Hearing Officer's Report and Recommendations

Enviva Pellets Northampton, LLC Public Hearing
Monday, May 24, 2021 6:00 PM
Online Meeting via Webex

Public Comment Period: April 24, 2021 through May 26, 2021

Pertaining to Application No. 6600167.20A and
Draft Air Permit No. 10203T08 for:

Enviva Pellets Northampton, LLC
309 Enviva Boulevard
Garysburg, Northampton County, North Carolina
Facility ID No. 6600167
Fee Class: Title V
PSD Class: Major

Hearing Officer

Karyn Kurek, Environmental Engineer II, Mooresville Regional Office

Background

Enviva Pellets Northampton, LLC currently operates under air permit 10203R07, issued October 21, 2020, with an expiration date of February 28, 2025 for a wood pellets manufacturing plant in Garysburg, Northampton County, North Carolina. The plant is currently permitted to produce up to 625,225 oven-dried tons (ODT) per year of wood pellets utilizing up to 30% softwood on a 12-month rolling basis. The allowed production limit, following the completion of control device installation and testing, is 781,255 oven dried tons pellets with up to 80% softwood usage. Plant operations consist of a log chipper, green wood hammermills, bark hog, wood-fired rotary dryer, dried wood handling, dry hammermills, pellet presses and coolers, product loadout operations, and other ancillary activities.

The original TV first time application was submitted on April 22, 2014, within 12 months of commencing operation of the facility, and was amended on August 9, 2016, January 21, April 3, and November 23, 2020. The November 23, 2020, amended application was considered complete on that date and replaced all the other amended first time Title V air permit applications. The submittal of an amended Title V application was required by the permit within 30 days of 10203R07 issuance.

The facility is applying for a first time Title V permit (10203T08) which does not include any significant operational changes at the wood pellet facility and the potential to emit remains the same as under the current permit. Facility-wide emissions, taken from the permit review, are illustrated in the below table:

Table 1
Facility-wide Criteria and CO_2e Emissions Summary
Enviva Pellets Northampton, LLC

	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	Total VOC (tpy)	CO_{2e} (tpy)
Total Emissions:	**83.6**	**78.0**	**141.7**	**74.4**	**50.2**	**10.7**	**50.4**	**3,870**
Total Excluding Fugitives[3]:	**83.6**	**78.0**	**69.7**	**58.1**	**49.6**	**10.7**	**48.5**	**3,870**
PSD Major Source Threshold:	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**--**
Major Source?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**--**

On Saturday April 24, 2021, a notice of public hearing was published in the Roanoke Chowan News Herald and on the DAQ website. Due to Covid-19, the public hearing was held online via Webex on Monday, May 24, 2021. The public comment period was April 24, 2021 through May 26, 2021 at 5:00 PM. Copies of the permit application review and draft air permit were posted on the Division of Air Quality website for public review. Copies of the air quality permit application and related documents were also made available for public review in DAQ's Raleigh Central Office (RCO) and the Raleigh Regional Office (RRO) throughout the public comment period.

Air Quality Permit Application and Review

DAQ's mission is to work with the state's citizens to protect and improve outdoor, or ambient, air quality in North Carolina for the health, benefit, and economic well-being of all citizens. To accomplish this mission, DAQ requires industrial facilities to apply for and receive air quality permits, prior to construction and operation, or modification of the air pollution sources, to ensure compliance with all applicable federal and state regulations.

Mr. Richard Simpson, permit engineer with DAQ's Raleigh Central Permitting Office, reviewed the application submitted by Enviva Pellets Northampton, LLC and determined that the modifications requested by the facility would comply with all applicable federal and state air quality requirements. The current permit was modified into the Title V format with facility comments addressed. The permit application review is available on the DAQ website.

Unless public comments received during the public hearing reveal that DAQ was in error or incomplete in its evaluation of the Enviva Pellet Northampton, LLC permit application from an air quality perspective, and if the applicant has met all the federal and state laws, regulations, and rules for the protection of the environment and North Carolina citizens, then the Division is obligated to issue an air permit to the facility. The public hearing officer's responses to both written and oral comments will address issues raised in light of these requirements.

Public Comments

During the May 24, 2021 online Webex hearing, 39 attendees were present, with 29 registered to formally comment. Of the 29 that were registered to formally comment, 22 attendees did, in fact, make formal comments. Of the 22 formal comments received, 41% (9 commentors) were in support of the Enviva Pellets Northampton facility and the draft permit, while 55% (12 commentors) were against the facility, and 4% (1 commentor) had no opinion either way. Comments received during the hearing included: 45% related to fugitive dust concerns and the facility lacking a formal fugitive dust plan, 18% environmental justice concerns, and 9% related to the lack of continuous air monitoring requirements. The remaining comments were not relevant to a specific air permit concern.

In addition to the public hearing oral comments, DAQ received 28 written comments via email during the public comment period. Only 27 contained actual comments within the body of the email. Of the submitted written comments, 59% were in support of the Enviva Pellets Northampton facility, while 30% were against the facility and 11% had no opinion either way. The submitted written concerns were in alignment with oral comments received during the public hearing with several comments containing multiple topics of concern; 18% related to a fugitive dust plan being needed, 11% related to environmental justice concerns, 3% related to VE monitoring at the facility, 74% of the comments were not related to the air quality permit for the facility and one comment (3%) was from Enviva requesting permit edits. These comments were

forwarded to the Central Permitting office to be addressed and are summarized below in Section 5.

The written and oral comments received have been separated by areas of environmental concern. Section 1 summarizes and addresses comments related to Enviva Pellets Northampton, LLC and the concern of fugitive dust. Section 2 summarizes and addresses comments related to the facility and environmental justice. Section 3 summarizes and addresses comments related to facility air monitoring requirements. Section 4 summarizes and addresses comments related to visible emission/opacity monitoring. Section 5 addresses specific comments received during the hearing from Enviva regarding their own permit and their request for changes to the draft permit.

SECTION 1 – Comments requesting the need for a fugitive dust plan for the facility

Of the written and oral comments made during the public comment period, 31% (15 of 49) were directly related to the concern of fugitive dust emanating from the facility and the current draft permit not addressing this issue; these commentors requested a fugitive dust plan for the facility.

In support of the hearing officer's own findings, the Staff Attorney for the Environmental Law Center commented that in August 2019 there were three complaints received by DAQ during the Enviva Northampton Public hearing. She mentioned "…neighbors of the facility during the public hearing for draft permit 10203R06 in August 2019: [stated]

> • "I [live] right across from the plant. I want you to explain to me all of this dust getting on my house and my vehicles. I have to wash them every two or three months, my house; my vehicles every two or three days."
> • "[M]y dad died last year of COPD. I have family – sisters, brother, uncle, and grandparents that have a history of COPD, asthma, allergy . . . and dealing with cancer – some of them. We deal with enough – the air we're breathing, the traffic from the trucks, the grit, the dirt on the cars, homes. We deal with enough of this stuff."
> • "I live 2.5 miles North of Enviva. I hear the noise from Enviva clearly . . . . I cannot deal with the dust. I cannot deal with the excessive smoke." "

In addition, the commentor goes on to further clarify that the residents have complained of fugitive dust for years with "these 'substantive complaints' (having been) made explicitly to DEQ in both written and oral comments on draft air permits for this facility. Draft Condition MM does not include sufficient monitoring, recordkeeping, and reporting requirements to ensure compliance with the condition's terms." The commentor provided pictures of dust on cars from a similar wood pellet plant, Bayou Wood Pellet Plant, emphasizing that "like" facilities have fugitive dust issues that are not being addressed.

A retired Executive Director of Clean Water for NC echoed a similar concern stating there is an "absence of any rigorous, site specific and enforceable fugitive dust control plan incorporated

into the permit. Numerous local residents have complained about fugitive dust appearing on their homes, vehicles and other surfaces, but no dust control plan has been drafted. Given DAQ's long experience with Enviva-Ahoskie and other wood pellet operations, and nearly 8 years of operations of this plant, it should have been obvious from the start that such a dust control plan would be needed to protect the surrounding community."

A commentor, representing herself, submitted a written request asking that DAQ "at least require Enviva to develop and implement a fugitive dust control plan to mitigate the impact that harmful dust pollution is having on the surrounding community, and incorporate that plan into Enviva's Title V permit."

A commentor, representing herself, made an oral comment during the public hearing stating "many of these people (in the community of Enviva Pellets Northampton) feel unsafe of even being able to go outside because of the dust particles. We ask that you require Enviva to develop and implement a fugitive dust control plan and incorporate that into the Title V permit."

A commentor representing the Dogwood Alliance made an oral comment during the public hearing stating "require [the facility] to develop and implement a fugitive dust control plan to mitigate the impact that harmful dust is having on the surrounding community and that they incorporate that plan into the Title V permit. The dust is so bad that I've heard several residents describe feeling as if they are prisoners in their own homes. I have attended every single public hearing that the DAQ has hosted for Enviva in Northampton County and every single hearing, I have heard residents show concerns about the dust. It is therefore the responsibility of the DAQ [to] respond to community concerns and require that they develop and implement a fugitive dust control plan."

A commentor representing Powell Environmental Law made an oral comment during the public hearing stating "[we] continue to hear, unfortunately, there are problems with fugitive dust. Fugitive dust is more than a nuisance. It can be a serious health risk, especially to those who are sensitive, like the elderly, children and people with conditions like asthma. The Title V permit contains only a vague general condition that lacks any specific requirements or steps to address the problems. The draft permit lacks any monitoring, designed to assure compliance with the existing fugitive dust requirements. Title V permits must include adequate monitoring record, keeping and reporting requirements designed to assure the compliance with all applicable requirements."

Hearing Officer's Response to this Comment:

The final draft permit, 10203T08, removed 15A NCAC 02D .0540 "Particulates from Fugitive Dust Emission Sources" that was part of the permit issued under the State construction and operating permit program (10203R07), since the rule is captured under General Condition MM within the permit. Under this rule, "fugitive dust emissions" are defined as "particulate matter that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as unloading and loading areas, process areas, stockpiles, stockpile working, plant parking lots, and plant roads, including access roads and haul roads." In addition, this rule does not allow a facility to "cause or allow fugitive dust emissions to cause or contribute to substantive complaints or visible emissions in excess of that allowed…..if fugitive dust emissions from a facility required to comply with this Rule cause or contribute to substantive complaints, the owner or operator of the facility shall: (1) within 30 days upon receipt of written notification from the Director of a second substantive complaint in a 12-month period, submit to the Director a written report that includes the identification of the probable sources of the fugitive dust emissions causing complaints and what measures can be made to abate the fugitive emissions…". Section (a)(6) of this rule defines Substantive Complaints as "complaints that are verified by the Division with physical evidence of excess fugitive dust emissions."

Upon investigation and review of Mr. Richard Simpson's permit application emission calculations for the Enviva Pellets Northampton, LLC Title V permit, it was discovered that facility-wide, potential to emit, fugitive emission calculations were performed for TSP, PM_{10} and $PM_{2.5}$ (see below table).

Total PTE fugitive emissions are 72.0 tpy TSP, 16.3 tpy PM_{10}, and 0.6 tpy $PM_{2.5}$; these are not insignificant quantities of fugitive emissions (i.e., <5 tpy).

Table 1
Facility-wide Criteria and CO_2e Emissions Summary
Enviva Pellets Northampton, LLC

	CO (tpy)	NOx (tpy)	TSP (tpy)	PM-10 (tpy)	PM-2.5 (tpy)	SO2 (tpy)	Total VOC (tpy)	CO_{2e} (tpy)
Total Emissions:	83.6	78.0	141.7	74.4	50.2	10.7	50.4	3,870
Total Excluding Fugitives[3]:	83.6	78.0	69.7	58.1	49.6	10.7	48.5	3,870
PSD Major Source Threshold:	250	250	250	250	250	250	250	--
Major Source?	No	No	No	No	No	No	No	--
Fugitive Emissions	0.0	0.0	72.0	16.3	0.6	0.0	1.9	0

A further source-by-source review illustrated that the main contributors for fugitive PM emissions are "Unpaved Roads," "Storage Piles," and "Material Handling." The "Unpaved Roads" sources had a PTE of 32.25 tpy TSP, 9.19 tpy PM_{10} and 0.92 tpy $PM_{2.5}$ (see below table); these calculations assumed a control efficiency of 90% for water/dust suppression activities, which is not required of the facility within the current draft permit. Since the permit does not

currently require the facility to control fugitive dust by 90%, these emission calculations are significantly below what the facility will actually emit without a fugitive dust plan. In addition, these are not insignificant quantities of fugitive emissions.

Table 15b
Haul Road Emissions
Potential Fugitive PM Emissions from Unpaved Roads
Enviva Pellets Northampton, LLC

Vehicle Activity	Distance Traveled per Roundtrip[1] (ft)	Trips Per Day[1]	Daily VMT	Events Per Year (days)	Empty Truck Weight (lb)	Loaded Truck Weight (lb)	Average Truck Weight (ton)	Annual VMT
Log Delivery to Crane Storage Area	2,000	93	35	365	40,400	85,400	31.5	12,860
Log Delivery to Log Storage Area	2,000	93	35	365	40,400	85,400	31.5	12,860
Purchased Chip Delivery	7,000	114	151	365	41,000	91,000	33.0	55,238
Bark Delivery - Dumper	7,000	11	15	365	41,000	81,000	30.5	5,334
Additive Delivery	500	0.26	0.02	365	41,000	91,000	33.0	9
							32.4	**86,300**

Notes:
[1] Distance traveled per round trip and daily trip counts were provided by Enviva.

Emission Calculations Unpaved Roads:

Pollutant	Emperical Constant (k)[1] (lb/VMT)	Silt Content (S)[2] (%)	Particle Constant a[3] (-)	Particle Constant b[3] (-)	Emission Factor[3] (lb/VMT)	Potential Emissions[4] (tpy)
PM	4.9	8.4	0.7	0.45	7.47	32.25
PM_{10}	1.5	8.4	0.9	0.45	2.13	9.19
$PM_{2.5}$	0.15	8.4	0.9	0.45	0.21	0.92

Notes:
[1] Constants (k, a, & b) based on AP-42, Section 13.2.2 (Unpaved Roads), Table 13.2.2-2 for Industrial Roads, November 2006
[2] Silt loading factor based on AP-42, Section 13.2.2 (Unpaved Roads), Table 13.2.2-1, Lumber Sawmills, November 2006
[3] Emission factors calculated based on Equation 1a from AP-42 Section 13.2.2 - Unpaved Roads, 11/06.
Particulate Emission Factor: $E_{ext} = k\,(s/12)^a \times (W/3)^b * (365-P/365)$
k = particle size multiplier for particle size range and units of interest
E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
P=number of days with at least 0.01 in of precipitation during the averaging period =
= 120 Per AP-42, Section 13.2.1, Figure 13.2.1-2 (Northampton, VA).
[4] Potential emissions calculated from appropriate emission factor times vehicle miles traveled with control efficiency of 90% for water / dust suppression activities.

... | 8 - Baghouses and Cyclones | 9a - Material Handling | 9b - Storage Piles | 10 - Chipper | 11 - Bark Hog | 12 - Debarker | 13 - IES-GN-1 & 2, IES-FWP

The "Storage Piles" sources had a PTE of 16.6 tpy TSP, 8.32 tpy PM_{10} and 1.25 tpy $PM_{2.5}$ (see below table); these are not insignificant quantities of fugitive emissions.

Table 9b
Potential Emissions from Wood Storage Pile Wind Erosion
Enviva Pellets Northampton, LLC

Source	Description	PM Emission Factor[1] (lb/day/acre)	PM Emission Factor[1] (lb/hr/ft²)	VOC Emission Factor[2] (lb/day/acre)	VOC Emission Factor[2] (lb/hr/ft²)	Pile Width/ Diameter (ft)	Pile Length (ft)	Pile Height (ft)	Outer Surface Area of Pile[3] (ft²)	Potential PM Emissions Max (lb/hr)	Potential PM Emissions Annual (tpy)	Potential PM_{10} Emissions Max (lb/hr)	Potential PM_{10} Emissions Annual (tpy)	Potential $PM_{2.5}$ Emissions Max (lb/hr)	Potential $PM_{2.5}$ Emissions Annual (tpy)	Potential VOC Emissions as propane[4] Max (lb/hr)	Potential VOC Emissions as propane[4] Annual (tpy)
IES-DRYSHAVE	Dry Shaving Storage Pile	8.6	8.2E-06	3.6	3.4E-06	100	--	25	10,537	0.09	0.38	0.04	0.19	0.007	0.03	0.04	0.19
IES-GWHS	Green Wood Storage Pile No. 1	8.6	8.2E-06	3.6	3.4E-06	155	--	72	30,907	0.25	1.11	0.13	0.56	0.019	0.08	0.13	0.57
	Green Wood Storage Pile No. 2	8.6	8.2E-06	3.6	3.4E-06	350	400	25	213,000	1.75	7.67	0.88	3.84	0.131	0.58	0.89	3.92
	Green Wood Storage Pile No. 3	8.6	8.2E-06	3.6	3.4E-06	150	150	25	45,000	0.37	1.62	0.19	0.81	0.028	0.12	0.19	0.83
	Green Wood Storage Pile No. 4	8.6	8.2E-06	3.6	3.4E-06	200	200	25	72,000	0.59	2.59	0.30	1.30	0.044	0.19	0.30	1.32
	Bark Fuel Storage Pile No. 1	8.6	8.2E-06	3.6	3.4E-06	150	150	25	45,000	0.37	1.62	0.185	0.81	2.8E-02	0.122	0.19	0.83
	Bark Fuel Storage Pile No. 2	8.6	8.2E-06	3.6	3.4E-06	100	200	25	42,000	0.345	1.513	0.173	0.757	2.6E-02	1.1E-01	0.18	0.77
	Bark Fuel Storage Pile No. 3	8.6	8.2E-06	3.6	3.4E-06	50	--	25	3,332	0.027	0.120	0.014	0.060	2.1E-03	9.0E-03	0.014	0.061
									Total Emissions:	**3.80**	**16.6**	**1.90**	**8.32**	**0.28**	**1.25**	**1.94**	**8.50**

Notes:
[1] TSP emission factor based on U.S. EPA Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988, Page 4-17.

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

where:
s, silt content of wood chips (%): 8.4 — s - silt content (%) for lumber sawmills (mean) from AP-42, Section 13.2.2 - Unpaved Roads, 11/06, Table 13.2.2-1
p, number of days with rainfall greater than 0.01 inch: 110 — Based on AP-42, Section 13.2.2 - Unpaved Roads, 11/06, Figure 13.2.1-2.
f (time that wind exceeds 5.36 m/s - 12 mph) (%): 12.5 — Based on meteorological data averaged for 2012-2016 for Maxton, NC National Weather Service (NWS) Station
PM_{10}/TSP ratio: 50% — PM_{10} is assumed to equal 50% of TSP based on U.S. EPA Control of Open Fugitive Dust Sources, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.
$PM_{2.5}$/TSP ratio: 7.5% — $PM_{2.5}$ 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.

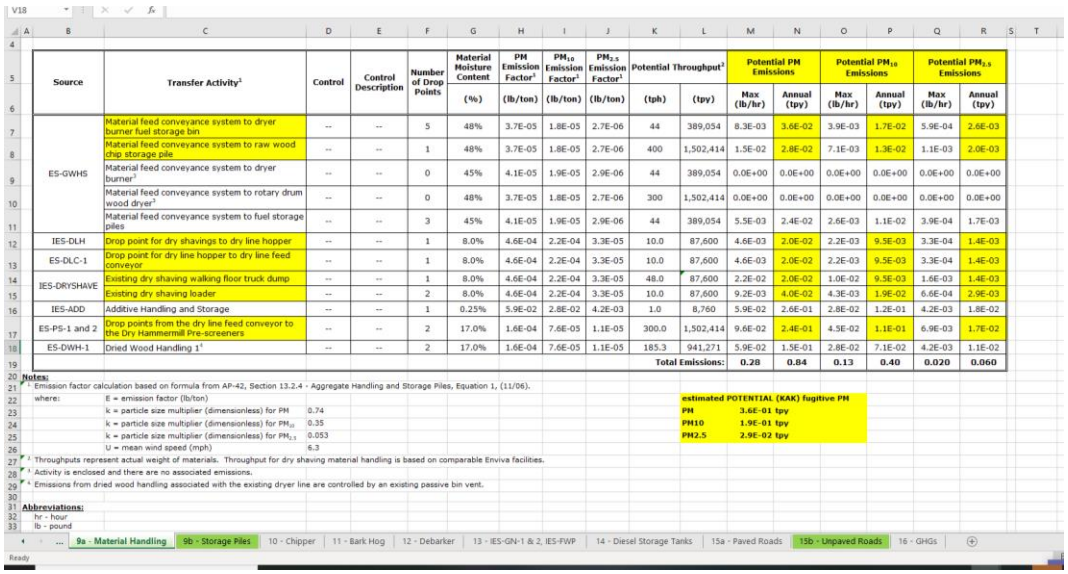
[2] VOC emission factor obtained from NCASI Technical Bulletin 700. Emission factors ranged from 1.6 to 3.6 lb C/acre-day. As Enviva has engineering data that shows VOC emissions from greenwood storage piles are less than the low end of the range of the factors listed, Enviva chose to employ the maximum emission factor from the NCASI document for purposes of conservatism.
[3] The surface area for rectangular piles is calculated as [2*H*L+2*W*H+L*W] + 20% to consider the sloping pile edges. Pile dimensions were provided by Enviva.
The surface area for circular piles is calculated as $[\Pi*R*(R^2+H^2)^{0.5}]$ + 20% to consider the sloping pile edges. Diameter and height were provided by Enviva.
[4] Emissions are calculated in tons of carbon per year by the following formula:
tons C/year = 5 acres * 365 days * 1.6 lb C/acre-day / 2000 lb/ton
Emission factor converted from as carbon to as propane by multiplying by 1.22.

Abbreviations:
EPA - Environmental Protection Agency
PM - particulate matter
ft - feet
PM_{10}- particulate matter with an aerodynamic diameter less than 10 microns
ft^2 - square feet
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less

... | 9a - Material Handling | 9b - Storage Piles | 10 - Chipper | 11 - Bark Hog | 12 - Debarker | 13 - IES-GN-1 & 2, IES-FWP | 14 - Diesel Storage Tanks | 15a - Paved Roads | 15b - Unpaved Roads | 16 - GHGs

Ready

While the "Material Handling" calculations are less impactful as a stand-alone fugitive dust source, they do contribute to the overall facility-wide impact (see below table) with 0.036 tpy TSP, 0.019 PM_{10}, and 0.0029 tpy $PM_{2.5}$.



Source	Transfer Activity[1]	Control	Control Description	Number of Drop Points	Material Moisture Content	PM Emission Factor[1]	PM_{10} Emission Factor[1]	$PM_{2.5}$ Emission Factor[1]	Potential Throughput[2]		Potential PM Emissions		Potential PM_{10} Emissions		Potential $PM_{2.5}$ Emissions	
					(%)	(lb/ton)	(lb/ton)	(lb/ton)	(tph)	(tpy)	Max (lb/hr)	Annual (tpy)	Max (lb/hr)	Annual (tpy)	Max (lb/hr)	Annual (tpy)
ES-GWHS	Material feed conveyance system to dryer burner fuel storage bin	--	--	5	48%	3.7E-05	1.8E-05	2.7E-06	44	389,054	8.3E-03	3.6E-02	3.9E-03	1.7E-02	5.9E-04	2.6E-03
	Material feed conveyance system to raw wood chip storage pile	--	--	1	48%	3.7E-05	1.8E-05	2.7E-06	400	1,502,414	1.5E-02	2.8E-02	7.1E-03	1.3E-02	1.1E-03	2.0E-03
	Material feed conveyance system to dryer burner[3]	--	--	0	45%	4.1E-05	1.9E-05	2.9E-06	44	389,054	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Material feed conveyance system to rotary drum wood dryer[3]	--	--	0	48%	3.7E-05	1.8E-05	2.7E-06	300	1,502,414	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Material feed conveyance system to fuel storage piles	--	--	3	45%	4.1E-05	1.9E-05	2.9E-06	44	389,054	5.5E-03	2.4E-02	2.6E-03	1.1E-02	3.9E-04	1.7E-03
IES-DLH	Drop point for dry shavings to dry line hopper	--	--	1	8.0%	4.6E-04	2.2E-04	3.3E-05	10.0	87,600	4.6E-03	2.0E-02	2.2E-03	9.5E-03	3.3E-04	1.4E-03
ES-DLC-1	Drop point for dry line hopper to dry line feed conveyor	--	--	1	8.0%	4.6E-04	2.2E-04	3.3E-05	10.0	87,600	4.6E-03	2.0E-02	2.2E-03	9.5E-03	3.3E-04	1.4E-03
IES-DRYSHAVE	Existing dry shaving walking floor truck dump	--	--	1	8.0%	4.6E-04	2.2E-04	3.3E-05	48.0	87,600	2.2E-02	2.0E-02	1.0E-02	9.5E-03	1.6E-03	1.4E-03
	Existing dry shaving loader	--	--	2	8.0%	4.6E-04	2.2E-04	3.3E-05	10.0	87,600	9.2E-03	4.0E-02	4.3E-03	1.9E-02	6.6E-04	2.9E-03
IES-ADD	Additive Handling and Storage	--	--	1	0.25%	5.9E-02	2.8E-02	4.2E-03	1.0	8,760	5.9E-02	2.6E-01	2.8E-02	1.2E-01	4.2E-03	1.8E-02
ES-PS-1 and 2	Drop points from the dry line feed conveyor to the Dry Hammermill Pre-screeners	--	--	2	17.0%	1.6E-04	7.6E-05	1.1E-05	300.0	1,502,414	9.6E-02	2.4E-01	4.5E-02	1.1E-01	6.9E-03	1.7E-02
ES-DWH-1	Dried Wood Handling 1[4]	--	--	2	17.0%	1.6E-04	7.6E-05	1.1E-05	185.3	941,271	5.9E-02	1.5E-01	2.8E-02	7.1E-02	4.2E-03	1.1E-02
										Total Emissions:	0.28	0.84	0.13	0.40	0.020	0.060

Notes:

[1] Emission factor calculation based on formula from AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, Equation 1, (11/06).

where:

E = emission factor (lb/ton)		
k = particle size multiplier (dimensionless) for PM	0.74	
k = particle size multiplier (dimensionless) for PM_{10}	0.35	
k = particle size multiplier (dimensionless) for $PM_{2.5}$	0.053	
U = mean wind speed (mph)	6.3	

estimated POTENTIAL (KAK) fugitive PM	
PM	3.6E-01 tpy
PM10	1.9E-01 tpy
PM2.5	2.9E-02 tpy

[2] Throughputs represent actual weight of materials. Throughput for dry shaving material handling is based on comparable Enviva facilities.

[3] Activity is enclosed and there are no associated emissions.

[4] Emissions from dried wood handling associated with the existing dryer line are controlled by an existing passive bin vent.

Abbreviations:
hr - hour
lb - pound

This facility has the potential to emit a substantiated amount of fugitive dust emissions based on the permit engineer's calculations and information provided by the facility in the permit application.

Further investigation into fugitive dust concerns against Enviva Pellets Northampton, LLC are evident in the August 20, 2019 public hearing records, specifically pages 17 and 18 of the hearing officer's report, indicating that the public openly expressed concern regarding fugitive dust emanating from this facility back in 2019. The 2019 hearing officer's response to these fugitive dust complaints was that 15A NCAC 02D .0540 "Particulates from Fugitive Dust Emission Sources" would address any further dust issues emanating from the facility.

Based on a query of the facility's compliance records, the facility has not had any substantive complaints related to fugitive dust nor any observations of fugitive dust during compliance inspections.

<u>Hearing Officer's Response to this Comment:</u>
Although the facility-wide potential to emit fugitive dust emissions taken from this facility's permit application indicates the facility has the potential to emit fugitive dust emissions, 15 NCAC 02D .0540 section (a)(6) defines Substantive Complaints as "complaints that are verified by the Division with physical evidence of excess fugitive dust emissions." Based on a query of

the facility's compliance records, the facility has not had any substantive complaints related to fugitive dust nor any observations of fugitive dust during compliance inspections. 15 NCAC 02D .0540(a)(6), defines what constitutes a substantive compliant against the facility with regards to fugitive dust emissions. The Enviva Pellets Northampton facility does not have any recorded substantive fugitive dust complaints. The rule clearly requires, under section (d), that two substantive complaints within a 12-month period are required to trigger the submittal of a fugitive dust plan by the facility; therefore, the facility cannot be required to submit a fugitive dust plan.

Recommendation: No changes to the draft permit are being recommended.

SECTION 2 – Comments related to Environmental Justice

Of the written and oral comments made during the public comment period, 14% (7 of 49) were directly related to the concern of environmental justice.

Mr. Robby Phillips, representing Dogwood Alliance, made an oral comment during the public hearing stating "Our significant matter of environmental justice as well, the Northampton County communities over 50%, black or African American, and his poverty rates. Well, above the national average."

A student from UNC Chapel Hill made an oral comment during the public hearing stating "Adjoined previous callers and emphasizing that these environmental justice and environmental protection issues require regulatory action."

A resident and concerned citizen made an oral comment during the public hearing stating "Point and the reason being most of the time these plants are located in communities where it's mostly 25% or more black and people of color populations in these communities."

A Retired Executive Director of Clean Water for NC made a written comment during the formal commenting period stating "In 2019, the Zip Code 27831 which includes Garysburg and the Enviva Northampton facility, was 79.7% African-American, more than 50% higher than the NC average population, and therefore an obvious Environmental Justice population. "

A citizen of the Occaneechi Band of Saponi Nation and President of the NCDP Native American Caucus made a written comment during the formal commenting period stating "These factories are often in black and brown communities, and most of these happen to be in places where there

are indigenous tribal nations present. According to the Environmental Integrity organization, this Enviva [facility] operates the nation's dirtiest pellet mill, according to the report. None of the state's four plants deploy pollution-control devices common elsewhere, it says."

Hearing Officer's Response to this Comment:
DEQ performed an extensive Environmental Justice Report for the Enviva Northampton facility that analyzed sociodemographic data (race, ethnicity, and poverty, county health data, and state designated Tribal statistical areas) in conjunction with an overview of the draft air quality permit. The data from this report does indicate higher percentages for Non-White populations as well as elevated poverty levels overall, consistent with the points made by multiple commenters. Given this data, additional outreach and engagement was conducted in this area. The Division of Air Quality permit is protective of human health and the environment.

Recommendation: No changes to the draft permit are deemed necessary to address these comments.

SECTION 3 – Comments requesting the facility to have air monitoring

Of the written and oral comments made during the public comment period, 6% (3 of 49) were directly requesting the facility be required to have air monitoring requirements.

A concerned citizen made an oral comment during the public hearing stating "I'm also what the AG department calls a tree farmer. DAQ needs to require them to install air monitoring [for] all of this dust."

A commentor representing Powell Environmental Law made an oral comment during the public hearing stating "The draft permit lacks any monitoring, designed to assure compliance with the existing fugitive dust requirements. So, DAQ must revise the permit to include visible emissions monitoring and record keeping and reporting for fugitive sources. Ideally, this monitoring should be conducted on a daily basis for all fugitive sources at the facility and more importantly require that prompt action, be taken and problems are observed."

Hearing Officer's Response to this Comment:
Under Section 1 above, the facility-wide potential to emit fugitive dust emissions taken from this facility's permit application indicated the facility has the potential to emit fugitive dust emissions, 15 NCAC 02D .0540 section (a)(6) defines Substantive Complaints as "complaints that are verified by the Division with physical evidence of excess fugitive dust emissions." Based on a query of the facility compliance records, the facility has not had any substantive

complaints related to fugitive dust nor any observations of fugitive dust during compliance inspections. The rule, 15 NCAC 02D 0.540 section (a)(6), clearly defines what constitutes a substantive compliant against the facility with regards to fugitive dust emissions. The Enviva Pellets Northampton facility does not have any substantive fugitive dust complaints. The rule clearly requires, under section (d), that two substantive complaints within a 12-month period are required to trigger the submittal of a fugitive dust plan by the facility; therefore, the facility cannot be required to submit a fugitive dust plan.

Visible emission monitoring is addressed under Section 4 of this report.

Recommendation: The resolution to these comments is addressed under Section 1 and 4 recommendations.

SECTION 4 – Comments requesting the need for visible emission/opacity monitoring

Of the written and oral comments made during the public comment period, 3.7% (1 of 49) were directly requesting the facility be required to monitor for visible emissions to ensure compliance with the 20% opacity limit set forth in the current permit draft.

A Staff Attorney for the Environmental Law Center stated "The draft permit is also deficient because it fails to require monitoring sufficient to assure compliance with the applicable 20% opacity limit for point sources set forth, allows an untrained individual to pick any time during the first 30 days of the permit's effective period to subjectively determine a "normal" opacity level from the sources. The draft permit provides no further requirements for how normal opacity is determined. The monitoring requirement is further deficient because a once-per-month observation is insufficient to show compliance with a permit condition".

A commentor representing Powell Environmental Law made an oral comment during the public hearing stating "DAQ must revise the permit to include visible emissions monitoring and record keeping and reporting for fugitive sources. Ideally, this monitoring should be conducted on a daily basis for all fugitive sources at the facility and more importantly require that prompt action, be taken and problems are observed."

Hearing Officer's Response to this Comment:

The final draft permit, 10203T08, permit condition 2.1.A.3.c, 15A NCAC 02D .0521: "Control of Visible Emissions" monitoring requirements (page 11) indicates that "to ensure compliance, once a week the Permittee shall observe the emission points of these sources (ID Nos. ES-GWHS, ES-GHM-1 through ES-GHM-5, ES-DRYER-1, and ES-DRYER-2), for any visible emissions above normal. The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement. For all new emission sources or control devices listed in the above table, the Permittee shall establish "normal" in the first 30 days following the commencement of operation."

In addition, permit condition 2.1.B.2.c states, "To ensure compliance, once a week the Permittee shall observe the emission points of these sources (ID Nos. ES-DWH-1, ES-DWH-2, ES-HM-1 through ES-HM-8, and ES-DLC-1) for any visible emissions above normal. The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement. For all new emission sources or control devices listed in the above table, the Permittee shall establish "normal" in the first 30 days following the commencement of operation."

Further permit condition 2.1.C.2.c states "To ensure compliance, once a week the Permittee shall observe the emission points of these sources (ID Nos. ES-DSR, ES-DSS, ES-DSHM-1, and ES-DSHM-2) for any visible emissions above normal. The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement. For all new emission sources or control devices listed in the above table, the Permittee shall establish "normal" in the first 30 days following the commencement of operation."

Permit condition 2.1.D.3.c states "To ensure compliance, once a week the Permittee shall observe the emission points of these sources (ID No. ES-PMFS, ES-CLR-1 through ES-CLR-6, ES-PCHP, ES-FPH, ES-PB-1 through ES-PB-12, ES-PL-1, and ES-PL-2) for any visible emissions above normal. The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement. For all new emission sources or control devices listed in the above table, the Permittee shall establish "normal" in the first 30 days following the commencement of operation. "

In response to the written comment, the facility's current draft permit requires Enviva Northampton, LLC to perform weekly visible emission observations not monthly. The weekly observations are more stringent than a once per month requirement and requires the facility to

stay acutely aware of the opacity emanating from their processes which allows a timelier response to any possible variances.

In addition, with regards to the comment that the draft permit "allows an untrained individual to pick any time during the first 30 days of the permit's effective period to subjectively determine a "normal" opacity level from the sources.". The Federal opacity standards for various industries is found in 40 CFR Part 60, Part 61 and Part 62 which require the use of Reference Method 9 or Reference Method 22 for determining the level or frequency of visible emissions by trained observers. Method 9 is the federal requirement for reading opacity as required in the draft permit for Enviva Northampton, LLC. While Method 22 is used in conjunction with emission standards or practices in which no visible emissions is the stated requirement. Method 22 differs from Method 9 in that Method 22 indicates only the absences or presence of emissions whereas Method 9 indicates the opacity of the emissions.

Method 9 opacity training requires a one day, in-class portion which discusses opacity in detail as well as the EPA requirements for observing and quantifying opacity. In addition to the in-class training, the trainee must attend a field exercise which consists of observing both white and black smoke each consisting of 25 observations. The field certification test consists of showing the trainee a complete run of 50 plumes—25 black plumes and 25 white plumes—generated by a smoke generator. Plumes within each set of 25 black and 25 white runs are presented in random order. The trainee assigns an opacity value to each plume and records his/her observation on a suitable answer sheet. At the completion of each run of 50 readings, the score of the trainee is determined by the training company. If a candidate fails to qualify, the complete run of 50 readings must be repeated in any retest. The trainee must pass both the white and black smoke sections in order to pass the Method 9 certification process.

Although not required under this rule, the Enviva Northampton facility has Certified, Method 9 employee's conducting the visible emission observations; therefore, these Enviva employees are fully trained to observe opacity and define exceedances above 20% and determine what constitutes "normal" operating opacity.

With regards to the facility being required to define "normal" in the first 30 days following the commencement of operation. This is standard DAQ permit language for new sources which was included in the previous permit 10203R07; the requirement is not new. This facility completed construction on all control devices February 2021, has met this permit requirement and is conducting visible emission observations.

Recommendation: No changes to the draft permit are being recommended at this time. The facility is conducting visible emission observations via certified Method 9 employees and is required under this permit to conduct the observations on a weekly basis. The wording in this Title V permit for the visible emission conditions is consistent with other Title V permits within the state and has been reviewed by EPA who commented that these conditions are consistent with Part 70 requirements.

SECTION 5 – Comments received during the hearing from Enviva regarding their own permit and their request for changes to the draft permit

The Director of Enviva Environmental Affairs submitted the below written comment during the comment period requesting permit changes to his company's own permit. Although the public hearing is not the correct forum for a facility to request edits to their own air permit, his comments are addressed below.

1. RTO and RTO/RCO Firebox Temperature Averaging Period.

   Condition 2.2 A.2.f of the draft permit requires Enviva to monitor the average combustion chamber temperature of the regenerative thermal oxidizers (RTOs) and RTO/regenerative catalytic oxidizer (RCO) and maintain the 3-hour average firebox temperature for each firebox comprising the RTO or RTO/RCO at or above the minimum average temperatures established during the performance test.

   Enviva requests that the permit be revised to allow compliance based on a 3-hour block average temperature, consistent with the requirements of 40 CFR 63, Subpart DDDD – National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products (also referred to as the PCWP MACT). The 3-hour block averaging period is consistent with Enviva's permits in other states, with permits issued by the North Carolina Division of Air Quality (DAQ) for identical control devices used at wood product plants subject to the PCWP MACT, with DAQ's own Incinerator regulations, and with other recent permits issued by DAQ for other source types and control devices.

   The US Environmental Protection Agency (EPA) explained the rationale behind the use of a 3-hour block average in the preamble to the draft PCWP MACT13:

   "EPA selected the 3-hour averaging time because the initial performance test provisions require a source to perform a minimum of three 1-hour test runs, and the control device operating requirements are based on the average values obtained using all test data obtained during the performance test. Each 3-hour average parameter value must remain

within the level established during the performance test in order to demonstrate continuous compliance with the operating requirement. Additionally, HAP destruction efficiency of thermal and catalytic oxidizers are subject to larger short-term variations than other control devices (e.g., biofilters) due to potential variability in combustion zone temperature; therefore, EPA believed it was appropriate to use a 3-hour block averaging requirement."

The minimum average firebox temperature for the RTOs and RTO/RCO at the Northampton plant are required to be established using the same procedures required by the PCWP MACT and the control devices are identical to those used by sources subject to the PCWP MACT.

In addition to the PCWP MACT, there are numerous other federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) that utilize 3-hour block averages as the basis for compliance with emission standards or parametric monitoring, including but not limited to, 40 CFR 60 Subparts BBa – Standards of Performance for Kraft Pulp Mill Affected Sources and CCCC – Standards of Performance for Commercial and Industrial Solid Waste Incineration Units and 40 CFR 63 Subparts Y – National Emission Standards for Marine Tank Vessel Loading Operations, RRR – NESHAP for Secondary Aluminum Production, AAAA -NESHAP: Municipal Solid Waste Landfills, MMMM – NESHAP for Surface Coating of Miscellaneous Metal Parts and Products, QQQQ – NESHAP: Surface Coating of Wood Building Products, SSSS – NESHAP: Surface Coating of Metal Coil, PPPPP – NESHAP for Engine Test Cells/Stands, SSSSS – NESHAP for Refractory Products Manufacturing, and AAAAA – NESHAP for Lime Manufacturing Plants.

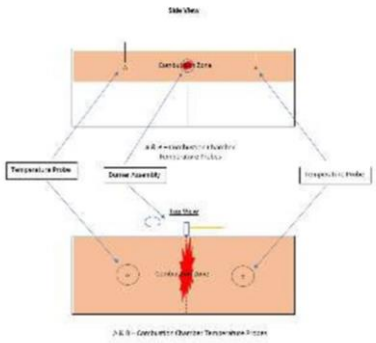
Considering all of the above, there is ample justification for use of a 3-hour block average for demonstrating compliance with the minimum average combustion chamber temperatures for the Northampton RTOs and RCO/RCO.

2. Removal of Language Requiring Temperature Monitoring in the Second Half of the Oxidizer Away from the Flame Zone.

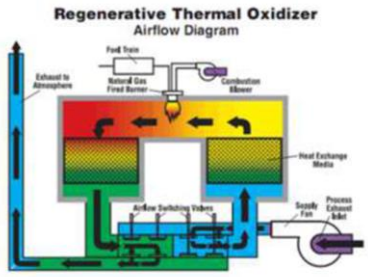
   Condition 2.2 A.2.f of the draft permit requires Enviva to monitor the temperature in the combustion chamber "(the second half of the oxidizer away from the flame zone)" of the RTOs and RTO/RCO. This language is not consistent with the equipment configuration as specified by the vendor design specifications. Furthermore, this language contradicts Condition 2.2 A.2.d.vi, of the draft permit which accurately reflects the location of the thermocouples. As described in Condition 2.2 A.2.d.vi, the RTOs and RTO/RCO are each comprised of multiple fireboxes, with each firebox containing two temperature

probes. The minimum average firebox temperature for each firebox is based on the average temperature of the two temperature probes over the span of the compliance test runs. As such, Enviva requests that the language requiring monitoring in "the second half of the oxidizer away from the flame zone" be removed from Condition 2.2 A.2.f.

For reference, the diagram below illustrates the location of the two thermocouples in a two (2) can RTO (i.e., firebox) per the vendor design specifications. Note, air flows through to the burner flame (from can A to can B or can B to can A) always crossing through the path of the burner flame before exiting the RTO.



Depiction of a two can RTO system



3. Frequency of Visible Emissions Observations.

The draft permit requires weekly visible emissions observations for numerous emission sources at the Northampton plant (Conditions 2.1 A.3.c, Condition 2.1 B.2.c, Condition 2.1 C.2.c, and Condition 2.1 D.3.c). This is inconsistent with all other Enviva permits issued by DAQ which require monthly observations (Enviva Sampson Air Quality Permit No. 10386R04, Enviva Hamlet Air Quality Permit No. 10365R05 and, Enviva Ahoskie Air Quality Permit No. 10121T04). During previous discussions with DAQ, DAQ indicated that the required frequency of observations is determined on an individual facility basis upon reviewing the compliance history of the facility.

The draft permit review document indicates that the Northampton facility is in compliance with all applicable requirements and states that "according to the RRO compliance database, no Notices of Violation (NOVs) have been issued to this facility." Considering the facility's compliance record and the fact that the facility does not have a history of formal dust complaints, Enviva asserts that there is ample justification to require visible emissions observations on a monthly basis rather than weekly.

4. Correction to Condition 2.1.A.1.h.

   Enviva requests the following correction (in bold font) to Condition 2.**1** A.1.h to reference the correct citation:

   Once initial testing has been performed, the parameters in Section 2.**1** A.1. h. will be established and included in the next permit.

5. Suggested Revisions to Condition 2.1.A.3.d.

   Enviva requests the following edits (in strikethrough and bold font) to Condition 2.1 A.3.d, which requires visible emissions observations for the furnace bypass stacks (ID Nos. ES-FURNACEBYP-1, and ES-FURNACEBYP-2) for each idle mode of the calendar year:

   *The Permittee shall be deemed to be in noncompliance with 15A NCAC 02D .0521 if the required ~~weekly~~ observations are not conducted as required; if the above-normal emissions are not corrected within the monitoring period or the percent opacity demonstration cannot be made; or if "normal" is not established for these sources in the first ~~30~~ **180** days following the effective date of this permit/of beginning operation.*

   As previously discussed during the draft permit review, use of the furnace bypass stacks are infrequent events that may not occur for periods of up to six months. Enviva is requesting 180 days to establish "normal" because a furnace idle event may not occur within the first 30 days of permit issuance. "Normal" will be established during the furnace idle event after permit issuance.

6. Suggested revision to Condition 2.1.A.2.c.

Enviva requests the following edit (in strike through and bold font) for clarity to Condition 2.1. A.2.c, which allows use of diesel fuel in the furnace during bypass operation as noted in previously submitted comments.

Monitoring/Recordkeeping/Reporting *[15A NCAC 02Q .0508(f)]*

c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of biomass in the wood-fired direct heat drying systems ***(ID Nos. ES-DRYER-1 and ES-DRYER-2)****, propane or natural gas for regenerative thermal oxidizers (ID No. CD-RTO-1 and CD-RTO-2), and diesel fuel in the furnace* ~~***bypasses***~~ ***(ID No. ES-FURNACEBYP-1 and ES-FURNACEBYP-2)****.*

7. Suggested revisions to Condition 2.2.A.2.n.

Enviva requests the following revision (in strike through and bold font) for clarity to Condition 2.2.A.2.n.

i. The Permittee shall calculate the total emissions of NOx, CO, VOC, and filterable PM monthly and shall record the emissions monthly in a logbook (written or electronic format) kept on-site and made available to DAQ personnel upon request. Monthly NOx emissions, in tons, shall be calculated by the following equations and emission factors (excluding the new wood dryer controls in the event the second dryer is not installed) ~~***and the most recent***~~ ***until*** *site-specific* ~~***approved***~~ *NOx emission factors* ***are*** *established through stack testing* ***and approved by DAQ:*** *…*

ii. Monthly VOC emissions, in tons, shall be calculated by the following equations and emission factors (excluding the new wood dryer controls in the event the second dryer is not installed) ~~***and the new***~~ ***until*** *site-specific* ~~***approved***~~ *VOC emission factors* ***are*** *established through stack testing* ***and approved by DAQ****:*

Hearing Officer's Response to this Comment:

Regarding item one above, the facility was contacted via telephone from the DAQ permitting section to further discuss this comment, the permit remains unchanged. Regarding item two above, the facility requested that the language requiring monitoring in "the second half of the

oxidizer away from the flame zone" be removed from Condition 2.2 A.2.f. Regarding item three above, visible emission observations remain weekly and only can be less frequent after demonstrating consistent compliance. Item four above, correcting a typo for the numbering of Section 2.1.A.1.h will be corrected. Item five above, under Condition 2.1.A.3.d, the facility requested changing the 30-day requirement to 180 days, however the language will be changed to "at the first idle bypass mode after the effective date of this permit or beginning of operation." Item six above requests modified language for clarity of Condition 2.1.A.2.c.; the language will be modified for clarity. Item seven above requests modified language for clarity of Condition 2.2.A.2.n; the language will be modified for clarity.

Recommendation: It is recommended that language requiring monitoring in "the second half of the oxidizer away from the flame zone" be removed from Condition 2.2 A.2.f. Also recommended is correcting a typo for the numbering of Section 2.1.A.1.h. It is also recommended under Condition 2.1.A.3.d changing the 30-day requirement to "at the first idle bypass mode after the effective date of this permit or beginning of operation." Item six above suggests clarified language to Condition 2.1.A.2.c, it is recommended the draft permit condition be modified to reflect this clarified language. Item seven above suggests clarified language to Condition 2.2.A.2.n, it is recommended the draft permit condition be modified to reflect this clarified language.

Conclusions and Recommendations

After considering all the public comments submitted during the comment period, regarding whether to issue the draft air quality permit to Enviva Pellets Northampton, LLC as originally drafted or request a modification, it is the recommendation of the hearing officer that the Director issue the Air Permit after considering the following:

- In response to comments, Section 5 above:
    - It is recommended that the language requiring monitoring in "the second half of the oxidizer away from the flame zone" be removed from Condition 2.2 A.2.f.
    - Also recommended is correcting a typo for the numbering of Section 2.1.A.1.h.
    - It is recommended under Condition 2.1.A.3.d changing the 30-day requirement to "at the first idle bypass mode after the effective date of this permit or beginning of operation."
    - It is recommended the draft permit Condition 2.1.A.2.c be modified to reflect the below clarified language:

Monitoring/Recordkeeping/Reporting *[15A NCAC 02Q .0508(f)]*

*c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of biomass in the wood-fired direct heat drying systems **(ID Nos. ES-DRYER-1 and ES-DRYER-2)**, propane or natural gas for regenerative thermal oxidizers (ID No. CD-RTO-1 and CD-RTO-2), and diesel fuel in the furnace **(ID No. ES- FURNACEBYP-1 and ES-FURNACEBYP-2)**.*

- It is recommended the draft permit Condition 2.2.A.2.n, be modified to reflect the below clarified language:

*iii. The Permittee shall calculate the total emissions of NOx, CO, VOC, and filterable PM monthly and shall record the emissions monthly in a logbook (written or electronic format) kept on-site and made available to DAQ personnel upon request. Monthly NOx emissions, in tons, shall be calculated by the following equations and emission factors (excluding the new wood dryer controls in the event the second dryer is not installed) **until** site-specific NOx emission factors **are** established through stack testing **and approved by DAQ:***

*iv. Monthly VOC emissions, in tons, shall be calculated by the following equations and emission factors (excluding the new wood dryer controls in the event the second dryer is not installed) **until** site-specific VOC emission factors **are** established through stack testing **and approved by DAQ**:*

In addition, I recommend DAQ staff remain diligent and responsive to the health concerns of nearby communities that may remain should this modification be completed. This can be achieved through thorough air quality inspections and timely investigation of concerns or complaints.

Karyn A. Kurek, Hearing Officer

6/28/2021
Date