 tph PNEUMATICALLY FILLED MECHANICALLY FILLED FILLED FROM BLOWER SCREW CONVEYOR TRUCK COMPRESSOR BELT CONVEYOR TRUCK OTHER: OTHER: OTHER: OTHER: OTHER: OTHER MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	Fine pellet material from ha			em and screeni	ng operation is colle	cted in the pellet fil	nes bin which is contro	lled by a bin
CAPACITY CUBIC FEET: 2200 TONS: DIMENSIONS (FEET) HEIGHT: DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT: ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 tph PNEUMATICALLY FILLED MECHANICALLY FILLED FILLED FROM BLOWER SCREW CONVEYOR TRUCK COMPRESSOR BELT CONVEYOR TRUCK OTHER: OTHER: OTHER: OTHER: OTHER: OTHER MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM ACFM: MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	MATERIAL STORED. Fine called	matorial			DENICITY OF MATE	DIAL & DETO	40	
DIMENSIONS (FEET) HEIGHT: DIAMETER: 12 (OR) LENGTH: WIDTH: HEIGHT: ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 tph PNEUMATICALLY FILLED MECHANICALLY FILLED FILLED FROM BLOWER SCREW CONVEYOR RAILCAR COMPRESSOR BELT CONVEYOR MOTOR HP: TRUCK OTHER: OTHER: OTHER: OTHER: OTHER: OTHER: OTHER: NO. FILL TUBES: MAXIMUM ACFM: MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):			2200			RIAL (LB/F13):	40	
ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL: MAXIMUM DESIGN CAPACITY 6 1ph PNEUMATICALLY FILLED MECHANICALLY FILLED MECHANICALLY FILLED FILLED FROM RAILCAR RAILCAR RAILCAR TRUCK STORAGE PILE OTHER: OTHER: OTHER: MAXIMUM ACFM: MAXIMUM ACFM: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):			1	42 (0.8)		DAMESTA I.	HEIOUT	
PNEUMATICALLY FILLED BLOWER COMPRESSOR DOTHER: BUCKET ELEVATOR OTHER: OTHER: OTHER: OTHER: MAXIMUM ACFM: MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):				12 (010				
BLOWER COMPRESSOR BELT CONVEYOR BUCKET ELEVATOR OTHER: OTHER: OTHER: OTHER: OTHER: Conveyor NO. FILL TUBES: MAXIMUM ACFM: MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):				HANICALLY F		ESIGN CAPACITY		100000
COMPRESSOR OTHER: BUCKET ELEVATOR OTHER: OTHER: OTHER: Conveyor NO. FILL TUBES: MAXIMUM ACFM: MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):						PALICAS		
MAXIMUM ACFM: MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	COMPRESSOR		BUCKET ELEV	(OR)	MOTOR HP:	TRUCK	SE PILE	
MATERIAL IS FILLED TO: BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	NO. FILL TUBES:						71.	
BY WHAT METHOD IS MATERIAL UNLOADED FROM SILO? MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	MAXIMUM ACFM:							
MAXIMUM DESIGN FILLING RATE OF MATERIAL (TONS/HR): MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	MATERIAL IS FILLED TO:							
MAXIMUM DESIGN UNLOADING RATE OF MATERIAL (TONS/HR):	BY WHAT METHOD IS MATERIAL L	INLOADED FROM	M SILO?					
	MAXIMUM DESIGN FILLING RATE	OF MATERIAL (TO	ONS/HR):					
COMMENTS:	MAXIMUM DESIGN UNLOADING RA	ATE OF MATERIA	L (TONS/HR):					
	COMMENTS:							

Attach Additional Sheets As Necessary



FORM C1 CONTROL DEVICE (FABRIC FILTER)

REVISED 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate								
CONTROL DEVICE ID NO: CD-PFB-BV CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PFB								
EMISSION POINT (STACK) ID NO(S): EP-7 POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS								
MANUFACTURER: Aircon	MODEL NO:	36-6						
DATE MANUFACTURED: -	PROPOSED OP	ERATION DATE	2013					
OPERATING SCENARIO:	PROPOSED STA	ART CONSTRU	CTION DATE:					
OF1_	P.E. SEAL REQU	JIRED (PER 2Q	.0112)?	YES	Of NO			
DESCRIBE CONTROL SYSTEM: A bin vent baghouse collects dust from when wood enters or exits the s	ilo and displaces	air.						
POLLUTANT(\$) COLLECTED:	PM	PM ₁₀	PM _{2.5}					
BEFORE CONTROL EMISSION RATE (LB/HR):	See calculations	in Appendix B						
CAPTURE EFFICIENCY:	~99 %	_	99 % ~99	%	%			
CONTROL DEVICE EFFICIENCY:	%		%	%	%			
CORRESPONDING OVERALL EFFICIENCY:	%		%	%	%			
EFFICIENCY DETERMINATION CODE:								
TOTAL EMISSION RATE (LB/HR):	See calculations	in Appendix B						
PRESSURE DROP (IN. H ₂ 0): MIN: TBD MAX: TBD GAUGE:	(e YES)	NO \	WARNING ALARM?	YES	DNO			
BULK PARTICLE DENSITY (LB/FT³): 1.43E-05	INLET TEMPERA	TURE (°F):	Ambient					
POLLUTANT LOADING RATE: 0.1 & LB/HR & GR/PT	OUTLET TEMPE	RATURE (°F):	Ambient					
INLET AIR FLOW RATE (ACFM): 3,600	FILTER MAX OP	ERATING TEMP	P. (°F): N/A					
NO. OF COMPARTMENT: TBD NO. OF BAGS PER COMPARTMENT:	TBD		LENGTH OF BAG	(IN.): TBD				
DIAMETER OF BAG (IN.): DRAFT:	S & FORCE	D/POS.	FILTER SURFACE	AREA (FT ²):	325			
AIR TO CLOTH RATIO: 11.08 FILTER MATERIAL:			ể WOVE					
DESCRIBE CLEANING PROCEDURES:				ICLE SIZE DIS				
₫ AIR PULSE ₫ SONIC			SIZE	WEIGHT %				
€ REVERSE FLOW			(MICRONS)	OF TOTAL	- %			
● MECHANICAL/SHAKER	LLAPSE		0-1					
€ OTHER			1-10					
DESCRIBE INCOMING AIR STREAM:			10-25					
The air stream will contain wood dust particles			25-50					
			50-100					
			>100		OTAL = 100			
METHOD FOR DETERMINING WHEN TO CLEAN:					OTAL = 100			
AUTOMATIC # TIMED # MANUAL								
METHOD FOR DETERMINING WHEN TO REPLACE THE BAGS:								
# ALARM INTERNAL INSPECTION # VISIBLE EMISSION # OTHER								
SPECIAL CONDITIONS: MOISTURE BLINDING CHEMICAL RESISTIVITY EXPLAIN:	€ OTHER							
DESCRIBE MAINTENANCE PROCEDURES: Per manufacturer recommendations or common industry practices. ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP	F THE CONTROL	DEVICE TO ITS	S EMISSION SOURCE	E(S):				

Attach Additional Sheets As Necessary

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division of	Air Quality -	Application f	or Air Permit	to Construct/	Operate		В
EMISSION SOURCE DESCRIPTION:						ES-FPH, ES-	
Finished Product Handling/ Pellet Loadout Bins / Pellet Lo	adout		EMISSION S			ES-PL1 and	2
			CONTROL D			CD-FPH-BF	
OPERATING SCENARIO 1 OF	1		EMISSION P	OINT (STACK	() ID NO(S);	EP-8	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS				N 4 0 F		ha Ballati aa	daya Blassana
Pelletized product is conveyed to pellet loadout bins that to controlled by a bagfilter. Pellet Loadout is accomplished							
telescopes upward during the loadout process to maintain							
the atmosphere from conveyance from the storage bins a							
negative pressure is maintained in the loadout building a f							
slight negative pressure is produced via an induced draft i							
the pellet press silo. Trucks are covered immediately afte		ata to the au	ne baginter t	nat controls (illilor dust elli	iiaaioiia ii oiii	loading of
TYPE OF EMISSION SOURCE (CHECK A		E ADDRODR	IATE FORM S	1-RO ON THE	E EOL L OWNE	DAGESI:	
☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodwo					coatings/inks		
	finishing/printin		_		Coatility Still IKS	(FUIII D7)	
			_	on (Form B8)			
	ilos/bins (Form		Other (Fo				
START CONSTRUCTION DATE: OPERATION MANUFACTURER / MODEL NO.: Agra 1200 P			DATE MANU		(0.1)(7)	212/848/	0 1011/0/10
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	ellet Storage					DAY/WK 5	2 WK/YR
		AP (SUBPAR			SUBPART?):_	25%	
	VISIBLE STA		JUN-AUG		SEP-NOV RATION: <2		NITY
CRITERIA AIR POLLUT						0 % OPAC	ALL T
GIGTETON AINT GEEDTI	SOURCE OF	EXPECTE		TON TING		EMSSIONS	
	EMISSION	(AFTER CONT		(DEFENDE OO)			
AIR POLLUTANT EMITTED	FACTOR	Ib/hr	tons/yr	Ib/hr	ROLS / LIMITS) tons/yr		ROLS / LIMITS)
PARTICULATE MATTER (PM)	See Emission				toris/yi	lb/hr	tons/yr
PARTICULATE MATTER (10 MICRONS (PM10)	See Ellissio	Carculation	s III Appendi				
PARTICULATE MATTER<2.5 MICRONS (PM)-5)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER				-			
HAZARDOUS AIR POLLU	TANT FMIS	SIONS IN	ORMATIO	N FOR THE	SSOURCE	LUGO ILL	
THE STATE OF THE S	SOURCE OF	EXPECTE		7 011		EMSSIONS	
	EMISSION	(AFTER CONT		(BEFORE CONT			ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	Ib/hr	tons/yr	lb/hr	tons/yr
N/A				157111	101.0.7		torioij.
							i i
TOXIC AIR POLLUTAN							
INDICATE EXPECTED		SSIONS AFT	ER CONTROL	S/LIMITATION	ONS		
	EF SOURCE	lb	hr	!b/d	day	Ib	/yr
N/A							
<u> </u>							
American sets (4) and sets as a set of the s							
Attachments: (1) emissions calculations and supporting documentation; or describe how these are monitored and with what frequency; and (3) describe how these are monitored and with what frequency; and (3) describe how the same that the contract of the c						operation, emiss	sion rates) and

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

Attach Additional Sheets As Necessary

FORM B9 EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Qual	lity - Applicatio	on for Air Permit to Construct/Opera	te B9				
EMISSION SOURCE DESCRIPTION: Finished Product Hand	dling	EMISSION SOURCE ID NO:	ES-FPH				
	_	CONTROL DEVICE ID NO(S):	CD-FPH-BF				
OPERATING SCENARIO: 1 OF 1		EMISSION POINT (STACK) ID NO(S): EP-8					
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):							
Collection of transfer points, pellet screening operations, an		ying.					
MATERIALS ENTERING PROCESS - CONTINUOUS PROC		MAX. DESIGN	REQUESTED CAPACITY				
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)				
Dried Wood	ODT	81.71					
MATERIALS ENTERING PROCESS - BATCH OPERATION	ON	MAX. DEŞIĞN	REQUESTED CAPACITY				
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)				
			Edition				
	_						
	-						
	+						
MAYING IM RECION PATOLICO LLIQUID							
MAXIMUM DESIGN (BATCHES / HOUR): REQUESTED LIMITATION (BATCHES / HOUR):	PATOLICON	70					
	(BATCHES/Y						
FUEL USED: N/A		MUM FIRING RATE (MILLION BTU/					
MAX. CAPACITY HOURLY FUEL USE: N/A	IREQUESTED	CAPACITY ANNUAL FUEL USE:	N/A				
COMMENTS:							

Attach Additional Sheets as Necessary

FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 12/01/01	1	NCDENR/Divis	sion of Air Q	uality - Application	n for Air Permit to C	onstruct/Operate		B6
EMISSION SOURCE DE	SCRIPTION: I	Pellet Loadou	t Bins		EMISSION S	OURCE ID NO:	ES-PB1-12	
					CONTROL D	EVICE ID NO(S):	CD-FPH-BF	
OPERATING SCENARIO):	1	OF	1	EMISSION P	OINT(STACK) ID NO(S):	EP-8	3
Pellet loadout b					loaded from the bins	into trucks/train in either	of the two pelle	t loadout
MATERIAL STORES.	Dallat Bradust				DENOTE OF MATE	DIAL II DIETOL	40	
MATERIAL STORED:	Pellet Product	IC FEET:			DENSITY OF MATE	RIAL (LB/F13):	40	
DIMENSIONS (FEE			DIAMETER:	12 (OR)	LENGTH:	WIDTH: HEIG	ur.	
ANNUAL PRODUC			ACTUAL:	12 (0.1)		ESIGN CAPACITY:	81.71 OD	T/hr
PNEUMATICA				ECHANICALLY F			ED FROM	
BLOWER		· d	SCREW CO	NVEYOR		RAILCAR		
d COMPRESSOR		(d)	BELT CONV	/EYOR	MOTOR HP:	☐ d TRUCK		
d OTHER:		0	BUCKET EL	EVATOR		STORAGE PILE	≣	
		•	OTHER:			OTHER:	Conveyor	
NO. FILL TUBES:						7.5-5.7		
MAXIMUM ACFM:	750 each							
MATERIAL IS FILLED TO): 							
BY WHAT METHOD IS N	MATERIAL UNLO	DADED FROM	SILO?					
MAXIMUM DESIGN FILL	ING RATE OF M	MATERIAL (TO	NS/HR):					
MAXIMUM DESIGN UNL	OADING RATE	OF MATERIAL	L (TONS/HR)):				
COMMENTS:								

Attach Additional Sheets As Necessary

FORM B9 EMISSION SOURCE (OTHER)

REVISED: 12/01/01 NCDENR/Division of Air Quality - Application for Air Permit to Construct/Operate							
EMISSION SOURCE DESCRIPTION: Pellet Loadout 1 and 2		EMISSION SOURCE ID NO:	ES-PL-1 and PL-2	-			
		CONTROL DEVICE ID NO(S):	CD-FPH-BF				
OPERATING SCENARIO: 1 OF 1		EMISSION POINT (STACK) ID N	O(S): EP-8				
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):							
Final product is loaded into trucks in either of the two (2) pel	let loadout are	eas.					
MATERIALS ENTERING PROCESS - CONTINUOUS PROC		MAX. DESIGN	REQUESTE	D CAPACITY			
TYPE	UNITS	CAPACITY (ODT)	LIMITATION	(UNIT/HR)			
Dried Wood	ODT	81.71					
	1						
	_		+				
	1		+				
	_		+				
MATERIALS ENTERING PROCESS - BATCH OPERATK	NC MC	MAX. DESIGN	REQUESTE	CAPACITY			
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (L				
	Citio	ON THE TOTAL PROPERTY.	LIMITATION	NIDBATOTI			
	_						
	-		-				
	-						
	1						
MAXIMUM DESIGN (BATCHES / HOUR)							
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/						
FUEL USED: N/A		IMUM FIRING RATE (MILLION BTL	I/HR): N/A				
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTE	CAPACITY ANNUAL FUEL USE:	N/A				
COMMENTS:							

Attach Additional Sheets as Necessary



1	CONT		RM C1 E (FABRIC FI	LTER)				
REVISED 12/01/01	NCDENR/DIvis	ion of Air Quality	Application for Air	Permit to Cons	struct/Operate		C1	
						ES-FPH, ES-PE	3-1 through 12,	
CONTROL DEVICE ID NO: CD-FBH-B			SIONS FROM WHIC			ES-PL1 and 2		
	P-8	POSITION IN SER	RIES OF CONTROLS		NO	. 1 OF 1	UNITS	
MANUFACTURER: Aircon			MODEL NO:	Aircon 13,5 R				
DATE MANUFACTURED:	210		PROPOSED OPER		2013			
OPERATING SCENAR	do:		PROPOSED STAR			1/50	1 110	
OF DESCRIBE CONTROL SYSTEM:			P.E. SEAL REQUIR	(ED (PER 2Q .0	1112)?	YES	d NO	
This bagfilter will be utilized to control particulate f loading finished product from the bins into the truc		d product handling	3 pellet conveyers a	nd screens, as	well as the pellet lo	ad out operatio	n consisting of	
POLLUTANT(S) COLLECTED:			PM	PM-10	PM-2.5			
BEFORE CONTROL EMISSION RATE (LB/HR):			See calculations in				-	
					· — —			
CAPTURE EFFICIENCY:			-99.9 %	-99.9	% <u>-99.9</u>		_%	
CONTROL DEVICE EFFICIENCY:			%		%	%	_%	
CORRESPONDING OVERALL EFFICIENCY:			%		%	%	%	
EFFICIENCY DETERMINATION CODE:								
TOTAL EMISSION RATE (LB/HR):			See calculations in	Appendix B	-			
PRESSURE DROP (IN. H ₂ 0); MIN: MAX: 6"		0411050			ARNING ALARM?	YES X	NO	
		GAUGE?				e IES 6	NU	
BULK PARTICLE DENSITY (LB/FT³): 1.43E-05 INLET TEMPERATURE (°F): 120 POLLUTANT LOADING RATE: 0.10 & LB/HR								
POLLUTANT LOADING RATE: 0.10 INLET AIR FLOW RATE (ACFM): 36,500	é LB/HR	GRAP ³						
		PER COMPARTM	FILTER MAX OPER	ATING TEMP.	(°F): N/A LENGTH OF BAG	IN.): 144		
DIAMETER OF BAG (IN.): 5.75	DRAFT:	€ INDUCED/NE		(DOS)	FILTER SURFACE		4,842	
AIR TO CLOTH RATIO: 7.30		RIAL: Polyester or		PUSK	WOVEN	FELTE		
DESCRIBE CLEANING PROCEDURES:	I ILILK WATE	NAL. Polyester of	PARTICLE SIZE DIST					
₫ AIR PULSE		& SONIC			SIZE	WEIGHT %	CUMULATIVE	
₫ REVERSE FLOW		SIMPLE BAG	COLLAPSE		(MICRONS)	OF TOTAL	%	
		€ RING BAG C			0-1		nown	
					1-10			
DESCRIBE INCOMING AIR STREAM:					10-25	-		
The air stream will contain wood dust particles.					25-50			
					50-100			
					>100			
						TOTA	L = 100	
METHOD FOR DETERMINING WHEN TO CLEAN: AUTOMATIC # TIMED	& MANUAL							
METHOD FOR DETERMINING WHEN TO REPLACE			SION & OT	THER				
SPECIAL CONDITIONS: None		O VIOIDEE EIVIIO	3014 001	11hd				
	RESISTIVITY		♦ OTHER					
DESCRIBE MAINTENANCE PROCEDURES: Per ma	nufacturer reco	mmendations						

ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

Attach Additional Sheets As Necessary

1 Final equipment selection has not yet occurred but will be similar in design to specifications shown.

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division o	f Air Quality -	Application f	or Air Permit	to Construct	/Operate	,	В
EMISSION SOURCE DESCRIPTION:			EMISSION S	OURCE ID N	n: T	ES-EG	
Emergency Generator (350 bhp)				EVICE ID NO		N/A	
OPERATING SCENARIO 1 OF	1			OINT (STAC	1	EP-4	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS	(ATTACH FLO	OW DIAGRAN	A):		7		
Diesel-fired internal combustion generator to provide pow							
			-				
TYPE OF EMISSION SOURCE (CHECK AN	ID COMPLET	E APPROPRI	ATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):	
Coal,wood,oil, gas, other burner (Form B1) Woodwo	orking (Form B	4)		t. of chemical	s/coatings/inks	(Form B7)	
Int.combustion engine/generator (Form B2) Coating/	finishing/printir	ig (Form 85)	Incinerat	ion (Form B8)	l		
Liquid storage tanks (Form B3) Storage	silos/bins (Fori	m B6)	Other (F	orm B9)			
START CONSTRUCTION DATE: OPERATION	DATE:	2013	DATE MANU	IFACTURED:			
MANUFACTURER / MODEL NO.: Generac SD	200	EXPECTED	OP. SCHEDU	LE: 24 HF	R/DAY 7	DAY/WK 5	2 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?): IIII	NESHAF	(SUBPART?):	MACT (SI	JBPART?): Z	777	
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB :	25% MAR-I	MAY 25%	JUN-AUC	3 25%	SEP-NOV	25%	
EXPECTED ANNUAL HOURS OF OPERATION 500	VISIBLE STA	CK EMISSIO	NS UNDER N	ORMAL OPE	RATION: <	0 % OPA	CITY
CRITERIA AIR POLLUTA				FOR THIS	SOURCE		
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS	
	EMISSION	AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTI	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emissio	n Calculation	s in Appendi	хВ			
PARTICULATE MATTER<10 MICRONS (PM.,.)							
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)					ļ		
CARBON MONOXIDE (CO)	-				-		
VOLATILE ORGANIC COMPOUNDS (VOC) LEAD					-		
OTHER					-	_	
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INE	OPMATIO	V EOD TUI	S SOUDCE		
TIAZARDOGG AINT OLLO	SOURCE OF		D ACTUAL	I OK III		EMSSIONS	
	EMISSION	(AFTER CONT		(BEFORE CONTROLS / LIMITS)		4	
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr tons/vi		lb/hr tons	
	See Emission				toriaryi	307111	tonaryi
TOXIC AIR POLLUTAN							
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		'hr		day	lb/	yr
	See Emission	n Calculation	s in Appendi	ĸВ			
		-					
Attachments: (1) emissions calculations and supporting documentation;	(2) indicate all re-	nunetad etato on	d fodoral onform	aabla narmii !!~	rite (o.a. hours of	ongentian amin	ion rotor) and
describe how these are monitored and with what frequency; and (3) describe how the are monitored and with what frequency; and (3) describe how these are monitored and with what frequency; and (3) describe how these are monitored and with what frequency; and (3) describe how these are monitored and with what frequency; and (3) describe how the second and the second						operacon, emis	oivii falto) afili

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary

FORM B2 EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/GENERATORS)

REVISED 12/01/01	NCDENR/Division of Air						B2		
EMISSION SOURCE DESCRIPTION:		4	· ·		EMISSION SOURCE		ES-EG		
					CONTROL DEVICE II		N/A		
OPERATING SCENARIO:	1 OF	1			EMISSION POINT (S		EP-4		
CHECK ALL THAT APPLY	d EMERGENCY	SP	ACE HEAT			GENERATION			
	PEAK SHAVER		THER (DESC	CRIBE):					
GENERATOR OUTPUT (KW):	AN	ITICIPATE	D ACTUAL	HOURS OF	OPERATION AS PEA	SHAVER (HRS/YR)			
ENGINE OUTPUT (HP):									
TYPE ICE: GASOLINE ENGINE OTHER (DESCRIBE		E UP TO 6	600 HD	d DIESE	L ENGINE GREATER (complete belo		DUAL FUEL ENGINE		
EMISSION REDUCTION MODIFICATION	ONS & INJECTION	TIMING R	RETARD	PREIG	NITION CHAMBER C	OMBUSTION &	OTHER		
OR STATIONARY GAS TURE					COMPRESSOR OR T				
FUEL NATURAL GAS	₫ OIL EN	IGINE TYP		2-CYCLE LE			TURBINE		
OTHER (DESCRIBE):				4-CYCLE RI		HER (DESCRIBE):			
CYCLE: COGENERATION		NTROLS:	_		ON MODIFICATIONS				
				TALYTIC REI	DUCTION	ECTIVE CATALYTIC. UNCONTROL			
4	LEAN-PREMIX	CLEAN B	IURN AND P	RECOMBUS	TION CHAMBER	& DINCONTROL	LEU		
d SHOOM:NOZZZZ		GE (INC	LUDE ST	ARTUP/BA	ACKUP FUEL)				
				UM DESIGN		REQUESTED CA	PACITY		
FUEL TYPE UNITS				TY (UNIT/HR		LIMITATION (UN			
No. 2 Fuel Oil	gal			6.55		6.55			
FUEL CHARACTERISTICS (COMPLETE ALL THAT ARE APPLICABLE)									
FUEL TYPE	BTU/UNIT		L	JNITS		SULFUR CON (% BY WEIGH			
No. 2 Fuel Oil	19,300	lb		1	<15 ppmw				
						1.3.			
	MANUFACTURER'S	SPECIF	IC EMISS	SION FACT	TORS (IF AVAILA	BLE)			
POLLUTANT	NOX	CO		PM	PM10	VOC	OTHER		
EMISSION FACTOR LB/UNIT									
UNIT									
DESCRIBE METHODS TO MINIMI Periodic equipment maintenance will						practices.			
COMMENTS:									

Attach Additional Sheets As Necessary

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 12/01/01 NCDENR/Division o	f Air Quality -	Application f	or Air Permit	to Construct	/Operate		В
EMISSION SOURCE DESCRIPTION:			EMISSION S	OURCE ID N	0: 1/	ES-FWP	
Fire Water Pump (300 bhp)				EVICE ID NO		N/A	
OPERATING SCENARIO 1 OF	1	-		POINT (STAC		EP-5	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS	(ATTACH FLO	OW DIAGRAM			7		
Diesel-fired internal combustion pump to provide water in							
			-,.				
TYPE OF EMISSION SOURCE (CHECK A)	ND COMPLETI	E APPROPRI	ATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):	
Coal,wood,oil, gas, other burner (Form B1) Woodwo					s/coatings/inks		
Int.combustion engine/generator (Form B2) Coating/			_	ion (Form B8)		(1 51111 511)	
	silos/bins (Fon	- ,	Other (F		'		
START CONSTRUCTION DATE: OPERATION			,			0040	
				JFACTURED:	\(\mathrea{D}\) \(\mathrea{D}\	2012	
MANUFACTURER / MODEL NO.: Clarke/John Deere PE600			OP. SCHEDU				2 WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		(SUBPART?			JBPART?): ZZ		
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB			JUN-AUC		SEP-NOV		OIT /
EXPECTED ANNUAL HOURS OF OPERATION 100 CRITERIA AIR POLLUTA	VISIBLE STA					0 % OPA	CHY
CRITERIA AIR POLLUTA				FUR INIS			
	SOURCE OF		D ACTUAL			EMSSIONS	
AIS SOLUTION TO THE PROPERTY OF THE PROPERTY O	EMISSION		ROLS / LIMITS)		TROLS / LIMITS)		ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emissio	n Calculation	s in Appendi	хB	-		
PARTICULATE MATTER<10 MICRONS (PM ₁)							
PARTICULATE MATTER<2.5 MICRONS (PM)							
SULFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)	-						
CARBON MONOXIDE (CO)	-						
VOLATILE ORGANIC COMPOUNDS (VOC)	1						
LEAD							
OTHER		010110111	00114110				L
HAZARDOUS AIR POLLU				N FOR THE			
	SOURCE OF		D ACTUAL			EMSSIONS	
	EMISSION		ROLS / LIMITS)		TROLS / LIMITS)		ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
	See Emission	n Calculation	s in Appendi	xВ			
70.40 10 5011171							
TOXIC AIR POLLUTAN	II EMISSIO	NS INFOR	MATION FO	OR THIS S	OURCE		
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE		/hr		'day	Ib	/yr
	See Emission	1 Calculation	s in Appendi	×В			
Attachments: (1) emissions calculations and supporting documentation; describe how these are monitored and with what frequency; and (3) des	(2) indicate all re-	quested state an	d federal enforce	eable permit lim	nits (e.g. hours of	operation, emis	sion rates) and

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE
Attach Additional Sheets As Necessary

FORM B2 EMISSION SOURCE (INTERNAL COMBUSTION ENGINES/GENERATORS)

REVISED 12/01/01	NCDENR/Division of Air Quali			te to to to to	B2
EMISSION SOURCE DESCRIPTION:		cy - replication (or var)	EMISSION SOURCE II		ES-FWP
Emission doorest second from	The viace Lamp		CONTROL DEVICE ID		N/A
OPERATING SCENARIO:	1 OF 1		EMISSION POINT (ST		EP-5
CHECK ALL THAT APPLY	e EMERGENCY é	SPACE HEAT	ELECTRICAL C		El -V
discourage in A 7 E.	PEAK SHAVER	OTHER (DESCRIBE):	4 ELECTRICAL C	SENERATION	
GENERATOR OUTPUT (KW):	ANTICIPA	ATED ACTUAL HOURS OF	OPERATION AS PEAK	SHAVER (HRS/YR):	
ENGINE OUTPUT (HP):					
TYPE ICE: GASOLINE ENGINE OTHER (DESCRIBE		TO 600 HP	EL ENGINE GREATER Complete below		DUAL FUEL ENGINE
ENGINE TYPE # RICH BUR		N/A			
EMISSION REDUCTION MODIFICATI			NITION CHAMBER CO		OTHER
OR STATIONARY GAS TURE	BINE (complete below)	NATURAL GAS PIPELINE	COMPRESSOR OR TU	RBINE (complete bela	ow)
FUEL NATURAL GAS	OIL ENGINE	TYPE: d 2-CYCLE LE	EAN BURN 🦸 4-CY	CLE LEAN 🦸 T	URBINE
		4-CYCLE R	ICH BURN 🕴 OTHI	ER (DESCRIBE):	
CYCLE: COGENERATION	SIMPLE CONTRO		ON MODIFICATIONS (
	II .	ELECTIVE CATALYTIC RE		ECTIVE CATALYTIC	
I a		N BURN AND PRECOMBUS	STION CHAMBER	# UNCONTROL	_ED
₫ UNCONTROLLED .₫	LEAN-PREMIX				
	FUEL USAGE (II	NCLUDE STARTUP/B	ACKUP FUEL)		
		MAXIMUM DESIGN		REQUESTED CAP	
FUEL TYPE	UNITS	CAPACITY (UNIT/HR	8)	LIMITATION (UNI	T/HR)
No. 2 Fuel Oil	gal	6.55		6.55	
	FUEL CHARACTERISTICS	(COMPLETE ALL TH	IAT ARE APPLICA	BLE)	
				SULFUR CON	
FUEL TYPE	BTU/UNIT	UNITS		(% BY WEIGH	T)
No. 2 Fuel Oil	19,300	lb	<15 ppmw		
	MANUFACTURER'S SPE		TORS (IF AVAILAB	BLE)	
POLLUTANT	NOX	CO PM	PM10	VOC	OTHER
EMISSION FACTOR LB/UNIT					
UNIT					
DESCRIBE METHODS TO MINIMI Periodic equipment maintenance will COMMENTS:				ractices.	

Attach Additional Sheets As Necessary

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

EVISED 12/01/01 NCDENR/Divisio	n of Air Quality -	Application f	or Air Permit	to Construct	Operate		В
MISSION SOURCE DESCRIPTION: Dry Line Hopper			EMISSION S	OURCE ID N	0:	ES-DLH	DLB9
				EVICE ID NO		N/A	
OPERATING SCENARIO1OF	1.	- C	EMISSION P		` '	N/A - Fugitive	<u> </u>
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCES Dried wood materials aretransferred to the Dry Line Convey	yor (ES-DLC).	,					
TYPE OF EMISSION SOURCE (CHECK	AND COMPLET	E APPROPRI	ATE FORM B	1-B9 ON THE	FOLLOWING	PAGES):	
Coal,wood,oil, gas, other burner (Form B1)	lworking (Form B4	1)		. of chemicals	coatings/inks	(Form B7)	
☐ Int.combustion engine/generator (Form B2) ☐ Coati	ng/finishing/printing	g (Form B5)	Incinerati	on (Form B8)			
Liquid storage tanks (Form B3)	ge silos/bins (Forn	n B6)	Other (Fo	orm B9)			
START CONSTRUCTION DATE: 2014 OPERATI	ON DATE:	2014	DATE MANU	FACTURED:	2014		
MANUFACTURER / MODEL NO.: Enviva Built		EXPECTED (OP. SCHEDUL	.E: <u>24</u> HR.	DAY7D	AY/WK <u>52</u>	WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHA	P (SUBPART)	?):	MACT (SL	JBPART?):		
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB	25 MAR-M		JUN-AUG	25	SEP-NOV	25	
	760 VISIBLE STA					% % OF	ACITY
CRITERIA AIR POLLU	JTANT EMISS	IONS INFO	RMATION	FOR THIS	SOURCE		
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMSSIONS	
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CON	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emission	Calculations i	n Appendix B				
PARTICULATE MATTER<10 MICRONS (PM ₁₀)							
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO2)							
TROGEN OXIDES (NOx)							
ARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER MATARRALIA ALD DOLLAR		212112 111					
HAZARDOUS AIR POLI				FOR THE		A Plant	
	SOURCE OF		D ACTUAL		POTENTIAL	L EMSSIONS	
HATABBOUG HE BOLLLIMAN AND ALCOHOL	EMISSION	(AFTER CONTI			TROLS / LIMITS)		ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO. N/A	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
					-		
TOXIC AIR POLLUT.	ANT EMISSIO	NS INFOR	MATIONE	D TUIC C	OURCE		
INDICATE EXPECT							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/				El-	h.m
N/A	EF SOURCE	107	111	ID/	day	IC	lyr
1.01							
	1						
·	+ +						
achments: (1) emissions calculations and supporting documentati	on: (2) indicate all re	augustad atata a	nd fordered aufour	aabla namuk D		£4:	

describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

PERATING SCENARIO: 1 CONTROL OF STATE O	FLOW DIAGRAM): onveyor (ES-DLC).	EMISSION SOURCE ID NO: CONTROL DEVICE ID NO(S): EMISSION POINT (STACK) ID N MAX. DESIGN CAPACITY (UNIT/HR) 10 tph	
	FLOW DIAGRAM): onveyor (ES-DLC). CONTINUOUS PROCESS UNITS	MAX. DESIGN CAPACITY (UNIT/HR)	O(S): N/A - Fugitive REQUESTED CAPACITY
DESCRIBE IN DETAIL THE PROCESS (ATTACH Dried wood materials are transferred to Dry Line C MATERIALS ENTERING PROCESS -	FLOW DIAGRAM): onveyor (ES-DLC). CONTINUOUS PROCESS UNITS	MAX. DESIGN CAPACITY (UNIT/HR)	REQUESTED CAPACITY
Oried wood materials are transferred to Dry Line C MATERIALS ENTERING PROCESS - TYPE	CONTINUOUS PROCESS UNITS	CAPACITY (UNIT/HR)	
TYPE	UNITS	CAPACITY (UNIT/HR)	
TYPE	UNITS	CAPACITY (UNIT/HR)	
		Ιοψι	
		-	
(F-1) = 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			
MATERIALS ENTERING PROCESS		MAX. DESIGN	REQUESTED CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)
· ·			
MAXIMUM DESIGN (BATCHES / HOUR):		*	
EQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES	/YR):	
UEL USED: N/A		XIMUM FIRING RATE (MILLION BTU	J/HR): N/A
		ED CAPACITY ANNUAL FUEL USE:	
COMMENTS:			

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

EVISED 12/01/01 NCDENR/Division of	f Air Quality -	Application fo	or Air Permit t	o Construct/	Operate		В
LEMISSION SOURCE DESCRIPTION: Dry Line Feed Conveyor			EMISSION S	DURCE ID NO): 153	MES-DLC	
			CONTROL D	EVICE ID NO((S):	CD-HM-BF-3	
OPERATING SCENARIO1OF	_1		EMISSION PO	DINT (STACK)) ID NO(S):	EP-2	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (Dried wood materials are transferred from the dry line feed hop		,		re-screens in-	feed conveyor		,
TYPE OF EMISSION SOURCE (CHECK A	ND COMPLET	E APPROPRI	ATE FORM B1	-B9 ON THE	FOLLOWING	PAGES):	
☐ Coal,wood,oil, gas, other burner (Form B1) ☐ Woodwo	rking (Form B4	.)	Manufact	. of chemicals	/coatings/inks	(Form B7)	
☐ Int.combustion engine/generator (Form B2) ☐ Coating/f	inishing/printin	g (Form B5)	Incineration	on (Form B8)			
Liquid storage tanks (Form B3)	silos/bins (Forn	n B6)	Other (Fo	rm B9)			
START CONSTRUCTION DATE: 2014 OPERATION	DATE:	2014	DATE MANUI	ACTURED:	2014		
MANUFACTURER / MODEL NO.: Enviva Built		EXPECTED (P. SCHEDUL	E: <u>24</u> HR/I	DAY <u>7</u> D	AY/WK <u>52</u>	_ WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHA	P (SUBPART?	°):	MACT (SU	BPART?):		ħ.
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 2	5 MAR-M	AY 25	JUN-AUG	25	SEP-NOV	25	
			S UNDER NO			%% OP	ACITY
CRITERIA AIR POLLUT	ANT EMISS	IONS INFO	RMATION I	FOR THIS	SOURCE		
	SOURCE OF	EXPECTE	D ACTUAL		POTENTIA	EMSSIONS	
	EMISSION	(AFTER CONTI	ROLS / LIMITS)	(BEFORE CONT	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emission	Calculations i	n Appendix B				
PARTICULATE MATTER<10 MICRONS (PM ₁₀)							
PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
SULFUR DIOXIDE (SO2)							
TROGEN OXIDES (NOx)							Į.
ARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INF	ORMATION	I FOR THIS	SOURCE		
	SOURCE OF	EXPECTE	DACTUAL	ACTUAL POTENTIAL EMSSIONS			
	EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CONTROLS / LIMITS)		(AFTER CONT	ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
11							
TOXIC AIR POLLUTAN							
INDICATE EXPECTED		SSIONS AFTE	R CONTROLS	S / LIMITATIO	NS		
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/	'hr	lb/d	day	lb.	/yr
N/A							

.tachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.



EMISSION SOURCE ID NO: CONTROL DEVICE ID NO(S): EMISSION POINT (STACK) ID exisiting hammermill pre-screens in-feed MAX. DESIGN CAPACITY (UNIT/HR)	NO(S): EP-2	
CONTROL DEVICE ID NO(S): EMISSION POINT (STACK) ID exisiting hammermill pre-screens in-feed MAX. DESIGN	NO(S): EP-2	
exisiting hammermill pre-screens in-feed	l conveyor.	
exisiting hammermill pre-screens in-feed	l conveyor.	
MAX. DESIGN	·	
	REQUESTED CAPACITY	
	LIMITATION(UNIT/HR)	
10 toh	Emilia (ONITALIO)	
10 (011		
MAX. DESIGN	REQUESTED CAPACITY	
TS CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)	
HES/YR):		
TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): N/A		
REQUESTED CAPACITY ANNUAL FUEL USE: N/A		
	MAX. DESIGN TS CAPACITY (UNIT/BATCH) CHES/YR): MAXIMUM FIRING RATE (MILLION B	

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

EVISED 12/01/01 NCDENR/Division o	f Air Quality -	Application for	or Air Permit i	to Construct/0	Operate	-	В
EMISSION SOURCE DESCRIPTION: Bagging System Screen	ing (includes co	onveyor and			•		
two screeners)			EMISSION S	OURCE ID NO);	ES-BSC-1,	BSS1, BSS2
			CONTROL D	EVICE ID NO(S):	DC-BS-BF-1,	DC-BS-BF-2
OPERATING SCENARIO1_OF	1			OINT (STACK)) ID NO(S):	EP-16, EP-17	7
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (
Finished product material is transferred using Bagging System	Conveyor 1 (E	S-BSC-1) into	screens ES-BS	SS-1 and ES-E	BSS-2.		
TYPE OF EMISSION SOURCE (CHECK A						•	
	rking (Form B4	•		. of chemicals	coatings/inks	(Form B7)	
	inishing/printin			on (Form B8)	_		
Liquid storage tanks (Form B3)	silos/bins (Forr		Other (Fo		<u> </u>		
START CONSTRUCTION DATE: 2015 OPERATION	DATE:		DATE MANU		2016		
MANUFACTURER / MODEL NO.: Pending			OP. SCHEDUL			DAY/WK _5	2_WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):		P (SUBPART?		MACT (SU			
		MAY 25%	JUN-AU		SEP-NC		
	VISIBLE STA					% OPACI	TY
CRITERIA AIR POLLUTA	Υ	_		FOR THIS			HENOR.
	SOURCE OF	I	D ACTUAL			LEMSSIONS	
AID BOLL VITANT ENGINEER	EMISSION		ROLS / LIMITS)		ROLS / LIMITS)		ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM) PARTICULATE MATTER<10 MICRONS (PM ₁₀)	See Emission	Calculations i	n Appendix B				
PARTICULATE MATTER<15 MICRONS (PM ₁₀)							
ULFUR DIOXIDE (SO2)							
.TROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)							
LEAD							
OTHER							
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INF	ORMATIO	V FOR THIS	SOURCE		Ata ii list
	SOURCE OF		D ACTUAL			EMSSIONS	
	EMISSION	N (AFTER CONTROLS / LIMITS)		(BEFORE CONTROLS / LIMITS)		T .	
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
TOXIC AIR POLLUTAN							Eve stand
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb.	/hr	lb/d	day	lb lb	/yr
N/A							

Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (e.g. hours of operation, emission rates) and describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

	CDENR/Division of Air Quality - Applicati		ate B9		
MISSION SOURCE DESCRIPTION: Bagging System Conveyor EMISSION SOURCE ID NO: ES-BSC-1			ES-BSC-1		
		CONTROL DEVICE ID NO(S): [DC-BS-BF-1, DC-BSBF-2		
PERATING SCENARIO:1	OF EMISSION POINT (STACK) ID NO(S): EP-16, EP-1				
ESCRIBE IN DETAIL THE PROCESS	(ATTACH FLOW DIAGRAM):	3 ¹			
inished product material (pellets) are tr	ansferred from the finished product bin onto	Bagging System Screeners 1 and 2 (E	:S-BSS-1, ES-BSS-2).		
		MAX. DESIGN			
	MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		REQUESTED CAPACITY		
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)		
ried Wood Materials	ODT	60 tn/hr			
MATERIAL & ENTERING P	PROCESS - BATCH OPERATION	MAX. DESIGN	REQUESTED CAPACITY		
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH		
AXIMUM DESIGN (BATCHES / HOUR					
EQUESTED LIMITATION (BATCHES	HOUR): (BATCHES	S/YR):			
		MAXIMUM FIRING RATE (MILLION BTU/HR): N/A			
JEL USED: N/A	TOTAL MA	AXIMUM FIRING RATE (MILLION BTU	J/HR): N/A		
JEL USED: N/A AX. CAPACITY HOURLY FUEL USE:		AXIMUM FIRING RATE (MILLION BTU TED CAPACITY ANNUAL FUEL USE:			

EVISED: 12/01/01 NC	DENR/Division of Air Quality - Applicatio	n for Air Permit to Construct/Ope	rate	B9		
EMISSION SOURCE DESCRIPTION: Bagging System Screen 1 EMISSION SOURCE			ES-BSS1			
			CONTROL DEVICE ID NO(S): DC-BS-BF-1			
OPERATING SCENARIO:1	OF EMISSION POINT (STACK) ID NO(S): EP-16					
DESCRIBE IN DETAIL THE PROCESS (AT	TACH FLOW DIAGRAM):	,,,				
Finished product material (pellets) are trans	ferred from conveyor ES-BSC-1 onto scree	en ES-BSS-1. The screened materia	al is then			
ransferred to bagging system conveyor ES	-BSC-2.					
MATERIALS ENTERING PROCESS - CONTINUOUS PROCESS		MAX. DESIGN	REQUESTED CAPACITY			
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)		
Dried Wood Materials	ODT	30 tn/hr				
		-				
	CESS - BATCH OPERATION	MAX. DESIGN	REQUESTED CAPACITY			
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UN	NIT/BATCH)		
-						
		+				
		11				
MAXIMUM DESIGN (BATCHES / HOUR):						
REQUESTED LIMITATION (BATCHES / HO	DUR): (BATCHES/	YR):				
FUEL USED: N/A	TOTAL MAX	MAXIMUM FIRING RATE (MILLION BTU/HR): N/A				
MAX. CAPACITY HOURLY FUEL USE:	N/A REQUESTE	D CAPACITY ANNUAL FUEL USE:	N/A			
COMMENTS:						
-						

FORM C1

CONTROL DEVICE (FABRIC FILTER)

VISED 12/01/01 CONTROL DEVICE ID NO: DC-BS			ality - Application f			E0 500 4: E0 500	C1	
		CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-BSC-1; ES-BSS-1 POSITION IN SERIES OF CONTROLS NO. 1 OF 1 UNITS						
MANUFACTURER: TBD	.1 10	JOHNON IN SERVE	MODEL NO:	TBD	NO.	1 01 1	OMIC	
		PROPOSED OPE		2016				
OPERATING SCE	NARIO:							
10F			P.E. SEAL REQUIRED (PER 2Q .0112)? YES ♦ NO			0		
DESCRIBE CONTROL SYSTEM:	·							
A fabric filter dust collector is used to collect du	ust from the Pellet	Bagging System (Conveyor 1 and Scr	een 1.				
POLLUTANT(S) COLLECTED:			PM	PM-10	PM-2.5			
BEFORE CONTROL EMISSION RATE (LB/Hi	R):		See cald	culations in Ap	pendix B			
CAPTURE EFFICIENCY:			%		%	%	%	
CONTROL DEVICE EFFICIENCY:		~99.9 %	~99.9	% ~99.9	%	%		
CORRESPONDING OVERALL EFFICIENCY:			%		%	%	%	
EFFICIENCY DETERMINATION CODE:								
TOTAL EMISSION RATE (LB/HR):			See calculations in Appendix B					
PRESSURE DROP (IN. H ₂ 0): MIN: MAX:	6"	GAUGE?	YES	NO WA	RNING ALARM?	d VES d NO		
PULK PARTICLE DENSITY (LB/FT³):			INLET TEMPERAT	TURE (°F): MI	MAX	Ambient		
LLUTANT LOADING RATE: 0.01	d LB/HR	(d GR/FT ³)	OUTLET TEMPER	ATURE (°F):	IIN MAX	Ambient		
INLET AIR FLOW RATE (ACFM):	45000		FILTER MAX OPE	RATING TEMP. (°F): N/A			
NO. OF COMPARTMENTS: 1 N	O. OF BAGS PER	COMPARTMENT	T: 412		LENGTH OF BAG	(IN.): 144		
DIAMETER OF BAG (IN.): 5.75 D	RAFT:	INDUCED/NEG.	. → d FORCED	POS.	FILTER SURFACE	AREA (FT ²):	6250	
AIR TO CLOTH RATIO: 6:1	ILTER MATERIAL	.: Polyester or Equ	uivalent		∮ WOVEN	FELTE		
DESCRIBE CLEANING PROCEDURES:					PAR	TICLE SIZE DISTRIE	UTION	
& AIR PULSE	•	SONIC			SIZE	WEIGHT %	CUMULATIVE	
e REVERSE FLOW	∮ SIMPLE BAG COLLAPSE				(MICRONS)	OF TOTAL	%	
				0-1				
₫ OTHER					1-10			
DESCRIBE INCOMING AIR STREAM: The air stream will contain wood dust particulate emissions.				10-25				
				25-50				
					50-100			
					>100			
						TOTA	L = 100	
METHOD FOR DETERMINING WHEN TO CL	LEAN:							
& AUTOMATIC & TIMED &	MANUAL							
METHOD FOR DETERMINING WHEN TO BE	EPLACE THE BA	GS:						
& ALARM INTERNAL INS	PECTION d	VISIBLE EMISSI	on 🛭 ot	HER				
SPECIAL CONDITIONS: None								
	MICAL RESISTIVI	ΤΥ	∮ OTHER					
EXPLAIN:								
SCRIBE MAINTENANCE PROCEDURES:	Per manufacturer	recommendations	S					
ON A SEPARATE PAGE, ATTACH A DIAGRA	M SHOWING TH	E REI ATIONSUIT	OF THE CONTRO	I DEVICE TO IT	EMISSION SOUR	CE(S):		
STATE FAGE, AT INCH A DIAGRA	AN OLIONNING ILL	T UTTY HONOUR	OF THE CONTRO	F DEAICE TO US	LIVINGOIUN OUUK	UL(U).		



Bagging System Screen 2 OF1 H FLOW DIAGRAM): from conveyor ES-BSC-1 onto scree 2.	CONTROL DEVICE ID NO(S): [EMISSION POINT (STACK) ID N	O(S): EP-17	
f FLOW DIAGRAM): from conveyor ES-BSC-1 onto scree	EMISSION POINT (STACK) ID N	O(S): EP-17	
f FLOW DIAGRAM): from conveyor ES-BSC-1 onto scree	*		
from conveyor ES-BSC-1 onto scree	n ES-BSS-2. The screened materia	l is then	
	n ES-BSS-2. The screened materia	l is then	
CONTINUOUS PROCESS	MAY DECICAL	DECLIFOTED CARACITY	
		REQUESTED CAPACITY	
		LIMITATION(UNIT/HR)	
ODT	30 tn/hr		
DATON OPEN : TON	1117 622.2.	DEALIEATED AND ACTION	
	⇒ 1	REQUESTED CAPACITY	
UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)	
(BATCHES/Y	'R):		
TOTAL MAX	TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): N/A		
"A KEQUESTEL	GAPACITY ANNUAL FUEL USE:	N/A	
	(BATCHES/Y	UNITS CAPACITY (UNIT/HR) ODT 30 tn/hr B - BATCH OPERATION MAX. DESIGN CAPACITY (UNIT/BATCH) UNITS CAPACITY (UNIT/BATCH) (BATCHES/YR): TOTAL MAXIMUM FIRING RATE (MILLION BTL	

- - . -

FORM C1

CONTROL DEVICE (FABRIC FILTER)

VISED 12/01/01	NCDENR/Division of Air Qu	ality - Application for Air Perm	nit to Construct/Operate		C
CONTROL DEVICE ID NO: DC-BS-B	F-2 CONTROLS EMIS	SIONS FROM WHICH EMISSIO	N SOURCE ID NO(S):	ES-BSC-1; ES-BSS	3-2
EMISSION POINT (STACK) ID NO(S): EP-	17 POSITION IN SERI	ES OF CONTROLS	NO.	1 OF 1	UNITS
MANUFACTURER: TBD		MODEL NO: TBD			
DATE MANUFACTURED: 2015		PROPOSED OPERATION DA	TE: 2016		
OPERATING SCENA	RIO:	PROPOSED START CONSTI		2015	
10F1_		P.E. SEAL REQUIRED (PER :	2Q .0112)?	YES # N	0
DESCRIBE CONTROL SYSTEM:		· · · · · · · · · · · · · · · · · · ·	<u> </u>		
A fabric filter dust collector is used to collect dust	from the Pellet Bagging System	Conveyor 1 and Screen 2.			
POLLUTANT(S) COLLECTED:		PM PM-1	10 PM-2.5		
BEFORE CONTROL EMISSION RATE (LB/HR):		See calculations	in Appendix B		
CAPTURE EFFICIENCY:		%	%	%	%
CONTROL DEVICE EFFICIENCY:		~99.9 % ~99.	9 % ~99.9	%	%
CORRESPONDING OVERALL EFFICIENCY:		%	%	%	%
EFFICIENCY DETERMINATION CODE:		· · · · · · · · · · · · · · · · · · ·			-
TOTAL EMISSION RATE (LB/HR):		See calculations	in Appendix B		
PRESSURE DROP (IN. H ₂ 0): MIN: MAX: 6"	GAUGE	? YES NO	WARNING ALARM?	d VES d NO	
DULK PARTICLE DENSITY (LB/FT3):		INLET TEMPERATURE (°F):	MIN MAX	Ambient	
LLUTANT LOADING RATE: 0.01	d LB/HR d GR/FT³	OUTLET TEMPERATURE (°F	r): MIN MAX	Ambient	
INLET AIR FLOW RATE (ACFM):	45000	FILTER MAX OPERATING TE	MP. (°F): N/A		
NO. OF COMPARTMENTS: 1 NO. 0	OF BAGS PER COMPARTMEN	IT: 412	LENGTH OF BAG	(IN.): 144	
DIAMETER OF BAG (IN.): 5.75 DRAI	FT: INDUCED/NEG	FORCED/POS.	FILTER SURFACE	E AREA (FT ²):	6250
AIR TO CLOTH RATIO: 6:1 FILTI	ER MATERIAL: Polyester or Eq	uivalent		I FELTE	
DESCRIBE CLEANING PROCEDURES:			PAR	TICLE SIZE DISTRIE	BUTION
d AIR PULSE	& SONIC		SIZE	WEIGHT %	CUMULATIVE
REVERSE FLOW	SIMPLE BAG C	OLLAPSE	(MICRONS)	OF TOTAL	%
		DLLAPSE	0-1		
₫ OTHER			1-10		
DESCRIBE INCOMING AIR STREAM:			10-25		
The air stream will contain wood dust p	particulate emissions.		25-50		
·			50-100		
			>100		
				TOTA	L = 100
METHOD FOR DETERMINING WHEN TO CLEA	N·			_	
	ANUAL				
METHOD FOR DETERMINING WHEN TO REPL	ACE THE BAGS:				
ALARM INTERNAL INSPEC		ION Ø OTHER			
SPECIAL CONDITIONS: None	- VIOIDEE ENIOO	COMEN			
4	AL RESISTIVITY	∂ OTHER			
EXPLAIN:		÷ +			
SCRIBE MAINTENANCE PROCEDURES: Per	r manufacturer recommendation	ıs			
The second secon					
ON A SEPARATE PAGE, ATTACH A DIAGRAM S	SHOWING THE RELATIONSHI	P OF THE CONTROL DEVICE 1	TO ITS EMISSION SOUR	CE(S):	

SPECIFIC EMISSIONS SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

. EVISED 12/01/01 NCDENR/Division o	f Air Quality -	Application fo	or Air Permit 1	to Construct/	Operate		В
EMISSION SOURCE DESCRIPTION: Bagging System Convey	ing and Feed I	Bins					3SC-3, BSB-1,
				OURCE ID NO			BSB-2
OPERATING CORMANIA	,			EVICE ID NO	,	N/A	
OPERATING SCENARIO 1 OF	1			OINT (STACK) ID NO(S):	N/A- Fugitive	
DESCRIBE IN DETAILTHE EMISSION SOURCE PROCESS (A Finished product material is transferred to the bagging system to associated with these units are represented by the drop points to the bagging system to be a sociated with these units are represented by the drop points to the bagging system to the bagging sy	oins (ES-BSB-	and ES-BSB- yors to the bin	-2) via conveyo s.		and ES-BSC-3	. Note that the	e emissions
☐ Int.combustion engine/generator (Form B2) ☐ Coating/f	JRCE DESCR rking (Form B4 inishing/printing silos/bins (Form) g (Form B5)	Manufact	of chemicals on (Form B8)	/coatings/inks (Form B7)	
START CONSTRUCTION DATE: 2015 OPERATION	DATE:	2015	DATE MANU	FACTURED:	2016		
MANUFACTURER / MODEL NO.: Pending			OP. SCHEDUL	E: <u>24</u> HR	Z/DAY7	DAY/WK _52	2_WK/YR
IS THIS SOURCE SUBJECT TO? NSPS (SUBPART?):	NESHA	P (SUBPART?	?):	MACT (SU	BPART?):		
		//AY 25%	JUN-AU		SEP-NO		
					ATION: <u><20%</u>	% OPACI	TY
CRITERIA AIR POLLUTA			RMATION	FOR THIS			
	SOURCE OF	EXPECTE	D ACTUAL			EMSSIONS	
	EMISSION	(AFTER CONT)			TROLS / LIMITS)		ROLS / LIMITS)
AIR POLLUTANT EMITTED	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)	See Emission	Calculations is	n Appendix B				
PARTICULATE MATTER<10 MICRONS (PM ₁₀) PARTICULATE MATTER<2.5 MICRONS (PM _{2.5})							
JLFUR DIOXIDE (SO2)							
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)					_		
LEAD							
OTHER							
HAZARDOUS AIR POLLU	TANT EMIS	SIONS INF	ORMATION	FOR THIS	SOURCE	ELITO AUX	12 000
	SOURCE OF		D ACTUAL			EMSSIONS	
	EMISSION	(AFTER CONTI		(BEFORE CONT	TROLS / LIMITS)		ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT AND CAS NO.	FACTOR	ib/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A							
·							
TOXIC AIR POLLUTAN							
INDICATE EXPECTED							
TOXIC AIR POLLUTANT AND CAS NO.	EF SOURCE	lb/	/hr	lb/	day	lb.	/yr
N/A							
1							
Attachments: (1) emissions calculations and supporting documentation;	(2) indicate all re	equested state a	nd federal enfor	ceable permit lir	nits (e.g. hours o	f operation, emi	ssion rates) and

describe how these are monitored and with what frequency; and (3) describe any monitoring devices, gauges, or test ports for this source.

COMPLETE THIS FORM AND COMPLETE AND ATTACH APPROPRIATE B1 THROUGH B9 FORM FOR EACH SOURCE

EMISSION SOURCE (OTHER)

ng System Conveyor 1 DW DIAGRAM): -BSB-1 or ES-BSC-3.	EMISSION SOURCE ID NO: E CONTROL DEVICE ID NO(S): N EMISSION POINT (STACK) ID N	
1	CONTROL DEVICE ID NO(S): 1	
OW DIAGRAM):	EMISSION POINT (STACK) ID N	O(S): N/A - Fugitive
NTINUOUS PROCESS	MAX. DESIGN	REQUESTED CAPACITY
UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
ODT		
BATCH OPERATION	MAX. DESIGN	REQUESTED CAPACITY
UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNIT/BATCH)
REQUESTED	CAPACITY ANNUAL FUEL USE:	N/A
	BATCH OPERATION UNITS (BATCHES/Y TOTAL MAXI	UNITS CAPACITY (UNIT/HR) ODT 60 tn/hr BATCH OPERATION MAX. DESIGN

.....

EMISSION SOURCE (OTHER)

	for Air Permit to Construct/Oper	ate	B9
уог	EMISSION SOURCE ID NO: E	S-BSC-3	
	CONTROL DEVICE ID NO(S): N	I/A	
5	EMISSION POINT (STACK) ID NO	O(S): N/A - Ft	igitive
BSB-2.			
CESS	MAX. DESIGN	REQUESTED	CAPACITY
UNITS	CAPACITY (UNIT/HR)	LIMITATION	UNIT/HR)
ODT	60 tn/hr		
ON	MAX. DESIGN	REQUESTED	CAPACITY
UNITS	CAPACITY (UNIT/BATCH)		
(BATCHES/V	(R)·		
	·	I/HR)· N/Δ	
		N/A	
	SSB-2. CESS UNITS ON UNITS (BATCHES/Y) TOTAL MAXI	CONTROL DEVICE ID NO(S): N EMISSION POINT (STACK) ID NO BSB-2. MAX. DESIGN CAPACITY (UNIT/HR) ODT 60 tn/hr ON MAX. DESIGN CAPACITY (UNIT/BATCH) UNITS CAPACITY (UNIT/BATCH) (BATCHES/YR): TOTAL MAXIMUM FIRING RATE (MILLION BTL	CONTROL DEVICE ID NO(S): N/A EMISSION POINT (STACK) ID NO(S): N/A - FL SSB-2. MAX. DESIGN REQUESTED LIMITATION(ODT 60 tn/hr ON MAX. DESIGN REQUESTED LIMITATION (UIT) ON MAX. DESIGN REQUESTED LIMITATION (UIT) CAPACITY (UNIT/BATCH) LIMITATION (UIT) (BATCHES/YR): TOTAL MAXIMUM FIRING RATE (MILLION BTU/HR): N/A

EMISSION SOURCE (STORAGE SILO/BINS)

.#VISED 12/01/01	NCDENR/I	Division of Air Quality - Ap	plicatio	n for Air Permit to Co	onstruct/Operat	е	B6
EMISSION SOURCE DESCRIF	PTION: Bagging S	System Bin 1		EMISSION S	OURCE ID NO:	ES-BSB-1	
					EVICE ID NO(S)		
OPERATING SCENARIO:	1	OF1			OINT(STACK) IE		
DESCRIBE IN DETAIL THE PR	ROCESS (ATTACH	H FLOW DIAGRAM):					
Finished product material (pellets	s) are transferred fr	rom ES-BSC-2.					
MATERIAL STORED: Wood	pellets			DENSITY OF MATER	RIAL (LB/FT3):	40	
CAPACITY	CUBIC FEET: '	100		TONS: 2			
DIMENSIONS (FEET)	HEIGHT:	DIAMETER:	(OR)	LENGTH: 7-8'	WIDTH: 7-8'	неіднт 6-7'	
ANNUAL PRODUCT THRO	DUGHPUT (TONS)	ACTUAL:			ESIGN CAPACIT	Y: 30 tph	
PNEUMATICALLY FI	LLED	MECHANICA	ALLY FI	LLED		FILLED FROM	
e BLOWER		d screw conveyor			e RAILC	AR	
d COMPRESSOR		BELT CONVEYOR	>	MOTOR HP:	d TRUC	K	
OTHER:		BUCKET ELEVATOR			d stor	AGE PILE	
		OTHER:			e OTH	ER: Screen	
NO. FILL TUBES:							
MAXIMUM ACFM:							
BY WHAT METHOD IS MATER	RIAL UNLOADED F	FROM SILO?	Direct c	oupled to a duplex net	weigh scale.		
MAXIMUM DESIGN FILLING RA	ATE OF MATERIA	L (TONS/HR): 30					
MAXIMUM DESIGN UNLOADIN	IG RATE OF MATI		30				
COMMENTS:							

EMISSION SOURCE (STORAGE SILO/BINS)

.EVISED 12/01/01 NCD	ENR/Division of Air Quality - A	pplication	on for Air Permit to Co	nstruct/Operate	9	B6
EMISSION SOURCE DESCRIPTION: Bag			EMISSION SC		ES-BSB-2	
	-			VICE ID NO(S):		
OPERATING SCENARIO:	1 OF 1			INT(STACK) ID		
DESCRIBE IN DETAIL THE PROCESS (A	TTACH FLOW DIAGRAM):			· ·		
Finished product material (pellets) are trans						
(policie) and trained						
MATERIAL STORED: Wood pellets			DENSITY OF MATER	IAL (LB/FT3):	40	
CAPACITY CUBIC FEE	ET: 100	,	TONS: 2			
DIMENSIONS (FEET) HEIGHT:	DIAMETER:	(OR)	LENGTH: 7-8'	WIDTH: 7-8'	HEIGHT 6-7'	
ANNUAL PRODUCT THROUGHPUT (TONS) ACTUAL:		MAXIMUM DE	SIGN CAPACIT	y: 30 tph	
PNEUMATICALLY FILLED	MECHANIC	ALLY F	ILLED		FILLED FROM	A No.
G BLOWER	G SCREW CONVEYOR	₹		G RAILCA	AR	
G COMPRESSOR	G BELT CONVEYOR	\supset	MOTOR HP:	G TRUCK	(
G OTHER:	G BUCKET ELEVATOR	₹		G STORA	GE PILE	
	G OTHER:			G OTHE		
INO. FILL TUBES:				0 (0.11)	-	
MAXIMUM ACFM:	- 					
MATERIAL IS FILLED TO:						
WAY ENGINEERS TO.						
BY WHAT METHOD IS MATERIAL UNLOA	ADED EDOM SILO2	Directo	sounded to a dupley and			
I WHAT METHOD IS WATERIAL ONEON	ADED FROM SILO?	Directo	coupled to a duplex net	weigh scale.		
MAXIMUM DESIGN FILLING RATE OF MA	ATERIAL (TONS/HR): 30					
MAXIMUM DESIGN UNLOADING RATE OF	F MATERIAL (TONS/HR):	30				
COMMENTS:						
_						

Summary of Title V Applicable Regulations and Compliance Demonstration Procedures Enviva Pellets Northampton, LLC

Emission Source Description and ID No.	Pollutant	Regulation	Final Control Device	Monitoring\Method\Frequency\ Duration	Recordkeeping	Reporting
Wood-fired Dryer System (ES-DRYER)			Cyclones + WESP	PM emissions shall be controlled by a an ESP. To assure compilance, daily verification of power and rapper operations are functioning. Monthly visual inspection of the ductwork and material collection units. Every 24 months internal inspection of the structural integrity.	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation	Any maintenance performed on the scrubber within 30 days of a writen request by DAQ. Semi-annual progress report and annual compliance certification
Nuisance Dust Systein (ES-NDS) Coarse Hammermills (ES-HM-1 through 8) Pellet Mill Feed Sio (ID No. ES-PMFS) Pellet Fines Bin (ES-PFB) Finished Product Handling (ES-PFP) Dry Line Conveyor Bagging System Conveyor (BSC-1) Bagging System Screens (BSS2, BSS2) Finished Product Handling (ES-FPH)	PM/PM10/ PM2.5	15A NCAC 2D.0515	Fabric Filter	Inspections and maintenance, including monthly inspection of ductwork and annual internal inspection of bagfilter integrity	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation	Semi-annual progress report and annual compliance certification
Pellet Presses & Coolers (ES-CLR-1 through 6)			Cyclones	Inspections and maintenance, including monthly inspection of ductwork and annual internal inspection of cyclone	Written or electronic log of date and time of each inspection, results of inspection and maintenance, and variance from manufacturer's recommendation	Semi-annual progress report and annual compliance certification
Wood-fired Dryer System (ES-DRYER)	202	15A NCAC 2D.0516	WESP	None required because inherently	None required because inherently low sulfur content of wood fuel achieves compliance	ompliance
Emergency Generator (ID No. ES-EG) and Fire Water Pump (ID No. ES-FWP)	202	15A NCAC 2D.0516	N/A	None required because inherer	None required because inherently low sulfur content of fuel achieves compliance	bliance
Wood-fired Dryer System (ES-DRYER)			Cyclones + WESP		Written or electronic log of	
Nuisance Dust System (ES-NDS) Coarse Hammermills (ES-HM-1: through 7) Pellet Mill Feed Silo (ID No. ES-PMFS) Pellet Filnes Bin (ES-PFB) Finished Product Handling (ES-PFB) Bagging System Conveyor (BSC-1) Bagging System Screens (BSC-1) Bagging System Screens (BSC-1)	Opacity	15A NCAC 2D.0521	Fabric Filter	Monthly visible observation for "normal." If above normal, correct action or Method 9 observation required	date/time/result of each observation, results of each non-compliant observation and actions taken to correct, and results of the corrective action	Semi-annual progress report and annual compliance certification
Pellet Presses & Coolers (ES-CLR-1 through 6)			Cyclones			
Emergency Generator (ID No. ES-EG) Fire Water Pump (ID No. ES-FWP)	Opacity	15A NCAC 2D.0521	N/A	N/A	N/A	N/A
Dryer	8	15A NCAC 20,0317/ 15A NCAC 2D,0530	N/A	Monthly CO Emissions Calculations (Calculations of rolling annual emissions)	Rolling Annual VOC Emissions Calculations	Semi-annual summary report and annual compliance certification
Facility-Wide	NOC NOC	15A NCAC 20,0317/ 15A NCAC 2D,0530	N/A	Monthly VOC Emissions Calculations (Calculations of rolling annual emissions) Using Factors Appropriate for the Annual Average Softwood Content Used in that 12-month Period (Factors shall be approved by DAQ).	Rolling Annual VOC Emissions Calculations. Emission Factor Approvals from DAQ.	Semi-annual summany report and annual compliance certification
Emergency Generator (ID No. ES-EG) Fire Water Pump (ID No. ES-FWP)	PM, CO, NOx, NMHC, SO2	40 CFR Part 60 Subpart IIII	N/A	All requirements as outlined in the regulation, including the following: use certified ennergency engines, operate according to manufacturers procedures, use fuel oil with fuel content of no more than 15 ppmw sulfur and cetane index of at least 40, install non-resettable hours meter.	Maintain records of engine certification, fuel certifications and hours/year of operation of each engine	Annual Compliance Certification
Emergency Generator (ID No. ES-EG) Fire Water Pump (ID No. ES-FWP)	HAPs	40 CFR Part 63 Subpart 2222	N/A	Comply with the NSPS requirements above and no other requirements apply	Comply with the NSPS requirements above and no other requirements apply	Annual Compliance Certification

APPENDIX B

Enviva Pellets Northampton, LLC
Emissions Calculations

TABLE B-1 FACILITY-WIDE CRITERIA POLLUTANT SUMMARY ENVIVA PELLETS NORTHAMPTON

Source Description	Unit ID	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	Total VOC (tpy)	CO _{2e} biomass defferal (tpy)	CO _{2e} (tpy)
Dryer System Emergency Generator Fire Water Pump	ES-DRYER ES-EG ES-FWP	60.95 0.50 0.43	125.50 0.58 0.49	29.84 0.03 0.02	29.84 0.03 0.02	29.84 0.03 0.02	19.20 0.0010 0.0008	209.88 0.0015 0.0013	3,341.43 93.35 80.02	162,118.83 93.35 80.02
Hammermills/Nuisance Dust System	ES-HM-1 thru 8/ ES-NDS	1	1	20.27	20.27	20.27	'	24.71	ı	,
Pellet Mill Feed Silo Pellet Fines Bin	ES-PMFS		1 1	0.38	0.38	0.38			1 1	
Pellet Presses and Coolers ES-CLR1 thru -6 Finished Product Handling & Loadout FS, EDH Dt 1.2 pt 1.12	ES-CLR1 thrd -6 FS-FPH Pt 1.2 PR1.12		1	38.52	35.05	21.19	1	142.86	1	
Finished Product Bagging Servening	ES-BSC-1, ES-BSS-1, 2			33.79	30.75	85.81	ľ			
Dried Wood Handling Diesel Storage Tanks	ES-DWH, ES-PP ereir 1 TK1 & TK2 - exempt	1 1	1 1	0.12	0.06	0.01		9.10E-04	1 1	1 1
	Total PSD Emissions	61.88	126.57	128.84	121.79	93.79	19.20	377.46	3,514.80	162,292.20
Fugitive (Non-PSD Sources)										
Bark-Hog	ES-BARK		-	'	٠	'	,	0:30		
Chipping		1	•		•	•	•	1.25	ı	•
Green Hammermills	ES-RCHIP - 1 and 2	•	1	1	•	1	,	1.25	i	1
Green Wood Handling	ES-GWH	1	•	0.03	0.01	0.00	,	1	1	
Green Wood Piles	ES-GWSP1			2.65	1.33	0.20		2.93	-	
	Total Facility Emisions:	61.88	126.57	131.52	123.13	93.99	19.20	382.89	3,514.80	162,292.20

ES-DLB ES-DLC-1 ES-PFB-1(GS-FB) BCS-2,3 BCS-2,3

TABLE B-2
FACILITYWIDE HAP EMISSIONS SUMMARY
ENVIVA PELLETS NORTHAMPTON

Description	Dryer	ES-HM1 thru 8	ES-CLR1 thru 6	ES-EG	ES-FWP	ES-BARK	ES-CHIP-1	ES-RCHIP-1,2	Total
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tby)	(tpy)	(tpy)	(tby)
1,3-Butadiene	# A/A	-	-	2.39E-05	2.05E-05				4.45E-05
Acetaldehyde	6.77E+00	0.00E+00	0.00E+00	4.70E-04	4.03E-04	,			6.77E+00
Acrolein	0.00E+00 ×	1.08E+00	0.00E+00 ✓	5.67E-05	4.86E-05				1.08E+00
Benzene			-	5.71E-04	4.90E-04	1	-		1.06E-03
Formaldehyde	1.26E+01	0.00E+00	1.11E+00	7.23E-04	6.20E-04				1.37E+01
m-,p-Xylene	-		-	1.75E-04	1.50E-04	ı			3.24E-04
Methanol	9.93E+00	9.41E-01	3.58E+00		1	90.0	0.27	0.27	1.51E+01
Propionaldehyde	1.17E+00	0.00E+00	0.00E+00	1.5	Si				1.17E+00
Toluene	_		•	2.51E-04	2.15E-04				4.65E-04
Total PAH (POM)	0.00E+00	ı	-	1.03E-04	8.82E-05	-	-	-	1.91E-04
TOTAL HAP	30.51	2.02	4.69	0.002	0.003	90.0	0.27	0.27	37.82

Coolers

TABLE B3 DETERMINATION OF POLLUTANTS SUBJECT TO AIR TOXICS PERMITTING ENVIVA PELLETS NORTHAMPTON

0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 (Jahrr) 0.00E+00 6.52E+00 0.00E+00 0.00E+00 (Ibflir) (Ibflir) (Ibflir) (1h-02 9.80E-01 5.99E-04 1.44E-02 2.99E-01 Z.06E-02 2.48E-03 Emergency Generator (Ib/fix) (Ib/day) (Ib/yr) 4.79E-02 3.498-01 1.68E+02 2.40E-02 1.88E-03 2.27E-04 2.85E-03 6.98E-04 6.97E+00 2.22E+03 0.00E+00 0.00E+00 0.00E+00 0.60E+00 Pellet Coolera (lb/day) 0.00E+00 (lb/br) Z 90E-01 0.00E+00 | Bohre | Gleyer | Gleyer | Gleher | Gleder | Gleyer | Gl 0.00E+00 2.15E+03 0.00E+00 0.09E+0G 0.00E+00 7.94E+00 0.00E+00 0.00E+00 0.00E+00 0.00£+00 0.00£+00 0.00£+00 0.00E+00 0.00E+00 0:00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 6.23E+00 0.60E+00 0.00E+00 0.00E+00 CAS Number 106-99-0 75-07-0 107-02-8 1330-20-7 108-10-1 75-09-2 71-43-2 50-32-8 67-66-3 100-42-5 108-95-2 20-00-0 108-88-3 Publication
Publication
According to the Control of Con

ER Comparison Table

			Total			TPER (2Q.0711)	13	Modeline
Pollutant	CAS Number	(lb/hr)	(ip/qui)	(Ib/sr)	(lb/hr)	(IIP/qm2)	(III.)	Required?
L.3-Butadiene	0-66-901			8.90E-02			1.108+01	No
Acetaldeh c	75-07-0	3.34[[10]]			6 RaP > 60			No
Acrolein	107-02-8	1318-01			2.00E-02			- Vac
Arsanic				0.00E+00			1.60E-02	N
Benzene	71-43-2			2.12E+00			\$.10E+00	No
Велго(в рузние	50-32-8			4.28E-04			2.20E+00	No.
Betyllium				0.00E+00			2.80E-01	No
Cadmium				0.00E+00			3.70H-01	No
Carbon Tetrachloride				0.00E+D0			4.60E+02	N
Chlorine		0.00E+00	0.00E+00		2,306-01	7.908-61		No.
Chlosobenzene			0.00E+00			4.60E+01		S. No.
Chlotoform	67-66-3			0.00E+00			2.90E+02	ž
Chromis acid (Chromium VI)	7738-91-5		0.00E+00			1,30E-02		Š
Dit2-cth/flexyd phthalate (DEHP)			6.00E+00			6,30E-01		o'N
Eth ene dichloride 1,2-dichloroethane				0.00E+00			2.60E+02	No
Formaldehyde	999099	6.52F +00			100101			. No.
Hexachlorodibonz - 1-dioxin 1,2,3,6,7,8				0.00E+00			5.10E-03	No
Hittogen chloride (hydrochloric scid)		0.00E+00			1.80E-01			Na
Manjames & compounds			0.00E+00			6.30E-01		No.
Mercury, vapor (Include in Mercuri &Compde)			0.0013+00			1.30E-02		No
Meth I chloroform 1,1,1 trichlorocthane		0.00E+00	0.00.00		6.40E+01	2.50E+02		No
Mothal ethyl ketone		0.00E+00	0.00E+00		2.248+01	7.80E+01		No
Nylene	1330-20-7	1.30E-03	3.11E-02		1.642401	\$,70E+01		No
Methyl isobutyl ketone	108-10-1	0.00E+00	0.00E+00		7.608+00	5.20E+01		No
Meth Jene chloride	75-09-2	0.00E+00		0.00E+00	3.90E-01		1,60E+03	No
Nickel metal (Component of Nickel & Compounds)			0.00E+00			1.308-01		Na
Pentachlorathenol		0.00E+00	0.00E+0D		6.40E-03	6.30E-02		No
Perchlorophylone (tetrachloroethylene)				0.00E+00			1.30E+04	No
Pitenol	108-95-2	0.00E+00			2.40E-01			No
Polyce formated birthenyly				0.00E+00			5.60E+00	No
Styring	100-42-5	0.00E+00			2.70E+00			No
Tefrachlorodibenzu-F-dioxin, 2,3,7,8-				0.00E+00			2.00E+04	No
Toluene	108-88-3		4.47E-02			9.80E+01		No.
Trichloroethylene				0.00E+00			4.00E+03	No
Trichlorofluoromethane (CFC 111)		0.00E+00			1.40E+02			No
Vinel chloride				0.00E+00			2.60E+01	No

TABLE B-4 ROTARY DRYER -CRITERIA POLLUTANT EMISSIONS ENVIVA PELLETS NORTHAMPTON

Dryer Inputs

Dryer Throughput (@ Dryer Exit)	647,741 tons year
Annual Dried Wood Throughput of Dryer	537,625 ODT/year
Max. Hourly Dried Wood Throughput of Dryer	71.71 ODT/hr
Burner Heat Input	175.3 MMBtu/hr
Long Term Percent Hardwood	70.0%
Long Term Percent Softwood	30.0%
Short Term Percent Hardwood	40.0%
Short Term Percent Softwood	60.0%
Max Potential Annual Heat Input:	1535628 MMBtu/yr

before countrol TSP 150 1b/hr

Criteria Pollutant Calculations:

Pollutant	Biomass Emission Factor (lb/ODT)	Units	Emission Factor Source	Control Efficiency (%)	Emissions (lb/hr)	Emissions (tpy)
СО	0.23	lb/ODT	Calculated from NOR October 18, 2013 Stack Test (2)	N/A	16.26	60.9
NO _X	0.47	lb/ODT	Calculated from NOR October 18, 2013 Stack Test (2)	N/A	33,48	125.5
PM/PM ₁₀ /PM _{2.5} Condensible Fraction	0.017	lb/MMBtu	AP-42, Section 1.6 ³	Included in factor	2.98	13.1
TSP (Filterable)	0.062	lb/ODT	Calculated from Guaranteed WESP Specifications ¹	Included in factor	4.48	16.8
Total TSP (Filterable + Condensible)					7.46	29.8
PM ₁₀ (Filterable)	0.062	lb/ODT	TSP=PM10=PM2.5	Included in factor	4.48	16.8
Total PM ₁₀ (Filterable + Condensible)					7.46	29.8
PM _{2.5} (Filterable)	0.062	lb/ODT	TSP=PM10=PM2.5	Included in factor	4.48	16.8
Total PM _{2.5} (Filterable + Condensible)					7.46	29.8
SO ₂	0.025	lb/MMBtu	AP-42, Section 1.6 6	N/A	4.38	19.2
Uncontrolled Long Term VOC	0.781	lb/ODT	See Note 4	N/A	N/A	209.9
Short Term VOC (as alpha-pinene)	0.781	lb/ODT	See Note 5	N/A	55.99	N/A
Lead	0.00	N/A	N/A	Included in factor	0.00	0.0

Note:

Te>t

1.521b/hr 1.54 lb/hr

3.07 15/hr 13.47 tpy.

 $^{^{1}}$ Filterable PM/PM $_{10}$ emission factors were provided by the dryer system vendor. The PM $_{2.5}$ filterable emission factor is assumed to be the same as PM and PM $_{10}$.

² CO, NOx, and VOC emission factors are calculated from the Northampton October 2013 stack test.

³ Condensible PM Factor obtained from AP-42, Section 1.6, Table 1.6-1.

⁴ Long Term VOC Emissions:

VOC emission factor obtained from Ahoskie June 2014 stack testing (30% softwood).

VOC emission factor obtained from Ahoskie June 2014 stack testing since Ahoskie VOC emissions were slightly

⁵ Short Term VOC Emissions:

higher than Amory October 2013 Stack Testing

No emission factor is provided in AP-42, Section 1.6 for SO₂ for rotary dryers. Enviva has conservatively calculated SO₂ emissions based upon the heat input of the dryer burners using an emission factor for wood combustion from AP-42, Section 1.6, Table 1.6-2.

	,			
*				

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ROTARY DRYER-HAP AND TAP WOOD COMBUSTION EMISSIONS ENVIVA PELLETS NORTHAMPTON TABLE B-5

Calculation Inputs:

Throughput ODT/yr 537,625 Annual Composition and Throughput Hardwood Composition Softwood Composition

Short Term Composition and Throughput
ODT/hr 71.71 40% Hardwood Composition Softwood Composition

Emission Calculations:

%0

Control Efficiency:

					A	mission Fact	Emission Factor Comparison								
		HAP	NCTAP	voc	AP-42 Calculated Direct wood-fired, hardwood factors	ated Direct hardwood rs	AP-42 Green, Direct wood- fired softwood factors	Direct wood- od factors		Weighted Emission Factor ³		Unonctrolled	Emissions	Unonctrolled Emissions Controlled Emissions	Emissions
Pollutant	CAS	(Yes/No) (Yes/No)	(Yes/No)	(Yes/No)	Emission Factor	Reference	Emission Factor	Reference	Short-term EF	Anuual EF					
					(II)(ODT)		(Ib/ODT)		(Ib/ODT)	(Ib/ODT)	(lh/ODT) EF Source	(lb/hr)	(thy)	(lb/br)	(tpy)
Acetaldehyde	75-07-0	Yes	Yes	Yes	3.83E-03	71	7.50E-02		4.65E-02	2.52E-02	AP-42	3.34E+00	6.77E+00	3.34E+00	6.77E+00
Acrolein	107-02-8	Yes	Yes	Yes	0.00E+00	1.2,4	0.00E+00	1,4	0.00E+00	0.00E+00	AP-42	0.00E+00	0.00E+00 0.00E+00 0.00E+00	0.00E+00	0.00E+00
Formaldehyde	20-00-0	Yes	Yes	Yes	7.15E-03	1,2	1,40E-01	-	8.69E-02	4.70E-02	AP-42	6.23E+00	1.26E+01	6.23E+00	1.26E+01
Methanol	67-56-1	Yes	No	Yes	5.62E-03	1,2	1.10E-01	-	6.82E-02	3.69E-02	AP-42	4.89E+00	9.93E+00	4.89E+00	9.93E+00
Propionaldehyde	123-38-6	Yes	No	Yes	6.64E-04	17	1.30E-02	-	8.07E-03	4.36E-03	AP-42	5.78E-01	1.17E+00	5.78E-01	1.17E+00

30.51

15.04

30.51

15,04

Total HAPs

¹ HAP & TAP emission factors for "Rotary Dryer, green, direct wood-fired, (inlet moisture content >50%, dry basis) softwood were obtained from AP 42, Section 10.6.2, Table 10.6.2-3.

To account for hardwood emissions since no HAP/TAP emission factors are given for direct hardwood-fired, factors were conservatively calculated by multiplying AP-42 Section 10.6.2-3 HAP factors for green, direct softwood fired by the ratio of the VOC emission factors for hardwood to softwood drying (0.24/4.7).

³ Short-term emissions based on worst case processing of 60% softwood.

⁴ Through testing at other Enviva facilities Acrolein and Phenol are typically not evident in the emissions stream.

		0

HAMMERMILLS - VOC, HAP, AND TAP EMISSIONS ENVIVA PELLETS NORTHAMPTON TABLE B-7

Calculation Inputs:

	100000000
Total Plant Throughput ODT/yr	625,225
% of Total Throughput to the	
am of and and and and and and	
Hamnernills	85%

Annual Composition and Throughput

Hammermills Throughput ODT/yr	531,441
Hardwood Composition	%02
Softwood Composition	30%

Short Term Composition and Throughput

The state of the s	81.71	40%	%09
CALCULA CALLE CONTROL WILL A MILE AND CONTROL	ODT/hr	Hardwood Composition	Softwood Composition

Emission Calculations:

					Emission Factor	Factor					. Il
		HAP	NCTAP	NOC	Stack Tests	Cests	<u>e</u>	Emission Factor		Emissions	ions
Pollutant	CAS	(Yes/No)	(Yes/No)	(Yes/No)	Emission Factor	Reference	Short-term EF	Annual EF ⁽²⁾			
	4-1-1				(Ib/ODT)		(Ib/ODT)	(Ib/ODT)	EF Source	(llb/hr)	(tpy)
VOC and Alpha Pinene	N/A	N/A	N/A	N/A	0.093	-	0.732	60.0	Stack Test	59.84	24.71
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.000	2	0.000	0.0000	Stack Test	0.00E+00	0.00E+00
Acrolein	107-02-8	Yes	Yes	Yes	0.004	2	0.004	0.0040	Stack Test	3.31E-01	1.08E+00
Formaldehyde	20-00-0	Yes	Yes	Yes	0.000	2	0.000	0.0000	Stack Test	0.00E+00	0.00E+00
Methanol	67-56-1	Yes	No	Yes	0.004	2	0.004	0.0035	Stack Test	2.89E-01	9.41E-01
Propionaldehyde	123-38-6	Yes	No	Yes	0.000	2	0.000	0.0000	Stack Test	0.00E+00	0.00E+00

1 Stack test and Long-term VOC:

² Stack test and Long-term HAPs:

3 Short-term VOCs: ⁴ Short-term HAPs:

VOC emission factor obtained from Ahoskie June 2014 stack testing (30% softwood).

HAP & TAP emission factors obtained from Enviva Amory facility October 2013 stack testing. Amory stack testing performed at 60% softwood.

24.71 2.02

59.84 0.62

Total VOC Total HAPs

VOC emission factors obtained from Amory October 2013 Stack Testing

HAP & TAP emission factors obtained from Enviva Amory facility October 2013 stack testing. Amory stack testing performed at 60% softwood.



PELLET PRESSES AND COOLERS - VOC, HAP, AND TAP EMISSIONS ENVIVA PELLETS NORTHAMPTON TABLE B-8

Calculation Inputs:

Annual Composition and Throughput

Throughput ODT/yr	625,225	
Hardwood Composition	20%	
Softwood Composition	30%	

81.71 40% Short Term Composition and Throughput Hardwood Composition Softwood Composition ODT/hr

Emission Calculations:

					Emission Factor	Factor					
		HAP	NCTAP	VOC	Stack Tests	l'ests		Emission Factor		Emissions	sions
Pollutant	CAS Number	(Yes/No)	(Yes/No)	(Yes/No)	Emission Factor	Reference	Short-term EF	Annual EF ⁽²⁾	EF Source		
					(IMODT)		(IP/ODT)	(Ib/ODT)		(lb/hr)	(tpy)
VOC as al pha-pinene	N/A	N/A	N/A	N/A	4.57E-01	_	1.81E+00	0.46	stack test	147.52	142.86
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.00E+00	2	0.00E+00	0.00E+00	stack test	0.00E+00	0.00E+00
Acrolein	107-02-8	Yes	Yes	Yes	0.00E+00	7	0.00E+00	0.00E+00	stack test	0.00E+00	0.00E+00
Formaldehyde	0-00-05	Yes	Yes	Yes	3.55E-03	2	3.55E-03	3.55E-03	stack test	2.90E-01	1.11E+00
Methanol	67-56-1	Yes	No	Yes	1.15E-02	2	1.15E-02	1.15E-02	stack test	9.36E-01	3.58E+00
Propionaldehyde	123-38-6	Yes	No	Yes	0.00E+00	2	0.00E+00	0.00E+00	stack test	0.00E+00	0.00E+00
									Total VOC	147.52	142.86
									Total HAPs	1.23	4.69

² Stack test and Long-term HAPs: 1 Stack test and Long-term VOC:

³ Short-term VOCs:
⁴ Short-term HAPs:

VOC emission factor obtained from Ahoskie June 2014 stack testing (45% softwood).

HAP & TAP emission factors obtained from Enviva Amory facility October 2013 stack testing. Amory stack testing performed at 60% softwood.

VOC emission factor obtained from Amory October 2013 Stack Testing
HAP & TAP emission factors obtained from Euviva Amory facility October 2013 stack testing. Amory stack testing performed at 60% softwood.

TABLE B-9 BARK HOG ENVIVA PELLETS NORTHAMPTON

Annual Throughput of Bark Hog

129,030

tons/year (dry wood)1

Dryer Throughput

71.71

tons/hr (dry wood)1

	Emission Factors	Emissi	ons ⁶
Pollutant	(lb/dry wood tons)	(lb/hr)	(tpy)
THC as Carbon ²	0.0041	2.940E-01	0.26
THC as alpha-Pinene ³	0.0047	3.337E-01	0.30
PM ⁴	N/A	N/A	N/A
Methanol ²	0.0010	7.171E-02	0.06

The annual throughput used for the chipper is calculated as 12% of dryer throughput, adjusted for moisture content (wet basis). The short-term throughput is based upon the maximum hourly throughput of the dryer.

² Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Table 7 and Section 10.6.4, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.

³ The THC/VOC makeup of wood is primarily composed of terpenes $(C_5H_8)_n$ [where n = 2, 3, or 4 typically] but to convert from carbon to the equivalent weight in THC/VOC, the assumption was that alphapinene (AP) would be the representative THC/VOC (molecular weight = 136.2 lb/lb-mol). The following equation shows the conversion: lb VOC/ODT = lb C/ODT * (136.2 lb/mol AP / 12 lb/mol C) * (1 mol AP / 10 mol C)

⁴ PM emission factor is not applicable as the bark hog emissions are routed downward to the ground.

TABLE B-10 ELECTRIC POWERED CHIPPER (ES-EPWC) - VOC, HAP, AND TAP EMISSIONS ENVIVA PELLETS NORTHAMPTON

Annual Throughput to ES-CHIP-1	1,075,250	tn/yr
Moisture Content:	50%	
Annual Throughput to ES-CHIP-1	537,625	tons/year (dry wood)1
Short-term Throughput of Chipper	71.71	tons/hr (dry wood) ¹

2	Emission Factors	Emissions ⁵	
Pollutant	(lb/dry wood tons)	(lb/hr)	(tpy)
THC as Carbon ²	0.0041	2.940E-01	1.10
THC as alpha-Pinene ³	0.0047	3.337E-01	1.25
PM^4	N/A	N/A	N/A
Methanol ²	0.0010	7.171E-02	0.27

The hourly and annual throughputs used for the chipper are conservatively assumed to be the same as the annual throughput of the dryer (note that 50% of the dryer throughput normally comes from purchased chips).

but to convert from carbon to the equivalent weight in THC/VOC, the assumption was that alphapinene (AP) would be the representative THC/VOC (molecular weight = 136.2 lb/lb-mol). The following equation shows the conversion:

lb VOC/ODT = lb C/ODT * (136.2 lb/mol AP / 12 lb/mol C) * (1 mol AP / 10 mol C)

² Emission factor obtained from available emissions factors for rechippers in AP-42 Section 10.6.3, Table 7 and Section 10.6.4, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.

 $^{^3}$ The THC/VOC makeup of wood is primarily composed of terpenes $(C_5H_8)_n$ [where n=2,3, or 4 typically]

⁴ PM emission factor is not applicable as rechipper emissions are routed downward to the ground.

⁵ Short term emissions were based upon the max short term capacity of the chippers. Emissions are representative of the total combined emissions for both rechippers.

TABLE B-11 GREEN HAMMERMILLS (ES-RCHP 1 and 2) - VOC, HAP, AND TAP EMISSIONS ENVIVA PELLETS NORTHAMPTON

Combined Annual Throughput to ES-RCHP-1,2	1,075,250	tn/yr
Moisture Content:	50%	
Annual Throughput to ES-CHP2	537,625	tons/year (dry wood)1
Short-term Throughput of Green Hammermill	71.71	tons/hr (dry wood) ¹

	Emission Factors	Emissions ⁵	
Pollutant	(lb/dry wood tons)	(lb/hr)	(tpy)
THC as Carbon ²	0.0041	2.940E-01	1.10
THC as alpha-Pinene ³ PM ⁴	0.0047 N/A	3.337E-01 N/A	1.25 N/A
Methanol ²	0.0010	7.171E-02	0.27

The hourly and annual throughput used for the hammermills is assumed to be the same as the annual throughput of the dryer.

Note that the throughputs listed above are throughputs that are allocated across both hammermills.

² Emission factor obtained from available emissions factors for rechippers in AP-42 Section 10.6.3, Table 7 and Section 10.6.4, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.

³ The THC/VOC makeup of wood is primarily composed of terpenes (C₅H₈)_n [where n = 2, 3, or 4 typically] but to convert from carbon to the equivalent weight in THC/VOC, the assumption was that alphapinene (AP) would be the representative THC/VOC (molecular weight = 136.2 lb/lb-mol). The following equation shows the conversion:
lb VOC/ODT = lb C/ODT * (136.2 lb/mol AP / 12 lb/mol C) * (1 mol AP / 10 mol C)

⁴ PM emission factor is not applicable as rechipper emissions are routed downward to the ground.

⁵ Short term emissions were based upon the max short term capacity of the chippers. Emissions are representative of the total combined emissions for both rechippers.

BAGFILTER AND CYCLONE EMISSIONS **ENVIVA PELLETS NORTHAMPTON** TABLE B-12

		Filter. Vent -or-		Pollutant	Annual					Emissions	sions		
	Emission	Cyclone	Flowrate ¹	Loading ²	Operation	% PM that is	that is	PM	_	PM10	I ₁₀ ³	PM _{2.5}	.5.
Emission Unit	Source ID	Œ	(cfm)	(gr/cf)	(hours)	PM_{10}	PM _{2.5}	(lb/hr)	(tby)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Hammermills 1-3	ES-HM-1 through 3, DLC	CD-HM-BF-1	45000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
Hammernills 4-6	ES-HM-4 through 6	CD-HM-BF-2	45000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
Hammermills 7, 8, NDS	ES-HM-7 and 8, ES-NDS	CD-HM-BF-3	45,000	0.004	8,760	100%	100%	1.54	92.9	1.54	92.9	1.54	92.9
Pellet Mill Feed Silo Bin Vent Filter	ES-PMFS	CD-PMFS-BV	2,500	0.004	8,760	100%	100%	0.09	0.38	60.0	0.38	0.09	0.38
Pellet Mill Fines Bin Bin Vent Filter	ES-FB	CD-FB-BV	3,600	0.004	8,760	100%	100%	0.12	0.54	0.12	0.54	0.12	0.54
Pellet Coolers Cyclone 1	ES-CLR-1	CD-CLR-1	17,100	0.01	8,760	%16	55%	1.47	6.42	1.33	5.84	0.81	3.53
Pellet Coolers Cyclone 2	ES-CLR-2	CD-CLR-2	17,100	0.01	8,760	%16	55%	1.47	6.42	1.33	5.84	0.81	3.53
Pellet Coolers Cyclone 3	ES-CLR-3	CD-CLR-3	17,100	0.01	8,760	%16	55%	1.47	6.42	1.33	5.84	0.81	3,53
Pellet Coolers Cyclone 4	ES-CLR-4	CD-CLR-4	17,100	0.01	8,760	%16	25%	1.47	6.42	1.33	5.84	0.81	3.53
Pellet Coolers Cyclone 5	ES-CLR-5	CD-CLR-5	17,100	0.01	8,760	%16	25%	1.47	6.42	1.33	5.84	0.81	3.53
Pellet Coolers Cyclone 6	ES-CLR-6	CD-CLR-6	17,100	0.01	8,760	91%	55%	1.47	6.42	1.33	5.84	0.81	3.53
Finished Product Handing	ES-FPH, ES-PL1,2, ES-PB1-12	CD-FPH-BV	35,500	0.004	8,760	%16	55%	1.22	5.33	1.11	4.85	0.67	2.93
Finished Product Bagging Screens	ES-BSC-1, ES-BSS-1	CD-BS-BF-1	45,000	0.01	8,760	%16	55%	3.86	16.89	3.51	15.37	2.12	9.29
Finished Product Bagging Screens	ES-BSC-1, ES-BSS-2	CD-BS-BF-2	45,000	0.01	8,760	%16	55%	3.86	16.89	3.51	15.37	2.12	9.29
							TOTAL	22.56	98.83	20.97	91.84	14.59	63,89

¹ Filter, Vent, and Cyclone inlet flow rate (cfm) provided by design engineering firm (Mid-South Engineering Co.). The exit flowrate was conservataively assumed to be the same as the inlet flowrate.

² Pollutant loading provided by Aircon.

³ Pellet cooler cyclone and finished product handling bagfilter speciation based on AP-42 factors for wet wood combustion (Section 1.6) controlled by a mechanical separator. Since the particle size of particle size of particulate matter from a pellet cooler is anticipated to be larger than flyash, this factor is believed to be a conservative indicator of speciation.

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Baghouses and Cyclones



TABLE B-13 EMERGENCY GENERATOR AND FIRE PUMP ENVIVA PELLETS NORTHAMPTON

Emergency Generator Emissions (ES-EG)

Equipment and Fuel Characteristics

Engine Output	0.26	MW
Engine Output Engine Power	350	hp (brake)
		1 ', '
Hours of Operation	500	hr/уг¹
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	7,000	Btu/hr/hp
Fuel Usage	17.6	gal/hr

Criteria Pollutant Emissions

				Emissio	ns
Pollutant	Category	Emission Factor	Units	lb/hr	tpy
TSP	PSD	4.41E-04	1b/kW-hr (2)	0.12	2.88E-02
PM_{10}	PSD	4.41E-04	1b/kW-hr (2)	0.12	2.88E-02
PM _{2.5}	PSD	4.41E-04	lb/kW-hr (2)	0.12	2.88E-02
NO _x	PSD	8.82E-03	lb/kW-hr (5)	2.30	5,75E-0
SO ₂	PSD	15	ppmw (3)	3.81E-03	9,52E-04
co	PSD	7.72E-03	lb/kW-hr (2)	2.01	5.03E-0
VOC (NMHC)	PSD	2.51E-03	lb/MMBtu (4)	6.15E-03	1.54E-0
Acetaldehyde	HAP/TAP	5.37E-06	1b/hp-hr (4)	1.88E-03	4.70E-0
Acrolein	HAP/TAP	6,48E-07	lb/hp-hr (4)	2.27E-04	5.67E-0
Вепzепе	HAP/TAP	6.53E-06	lb/hp-hr (4)	2.29E-03	5.71E-0
Benzo(a)pyrene ⁶	HAP/TAP	1.32E-09	lb/hp-hr (4)	4.61E-07	1,15E-0
1,3-Butadiene	HAP/TAP	2.74E-07	lb/hp-hr (4)	9.58E-05	2.39E-0
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	2.89E-03	7.23E-0
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	4.12E-04	1.03E-0
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	1.00E-03	2.51E-0
m-,p-Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	6.98E-04	1.75E-0
Highest HAP (Formaldehyde)		8.26E-06	lb/hp-hr (4)	2.89E-03	7.23E-0
Total HAPs				9,49E-03	2.37E-0

Note:

¹ NSPS allows for only 100 hrs/yr of non-emergency operation of these engines (not the 500 hours shown). The PTE for the emergency generator is based on 500 hr/yr, though, because the regs allow non-emergency operation and EPA guidance is 500 hr/yr for emergency generators.

² Emissions factors from NSPS Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2009 construction.

³ Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

⁴ Emission factor obtained from AP-42 Section 3.3, Tables 3.3-1 Table 3.3-2.

⁵ Emission factor for NOx is listed as NOx and NMHC (Non-Methane Hydrocarbons or VOC) in Table 4 of NSPS Subpart IIII. Conservatively assumed entire limit attributable to NOx.

⁶ Benzo(a)pyrene is included as a HAP in Total PAH.

Firewater Pump Emissions (ES-FWP)

Equipment and Fuel Characteristics

Engine Output	0.22	MW
Engine Power	300	hp
Hours of Operation	500	hr/yr1
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	7,000	Btu/hr/hp
Fuel Usage	15.1	gal/hr

Criteria Pollutant Emissions

				Emis	sions
Pollutant	Category	Emission Factor	Units	lb/hr	tpy
TSP	PSD	4.41E-04	lb/kW-hг (2)	0.10	2.47E-02
PM_{10}	PSD	4.41E-04	lb/kW-hr (2)	0.10	2.47E-02
PM _{2.5}	PSD	4.41E-04	lb/kW-hr (2)	0.10	2.47E-02
NO _x	PSD	8.82E-03	lb/kW-hr (5)	1.97	4.93E-01
SO ₂	PSD	15	ppmw (3)	3.26E-03	8.16E-04
CO	PSD	7.72E-03	1b/kW-hr (2)	1.73	4.32E-01
VOC (NMHC)	PSD	2.51E-03	lb/MMBtu (4)	5.27E-03	1.32E-03
Acetaldehyde					
Acetaldehyde	HAP/TAP	5.37E-06	lb/hp-hr (4)	1.61E-03	4.03E-04
Acrolein	HAP/TAP	6.48E-07	lb/hp-hr (4)	1.94E-04	4.86E-0
Benzene	HAP/TAP	6.53E-06	lb/hp-hr (4)	1.96E-03	4.90E-0
Benzo(a)pyrene ⁶	HAP/TAP	1.32E-09	lb/hp-hr (4)	3.95E-07	9.87E-08
1,3-Butadiene	НАР/ТАР	2.74E-07	lb/hp-hr (4)	8.21E-05	2.05E-0
Formaldehyde	HAP/TAP	8.26E-06	lb/hp-hr (4)	2.48E-03	6.20E-0
Total PAH (POM)	HAP	1.18E-06	lb/hp-hr (4)	3.53E-04	8.82E-0
Toluene	HAP/TAP	2.86E-06	lb/hp-hr (4)	8.59E-04	2.15E-0
m-,p-Xylene	HAP/TAP	2.00E-06	lb/hp-hr (4)	5.99E-04	1.50E-0
Highest HAP (Formaldehyde)		8.26E-06	1b/hp-hr (4)	2.48E-03	6.20E-0
Total HAPs				8.13E-03	2.03E-0

Note:

¹ NSPS allows for only 100 hrs/yr of non-emergency operation of these engines (not the 500 hours shown). The PTE for the emergency generator is based on 500 hr/yr, though, because the regs allow non-emergency operation and EPA guidance is 500 hr/yr for emergency generators.

² Emissions factors from NSPS Subpart IIII (or 40 CFR 89.112 where applicable) in compliance with post-2009 construction.

³ Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

 $^{^4}$ Emission factor obtained from AP-42 Section 3.3, Tables 3.3-1 Table 3.3-2.

⁵ Emission factor for NOx is listed as NOx and NMHC (Non-Methane Hydrocarbons or VOC) in Table 4 of NSPS Subpart IIII. Conservatively assumed entire limit attributable to NOx.

⁶ Benzo(a)pyrene is included as a HAP in Total PAH.

TABLE B-14 DRIED WOOD HANDLING DROP POINTEMISSIONS ENVIVA PELLETS NORTHAMPTON

537,625 87,600 625,225 15.0% 531,441 625,225 71.710 10.000 81.710 60.000 17% 7% Annual Dryer Output Throughput (ODT/yr)
Maxium Dry Line Annual Throughput (ODT/yr)
Dryer Throughput Plus Dry-line Throughput (ODT/yr)
Annount of Fines Diverted from Hammemulis Max Dryer Short-Term Throughput (ODT/hr)
Dry-line Feed Throughput (ODT/hr)
Max Hamntermill and Bellet Press Throughput (ODT/hr)
Max Bagging System Throughput (ODT/hr)
Dryer Output Moisture Content Annual Hammermill Throughput (ODT/yr) Pellet Press Throughput (ODT/yr) Pellet Mill Output Moisture Content:

					Thro	Throughput						
9	Emission Source Group	Description	Control	Control Description	Max, Hourty ²	Annual	Potential Uncontrolle Emissions for PM ³	Potential Uncontrolled Emissions for PM ³		Potential Uncontrolled Emissions for PM ₁₀ ³	Potential Uncontrolled Emissions for PM _{2.5}	controlled for PM _{2.5}
					(tph)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(Ib/hr)	(tpy)
DPI	ES-DWH	Dryer Discharger to Dryer Collection Conveyor Belt	Enclosed	Reduction to 2 mph mean wind speed	86.40	647,741	3.1E-03	1.2E-02	1.5E-03	5.5E-03	2.2E-04	8.3E-04
DP2	ES-DWH	Pre-screen Feeder Fines Overs to Hammernills Infeed and Distribution	Enclosed	Reduction to 2 mph mean wind speed	14.77	112,992	5,3E-04	2.0E-03	2.5E-04	9.6E-04	3.8E-05	1.5E-04
DP3	ЕЅ-DWН	Hammermills Cyclone Diverter Gates to Hammermills System Discharge Collection Conveyor Belt	Enclosed	Reduction to 2 mph mean wind speed	83.68	640,291	3,0E-03	1.2E-02	1.4E-03	5.4E-03	2.2E-04	8.2E-04
DP4	ES-DWH	Hammermills System Discharge Collection Conveyor Belt to Pellet Mill Feed Silo Infeed Screw	Enclosed	Reduction to 2 mph mean wind speed	98.45	753,283	3.5E-03	1.4E-02	1.7E-03	6.4E-03	2.5E-04	9.7E-04
DP5	ES-DWH	Drop Point for Dry Line Transfer from Dry Line Hopper to Dry Line Conveyor	Enclosed	Reduction to 2 mph mean wind speed	12.05	105,542	4.3E-04	1.9E-03	2,0E-04	9.0E-04	3.1E-05	1.4E-04
DP6	ESpp	Drop Emissions from Pellet Presses to Pellet Press Collection Conveyors	Enclosed	Reduction to 2 mph mean wind speed	87.86	672,285	1.1E-02	4.2E-02	5.2E-03	2,0E-02	7.8E-04	3.0E-03
DP7	ЕЅ-DWН	Drop Emissions from Bagging System Coneyors to Bagging System Bins	Enclosed	Reduction to 2 mph mean wind speed	64.52	625,225	8.0E-03	3.9E-02	3.8E-03	1.8E-02	5.8E-04	2.8E-03
						TOTAL	3.0E-02	1,2E-01	1.4E-02	5.7E-02	2.1E-03	8.7E-03

¹ Frigitive emissions are not included in facility-wide PTE because the Northampton Peller Mill does not belong to one of the listed 28 source categories.
² Max hourly rates based upon maximum calculated throughput rates provided in mass balance provided by Mid-South Engineering Company, June 17, 2011; updated for 13% moisture content on December 29, 2011

³ Based emission factors calculated per AP-42 Section 13.2.4, September 2006.

where. $E = amission factor (tb/ton) \\ k = particle size multiplier (dimensionless) for PM \\ k = particle size multiplier (dimensionless) for PM , o \\ k = particle size multiplier (dimensionless) for PM , o \\ k = particle size multiplier (dimensionless) for PM , s$

0.053

Dryer Exit Pellet Press Exit 2.00 U = mean wind speed (mph)

1.2E-04 5.9E-05 8.9E-06 ial moisture content (%) 17 E for PM (lb/ton) = 3.6E-05 E for PM₁₀ (lb/ton) = 1.7E-05 E for PM₂₃ (lb/ton) = 2.6E-06 M = material moisture content (%) E for PM (lb/ton) =

TABLE B-15 GREEN WOOD HANDLING DROP POINT EXAMPLE EMISSIONS ENVIVA PELLETS NORTHAMPTON

	Emission		Number Type of Of Drop Operation Points	Number of Drop Points	PM Particle Size Multiplier	PM ₁₀ Particle Size Multiplier	PM _{2.5} Particle Size Multiplier	Mean Wind Speed (U)	Material Moisture Content (M)	PM Emission Factor ²	PM ₁₀ Emission Factor ²	PM _{2.5} Emission Factor ²	Potential Throughput	PM Emissions	PM ₁₀ Emissions	PM _{1,6} Emissions
e	Group	Transfer Activity				(dimensionless) (dimensionless) (dimensionless)	(dimensionless)	(mph)	(%)	(lb/ton)	(Ib/ton)	(lb/ton)	(tpy)	(tpy)	(tpy)	(tpy)
GDP1	ES-GWH	Purchased Bark Transfer to Outdoor Storage Area	Batch Drop	-	0.74	0.35	0.053	6.3	%05	3.52E-05	1.67E-05	2.52E-06	129,030	5.75E-04	2.73E-04	4.11E-05
GDP1	ES-GWH	Drop Points via Conveying from Bark Pile to Dryer	Batch Drop	4	0.74	0.35	0.053	6.3	20%	3.52E-05	1.67E-05	2.52E-06	258,060	4.60E-03	2.18E-03	3.29E-04
GDP2	ES-GWH	Transfer Purchased Wood Chips (Wet) to Outdoor Storage	Batch Drop	1	0.74	0.35	0.053	6.3	20%	3.52E-05	1.67E-05	2.52E-06	537,625	2.39E-03	1.14E-03	1.71E-04
GDP2	ES-GWH		Batch Drop	S	0.74	0.35	0.053	0.9	%0\$	3.31E-05	1.57E-05	2.37E-06	1,075,250	2.25E-02	1.07E-02	1.61E-03
		Total Emissions												3.01E-02	1.43E-02	2.15E-03

1. Average moisture content for logs, both, and wood chips (wet) based on material balance provided by design engineering firm (Mid-South Engineering).

2. Emission factor calculation based on formula from AP-A2, Section 13.2.4 - Aggregate Handling and Storage Pites, Equation 13.2.4, (11/06).

where E = emission factor (th/ton)

k = particle size mulliplier (dimensionless) for PM

k = particle size mulliplier (dimensionless) for PM₁₀

k = particle size mulliplier (dimensionless) for PM₁₀

0.74 0.35 0.053 6.3

U = mean wind speed (mph)

M = makerial moisture content (%)
3. PM₁₀ conteol efficiency of 74,7% applied for three-sided enclosed structure with 50% perceity per Sierra Research. "Final BACM Technological and Economic Fearability, Snalyuis", report prepared for the San Longuin Valley Unified Air Pollution Conteol District (3/03). The control efficiency is assumed equivalent for PM₁₀ and PM_{2,5} emissions.
San Longuin Valley Unified Air Pollution Conteol District (3/03). The control efficiency is assumed equivalent for PM₁₀ and PM_{2,5} emissions up these emissions will be negligible.
4. These green wood handling emissions are representative of the fightive emissions at the site. Note there may be multiple drop points for each type but as shown these emissions will be negligible.



TABLE B-16
TANKS EMISSIONS
ENVIVA PELLETS NORTHAMPTON

			Tank D	Tank Dimensions				TANKS 4.0	S 4.0
		Volume	Diameter	Height/Length Orientation Throughput Turnovers(3)	Orientation	Throughput	Turnovers (3)	VOC Emissions	nissions
Tank ID	Tank Description	(gal)	(ft)	(ft)		(gal/yr)		(lb/yr)	(tpy)
TK01	Emergency Generator Fuel Oil Tank ²	2,500	9	12	Vertical	8,813	3.53	1.51	7.55E-04
TK02	Fire Water Pump Fuel Oil Tank ²	200	80	10	Horizontal	7,554	15.11	0.31	1.55E-04
							TOTAL	1.82	9.10E-04

Note:

¹ Conservative design specifications.

² Throughput based on fuel consumption based on engine horsepower (BHP), conversion to fuel usage (gal/hr), and engine operating hours.

³ Tanks Program Calculations are performed with a minimum 1 turnover per year as a conservative measure.

TABLE B-17 POTENTIAL GHG EMISSIONS FROM COMBUSTION SOURCES ENVIVA PELLETS NORTHAMPTON

Operating Data:

Dryer Heat Input 1535628.00 MMBtu/yr

Emergency Generator Output 350 bhp
Operating Schedule 500 hrs/yr

No. 2 Fuel Input 16.7 gal/hr¹
Energy Input 2.282 MMBtu/hr²

Fire Water Pump Output 300 bhp
Operating Schedule 500 brs/yr

rerating Schedule 500 hrs/yr
No. 2 Fuel Input 14.3 gal/hr

1.956 MMBtu/hr²

Energy Input

		Emission Fa	Emission Factors from Table C-1 (kg/MMBtu) ³	(kg/MMBtu) ³		Tier 1 E	Tier 1 Emissions (metric tons)	etric tons)	
Emission Unit ID	Fuel Type	C02	CH4	N20	C02	СН4	N20	Total CO2e biomass deferral ⁴	Total CO2e
ES-DRYER	Wood and Wood Residuals	9.38E+01	3.20E-02	4.20E-03	158,777	54	7	3,341	162,119
ES-EG	No. 2 Fuel Oil (Distillate)	7.40E+01	3.00E-03	6.00E-04	93	3.77E-03	7.55E-04	93	93
ES-FWP	No. 2 Fuel Oil (Distillate)	7.40E+01	3.00E-03	6.00E-04	80	3.23E-03	6.47E-04	80	80

¹ Fuel consumption calculated using a factor of 0.0476 gal/hr-hp. Advanced Environmental Interface, Inc. (1998). General Permits for Emergency Engines. INSIGHTS, 98-2, 3.

² Energy calculated on a fuel consumption basis, using an energy factor of 0.137 MMBtu/gal.

³ Emission factors from Table C-1 and C-2 of GHG Reporting Rule. Emission factors for methane and N2O already multiplied by their respective GWPs of 21 and 310.

sources are not applicable towards PSD and Title V permitting. Therefore CO2 emissions form the dryer are not included in the Total CO2e biomass deferral column. ⁴ As per NC DAQ Biomass Deferral Rule 15A NCAC 02D .0544, CO2 emissions from bioenergy and other biogeneic

160708 ENV NOR T5 App Amendment Emiss Calcs Green Wood Storage Piles

TABLE B-18 GREEN WOOD STORAGE PILES FUGITIVE EMISSIONS ENVIVA PELLETS AHOSKIE

Emission Unit ID Description	tion	TSP Emission Factor ¹ (Ib/day/acre) (Ib/har/ft ²)	nn Factor ¹ (B/hx/ft²)	VOC Emission (lb/day/acre)	ion Factor ³ (Ib/hr/ft²)	Width (ft)	Length (ft)	Height (ft)	Outer Surface Area of Storage Pile (ft²)	PM Emissions (Ib/hr) (tpy)	ssions (tpy)	PM ₁₀ Emissions (1b/hr) (tpy)	issions (tpy)	PM _{2.8} Emissions (fb/hr) (fpy)	ssions (fpy)	VOC as Carbon Emissions (lb/hr) (fpy)	rbon ns (fpy)	VOC as alpha- Pinene Emissions* (lb/hr) (tpy)	sipha- nissions [†] (tpy)
GWSP1 Green Wood Pile No. 1	Vood Pile No. 1	3.71	3.55E-06	3.60	3.44E-06	100	400	01	000'09	0.213	0.933	0.107	0.467	0,0160	0.070	0.21	06.0	0.24	1.03
GWSP2 Green Wood Pile No. 2	700d Pile No. 2	3.71	3,55E-06	3.60	3.44E-06	200	400	10	110,400	0.392	1.717	0.196	0.859	0.0294	0.129	0.38	1.67	0.43	1.90
Total										0.605	2,651	0.303	1.325	0.0454	0.199	65.0	2.57	0.67	2.93

1. TSP emission factor based on U.S. EPA Coursel of Open Fingitive Dust Sources . Research Triangle Park, North Carolina, EPA-4503-48-008. Suptember 1988, Page 4-17.

E=1.7 $\left(\frac{s}{1.5}\right)\left(\frac{(365-p)}{235}\right)\left(\frac{f}{15}\right)$ (lb/day/acre)

s - silt content(%) for lumber sawmills (minimum), from AP-42 Table 13.2.2-1 Based on AP-42, Section 13.2.2, Figure 13.2.1-2. 4.8 120 9.8 s, sill content of wood chips (9_3) ; p, number of days with rainfull greater than 0.01 inch. If (time that wind execods 5.36 n/s - 12 mph) (9_4) :

Based on meteorological data averaged for 2007-2011 for Northampton, NC. 50% PM₁₀/TSP ratio:

PMs is assumed to equal 50% of TSP based on U.S. EPA. Central of Open Figuite Data Sources. Research Triangle Park, North Carolina. EPA-4503-88-008. September 1988.

PMs, is assumed to equal 7.5 % of TSP U.S. EPA Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors. November 2006. 7.5% PM₂₅/TSP ratio:

2. The surface area is calculated as [2*H*L*2*W*H+L*W] + 20% to consider the sloping pile edges. Longth and width based on proposed site design with a conservative height

3. Emission factors obtained from NCASI document provided by SC DHEC for the calculation of fugivive VOC emissions from Douglas Fir wood storage piles. Emission factors ranged from 1.6 to 3.6 th Caerceday. Envir a close to employ the maximum emission factor for purposes of conservatism.

4. Emissions are calculated in Ions of carbon per year by the following formula:

tons C'year = 5 acres * 365 days * 1.6 lh C'acre-day / 2000 lh/ton

Emission factor converted from as carbon to as alpha-pinene by multiplying by 1.14.



APPENDIX C

Enviva Pellets Northampton, LLC
Process Flow Diagram

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NORTHAMPTON PROCESS MAP

