

ENVIRONMENT & HEALTH

Received

MAY 1 4 2018

Air Permits Section

Mr. William Willets, PE Chief, Permitting Section, Division of Air Quality NC Department of Environmental Quality 1641 Mail Service Center Raleigh, NC 27699-1641

Re: Permit Modification for Classification as a PSD Minor Source Enviva Pellets Hamlet, LLC Hamlet, North Carolina Richmond County Permit No.: 10365R02 Facility ID: 7700096

Dear Mr. Willets:

Enclosed please find a North Carolina Department of Environment Quality (NC DEQ) permit application package for a permit modification to classify the Enviva Pellets Hamlet, LLC (Enviva) (NC DEQ Facility ID #7700096) in Richmond County as a Prevention of Significant Determination (PSD) minor source.

Enviva was initially permitted to construct a wood pellets manufacturing plant (referred to herein as "the Hamlet plant" or "the facility") under the authorization of PSD Permit No. 10365R00 issued by the North Carolina Department of Environment and Natural Resources (DENR), now the NC Department of Environmental Quality (NCDEQ), Division of Air Quality (DAQ) on March 29, 2016.¹ The plant is currently permitted to produce up to 537,625 oven-dried tons (ODT) per year of wood pellets utilizing up to 75% softwood on a 12-month rolling basis. Enviva has initiated onsite construction of the Hamlet plant but has not yet completed construction activities.

Enviva is submitting this permit modification application to reflect planned changes for the Hamlet plant since the submittal of the original construction permit application. These changes are being implemented to meet new customer softwood percentage and production rate demands and to incorporate significant emission reduction efforts to minimize emissions impacts associated with the project. Because of these changes, the Hamlet plant's potential emissions for all criteria pollutants will be less Date May 9, 2018

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¹ Permit Nos. 10365R01 and 10365R02 were subsequently issued on April 7, 2017 and June 8, 2017, respectively.



than the PSD major source thresholds of 250 tpy and, thus, the facility will be classified as a PSD synthetic minor source. The facility will, however, continue to be classified as a major source under the Title V and hazardous air pollutant (HAP) programs. Therefore, this application is being submitted to modify the existing PSD permit to incorporate the proposed construction changes and to reclassify the permit as a PSD Synthetic Minor facility.

In addition to these physical design changes to the proposed construction, Enviva is proposing several updates to the previous PSD permit as part of this application.

As required, three (3) copies of the complete permit application package and an application processing fees in an amount of \$947 are enclosed. In addition, Enviva has submitted the required zoning determination documents to both the City of Hamlet and Richmond County departments.

Thank you for your prompt attention to this matter. If you have any questions regarding this request, please contact me at (225) 408-2691 or Kai Simonsen, Air Permit Engineer at Enviva, at (984) 789-3628.

Yours sincerely,

MX

Michael Carbon Managing Principal Air Sciences

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Enclosures: Permit Application including Appendices

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Prepared for Enviva Pellets Hamlet, LLC Richmond County, North Carolina

Prepared By Ramboll US Corporation Research Triangle Park, North Carolina

Project Number 1690006061

Date May 2018

APPLICATION FOR PERMIT MODIFICATION FOR CLASSIFICATION AS A PSD MINOR SOURCE ENVIVA PELLETS HAMLET, LLC





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ACRONYMS AND ABBREVIATIONS

AAL	Acceptable Ambient Level
AP-42	Compilation of Air Pollutant Emission Factors
bhp	brake horsepower
ВМР	Best Management Practice
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CI	Compression Ignition
со	Carbon Monoxide
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
FSC	Forest Stewardship Council
HAP	Hazardous Air Pollutant
hp	horsepower
ICE	Internal Combustion Engine
lb	Pound
MACT	Maximum Achievable Control Technology
MMBtu	Million British thermal units
NAAQS	National Ambient Air Quality Standards
NCAC	North Carolina Administrative Code
NCASI	National Council for Air and Stream Improvement
NCDEQ	North Carolina Department of Environmental Quality
NESHAP	National Emission Standards for Hazardous Air Pollutants
NNSR	Nonattainment New Source Review
NOx	Nitrogen Oxides (NO + NO2)
NSPS	New Source Performance Standards
NSR	New Source Review
NWS	National Weather Service
ODT	Oven Dried Tons
PEFC	Programme for the Endorsement of Forest Certifications
PM	Particulate Matter

PM _{2.5}	Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Diameter
PM10	Particulate Matter Less Than 10 Micrometers in Aerodynamic Diameter
PSD	Prevention of Significant Deterioration
PSEU	Pollutant Specific Emission Unit
RICE	Reciprocating Internal Combustion Engine
RCO	Regenerative Catalytic Oxidizer
RTO	Regenerative Thermal Oxidizer
SIP	State Implementation Plan
50 ₂	Sulfur Dioxide
SFI	Sustainable Forestry Initiative
ТАР	Toxic Air Pollutant
тсо	Thermal Catalytic Oxidizer
tph	tons per hour
tpy	tons per year
EPA	US Environmental Protection Agency
VOC	Volatile Organic Compounds
WESP	Wet Electrostatic Precipitator

1. INTRODUCTION

Enviva Pellets Hamlet, LLC (Enviva) was initially permitted to construct a wood pellets manufacturing plant (referred to herein as "the Hamlet plant" or "the facility") in Richmond County, North Carolina under the authorization of Prevention of Significant Deterioration (PSD) Permit No. 10365R00 issued by the North Carolina Department of Environment and Natural Resources (DENR), now the NC Department of Environmental Quality (NCDEQ), Division of Air Quality (DAQ) on March 29, 2016.¹ The plant is currently permitted to produce up to 537,625 oven-dried tons (ODT) per year of wood pellets utilizing up to 75% softwood on a 12-month rolling basis. The plant will consist of the following processes: Log Chipper, Bark Hog, Green Wood Hammermills, Rotary Dryer, Dry Hammermills, Pellet Presses and Coolers, Product Loadout operations and other ancillary activities. Enviva has initiated onsite construction activities on the Hamlet plant but has not yet completed construction activities.

The Hamlet plant is currently permitted as a major source with respect to the Title V and New Source Review (NSR) permitting programs, because potential facility-wide emissions of one or more criteria pollutants were estimated to exceed the major source thresholds of 100 tons per year (tpy) and 250 tpy, respectively. Additionally, the plant is permitted as a major source of hazardous air pollutants (HAP) due to potential total HAP emissions and maximum individual HAP emissions estimated to exceed the major source threshold of 25 tpy, and 10 tpy, respectively.

Enviva is submitting this permit modification application to reflect planned changes for the Hamlet plant since the submittal of the original construction permit application. These changes are being implemented to meet new customer softwood percentage and production rate demands and to incorporate significant emission reduction efforts to minimize emissions impacts associated with the project. Because of these changes, the Hamlet plant's potential emissions for all criteria pollutants will be less than the PSD major source thresholds of 250 tpy and, thus, the facility will be classified as a PSD synthetic minor source. The facility will, however, continue to be classified as a major source under the Title V and HAP programs. Therefore, this application is being submitted to modify the existing PSD permit to incorporate the proposed changes and to reclassify the permit as a PSD Synthetic Minor facility.

The following summarizes the proposed physical changes and changes in the method of operation associated with the new plant design:

- Increase production rate from 537,625 ODT per year to 625,011 ODT per year by
 upgrading pellet dies with a new prototype while increasing the amount of softwood
 processed from a maximum of 75% to a maximum of 85%;
- Incorporate a permit condition that allows Enviva to operate either up to 625,011 ODT/yr at 85% softwood or at a higher production rate if the softwood percentage is lower such that the total facility-wide annual emissions stay below the potential to emit (PTE) emissions set forth in this application;
- Add a regenerative thermal oxidizer (CD-RTO-1) following the currently permitted Dryer wet electrostatic precipitator (CD-WESP) for volatile organic compound (VOC), HAP and particulate matter (PM) emissions control;

¹ Permit Nos. 10365R01 and 10365R02 were subsequently issued on April 7, 2017 and June 8, 2017, respectively.

- Install a third Green Wood Hammermill;
- Remove the Green Wood Hammermill cyclones from the permit and recirculate the exhaust to either the inlet of the Dryer furnace or directly to the WESP/RTO system (CD-WESP/CD-RTO-1) to reduce VOC, HAP and PM emissions;
- Following the six (6) Pellet Cooler product recovery cyclones, install either six (6) baghouses (CD-CLR-BH1 through 6) or one wet scrubber (CD-WSB) to reduce PM emissions;
- Add a regenerative catalytic oxidizer (CD-RCO), which can operate in thermal mode (as an RTO) for backup during catalyst cleaning, to control combined emissions of VOC, HAP and PM from the Pellet Coolers and Pellet Mills;
- Decrease the amount of wood that can bypass the Dry Hammermills from 25% to 15%;
- Incorporate construction of a baghouse (CD-HMC-BH) installed to control fugitive emissions that escape from the Hammermill Collection Conveyor (ES-HMC);
- Add an emission point for the Pellet Cooler Low Pressure (LP) Fines Relay System (ES-PCLP) and add a corresponding baghouse (CD-PCLP-BH);
- Remove the hammermill area (ES-HMA) emission point which will no longer be an emission point;
- Rename the Pellet Fines Bin (ES-PFB) and associated baghouse (CD-PFB-BV) as the Pellet Cooler High Pressure (HP) Fines Relay System (ES-PCHP) and associated baghouse (CD-PCHP-BH), respectively;
- Rename the Pellet Sampling Transfer Bin (ES-PSTB) to the Pellet Dust Collection Transfer Bin (ES-PDCTB);
- Change the number of Pellet Loadout Bins (ES-PB-1 to 8) from eight (8) to (2) bins (ES-PB-1 and 2);
- Remove the truck loadout station (ES-PL-1 to 3) emissions point because pellets will be loaded into closed top hopper rail cars that are entirely enclosed; and
- Add Additive Handling and Storage (ES-ADD) and associated baghouse (CD-ADD-BH) to for storage of a powder additive to be added during pelletizing.

In addition to these physical design changes, Enviva is proposing the following reconciliations to the previous PSD permit as part of this application:

- Update site emissions to reflect planned insignificant activities including:
 - Adding two storage piles for a total of four Green Wood Storage Piles (IES-GWSP-1 through 4);
 - o Adding Bark Fuel Storage Piles (IES-BFSP-1 and 2);
 - Reclassifying the Chipper (IES-CHIP-1) and Bark Hog (IES-BARKHOG) as insignificant activities instead of as permitted equipment (previously, ES-CHIP-1 and ES-BARKHOG, respectively); and
 - Adding Dry Shavings Handling (IES-DRYSHAVE) and storage silo to allow the facility to process dry shavings which will not require drying.

- Update HAP emission factors to reflect new testing data from other similar facilities.
- Bin vent filter (CD-BV) and bagfilter (CD-BF) descriptions have been changed to baghouse (CD-BH) to more accurately reflect planned control equipment to be utilized at the Hamlet plant. In addition, some control device nomenclature was updated to reference the equipment it controls to be consistent with nomenclature used for the other units in Enviva's permit (e.g. CD-DC-BF-3 is relabeled as CD-PDCTB-BH, and CD-DC-BV1 and CD-DC-BV2 are relabeled CD-DWH-BH1 and CD-DWH-BH2).
- Update the emergency generator rating to a proposed rating of 671 brake horsepower (bhp) instead of the proposed 536 bhp unit referenced in the initial PSD application.
- Update the Fire Pump Engine rating from 250 bhp to 131 bhp.
- Cyclones on the Dry Hammermills (ES-HM-1 to 8) and Dryer (ES-DRYER) will not be used as air pollution control devices but rather are used for product recovery. Therefore, CD-HM-CYC-1 through 8 and CD-DC1 through 4 for the ES-HM-1 through 8 and ES-DRYER, respectively, should be removed from the control device description in Section 1 of the Hamlet plant's permit.

A description of the process is provided in Section 2 and methodologies used to quantify potential emissions are summarized in Section 3. Section 4 describes the applicability of federal and state permitting programs. Section 5 includes a detailed applicability analysis of both federal and state regulations. Finally, the completed air permit application forms are included in Appendix D.

2. PROCESS DESCRIPTION

Enviva manufactures wood pellets for use as a renewable fuel for energy generation and industrial customers. Enviva's customers use wood pellets in place of coal, significantly reducing emissions of pollutants such as lifecycle CO₂/greenhouse gases, mercury, arsenic and lead. The company is dedicated to improving the environmental profile of energy generation while promoting sustainable forestry in the southeastern United States. Enviva holds certifications from the Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), Programme for the Endorsement of Forest Certification (PEFC), and Sustainable Biomass Program (SBP). Enviva requires that all suppliers adhere to state-developed "Best Management Practices" (BMPs) in their activities to protect water quality and sensitive ecosystems. In addition, Enviva is implementing an industry leading "track and trace" system to further ensure that all fiber resources come from responsible harvests. Enviva pays particular attention to: I and use change, use and effectiveness of BMPs, wetlands, biodiversity, and certification status. All of this combined ensures that Enviva's forestry activities contribute to healthy forests both today and in the future. A detailed description of Enviva's Responsible Wood Supply Program can be found at:

http://www.envivabiomass.com/sustainability/wood-sourcing/responsible-wood-supplyprogram/

The following sections provide a process description of proposed operations at the Hamlet plant. An area map and process flow diagram are provided in Appendices A and B, respectively.

2.1 Green Wood Handling and Storage

"Green" (i.e., wet) wood will be delivered to the plant via trucks as either pre-chipped wood or unchipped logs from commercial harvesting for on-site chipping. Purchased chips and bark will be unloaded from trucks into hoppers that feed conveyors (IES-GWH) that transfer the material to Green Wood Storage Piles (IES-GWSP-1 through 4) or to Bark Fuel Storage Piles (IES-BFSP-1 and 2). Conveyors transferring green wood chips will be enclosed.

Purchased chips will be screened prior to transfer to the Green Wood Storage Piles.

2.2 Debarking, Chipping, Bark Hog, and Bark Fuel Storage Piles and Bin

Logs will be debarked by the electric-powered rotary drum Debarker (IES-DEBARK-1) and then sent to the Chipper (IES-CHIP-1) to chip the wood to specification for drying. Bark from the Debarker and purchased bark/chips will be transferred to the Bark Hog (IES-BARKHOG) via conveyor for further processing.

Material processed by the Bark Hog will be transferred to the Bark Fuel Storage Piles (IES-BFSP-1 and 2) via conveyor. The primary Bark Fuel Storage Pile (IES-BFSP-1) will be located under a covered structure. The secondary Bark Fuel Storage Pile (IES-BFSP-2) will serve as overflow storage as needed. Following storage in the Bark Fuel Storage Piles (IES-BFSP-1 and 2), the bark will be transferred via a walking floor to a covered conveyor to a fully enclosed Bark Fuel Bin (IES-BFB) where the material will be pushed into the furnace.

2.3 Green Wood Hammermilis

Chipped wood used in pellet production will be further processed in the Green Wood Hammermills (ES-GHM-1, 2, and 3) to reduce material to the proper size. The facility is currently permitted to install two Green Wood Hammermills (ES-GHM-1 and 2) each with its own cyclone control device (CD-GHM-CYC1 and CD-GHM-CYC2). Enviva is now proposing to install three Green Wood Hammermills total, to remove the cyclones from the design, and to directly route the vent streams to either the inlet of the Dryer furnace (which is ultimately routed to WESP/RTO control system) or directly into the WESP/RTO control system (CD-WESP/CD-RTO-1) to control PM, VOC, and HAP emissions.

2.4 Dryer

Green wood will be conveyed to a single pass rotary Dryer system (ES-DRYER). Direct contact heat will be provided to the system via a 250.4 million British thermal unit per hour (MMBtu/hr) total heat input furnace that uses bark and wood chips as fuel. Green wood will be fed into the Dryer where the moisture content will be reduced to the desired level and routed to four (4) identical product recovery cyclones operating in parallel, which will capture dried wood for further processing. Emissions from the Dryer cyclones will be combined into a common duct which will include the proposed vent from the Green Hammermills (ES-GHM-1 through 3) and routed to a WESP (CD-WESP) for additional particulate, metallic HAP, and hydrogen chloride removal. As part of this application, Enviva is proposing to install a natural gas-fired RTO (CD-RTO-1) following the WESP to provide further PM, VOC, and HAP emissions control.

2.5 Dried Wood Handling

Dried materials from the Dryer product recovery cyclones will be conveyed to screening operations that remove smaller wood particles. Oversized wood will be diverted to the Dry Hammermills (ES-HM-1 through 8) for further size reduction prior to pelletization, each of which will be followed by a product recovery cyclone that is controlled by a baghouse. Smaller particles passing through the screens will bypass these hammermills and be pneumatically conveyed directly to the product recovery cyclones for the Dry Hammermills. Enviva estimates that approximately 15% of the total material leaving the Dryer will bypass the Dry Hammermills and be sent directly to the pelletizing operations. It should be noted that the current permit basis assumes 25% will bypass the Dry Hammermills.

There will be several other conveyor transfer points located between the Dryer and Dry Hammermills comprising the Dried Wood Handling (ES-DWH) emission source. These transfer points will be completely enclosed with only two (2) emission points that will be controlled by individual baghouses (CD-DWH-BH1 and 2).

As part of this application, Enviva is proposing to use purchased dry shavings to produce wood pellets in addition to green chips or logs, forgoing the drying process and thus lowering VOC and HAP emissions. The purchased dry shavings will be unloaded from trucks into a hopper that feeds material via enclosed conveyors to a bucket elevator that ultimately fills a silo. Each of these material transfer points will be entirely enclosed except for truck unloading (IES-DRYSHAVE). From the silo, the dry shavings will then be transferred via an enclosed screw conveyor to the Dry Hammermills for additional processing.

2.6 Dry Hammermills

Prior to pelletization, dried wood is reduced to the appropriate size using eight (8) Dry Hammermills operating in parallel (ES-HM-1 through ES-HM-8). Each Dry Hammermill will include a product recovery cyclone for capturing additional dried wood for further processing. Particulate emissions from each of the Dry Hammermills will be controlled using individual baghouses (CD-HM-BH1 through 8).

2.7 Hammermill Conveyors

The Hammermill Conveyors (ES-HMC) will transport material from the product recovery cyclones associated with the Dry Hammermills (ES-HM-1 through 8) to the pelletizing process. Emissions from the Hammermill Conveyors will be captured and controlled by the Hammermill Conveyor baghouse (CD-HMC-BH).

2.8 Pellet Mill Feed Silo

Sized wood from the Dry Hammermill product recovery cyclones will be transported by a set of conveyors to the Pellet Mill Feed Silo (ES-PMFS) prior to pelletization. Particulate emissions from the Pellet Mill Feed Silo will be controlled by a baghouse (CD-PMFS-BH).

2.9 Additive Handling and Storage

Additive will be used in the pellet production process to increase the durability of the final product. The additive will be added to sized wood from the Pellet Mill Feed Silo discharge screw conveyor prior to transfer to the Pellet Presses. The additive contains no hazardous chemicals or VOCs.

Bulk additive material will be delivered by truck and pneumatically unloaded into a storage silo (ES-ADD) equipped with a baghouse (CD-ADD-BH) to control emissions from air displaced during the loading of additive material to the silo. The additive will then be conveyed via screw conveyor from the storage silo to the milled fiber conveyor which transfers milled wood to the Pellet Presses.

2.10 Pellet Press System and Pellet Coolers

Dried processed wood will be mechanically compacted through pellet press dies. Exhaust from the Pellet Press System and Pellet Press conveyors will be vented through the Pellet Cooler aspiration material recovery cyclones and pollutant controls as described below, and then to the atmosphere. No resin or other chemical binding agents are needed for pelletization. As discussed in Section 1, Enviva is proposing to increase the permitted production rate from 537,625 ODT per year to 625,011 ODT per year by upgrading the design of the pellet dies to use a new prototype.

Formed pellets will be discharged into one of six (6) Pellet Coolers (ES-PCLR-1 through ES-PCLR-6) where cooling air will be passed through the pellets. At this point, the pellets will contain a small amount of wood fines which will be swept out with the cooling air and controlled utilizing either six (6) baghouses (CD-CLR-BH1 through 6), one on each cooler, or a single wet scrubber (CD-WSB). The exhaust from the baghouses or scrubber will then be sent to a natural gas-fired RCO (CD-RCO) for control of VOC, HAP, and PM. The RCO will also be able to operate in thermal mode during catalyst cleaning.

An aspiration system will be used to recirculate air for the pellet coolers. Emissions from the Pellet Cooler LP Fines Relay System (ES-PCLP) will be controlled by a baghouse (CD-PCLP-BH). A second aspiration system, referred to as the Pellet Cooler HP Fines Relay System (ES-PCHP), will pull collected fines from the Pellet Cooler screens and from the Pellet Cooler LP Fines Relay System baghouse to the associated baghouse (CD-PCHP-BH). From the collection system, the fines will be reintroduced to the Pellet Presses for re-use in the process.

The final product, wood pellets, will be transferred from the Pellet Coolers to the rail loadout operation via a conveyor that will be controlled by the Pellet Dust Collection Transfer Bin (ES-PDCTB) baghouse (CD-PDCTB-BH).

2.11 Finished Product Handling and Loadout

Final product will be conveyed to two storage bins (ES-PB-1 and ES-PB-2) that will feed a rail loadout station. At the rail loadout station, pellets will be gravity fed into closed top rail cars. Atmospheric emissions from pellet loadout will be minimal because dried wood fines will have been removed in the pellet screener, and a slight negative pressure will be maintained in the loadout building as a fire prevention measure to prevent any buildup of dust on surfaces within the building. This slight negative pressure will be produced via an induced draft fan that will exhaust to the Finished Product Handling baghouse (CD-FPH-BH). This baghouse will control emissions from Finished Product Handling (ES-FPH) and the two (2) Pellet Loadout Bins (ES-PB-1 to ES-PB-2). Rail car loading will be entirely enclosed because material will be loaded into closed top hopper cars.

2.12 Emergency Generator, Fire Water Pump Engine, and Diesel Storage Tanks

The plant will have a 671 brake horsepower (bhp) diesel-fired Emergency Generator (IES-GN) for emergency operations and a 131 bhp diesel-fired Fire Water Pump Engine (IES-FWP). Aside from maintenance and readiness testing, the generator and fire water pump engines will only be utilized for emergency operations.

Diesel for the emergency generator will be stored in a tank of up to 1,000 gallons capacity (IES-TK-1) and diesel for the fire water pump engine will be stored in a storage tank of up to 185 gallons capacity (IES-TK-2). The plant will also have a third diesel storage tank with a capacity of up to 5,000 gallons (IES-TK-3) for distributing diesel fuel to mobile equipment.

3. POTENTIAL EMISSIONS QUANTIFICATION

The following summarizes the data sources and calculation methodologies used in quantifying potential emissions from the Hamlet plant. Detailed potential emissions calculations are provided in Appendix C.

3.1 Green Wood Handling (IES-GWH)

Fugitive PM emissions will result from unloading purchased chips and bark from trucks into hoppers and transfer of these materials to storage piles via conveyors. Fugitive PM emissions from chip and bark transfer operations were calculated based on AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles.*² Chip conveyors are completely enclosed; therefore, emissions were only quantified for the final drop points (i.e., from conveyor to pile). Bark conveyors will not be enclosed; however, due to the large size of this material any fugitive PM emissions occurring along the conveyor itself will be negligible. As such, emissions were only quantified for the final drop points (i.e., from conveyor to pile). Detailed potential emission calculations are included in Appendix C, Table 13.

Green wood and bark contain a high moisture content approaching 50 percent water by weight. Therefore, Green Wood Handling will have insignificant PM emissions. Per 15A NCAC 02Q .0503, Green Wood Handling (IES-GWH) is an insignificant activity, because potential uncontrolled PM emissions are less than 5 tpy.

3.2 Green Wood Storage Piles (IES-GWSP-1 through 4) and Bark Fuel Storage Piles (IES-BFSP-1 and 2)

Particulate emission factors used to quantify emissions from storage pile wind erosion for the four (4) Green Wood Storage Piles and two (2) Bark Fuel Storage Piles were calculated based on USEPA's *Control of Open Fugitive Dust Sources*.³ The number of days with rainfall greater than 0.01 inch was obtained from AP-42 Section 13.2.2, *Unpaved Roads*⁴, and the percentage of time that wind speed exceeds 12 miles per hour (mph) was determined based on the AERMOD-ready meteorological dataset for the Maxton National Weather Service (NWS) Station provided by DAQ⁵. The mean silt content of 8.4% for unpaved roads at lumber mills from AP-42 Section 13.2.2 was conservatively applied in the absence of site-specific data. The exposed surface area of the pile was calculated based on worst-case pile dimensions.

VOC emissions from storage piles were quantified based on the exposed surface area of the pile and emission factors from the National Council for Air and Stream Improvement (NCASI). NCASI emission factors range from 1.6 to 3.6 pounds (lb) VOC as carbon/acre-day; however, emissions were conservatively based on the maximum emission factor. Detailed potential emission calculations are included in Appendix C, Table 14.

² USEPA AP-42 Section 13.2.4, Aggregate Handling and Storage Piles (11/06).

³ USEPA *Control of Open Fugitive Dust Sources*, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.

⁴ USEPA AP-42 Section 13.2.2, Unpaved Roads (11/06).

⁵ Data provided via email to Aubrey Jones (Ramboll) by Matthew Porter (NC DAQ) on July 27, 2017.

Per 15A NCAC 02Q .0503, the Green Wood Storage Piles (IES-GWSP-1 through 4) and the Bark Fuel Storage Piles (IES-BFSP-1 and 2) are insignificant activities based on potential uncontrolled PM and VOC emissions each less than 5 tpy.

3.3 Debarker (IES-DEBARK-1)

PM emissions will occur as a result of log debarking. Potential PM emissions from debarking were quantified based on emission factors from EPA's *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants* for Source Classification Code (SCC) 3-07-008-01 (Log Debarking).⁶ All PM was assumed to be larger than 2.5 microns in diameter. PM emissions from debarking will be minimal due to the high moisture content of green wood (~50%) and the fact that the debarking drum will be enclosed, except for the two ends where logs enter and material exits after debarking. A 90% control efficiency was applied for partial enclosure. Detailed potential emission calculations are included in Appendix C, Table 18.

The Debarker is considered an insignificant activity per 15A NCAC 02Q .0503 due to potential uncontrolled PM emissions less than 5 tpy.

3.4 Bark Hog (IES-BARKHOG)

Processing of bark by the Bark Hog will result in emissions of PM, VOC, and methanol. Particulate emission factors were not available in for this specific operation; therefore, potential PM emissions were quantified based on emission factors from EPA's *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants* for log debarking (SCC 3-07-008-01).⁷ The Bark Hog is primarily enclosed and thus has minimal PM emissions. A 90% control efficiency was applied for partial enclosure. VOC and methanol emissions were quantified based on emission factors for log chipping from AP-42 Section 10.6.3, *Medium Density Fiberboard*.⁸ Detailed potential emission calculations are included in Appendix C, Table 12.

The Bark Hog is considered an insignificant activity per 15A NCAC 02Q .0503 due to potential uncontrolled emissions less than 5 tpy.

3.5 Chipper (IES-CHIP-1)

The Chipper will be located inside of a building; therefore, PM emissions will be negligible and were not quantified. The chipping process will also result in emissions of VOC and methanol. VOC and methanol emissions were quantified based on emission factors for log chipping from AP-42 Section 10.6.3, *Medium Density Fiberboard*.⁹ Detailed emission calculations are included in Appendix C, Table 11.

The Chipper is considered an insignificant activity per 15A NCAC 02Q .0503 due to potential uncontrolled emissions less than 5 tpy.

⁶ USEPA. Office of Air Quality Planning and Standards. AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. EPA 450/4-90-003. March 1990.

⁷ Ibid.

⁸ USEPA AP-42 Section 10.6.3, Medium Density Fiberboard Manufacturing (08/02).

⁹ Ibid.

3.6 Bark Fuel Bin (IES-BFB)

Bark will be transferred from the Bark Fuel Storage Piles via a walking floor to a covered conveyor and then to the fully enclosed Bark Fuel Bin (IES-BFB). Due to complete enclosure of the Bark Fuel Bin, emissions from transfer of material into the bin were not explicitly quantified. Per 15A NCAC 02Q .0503, the Bark Fuel Bin is an insignificant activity due to potential uncontrolled PM emissions less than 5 tpy.¹⁰

3.7 Dryer (ES-DRYER) and Green Wood Hammermills (ES-GHM-1 through 3)

Exhaust from the Dryer and Green Wood Hammermills will be routed to a WESP/RTO control system for control of PM, VOC, and HAP. As shown in Appendix C, Table 4, potential emissions of PM, PM less than 10 microns in diameter (PM₁₀), PM less than 2.5 microns in diameter (PM_{2.5}), carbon monoxide (CO) and oxides of nitrogen (NO_x), including NO_x and CO emissions generated during thermal oxidation, are based on guaranteed pound per hour (lb/hr) emission rates provided by the RTO vendor. Potential emissions of sulfur dioxide (SO₂) were calculated based on an emission factor from AP-42 Section 10.6.2, *Particle Board Manufacturing*.¹¹ VOC emissions were calculated using an emission factor derived from stack testing conducted at Enviva and other similar wood pellet manufacturing facilities.

HAP and toxics air pollutant (TAP) emissions were calculated based on emission factors from several data sources including stack testing data from other similar facilities, emission factors from AP-42 Section 1.6, *Wood Residue Combustion in Boilers*¹², and NC DAQ's Wood Waste Combustion Spreadsheet¹³. HAP emissions from natural gas combustion by the RTO burners were calculated based on AP-42 Section 1.4, *Natural Gas Combustion*.¹⁴

Combustion of wood by the Dryer furnace and natural gas by the RTO burners will also result in emissions of GHG. The emissions were quantified based on emission factors from AP-42, Section 10.6.1 for a rotary dryer with an RTO control device. Enviva has conservatively calculated the CO_2 emissions using the higher hardwood emission factor because the dryer at the Hamlet facility will use a combination of hardwood and softwood.

3.8 Dried Wood Handling (ES-DWH)

As previously described in Section 2, ES-DWH will include conveyor transfer points located between the Dryer and Dry Hammermills with emissions controlled by two (2) baghouses (CD-DWH-BH-1 and 2). PM emissions from these baghouses were calculated based on manufacturer guaranteed exit grain loading rates and the maximum nominal exhaust flow rate of the baghouses. Detailed potential emissions calculations are provided in Appendix C, Table 5.

Additionally, the dried material may continue to emit VOC and HAP as it is transferred between the Dryer and Dry Hammermills due to the elevated temperature of the material.

¹⁰ Due to complete enclosure of the Bark Fuel Bin, emissions were not quantified.

¹¹ USEPA AP-42 Section 10.6.2, Particle Board Manufacturing (6/02).

¹² USEPA AP-42 Section 1.6, Wood Residue Combustion in Boilers (09/03).

¹³ NCDAQ Wood Waste Combustion Spreadsheet for a wood stoker boiler. Available online at: https://files.nc.gov/ncdeq/Air%20Quality/permits/files/WWC_rev_K_20170308.xlsx.

¹⁴ USEPA AP-42 Section 1.4, Natural Gas Combustion (07/98).

Potential VOC and HAP emissions were calculated based on NCASI dry wood handling emission factors.¹⁵ Potential emissions calculations are provided in Appendix C, Table 8.

3.9 Dry Shavings Handling (IES-DRYSHAVE)

Particulate emissions will occur during unloading of dry shavings from trucks and may also occur because of air displaced during silo loading. Potential emissions were calculated based on AP-42, Section 13.2.4, *Aggregate Handling and Storage Piles*.¹⁶ Dry shavings will be transferred into the new dry shavings silo via an enclosed bucket elevator. Because the actual transfer will be enclosed within the silo, a 90% control efficiency was applied for this material transfer point. Detailed potential emission calculations are provided in Appendix C, Table 17.

Per 15A NCAC 02Q .0503, Dry Shavings Handling (IES-DRYSHAVE) is considered an insignificant activity because potential uncontrolled PM emissions are less than 5 tpy.

3.10 Dry Hammermills (ES-HM-1 through 8)

The Dry Hammermills will generate PM, VOC, and HAP emissions during the process of reducing wood chips to the required size. PM emissions from the Dry Hammermills will be controlled using individual baghouses (CD-HM-BH-1 through 8). Particulate emissions from each baghouse were calculated using a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Appendix C, Table 5 summarizes the potential PM emissions from each Dry Hammermill baghouse.

VOC and HAP emissions were calculated based on stack testing data from comparable Enviva facilities as shown in Appendix C, Table 6.

3.11 Pellet Cooler HP Fines Relay System (ES-PCHP) and Pellet Cooler LP Fines Relay System (ES-PCLP)

As previously described in Section 2, an induced draft fan will be used to transfer dust generated from a number of enclosed transfer/handling sources around the Dry Hammermill Area to the Pellet Cooler HP Fines Relay System, controlled by a baghouse (CD-PCHP-BH). PM emissions from this baghouse, which will control emissions from ES-PCHP, were calculated based on a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Potential emission calculations are provided in Appendix C, Table 5. A second baghouse (CD-PCLP-BH) will control emissions from Pellet Cooler LP Fines Relay System (ES-PCLP) and PM emissions were calculated based on a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse.

3.12 Dry Hammermill Conveying System (ES-HMC)

Fugitive PM emissions that escape the Hammermill Collection Conveyor will be controlled by a baghouse (CD-HMC-BH). PM emissions from this baghouse were calculated based on a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Potential emission calculations are provided in Appendix C, Table 5.

3.13 Pellet Mill Feed Silo (ES-PMFS)

The Pellet Mill Feed Silo will be equipped with a baghouse (CD-PMFS-BH) to control PM emissions associated with silo loading and unloading operations. PM emissions are calculated

¹⁵ NCASI VOC Dry Wood handling factor based oriented-strand board operations.

¹⁶ USEPA AP-42 Section 13.2.4, Aggregate Handling and Storage Piles (11/06).

based on a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Potential emission calculations are provided in Appendix C, Table 5.

3.14 Additive Handling and Storage (ES-ADD)

An additive will be used in the pellet production process to increase the durability of the final product. Material will be pneumatically conveyed from the delivery trucks to the storage silo equipped with a baghouse (CD-ADD-BH). PM emissions from the baghouse were calculated based on an assumed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Detailed potential emissions calculations are provided in Appendix C, Table 5.

3.15 Pellet Press System and Pellet Coolers (ES-CLR-1 through 6)

Pellet Press and Pellet Cooler operations will generate PM, HAP, and VOC emissions during the forming and cooling of wood pellets. The Pellet Mill and Coolers will be equipped with either six (6) baghouses (CD-CLR-BH1 through 6) or a single wet scrubber (CD-WSB) for PM control, followed by an RCO (CD-RCO) for VOC and HAP control from the exhaust of the scrubber. The oxidizer will operate in thermal mode as an RTO during catalyst cleaning. PM emissions from the Pellet Press System (Pellet Mills) and Pellet Coolers were calculated based on a maximum exit grain loading rate and the maximum nominal exhaust flow rate for the proposed baghouses. If Enviva installs a wet scrubber in place of the six baghouses, the PM emissions are expected to be less than or equal to those estimated assuming the baghouses. Thus, PM emissions represented in this application are assumed to be the maximum PTE for the Pellet Mill and Coolers. Refer to Appendix C, Table 5 for detailed potential PM emissions calculations.

Uncontrolled VOC and HAP emissions at the outlet of the Pellet Cooler baghouses (CD-CLR-BH1 through 6) or wet scrubber (CD-WSB) were quantified based on stack testing data from comparable Enviva plants. This includes emissions from both the Pellet Mills and the Pellet Coolers. Controlled emissions were estimated based on a 95% control efficiency for the RCO. Operation in thermal mode will achieve the same control efficiency and will have no impact on the calculated emissions. NO_x and CO emissions resulting from thermal oxidation were calculated using AP-42 Section 1.4, *Natural Gas Combustion*¹⁷, and the maximum high heating value of the anticipated VOC constituents. Detailed calculations are provided in Appendix C, Table 7.

Emissions of criteria pollutants, HAP, and TAP from natural gas combustion by the RCO burners were estimated using emission factors from AP-42 Section 1.4. Potential GHG emissions from natural gas combustion were quantified based on emission factors from Subpart C of 40 CFR Part 98. Emissions were converted to carbon dioxide equivalent (CO₂e) based on Global Warming Potentials from Subpart A of 40 CFR 98.

3.16 Pellet Dust Collection Transfer Bin (ES-PDCTB)

PM emissions will occur during transfer of wood pellets into the Pellet Dust Collection Transfer Bin. Particulate emissions from the baghouse that controls the Pellet Dust Collection Transfer Bin (CD-PDCTB-BH) were calculated assuming a manufacturer guaranteed exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Refer to Appendix C, Table 5 for detailed potential emission calculations.

¹⁷ USEPA AP-42 Section 1.4, Natural Gas Combustion (07/98).

3.17 Pellet Loadout Bins (ES-PB-1 through 2) and Finished Product Handling (ES-FPH)

PM emissions result from the transfer of finished product to the Pellet Loadout Bins. No emissions are anticipated for the transfer of pellets from the bins to rail cars because wood pellets will be loaded into closed top rail cars that are entirely enclosed. PM emissions from Finished Product Handling and the two (2) Pellet Loadout Bins will be controlled by a baghouse (CD-FPH-BH). Potential PM emissions from the baghouse were calculated based on a maximum exit grain loading rate and the maximum nominal exhaust flow rate of the baghouse. Detailed potential emissions calculations are provided in Appendix C, Table 5.

3.18 Emergency Generator (IES-GN) and Fire Water Pump Engine (IES-FWP)

Operation of the Emergency Generator and Fire Water Pump will generate emissions of criteria pollutants, HAP, and GHG. Potential PM, NO_X, VOC, and CO emissions from operation of the Emergency Generator and Fire Water Pump Engine were calculated based on emission factors from their respective manufacturer specification sheets and the maximum horsepower rating of the engines. VOC emissions were calculated based on the manufacturer's emission factor for hydrocarbons. Potential SO₂ emissions were calculated based on the fuel sulfur restriction in NSPS Subpart IIII, and by assuming that all the sulfur present in the diesel fuel becomes SO₂ air emissions.¹⁸ Potential HAP emissions were quantified based on emission factors from AP-42 Section 3.3, *Stationary Internal Combustion Engines*.¹⁹ Annual potential emissions were conservatively calculated based on 500 hours per year.

Combustion of diesel fuel by the engines will also result in emissions of GHG. Potential GHG emissions from each engine were quantified based on emission factors from Subpart C of 40 CFR Part 98. Emissions were converted to CO₂e based on Global Warming Potentials from Subpart A of 40 CFR 98.

The Emergency Generator and Fire Water Pump Engine are considered insignificant activities pursuant to 15A NCAC 02Q .0503. Refer to Appendix C, Tables 9 and 10 for detailed potential emission calculations.

3.19 Diesel Storage Tanks (IES-TK-1 through 3)

The storage of diesel in on-site storage tanks will generate emissions of VOC. VOC emissions from the three (3) Diesel Storage Tanks were calculated using EPA's TANKS 4.0 software based on actual tank characteristics (e.g., orientation, dimensions, etc.) and potential annual throughput. VOC emissions from the storage tanks are below 5 tpy and thus, per 15A NCAC 02Q .0503 they are listed as insignificant sources in the permit. Refer to Appendix C, Table 16 for detailed potential emission calculations.

3.20 Paved Roads

Fugitive PM emissions will occur as a result of trucks and employee vehicles traveling on paved roads on the Hamlet plant property. Emission factors were calculated based on Equation 2 from AP-42 Section 13.2.1, *Paved Roads*²⁰ using the mean silt loading for quarries (8.2 g/m²) and 110 days with rainfall greater than 0.01 inch based on Figure 13.2.1-2. A 90% control efficiency was applied for water/dust suppression activities followed

¹⁸ Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510(b) as required by NSPS Subpart IIII.

¹⁹ USEPA AP-42 Section 3.3, Stationary Internal Combustion Engines (10/96).

²⁰ USEPA AP-42 Section 13.2.1, Paved Roads (01/11).

by sweeping. This control efficiency is based on data from the *Air Pollution Engineering Manual* of the Air and Waste Management Association. Refer to Appendix C, Table 15 for detailed potential emissions calculations.

4. STATE AND FEDERAL PERMITTING APPLICABILITY

The Enviva Hamlet plant is potentially subject to numerous federal and state air quality permitting requirements. The following sections summarize the applicability of these requirements.

4.1 Federal Permitting Programs

The federal NSR permitting program includes requirements for construction of new sources, and modifications to existing sources, while the Title V Operating Permit Program includes requirements for operation of Title V major sources. The following sections discuss the applicability of these requirements to the Hamlet plant.

4.1.1 New Source Review

NSR is a federal pre-construction permitting program that applies to certain major stationary sources. The federal NSR permitting program is implemented in North Carolina pursuant to 15A NCAC 2D .0530 and 15A NCAC 2D .0531. The primary purpose of NSR is to support the attainment and maintenance of ambient air quality standards across the country. There are two distinct permitting programs under NSR. The particular program that applies depends on the ambient air quality in the geographic area in which the source is located. The two programs are nonattainment NSR (NNSR) (15A NCAC 2D .0531) and PSD (15A NCAC 2D .0530). Because NNSR and PSD requirements are pollutant-specific, a stationary source can be subject to NNSR requirements for one or more regulated NSR pollutants and to PSD requirements for the remaining regulated NSR pollutants.

NNSR permitting requirements apply to an existing stationary source located in an area where concentrations of a "criteria pollutant"²¹ exceed the National Ambient Air Quality Standard (NAAQS) for that pollutant. PSD permitting requirements apply to stationary sources located in an area where concentrations of criteria pollutants do not exceed a NAAQS.

The Hamlet plant is located in Richmond County which is classified as attainment or unclassifiable for all criteria pollutants.²² The Hamlet plant is currently permitted as a PSD major source because facility-wide potential emissions of one or more criteria pollutants have previously been estimated to exceed the major source threshold of 250 tpy. However, Enviva is submitting this application to incorporate recent design changes to the facility that will limit the Hamlet plant's potential emissions to less than the major source threshold of 250 tpy for all PSD-regulated pollutants (see Appendix C, Table 2). As a result, the facility will be classified as a synthetic minor source for PSD. A comparison of the current permitted PTE to the proposed PTE incorporating the changes proposed in this application is provided in Table 4.1.

²¹ The following are "criteria pollutants" under current NSR regulations: CO, nitrogen dioxide, SO₂, PM₁₀, PM₂₅, ozone (VOCs and NO_x), and lead.

State and Federal Permitting Applicability

^{22 40} CFR 81.334

Emissions Scenario	CO (tpy)	NO _x (tpy)	PM (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)	SO ₂ (tpy)	VOC (tpy)	CO ₂ e (tpy)	Total HAPs (tpy)
Proposed PTE1	231	236	71	60	37	28	241	264,666	34
Previous PTE ²	231	220	178	101	58	27	606	229,961	83
Change in PTE	0.3	16	-107	-41	-21	0.1	-365	34,705	-49

Table 4.1. Change In Potential to Emit

¹ Proposed PTE (excluding fugitive emission sources) from Appendix C, Tables 2 and 3.

² Previous PTE from the January 20, 2015 PSD modification application for the facility.

In order to provide the plant with operational flexibility while still achieving this reduction in emissions, Enviva requests that a permit condition be added to the permit that allows Enviva to process either up to 625,011 ODT/yr at 85% softwood or to process a higher annual throughput with a lower softwood percentage such that the total facility-wide annual emissions stay below the proposed VOC PTE of 246 tpy listed in Table 4.1.

The CO and NO_x emissions at the facility are predominately from the Dryer, and the proposed RTO and RCO, and are independent of softwood percentage. As discussed in Section 3 and the associated Appendix C emission tables, these potential emissions are based on a maximum emission rate over 8,760 hrs/yr and thus, the CO and NO_x emissions would not exceed the PTE listed in Table 4.1 with an increase in throughput at a lower softwood content.

4.1.2 Title V Operating Permit Program

The federal Title V Operating Permit program is promulgated in 40 CFR 70 and is implemented in North Carolina via 15A NCAC 2Q .0500. The Hamlet plant is a major source with respect to the Title V Operating Permit Program, because facility-wide emissions of one or more criteria pollutants exceed the major source threshold of 100 tpy. Additionally, the plant is considered a major source of HAP due to total HAP emissions and maximum individual HAP emissions exceeding the major source thresholds of 25 tpy and 10 tpy, respectively. The proposed permit modifications will not change this status. Enviva will submit an application for an initial Title V operating permit within one year of commencing source operations pursuant to 15A NCAC 02Q .0507(a).

4.2 North Carolina Permitting Program

In addition to the Title V permitting requirements in 15 NCAC 02Q .0500, specific requirements for permitting of construction and operation of new and modified sources are included in 15A NCAC 02Q .0300, in accordance with North Carolina's State Implementation Plan (SIP). The proposed changes are subject to the permitting procedures under 15A NCAC 02Q .0300, and the required application forms are included as Appendix D.

5. **REGULATORY APPLICABILITY**

The Hamlet plant will be subject to federal and state air quality regulations. The following addresses all potentially applicable regulations.

5.1 New Source Performance Standards

New Source Performance Standards (NSPS) apply to new and modified sources and require sources to control emissions in accordance with standards set forth at 40 CFR Part 60. NSPS standards in 40 CFR Part 60 have been incorporated by reference in 15A NCAC 02D .0524.

5.1.1 40 CFR 60 Subpart A – General Provisions

All sources subject to a NSPS are subject to the general requirements under Subpart A unless excluded by the source-specific subpart. Subpart A includes requirements for initial notification, performance testing, recordkeeping, monitoring, and reporting. Subpart A is applicable because the Emergency Generator and Fire Water Pump Engine are subject to NSPS Subpart IIII.

5.1.2 40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

NSPS Subpart IIII applies to owners or operators of compression ignition (CI) internal combustion engines (ICE) manufactured after April 1, 2006 that are not fire pump engines, and fire pump engines manufactured after July 1, 2006. The 671 bhp Emergency Generator and 131 bhp Fire Water Pump Engine at the Hamlet plant will be subject to NSPS Subpart IIII. The Subpart IIII requirements were previously incorporated into the facility's permit. Under this application, the maximum rating of the Emergency Generator and Fire Pump Engine have been updated to reflect planned construction. Thus, the applicable requirements under Subpart IIII for the fire water pump will change.

5.2 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) regulate HAP emissions and are applicable to certain major and area sources of HAP. NESHAP can be found in 40 CFR Part 63 and have been incorporated by reference in 15A NCAC 02D .1111. As previously discussed, the Hamlet plant will be a major source of HAP due to facility-wide total HAP emissions exceeding 25 tpy and maximum individual HAP emissions exceeding 10 tpy.

5.2.1 40 CFR 63 Subpart A – General Provisions

All sources subject to a NESHAP are subject to the general requirements under Subpart A unless excluded by the source-specific subpart. Subpart A includes requirements for initial notification, performance testing, recordkeeping, monitoring, and reporting. The Hamlet plant has sources subject to Subparts B and ZZZZ of this part and thus, Subpart A is also applicable to these sources.

5.2.2 40 CFR 63 Subpart B – Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Section 112(g)

Clean Air Act (CAA) Section 112(g)(2)(B) requires that a new or reconstructed stationary source that does not belong to a regulated "source category" for which a NESHAP has been promulgated must control emissions to levels that reflect "maximum achievable control technology" (MACT). Because Wood Pellet Manufacturing Plants are not a regulated source category under 40 CFR 63, the Hamlet plant was subject to 112(g) and underwent a case-

by-case MACT analysis pursuant to 40 CFR 63 Subpart B as part of the initial PSD construction permitting process. NC DAQ concluded that case-by-case MACT was use of a low HAP-emitting design for the Dryer (ES-DRYER) without the addition of add-on controls, and that the Hamlet plant was not subject to numeric HAP emission limits under Section 112(g).²³ Furthermore, while not required under case-by-case MACT, the plant is subject to other requirements that have the ancillary benefit of reducing HAP emissions such as a limitation on softwood to reduce VOC emissions. We also note that previous BACT requirements include a limitation on PM from the Dryer achieved through use of a WESP, that provides control of metallic and inorganic HAP emissions resulting from wood combustion in the furnace. Although BACT will no longer be applicable since the plant will now be a synthetic minor source with respect to PSD, Enviva is still proposing to install and operate the WESP.

5.2.2.1 Applicability of Section 112(g) to the Proposed Project

Enviva has initiated construction activities at the Hamlet plant but has not yet completed construction. The proposed permit modifications outlined in this application include changes to the wood pellet manufacturing process that will decrease total potential HAP emissions by approximately 126 tpy. As provided in §63.40(b), a case-by-case MACT evaluation is only required prior to the construction or reconstruction of a major source of HAP emissions.

The regulation defines "construct a major source" as the fabrication, erection, or installation of a **new greenfield site** emitting greater than the HAP major source thresholds, or of a new process or production unit at an existing site, provided the new process or production unit in and of itself emits above the HAP major source thresholds.²⁴ The rule further defines process or production unit as "any collection of structures and/or equipment that processes, assembles, applies, or otherwise uses material inputs to produce or store an intermediate or final product [bold emphasis added]."²⁵

Since Enviva has already commenced construction of the Hamlet plant under the currently effective PSD permit, the proposed project does not constitute construction of a greenfield site as defined in §63.41.

Furthermore, the proposed changes to the plant design do not constitute reconstruction of a major source. Per §63.41, reconstruction is defined as the replacement of components at an existing process or production unit such that the fixed capital cost of the new components exceeds 50% of that which would be required to construct a comparable new process or production unit. The "process or production unit" at the Hamlet plant is the collection of all equipment used to manufacture the wood pellet product. The fixed capital costs associated with the proposed project are significantly less than 50% of the fixed capital costs that would be required to construct a comparable new wood pellet manufacturing facility. As such, the project also does not constitute reconstruction of the process or production unit.

Based on this review, Enviva has concluded that the proposed project does not trigger a requirement to perform a new case-by-case MACT evaluation under Section 112(g), as the project does not constitute construction of a major source or reconstruction of the process or production unit.

²⁵ Ibid.

²³ Air Quality Permit No. 10365R02, Section 2.1.A, Condition 4

²⁴ §63.41

5.2.2.2 Impact of the Proposed Project on Existing Case-by-Case MACT

As part of the proposed project, Enviva is requesting an increase in the maximum amount of softwood that can be used from 75% up to a maximum of 85%. However, Enviva is also proposing to install an RTO to follow the WESP for the Dryer exhaust which will significantly reduce emissions of VOC and organic HAP. In addition, the exhaust stream from the Green Wood Hammermills (ES-GHM-1 to 3) will be routed to either the inlet of the Dryer furnace or directly to the WESP/RTO system (CD-WESP/CD-RTO-1), which will control VOC and organic HAP emissions from the Green Wood Hammermills. Furthermore, Enviva is proposing to install an RCO (with RTO backup) to control VOC and organic HAP emissions from the twelve (12) Pellet Mills and six (6) Pellet Coolers (ES-CLR-1 through 6). With the installation of the RTO and RCO, Enviva will surpass the level of control required under the original case-by-case MACT determination for the Hamlet plant and believes the intent of the proposed project.

Other sources of organic HAP emissions at the plant include the following: Log Chipper (IES-CHIP-1), the Bark Hog (IES-BARKHOG), Dried Wood Handling (ES-DWH), and eight (8) Dry Hammermills (ES-HM-1 through 8) as well as the Emergency Generator (IES-GEN) and Fire Water Pump (IES-FWP). For these sources, MACT was determined to be good process design and maintenance of equipment in accordance with manufacturer specifications and/or standard industry practices. Enviva is not requesting any modifications to the existing MACT determinations for these process sources.

5.2.3 40 CFR 63 Subpart ZZZZ - NESHAP for Stationary Reciprocating Internal Combustion Engines

Subpart ZZZZ applies to reciprocating internal combustion engines (RICE) located at a major or area source of HAP emissions. Emergency stationary RICE are defined in §63.6675 as any stationary RICE that operates in an emergency situation. These situations include engines used for power generation when a normal power source is interrupted, or when engines are used to pump water in the case of fire or flood. The Hamlet plant's Emergency Generator and emergency Fire Water Pump Engine will both be classified as emergency RICE under Subpart ZZZZ. Further, the engines will both be classified as new sources, as they will be constructed after June 12, 2006.

New and reconstructed emergency power engines with ratings of more than 500 bhp located at a major source of HAP emissions, including the plant's Emergency Generator, are subject to limited requirements under Subpart ZZZZ, in accordance with §63.6590(b)(1)(i). New or reconstructed CI engines with ratings less than or equal to 500 bhp located at a major source of HAP, including the plant's Fire Water Pump Engine, are only subject to the requirement to comply with the applicable provisions of NSPS Subpart IIII, per §63.6590(c)(7), and no further requirements apply under Subpart ZZZZ. The applicable requirements of this regulation have previously been incorporated into the facility's current permit and will not be impacted by the proposed permit changes.

5.2.4 40 CFR 63 Subpart DDDDD – NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

Subpart DDDDD, also referred to as the Boiler MACT, provides emission standards for boilers and process heaters located at major sources of HAP emissions. The rule defines a process heater in §63.7575 as a device with the primary purpose of transferring heat <u>indirectly</u> to a

process materia! or to a heat transfer material for use in a process unit. The Hamlet plant's Dryer will be heated by a wood-fired furnace burner system; however, the furnace burner system will provide <u>direct</u> heating of the wood chips, not indirect. As such, Subpart DDDDD does not apply.

5.3 Compliance Assurance Monitoring

Compliance Assurance Monitoring (CAM) under 4D CFR 64 is applicable to emission units located at a Title V major source that use a control device to achieve compliance with an emission limit and whose pre-controlled emissions exceed the major source thresholds. A CAM plan is required to be submitted with the initial Title V operating permit application for emission units whose post-controlled emissions exceed the major source thresholds (i.e., large pollutant-specific emission units [PSEU]).²⁶ For emission units with post-controlled emissions below the major source thresholds, a CAM plan must be submitted with the first Title V permit renewal application.²⁷

The Dryer (ES-DRYER) and three (3) Green Wood Hammermills (ES-GHM-1 to 3) are each subject to a PM emission limit under 15A NCAC 02D .0515 and will utilize a WESP (CD-WESP) to meet this limit. However, combined, the Dryer and Green Wood Hammermill post-controlled PM emissions are below the major source threshold. The exhaust from both the Dryer and Green Wood Hammermills will be controlled by an RTO following the WESP; however, the RTO will not be installed to meet a specific emission limit but rather to reduce the plant's potential VOC emissions below the PSD major source threshold. Since the Hamlet plant will now be a synthetic minor PSD source, the current BACT limits will no longer be applicable and there is no other applicable VOC limit for the Dryer or Green Wood Hammermills. As such, a CAM plan is not required for VOC. A CAM plan for PM is required to be submitted for the Dryer and Green Wood Hammermills with the initial Title V permit renewal application.

The Pellet Coolers (ES-CLR-1 through 6) are also subject to a PM emission limit under 15A NCAC 02D .0515 and will utilize either six (6) individual baghouses or a wet scrubber to meet this limit. Post-controlled PM emissions will be below the major source threshold. An RCO (with RTO backup) will be installed to control VOC from the Pellet Mills and Pellet Coolers to reduce the facility-wide VOC PTE below the PSD major source threshold. Since the current VOC BACT limit will no longer be applicable and there is no other applicable VOC limit, a CAM plan is not required for VOC. A CAM plan for PM will be submitted for the Pellet Press System and Pellet Coolers (ES-CLR-1 through 6) with the initial Title V permit application.

All other emission units at the Hamlet plant have pre-controlled emissions below the major source threshold and/or do not use a control device as defined in §64.1. For those with control devices, the post-controlled emissions are below the major source threshold and thus, if CAM is applicable, it will not need to be addressed until the first Title V permit renewal application.

5.4 North Carolina Administrative Code

The Hamlet plant sources will be subject to regulations contained within 15A NCAC 02D and 02Q. Potentially applicable regulations are addressed in the following sections.

Regulatory Applicability

²⁶ §64.5(a) ²⁷ §64.5(b)

5.4.1 15A NCAC 02D .0504 Particulates from Wood Burning Indirect Heat Exchangers

15A NCAC 02D .0504 provides PM emission limits for <u>indirect</u> heat exchangers combusting wood. An indirect heat exchanger is defined as equipment used for the alteration of the temperature of one fluid by the use of another fluid in which the two fluids are not mixed. The Dryer will be heated by a wood-fired furnace burner system; however, the furnace burner system provides <u>direct</u> heating of the wood chips, not indirect. As such, this regulation does not apply.

5.4.2 15A NCAC 02D .0515 Particulates from Miscellaneous Industrial Processes

PM emissions from all emission sources subject to permitting are regulated under 15A NCAC 02D .0515. This regulation limits particulate emissions based on process throughput using the equation $E = 4.10 \times P^{0.67}$, for process rates (P) less than or equal to 30 tons per hour (tph) and $E=55 \times P^{0.11}$ -40 for process rates greater than 30 tph.

All emissions from PM sources at the Hamlet plant will either be negligible or controlled by cyclones, baghouses, a scrubber, or the WESP, and thus, are expected to comply with this requirement.

5.4.3 15A NCAC 02D .0516 Sulfur Dioxide Emissions from Combustion Sources

Emissions of SO₂ from combustion sources cannot exceed 2.3 pounds of SO₂ per MMBtu input. The Emergency Generator and Fire Water Pump will use ultra-low sulfur diesel, the Dryer furnace burner system will combust bark and wood chips, and the RTO and RCO will utilize natural gas, each of which contain low amounts of sulfur and will result in SO₂ emissions well below the limit of 2.3 lb/MMBtu.

5.4.4 15A NCAC 02D .0521 Control of Visible Emissions

For sources manufactured after July 1, 1971, visible emissions cannot exceed 20 percent opacity when averaged over a six-minute period except under the following conditions:

- No six-minute period exceeds 87 percent opacity,
- No more than one six-minute period exceeds 20 percent opacity in any hour, and
- No more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

This rule applies to all processes at the facility that may have visible emissions.

5.4.5 15A NCAC 02D .0540 Particulate from Fugitive Dust Emission Sources

15A NCAC 02D .0540 requires a fugitive dust control plan be prepared if ambient monitoring or air dispersion modeling show violation or a potential for a violation of a PM NAAQS, or if NC DAQ observes excess fugitive dust emissions from the facility beyond the property boundary for six (6) minutes in any one hour using EPA Method 22. Previous dispersion modeling for the Hamlet plant did not show a violation or the potential for a violation of the PM₁₀ or PM_{2.5} NAAQS. As such, a fugitive dust control plan is not required at this time.

5.4.6 15A NCAC 02D .1100 Control of Toxic Air Pollutant Emissions

15A NCAC 02D .1100 outlines the procedures that must be followed if a TAP permit and associated modeling are required under 15A NCAC 02Q .0700. Under 15A NCAC 02Q .0704(d), a TAP permit application is required to include an evaluation of the TAP emissions from a facility's sources, excluding exempt sources listed in Rule .0702 of this Section.

15A NCAC 02Q .0702(a)(27)(B) exempts affected sources under 40 CFR Part 63. Case-by-Case MACT, required under Clean Air Act (CAA) Section 112(g)(2)(B), is carried out in Subpart B of 40 CFR 63; therefore, all sources subject to Case-by-Case MACT under Subpart B of 40 CFR 63 are exempt from the requirement to obtain a permit to emit air toxics under 15A NCAC 02Q .0702(a)(27)(B). All sources of TAP emissions at the Hamlet plant are either subject a source-specific NESHAP under 40 CFR 63 (i.e., Emergency Generator and Fire Pump Engine) or have previously undergone case-by-case MACT as required under 40 CFR 63 Subpart B. The proposed changes do not trigger a re-assessment of the previous caseby-case MACT determination, as discussed in Section 5.2.2. As such, a TAP permit and associated TAP evaluation and TAP modeling are not required.

Although not required, a TAP modeling analysis was performed as part of the permitting effort in January 2015 and the results demonstrated that the facility would not exceed any TAP ambient air standards. As part of this permit modification Enviva is proposing to reduce total TAP emissions from 31.6 tpy to 20.5 tpy. As such, Enviva believes additional TAP modeling is not warrantied.

5.4.7 15A NCAC 02Q .0700 Toxic Air Pollutant Procedures

As discussed in the previous section, total potential HAP emissions are significantly lower than estimated in the previous permit application. In addition, per 15A NCAC 02Q .0702(a)(27)(B), sources subject to 40 CFR 63 are exempt from the requirements to obtain a permit for TAP emissions.

(a) A permit to emit toxic air pollutants shall not be required under this Section for

(27)(B) an affected source under 40 CFR 63, as amended

Because the Enviva Hamlet plant is subject to NESHAP Part 63, Subpart B, which covers CAA 112(g) §63.40-§63.44 case-by-case MACT for the Hamlet plant, and Subpart ZZZZ which covers the Emergency Generator and Fire Water Pump Engine, all sources are exempt from air toxics review.

Application for Minor Source Permit Enviva Pellets Hamlet, LLC Richmond County, North Carolina

APPENDIX A AREA MAP



Application for Minor Source Permit Enviva Pellets Hamlet, LLC Richmond County, North Carolina

APPENDIX B PROCESS FLOW DIAGRAM

Application for Minor Source Permit Enviva Pellets Hamlet, LLC Richmond County, North Carolina

APPENDIX C POTENTIAL EMISSIONS CALCULATIONS

Table 1

Calculation Inputs Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Operational Data							
Green Hammermills, Dryers, Pellet Coolers							
Short-Term Throughput (ODT/hr) 80							
Annual Throughput (ODT/yr)	625,011						
Hours of Operation (hr/yr)	8,760						
Softwood Composition	85%						
Dry Hammermills							
Short-Term Throughput (ODT/hr)	68						
Annual Throughput (ODT/yr) ¹	531,259						
Hours of Operation (hr/yr)	8,760						
Softwood Composition	85%						

Notes:

^{1.} 85% of raw material is processed by the dry hammermills.



Table 2 Summary of Facility-wide Potential Emissions Enviva Pollets Hamlet, LLC Hamlet, Richmond County, North Carolina

Emission Unit ID	Emission Unit ID Bource Description		Control Device Description	со (фу)	NO _x (tpy)	РМ (tpy)	PM ₁₀ (tpy)	РМ _{2.8} (tpy)	50 ₂ (τργ)	VOC (tpy)	СО ₂ в (tру)
IES-CHIP-1	Log Chipping									1.6	
IES-BARKHOG	Bark Hog					0.23	D.13			0.28	
ES-DRYER	DRYER 250.4 MMBtu/hr Wood-fired Direct Heat Drying System		WESP: RTO	219	219	33	33	33	27	39	243.754
ES-GHM-1 through 3	Three (3) Green Wood Hammermills	CD-RTO-1	WESF, RTO	213		33	33				270,704
ES-HM-1 through 8	Eight (8) Dry Hammermills	CD-HM-BH1 through 8	Eight (8) baghouses			18	18	0.31		135	
FS-HMC	Hammermill Collection Conveyor	CD-HMC-BH	One (1) baghouse			D.23	D.23	0.23			-077
ES-PCHP	Pellet Cooler HP Fines Relay System	CD-PCHP-BH	One (1) baghouse			0.075	0.075	0.075		1.77	3375
ES-PCLP	Pellet Cooler LP Fines Relay System	CD-PCLP-BH	One (1) baghouse		<u></u>	0,47	0.47	0.47		812	
ES-PMFS	Pellet Mill Feed Silo	CD-PMFS-BH	One (1) baghouse			0.37	0.37	0.37			A-
ES-CLR-1 through 61	Six (6) Pellet Coolers	CD-CLR-1 through 6 (or CD-WSB) CD-RCO	Six (6) baghouses (one on each cooler) or wet scrubber: RCO	12	15	15	4.6	1.5	0.082	24	20,603
ES-DCTB	Pellet Dust Collection Transfer Bin	CD-PDCTB-BH	One (1) baghouse			0.45	0.45	0.45			
ES-FPH ES-PB-1 and 2	Finished Product Handling Two (2) Pellet Loadout Bins	CD-FPH-BH	One (1) baghouse			1.3	1.2	0.022		0.00	075
ES-UWH	Dried Wood Handling Operations	CD-DWH-8H1 and 2	Two (2) baghouses		0.775	D.30	0.30	0.30		39	855
ES-ADD	Additive Handling and Storage	CD-AOD-BH	One (1) baghouse			0.15	D.15	0.15			822
TES-GWH	Green Wood Handling Operations		811		812	D.077	0.035	0.0055		1.12	
TES-TK 1	1,000 gallon Diesel Storage Tank									0.00058	
IES-TK-2	185 gallon Diesel Storage Tank				()	(++)	. 4.4.	10.00		0.00015	
IES-TK-3	5,000 gallon Diesel Storage Tenk		1.44			1992				0.0033	
LES-GWSP-1 through 4	Green Wood Storage Piles					13	6.7	1.0		6.9	1
TES-BF5P-1 and 2	Bark Fuel Storage Piles					0.56	0.28	0.042		0.29	
IES-DRYSHAVE	Dry Shaving Material Handling		0.777		1.075	0.054	0.025	0.0039	77	10	
IES DEBARK-1	Debarker					1.1	0.59				
IES-BFB ²	Bark Fuel Bin										
LES-GN	500 kW Diesel-fired Emergency Generator		673	0.14	2.5	D.0078	0.0078	0.0078	D.00066	1.7	179
IES-FWP	250 hp Diesel-fired Fire Water Pump		*	0.07	D.18	0.009	0.009	0.009	0.00048	0.01	50
	Payed Roads	· · · ·				16	3.2	0.78			
			Total Emissions:	231	236	1,00	70	39	28	248	264,666
		Tak	al Excluding Fugitives ³ :	231	236	71	60	37	28	241	264,666
		PSD M	ajor Source Threshold:	250	25D	250	250	250	250	250	_

Notas: The pellet coolers will be equipped with either six (6) baghouses (one on each cooler) or a single wet scrubber for PM control. The emissions are expected to be the same whether the scrubber or baghouses are installed. In addition, the pellet coolers will be equipped with an RCO for VOC control that will operate primarily in catalytic mode with thermal (RTO) mode as a backup. The RTO and RCO modes have the same control efficiency so there will be no impact on emissions during thermal mode usage. Bark is transferred from the primary Bark Fuel Storage Pile by walking floor to covered conveyors which transfer the bark into the fully enclosed Bark Fuel Bin. There are no emissions expected from transfer of material into the bin.

3. Fugitive emissions are not included in comparison against the major source threshold because the facility is not on the list of 28 source categories in 40 CFR 52.21.

Abbreviations:

ES - Emission Source IES - Insignificant Emission Source

CO - carbon monoxide

CO₃e - carbon dioxide equivalent

NO_x - nitrogen oxides PM - particulate matter

PM10 - particulate matter with an aerodynamic diameter less than 10 microns

 $PM_{2,5}$ - perticulate matter with an aerodynamic diameter of 2.5 microns or less RTO - Regenerative Thermal Oxidizer

SO₂ sulfur dioxide

tpy - tons per year

VOC - volatile organic compounds WESP - Wet Electrostatic Precipitator



Table 3 Summary of Facility-wide HAP Emissions Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Pollutant	СD-RTO-1 ¹ (фу)	ES-HM-1 through 8 (tpy)	СD-RC0 ² (1/27)	ES-DWH	IES-GN (tpy)	LES-FWP (tpy)	IES- BARKHOG (tpy)	IES-CHIP-1 (tpy)	Total HAP (tpy)
Acetakiehyde	1.6	2.4	0.13		9.08-04	1.8E-04			4.3
kcetophenone	1.8F-07	12				122			1.8E-07
Acrolein	1.0	2.9	U.79		1.12-04	2.1E-05			4.7
Antimony and compounds	6.3E-04		44		540 C	(a)			6.3E-04
Arsenic and compounds	1.8E-03		2.7E-05		**				1.8E-03
Benzene	D.23		2.9E-04		1.1E-03	2.1E-04			0.23
Senzo(a)pyrene	1.4E-04		1.6E-07		2.2E-07	4.3E-08	1		1.4E-04
Seryllium metal	8.9E-05		1.6E-06						9.16-05
Butadlene, 1,3-			-		4.6E-05	9.0E-06			5.5E-05
Cadmium Metal	4.8E-04		1.5E-04						5.3E-04
Carbon tetrachloride	2.5E-03								2.5E-03
Chlorine	0.87		- 14						0.87
Chlorobenzene	1.8E-03								1.8E-03
Chlorofurm	1.55 03								1.5E-03
Chromium VI	4.7E-D4		1.9E-04						6.6E-04
Chromium-Other compounds	1.4E-D3								1.4E-03
Cobalt compounds	5.3E-04		1.2E-05						5.4E-04
Dichlorobenzene	1.6E-04		1.5E-04						3.3E-04
Dichloroethane, 1,2-	1.6E-03								1.6E-03
Dichloropropane, 1,2-	1.8E-03								1.86-03
Dinitrophenol, 2,4-	9.9E-06								9.9E-06
	2.6E-06								2.5E-06
Di(2-ethylhexyl)phthalate									1.7E-03
thyl benzene	1.7E-03								3.8
ormaldehyde	0.94	2.1	0.50	0.26	1.4E-03	2.7E-04			0.49
lexane	0.25		0.25				-		
lydrochloric acid	2.1		-						2.1
lead and lead compounds	3.9E-03	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6.9E-05				- + + -		4.0E-03
Manganese and compounds	0.13		5.2E-05		**				0.12/
fercury, vapor	3.1E-04		3.66-05						3.5E-04
lethanol	2.1	1.4	3.8	0.61			5.7E-02	0.31	8.2
Hethyl bromide	8.2E-04								8.2E-04
Methyl chloride	1.3E-03								1.3E-03
lethylene chloride	1.5E-02								1.6E-02
Vaphthalene	5.4E-03		8.4E-05		1.0E-04	1.9E-05			5.6E-03
Nickel metal	2.9E-03		2.9E-04						3.2E-03
Nitrophenol, 4-	6.0E-06								6.0E-06
Pentachlorophenol	5.6E+05								5.6E-05
Perchloroethylene	4.2E-02								0.042
henol	1.3	1.1	0.39						2.8
hosphorus metal, yellow or white	2.1E-03			**]	2.1E-03
olychlorinated biphenyls	4.5E-07							44	4.5E-07
Propionaldehyde	0.45	5.0	0.17			**			5.6
Selenium compounds	2.3E-04		3.3E-06						2.3E-04
Styrene	0.10								0.10
etrachlorodibenzo-p-dioxin, 2,3,7,8-	4.7E-10								4.7E-10
oluene	2.1E-03		4.7E-04		4.8E-04	9.4E-05			3.2E-03
otal PAH (PDM)	0.14		9.6E-05		2.0E-04	3.9E-D5			0.14
richloroethane, 1,1,1-	3.4E-02								3.4E-02
richloroethylene	1.6E-03				++)				1.6E-03
richlaraphenol, 2,4,6-	1.2E-05								1.2E-05
/inyl chloride	9.9E-04				-++-				9.9E-04
viene	1.4E-03				3.3E-04	6.5E-05			1.8E-03
Total HAP Emissions ⁷ (tpy)	1.46-05	15	6.0	0.87	4.5E-03	8.9E-04	0.06	3.12-01	34
local HAP Emissions" (tpy) local HAP (tpy)	Hydrochloric acid	Propionaldehyde	Methanol	Methanol	Formsidehyde	Formaldehyde	Methanol	Mathanol	Methano
Maximum Individual HAP (tpy) Maximum Individual HAP Emissions (tp	A REAL PROPERTY AND A REAL	5.0	3.8	0.61	1.4E-03	. vinialuenyde	1. Contraction of	COLUMNY	rrecharly

hammernilis (ES-GIM-1 through 3). A Includes emissions at outlet of RCO stack as well as the HAP combustion emissions resulting from NG by the RCO burners. RCO controls emissions from the pellet coolers and pellet mill (ES-CLR-1 through 6). The pellet coolers will be equipped with an RCO that will operate primarily in catalytic mode with thermal (RTO) mode as a backup. The RTO and RDO modes have the same control efficiency so there will be no impact on emissions during thermal mode usage.

Because benzo(a)pyrene and naphthalene emissions were presented individually and as components of total PAH emissions, the total HAP emissions presented here do not match the sum of all pollutant emissions to avoid double counting benzo(a)pyrene and naphthalene emissions.

RTO - regenerative thermal oxidizer

Addrewitions: HAP - hazardous air pollutant REO regenerative catalytic exidizer

tpy - tons per year

RAMBOLL
Table 4 Potential Emissions at Outlet of RTO-1 Stack ES-DRYER and ES-GHM-1 through 3 **Enviva Pellets Hamlet, LLC** Hamlet, Richmond County, North Carolina

Calculation Basis	
Hourly Throughput	80 ODT/hr
Annual Throughput	625,011 ODT/yr
Hourly Heat Input Capacity	250.4 MMBtu/hr
Annual Heat Input Capacity	2,193,504 MMBtu/yr
Hours of Operation	8,760 hr/yr
Number of RTO Burners	4 burners
RTO Burner Rating	8 MMBtu/hr
RTO Control Efficiency	95%

Potential Criteria Pollutant and Greenhouse Gas Emissions

Poliutant	Controlled Emission	Units	Emissions at RTO-1 Outlet ¹		
	Factor		(lb/hr)	(tpy)	
CO	50	lb/hr ²	50	219	
NOx	50	lb/hr ²	50	219	
SO ₂	0.025	lb/MMBtu ³	6.3	27	
VOC	D.12	Ib/ODT ¹	10	39	
PM/PM ₁₀ /PM _{2.5} (Filterable + Condensable)	7.6	lb/hr ²	7.6	33	
CO2	780	lb/ODT ⁵	62,400	243,754	

Notes: 1. Exhaust from the dryer (ES-DRYER) and green hammermills (ES-GHM-1 through 3) are routed to a WESP and then RTO for control of VOC, HAP, and particulates.

 ²⁷ Emission rate based on data provided by RTO vendor (Lundberg) and include thermal emissions from the use of the RTO.
 ³⁵ No emission factor is provided in AP-42, Section 10.6.2 for SO₂ for rotary dryers. Enviva has conservatively calculated SO₂ emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

* VOC emission factor based on source test results from similar Enviva facilities.

5. Emission factor for CO₂ from AP-42, Section 10.6.1 for rotary dryer with RTO control device. Enviva has conservatively calculated the CO₂ emissions using the hardwood emission factor because the dryer at Hamlet uses a combination of hardwood and softwood and the hardwood emission factor is greater than the softwood emission factor.



Table 4 Potential Emissions at Outlet of RTO-1 Stack ES-DRYER and ES-GHM-1 through 3 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Pollutant	НАР М	NC TAP	voc	Emission	Units	Footnote	Pote Emis	
Pollutant		Inc TAP		Factor	Units	FOOLIOLE	(lb/hr)	(tpy)
Biomass Source	-							
cetaldehyde	Y	Y	Y	5.7E-03	b/ODT	1	0.46	1.8
Acrolein	Ý	Ý	Ý	3.2E-03	Ib/ODT	1	0.26	1.0
ormaldehyde	Y	Y	Ý	3.0E-03	Ib/ODT	1	0.24	0.92
dethanol	Ý	N	Ý	6.6E-03	b/ODT	1	0.53	2.1
Phenol	Y	Y	Ý	4.1E-03	Ib/ODT	1	0.33	1.3
Propionaldehyde	Ŷ	N	Ý	1.4E-03	Ib/ODT	1	0.12	0.45
Acetophenone	Ý	N	Ý	3.2E-09	ID/MMBtu	1	4.0E-08	1.8E-0
Antimony and compounds	Ý	N	N	7.9E-06	lb/MMBtu	2,4	1.4E-04	6.3E-0
Arsenic	Ý	Y	N	2.2E-05	b/MMBtu	2.4	4.0E-04	1.7E-0
Benzene	Y	Y	Y	4.2E-03	ib/MMBtu	2,3	5.3E-02	0.23
Benzo(a)pyrene	Ý	Ý	Ý	2.6E-06	Ib/MMBtu	2,3	3.3E-05	1.4E-0
Beryllium	Ŷ	Y	N	1.1E-06	Ib/MMBtu	2.4	2.0E-05	8.7E-0
Cadmium	Ŷ	Y	N	4.1E-06	1b/MMBtu	2,4	7.4E-05	3.3E-0
Carbon tetrachloride	Y	Y	Y	4.5E-05	Ib/MMBtu	2.3	5.6E-04	2.5E-0
Chlorine	Y	Y	N	7.9E-04	Ib/MMBtu	2,5	0.20	0.87
Chlorobenzene	Y	Y	Y	3.3E-05	Ib/MMBtu	2.3	4.1E-04	1.8E-0
Chloroform	Y	Y	Y	2.8E-05	lb/MMBtu	2,3	3.5E-04	1.5E-0
	_3	Y	Ň	3.5E-06	Ib/MMBtu	2,4,5	6.4E-05	2.8E-0
								1.4E-0
Chromium-Other compounds		N	N	1.8E-05	Ib/MMBtu	2,4	3.2E-04	5.2E-0
Cobalt compounds	Y	N	N Y	6.5E-06	Ib/MMBtu	Z,4	1.2E-04	1.6E-0
Dichloroethane, 1,2-	<u>Y</u>			2.9E-05	lb/MMBtu	2,3	3.6E-04	
Dichloropropane, 1,2-	Y	N	Y	3.3E-05	lb/MMBtu	2,3	4.1E-04	1.8E-0
Dinitrophenol, 2,4-	Y	N	Y	1.8E-07	lb/MMBtu	2,3	2.3E-06	9.9E-0
Di(2-ethylhexyl)phthalate	Y	Y	Y	4.7E-08	lb/MMBtu	2,3	5.9E-07	2.6E-0
Ethyl benzene	Y	N	Y	3.1E-05	Ib/MMBtu	2,3	3.9E-04	1.7E-0
Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8-	N	Y	Y	1.6E-11	Ib/MMBtu	2,3	2.2E-10	9.8E-1
Hydrochloric acid	Y	Y	N	1.9E-02	lb/MMBtu	2,6	0.48	2.1
ead and lead compounds	Y	N	N	4.8E-05	lb/MMBtu	2,4	8.7E-04	3.8E-0
Manganese and compounds	Y	Y	N	1.6E-03	Ib/MMBtu	2,4	2.9E-02	0.13
Mercury, vapor	Y	Y	<u>N</u>	3.5E-06	lb/MMBtu	2,4	6.4E-05	2.8E-0-
Methyl bromide	Y	N	Y	1.5E-05	lb/MMBtu	Z,3	1.9E-04	8.2E-0
Methyl chloride	Y	N	Y	2.3E-05	lb/MMBtu	2,3	2.9E-04	1.3E-0
Methyl ethyl ketone	N	Y	Y	5.4E-06	lb/MMBtu	2,3	6.8E-05	3.0E-04
Methylene chloride	Y	Y	Y	2.9E-04	lb/MMBtu	2,3	3.6E-03	1.6E-0
Naphthalene	Y	N	Y	9.7E-05	lb/MMBtu	2,3	1.2E-03	5.3E-0
Nickel metal	Y	Y	N	3.3E-05	Ib/MMBtu	2,4	6.0E-04	2.6E-0
Nitrophenol, 4-	Y	N	Y	1.1E-07	lb/MMBtu	2,3	1.4E-06	6.0E-0
Pentachlorophenol	Y	Y	N	5.1E-08	lb/MMBtu	2	1.3E-05	5.6E-0
Perchloroethylene	Y	Y	N	3.8E-05	Ib/MMBtu	2	9.5E-03	4.2E-0
Phosphorus metal, yellow or white	Y _	N	N	2.7E-05	Ib/MMBtu	2,4	4.9E-04	2.1E-0
Polychlorinated biphenyls	Y	Y	Y	8.2E-09	lb/MMBtu	2,3	1.0E-07	4.5E-0
Polycyclic Organic Matter	Y	N	N	1.3E-04	lb/MMBtu	2	3.1E-02	0.14
Selenium compounds	Y	N	N	2.8E-06	lb/MMBtu	2,4	5.1E-05	2.2E-0
Styrene	Y	Y	Y	1.9E-03	Ib/MMBtu	2,3	2.4E-02	0.10
Fetrachlorodibenzo-p-dioxin, 2,3,7,8-	Y	Y	Y	8.6E-12	lb/MMBtu	2,3	1.1E-10	4.7E-1
Foluene	Y	Y	Y	3.0E-05	lb/MMBtu	2,3	3.8E-04	1.6E-0
Frichloroethane, 1,1,1-	Y	Y	N	3.1E-05	Ib/MMBtu	2	7.8E-03	3.4E-0
Frichloroethylene	Ŷ	Y	Y	3.0E-05	Ib/MMBtu	2,3	3.8E-04	1.6E-0
richlorofluoromethane	N	Y	Y	4.1E-05	lb/MMBtu	2,3	5.1E-04	2.2E-0
Frichlorophenol, 2,4,6-	Y	N	Y	2.2E-08	lb/MMBtu	2,3	2.8E-07	1.2E-0
/inyl chloride	Υ	Y	Y	1.8E-05	Ib/MMBtu	2.3	2.3E-04	9.9E-0
(viene	Y	Y	Y	2.5E-05	Ib/MMBtu	2.3	3.1E-04	1.48-0
			Total H	AP Emission	s (related t	o biomass)	2.8	11.2
				AP Emission			2.1	8.5



Table 4 Potential Emissions at Outlet of RTO-1 Stack E\$-DRYER and ES-GHM-1 through 3 Enviva Peliets Hamlet, LLC Hamlet, Richmond County, North Carolina

				Emission		Footnote	Potential Emissions	
Pollutant	HAP	NC TAP	VOC	Factor	Units			
					<u> </u>		(lb/hr)	(tpy)
Natural Gas Source								
2-Methylnaphthalene	Y	N	Y	2.4E-05	Ib/MMscf	7	7.5E-07	3.3E-06
3-Methylchloranthrene	Y	N	Y	1.8E-06	lb/MMscf	7	5.6E-08	2.5E-07
7,12-Dimethylbenz(a)anthracene	Y	N	Y	1.6E-05	Ib/MMscf	7	5.0E-07	2.2E-06
Acenaphthene	Y	N	Y	1.88-06	lb/MMscf	7	5.6E-08	2.5E-07
Acenaphthylene	Y	N	Y	1.8E-06	lb/MMscf	7	5.6E-08	2.5E-07
Acetaldehyde	Y	Y	Y	1.5E-05	lb/MMscf	7	4.8E-07	2.1E-06
Acrolein	I Y	Y	Y	1.8E-05	lb/MMscf	7	5.6E-D7	2.5E-06
Ammonia	N	Y	N	3.2	lb/MMscf	7	0.10	0.44
Anthracene	Y	N	Y	2.4E-06	lb/MMscf	7	7.5E-08	3.3E-07
Arsenic	Y	Y	N	2.0E-04	Ib/MMscf	7	6.3E-06	2.7E-05
Benz(a)anthracene	Y	N	Y	1.8E-06	Ib/MMscf	7	5.6E-08	2.5E-07
Benzene	Y	N	Y	2.1E-03	Ib/MMscf	7	6.6E-05	2.9E-04
Benzo(a)pyrene	Γ Y	Y	Y	1.2E-06	lb/MMscf	7	3.8E-08	1.6E-07
Benzo(b)fluoranthene	Y	N	Y	1.8E-06	Ib/MMscf	7	5.6E-08	2.5E-07
Benzo(g.h.i)perylene	Y	N	Y	1.2E-06	lb/MMscf	7	3.8E-08	1.6E-07
Benzo(k)fluoranthene	Υ	N	Y	1.8E-06	lb/MMscf	7	5.6E-08	2.58-07
Beryllium	Y	Y	N	1.2E-05	lb/MMscf	7	3.8E-07	1.68-06
Cadmium	Y	Y	N	1.1E-03	Ib/MMscf	7	3.5E-D5	1.5E-04
Chromium VI	Y	N	N	1.4E-03	Ib/MMscf	7	4.4E-05	1.9E-04
Chrysene	Y	N	Y	1.8E-06	lb/MMscf	7	5.6E-08	2.58-07
Cobalt	Y	N	N	8.4E-05	Ib/MMscf	7	2.6E-06	1.28-05
Dibenzo(a,h)anthracene	Y	N	Y	1.2E-06	Ib/MMscf	7	3.8E-08	1.6E-07
Dichlorobenzene	Y	Y	Y	1.2E-03	Ib/MMscf	7	3.8E-05	1.68-04
Fluoranthene	Y	N	Y	3.0E-06	Ib/MMscf	7	9.4E-08	4.1E-07
Fluorené	Y	N	Y	2.8E-06	lb/MMscf	7	8.8E-08	3.8E-07
Formaldehyde	Y	Y	Y	7.5E-02	Ib/MMscf	7	2.4E-03	1.0E-02
Hexane	Y	Y	Y	1.8	lb/MMscf	7	5.6E-02	0.25
Indeng(1,2,3-cd)pyrene	Y	N	Y	1.8E-06	lb/MMscf	7	5.6E-08	2.5E-07
Lead	Y	N	N	5.0E-04	lb/MMscf	7	1.6E-05	6.9E-05
Manganese	Y	Y	N	3.8E-04	lb/MMscf	7	1.2E-05	5.2E-05
Mercury	Y	Y	N	2.6E-04	lb/MMscf	7	8.2E-06	3.6E-05
Naphthalene	Y	N	Y	6.1E-04	Ib/MMscf	7	1.9E-05	8.4E-05
Nickel	Y	Y	N	2.1E-03	Ib/MMscf	7	6.6E-05	2.9E-04
Phenanthrene	Y	N	Y	1.7E-05	Ib/MMscf	7	5.3E-07	2.3E-06
Pyrene	Y	N	Y	5.0E-06	lb/MMscf	7	1.6E-07	6.9E-07
Selenium	Y	N	N	2.4E-05	lb/MMscf	7	7.5E-07	3.3E-06
Toluene	Y	Y	Y	3.4E-03	lb/MMscf	7	1.1E-04	4.7E-04
			Total HAP	Emissions (r	elated to n	atural gas)	0.059	0.25
				Emissions (r			0.16	0.70

Notes:

¹- Emission factor derived based on stack testing data from comparable Enviva facilities.

² Emission factors (criteria and HAP/TAP) for wood combustion in a stoker bailer from NCDAQ Wood Waste Combustion Spreadsheet/AP-42, Fifth Edition, Volume 1, Chapter 1.6 - Wood Residue Combustion in Boilers, 09/03.

³. The control efficiency of 95% for the RTO is applied to all VOC hazardous and toxic pollutants for those emission factors that are not derived from Enviva stack test data.

⁴ The control efficiency of the wet electrostatic precipitator (WESP) for filterable particulate matter is applied to all metal hazardous and toxic pollurants. Actual design filterable efficiency is estimated to 96.4%, but 92.75% is assumed for toxics permitting.

5. Chromium VI is a subset of chrome compounds, which is accounted for separately as a HAP. As such, Chromium VI is only calculated as a TAP.

^{5.} The WESP employs a caustic solution in its operation in which hydrochloric acld will have high water solubility. This caustic solution will neutralize the acid and effectively control it by 90%, per conversation on October 18, 2011 with Steven A. Jaasund, P.E. of Lundberg Associates, a manufacturer of WESPs.

² Emission factors for natural gas combustion are from NCDAQ Natural Gas Combustion Spreadsheet and AP-42, Fifth Edition, Volume 1, Chapter 1.4 - Natural Gas Combustion, 07/98 for small boilers. The emission factors for acetaldehyde, acrolein, and ammonia are cited in the NCDAQ spreadsheet as being sourced from the USEPA's WebFIRE database.

Abbreviations:

CAS - chemical abstract service	N ₂ O - nitrous oxide
CH ₄ - methane	ODT - oven dried tons
CO - carbon monoxide	PM – particulate matter
CO2 - carbon dioxide	PM ₁₀ - particulate matter with an aerodynamic diameter less than 10 microns
CO2e - carbon dioxide equivalent	PM _{2.5} – particulate matter with an aerodynamic diameter of 2.5 microns or less
HAP - hazardous air pollutant	RTO - regenerative thermal oxidizer
hr – hour	SO ₂ - sulfur dioxide
kg - kilogram	TAP - toxic air pollutant
lb - pound	tpy - tons per year
MMBtu - Million British thermal units	VOC - volatile organic compound
NC - North Carolina	WESP - wet electrostatic precipitator
NO _x - nitrogen oxides	yr - year



Table 5 Summary of Potential Emissions from Baghouses Envive Peliates Hamlet, LLC Hamlet, Richmond County, North Carolina

Emission Unit ID Source Description			Exhaust	Exit Grain	Particulate Speciation		Potential Emissions						
	Control	Control Device	Flow Rate ¹	Loading	Particulate	Particulate Speciation		м	PMin		PN	21	
	Devica ID	Description	(cfm)	(gr/d)	PN19 (% of PM)	PM25 (% of PM)	(lb/hr]	(14P¥)	(lb/hr)	(tpy)	(ib/hr)	(tpy)	
ES-HM-1	Dry Hammermill	CD HM BH1	One (1) paghouse ^{1, 1}	15,000	0.004	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-03	0.038
ES-HM-Z	Dry Hammermill	CD-HM-BH2	One (1) baghouse ^{2, 2}	15,000	0.064	100%	1.7%	0.51	2.3	0.51	2.3	8.7E D3	850.0
ES-HM-3	Dry Hammermill	CD-14M-B113	One (1) pathouse ^{2, 3}	15,000	0.0Ç4	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-03	BE0.0
ES-HM-4	Dry Kammermill	CD-HM-BH4	One (1) paghouse ^{1, 3}	15,000	0.004	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-03	0.038
ES-HM-5	Ory Hammermill	CD-HM-BHS	One (1) paghouse ^{2, 3}	15,000	0.004	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-03	0.038
ES-HM-6	Dry Hammermill	CD-HM-BH6	One (1) paghouse ^{1, 1}	15,000	0.004	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-03	0.038
ES-HM-7	Ory Kammermill	CD-HM-BH7	One (1) pathouse ^{2, 3}	15,000	0.004	100%	1.7%	0.51	2.3	0.51	2.3	8.7E-D3	0.038
ES-HM-B	Dry Hammermill	CD-HM-BH8	One (1) baghouse ^{2, 3}	15,000	0.004	100%	1.795	0.51	2.3	0.51	2.3	B.7E-03	BE0.0
ES-HMG	Hammermill Collection Conveyor	CD-HMC-BH	One (1) paghouse ^{2,4}	1,500	0.004	100%	100%	0.051	0.23	0.051	0.23	0.051	0.23
ES-PCHP	Pellet Copier HP Fines Relay System	CD-PCHP-BH	One (1) baghouse ^{2, *}	SDD	C.004	100%	100%	0.017	0.075	0.017	0.075	0.017	0.075
	Pellet Copier LP Fines Relay System	CO-PCLP-BH	One (1) paghouse ^{2, 4}	3,102	6.004	100%	100%	0.11	0.47	0.11	0.47	0.11	0.47
ES-PMFS	Pellet Mill Feed Slip	CD-PMPS-BH	One (1) baghouse"."	2,444	C.004	100%	100%	0.084	D.37	0.084	0.37	0.084	0.37
ES-C.R-1	Pellet Cooler	CD-CLR-8H1	One (1) bagnouse ⁵	15,000	0.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES-CLR-2	Pellet Cooler	CD-CLR-BH2	One (1) baghouse [®]	15,000	C.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES CLR 3	Pollet Cooier	CO-CLR-BH3	One (1) baghouse ⁵	15,000	0.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES-C.R-4	Pellet Capler	CD-CLR-BH4	One (1) bachouse	15,000	0.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES-CLR-5	Pellet Copier	CO-CLR-BH5	One (1) bagnouse	15,000	C.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES-C.R-B	Pellet Copler	CD-CLR-BH6	One (1) bagnouse'	15,000	C.004	26.1%	3.2%	0.51	2.3	0.13	0.59	0.016	0.072
ES-DCTB	Pellet Oust Collection Transfer Bin	CD-PDCTB-BH	One (1) baghouse ^{2, 4}	3,000	0.064	100%	100%	0.10	Û.45	0.10	0.45	0.10	0.45
ES-FPH ES-PB-1 and 2	Finished Product Handling Two (2) Pellet Loadout Bins	CD-FPH-BH	One (1) baghouse ^{3,6}	8,500	0.004	91%	1.7%	0.29	1.3	0.27	1.2	5.0E-D3	0.022
ES-DWH	Dried Wood Handling Operations (conveyors)	CD-DWH-BH1 CD-DWH-BH2	One (1) beghouse ^{2, 2}	1,000	0.004	100%	100%	0.034	0.15	0.034	0.15	0.034	0.15 D.15
ES-ADD	Additive Handling and Storage	CD-ADD-BH	One (1) baghouse ^{2, 4} One (1) baghouse ^{2, 4}	1,000	0.004	100%	100%	0.034	C.15	0.034	0.15	0.034	0.15

Motiva:

 Control device flow rate (cfm) based on updated emission point data provided by Enviva on 3/16/18.
 Control device flow rate (cfm) based on updated emission point data provided by Enviva on 3/16/18.
 No speciation data is available for PM₁₀. Therefore, it is conservatively assume to be equal to total PM.
 Dry Hammernillis and finished product handling PM₂₁ speciation based on April 2014 Envive Southampton PM₂₁ speciation tests.
 No speciation data is available for PM₁₀. Therefore, it is conservatively assumed to be eque to total PM.
 Det Hammernillis and finished product handling PM₂₁ speciation based on April 2014 Envive Southampton PM₂₁ speciation tests.
 No speciation data is available for PM₁₀. Therefore, it is conservatively assumed to be eque to total PM.
 Exit flow rate provided by Envive. Exit grain loading assumed to be the same as for other baghouses at the facility. A single wet scrubber may be used in place of the six (6) baghouses for PM control. The emissions are expected to be the same whether the scrubber or baghouses are installed. Baghouse or scrubber emissions intervality introval Co-RED.
 Einshed product handling PM₁₂ speciation based on emission factors for wet wood combustion controlled by a mechanical separator from AP 42, Section 1.6 Wood Residue Combust on in 80ilters, 09/03. Because the particle size of particulate matter from finished product handling is anticicated to be larger than flyash, this factor is be leved to be a conservative indicator of speciation.

Abbreviations: cf - cubic feet cfm - cubic feet per minute ES - Emission Sources

165 - Enignificant Emission Source gr - grain hr - hour

lb - pound PM - particulate matter PM₃₀ - particulate matter with an aerodynamic diameter less than 50 microns or less the matter with an aerodynamic diameter of 2.5 microns or less $\text{PM}_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less thy - tons per year

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Table 6 Dry Hammermill Potential VOC and HAP Emissions ES-HM-1 through 8 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

Hourly Throughput	68 ODT/hr
Annual Throughput	531,259 ODT/yr
Hours of Operation	8,760 hr/yr

Potential VOC and HAP Emissions

Pollutant	CAS No.		voc	Emission Factor ¹	Potential Emissions	
				(Ib/ODT)	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	Y	Y	0.0091	0.62	2.4
Acrolein	107-02-8	Y	Y	0.011	0.73	2.9
Formaldehyde	50-00-0	Y	Y	0.0080	0.55	2.1
Methanol	67-56-1	N	Y	0.0052	0.35	1.4
Phenol	108-95-2	Y	Y	0.0041	0.28	1.1
Propionaldehyde	123-38-6	N	Y	0.019	1.3	5.0
			Total H	AP Emissions	3.8	15
			Total T	AP Emissions	2.2	8.5
Total VOC		I [Y	0.51	35	135

Notes:

¹ Emission factors are based on stack testing data from comparable Enviva facilities.

Abbreviations:

- CAS chemical abstract service HAP - hazardous air pollutant
- hr hour
- lb pound
- NC North Carolina

ODT - oven dried tons TAP - toxic air pollutant tpy - tons per year VOC - volatile organic compound yr - year



Table 7 Potential VOC and HAP Emissions at Outlet of RCO Stack ES-CLR-1 through 6 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis	
Hourly Throughput	80 ODT/hr
Annual Throughput	625,011 ODT/yr
Hours of Operation	8,760 hr/yr
Number of Burners	4 burners
RCO/RTO Burner Rating	8 MMBtu/hr
RCO/RTO Control Efficiency	95%

Pellet Cooler and Pellet Mill Potential Process VOC and HAP Emissions

Pollutant	CAS No.	CAS NO. NC TAP YOC		Uncontrolled Emission Factor ¹	Emissions at RCO Outlet ²	
				(Ib/ODT)	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	Y	Y	0.0084	0.034	0.13
Acrolein	107-02-8	Y	Y	0.050	0.20	0.79
Formaldehyde	50-00-0	Y	Y	0.031	0.12	0.49
Methanol	67-56-1	N	Y	0.24	0.96	3.8
Phenol	108-95-2	Y	Y	0.025	0.10	0.39
Propionaldehvde	123-38-6	N	Y	0.011	0.043	0.17
			Total	HAP Emissions	1.5	5.7
			Total	TAP Emissions	0.46	1.8
Total VOC			Y	1.5	6.0	23

Notes:

 $^{\rm 1}$ Emission factors were derived based on stack testing data from comparable Enviva facilities.

² A 95% control efficiency is applied to the potential emissions for the RCO. The pellet coolers will be equipped with an RCO that will operate primarily in catalytic mode with thermal (RTO) mode as a backup. The RTO and RCO modes have the same control efficiency so there will be no impact on emissions during thermal mode usage.

Thermal Generated Potential Criteria Pollutant Emissions

Maximum high heating value of VOC constituents	
Uncontrolled VOC emissions	
Heat input of uncontrolled VOC emissions	

1.8E-02 MMBtu/lb 467 tons/yr 17,284 MMBtu/yr

Pollutant	Emission	Units	Potential Emissions		
	Factor	Units	(lb/hr)	(tpy)	
CO	8.2E-02	lb/MMBtu ¹	0.16	0.71	
NOx	9.8E-02	lb/MMBtu ¹	0.19	0.85	

Natural Gas Combustion Potential Criteria Pollutant and Greenhouse Gas Emissions

Pollutant	Emission	Units	Potential Emissions		
Folititalit	Factor	Units	(lb/hr)	(tpy)	
co	8.2E-02	lb/MMBtu ¹	2.6	12	
NOx	9.8E-02	lb/MMBtu ¹	3.1	14	
SO ₂	5.9E-04	Ib/MMBtu ¹	1.9E-02	8.2E-02	
VOC	5.4E-03	lb/MMBtu ¹	0.17	0.76	
РМ	7.5E-03	Ib/MMBtu ¹	0.24	1.0	
PM ₁₀	7.5E-03	lb/MMBtu ¹	0.24	1.0	
PM _{2.5}	7.5E-03	ib/MMBtu ¹	0.24	1.0	
CO ₂	66.9	kg/MMBtu ²	4,718	20,666	
CH4	1.0E-03	kg/MMBtu ²	7.1E-02	0.31	
N ₂ O	1.0E-04	kg/MMBtu ²	7.1E-03	3.1E-02	
CO ₂ e			4,722	20,683	



Table 7 Potential VOC and HAP Emissions at Outlet of RCO Stack ES-CLR-1 through 6 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Natural Gas Combustion Potential HAP and TAP Emissions

Pollutant	HAP	I NC TAP	voc	Emission	Units	Footnote	Potential Emissions	
				Factor			(lb/hr)	(tpy)
latural Gas Source								
-Methylnaphthalene	Y	N	Y	2.4E-05	lb/MMscf	3	7.5E-07	3.3E-06
-Methylchloranthrene	Y	N	Y	1.8E-06	ib/MMscf	3	5.6E-08	2.5E-07
12-Dimethylbenz(a)anthracene	Y	N	Y	1.6E-05	lb/MMscf	3	5.0E-07	2.2E-06
cenaphthene	Y	N	Y	1.8E-06	lb/MMscf	3	5.6E-08	2.5E-07
cenaphthylene	Y	N	Y	1.8E-06	b/MMscf	3	5.6E-08	2.5E-07
cetaldehyde	Y	Y	Y	1.5E-05	lb/MMscf	3	4.8E-07	2.1E-06
crolein	Y	Y	Y	1.8E-05	lb/MMscf	3	5.6E-07	2.5E-06
mmonia	N	Y	N	3.2	lb/MMscf	3	0.10	0.44
Inthracene	Y	N	Y	2.4E-06	b/MMscf	3	7.5E-08	3.3E-07
Arsenic	Y	I Y	N	2.0E-04	b/MMscf	3	6.3E-06	2.7E-05
Benz(a)anthracene	Y	N	Y	1.8E-06	lb/MMscf	3	5.6E-08	2.5E-07
Senzene	Y	N	Y	2.1E-03	b/MMscf	3	6.6E-05	2.9E-04
Senzo(a)pyrene	Y	Y	Ŷ	1.2E-06	lb/MMscf	3	3.8E-08	1.6E-07
enzo(b)fluoranthene	Y	N	Y	1.8E-06	b/MMscf	3	5.6E-08	2.5E-07
enzo(g,h,i)perylene	Y	N	Y	1.2E-06	b/MMscf	3	3.8E-08	1.6E-07
enzo(k)fluoranthene	T Y	N	Y	1.8E-06	lb/MMscf	3	5.6E-08	2.5E-07
Beryllium	Y	Y	N	1.2E-05	b/MMscf	3	3.8E-07	1.6E-06
ladmium	Y	Y	N	1.1E-03	lb/MMscf	3	3.5E-05	1.5E-04
Chromium VI	Y	N	N	1.4E-03	Ib/MMscf	3	4.4E-05	1.9E-04
hrysene	Y	N	Y	1.8E-06	lb/MMscf	3	5.6E-08	2.5E-07
obalt	Y	N	N	8.4E-05	Ib/MMscf	3	2.6E-06	1.2E-05
)ibenzo(a.h)anthracene	Y	N	Ý	1.2E-06	lb/MMscf	3	3.8E-08	1.6E-07
Dichlorobenzene	Y	Y	Y	1.2E-03	Ib/MMscf	3	3.8E-05	1.6E-04
luoranthene	Ý	N	Y	3.0E-06	lb/MMscf	3	9.4E-08	4.1E-07
luorene	Y	N	Y	2.8E-06	Ib/MMscf	3	8.8E-08	3.8E-07
ormaldehyde	Y	I Y	Y	7.5E-02	lb/MMscf	3	2.4E-03	1.0E-02
lexane	Ý	Y	Ŷ	1.8	lb/MMscf	3	5.6E-02	0.25
ndeno(1.2.3-cd)ovrene	Ý	N	Ý	1.8E-06	lb/MMscf	3	5.6E-08	2.5E-07
ead	Y	N	Ň	5.0E-04	lb/MMscf	3	1.6E-05	6.9E-05
fanganése	Y	Y	N	3.8E-04	lb/MMscf	3	1.2E-05	5.2E-05
fercury	Y	Y	N	2.6E-04	lb/MMscf	3	8.2E-06	3.6E-05
laphthalene	Ý	N	Y	6.1E-04	lb/MMscf	3	1.98-05	8.4E-05
lickel	Ý	Ŷ	Ň	2.1E-03	Ib/MMscf	3	6.6E-05	2.9E-04
henanathrene	Ý	N	Ŷ	1.7E-05	lb/MMscf	Ĭ	5.3E-07	2.3E-06
Vrene	Y	N	Ý	5.0E-06	Ib/MMscf	3	1.6E-07	6.9E-07
Gelenium	Ý	N	N	2.4E-05	lb/MMscf	3	7.5E-07	3.3E-06
oluene	Ý	Ŷ	Ŷ	3.4E-03	lb/MMscf	Ť	1.1E-04	4.7E-04
bigent.			· ·	AP Emissions				0.26
				AP Emissions				0.70

Notes:

Emission factors from AP-42, Section 1.4 - Natural Gas Combustion, 07/98. Emission factors converted from Ib/MMscf to Ib/MMBtu based on assumed heating value of 1,020 Btu/scf for natural gas per AP-42 Section 1.4.
 Emission factors for natural gas combustion by the burners obtained from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from

Table A-1.

3- Emission factors for natural gas combustion are from NCDAQ Natural Gas Combustion Spreadsheet and AP-42, Fifth Edition, Volume 1, Chapter 1.4 -Natural Gas Combustion, 07/98 for small boilers. The emission factors for acetaldehyde, acrolein, and ammonia are cited in the NCDAQ spreadsheet as being sourced from the USEPA's WebFIRE database.

Abbreviations:

CAS - chemical abstract service	RCO - regenerative catalytic oxidizer
HAP - hazardous air pollutant	RTO - regenerative thermal oxidizer
hr - hour	TAP - toxic air pollutant
lb - pound	tpy - tons per year
NC - North Carolina	VOC - volatile organic compound
ODT - oven dried tons	уг - уезг



Table 8 Dried Wood Handling Potential Emissions ES-DWH Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

Hourly Throughput ¹	80 ODT/hr
Annual Throughput ¹	625,011 ODT/yr

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Potential Emissions ¹			
	(Ib/ODT)	(lb/hr)	(tpy)		
Formaldehyde	8.4E-04	0.067	0.26		
Methanol	2.0E-03	0.16	0.61		
Total HAP Emissions		0.22	0.87		
VOC as carbon ²	0.10	8.1	32		
VOC as propane ³	0.12	9.9	39		

Notes:

^{1.} Hourly and annual throughputs assumed to be the same as dry hammermill throughput.

- ^{2.} Emission factors derived from NCASI's Wood Products Database (February 2013) for dry wood handling operations at an OSB mill, mean emission factors. The emission factors were converted from Ib/MSF (3/8") to Ib/ODT using the typical density and moisture content of an OSB panel.
- ^{3.} VOC as propane = $(1.22 \times VOC \text{ as carbon}) + \text{formaldehyde}$.

Abbreviations:

hr - hour lb - pound ODT - oven dried tons tpy - tons per year VOC - volatile organic compound yr - year



Table 9 **Emergency Generator Potential Emissions** IES-GN Enviva Pelleta Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

Engine Output	500 kW
Horsepower Rating	671 brake hp
Diesel Heating Value	19,300 Btu/ib
Hours of Operation	500 hr/yr
Conversion factor	2,545 Btu/hr/hp
Hourly Fuel Consumption	31.9 gal/h ¹
Energy Input	4.37 MMBtu/hr ²

Notes:

^{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.

Potential Criteria Pollutant Emissions

Pollutant	Emission	Units	Potential Emissions ¹		
	Factor	Units	(lb/hr)	(tpy)	
CO ²	0.39	g/hp-hr	0.58	D.14	
NO _x ²	6.65	g/hp-hr	9.8	2.5	
SO ₂ 3	15	ppmw	2.7E-03	6.6E-04	
VOC ²	0.01	lb/hp-hr	6.7	1.7	
PM ²	0.021	g/hp-hr	3.1E-02	7.8E-03	
PM10 ²	0.021	g/hp-hr	3.1E-02	7.8E-03	
PM2.5	0.021	g/hg-hr	3.1E-02	7.8E-03	
CO2	74.0	kg/MMBtu ⁴	713	178	
CH4	3.0E-03	kg/MMBtu*	2.9E-02	7.2E-03	
N ₂ O	6.0E-04	kg/MMBtu ⁴	5.86-03	1.4E-03	
COze			715	179	

Notes: ¹· NSPS allows for only 100 hrs/yr of non-emergency operation of these engines. Potential emissions for the emergency generator are conservatively based on 500 hr/yr.

². Emission factors for Particulate Matter (TSP/PM₁₀/PM₁₀), Nitrous Oxide (NO_x), Volatile Organic Matter (VOC), and Carbon Monoxide (CO) obtained from generator's spec sheet. The generator's spec sheet does not include an emission factor for VOC so the hydrocarbon (HC) emission factor was used as a surrogate for VOC.

^{3.} Sulfur content in accordance with Year 2013 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

⁴ Emission factors from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Potential HAP Emissions

Pollutant	CAS No. NC TAP	VOC	Emission Factor ¹	Potential Emissions ²		
				(lb/hp-hr)	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	I Y I	Ŷ	5.37E-06	3.6E-03	9.0E-04
Acrolein	107-02-8	Y	Ŷ	6.48E-07	4.3E-04	1.1E-04
Benzene	71-43-2	Y	Y	6.53E-06	4.4E-03	1.1E-03
Benzo(a)pyrene ³	50-32-8	Y	Y	1.32E-09	8.8E-07	2.2E-07
1,3-Butadiene	106-99-0	Y	Y	2.74E-07	1.8E-04	4.6E-05
Formaldehyde	50-00-0	Y	Y	8.26E-06	5.5E-03	1.4E-03
Naphthalene ³	91-20-3	N	Y	5.94E-07	4.0E-04	1.0E-04
Total PAH (POM)		N	Y	1.18E-06	7.9E-04	2.0E-D4
Toluene	108-88-3	Y	Y	2.86E-06	1.9E-03	4.8E-04
Xviene	1330-20-7	Y	Y	2.00E-06	1.3E-03	3.3E-04
			Total	HAP Emissions	1.8E-02	4.5E-03
			Total	TAP Emissions	1.7E-02	4.3E-03

Nates:

Emission factors obtained from AP-42 Section 3.3 - Stationary Internal Combustion Engines, 10/96, Table 3.3-2.

² NSPS allows for only 100 hrs/yr of non-emergency operation of these engines. Potential emissions for the emergency generator are conservatively based on 500 hr/yr.

³ Benzo(a)pyrene and naphthalene are included as HAPs in Total PAH.

Abbreviations:

Btu - British thermal unit	MMBtu - Million British thermat units
CAS - chemical abstract service	NO _x - nitrogen oxides
CH ₄ - methane	NC - North Carolina
CO - carbon monoxide	N20 - nitrous oxide
CO2 - carbon dioxide	ODT - oven dried tons
CO ₂ e - carbon dioxide equivalent	PAH - polycyclic aromatic hydrocarbon
g - gram	PM - particulate matter
gal - gallon	PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
HAP - hazardous air pollutant	PM _{2.5} - particulate matter with an aerodynamic diameter of 2.5 microns or less
hp - horsepower	POM - polycyclic organic matter
hr - hour	SO ₂ - sulfur dioxide
kg - kilogram	TAP - toxic air pollutant
kW - kilowatt	toy - tons per year
lb - pound	VOC - volatile organic compound
MW - megawatt	yr - year

Table 10 Fire Pump Potential Emissions IES-FWP Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis					
Engine Output	0.10 MW				
Horsepower Rating	131 brake hp				
Diesel Density ¹	7.1 lb/gai				
Hours of Operation	500 hr/yr				
Hourly Fuel Consumption	9 gal/hr ¹				
Energy Input	1.23 MMBtu/hr ²				

Notes: ¹ Diesel density from AP-42 Section 3.4 - Large Stationary Diesel and All Stationary Dual-fuel Engines, 10/96, Table 3.4-1, footnote a.

 2 Energy calculated on a fuel consumption basis, using an energy factor of $0.137\ \text{MMBtu/gal}.$

Potential Criteria Pollutant Emissions

Pollutant	Emission	Units	Potential E	missions ¹
Pontianc	Factor	Units	(lb/hr)	(toy)
CO ²	1.3	g/kW-hr	0.28	7.0E-02
NDx2	3.4	g/kW-hr	0.72	0.18
SO23	15	ppmw	1.9E-03	4.8E-04
VOC ²	0.15	g/kW-hr	3.2E-02	8.1E-03
PM ²	0.17	g/kW-hr	3.7E-02	9.2E-03
PM ₁₀ ²	0.17	g/kW-hr	3.7E-02	9.2E-03
PM2 52	0.17	g/kW-hr	3.7E-02	9.2E-03
CO2	74	kg/MMBtu ⁴	201	50
CH4	3.0E-03	kg/MMBtu ⁴	8.2E-03	2.0E-03
N20	6.0E-04	kg/MMBtu ⁴	1.6E-03	4.1E-04
CO2e			202	50

Notes:

1- NSPS allows for only 100 hrs/yr of non-emergency operation of these engines. Potential emissions for the fire pump are conservatively based on 500 hr/yr.

² Emissions factors for PM/PM₁₀/PM_{2.5}, NO_X, hydrocarbons, and CO obtained from generator's spec sheet.

⁹ Sulfur content in accordance with Year 2013 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.

4- Emission factors from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Pollutant	CAS No. NO	NC TAP	voc	Emission Factor ¹	Potential Emissions ²	
				(lb/hp-hr)	(lb/hr)	(tpy)
Acetaldehyde	75-07-0	Y	Y	5.4E-06	7.0E-04	1.8E-04
Acrolein	107-02-8	Y	Y	6.5E-07	8.5E-05	2.1E-05
Benzene	71-43-2	Y	Y	6.5E-06	8.6E-04	2.1E-04
Benzo(a)pyrene	50-32-8	Y	Y	1.3E-09	1.7E-07	4.3E-08
1 3-Butadiene	106-99-0	Y	Y	2.7E-07	3.6E-05	9.0E-06
Formaldehyde	50-00-0	Y	Y	8.3E-06	1.1E-03	2.7E-04
Naphthalene	91-20-3	N	Y	5.9E-07	7.8E-05	1.9E-05
Total PAH (POM)3		N	Y	1.2E-06	1.5E-04	3.9E-05
Toluene	108-88-3	Y	Y	2.9E-06	3.8E-04	9.4E-05
Kylene	1330-20-7	T Y T	Ý	2.0E-06	2.6E-04	6.SE-05
			Total	HAP Emissions	3.6E-03	8.9E-04
			Total	TAP Emissions	3.4E-03	8.5E-04

Notes:

- Emission factor obtained from NCDAQ Internal Combustion (Small Gasoline and Diesel Engines) Spreadsheet/AP-42 Section 3.3 -Stationary Internal Combustion Engines, 10/96, Table 3.3-2.

2. NSPS allows for only 100 krs/yr of non-emergency operation of these engines. Potential emissions for the fire pump are conservatively based on 500 hr/yr.

³ The PAH emission factor includes all the PAH compounds listed in AP-42. Emissions for naphthalene and benzo(a)pyrene are also calculated separately. For the purposes of calculating total HAP emissions, the naphthalene and benzo(a)pyrene are not included separately to avoid double counting these emissions.

Abbreviationa: Btu CAS CH₄

Btu - British thermal unit	MMBtu - Million British thermal units
CAS - chemical abstract service	NQ _X - nitrogen oxides
CH4 - methane	NC - North Carolina
CO - carbon monoxide	N ₂ O - nitrous axide
CO2 - carbon dioxide	ODT - oven dried tons
CO ₂ e - carbon dioxide equivalent	PAH – polycyclic aromatic hydrocarbon
g - gram	PM - particulate matter
gal - gallon	PM ₁₀ - particulate matter with an aerodynamic diameter less than 10 microns
HAP - hazardous air poliutant	$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
hp - horsepower	POM - polycyclic organic matter
hr - hour	\$0 ₂ - sulfur dioxide
kg - kliogram	TAP - toxic air pollutant
kW - kilowatt	tpy - tons per year
1b - pound	VOC - volatile organic compound
MW - megawatt	yr - year



Table 11 Log Chipper Potential Emissions IES-CHIP-1 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

	275 ton/hr, wet
Hourly Throughput [⊥]	138 ODT/hr
Annual Throughput	625,011 ODT/yr

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Potential Emissions ¹					
Polititant		(lb/hr)	(tpy)				
THC as carbon ²	4.1E-03 lb/ODT	0.56	1.3				
VOC as propane ³	5.0E-03 lb/ODT	0.69	1.6				
Methanol ²	1.0E-03 Ib/ODT	0.14	0.31				

Notes:

¹ Hourly chipper throughput data provided by Enviva (email from Kai Simonsen dated 12/21/17).

- ² Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Medium Density Fiberboard, 08/02, Table 7 and Section 10.6.4, Hardboard and Fiberboard, 10/02, Table 9. Emission factors for THC and methanol are the same across all three tables.
- ^{3.} Emission factor for VOC as propane is from AP-42, Section 10.6.3., Medium Density Fiberboard, 08/02, Table 7.

Abbreviations:

hr - hour Ib - pound ODT - oven dried tons THC - total hydrocarbon tpy - tons per year yr - year



Table 12 Bark Hog Potential Emissions IES-BARKHOG Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

University Theory alternation	50 ton/hr, wet
Hourly Throughput ¹	25 ODT/hr
a 1	113,638 ODT/yr
Annual Throughput ²	227,277 ton/уг, wet
Approx. Moisture Content ¹	50% of total weight

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Potential E	missions1
Poliutant	Emission Factor	(lb/hr)	(tpy)
THC as carbon ³	4.1E-03 lb/ODT	0.10	0.23
VOC as propane ⁴	5.0E-03 lb/ODT	0.13	0.28
Methanol ³	1.0E-03 Ib/ODT	2.5E-02	5.7E-02
TSP⁵	2.0E-02 lb/ton	0.10	0.23
PM ₁₀ ⁵	1.1E-02 lb/ton	5.5E-02	0.13

Notes:

- ^{1.} Hourly bark hog throughput data and approximate moisture content provided by Enviva (email from Kai Simonsen dated 12/21/17).
- ^{2.} Maximum throughput assumes bark hog usage is proportional to the amount of log chipping that occurs for maximum pellet ODT and maximum 75% purchase of green wood from logs.
- ^{3.} Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Medium Density Fiberboard, 08/02, Table 7 and Section 10.6.4, Hardboard and Fiberboard, 10/02, Tables 7 and 9. Emission factors for THC and Methanol are the same across all three tables.
- ^{4.} Emission factor for VOC as propane is from AP-42, Section 10.6.3., Medium Density Fiberboard, 08/02, Table 7.
- ⁵ Particulate matter emission factors from the USEPA document titled AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. Source Classification Code 3-07-008-01 (Log Debarking). All PM is assumed to be larger than 2.5 microns. PM emissions are assumed to be controlled due to the bark hog being partially enclosed (assumed 90% control).

Abbreviations:

hr - hour lb - pound ODT - oven dried tons THC - total hydrocarbon tpy - tons per year yr - year



Table 13 Green Wood Handling IE9-GWH Enviva Pollets Hamlet, LLC Hamlet, Richmond County, North Carolina

Source	Transfer Activity ¹	of Drop	Material Moisture Content ²	PM Emission Factor ^a	PM ₁₀ Emission Factor ³	PM _{2.5} Emission Factor	1.	tential ughput ⁴	Poteni Emiss		Potenti Emiss	al PM _{IO} sions ⁵	Potenti Emis:	iol PM _{2.5} slons ^{\$}
		Points	(%)	(lb/ton)	(lb/ton)	(lb/ton)	(tph)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(ib/hr)	(tpy)
· · · · · · · · · · · · · · · · · · ·	Purchased Bark/Fuel Chips Transfer to Outdoor Storage Area	1	48%	5.0E-05	2.4E-05	3.6E-06	25	B1,640	1.2E-03	2.0E-03	5.9E-04	9.6E-04	8.9E-D5	1.5E-04
	Purchased Wood Chips to Outdoor Storage Area	4	42%	6.0E-05	2.8E-05	4.3E-06	69	312,505	1.6E-02	3.7E-C2	7.8E-03	1.8E-02	1.2E-D3	2.7E-03
E2-GWH	Processed Wood Chips to Outdoor Storage Area	2	42%	6.0E-05	2.8E-05	4.3E-06	138	312,505	1.6E-02	1.9E-02	7.8E-03	8.9E-03	1.2E-03	1.3E-03
	Chip Truck Dump to Dumpers	2	42%	6.0E-05	2.8E-05	4.38-06	69	317,505	B.2E-03	1.96-02	3.9E-03	8.9E-03	5.9E-04	1.3E-03
	- 111117/15)						Total E	missions:	4.2E-02	7.72-02	2.0E-02	3.6E-02	3.0E-03	5.58-03

0.74

0.35

0.053

where: E = emission factor (lb/ton)

k - particle size multiplier (dimensionless) for PM

 λ = particle size multiplier (dimensionless) for PM $_{10}$

k = particle size multiplier (dimensionless) for PM_{2.5}

U = mean wind speed (mph)

7.85 U = mean wind speed (mpn) 7.85 - Throughputs represent dry weight of materials, calculated based on listed material molecure contents. Hourly purchased bark throughput based on bark hog hourly throughput. Hourly purchased wood thip throughput based on weight of onlys delivered to the facility. Hourly processed wood chip throughput based on log chipping hourly throughput.

Abbreriations:

barrenations; hr - hour Ib - pound PM - particulate matter PM₃₀ - particulate matter with an aerodynamic diameter less than 10 m/crons PM₃₀ - particulate matter with an aerodynamic diameter of 2.5 microns or tess top - tons per year yr - year

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Table 14 Storage File Wind Erosion IES-GWSP-1 through -4, and IES-GFSF-1 and -2 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Source	Description	PM Emission Factor ³				Pila Width	Plie Length		Outer Surface Area of Pile ³	Potent Emis:			al PM10 sions	Potenti Emis			ions as tene ⁴
		(Ib/day/scre)	(Ib/hr/ft ²)	(lb/day/acre)	(lb/hr/h2)	(11)	(ft)	(1)	(ft ²)	(ib/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(Epy)	(lb/hr)	(1py)
IES-GWSP-1	Green Wood Storage Pile No. 1	8.6	8.26-05	3.6	3.40-06	100	310	30	66,720	0.55	2.4	0.27	1.2	D.041	0.18	0.28	1.2
JES-GWSP-2	Green Wood Storage Pile No. 2	8.5	8.25-06	3.6	3.4E-06	100	310	30	66,720	D.35	2.4	0.27	1.2	0.041	0.18	0.2B	1.2
IES-GWSP-3	Green Wood Storage Pile No. 3	8.5	8.23-06	3.6	3.4E-06	220	310	30	120,000	66.0	4.3	0.49	2.2	0.074	0.32	0.5D	2.2
IES-GWSP-4	Green Wood Storage Pile No. 4	8.5	8.25-06	3.6	3.4E-06	220	310	30	120,000	0.99	4.3	0.49	2.2	0.074	0.32	0.5D	2.2
IES-BFSP-1	Bark Fuel Storage Pile No. 1	8 .6	8.25-06	3.6	3.4E-D6	60	100	15	12,960	Q.11	0.47	0.053	0.23	8.0E-03	0.035	0.054	C.24
IES-BPSP-2	Bark Fuel Storage Pile No. 2	8.6	8.25-06	3.6	3.4E-06	25	25	15	2,550	0.021	0.092	0.010	0.046	1.62-03	6.96-03	0.011	0.047
								т	stal Embalona:	3.2	14	1.5	7.0	0.24	1.1	1.6	7.2

where:

Notes:
³¹ TSP emission factor based on U.S. HM-Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988, Page 4-17.

 $E = 1.7 \left(\frac{s}{1.5} \sqrt{\frac{(365-p)}{235}} \sqrt{\frac{1}{15}} \right) (b \text{ day avec})$

- s, sit content of wood chips (%):
- s sit content (%) for lumber sawmills (mean) from AP-42, Section 13.2.2 Unpaved Roade, 11/05, Table 13.2.2-1

8.4

 where:
 s, sit content of woold chips (%):
 8.4
 s - dit content (%) for lumber sammilis (maan) from AP-42, Section 13.2.2 - Unpaved Reads, 11/05, Table 13.2.2-1

 p, number of days with rainfail graster than 0.01 inch:
 10
 Basec on AP-42, Section 13.2.2- Unpaved Reads, 11/06, Figure 13.2.1-2.

 r (time that wind exceeds 5.36 m/s - 12 mph) (%):
 12.5
 Basec on AP-42, Section 13.2.2- Unpaved Reads, 11/06, Figure 13.2.1-2.

 PM₁₂/TSP ratio:
 PM₁₂/TSP ratio:
 50%

 PM₁₂/TSP ratio:
 7.5%
 FTSP based on U.S. EPA Centrol of Open Fugitive Dust Sources, Research Triangle Park, North Carolina, EPA-45Q/3-88-008, September 1938.

 PM₁₂/TSP ratio:
 7.5%
 FTSP based on U.S. EPA Background Document for Reinsions to Fine Fraction: Ratios Used for AP-42 Fugrive Dust Emission Factors.

 Novembar 2002
 7.5%
 PM₁₂ is assumed to equal 7.5% of TSP U.S. EPA Background Document for Reinsions to Fine Fraction: Ratios Used for AP-42 Fugrive Dust Emission Factors.

 * Emission factors obtained from NCASI document provided by the South Carolina Department of Health and Environmental Control (DHEC) for the calculation of fugitive VUC amissions from Douglas Fir word storage pi es. Emission factors anged for 0.1.5 to 3.6 in Cylicity and the south Carolina Department of Health and Environmental Control (DHEC) for the calculation of fugitive VUC amissions from Douglas Fir word storage pi es. Emission factors anged for 0.1.5 to 3.6 in Cylicity and the souther within miles and the provide the dubt accention of fugitive cube calculation of fugitive CUC amissions from Douglas Fir

From Lab as to in cytacheby. Environmental table and the second of perpendence of a solution table. The surface area is calculated as [2+fi+[+2+W+H+_W]+ 20% to consider the sloping size edges. Length and width based on proposed size design with a conservative reight.
⁴ Environmental as a calculated in tons of carbon par year by the following formula: tons C/year = 5 acces = 365 days = 1.6 to C/acce-day / 2000 lipton
Emission factor converted from as carbon to as presame by uniplying by 1.22.

Abbreviations: EPA - Environmenta: Protection Agency EPA - Environmenta: Protection Agency % - feac ft² - square feet 1b - sound mph - miles per hour NC - North Carolina NCASI - Netional Council for Air and Stream Improvement, Irc.

- PM particulate matter $PM_{10} particulate matter with an Asyndynamic diameter less than 1D microris <math display="block">PM_{21} part culate matter with an aerodynamic diameter of 2.5 microris or lass type tors per year <math display="block">TSP tors per year \\TSP tors per year \\VCC volatile organic compound$

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Table 15 Polentis: Fugitive PM Emissions from Paved Roads Envive Pellets Hamlet, LLC

flamhel,	Lichmood	County,	North	Carolina	

Vahicle Activity	Distance Traveled per Roundtrip ¹	Per.	Deily		Empty Truck Weight	Londed Truck Weight	Average Truck Weight	Annua! VHT	PM Emission Factor ²	Emission Factor ²	Emission Factor ^a	Potential PN Emissions		Petential PM Emissions		Potential PM ₂₄ Emissions	
	(R)	Day		(days)	(16)	(16)	(ton)		(B/VHT)	(III/VIIII)	(IE/VHT)	(th/day)	(tpy)	(B/day)	(tpy)	(lb/day)	(19V)
Logs Delivery to Crane Storage Area	9,050	47	08	365	40,45D	102,540	35.8	29,241	2.7	0.53	0.13	21	3.9	4.Z	0.78	1.0	D.19
Logs Delivery to South Log Storage Area	11,700	31	69	365	40,480	102,540	35.8	25,089	2.7	0.53	D.13	15	3.3	3.6	0.67	0.89	D.16
Logs Delivery to North Log Storage Area	8,475	14	23	365	40,480	107,540	35.8	3,261	2.7	0.53	D.13	6.0	1.1	1.2	0.22	0.29	3.4E-02
Chics/Hos Fuel Dalivery	8,475	94	151	365	40,960	101,440	35.6	55,071	2.6	0.53	D.13	40	7.3	4.0	1.5	2.0	D.36
Pellet Truck Delivery to Pellet Londout Area (Truck Back-up)	9,075	60	103	10	40,480	102,540	35.8	1,031	2.7	0.53	D.13	27	0.14	5.5	2.76 02	1.3	6.7E-03
Paliat Truck Delivery to Pellet Londout Area (Normal Operations)	900	2	0.34	COE	40,480	102,540	35.8	1.02	2.7	0.53	0.13	9.0E+02	1.4E-02	1.6E-02	2.7E-03	4,45-03	8,/E-04
Employae Car Parking	2,250	75	32	365	4,000	4.000	2.0	11.665	0.14	0.02.8	6.9E-03	0.45	8.2E-02	8.96-02	1.6E-02	2_2E-D2	4.0E-03
						-				Tota	Eminatore	113	16	23	3.2	5.6	0.76

 Netces:

 ¹ Distance traveled per round trip was estimated based on trock route and site layout.

 ² Disij trip courts beted on original permit application actimation.

 ² Emission factors calculated based on Equation 7 from AP-42 Section 13.2.1 - Paved Roads, D1/11.

 where:
 E-aminimation

where: E = omission factor (fb(ton) k = particle size multiplier (dimensionless) for PM 0.011 k = particle size multiplier (dimensionless) for PM 0.022 k = particle size multiplier (dimensionless) for PM₃ 0.0025 k = particle size multiplier (dimensionless) for PM₃ 0.00054 SL - mean read surface sill load ing from AP-42 Table 13.2.1-3 for quarties (q/m³) 0.2 P - No. days with rainfall greater than 0.001 for 10 Per AP-42, Sactor 13.2.1, Figure 13.2.1-2 (Richmend Gounty, NC). * Potential emissions calculated from appropriate emission frame than 0.001 for water / dust suppression activities followed by sweaping. Par Table 3 in: Chapter 4 of the Air Sollution Engineering Menval, Air and Weste Management Association, page 141. Cortrol efficiency (%) = 95-0.2637V, where V is the number of vehicle packes since application of water.

by - tons per yeèr yr - year VMF - vehicle miles traveled VGC - volatile organic compound

Abbre-detiens; R - feet M - nourd M - gentrolate matter M - gentrolate matter M - gentrolate matter M - gentrolate matter with an aerodynamic diameter less than 10 microns PM - gentrolate matter with an aerodynamic diameter of 2.5 microns or less

Page 10 of 21

Table 16 Diesel Storage Tanks IES-TK-1 through 3 Enviva Pellete Hamlet, LLC Hamlet, Richmond County, North Carolina

		Design	Working	Tank Dim	ensions ⁵		Throughout	0	VOC Em	innin an ⁴	
Source ID	Description	Volume ¹	Volume ²	Diameter	Length	Orientation	Inroughput	Turnovers	VOC Em	maaions	
		(gal)	(gal)	(ft)	(ft)		(gal/yr)		(lb/hr)	(tpy)	
IES-TK-1	Emergency Generator Fuel Storage Tank ²	1,000	500	5.3	6	Horizontal	15,958	31.9	1.3E-04	5.8E-04	
IES-TK-2	Fire Pump Fuel Storage Tank ²	185	93	3.3	3.3	Horizontal	4,500	48.6	3.7E-05	1.6E-04	
IES-TK-3	Mobile Fuel Diesel Storage Tank	5,000	2,500	6.0	23.7	Horizontal	200,000	80.0	7.6E-04	3.3E-03	
							Tota	Emissions:	9.3E-04	4.1E-03	

Notes:

¹¹ Conservative design specifications.

². Throughput for IES-TK-1 and IES-TK-2 based on fuel consumption provided by Enviva and 500 hours of operation per year. Throughput for IES-TK-3 provided by Enviva.

* Emissions calculated using EPA TANKS 4.0 software. A minimum tank length for the TANKS program of 5 feet was used to estimate the emissions for IES-TK-2.

^{5.} IES-TK-3 length was estimated based on the capacity of the tank and the diameter.

Abbreviations: EPA - Environmental Protection Agency ft - feet gal - gallon lb - pound

γr - year VOC - volatile organic compound

Page 19 of 21

². Working volume conservatively assumed to be 50% of tank design volume because tanks will not be full at all times.

Table 17 Dry Shaving Material Handling IES-DRYSHAVE Envive Pallets Hemiat, LLC Hamim, Richmond County, North Carolina

IES-DRYSHAVE Dry Shaving Matenal Handling - Truck dump to truck dumper 1 10% 4.5E-04 2.1E-04 3.2E-05 25 219,000 1.1E-02 4.9E-02 5.3E-03 2.3E-03 2.3E-04	Bource	Transfer Activity	Number of Brop Points	Content ¹	isture Emission i		Factor ²	Potential Throughput ^{3,4} (toh) (toy)		Potential PM Emissions (lb/hr) (toy)		Potential PM _{to} Emissions		Potential PM _{2.5} Emissions (lb/hr) (toy)	
	IES_DRYSHAVE	Dry Shaving Material Handling - Truck dump to truck dumper	1		the lite of the local division of the lite	the second s		25					(tpy) 2.3E-02		3.5E-03
		Dry Shaving Material Handling - Bucket elevator to silo ⁵	1	10%	4.5E-04	2.1E-C4	3.2E-05	25	219,000	1.1E-03	4.9E-03	5.36-04	2.36-03	8.CE-05	3.5E-04

Notes: L Melaure: context for dry shavings based on information provided by Enviva. 4 Emission factor calculation based on formula from AP-42, Section 13.2.4 - Aggregate Mandling and Storage Piles, Equation 13.2.1, (11/06). where: E = emission factor (Lg/ton)

E = Emission factor (wyton)
k = particle size multiplier (dimensionless) for PM
k = narticle size multiplier (dimensionless) for 954

k = particle size multiplier (dimensionless) for PM ₃₀	D.35
k = particle size multiplier (dimensionless) for PM2.5	0.053
U = mean wind speed (mph)	7.85

7.55
 3. Houriy throughput based on a maximum transfer rate of 100 ton/hr of dry shaving materia.
 4. Annual throughput based on a dry shaving detremes per week and a maximum storage capacity of 1360 tons for the dry shaving material storage silo.
 5. Bucket elevator to silo material handling transfer point emissione account for a 90% control efficiency due to the endosed nature of the silo (San Diago County, 1993).

0.74

Abbreviations: hr.hour ID-pound PM - particulate matter PM - particulate matter with an aerodynamic diameter less than 10 microns PM₂₀ - particulate matter with an aerodynamic diameter of 2.5 microns or less tpy - took per year y' - year

Seferance: Sen Diego County, 1993. Cement & Fly Ash Storage Sios. June 7. Available online at: https://www.sandiegocounty.gov/content/dam/dd/apcd/PDF/Toxics. Program/APCD_sio1.pdf.

90% Control efficiency for bucket elevator to sile drop 25 tons/hr, max mum hourly transfer rate 600 tons/day, maximum dally throughput 365 dayatyear

Page 20 of 21

Table 18 Debarker Potential Emissions IES-DEBARK-1 Enviva Pellets Hamlet, LLC Hamlet, Richmond County, North Carolina

Calculation Basis

Hourly Throughput ¹	275 ton/hr	
Annual Throughput ¹	1,078,143 ton/yr	

Potential Criteria Pollutant Emissions

Source	Pollutant	Emission Factor	Potential Emissions		
		(lb/ton)	(lb/hr)	(tpy)	
IES-DEBARK-1	TSP ²	2.0E-02	0.55	1.1	
IES-DEDARK-I	PM 10 ²	1.1E-02	0.30	0.59	

Notes:

- ^{1.} Hourly bark hog throughput data provided by Enviva (email from Kai Simonsen dated 12/21/17). Annual throughput of logs delivered for debarking, as reported for log chipping. Per 12/21/17 email from Enviva, 2 tons of green material is needed for every 1 ODT of pellets, and 1.15 times that amount for purchased logs. At most, Enviva would purchase 75% of the needed logs with the remaining 25% of green material coming from purchased chips.
- ^{2.} Particulate matter emission factors from the USEPA document titled AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. Source Classification Code 3-07-008-01 (Log Debarking). All PM is assumed to be larger than 2.5 microns in diameter. PM emissions are assumed to be controlled due to the debarker being partially enclosed (assumed 90% control).

Abbreviations:

hr - hour lb - pound ODT - oven dried tons tpy - tons per year yr - year



Application for Minor Source Permit Enviva Pellets Hamlet, LLC Richmond County, North Carolina

APPENDIX D PERMIT APPLICATION FORMS



MAY 1 4 2018

FORM A
GENERAL FACILITY INFORMATION

Air Darmite Saction

REVISED	00/22/18

REVISED 09/2	2/16		NCDEQ/Divisi	ion of Air Quality	y - Application	for Air Permit t	o Construct/Op	parate 🗖		auum2 3		A
1.62	45 CONTRACTOR 100	NOTE	- APPLICATIO	N WILL NOT I	BE PROCES	SED WITHO	UT THE FOL	LOWING:				
	Local Zoning Consistence only)	y Determination (new	v or modification	2	Appropriate	Number of Capie	as of Application		1	Application Fee	(if required)	
	Responsible Official/Auth	orized Contact Sign	ature	7	P.E. Seal (if	required)						
				GENER	RAL INFORM	ATION		5.875	115	12-11-57	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Legal Corpora	ite/Owner Name:	Enviva Pellets Har	nlet, LLC									
Site Name:	Enviva Pellets Hamlet, L	191										
Site Address (S	911 Address) Line 1;	1125 North NC H	ighway 177									
Site Address L	ine 2:											
City:	Hamlet					State:	North Carolin	18				
Zip Code:			28345			County:	Richmond					
				CONT	ACTINFORM	ATION				5 7 7 7 2	1 5.0 9 .	1
Responsible (Official/Authorized Contact:	·				Invoice Contact	: :					
Name/Title:	Steve Reeves, EVP and CF	O - Accounting				Name/Title:	Joe Harrell, Co	orporate EHS M	lanager		90,020	
Mailing Addres	s Line 1: 7200 Wisconsh	n Avenne				Malling Address	N. 2011 115 11 11 11 11 11 11	NC Route 5611				
Mailing Addres	s Line 2:					Mailing Address						
City: Bethes	sda State:	: MD	Zip Code:	208	14	City: Ahoskie		State:	NC	Zip Code:	27910	
Primary Phone	No.: (240) 48	2-3787 Fax N	0,-			Primary Phone N	No.: [252	370-3181	_	Fax No .:		
Secondary Pho	one No.:					Secondary Phor						
Email Address:	Steve.Reeves@envivabior	mass.com				Email Address:		nvivablomass.c	io mo			
Facility/Inspec	tion Contact:					Permit/Technic						
Name/Title:	Kai Simonsen, Alr Permit 1	Engineer				Name/Title:	0.000	Air Permit Engl	neer			
Malling Addres		Road, Suite 1050				Name/Title: Kei Simonsen, Air Permit Englneer Mailing Address Line 1: 4242 Stx Forks Road, Sulte 1050						
Mailing Addres	s Line 2:					Mailing Address	215 - 22102					
City: Raleigi	h State:	NC	Zip Code:	2760		City: Raleigh		State:	NC	Zip Code:	27609	
Primary Phone	196.253 D32-05-053	Fax N				Primary Phone N	lo.: (919) 428-0289		Fax No.:	21005	
Secondary Pho	ane No.:					Secondary Phon	Statute and	/				
Email Address:	Kai.Simonsen@envlvablor	mass.com				Email Address:		genvivabiomas	s.com			
				APPLICATIO	ON IS BEING	MADE FOR			1			1 - The State
New N	Ion-parmitted Facility/Greenfi	eld 🔽	Modification of Fa	cility (permitted)		Renewa	Title V		lenewal	Non-Title V		
Name		hip Change 🛛 🗋					with Modification	20				
			FACILITY CLAS	SSIFICATION	AFTER APP	LICATION (C	heck Only	One)	2.54			
	General	Smali			Prohit	itory Smell		Synthetic Min	or	1	Title V	
				FACILITY (P	lant Site) IN	FORMATION			121	1		
	e of (plant site) operation(s):											
AAGOO DEMET WI	anufacturing facility											
						Facility ID No. 77	00095					
Primary SIC/NA	ACS Code: 2499 (Wood Prode	ucts, not elsewhere o	lassified)			Current/Previous	Air Permit No.	10365R02		Expiration Date	02/28/2021	
Facility Coordin	ates:	Lalitude: 3-	4 degrees, 56 minut	es, 2.4 seconds		Longitude: 79 de	grees, 38 minut	es, 3.3 seconds				
	lication contain confidentia	I TES		NO			DAQ Regional	Office prior to	mdue o	itting this appli	cation.***	
data?				NO	(See Instruc	tions)						
174 (SH).		Lange to the	PERSC	ON OR FIRM T	HAT PREP/	RED APPLI	CATION		2			ALC # 1
Person Name:	Michael Carbon					Firm Name: Ram	boil US Corpora	tion				
Mailing Address	s Line 1: 8234 YMCA Plaza Dri	ve				Mailing Address	Line 2:					
City: Baton Rou	ge	State:	LA			Zlp Code: 70810				County:]
Phone No.:	(225) 408-2691	Fax N				Email Address: n	ncarbon@rambo	oll.com				
	NER VIEL DURING	1	SIGNATURE O	FRESPONSI	BLE OFFICI	LAUTHORI	ZED CONTA	ACT				
Name (typed): :	Steve Reeves					Title: EVP and C	FO - Accounting	9				
X Signature(Bl	ue Ink):	1	10			Date: 🧳	2 M		4			
		14	-			-	5/10	m I	8			
	/		Attach	Additional S	Sheets As I	lecessary					Pag	e 1 of 2

FORM A (continued, page 2 of 2) GENERAL FACILITY INFORMATION

VISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate	A
SECTION AA1 - APPLICATION FOR NON-TITLE V PERMIT RENEWAL	
(Company Name) hereby formally requests renewal of Air Permit No.	
Is your facility subject to 40 CFR Part 68 "Prevnetion of Accidental Releases" - Section 112(r) of the Clean Air Act?	
If yes, have you already submitted a Risk Manage Plan (RMP) to EPA?	
Did you attach a current emissions inventory?	
If no, did you submit the inventory via AERO or by mail? 🔲 Via AERO 🗌 Mailed 🗌 Date Mailed:	
SECTION AA2- APPLICATION FOR TITLE V PERMIT RENEWAL	
In accordance with the provisions of Title 15A 2Q .0513, the responsible official of (Company Name)	
hereby formally requests renewal of Air Permit No. (Air Permit No.) and further certifies that:	
(1) The current air quality permit idenlifies and describes all emissions units at the above subject facility, except where such units are exempled under the	
North Carolina Tille V regulations al 15A NCAC 2Q .0500;	
(2) The current air quality permit cits all applicable requirements and provides the method or methods for determing compliance with the applicable	
requirements;	
(3) The facility is currently in compliance, and shall continue to comply, with all applicable requirements. (Note: As provided under 15A NCAC 2Q .0512 compliance with the conditions of the permit shall be deemed compliance with the applicable requirements specifically identified in the permit);	
 (4) For applicable requirements that become effective during the term of the renewed permit that the facility shall comply on a timely basis; 	
(5) The facility shall fulfill applicable enhanced monitoring requirements and submit a compliance certification as required by 40 CFR Part 64.	
The responsible official (signature on page 1) certifies under the penalty of law that all information and statements provided above, based on information and belief	
formed after reasonable inquiry, are true, accurate, and complete.	
SECTION AA3- APPLICATION FOR NAME CHANGE	
New Facility Name:	
Former Facility Name:	
An official facility name change is requested as described above for the air permit mentioned on page 1 of this form. Complete the other sections if there have been modifications to the originally premitted facility that would require an air quality permit since the last permit was issued and if ther has been an ownership change	
associated with this name change.	
SECTION AA4- APPLICATION FOR AN OWNERSHIP CHANGE	
By this application we hereby request transfer of Air Quality Permit No from the former owner to the new owner as described below.	
e transfer of permit responsibility, coverage and liability shall be effective	
Vilty described on page 1 of this form has been or will be transferred on [date). There have been no modifications to the originally	
permitted facility that would require an air quality permit since the last permit was issued.	
Signature of New (Buyer) Responsible Official/Authorized Contact (as typed on page 1);	
X Signatura (Blue Ink)	
Date:	
New Facility Name:	
Former Facility Name:	
Signature of Former (Seller) Responsible Official/Authorized Contact:	
Name (typed or print):	
Title:	
M Chan-Land (Direction)	
X Signature (Blue Ink):	
Date:	
Former Legal Corporate/Owner Name:	
In lieu of the seller's signature on this form, a letter may be submitted with the seller's signature indicating the ownership change	a
SECTION AA5- APPLICATION FOR ADMINISTRATIVE AMENDMENT	The second House
Describe the requested administrative amendment here (attach additional documents as necessary):	
Attach Additional Shoata As Necessary	Page 2 of 2
Attach Additional Sheets As Necessary	Fage 2 UI 2

FORMs A2, A3

EMISSION SOURCE LISTING FOR THIS APPLICATION - A2

112r APPLICABILITY INFORMATION - A3

REVISED 09/22/16	NCDEQ/Division of Air Quality - Appl	lication for Air Permit to Constru	uct/Operate A2				
	EMISSION SOURCE LISTING: New, Mod	ified, Previously Unpermit	ted, Replaced, Deleted				
EMISSION SOURCE	ICE EMISSION SOURCE CONTROL DEVICE CONTROL DEVICE						
ID NO.	DESCRIPTION	ID NO.	DESCRIPTION				
走进 医弗洛	Equipment To Be ADDED By This Applicat	tion (New, Previously Unp	ermitted, or Replacement)				
ES-GHM-3	Green Wood Hammerinili	CD-WESP	Wet Electrostatic Precipitator				
E3-0IIM-3	dieen wood nammerinni	CD-RTO-1 (new)	Regenerative Thermal Oxidizer				
ES-HMC	Hammermill Collection Conveyor	CD-HMC-BH	Baghouse				
ES-DWH	Dried Wood Handling Operations	CD-DWH-BH-1 through 2	Baghouses (operating in parallel)				
ES-ADD	Additive Handling and Storage	CD-ADD-BH	Baghouse				
	Existing Permitted Equipment	To Be MODIFIED By Thi	s Application				
FE CHINE 1 showed 2	The (2) (2	CD-WESP	Wet Electrostatic Precipitator				
ES-GHM-1 through 2	Two (2) Green Wood Hammermills	CD-RTO-1 (new)	Regenerative Thermal Oxidizer				
EC DOVED	Green Wood Direct-Fired Rotary Dryer System	CD-WESP	Wet Electrostatic Precipitator				
ES-DRYER		CD-RTO-1 (new)	Regenerative Thermal Oxidizer				
ES-HM-1 through 8	Eight (8) Dry Hammermills	CD-HM-BH-1 through 8	Baghouses (one per hammermill)				
ES-PCHP	Pellet Cooler High Pressure Fines Relay System	CD-PCHP-BH	Baghouse				
ES-PCLP	Pellet Cooler Low Pressure Fines Relay System	CD-PCLP-BH	Baghouse				
ES-PMFS	Pellet Mill Feed Silo	CD-PMFS-BH	Baghouse				
ES-CLR-1 through 6	Six (6) Pellet Coolers	CD-CLR-1 through 6 or CD- WSB (new)	Baghouses or Wet Scrubber				
		CD-RC0 (new)	Regenerative Catalytic Oxidizer with thermal mode backup				
ES-PDCTB	Pellet Dust Collection Transfer Bin	CD-PDCTB-BH	Baghouse				
ES-FPH	Finished Product Handling	CD-FPH-BH	Beskeue				
ES-PB-1 through 2	Two (2) Peilet Loadout Bins	CD-FPR-BR	Baghouse				
	Equipment To Be DE	LETED By This Applicat	ion				
ES-PL-1 through 3	Three (3) Pellet Mill Loadouts						
'S-HMA	Hammermill Area						
S-CHIP-1	Log Chipping (now listed on Form D4 as IES-CHIP-1)						
ES-BARKHOG	Bark Hog (now listed on Form D4 as IES-BARKHOG)						
ES-GN	Emergency Generator (now listed on Form D4 as IES-GN)						
ES-FWP	Fire Water Pump (now listed on Form D4 as IES-FWP)						

	112(r) APPLICABIL	ITY INFORMATION	A 3
is your facility subject to 40 CFR Part 68 "Prevention of Accident	tal Releases" - Section 112(r)	of the Federal Clean Air Act?	Yes 🗸 No
If No, please specify in detail how your facility avoided applicabil	ity:	The Hamlet plant will not store any regulated substan	ces in excess of their
threshold quantities, as determined under §68.115.	9		
If your facility is Subject to 112(r), please complete the following:			
A. Have you already submitted a Risk Management Plan (RI	MP) to EPA Pursuant to 40 CF	R Part 68.10 or Part 68.150?	,
Yes No Specify required RMP s	ubmittal date:	If submitted, RMP submittal date:	
B. Are you using administrative controls to subject your facili	ty to a lesser 112(r) program s	standard?	
Yes No If yes, please specify:			
C. List the processes subject to 112(r) at your facility:	C		
PROCESS DESCRIPTION	PROCESS LEVEL (1, 2, or 3)	HAZARDOUS CHEMICAL	MAXIMUM INTENDED INVENTORY (LBS)
	t		

FORM D1 FACILITY-WIDE EMISSIONS SUMMARY

REVISED 09/22/16 NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate D1							
CRITERIA AIR POLLUTANT EMISSIONS INFORMATION - FACILITY-WIDE							
	EMIS	D ACTUAL SIONS	POTENTIAL E				
			ONTROLS /	(BEFORE CO		· ·	CONTROLS /
AIR POLLUTANT EMITTED				LIMITATI			
			ision Calculat	tons/ ions in Appead			ns/yr
PARTICULATE MATTER (PM) PARTICULATE MATTER < 10 MICRONS (PM10)	-	See Chi		Тана и Арреац	IX C		
PARTICULATE MATTER < 2.5 MICRONS (PM ₁₀)							
SULFUR DIOXIDE (SO2)	5/						
NITROGEN OXIDES (NOx)							
CARBON MONOXIDE (CO)							
VOLATILE ORGANIC COMPOUNDS (VOC)				+			
LEAD							
GREENHOUSE GASES (GHG) (SHORT TONS)				1			
OTHER							
	AIR POLLUT	ANT EMISSION	S INFORMATI	ON - FACILITY	WIDE		
		EXPECTE	DACTUAL				
		EMIS	SIONS	POTENTIAL E	MISSIONS	POTENTIA	L EMISSIONS
		(AFTER C	ONTROLS /	(BEFORE CO	NTROLS /	(AFTER C	ONTROLS /
		LIMITA	TIONS)	LIMITATI	ONS)	LIMIT	ATIONS)
HAZARDOUS AIR POLLUTANT EMITTED	CAS NO.	-	is/yr	tons/		to	ns/yr
		See Em	ission Calculat	ions in Append	ix C		
	ļ						
	ļ	-					
	·						
	<u> </u>	-					
TOXIC AIL	POLLUTANT	EMISSIONS IN	FORMATION	- FACILITY-WI)Ê	1000 1000	1
INDICATE REQUESTED ACTUAL EMISSIONS							TE /TOED) IN
154 NCAC 20.0711 MAY REQUIRE AIR OISPE							
					Modeling	Required ?	
TOXIC AIR POLLUTANT EMITTED	CAS NO.	lb/hr	lb/day	lb/year	Yes	No	
		See Emission	Calculations i	n Appendix C			
COMMENTS							
COMMENTS:							

FORM D4

EXEMPT AND INSIGNIFICANT ACTIVITIES SUMMARY

REVISED 09/22/16

NCDEQ/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

INDIGINI IOANT ACTIVITIEOT	LIX 2 4 .00001	ORTHER TOOGRADED
DESCRIPTION OF EMISSION SOURCE	SIZE OR PRODUCTION RATE	BASIS FOR EXEMPTION OR INSIGNIFICANT ACTIVITY
1. Green Wood Handling Operations IES-GWH	Varies	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
2. Bark Hog IES-BARKHOG	25 ODT/hr	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
3. Emergency Generator Diesel Fuel Storage Tank IES-TK1	1,000 gallons	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
4. Firewater Pump Engine Diesel Fuel Storage Tank IES-TK2	185 gallons	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
5. Mobile Sources Diesel Fuel Storage Tank IES-TK3	5,000 gallons	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
6. Green Wood Storage Piles IES-GWSP-1 through 4	N/A	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
7. Bark Fuel Storage Piles IES-BFSP-1 and 2	N/A	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
8. Dry Shaving Material Handling IES-DRYSHAVE	25 tons/hr	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
9. Debarker JES-DEBARK-1	275 tons/hr	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
J. Bark Fuel Bin IES-BFB	N/A	15A NCAC 02Q .0503(8)-negligible emissions, see Appendix C
11. Diesel-Fired Emergency Generator IES-GN	671 bhp	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
12. Diesel-Fired Fire Water Pump IES-FWP	131 bhp	15A NCAC 02Q .0503(8)-low emissions, see Appendix C
13. Log Chipping IES-CHIP-1	138 ODT/hr	15A NCAC 02Q .0503(8)-low emissions, see Appendix C

		TECHNICAL ANALYSIS TO SUPPORT PERMIT APPLICATION
RE\	VISED 09/22/16	NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate D5
(PROVIDE DETAILED TECHNICAL CALCULATIONS TO SUPPORT ALL EMISSION, CONTROL, AND REGULATORY EMONSTRATIONS 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:
A	BALANCES, AND/OR C	SOURCE (EMISSION INFORMATION) (FORM B and B1 through B9) - SHOW CALCULATIONS USED, INCLUDING EMISSION FACTORS, MATERIAL THER METHODS FROM WHICH THE POLLUTANT EMISSION RATES IN THIS APPLICATION WERE DERIVED. INCLUDE CALCULATION OF POTENTIAL E APPLICABLE, AFTER CONTROLS. CLEARLY STATE ANY ASSUMPTIONS MADE AND PROVIDE ANY REFERENCES AS NEEDED TO SUPPORT CALCULATIONS.
в	SOURCES AND THE F WITH APPLICABLE RE PROVIDE JUSTIFICAT STANDARDS (NSPS), I REGULATIONS WHICE	COURCE (REGULATORY INFORMATION)(FORM E2 - TITLE V ONLY) - PROVIDE AN ANALYSIS OF ANY REGULATIONS APPLICABLE TO INDIVIDUAL ACILITY AS A WHOLE. INCLUDE A DISCUSSION OUTING METHODS (e.g. FOR TESTING AND/OR MONITORING REQUIREMENTS) FOR COMPLYING (GULATIONS, PARTICULARLY THOSE REGULATIONS LIMITING EMISSIONS BASED ON PROCESS RATES OR OTHER OPERATIONAL PARAMETERS. ION FOR AVOIDANCE OF ANY FEDERAL REGULATIONS (PREVENTION OF SIGNIFICANT DETERIORATION (PSD), NEW SOURCE PERFORMANCE NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), TITLE V), INCLUDING EXEMPTIONS FROM THE FEDERAL I WOULD OTHERWISE BE APPLICABLE TO THIS FACILITY. SUBMIT ANY REQUIRED INFORMATION TO DOCUMENT COMPLIANCE WITH ANY JDE EMISSION RATES CALCULATED IN ITEM "A" ABOVE, DATES OF MANUFACTURE, CONTROL EQUIPMENT, ETC. TO SUPPORT THESE
С	LISTED ON SECTION ((e.g. OPERATING CON PERFORMANCE OF T	IALYSIS (FORM C and C1 through C3) - PROVIDE A TECHNICAL EVALUATION WITH SUPPORTING REFERENCES FOR ANY CONTROL EFFICIENCIES C FORMS, OR USED TO REDUCE EMISSION RATES IN CALCULATIONS UNDER ITEM "A" ABOVE. INCLUDE PERTINENT OPERATING PARAMETERS IDITIONS, MANUFACTURING RECOMMENDATIONS, AND PARAMETERS AS APPLIED FOR IN THIS APPLICATION) CRITICAL TO ENSURING PROPER HE CONTROL DEVICES). INCLUDE AND LIMITATIONS OR MALFUNCTION POTENTIAL FOR THE PARTICULAR CONTROL DEVICES AS EMPLOYED AT IL PROCEDURES FOR ASSURING PROPER OPERATION OF THE CONTROL DEVICE INCLUDING MONITORING SYSTEMS AND MAINTENANCE TO BE
D	OPERATIONAL, OR OT	ATIONAL COMPLIANCE ANALYSIS - (FORM E3 - TITLE V ONLY) - SHOWING HOW COMPLIANCE WILL BE ACHIEVED WHEN USING PROCESS, THER DATA TO DEMONSTRATE COMPLIANCE. REFER TO COMPLIANCE REQUIREMENTS IN THE REGULATORY ANALYSIS IN ITEM "B" WHERE ANY CONDITIONS OR PARAMETERS THAT CAN BE MONITORED AND REPORTED. TO DEMONSTRATE COMPLIANCE WITH THE APPLICABLE
E		INEERING SEAL - PURSUANT TO 15A NCAC 20 .0112 "APPLICATION REQUIRING A PROFESSIONAL ENGINEERING SEAL," IGINEER REGISTERED IN NORTH CAROLINA SHALL BE REQUIRED TO SEAL TECHNICAL PORTIONS OF THIS APPLICATION FOR MODIFICATIONS OF EXISTING SOURCES. (SEE INSTRUCTIONS FOR FURTHER APPLICABILITY).
	I, Russell Kemp	attest that this application for Enviva Pellets Hamlet, LLC
		has been reviewed by me and is accurate, complete and consistent with the information supplied
	been prepared in accommaterials under my sea	n, 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 dance with the applicable regulations. Although certain portions of this submittal package may have been developed by other professionals, inclusion of these I 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- any person who knowingly makes any false statement, representation, or certification in any application shall be guilty of a Class 2 misdemeanor which may aed \$10,000 as well as civil penalties up to \$25,000 per violation Received
	(PLEASE USE BLUE II	NK TO COMPLETE THE FOLLOWING) PLACE NORTH CAROLINA SEAL HERE
	NAME:	Russell Kemp, MS, PE
	DATE:	04 APRIL 2018
	COMPANY:	REUS Engineers, P.C.
	ADDRESS:	1600 Parkwood Circle, Suite 310, Atlanta, GA 30339
	TELEPHONE:	(678) 388-165 A
	SIGNATURE:	- / una
	PAGES CERTIFIED:	Forms B, B1, B6, B9, C1, C2, C3, C4
		Appendix C with emission calculations
		Application Narrative
		(IDENTIFY ABOVE EACH PERMIT FORM AND ATTACHMENT
		THAT IS BEING CERTIFIED BY THIS SEAL)
		Attach Additional Sheets As Necessary

FORM D5

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

.EVISED 09/22/16		NCDEQ/Division	of Air Quality - J	Application fo	or Air Permit to	a Construct/O	perate	-	В	
EMISSION SOURCE DESCR	RIPTION:				EMISSION S	MISSION SOURCE ID NO: ES-GHM-1, 2, 3				
Green Wood Hammermills							S): CD-WESP,			
OPERATING SCENARIO	1OF	1					ID NO(S): EP			
DESCRIBE IN DETAIL THE		OCESS (ATTACH	FLOW DIAGRA	M):	Lindotort		10110(0), 11			
Green wood chips are proc		•								
	•									
TY	PE OF EMISSION SOU	RCE (CHECK AND	COMPLETE A	PPROPRIATE	FORM B1-B9	ON THE FOL		ES):		
Coal,wood,oil, gas, other	burner (Form B1)			ting (Form B4)		Manuf.	of chemicals/co	atings/inks (For	rm B7)	
Int.combustion engine/get				ishing/printing			ation (Form B8)	• •		
Liquid storage tanks (Fon	m B3)			Storage silos/bins (Form B6)						
START CONSTRUCTION D/	ATE: TBD			DATE MANUE	ACTURED: 1	rbd				
MANUFACTURER / MODEL	NO.: TBD		1	EXPECTED C	P. SCHEDUL	E: _24 HR/D	AY 7_DA	Y/WK 52_ W	VK/YR	
IS THIS SOURCE SUBJECT	TO? . N	SPS (SUBPARTS)	?):		V NESH	AP (SUBPART	Supbart B,	Section 112(g)	0	
PERCENTAGE ANNUAL TH	ROUGHPUT (%): DEC-I	EB 25% MA	R-MAY 25%	JUN-AUG 25	% SEP-NO	V 25%				
	CRITERIA A	WR POLLUTAN	IT EMISSION	VS INFORM	ATION FOI	R THIS SOL	IRCE			
			SOURCE OF	EXPECTE	D ACTUAL	1	POTENTIAL	LEMISSIONS		
			EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	(TROLS / LIMITS)		ROLS / LIMITS)	
AIR POLLUTANT EMITTED			FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
PARTICULATE MATTER (PM	A)		See Emission	Calculations	in Appendix	c				
PARTICULATE MATTER<10	MICRONS (PMID)									
PARTICULATE MATTER<2.5	MICRONS (PM2.5)							1	1	
SULFUR DIOXIDE (SO2)								1		
NITROGEN OXIDES (NOx)					1				1	
CARBON MONOXIDE (CO)									1	
VOLATILE ORGANIC COMP	OUNDS (VOC)								1	
LEAD							1	1		
THER					1					
	HAZARDOUS	AIR POLLUT	ANT EMISSIC	ONS INFOR	MATION F	OR THIS SC	URCE			
1			SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMISSIONS		
			EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)	
HAZARDOUS AIR POLLUTA	NT	CAS NO.	FACTOR	ib/hr	tons/yr	lb/hr	tons/yr	ib/hr	tons/yr	
			See Emission	Calculations	іл Appendix (Ċ			<u> </u>	
				j						
							Ĩ			
							10			
	TOXIC AIF	R POLLUTANT	EMISSIONS	INFORMA	TION FOR	THIS SOUR	CE	i sosti ni k		
			SOURCE OF	EXPE	CTED ACTUA		AFTER CONT	ROLS / LIMITA	TIONS	
			EMISSION			1		1		
TOXIC AIR POLLUTANT CAS NO.			FACTOR		/hr		/day	<u>lb</u>	o/yr	
			See Emission	Calculations	in Appendix (
		_				<i>i</i>		<u> </u>		
			-							
								<u> </u>		
		_								
			1					1	-	
Attachments: (1) emissions calcul	ations and supporting docum	nentation; (2) indicate	all requested state	and federal entr	orceable permit li	mits (e.g. hours o	of operation, emis	sion rates) and de	escribe 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 Attach Additional Sheets As Necessary

FORM B9 EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quality -	Application	for Air Permit to Construct/Op	perate	B9			
EMISSION SOURCE DESCRIPTION: Green Wood Hammermills		EMISSION SOURCE ID NO:	ES-GHM-1, 2, 3				
		CONTROL DEVICE ID NO(S): CD-WESP, CD-RTO-1					
OPERATING SCENARIO:1 OF1		EMISSION POINT (STACK) ID NO(S): EP-1					
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM) Green wood chips are processed in the green wood hammermill:							
MATERIALS ENTERING PROCESS - CONTINUOUS PROC	CESS	MAX. DESIGN	REQUESTED C	CAPACITY			
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(U	NIT/HR)			
Green Wood	ton/hr	40	N/A				
MATERIALS ENTERING PROCESS - BATCH OPERATIN		MAX. DESIGN	REQUESTED C	APACITY			
ТҮРЕ	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UNI	T/BATCH)			
	L						
MAXIMUM DESIGN (BATCHES / HOUR):							
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/	YR):					
FUEL USED: N/A	TOTAL MA>	XIMUM FIRING RATE (MILLION	i btu/hr): N/A				
	REQUESTE	D CAPACITY ANNUAL FUEL L	JSE: N/A				
COMMENTS:							

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

REVISED 09/22/16	NG	DEQ/Division	of Air Quality - A	Application for	Air Permit to	Construct/Op	erate		B
EMISSION SOURCE DESCRI	PTION:				EMISSION SOURCE ID NO: ES-DRYER				
Green Wood Direct-Fired Ro): CD-WESP, C	D-RTO-1	
OPERATING SCENARIO	1 OF 1						ID NO(S): EP-1		
DESCRIBE IN DETAILTHE E		S (ATTACH FI	OW DIAGRAM						
Green wood is conveyed to a	a rotary driver system. Direct	t contact heat	is provided to f	the system via	a 250.4 MMBt	u/hr burner sy	stem. Air emi	ssions are con	trolled
utilizing a wet electrostatic p	recipitator (WESP) for parti	culate removal	. VOC and orga	anic-HAP emis	sions will be o	controlled by a	a regenerative (thermal oxidize	er (RTO).
<u>г</u>	YPE OF EMISSION SOURCE	(CHECK AND	COMPLETE A	PPROPRIATE	FORM B1-B9 (ON THE FOLL	OWING PAGES	3):	
Coal,wood,oil, gas, other b		·		ing (Form B4)			f chemicals/coa		n B7)
Int.combustion engine/gen			Coating/fini	shing/printing (Form B5)	Incineral	tion (Form B6)		
Liquid storage tanks (Form	n B3)		Storage sile	os/bins (Form B	6)	Pther (F	om B9)		
START CONSTRUCTION DA	TE: TBD			DATE MANUF	ACTURED: TE	BD			
MANUFACTURER / MODEL N	NO.: TBD			EXPECTED O	P. SCHEDULE	: _24 HR/DA	Y _7 DAY	WK _52_ WF	(YR
IS THIS SOURCE SUBJECT		(SUBPARTS?)			V NESHA	P (SUBPARTS	S Subpart B, S	Section 112(g)	
PERCENTAGE ANNUAL THE	ROUGHPUT (%): DEC-FEB	25% MAR-M	AY 25% JUN	-AUG 25%	SEP-NOV 259	%			
	CRITERIA AIR	POLLUTAN	T EMISSION	VS INFORM	ATION FOR	R THIS SOU	IRCE		
			SOURCE OF	EXPECTE	D ACTUAL		POTENTIAL	EMISSIONS	
			EMISSION	(AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS)				(AFTER CONTROLS / 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 C				
PARTICULATE MATTER<10	MICRONS (PM10)						·		
PARTICULATE MATTER<2.5	MICRONS (PM2.5)								
SULFUR DIOXIDE (SO2)									
NITROGEN OXIDES (NOx)			l						
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COMPO	DUNDS (VOC)								
LEAD			ļ						
OTHER									
	HAZARDOUS AI	R POLLUTA	NT EMISSIC	ONS INFOR	MATION FO	dr this sc	DURCE	Sup rate	
1			SOURCE OF	EXPECTED ACTUAL POTENTIAL E				EMISSIONS	
			EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
HAZARDOUS AIR POLLUTA	NT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	Jb/hr	tons/yr
			See Emission	Calculations i	in Appendix C				
	TANA 143 5	OL LUTANT	FARCORATE	NEODHA	TION FOR	THIS SOUD	ICE	-	
	TOXIC AIR P	ULLUIANI	ENISSIONS	INFORMA	TION FOR	INIS SOUR	VE	S. 111. 5	
			SOURCE OF	EXPE	ECTED ACTUA	L EMISSIONS	AFTER CONT	ROLS / LIMITAT	TIONS
TOXIC AIR POLLUTANT CAS NO.			EMISSION FACTOR	ll-	/hr	Ib	/dav	l	νγг
TOATO AIRT OLEOTART		0,10,110.	4.	L	in Appendix C		,		,
			1						
				I. I				n extent and down	riho hav there

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.

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

FORM B1

N	EMISSI	ON S	OURCE (W	OOD, CO	AL, OIL,	GAS, C	THER F	UEL-P	FIRE	D BURNER)	
REVISED 09/			NCDEQ/Division			on for Air P	ermit to Con	struct/O	perate		B1
EMISSION SC System	OURCE DESCRIPT	FION: 0	Green Wood Dire	ct-Fired Rotar	y Dryer	EMISSION	SOURCE ID	NO: ES	-DRYE	R	
aystem						CONTROL	DEVIÇE ID N	NO(S): C	D-WES	SP, CD-RTO-1	
OPERATING	SCENARIO:	1 OF 1				EMISSION	POINT (STA	CK) ID N	O(S): 1	EP-1	
DESCRIBE U	SE: PROC	ESS HE	AT []\$PACE HEAT	-		ELEÇTI	RICAL GI	ENERA	TION	
		NUOUS	s use 🔤 🗌	STAND BY/E	MERGENCY		OTHER	(DESCR	BE):		
HEATING ME	CHANISM:		INDIRECT	 	DIRECT						
MAX. FIRING	RATE (MMBTU/H	OUR):	250.4								
				woo	D-FIRED	BURNE	R		"ne"		
WOOD TYP	PE: DARK	~	WOOD/BARK		DOD	DRY N	WOOD			OTHER (DESCRIE	3E):
PERCENT MO	DISTURE OF FUEL	.: 20	to 50%								
	UNCONTROLLED			ED WITH FLYA	SH REINJE	CTION		\checkmark	CONT	ROLLED W/O REIN	JECTION
FUEL FEED N	ETHOD: N/A			EAT TRANSP	ER MEDIA:		STEAM	🗹 AIR	🗆 o	THER (DESCRIBE)	
				COA	L-FIRED	BURNEF	2				
TYPE OF BO	ILER		IF OTHER DESC	RIBE:							
PULVERIZED	OVERFEED STO		UNDERFEED		5	SPREADER	STOKER		FL	UIDIZED BED	
U WET BED		LLED		LLED		ONTROLLE	D			CIRCULATING	
DRY BED		ED		ED	D FLYASH REINJECTIO						
					🗋 NO F	LYASH REI	NJECTION				
				OIL/C	AS-PIRE		ER .				1.2 Continue
TYPE OF BO											
TYPE OF FIR	ING:	NORM		SENTIAL		IOX BURNE	IRS		NO LO	W NOX BURNER	
				OTHER	FUEL-FIR	RED BUR	NER		n-ik-		
TYPE(S) OF I	-UEL:										
TYPE OF BO		UTILIT	Y 🗌 INDU	JSTRIAL		IERCIAL			INSTIT	UTIONAL	
TYPE OF FIR	ING:			CONTROL(S)					_		
	Ħ.	= 8	FUEL U	SAGE (INCI				JELS)	lla h		
		1			MAXIM	IUM DESIG	IN			REQUESTED C	
FUE	EL TYPE		UNITS		CAPAC	ITY (UNIT/F	HR)			LIMITATION (U	NIT/HR)
Bark/	Wet Wood		tons			40					
											- Mail
	A State of the second	FU	EL CHARACT	ERISTICS (
					SPECIFIC			JR CONT			
	FUEL TY	-			BTU CONTE		(% B	Y WEIGI	11)	(% BY V	/EIGHT)
	Bark/Wet V	lood		Non	ninal 4,200 E	BTU/Ib		0.011			
		IT WITH	H EPA METHOD	1 WILL BE INS	TALLED ON	THE STAC	KS 🔄	YES)
COMMENTS:											
				I. A. I.I.A.	1.001						

CONTROL DEVICE (Electrostatic Precipitator) **C2** NCDEQ/Division of Air Quality - Application for Air Permit to Construct/Operate EVISED 09/22/16 CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-DRYER and CONTROL DEVICE ID NO: CD-WESP ES-GHM-1 through 3 EMISSION POINT (STACK) ID NO(S): EP-1 POSITION IN SERIES OF CONTROL: NO. 1 OF 2 UNITS MANUFACTURER: MODEL NO. TBD Lundberg **OPERATING SCENARIO: OPERATING SCENARIO:** P.E. SEAL REQUIRED (PER 2Q.0112)? NO _1___0F ___1_ 5 YES DESCRIBE CONTROL SYSTEM: Emissions from the Dryer and Green Wood Hammermills are initially controlled by the WESP through a common duct for additional PM, metallic HAP, and HCI removal. EQUIPMENT SPECIFICATIONS GAS DISTRIBUTION GRIDS: 1 YES IT NO DRY 2 TYPE: 🕗 WET SINGLE-STAGE TWO-STAGE TOTAL COLLECTION PLATE AREA (FT²): TBD NO. FIELDS TBD NO, COLLECTOR PLATES PER FIELD: TBD COLLECTOR PLATE SIZE (FT): LENGTH: TBD WIDTH: TBD SPACING BETWEEN COLLECTOR PLATES (INCHES): TBD TOTAL DISCHARGE ELECTRODE LENGTH (FT): TBD GAS VISCOSITY (POISE): TBD NUMBER OF DISCHARGE ELECTRODES: TBD NUMBER OF COLLECTING ELECTRODE RAPPERS: TBD PARTICLE MIGRATION VELOCITY (FT/SEC): TBD MAXIMUM INLET AIR FLOW RATE (ACFM): TBD MINIMUM GAS TREATMENT TIME (SEC): TBD BULK PARTICLE DENSITY (LB/FT³): TBD CORONA POWER (WATTS/1000 CFM): TBD FIELD STRENGTH (VOLTS) CHARGING: COLLECTING: TBD ELECTRICAL USAGE (KW/HOUR): TBD CLEANING PROCEDURES: RAPPING PLATE VIBRATING WASHING OTHER **OPERATING PARAMETERS** PRESSURE DROP (IN. H20): MIN WARNING ALARM? YES NO NO MAX RESISTIVITY OF POLLUTANT (OHM-CM): TBD GAS CONDITIONING: YES NO TYPE OF AGENT (IF YES): INLET GAS TEMPERATURE (°F): TBD OUTLET GAS TEMPERATURE (°F): TBD VOLUME OF GAS HANDLED (ACFM): TBD INLET MOISTURE PERCENT: TEDMIN TED MAX **POWER REQUIREMENTS** IS AN ENERGY MANAGEMENT SYSTEM USED? 🔲 YES 🗌 NO FIELD NO. NO. OF SETS CHARGING EACH TRANSFORMER (kVA) EACH RECTIFIER Ky Ave/Peak Ma Dc POLLUTANT(S) COLLECTED: PM / PM10 / PM25 BEFORE CONTROL EMISSION RATE (LB/HR); CAPTURE EFFICIENCY: 4 % CONTROL DEVICE EFFICIENCY: % % % % CORRESPONDING OVERALL EFFICIENCY: % % % EFFICIENCY DETERMINATION CODE: TOTAL AFTER CONTROL EMISSION RATE (LB/HR): See calculations in Appendix C DESCRIBE STARTUP PROCEDURES: PARTICLE SIZE DISTRIBUTION Refer to previous submittal. SIZE WEIGHT % CUMULATIVE (MICRONS) OF TOTAL % DESCRIBE MAINTENANCE PROCEDURES: 0-1 Refer to previous submittal. 1-10 10-25 DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED INTO THE CONTROL 25-50 SYSTEM 50-100 >100 TOTAL = 100 DESCRIBE ANY MONITORING DEVICES, GAUGES, OR TEST PORTS AS ATTACHMENTS: PLC COMMENTS: ATTACH A DIAGRAM OF THE TOP VIEW OF THE ESP WITH DIMENSIONS (include at a minimum the plate spacing and wire spacing and indicate the electrode type), AND THE RELATIONSHIP OF THE CONTROL DEVICE TO ITS EMISSION SOURCE(S):

FORM C2

Attach Additional Sheets As Necessary

ach Auditional Sheets As Necessa

FORM C3 CONTROL DEVICE (THERMAL OR CATALYTIC)

REVISED 09/22/16 NCDE	Q/Division of Air Quality	y - Application for Air Perm	it to Construct/Operate		C3
AS REQUIRED BY 15A NCAC 2Q .0112, TH	IS FORM MUST BE SEA	LED BY A PROFESSIONAL	ENGINEER (P.E.) LICE	NSED IN NORTH CA	ROLINA.
CONTROL DEVICE ID NO: CD-RTO-1	CONTROLS EN	IISSIONS FROM WHICH EN	AISSION SOURCE ID NO	(S): ES-DRYER, ES	-GHM-1 through 3
EMISSION POINT (STACK) ID NO(S): EP-1	POSITION IN S	ERIES OF CONTROLS	NO, _	2 OF <u>2</u>	UNITS
MANUFACTURER: Lundberg	MOD	EL NO: TBD			
OPERATING SCENARIO:					
1OF1					
TYPE AFTERBURNER Z REGENERAT	TIVE THERMAL OXIDATI	ON RECUPERATI	VE THERMAL OXIDATIO	N CATAL	TIC OXIDATION
EXPECTED LIFE OF CATALYST (YRS): TBD	METHOD OF D	ETECTING WHEN CATALY	ST NEEDS REPLACMEN	NT: TBD	
CATALYST MASKING AGENT IN AIR STREAM] HALOGEN [SILICONE	PHOSPHOROUS COM		HEAVY METAL
	SULFUR COMPOUND	OTHER (SPEC	/		NONE
	LYST VOL (FT ³): TBD	VELOCITY THRO	UGH CATALYST (FPS):	TBD	
SCFM THROUGH CATALYST: TBD					
DESCRIBE CONTROL SYSTEM, INCLUDING RELATIO Emissions leaving the WESP will enter the RTO prio			, AND ATTACH DIAGR/	AM OF SYSTEM:	
Emissions leaving the WESP will enter the RTO prio	ir to being emitted to the	atmosphere.			
POLLUTANT(S) COLLECTED:	VOC				
BEFORE CONTROL EMISSION RATE (LB/HR):	-				
CAPTURE EFFICIENCY:		-%	_%	_%	%
CONTROL DEVICE EFFICIENCY:	95	%	%	_%	%
CORRESPONDING OVERALL EFFICIENCY:		%	_%	%	%
EFFICIENCY DETERMINATION CODE:		<u> </u>	1 N		
TOTAL AFTER CONTROL EMISSION RATE (LB/HR) :	See calculation	ns in Appendix C			<u>_</u>
PRESSURE DROP (IN. H2O); MIN MA	X TBD	OUTLET TEMPERATURE	(°F): <u>TBD_</u> MIN	TBD	_MAX
INLET TEMPERATURE (°F): MIN MA	х твр	RESIDENCE TIME (SECO	NDS): TBD		
INLET AIR FLOW RATE (ACFM): TBD (SCFM	1): TBD	COMBUSTION TEMPERA	TURE (^c F): TBD		
COMBUSTION CHAMBER VOLUME (FT ³): TBD		INLET MOISTURE CONTE			
% EXCESS AIR: TBD		CONCENTRATION (ppmv			OUTLET
AUXILIARY FUEL USED: Natural Gas		TOTAL MAXIMUM FIRING	FRATE (MILLION BTU/H	R): 32	
DESCRIBE MAINTENANCE PROCEDURES:					
тво					
DESCRIBE ANY AUXILIARY MATERIALS INTRODUCE	ED INTO THE CONTROL	SYSTEM:			
N/A					
COMMENTS:					

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

REVISEO 092216 NCOEQUIVELORS B EVISION SOURCE DESCRIPTION: EVISION SOURCE CHECK AND COMPLETE APPROPRIATE FORM 91-89 ON THE FOLLOWING PAGES: EVISION SOURCE CHECK AND COMPLETE APPROPRIATE FORM 91-89 ON THE FOLLOWING PAGES: EVISION SOURCE CHECK AND COMPLETE APPROPRIATE FORM 91-89 ON THE FOLLOWING PAGES: EVISION SOURCE CHECK AND COMPLETE APPROPRIATE FORM 91-80 ON THE FOLLOWING PAGES: EVISION SOURCE DESCRIPTION: EVISION SOURCE DESCRIPTION: <td< th=""><th>REVISED 09/22/16</th><th>NCDE</th><th>O/Division o</th><th>f Air Quality - /</th><th>Application fr</th><th>or Air Permit (</th><th>to Construct/(</th><th>)nerate</th><th>,</th><th>В</th></td<>	REVISED 09/22/16	NCDE	O/Division o	f Air Quality - /	Application fr	or Air Permit (to Construct/()nerate	,	В
Fight (8) Hammernills CONTROL DOVICE (D.NO(5): CD-MM-8H-1 through 8 DPBATINGS CENNERD					-pproduction is			·	wayyah 0	
OPERATING SCEWARIO 1 OF						<u> </u>				
DESCRIPE IN DETAILTIE EMISSION SOURCE PROCESS (ATTACK FFLOW DIAGRAM): Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. TYPE OF FUSISION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM 81-B9 ON THE FOLLOWING PAGES): Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation using eight hummermills. Dried materials are reduced to the appropriate size needed for petietisation appropriate size needed for petietisation and petietisation and petietisation appropriate size needed for petietisation and petietisation appropriate size needed for petietisation appropriate size needed for petietisation and petietis appropriate size needed for petietisation appropriate size needed for petietisation appropriate size needed for petietisation and petietis appro	OPERATING SCENARIO	1 OF	1							
Dried materials are reduced to the appropriate size needed for pelletization using eight hammermills. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B5 ON THE FOLLOWING PAGES): Catalymental (Form B1) Contractional (Form B2) Contractional (Form B3) Contraction			CESS (ATTAC		RAM).	LIVIDOION			r-z nabagn s	
TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B3 ON THE FOLLOWING PAGES): Coal,wood,air, gas, dithe burner (Form B1) Woodworking, (Form B4) Indicatal of chemical/coaling/inits (Form B7) Int combutation enginegeneration (Form B3) Storage stabubins (Form B3) Indicatal of chemical/coaling/inits (Form B3) XBAT CONSTRUCTION DATE: TBD DATE MANUFACTURER: TBD DATE MANUFACTURER: TBD MANUFACTURER / MODEL NO:. TBD EXPECTED OP. SCHEDULE: 24. HINDAY, 72. DAYWAR, 52. WK/YR STHS SOURCES SUBJECT OT NSPS (SUBPARTSY); Int SOURCE OF CRITERIA AIR POLLUTANT MERSIONS INFORMATION FOR THIS SOURCE EXPECTED ACTUAL POTENTIAL EMISSIONS AIR POLLUTANT EMITTED FACTOR EXPECTED ACTUAL POTENTIAL EMISSIONS ART COLUCTE MATTER: (MD) See Emission Calculations in Appendix C Introduce Juans; ART COLUCTE MATTER: (MD) See Emission Calculations in Appendix C Introduce Juans; PARTICULATE MATTER: (MD) See Emission Calculations in Appendix C Introduce Juans; PARTICULATE MATTER: (MD) See Colspan= Calculations in Appendix C Introduce Juans; PARTICULATE MATTER: (MD) See Emission Calculations in Appendix C Introduce Juans; PARTICULATE MATTER: (MD) See Cone Calculations in Appendix C I			•			nermills				
Control Note: Verdeworking (Form B1) Verdeworking (Form B2) Control (Information ergine) (Semical Section (Form B2))										
Control Note: Verdeworking (Form B1) Verdeworking (Form B2) Control (Information ergine) (Semical Section (Form B2))										
Control Note: Verdeworking (Form B1) Verdeworking (Form B2) Control (Information ergine) (Semical Section (Form B2))	TYP	E OF EMISSION SOURCE (CHECK AND	COMPLETE A	PPROPRIATI	FORM B1-B	ON THE FO		GES):	
Image: Storage			oneontrate							orm B7)
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STHIS SOURCE SUBJECT TO? INSPS (SUBPARTS?): Image: Subpart B, Section 112(g) PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FEB 28% MARMAY 28%, SEPNOV 28% CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SUBPRICELUTATE MATTER SUBPRICELUTANT EMISSIONS INFORMATION FOR THIS SOURCE PATTER PARTICULATE MATTER (PM) See Emission Calculations in Appendix C Inter control 14(m) PARTICULATE MATTER MICRONS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER MICRONS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER MICRONS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER MICRONS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER MICRONS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER SURCINS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER SURCINS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER SURCINS (PM:_2) Inter control 14(m) Inter control 14(m) PARTICULATE MATTER SURCINS (PM:_2) SURCINS (PM:_2) Inter control 14(m) PARTICULATE CONFOLU									AV/M/K 52	WKMR
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CRITERIA AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION EXPECTED ACTUAL PORTITAL EMISSIONS AIR POLLUTANT EMITTED AIR POLLUTANT EMITTED FACTOR FACTOR IDIP PORTITAL EMISSIONS (MTER QOTINGUE) JUNES) (Borne Controck J Munits) (Borne Controck					IUN-AUG 3			Jupan D,	Section 112(g	
SOURCE OF EMISSION EXPECTED ACTUAL POTENTIAL EMISSIONS AIR POLLUTANT EMITTED FACTOR Jumps (deread controls / Lumps) (derea		, ,						RCE		
EMISSION (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS /				1					EMIRCIONE	
AIR POLLUTANT EMITTED FACTOR Ibhr tons/yr Ibhr tons/yr Ibhr tons/yr PARTICULATE MATTER (PM) See Emission Calculations in Appendix C							INFEROME DOM		1	
PARTICULATE MATTER (PM) See Emission Calculations in Appendix C PARTICULATE MATTER-10 MICRONS (PM ₁₀) PARTICULATE MATTER-25 MICRONS (PM ₁₀) SULFUR DIOXIDE (NOX) SULFUR DIOXIDE (NOX) SULFUR DIOXIDE (NOX) SULFUR DIOXIDE (NOX) CARBON MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) EAROD MONOXIDE (CO) VOLATILE ORGANIC COMPOUNDS (VOC) EAROD MONOXIDE (CO) FACTOR HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE EXPECTED ACTUAL EXPERIMENT CAS NO. FACTOR TOXIC AIR POLLUTANT EMISSIONS INFORMATION FOR THIS SOURCE TOXIC AIR POLLUTANT EMISSIONS AFTER CONTROLS / LIMITATIONS TART AND A A A A A A A A A A A A A A A A A A						1		Y		1
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PARTICULATE MATTER-2.5 MICRONS (PM ₂₄) SULFUR DIOXIDE (SO2) UITROGEN OXDES (NO2) CARBON MONOXIDE (CO) CARBON MONOXIDE (CO) CAR	· · · · · ·	/		See chiissio	Calculation	s in Appendix				
SULFUR DIOXIDE (S02) ImitRogEn OXIDES (NO4) ImitRogEn OXIDES (NO4) <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>-</td> <td></td> <td></td> <td></td>					-		-			
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EMISSION FACTOR EMISSION Ib/hr Ib/day Ib/yr Image: Display the state and federal enforceable permit limits (o.g. hours of operation, emission rates) and describe Image: Display the state and federal enforceable permit limits (o.g. hours of operation, emission rates) and describe			1	- TOULOF						
TOXIC AIR POLLUTANT CAS NO. FACTOR Ib/hr Ib/day Ib/yr See Emission Calculations in Appendix C See Emission Calculations in Appendix C Image: Calculation Calculation C Image: Calculation C Image: Calculation Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Image: Calculation C Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (o.g. hours of operation, emission rates) and describe					EAPEC	JIEU ACTUA	LEMISSIONS	AFTERCONT	ROLS / LIMIT /	ATIONS
Attachments: (1) emissions calculations and supporting documentation; (2) indicate all requested state and federal enforceable permit limits (o.g. hours of operation, emission rates) and describe	TOXIC AIR POLLUTANT		lb	/br	lb/	day	lb	/yr		
				See Emission	1 Calculation	s in Appendix	c C			
							rmit limits (o.g. h	ours of operation	i, emission rates) and describe

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

FORM B9 EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quality -	Application fo	or Air Permit to Construct/Ope	rate	B9				
EMISSION SOURCE DESCRIPTION:		EMISSION SOURCE ID NO: E	S-HM-1 through 8					
Eight (8) Hammermills		CONTROL DEVICE ID NO(S): CD-HM-BH-1 through 8						
OPERATING SCENARIO:1 OF1	_	EMISSION POINT (STACK) ID NO(S): EP-2 through 9						
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM):							
Dried materials are reduced to the appropriate size needed for p	elletization us	ing eight hammermills.						
MATERIALS ENTERING PROCESS - CONTINUOUS PROC	CESS	MAX. DESIGN	ESIGN REQUESTED CAPACITY					
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(
Dried Wood	ODT	68						
MATERIALS ENTERING PROCESS - BATCH OPERATI	ION	MAX. DESIGN	REQUESTED	CAPACITY				
ТҮРЕ	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (U	NIT/BATCH)				
MAXIMUM DESIGN (BATCHES / HOUR):								
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/Y	R):						
FUEL USED: N/A	TOTAL MAX	MUM FIRING RATE (MILLION E	BTU/HR): N/A					
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTED	CAPACITY ANNUAL FUEL US	E: N/A					
COMMENTS:								

FORM C1 CONTROL DEVICE (FABRIC FILTER)

	vision of Air Quality								C'
	ONTROL DEVICE ID NO: CD-HM-BH-1 through 8 CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-HM-1 through 8								
EMISSION POINT (STACK) ID NO(S): EP-2 through 9	POSITION IN SEF	RES OF CO	ONTRO	DLS		NO	. 1 OF	1 UN	ITS
OPERATING SCENARIO:									
1OF1		P.E. SEA	l req	UIRED (PER 2	q .0112)? 🔽	YES		NO
DESCRIBE CONTROL SYSTEM: Eight (8) baghouses are utilized for emission contr	ol on the eight dry ha	ummermiti	cyclar	ics. There are	: 8 iden	lical dry l	nammermill b	aghouse	slacks.
POLLUTANTS COLLECTED:		РМ	_	PM ₁₀		PM _{2.5}			
BEFORE CONTROL EMISSION RATE (LE/HR):			_	1. <u>11 -</u>	-				
CAPTURE EFFICIENCY:			- 56		%		%	%	
CONTROL DEVICE EFFICIENCY;		~99.9	%	~99.9	%	~99.9	%	%	
CORRESPONDING OVERALL EFFICIENCY:			%		%		_%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
EFFICIENCY DETERMINATION CODE:			-						
TOTAL AFTER CONTROL EMISSION RATE (LB/HR)		-	lation	s in Appendix	c				
PRESSURE DROP (IN H ₂ 0): MIN: MAX:TBD	GAUGE?	YES		NO NO					
BULK PARTICLE DENSITY (LB/FT ³): TBD			ATURE (°F):	TBD					
	GR/FT ³			ERATURE (°F)					
INLET AIR FLOW RATE (ACFM): 15,000 each			PERA	TING TEMP ("	1		C (1) 1 TOD		
	S PER COMPARTME						G (IN.): TBD		
NO, OF CARTRIDGES: TBD FILTER SURI TOTAL FILTER SURFACE AREA (FT ²): TBD	AIR TO CLOTH R			160	DIAME	TERUE	BAG (IN.): TBI		
				FILTER MA	COLAL.	<u> </u>	WOVEN	FE	
DRAFT TYPE: INDUCED/NEGATIVE DESCRIBE CLEANING PROCEDURES	FURCEDIPUSIT	/E		FILTER MA	ERIAL.		NOVEN		
2010.01	CONIE						1		
	SONIC	LADÓE				BIZE	WEIGHT		CUMULATIV %
REVERSE FLOW	SIMPLE BAG COI					RONS)	OF TOTA		
	RING BAG COLU	APSE				0-1		Unknov	vn
DESCRIBE INCOMING AIR STREAM:				-	<u> </u>	1-10			
The air stream contains wood dust particles. Large	r particles are remo	ved by the	upstre	am cyclone	<u> </u>	0-25			
for product recovery.						5-50 0-100			_
						-100			
					<u> </u>	100		TOTAL =	100
								<u> </u>	
ON A SEPARATE PAGE, ATTACH A DIAGRAM SHO		NELIDIOS				TE EUR			
COMMENTS:						- en ser he rodis			

FORM B

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16	NC	EQ/Division	of Air Quality - /	Application F	or Air Permit to	o Construct/O	perate		В
EMISSION SOURCE DESCR	RIPTION:				EMISSION S	EMISSION SOURCE ID NO: ES-CLR1 through 6			
Pellet Coolers							S): CD-CLR-1		CD-WSB), CD-
					RCO				
OPERATING SCENARIO	OF	1			EMISSION P	OINT (STACK)	ID NO(S): EP	-10	
DESCRIBE IN DETAILTHE I		,							
Six (6) Pellet Coolers follow	the pellet presses to coo	the newly for	med pellets do	wn to an acc	eptable storag	je temperature	a .		
	PE OF EMISSION SOURCE	(CHECK AND	_			_		,	
Coal, wood, oil, gas, other				king (Form B4			of chemicals/co	atings/inks (Fo	rm B7)
Int.combustion engine/ge	, ,			hishing/printin	· · ·		tion (Form B8)		
Liquid storage tanks (For			Storage sit	los/bins (Form	,	[J]Other (i	Form B9)		
START CONSTRUCTION DA					JFACTURED: 1				
MANUFACTURER / MODEL	- press			EXPECTED	OP. SCHEDUL			Y/WK _52	
IS THIS SOURCE SUBJECT		S (SUBPARTS					Subpart B, S	Section 112(g)	
PERCENTAGE ANNUAL TH									
	CRITERIA AIR	POLLUTAN	T EMISSION	IS INFORI	NATION FO	R THIS SO			
			SOURCE OF	EXPECT	ED ACTUAL		POTENTIAL	EMISSIONS	
			EMISSION	(AFTER CON	TROLS / LIMITS)	(BEFORE CON	P (SUBPART: Subpart B, Section 112(g) 5% THIS SOURCE DOTENTIAL EMISSIONS (BEFORE CONTROLS / LIMITS) (AFTER CONTROL Ib/hr tons/yr Ib/hr		
AIR POLLUTANT EMITTED			FACTOR	lb/hr	tons/yr		tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PI	Vi)		See Emission	Calculation	s in Appendix	ç			
PARTICULATE MATTER<10									
PARTICULATE MATTER<2.	MICRONS (PM2.5)								
SULFUR DIOXIDE (SO2)					ļ				
NITROGEN OXIDES (NOx)					·				
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COMP	OUNDS (VOC)					-	l		
EAD								ļ	
JTHER								J	
	HAZARDOUS AII	RPOLLUIA	1			OR THIS S			
			1 1	SOURCE OF EXPECTED					
			EMISSION		TROLS / LIMITS)	1	TROLS / LIMITS)	(AFTER CONTI	-
HAZARDOUS AIR POLLUTA	ANT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tans/yr	lb/hr	tons/yr
			See Emission	Calculation	s in Appendix	с Т			
					-				
A	TOVIC AID D	VIUTANT	EMCRICH	IANG ADAL	TION FOR	THE OOIN	905		
	TOXIC AIR PO	LEVIANI	T					A DECEMBER OF A	
			SOURCE OF	EXP	ECTED ACTUA	L EMISSIONS	AFTER CONTI	ROLS / LIMITA	TIONS
TOXIC AIR POLLUTANT		CAS NO.	EMISSION FACTOR		b/hr	lh.	/day	Ib.	/yr
		-			s in Appendix				
		1				Ī			
								i	
		-							
Attachments: (1) emissions calcu	lations and supporting documer	tation: (2) indica	le all requested st	ate and federal	enforceable perm	nit limits (e.a. hou	urs of operation, e	mission rales) ar	nd describe how
these are monitored and with what								,	

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

FORM B9 EMISSION SOURCE (OTHER)

	y - Application f	or Air Permit to Construct/Ope	rate	B9			
EMISSION SOURCE DESCRIPTION: Pellet Coolers		EMISSION SOURCE ID NO: E					
		CONTROL DEVICE ID NO(S): CD-CLR-1 through 6 (or CD- WSB), CD-RCO					
OPERATING SCENARIO:1 OF1		EMISSION POINT (STACK) ID	NO(S): EP-10				
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRA		· · · · · · · · · · · · · · · · · · ·					
Six (6) Pellet Coolers follow the pellet presses to cool the new	ly formed pelle	ts down to an acceptable stora	age temperature.				
MATERIALS ENTERING PROCESS - CONTINUOUS PR	OCESS	MAX. DESIGN	REQUESTED	CAPACITY			
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)			
Dried Wood	ODT	80					
MATERIALS ENTERING PROCESS - BATCH OPERA		MAX. DESIGN REQUESTED CAPAC					
ТҮРЕ	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (UN	NIT/BATCH)			
	_						
	_						
	_						
	_						
	_						
MAXIMUM DESIGN (BATCHES / HOUR):	LIDATOUISOA	(2)					
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/						
FUEL USED: N/A MAX. CAPACITY HOURLY FUEL USE: N/A		IMUM FIRING RATE (MILLION E D CAPACITY ANNUAL FUEL US					
COMMENTS:	REQUEATE	D CAPACITY ANNUAL FOEL US	SE: N/A				
FORM C8							

CONTROL DEVICE (WET PARTICULATE SCRUBBER)							

REVISED 09/22/16 NCDE	Q/Division of A	ir Quality -	Applicatio	on for A	vir Perr	nit to	Constr	uct/O	perate		C8
CONTROL DEVICE ID NO: CD-WSB	CONTROLS E	MISSIONS	FROM WH	HICH E	MISSIC	ON SC	URCE	ID NO	D(S): ES-CLI	R1 through	6
EMISSION POINT ID NO(S): EP-10	POSITION IN	SERIES OI	F CONTRO	LS:	NO.	1	OF	2	UNITS		
OPERATING SCENARIO:											
1OF2		P.E. SEAL	NEEDED	(PER 2	2Q .011	2)?	🖌 YE	S		NO	
DESCRIBE CONTROL SYSTEM: Control system for PM is to be determined. O the pellet cooler exhaust may be controlled b		-									atively,
POLLUTANT(S) COLLECTED:			PM			PM10			PM _{2.5}		
BÉFORE CONTROL EMISSION RATE (LB/HR)	:	-								-	
CAPTURE EFFICIENCY:		3. 		%			%			%	
CONTROL DEVICE EFFICIENCY:		-		95 %			95 %		95	%	
CORRESPONDING OVERALL EFFICIENCY:		-		%			%			%	
EFFICIENCY DETERMINATION CODE:										• •	
TOTAL AFTER CONTROL EMISSION RATE (L	B/HR):	-	See calcula	ations	In App	endix	С	_			
PRESSURE DROP (IN. H ₂ 0): <u>TBD</u> MIN	TBD_MAX										
INLET TEMPERATURE (°F): TBD MIN	MAX	OUTLET T	EMPERAT	URE (°	۲ T	TBD	MIN		TBD_MAX		
INLET AIR FLOW RATE (ACFM): TBD		MOISTUR	E CONTEN	NT : INL	.ET	TBD	%	OL	JTLET <u>TB</u>	<u>D</u> %	
THROAT VELOCITY (FT/SEC): TBD		THROAT	TYPE:			ED	[] v/	ARIABLE		
TYPE OF SYSTEM TBD		TYPE OF	PACKING	USED	F ANY	:					
ADDITIVE LIQUID SCRUBBING MEDIUM: TBD		PERCENT	RECIRCU	LATED	: TBD						
MINIMUM LIQUID INJECTION RATE (GAL/MIN): TBD										
	OR ADDITIVE (G	AL/MIN): TI	BD								
DESCRIBE MAINTENANCE PROCEDURES:							-		SIZE DIGTR		
					(SI2 MICR	ZE ONS)		VEIGHT %	CUMUL %	
					È	0-		+			
DESCRIBE ANY MONITORING DEVICES, GAU	JGES, TEST PO	RTS, ETC:			-	1-1					
						10-	25				-
						25-					
						50-		_			
					-	>1	00		DTAL = 100		
ATTACH A DIAGRAM OF THE RELATIONSHIF	OF THE CONT	ROL DEVIC	E TO ITS I	EMISSI	ION SC	DURC	E(S):				
COMMENTS:											

REVISED 09/22/16	NCDEQ/Divi	sion of Alr Quality -	Applicatio	n for .	Air Permit t	Cons	truct/Oper	ate		Г	C1
CONTROL DEVICE ID NO: CD-CLR-1	through 6	CONTROLS EMIS	CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-CLR-1 through 6								
EMISSION POINT (STACK) ID NO(S): I	EP-10	POSITION IN SER	IES OF CO	NTRO	OLS		NO.	. 1	OF 2	UNITS	
OPERATING S	CENARIO:										
2OF	_2		P.E. SEAL	REQ	VIRED (PER	R 2q .0	112)? 🗸	YES	[
DESCRIBE CONTROL SYSTEM: Control system for PM is to be detern cooler would vent to one dedicated b The exhaust gas will then be passed t	aghouse in th	identical baghouses is scenario. Alterna	s may be u atively, the	sed to comb	o capture bu bined pellet i	ik PM cooler	emissions exhaust m	from si ay be co	x (6) pellet (antrolled by	coolers. Eacl y one scrubb	h ier.
POLLUTANTS 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 EFFICIE	ENCY:			%		%		%		%	
EFFICIENCY DETERMINATION CODE	2:			-		-					
TOTAL AFTER CONTROL EMISSION	RATE (LB/HR)):	See calcu	lation	in Append	lix C					
PRESSURE DROP (IN H ₂ 0): MIN:	MAX: TBD	GAUGE?	YES	_	NO NO						_
BULK PARTICLE DENSITY (LB/FT ³):	TBD				RATURE (°F)		_				
POLLUTANT LOADING RATE: 0.004	LB/HR	GR/FT ³			ERATURE (_			_
INLET AIR FLOW RATE (ACFM): 15,00	-			PERA	TING TEMP	-					
NO, OF COMPARTMENTS: TBD		S PER COMPARTM				-	STH OF BA				
NO. OF CARTRIDGES: TBD		FACE AREA PER C		(FT')	: TBD		ETER OF I	BAG (IN	.): TBD		
TOTAL FILTER SURFACE AREA (FT ²)		AIR TO CLOTH R						1			
DRAFT TYPE: INDUCED/NEC		FORCED/POSITIN	/E	_	FILTER N	ATER		WOVE	The second second	FELTED	
DESCRIBE CLEANING PROCEDURE:	s					-		1	IZE DISTRI		
AIR PULSE		SONIC				L	SIZE		IGHT %	CUMULAT	FIVE
REVERSE FLOW		SIMPLE BAG COL	LAPSE			(M)	ICRONS)		TOTAL	%	
		RING BAG COLLA	APSE				0-1	-	Unk	nown	_
OTHER:						_	1-10				_
DESCRIBE INCOMING AIR STREAM: The baghouses used to capture parti		ons from the cellet	coolers wil	l be d	ucted to the		10-25				
RCO.		• · · · · · · · · · · · · · · · · · · ·					25-50				_
							50-100				_
						_	>100				
									TOTA	L = 100	
ON A SEPARATE PAGE, ATTACH A I	DIAGRAM SHO	OWING THE RELATI	IONSHIP 0	F THE	CONTROL	DEVIC	E TO ITS I	EMISSIC		E(S):	
COMMENTS:											

FORM C3 CONTROL DEVICE (THERMAL OR CATALYTIC)

REVISED 09/22/16 NCDEQ/D	ivísion of Air Qua	lity - Application fo	r Air Permit to Cor	struct/Operate		C3
AS REQUIRED BY 15A NCAC 2Q .0112, THIS F	ORM MUST DE SI	ALED BY A PROFE	SSIONAL ENGINE	ER (P.E.) LICENSED II	N NORTH CA	ROLINA.
CONTROL DEVICE ID NO: CD-RCO (new)	CONTROLS	EMISSIONS FROM	WHICH EMISSION	SOURCE ID NO(S): ES	-CLR-1 throu	igh 6
EMISSION POINT (STACK) ID NO(S): EP-10 (new)	POSITION IN	SERIES OF CONTR	ROLS	NO. 2	OF 2	UNITS
MANUFACTURER: Lundberg	М	ODEL NO: TBD				
OPERATING SCENARIO:	·					
1OF1						
TYPE AFTERBURNER REGENERATIVE	THERMAL OXIDA		UPERATIVE THEF	MAL OXIDATION	CATALY	TIC OXIDATION
EXPECTED LIFE OF CATALYST (YRS): TBD	METHOD OF	DETECTING WHEN	N CATALYST NEED	S REPLACMENT: TBD)	
CATALYST MASKING AGENT IN AIR STREAM	ALOGEN	SILICONE	PHOSP	HOROUS COMPOUND		HEAVY METAL
000	FUR COMPOUND	ОТН	ER (SPECIFY) TB	D		NONE
	VOL (FT ³): TBD	VELOC	ITY THROUGH CA	TALYST (FPS): TBD		
SCFM THROUGH CATALYST: TBD						
DESCRIBE CONTROL SYSTEM, INCLUDING RELATION T	O OTHER CONTR	OL DEVICES AND S	SOURCES, AND A	TTACH DIAGRAM OF S	SYSTEM:	
Emissions leaving the six (6) baghouses (or wet scrubbe	er) will enter the R	CO (with thermal m	iode backup) prior	to being emitted to th	e atmospher	8.
POLLUTANT(S) COLLECTED:	VOC					
BEFORE CONTROL EMISSION RATE (LB/HR):		-				
		%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~%	-	%
CONTROL DEVICE EFFICIENCY:	95	%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	%	3	~
CORRESPONDING OVERALL EFFICIENCY:		%	%	%		<u> </u>
	Constant and a start of the				<u> </u>	
TOTAL AFTER CONTROL EMISSION RATE (LB/HR) :	See calculat	ions in Appendix C			-	
PRESSURE DROP (IN. H ₂ O): MIN MAX TE	0	OUTLET TEMPI	ERATURE (°F):	TBD_MIN	TBD	MAX
INLET TEMPERATURE (°F): MIN MAX TE	D	RESIDENCE TI	ME (SECONDS): TI	3D		
INLET AIR FLOW RATE (ACFM): TBD (SCFM): TE	D	COMBUSTION T	TEMPERATURE (°I	=): TBD		
COMBUSTION CHAMBER VOLUME (FT ³): TBD		INLET MOISTUR	RE CONTENT (%):	TBD		
% EXCESS AIR: TBD		CONCENTRATI	ON (ppmv)	TBD_INLET	TBD	OUTLET
AUXILIARY FUEL USED: Natural Gas		TOTAL MAXIMU	M FIRING RATE (I	MILLION BTU/HR): 32		
DESCRIBE MAINTENANCE PROCEDURES:						
TBD						
DESCRIBE ANY AUXILIARY MATERIALS INTRODUCED IN	TO THE CONTRO	L SYSTEM:				
N/A						
COMMENTS:						
		and Observes A				

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

REVISED 09/22/16	NCD	EQ/Division o	f Air Quality - J	Application f	or Air Permit (o Construct/0	Operate		В
EMISSION SOURCE DESC	RIPTION:				EMISSION S	OURCE ID NO	D: ES-HMC (n	ew)	
Hammermill Collection Co	onveyor						(S): CD-HMC-		
OPERATING SCENARIO	1OF_	1) ID NO(S): EI	. ,	
DESCRIBE IN DETAILTHE Conveying system for ma	EMISSION SOURCE PRO terial from the dry hamme		H FLOW DIAG	GRAM):					
TYP	E OF EMISSION SOURCE	(CHECK AND	COMPLETE A	PPROPRIAT	E FORM B1-B	9 ON THE FO	LLOWING PA	GES):	
Coal,wood,oil, gas, othe	r burner (Form B1)		Woodword	king (Form B4	4)	Manuf.	of chemicals/c	oatings/inks (F	orm B7)
Int.combustion engine/g	enerator (Form B2)		Coating/fi	nishing/printin	g (Form B5)		ation (Form B8)		
Liquid storage tanks (Fo	orm B3)		Storage si	ilos/bins (Forr	n B6)	Dther (Form B9)		
START CONSTRUCTION D	DATE: TBD			DATE MANU	FACTURED:				
MANUFACTURER / MODE	L NO.: TBD			EXPECTED	OP. SCHEDU	LE: 24 HR/	DAY 7 D	AY/WK 52	WK/YR
IS THIS SOURCE SUBJEC	TTO? NSP	S (SUBPARTS	?):			AP (SUBPAR			
PERCENTAGE ANNUAL T	HROUGHPUT (%): DEC-FI	B 25% MA	R-MAY 25%	JUN-AUG					-
	CRITERIA AIR F						URCE	1000	15 2 7
			SOURCE OF		D ACTUAL	1		EMISSIONS	
			EMISSION		ROLS / LIMITS)	(BEEORE CON	TROLS / LIMITS)	T.	ROLS / LIMITS)
AIR POLLUTANT EMITTER	2		FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (F				<u> </u>	is in Appendix		toriaryi		uoria, yi
PARTICULATE MATTER<1	,		Dec Enilogio			<u> </u>			
PARTICULATE MATTER<2					1				
SULFUR DIOXIDE (SO2)		_				<u> </u>			
NITROGEN OXIDES (NOx)									-
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COM						1	<u> </u>		<u> </u>
LEAD	FOOND3 (FOC)					+			
JTHER									
5mer	HAZARDOUS AIR	POLLITA	NT EMISSI	ONS INFO	PMATION	THE S	OURCE		1210000000
	TRACE IN COURSE	I	SOURCE OF		DACTUAL	UN IIIG C		EMISSIONS	
			EMISSION					EMISSIONS	
HAZARDOUS AIR POLLUT	TANT	CAS NO.	FACTOR	lb/hr	tons/yr	ib/hr	TROLS / LIMITS)	Ib/hr	ROLS / LIMITS)
N/A		CASINO.	TACTOR	ID/TR	toristyr	10/11	tons/yr	10/19	tons/yr
		1							
									<u> </u>
		-							
			<u> </u>						
	TOXIC AIR PO	LUTANT	EMISSIONS	INFORM	TION FOR	THIS SOL	RCE		
	TORICARTO		OF		CTED ACTUAL			ROLS / LIMITA	
TOXIC AIR POLLUTANT		CAS NO.	EMISSION FACTOR		- fl				
		CAS NO.	FACTOR	10)/hr	101	day	ID ID	/yr
N/A									
Alterative to the second		L							
Attachments: (1) emissions calc how these are monitored and wi	utations and supporting docume th what frequency; and (3) description	ntation; (2) indica ibe any monitori	ate all requested s ng devices, gauge	state and federa	i enforceable per for this source.	rmit limits (e.g. h	ours of operation	i, emission rates) and describe

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

FORM B9 EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quality -	Application f	or Air Permit to Construct/Ope	erate	B9
EMISSION SOURCE DESCRIPTION:		EMISSION SOURCE ID NO: E	S-HMC (new)	
Hammermill Collection Conveyor		CONTROL DEVICE ID NO(S):	CD-HMC-BH (new	<i>ı</i>)
OPERATING SCENARIO:1 OF1		EMISSION POINT (STACK) ID	NO(S): EP-11 (new	N)
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRA	M):			
Dust from the dry hammermill collection conveyor is vented to	a baghouse (CD-HMC-BH1) to control parti	cluate matter emis	sions.
MATERIALS ENTERING PROCESS - CONTINUOUS PRO	CESS	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Dried Wood	ODT	68		
MATERIALS ENTERING PROCESS - BATCH OPERAT	NON	MAX. DESIGN	REQUESTED	CAPACITY
TYPE	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (U	NIT/BATCH)
MAXIMUM DESIGN (BATCHES / HOUR):				
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/	′R):		
FUEL USED: N/A	TOTAL MAX	MUM FIRING RATE (MILLION	BTU/HR): N/A	
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTE	D CAPACITY ANNUAL FUEL U	SE: N/A	
COMMENTS:				

REVISED 09/22/16 NCE	EQ/Divis	ion of Air Quality -	Applicatio	on for A	Air Permit to	o Canstr	uct/Oper	ate			C1
CONTROL DEVICE ID NO: CD-HMC-BH (nd	9w)	CONTROLS EMIS	SIONS FR	OM WI	HICH EMISS	SION SO	URCE ID	NO(S)	ES-HMC	(new}	
EMISSION POINT (STACK) ID NO(S): EP-11	(new)	POSITION IN SEP	RES OF CO	ONTRO)L S		NO.	1	OF 1	UNITS	_
OPERATING SCENA	ARIO:										
			P.E. SEA	REQL	UIRED (PEF	R 2q .011	2)? 🔽	YES		NO	
DESCRIBE CONTROL SYSTEM: This baghouse controls particulate from th	e dry har	nmermill conveyin	g system.								
POLLUTANTS COLLECTED:			РМ	_	PM ₁₀	F	M _{2.5}	-	_	_	
BEFORE CONTROL EMISSION RATE (LB/H	R):			-				-		-	
CAPTURE EFFICIENCY:				%		-%		%		_%	
CONTROL OEVICE EFFICIENCY:			~99.9	%	99.9	%	-99.9	%		%	
CORRESPONDING OVERALL EFFICIENCY	:			%		%		%		%	
EFFICIENCY DETERMINATION CODE:				-						-	
TOTAL AFTER CONTROL EMISSION RATE	(LB/HR):		_	lations	s in Append	lix C				-	
	X: TBD	GAUGE?	✓ YES								
BULK PARTICLE DENSITY (LB/FT3): TBD			-		ATURE (°F)		_	_			
transl.	MHR	GR/FT ⁸			RATURE (
INLET AIR FLOW RATE (ACFM): 1,500	0000	DER COURARTU		PERA	TING TEMP			0 (111)	700		
		ACE AREA PER C		1-12)	TED		H OF BA				
TOTAL FILTER SURFACE AREA (FT ²): TBD		AIR TO CLOTH R		(FT).	160	DIANE		MG (IN			
DRAFT TYPE: INDUCED/NEGATIV		FORCED/POSITIN			FILTER M			WOVE	EN 🔽	FELTED	
DESCRIBE CLEANING PROCEDURES	<u>- L</u>	FORGED/FOSHIN						the Westmann			
		SONIC					ZE		IGHT %	CUMULA	TRAT
		SIMPLE BAG COL					RONS)		TOTAL	% COMUL	ATIVE
		RING BAG COLLA)-1				
		And Brid OOLEr	V QL				-10		OTIN		
DESCRIBE INCOMING AIR STREAM:				_)-25				
The air stream contains wood dust particul	e5.					<u> </u>	-50				
						<u> </u>	-100				
						>	100				
									TOTA	L = 100	
ON A SEPARATE PAGE, ATTACH A DIAGR COMMENTS:	AM SHOI	WING THE RELATI	ONSHIP O	FTHE	CONTROL	DEVICE	TO ITS E	MISSIC	ON SOURC	E(S):	

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16	NCDE	Q/Division of	f Air Quality - /	Application f	for Air Permit t	o Construct/C	Operate		В
EMISSION SOURCE DESC	RIPTION:				EMISSION S				
Pellet Mill Feed Silo					CONTROL D	EVICE ID NO	(S): CD-PMFS	-BH	
OPERATING SCENARIO		1) ID NO(S): EF		
DESCRIBE IN DETAILTHE A pellet press silo stores d				,			, , ,		
TYPE	OF EMISSION SOURCE (CHECK AND	COMPLETE A	PPROPRIAT	E FORM B1-B	9 ON THE FO	LLOWING PAG	3ES}:	
Coal,wood,oil, gas, other				king (Form B			of chemicals/co	•	orm B7)
Int.combustion engine/ge	enerator (Form B2)		Coating/fir	nishing/printir	ng (Form B5)		ation (Form B8)	÷ .	
Liquid storage tanks (For				los/bins (For		Dther (I	Form B9)		
START CONSTRUCTION D	ATE: TBD			DATE MAN	UFACTURED:	твр			
MANUFACTURER / MODEL	NO.: TBD			EXPECTED	OP. SCHEDUL	E: 24 HR/	DAY 7 D	AY/WK _52	WK/YR
IS THIS SOURCE SUBJECT		(SUBPARTS	?):			AP (SUBPAR			
PERCENTAGE ANNUAL TH	ROUGHPUT (%): DEC-FE	B 25% MA	R-MAY 25%	JUN-AUG					
	CRITERIA AIR P						WRCE		TEL TEL
			SOURCE OF		ED ACTUAL	T		EMISSIONS	
			EMISSION		TROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	AFTER CONTE	BOLS / LIMITS)
AIR POLLUTANT EMITTED	1		FACTOR	lb/hr	tons/yr	ib/hr	tons/yr	lb/hr	tans/yr
PARTICULATE MATTER (P					ns in Appendix		колаууг	- Ibarta	turnary.
PARTICULATE MATTER<10			Dec Enhadio	l valealatio		1	1		
PARTICULATE MATTER<2.	1						1		
SULFUR DIOXIDE (SO2)									
NITROGEN OXIDES (NOx)						1	1		
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COM				1	1				
LEAD									
DTHER			<u> </u>						
	HAZARDOUS AIR	POLLITA	NT EMICON	WE INCO	DMATION		OURCE		1
	Indenibood Ain	OLLOIA,	SOURCE OF			OR TING C		EMISSIONS	
			EMISSION		ED ACTUAL				
HAZARDOUS AIR POLLUT	ANT	CAS NO.	FACTOR	(AFTER CON Ib/hr	TROLS / LIMITS)	-	TROLS / LIMITS)	(AFTER CONTR	
N/A	ANT	CAS NO.	FACTOR	IDITII	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
				5					
20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOXIC AIR POL	LUTANT	EMISSIONS	INEOPH	ATION FOR	THIS SOL	PCE	Sec. 45 Long	
	TOXIC MILTO	LOTAN	- Jodnoc		ATIONFUR	1113 300	AVE		
			OF EMISSION	EXPE	CTED ACTUAL	. EMISSIONS	AFTER CONT	ROLS / LIMITA	TIONS
TOXIC AIR POLLUTANT		CAS NO.	FACTOR		b/hr	lb/	day	lb/	/yr
N/A									
Attachments: (1) emissions calculous how these are monitored and with						rmit limits (e.g. h	ours of operation	, emission rates)) and describe

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

FORM B6 EMISSION SOURCE (STORAGE SILO/BINS)

REVISED 09/22/16	NCDEQ/Division	n of Air Quality - App	lication	n for Air Permit to Co	onstruct/Ope	rate	B6
EMISSION SOURCE DESCRIP	TION: Pellet Mill	Feed Silo		EMISSION SC	OURCE ID NO	ES-PMFS	
				CONTROL DE	EVICE ID NO(S): CD-PMFS-BH	
OPERATING SCENARIO:	3 	OF		EMISSION PO	NNT(STACK)	ID NO(S): EP-12	
DESCRIBE IN DETAIL THE PR A pellet mill feed silo stores o		,	o the p	ellet presses.			
MATERIAL STORED: Dried gr	ound wood			DENSITY OF MATER	RIAL (LB/FT3)	: TBD	
CAPACITY	UBIC FEET:			TONS: TBD			
DIMENSIONS (FEET)	IEIGHT: 70	DIAMETER: TBD	(OR)	LENGTH:	WIDTH:	HEIGHT:	
ANNUAL PRODUCT THROU	GHPUT (TONS)	ACTUAL:		MAXIMUM DE	SIGN CAPAC	NTY:	
PNEUMATICALLY FILI	LED	MECHANICA		LLED		FILLED FROM	
BLOWER COMPRESSOR OTHER:		SCREW CONVEYOR BELT CONVEYOR BUCKET ELEVATOR OTHER:				X XAGE PILE	
NO. FILL TUBES: MAXIMUM ACFM:							
MATERIAL IS UNLOADED TO:	Pellet Mill/Presse	5					
BY WHAT METHOD IS MATER	IAL UNLOADED F	ROM SILO?					
MAXIMUM DESIGN FILLING R	ATE OF MATERIA	L (TONS/HR): TBD					
MAXIMUM DESIGN UNLOADIN	IG RATE OF MATE	ERIAL (TONS/HR): TE	BD				
COMMENTS:							

FORM C1

CONTROL DEVICE (FABRIC FILTER)

REVISED 09/22/16	NCDEQ/Divisi	on of Air Quality -	Applicatio	n for	Air Permit to	o Cons	truct/Dpe	rate			C1
CONTROL DEVICE ID NO: CD-PMFS	PMFS-BH CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PMFS										
EMISSION POINT (STACK) ID NO(S):	EP-12	POSITION IN SEF	IES OF C	ONTR	OLS		NO	. 1	OF	1 UNITS	
OPERATING S	CENARIO:										
10F	_1		P.E. SEA	REC	UIRED (PEF	R 2q .01	12)? 🔽	YES		NO NO	
DESCRIBE CONTROL SYSTEM: A baghouse is used to create a sligh silo. The baghouse is sized to offset							ects dust	from th	ne air volur	ne present i	in the
POLLUTANTS COLLECTED:			РМ	_	P M 10	_	PM _{2.5}	_		_	
BEFORE CONTROL EMISSION RATE	(LB/HR):			-		-		_		<u>.</u>	
CAPTURE EFFICIENCY:				%		%		-*		~%	
CONTROL DEVICE EFFICIENCY:			-99.9	- %	-99.9	%	~99.9	-*		%	
CORRESPONDING OVERALL EFFICI	ENCY:			%		%		-*		_%	
EFFICIENCY DETERMINATION CODE	Ē			-		-		-		_	
TOTAL AFTER CONTROL EMISSION	RATE (LB/HR):		See calcu	lation	ns in Append	lix C					
PRESSURE DROP (IN H ₂ 0): MIN:	MAX: TBD	GAUGE?	✓ YES	_	D NO						
BULK PARTICLE DENSITY (LB/FT ³):			INLET TE	MPER	RATURE (°F)	: TBD					
POLLUTANT LOADING RATE: 0.004	LE/HR	GR/FT ³	OUTLET .	TEMP	'ERATURE (°	'F) TBI	2				_
INLET AIR FLOW RATE (ACFM): 2,44				PERA	TING TEMP	(°F): 1	I/A			_	
NO. OF COMPARTMENTS: TBD		PER COMPARTME					TH OF BA				_
NO. OF CARTRIDGES: TBD		ACE AREA PER CA): TBD	DIAM	ETER OF	BAG (II	N.): TBD		
TOTAL FILTER SURFACE AREA (FT ²		AIR TO CLOTH R						1			
		FORCED/POSITIV	۲E		FILTER M	ATERI		WOV		FELTED	
DESCRIBE CLEANING PROCEDURE	с. С							T	SIZE DISTR	-	
AIR PULSE		SONIC SIMPLE BAG COL				I	SIZE		EIGHT %	CUMUL	
						(141)	CRONS)		TOTAL	%	,
MECHANICAL/SHAKER OTHER:	L]	RING BAG COLLA	PSE			<u> </u>	0-1	+	Qn	known	
DESCRIBE INCOMING AIR STREAM:	· · · ·					<u> </u>	1-10	1			_
The air stream contains wood dust p	articulate emis	sions.					25-50	1		1	_
						├ ──	0-100	1			
							>100	\mathbf{t}		1	
								-	TOT	AL = 100	
ON A SEPARATE PAGE, ATTACH A D COMMENTS:	DIAGRAM SHOV	VING THE RELATION	ONSHIP O	FTHE	CONTROL	DEVIC	E TO ITS	EMISSI	ON SOURC	CE(S):	
	Δ#	ach Addition:	al Shoo	te A	s Nocoes	ani					

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 NCDEC	Division of	Air Quality - A	Application f	or Air Permit	to Construct/	Operate		В
EMISSION SOURCE DESCRIPTION: Pellet Cooler H	P Fines Rela	y System		EMISSION S	OURCE ID N	O: ES-PCHP	2	
						(S): CD-PGH	P-BH	
OPERATING SCENARIO1 OF	1			-		() ID NO(S): E		
DESCRIBE IN DETAILTHE EMISSION SOURCE PRO Fine pellet material from the hammermill pollution of which is controlled by a baghouse.								relay system
TYPE OF EMISSION SOURCE (CHECK AND	COMPLETE A	PPROPRIAT	E FORM B1-B	9 ON THE FO	LLOWING PA	GES):	
Coal,wood,oil, gas, other burner (Form B1)		Woodwor	king (Form B	4)	Manuf	of chemicals/	coatings/inks (Form B7)
Int.combustion engine/generator (Form B2)		Coating/fi	nishing/printi	ng (Form B5)	Inciner	ation (Form B8	3)	
Liquid storage tanks (Form B3)		Storage s	ilos/bins (For	m B6)	Other (Form B9)		
START CONSTRUCTION DATE: TBD			DATE MAN	JFACTURED:	TBD			
MANUFACTURER / MODEL NO.: TBD			EXPECTED	OP. SCHEDU	LE: 24 HF	DAY 7	DAY/WK 52	WK/YR
IS THIS SOURCE SUBJECT TO?	(SUBPARTS	5?):			AP (SUBPAR			_
PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FE			JUN-AUG					
CRITERIA AIR P						DURGE		"
		SOURCE OF		D ACTUAL	l.		EMISSIONS	
		EMISSION		TROLS / LIMITS)	IBEEDRE CON	ITROLS / LIMITS)	(AFTER CONT	
AIR POLLUTANT EMITTED		FACTOR	lb/hr	tons/yr	Ib/hr	1	Jb/hr	
PARTICULATE MATTER (PM)		-		ns in Appendi		tons/yr	10/11	tons/yr
PARTICULATE MATTER (PM) PARTICULATE MATTER<10 MICRONS (PM ₁₀)		See Emissio	n Calculatio	Ins in Appendi				
PARTICULATE MATTER<2.5 MICRONS (PM2.5)								
SULFUR DIOXIDE (SO2)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
EAD				-			1	
OTHER HAZARDOUS AIR	DOULUTA.	HT ELLOOM	ALC: NAME OF	10 8 8 6 17 1 C 1 1	ric marilian.			
HAZARDOUS AIR	POLLUIA				OKARISK			
		SOURCE OF		ED ACTUAL			EMISSIONS	
		EMISSION		TROLS / LIMITS)		TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
HAZARDOUS AIR POLLUTANT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A				<u> </u>	ļ			
							·	
				ļ		L		
					L			
	L							
TOXIC AIR POL	LUTANT	EMISSIONS	INFORM	ATION FOR	this sol	IRCE		
		OF EMISSION	EXPE	TED ACTUAL	EMISSIONS	AFTER CONT	ROLS / LIMIT	ATIONS
TOXIC AIR POLLUTANT	CAS NO.	FACTOR	li li	o/hr	lb/	day	ib.	/yr
N/A								
Atlachments: (1) emissions calculations and supporting docume describe how these are monitored and with what frequency; and						g. hours of opera	tion, emission ra	ites) 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 09/22/16	NCDEQ/Divisio	n of Air Quality - App	lication	for A	ir Permit to C	onstruc	f/Operate	9		B6
EMISSION SOURCE DESCRIP					EMISSION SO					
					CONTROL DI	EVIČE II	D NO(S):	CD-PCHP-BH		
OPERATING SCENARIO:	1	OF1_		_	EMISSION PO	DINT(ST	ACK) ID	NO(S): EP-13		
DESCRIBE IN DETAIL THE PF Fine pellet material from the I fines relay system which is ca	nammermill pollut	ion control system a	and scre	ening	operation is	collecte	d in the j	pellet cooler hi	igh pr	essure
MATERIAL STORED: Fine pel	llet material			DENS		RIAL (LE	3/FT3): T	BD		
	UBIC FEET: TBD			TONS		``				
DIMENSIONS (FEET)	EIGHT:	DIAMETER: TBD	(OR)	LENG	TH:	WIDTH	:	HEIGHT:		
ANNUAL PRODUCT THROU	IGHPUT (TONS)	ACTUAL:			MAXIMUM DE	ESIGN C		: TBD		
PNEUMATICALLY FIL	LED	MECHANICALLY FILLED						FILLED FROM	195	
BLOWER B		SCREW CONVEYOR BELT CONVEYOR BUCKET ELEVATOR OTHER:					RAILCAF TRUCK STORAG OTHER:			
BY WHAT METHOD IS MATER		ROM SILO?								
MAXIMUM DESIGN FILLING R	ATE OF MATERIA	L (TONS/HR):								
MAXIMUM DESIGN UNLOADIN	IG RATE OF MATE	ERIAL (TONS/HR):							_	
COMMENTS:										

REVISED 09/22/16 NC	DEQ/Division of Air	Quality - App	lication	for Air Permit	ta Constru	uct/Operat	6	
CONTROL DEVICE ID NO: CD-PCHP-BH	H EMISSION	SOURCE I	D NO(S):	ES-PCHP				
MISSION POINT (STACK) ID NO(S): EP-13	NTROL	3		NO.	1 OF	1 UNITS		
OPERATING SCENARIO:								
1OF1		P.E. SEAL R	EQUIRE	D (PER 2q .01	12)?	[Z∎	s	NO
ESCRIBE CONTROL SYSTEM: The baghouse collects dust from displacement of a	ir that occurs when	wood enters o	or exits	the pellet cool	ler high pre	essure fin	es relay systi	em.
POLLUTANTS COLLECTED:		РМ		PM ₁₀		PM _{2.5}		
BEFORE CONTROL EMISSION RATE (LB/HR);			-					
APTURE EFFICIENCY:		-	%		- %	%		%
ONTROL DEVICE EFFICIENCY:		~99.9	- %	99.9	_%	-99.9 %		%
ORRESPONDING OVERALL EFFICIENCY:			-%		- %	%		%
FFICIENCY DETERMINATION CODE:			-11				s	
OTAL AFTER CONTROL EMISSION RATE (LB/HR):		See calculati	ions in A	ppendix C			×	
RESSURE DROP (IN H ₂ 0): MIN: MAX: TBD	GAUGE?	✓YES		NO		_		
ULK PARTICLE DENSITY (LB/FT ⁴): TBD		INLET TEMP	ERATUR	RE (°F): TBD				
OLLUTANT LOADING RATE: 0.004	IR JGR/FT	OUTLET TEM	MPERAT	URE (°F) TBD	+			
VLET AIR FLOW RATE (ACFM): 500				TEMP (°F): N	A			
	BAGS PER COMP.				-	OF BAG		
	SURFACE AREA F		GE (FT ²):	TBD	DIAMET	ER OF BA	G (IN.): TBD	
OTAL FILTER SURFACE AREA (FT ²): TBD	AIR TO CLOTH		_		_	_		
	FORCED/POSI			FILTER MAT	TERJAL:	wo	and a second sec	FELTED
ESCRIBE CLEANING PROCEDURES:	_					PAR	TICLE SIZE	DISTRIBUTION
	SONIC				SIZ		WEIGHT %	
	SIMPLE BAG C				(MICRO	DNS)	OF TOTAL	- %
MECHANICAL/SHAKER	RING BAG COL	LAPSE			0-1	e		Unknown
OTHER:					1-10	0		
ESCRIBE INCOMING AIR STREAM: ne air stream contains wood dust particules. Larg	r narticles are rom	oved by the	netrese	cyclone	10-2	25		
	or portiones are rem	oved by the d	pau cai fi	ayanang.	25-5	50		
					50-10	00		
					>10	0		
								TOTAL = 100
IN A SEPARATE PAGE, ATTACH A DIAGRAM SHOV COMMENTS:	ING THE RELATIO	NSHIP OF THE	CONTR	OL DEVICE T				TOTAL = 100

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

EMUSION SOURCE DESCRIPTION: Pellet Cooler LP Fins Relay System EMUSION SOURCE DESCRIPTION: Pellet Cooler LP Fins Relay System CONTROL DESCRIPTION: Pellet Cooler Source For Cooler LP Fins Relay System CONTROL DESCRIPTION: Pellet Cooler Source For Source For Pellet Cooler Source For Pellet Source End Source Cooler Source For Source For Pellet Pellet Source For Pellet Pellet Source For Pellet For Pellet Source For Pellet Pellet Source For Pellet Pell	REVISED 09/22/16	NCDEQ/Division	of Air Quality - Aj	oplication for	r Air Permit to	Construct/C	perate		В
OPERATING SCENARIO 1 CONTROL DEVICE ID NOUGE COPICE-BH DESCRIBE IN DETALTHE EMISSION SOURCE PROCESS (ATTACH HLDW DIAGRAM): Station of the pellet presses to call the marky tormed pellets drams to an acceptable storage temperature. The recirculation for the pellet conters in the pellet conters in the pellet presses to call the marky tormed pellets drams to an acceptable storage temperature. The recirculation for the pellet conters in the pellet contere pellet conters in the pellet contere pellet contere	EMISSION SOURCE DESCRIPTION: Pellet Co								
OPECATING SCENARIO			-					P_RH	
DESCRIBEN NO FAILTHE EMISSION SOURCE PROCESS (ATTACH FLOW DURGGAN): Sto (Prefet Colers follow the paint promoted pellets down to an acceptable storage tamperature. The recirculation for the pellet coolers in the pellet cooler fow pressure fines relay system) is controlled by a baghouse. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): Coal,wood, all, gas, dhen burner (Form B1) Coal,wood, all, gas, dhen burner (Form B2) Coal,wood, all, gas, dhen burner (Form B2) Coal,wood, all, gas, dhen burner (Form B2) Coal,wood, all, gas, dhen burner, (Form B3) Coal,wood, all, gas, dhen burner, (Form B2) Coal,wood, all, gas, dhen burner, (Form B3) Coal,wood, all, gas, dhen burner, (Form B3) Coal, wood, all, gas, dhen burner, (Form B3) Coal, gas, dhen burner, (For	OPERATING SCENARIO 1	OF 1							
Six (6) Pallet Coolers follow the pellet presess to cool the newly formed pellets down to an acceptable storage tamperature. The recirculation for the pellet coolers in the pellet acoler fow pressure fines relay system) is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system) is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system) is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system) is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system) is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system is controlled by a baghous. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pellet cooler fow pressure fines relay system. Image: the pe			CH FLOW DIAGE	RAM):	TEMIOGICITY	Ontri (office		_/-/+	
coolers in the pallet cooler low pressure filese relay system) is controlled by a baghouse. TYPE OF EMISSION SOURCE (CHECK AND COMPLETE APPROPRIATE FORM B1-B9 ON THE FOLLOWING PAGES): Clocal wood (Dir gas, Cheh During' Form B1) Clocal model (Dir Form B3) Indication of the main					ceptable stor	ade tempera	ture. The reci	reulation for	the nellet
□ Cost Normal State Numer (Form B1) □ Woodworking (Form B2) □ Define the Numer (Form B2)	coolers in the pellet cooler low pressure fines	s relay system) is c	ontrolled by a ba	ghouse.	• • • • • • • • •	···			and participation
□ Cost Normal State Numer (Form B1) □ Woodworking (Form B2) □ Define the Numer (Form B2)									
□ Cost Normal State Numer (Form B1) □ Woodworking (Form B2) □ Define the Numer (Form B2)	TYPE OF EMISSION SOL	JRCE (CHECK AND	COMPLETE AP	PROPRIATE	FORM B1-B9	ON THE FOL	LOWING PAG	GES):	
Image: Construction engine generator (Form B2) Contention of the mask (Form B3) Descent (Form B3) START CONSTRUCTION DATE: TBD DATE MANUFACTURED: TBD DATE MANUFACTURED: TBD DATE MANUFACTURED: TBD MANUFACTURER / MODEL NO.: TBD EXPECTED OP: SCHEDULE: 24 HRDAY 7_DAY/WK_52_WK/7R DAY/WK_52_WK/7R START CONSTRUCTION DATE: TBD EXPECTED OP: SCHEDULE: 24 HRDAY 7_DAY/WK_52_WK/7R DAY/WK_52_WK/7R START CONSTRUCTION DATE: TBD EXPECTED OP: SCHEDULE: 24 HRDAY 7_DAY/WK_52_WK/7R DAY/WK_52_WK/7R START CONSTRUCTION DATE: TBD EXPECTED OP: SCHEDULE: 25 WK/7R DAY/WK_52_WK/7R STHIS SOURCE OF EXPECTED AGTUAL POTENTIAL EMISSIONS POTENTIAL EMISSIONS CRITERIA AIR POLLUTANT EMISSIONS EXPECTED AGTUAL POTENTIAL EMISSIONS HORY PARTICULATE: MATTER: 04 MATTER: 04 MARCHS (PM) See Emission Calculations in Appendix C Insign (PM) Insign (PM) PARTICULATE: MATTER: 05 MIRCINS (PM) See Emission Calculations in Appendix C Insign (PM) Insign (PM) UPARITCULATE: MATTER: 04 MIRCINS (PM) See Emission S Insign (PM) Insign (PM) Insign (PM) UPARTICULATE: MATTER: 04 MIRCINS (PM) SOURCE OF EXPECTED ACTUAL	Coal,wood,oil, gas, other burner (Form B1)								(Eorm B7)
Under U					Form B5)			-	(Form Dry
START CONSTRUCTION DATE: TBD DATE MANUFACTURED: TBD MANUFACTURED: NO.: TBD EXPECTED OP, SCHEDULE: 24, HRIDAY 7_ DAYNK, S2_WKR STHIS SOURCE SUBJECT TO' INSPS (SUBPARTST); INSENS (SUBPARTST); INSENS (SUBPARTST); PERCENTAGE ANNUAL THROUGHPUT (%): DEC-FED 25% MAR-MAY 25% JUN-NUC 25% SEPACO 25% CRITERIA AIR POLLUTANT EMISSIONS SOURCE OF EMISSION EXPECTED ACTUAL POTENTIAL EMISSIONS AIR POLLUTANT EMITTED FACTOR Bh/r Ions/yr Ibh/r Ions/yr PARTICULATE MATTER (PM) See Emission Calculations in Appendix C Ibh/r Ions/yr Ibh/r Ions/yr PARTICULATE MATTER; (PM) See Emission Calculations in Appendix C Ibh/r Ions/yr Ibh/r Ions/yr VILTORGEN X02DES (NO2) ID ID ID ID ID ID VILTORGEN X02DES (NO2) ID ID ID ID ID ID ID ID VILTUATE MATTER; CAS NO. FACTOR IB/r ID ID ID ID ID ID ID ID ID						L		<i>)</i>)	
MANUFACTURER / MODEL NO. TBD EXPECTED OP. SCHEDULE: 24. HRIDAY TO AVVIK _S2_ WK/YR ST HIS SOURCE SUBJECT TO? NSPS (SUBPARTS7):							· 0/// 00/		
IS THIS SOURCE SUBJECT TO? INSPS (SUBPARTS?): INSPA (SUBPARTS?): INSPA (SUBPARTS?): PERCENTAGE ANNUAL THROUGHPUT (%): DEC/FEB 20%, MAR-MAY 20%, JUN-AUG 20%, SEP-NOV 20%, CRITERIA AIR POLLUTANT FMISSIONS INFORMATION FOR THIS SOURCE SOURCE OF EMISSION SOURCE OF EMISSION EVEPSCTED ACTUAL POTENTIAL EMISSIONS AIR POLLUTANT EMITTED See Emission Calculations in Appendix C Information of the symptotic source of the								DAMONIC E	0 14///0/0
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SOURCE OF EMISSION EXPECTED ACTUAL (ATTR OCHTROS / LUMTS) POTENTIAL EMISSIONS AIR POLLUTANT EMITTED FACTOR (ATTR OCHTROS / LUMTS) (ATTR OCHTRO		ARPOINTAN	TEMISSION	SUN-AUG Z	ATHOM EA	5 THIC OA	NDCE		
AIR POLLUTANT EMITTED EMISSION FACTOR (AFTER CONTROLS / LIMITS) (BEFORE CONTROLS / LIMITS) (AFTER CONTROLS / LIMITS) PARTICULATE MATTER (PM) See Emission Colculations in Appendix C Ib/hr tons/yr Ib/hr tons/yr Ib/hr tons/yr PARTICULATE MATTER MCRONS (PMs.) See Emission Colculations in Appendix C Image: Coll I			1	1		1			
ARR POLLUTANT EMITTED FACTOR Ib/tr tons/yr PARTICULATE MATTER: 0 MICRONS (PMa;) See Emission Calculations in Appendix C Ib/tr	1							1	
PARTICULATE MATTER (PM) See Emission Calculations in Appendix C Image: Constraint of the second sec				-	-	-	-	1	TROLS / LIMITS)
PARTICULATE MATTER<*0 MICRONS (PM6,a)						lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER<2.5 MICRONS (PM2,1)			See Emission C	alculations l	n Appendix C			<u> </u>	-
SULFUR DIOXIDE (302) Image: state of the state of								<u> </u>	
NITROGEN OXIDES (NOx) Image: Construct of the second								<u> </u>	
CARBON MONOXIDE (CO) Image: Constraint of the second con									
VOLATILE ORGANIC COMPOUNDS (VOC) Image: mark transmission of the sector of									
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HAZARDOUS AIR POLLUTANTSOURCE OF CAS NO.EXPECTED ACTUALPOTENTIAL EMISSIONSIAZARDOUS AIR POLLUTANTCAS NO.FACTOR[AFTER CONTROLS / LIMITS)(AFTER CONTROLS / LIMITS)(AFTER CONTROLS / LIMITS)NIAIIIons/yrIb/hrIons/yrIb/hrIons/yrIb/hrIons/yrNIAIIIons/yrIb/hrIons/yrIb/hrIons/yrIb/hrIons/yrIIIons/yrIb/hrIons/yrIb/hrIons/yrIb/hrIons/yrIIIons/yrIb/hrIons/yrIb/hrIons/yrIb/hrIons/yrIIIons/yrIb/hrIons/yrIb/hrIons/yrIb/hrIons/yrIIIonsIons/yrIb/hrIons/yrIb/hrIons/yrIons/yrIIIonsIonsIonsIons/yrIons/yrIons/yrIons/yrIIIonsIonsIonsIonsIons/yrIons/yrIons/yrIIIonsIonsIonsIonsIonsIons/yrIons/yrIIIonsIonsIonsIonsIonsIonsIonsIIonsIonsIonsIonsIonsIonsIonsIonsIIonsIonsIonsIonsIonsIonsIonsIonsIIonsIonsIonsIonsIonsIonsIonsIonsIIons									
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HAZARDOUS AIR POLLUTANT CAS NO. FACTOR Ib/hr tons/yr Ib/hr tons/yr Ib/hr tons/yr N/A IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII			SOURCE OF	EXPECTE	ED ACTUAL		POTENTIAL	EMISSIONS	
N/A Corols / 1 Main Main Main Main Main			EMISSION	(AFTER CONT	FROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONT	TROLS / LIMITS)
Image: state of the state	HAZARDOUS AIR POLLUTANT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Source of EMISSION EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT CAS NO. Ib/In Ib/day Ib/yr N/A Image: Cas No. FACTOR Image: Cas No.	N/A								
Source of EMISSION FACTOR EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS TOXIC AIR POLLUTANT CAS NO. Ib/fr Ib/day Ib/yr N/A Image: Cas No. FACTOR Image: Cas No.									
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TOXIC AIR POLLUTANTCAS NO.FACTORIb/hrIb/dayIb/yrN/AIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				EXPEC	TED ACTUAL	EMISSIONS	AFTER CONT	ROLS / LIMIT	TATIONS
N/A Image: Constraint of the system of the sys	TOXIC AIR POLLUTANT	CAS NO.		lit)/br	lb/	dav	L. IF	alur
Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. bruc of examples emission state) and documentation: (2) indicate all requested state and federal enforceable permits in the state and federal	N/A						,		
Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission mice) and documentation (2) indicate all requested state and federal enforceable permits (a p. baux of examples emission mice) and documentation (2) indicate all requested state and federal enforceable permits (a p. baux of examples emission mice) and (a p. baux of									
Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples emission miceion m									
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Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and documentation: (2) indicate all requested state and federal enforceable permit limits (a p. baux of examples, emission mice) and (a p. baux of examples, emission mice) and (a p. baux of									
Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicate all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicate all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicates all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicates all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicates all requested state and federal enforceable permit limits (a phase of operation anticates much and documentation) and documentation (2) indicates all requested states and federal enforceable permit limits (b phase of operation anticates much ant									
Attachments: (1) emissions calculations and supporting documentation: (2) indicate all requested state and faderal enforceable permit limite (e.g. baue of operation emission much band documentation)									
	Attachments: (1) emissions calculations and supportion r	focumentation: (2) indi-	rate all requested etc	te and fadoral	anforegable ser	hit limite (o a b	use of one and	emienies =1-	e) ood deeed

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

FORM B9 EMISSION SOURCE (OTHER)

EMISSION SOURCE DESCRIPTION: Pellet Cooler LP Fines Relation	approvation	for Air Permit to Construct/Op	perate	B9
	y System	EMISSION SOURCE ID NO:	ES-PCLP	
		CONTROL DEVICE ID NO(S):	CD-PCLP-BH	
OPERATING SCENARIO:1 OF1		EMISSION POINT (STACK) I	DNO(S): EP-14	
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM) Six (6) Pellet Coolers follow the pellet presses to cool the newly recirculation for the pellet coolers in the pellet cooler low pressu	formed pelle	ets down to an acceptable sto ay system is controlled by a b	orage temperature. aghouse.	The
MATERIALS INTERING PROCESS - CONTINUOUS PROC	E88	MAX. DESIGN	REQUESTED	CAPACITY
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)	LIMITATION(UNIT/HR)
Pellet Cooler Exhaust		3,102 CFM		
MATERIALS ENTERING PROCESS - BATCH OPERATIO	DN	MAX. DESIGN	REQUESTED	CAPACITY
	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (U	
MAXIMUM DESIGN (BATCHES / HOUR):				
REQUESTED LIMITATION (BATCHES / HOUR):	BATCHES/Y	′R):		
FUEL USED: N/A	TOTAL MAX	MUM FIRING RATE (MILLION	BTU/HR): N/A	
		CAPACITY ANNUAL FUEL U		

REVISED 09/22/16	NCDEQ/Division	n of Air Quality - Appl	ication for Air I	Permit to Con	struct/Opera	te			
CONTROL DEVICE ID NO: CD-PCLP-BH CONTROLS EMISSIONS FROM WHICH EMISSION SOURCE ID NO(S): ES-PCLP									
MISSION POINT (STACK) ID NO(S):	NO.	1 QF	1 UNITS						
OPERATING SCENA	RID:	102.							
10F1	_	P.E. SEAL R	EQUIRED (PER	2q .0112)?		ES .	NO		
DESCRIBE CONTROL SYSTEM: The baghouse collects dust from displacem	ent of air that occurs	s when wood enters o	or exits the pell	let coolers.					
POLLUTANTS COLLECTED:		PM	PM ₁₀		PM ₂₅				
BEFORE CONTROL EMISSION RATE (LB/HR):								
CAPTURE EFFICIENCY:			.%	%	%		*		
CONTROL DEVICE EFFICIENCY:		-99.9	%	·99.9 %	~99.9 %		%		
ORRESPONDING OVERALL EFFICIENCY:			%	%	%		%		
FFICIENCY DETERMINATION CODE:			2						
OTAL AFTER CONTROL EMISSION RATE (I	B/HR):	See calculation	ons in Append	ix C		-			
RESSURE DROP (IN H ₂ 0): MIN: MAX:	TBD GAU	IGE? VES	N						
ULK PARTICLE DENSITY (LB/FT ³): TBD			ERATURE (°F):						
OLLUTANT LOADING RATE: 0.004	LB/HR JBR/FI		IPERATURE (°F						
NLET AIR FLOW RATE (ACFM): 3,102			RATING TEMP						
IO. OF CARTRIDGES: TBD		COMPARTMENT: THE			TH OF BAG				
OTAL FILTER SURFACE AREA (FT ²): TBD		REA PER CARTRIDG		DIAM	ETER OF BA	G (IN.): TBD			
RAFT TYPE: INDUCED/NEG			EU T	ER MATERIAL		ÖVEN	FELTED		
ESCRIBE CLEANING PROCEDURES:		#FOAITIVE	PILI	ERMATERIAL		TICLE SIZE D	and the second se		
	SONIC				SIZE	WEIGHT %			
		BAG COLLAPSE			CRONS)		CUMULATIN %		
		G COLLAPSE		(Ivar					
	Exting the	O OULDAPOE			0-1		Unknown		
ESCRIBE INCOMING AIR STREAM:				1	0-25				
ne air stream contains wood dust particule:	s. Larger particles a	re removed by the up	stream cyclon	e. 🗕 🗕	5-50				
					0-100				
					>100				
							OTAL = 100		
N A SEPARATE PAGE, ATTACH A DIAGRAN DMMENTS:	A SHOWING THE RE	LATIONSHIP OF THE	CONTROL DEV		MISSION SO	URCE(S)			

SPECIFIC EMISSION SOURCE INFORMATION (REQUIRED FOR ALL SOURCES)

REVISED 09/22/16 NCI	EQ/Division of	f Air Quality - J	Application i	or Air Permit	to Construct	/Operate	,	В
EMISSION SOURCE DESCRIPTION: Pellet Dust (O: ES-PDCTE	2	
						D(S): CD-PSTE		
OPERATING SCENARIO 1 C	F 1					K) ID NO(S): E		
DESCRIBE IN DETAILTHE EMISSION SOURCE P Pelletized wood is transferred from the pellet cod pellet dust collection transfer bin baghouse.	ROCESS (ATTA	CH FLOW DIA	GRAM): rations via c					d by the
TYPE OF EMISSION SOURCE	CHECK AND	COMPLETE A	PPROPRIAT	E FORM B1-F			CES)-	
Coal,wood,oil, gas, other burner (Form B1)	. (one of CARD		king (Form B			. of chemicals/		
Int.combustion engine/generator (Form B2)				ng (Form B5)		ration (Form B8		Folin B7)
Liquid storage tanks (Form B3)			ilos/bins (Fo	D ((Form B9)	"	
START CONSTRUCTION DATE: TBD		<u>-</u> 3+ -		JFACTURED:		(10111100)		
MANUFACTURER / MODEL NO.: TBD			r	OP. SCHEDU				WICDO
	PS (SUBPARTS	22).	EXPECTED	Parat			DAY/WK _52	VVK/YR
PERCENTAGE ANNUAL THROUGHPUT (%): DEC			ILIN AUC		AP (SUBPAR	(187):		-
CRITERIA AIR	POLILITAN	TEMSCIOI	IC MEOD		NUV 25%	OHDOF	C Control	
	I OLLO MAI	1	r		JA 1763 3			
		SOURCE OF		ED ACTUAL			EMISSIONS	
		EMISSION		TROLS / LIMITS)		TROLS / LIMITS)	(AFTER CONT	ROLS / LIMITS)
		FACTOR	Jb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
PARTICULATE MATTER (PM)		See Emissio	n Calculatio	ns in Appendi	x C			
PARTICULATE MATTER<10 MICRONS (PM10)								
PARTICULATE MATTER<2.5 MICRONS (PM2,5)								
SULFUR DIOXIDE (SO2)								
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
EAD								
OTHER								
HAZARDOUS AI	R POLLUTA	NT EMISSIC	ons info	RMATION I	OR THIS	SOURCE		
		SOURCE OF	EXPECTE	DACTUAL		POTENTIAL	EMISSIONS	
		EMISSION	(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS)	(AFTER CONTR	OLS / LIMITS)
HAZARDOUS AIR POLLUTANT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A								
	_							
		1						
TOXIC AIR P	OLLUTANT	=MISSIONS	INFORM/	ATION FOR	THIS SOL	IRCE		
		OF EMISSION	EXPEC	TED ACTUAL	EMISSIONS	AFTER CONTI	ROLS / LIMITA	TIONS
TOXIC AIR POLLUTANT	CAS NO.	FACTOR	lb	/hr	lb/	day	lb/	yr
N/A								
Attachments: (1) emissions calculations and supporting docu describe how these are monitored and with what frequency; a	mentation; (2) indiand (3) describe an	cate all requester by monitoring dev	l state and lede ices, gauges, c	eral enforceable or test ports for th	permit limits (e.ç iis source,	, hours of operat	ion, emission rat	es) 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 09/22/16 NCDEQ	Divisi-		diam'-	- 6 *	in Dan - 11 (DC
		n of Air Quality - App		n tor A	1		B 6
EMISSION SOURCE DESCRIPTION: Pe	net Du\$	a collection Transfe	r Uin			OURCE ID NO: ES-PDCTB	
	1.	OF 1				EVICE ID NO(S): CD-PDCTB-BH	
OPERATING SCENARIO: DESCRIBE IN DETAIL THE PROCESS (/				_	EMISSION PO	OINT(STACK) ID NO(S): EP-15	
Pelletized wood is transferred from the controlled by the pellet dust collection	pellet o	oolers to the truck le	padout	operat	tions via conv	veyor. Emissions from this conveyo	r are
MATERIAL STORED: Fine pellet materia	al			DENS	ITY OF MATE	RIAL (LB/FT3): TBD	
CAPACITY CUBIC FEE	т:			TONS			
DIMENSIONS (FEET) HEIGHT:		DIAMETER: TBD	(OR)	LENG	TH:	WIDTH: HEIGHT:	
ANNUAL PRODUCT THROUGHPUT (1	ONS)	ACTUAL:			MAXIMUM DE	ESIGN CAPACITY: TBD	
PNEUMATICALLY FILLED		MECHANIC	ULLY F	ILLED		FILLED FROM	
BLOWER		SCREW CONVEYO	२				
COMPRESSOR		BELT CONVEYOR					
		BUCKET ELEVATOR	र				
		OTHER:				OTHER: Conveyor	
NO. FILL TUBES: TBD							
MAXIMUM ACFM: TBD							
MATERIAL IS UNLOADED TO:			_				
BY WHAT METHOD IS MATERIAL UNLO	ADED F	ROM SILO?					
MAXIMUM DESIGN FILLING RATE OF M	ATERIA	L (TONS/HR): TBD					
MAXIMUM DESIGN UNLOADING RATE C		ERIAL (TONS/HR): TE	30				
COMMENTS:							

REVISED 09/22/16 CONTROL DEVICE ID NO: CD-PDCTB		CONTROLS EMI						тв
EMISSION POINT (STACK) ID NO(S):		POSITION IN SE				NO.		1 UNITS
OPERATING BO								
1OF_	1		P.E. SEAL REC	UIRED (PE	R 20 .0112)?	িনি	'ES	T NO
DESCRIBE CONTROL SYSTEM: A baghouse is used to create a slight present in the bin and is sized to offse						OUSƏ CO	ollacts dust fro	m the air volu
POLLUTANTS COLLECTED:			РМ	PM ₁₀	PM ₂	5		_
BEFORE CONTROL EMISSION RATE ((LB/HR):							_
CAPTURE EFFICIENCY:			%	·	_%	9	6	%
CONTROL DEVICE EFFICIENCY:			~99.9 %	~99.9	%9	9.9 %		%
CORRESPONDING OVERALL EFFICIE	NCY:		%		%	%	۵	%
EFFICIENCY DETERMINATION CODE:								_
TOTAL AFTER CONTROL EMISSION R	ATE (LB/HR)		See calculation	ns in Appen	dix C			
PRESSURE DROP (IN H20): MIN:	MAX: TBD	GAUGE?	VES	NO NO				
BULK PARTICLE DENSITY (LB/FT ²): T			INLET TEMPE					
POLLUTANT LOADING RATE: 0.004	LB/HR	GR/FT ³	OUTLET TEMP	ERATURE (°F) TBD			
NLET AIR FLOW RATE (ACFM): 3,000			FILTER OPERA	ATING TEMP	° (°F): N/A			
NO. OF COMPARTMENTS: TBD	NO. OF BAGS	FER COMPARTM	ENT: TOD		LENGTH O	FBAG	(IN,): TBD	
		ACE AREA PER C	ARTRIDGE (FT ²)	: TBD	DIAMETER	OF BA	G (IN.): TBD	
TOTAL FILTER SURFACE AREA (FT ²):		AIR TO CLOTH R	ATIO: TBD		_			
DRAFT TYPE: INDUCED/NEG		FORCED/POSITI	VE	FILTER N	ATERIAL:		ATTING PLACE OF ITS	FELTED
DESCRIBE CLEANING PROCEDURES					1000	PARTIC	LE BIERE DISTR	BUTION
		SONIC			SIZE		WEIGHT %	CUMULAT
REVERSE FLOW		SIMPLE BAG CO	LLAPSE		(MICRON	NS}	OF TOTAL	%
MECHANICAL/SHAKER		RING BAG COLL	APSE		0-1		Uni	know n
OTHER:					1-10			
DESCRIBE INCOMING AIR STREAM:					10-25			
The air stream contains wood dust pa	iniculate emis	5510115.			25-50			
					50-100			
					>100			
							TOT	AL = 100
DN A SEPARATE PAGE, ATTACH A DI. COMMENTS:	AGRAM SHO	WING THE RELATI	ONSHIP OF THE	E CONTROL	DEVICE TO	ITS EM	ISSION SOURC	XE(8):
	At	tach Addition	al Sheets A	s Necess	ary			

SPE	CIFIC EMISSION	SOURCE	INFORM	ATION (F	REQUIRE	D FOR A		CES)	
REVISED 09/22/16			of Air Quality -					,	В
EMISSION SOURCE DESC	RIPTION:								
Finished Product Handling	J/Pellet Loadout Bins				EMISSION S	OURCE ID NO	D: ES-FPH, ES	i-PB-1 and 2	
					CONTROL D	EVICE ID NO	(S): CD-FPH-E	ŝн	
OPERATING SCENARIO	1OF_	1			EMISSION P	OINT (STACK) ID NO(S): EF	^{>} -16	
DESCRIBE IN DETAILTHE Pelletized product is conve controlled by a baghouse.	eyed to one of two pellet i	CESS (ATTAC oadout bins (I	H FLOW DIAG ES-PB-1 and 2	RAM):) that feed en	closed rail ca	rs. Emissions	from the pelle	≭ loadout bin	IS Are
TYPI	E OF EMISSION SOURCE	(CHECK AND		PPROPRIATI			LOWING PAG	-	orm B7)
Int.combustion engine/ge				nishing/printing		=	tion (Form B8)		
Liquid storage tanks (For	· ·			ilos/bins (Fom		Other (F			
START CONSTRUCTION D					FACTURED:				_
MANUFACTURER / MODEL				1	OP. SCHEDUL		DAY 7 D	AY/WK _52	WK/YR
IS THIS SOURCE SUBJECT		S (SUBPARTS	2):	EX EGIED		AP (SUBPART		MINN _JZ_	
PERCENTAGE ANNUAL TH				JUN-AUG 2	5% SEP-NOV	25%	v:)		
	CRITERIA AIR I	POLIUTAN	TEMISSIO	VS MEDRI	ATION FO	R THIS SO	HRCE	1	the state of the state
		01100000	SOURCE OF		DACTUAL	1 1110 00		FIRECOLONIC	
			EMISSION		ROLS/UMITS)		TROLS / LIMITS)	EMISSIONS	Pot o transmo
AIR POLLUTANT EMITTED			FACTOR	lb/hr	tons/yr	lb/hr	1		ROLS / LIMITS
PARTICULATE MATTER (PI			-		s in Appendix		tons/yr	lb/hr	tons/yr
PARTICULATE MATTER<10			OCE Emiliano		S IT Appendix	<u> </u>			
PARTICULATE MATTER<2.6									
SULFUR DIOXIDE (SO2)	1 morten o (1 m2.5)								
NITROGEN OXIDES (NOx)									
CARBON MONOXIDE (CO)									
VOLATILE ORGANIC COMP	POLINDS (VOC)				<u> </u>				
LEAD			1						-
OTHER				· · · · · · · · · · · · · · · · · · ·					
	HAZARDOUS AIR	POLITA	NT EMISSI	ONS INFOR	ANA TICALE	OP THIS S	OURCE		
	THE REPORT	I	SOURCE OF	1		OR THIS S			
					DACTUAL		POTENTIAL		
HAZARDOUS AIR POLLUT		CAS NO.	EMISSION		ROLS / LIMITS)		ROLS / UMITS)		ROLS / LIMITS
N/A		CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
						·			
	TOXIC AIR PC	LUTANT	EMISSIONIS	INCODES	TION FOR	THE COL	205		
	TOAIC AIR PO	LLUTANT	SOURCE OF				AFTER CONTR	ROLS / LIMIT/	TIONS
		0.0.00	EMISSION						
		CAS NO.	FACTOR	lb	/hr	lb/d	day	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.

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 09/22/16 NCDEQ/Division of Air Quality -		or Air Permit to Construct/Ope	erate	B9
EMISSION SOURCE DESCRIPTION: Finished Product Handling)	EMISSION SOURCE ID NO: E	S-FPH	
		CONTROL DEVICE ID NO(S):	CD-FPH-BH	
OPERATING SCENARIO:1 OF1		EMISSION POINT (STACK) ID	NO(S): EP-16	
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM		£		
Collection of transfer points, pellet screening operations, and p	ellet conveyi	ng.		
MATERIALS ENTERING PROCESS - CONTINUOUS PRO	C208	MAX, DESIGN	REQUESTED	
TYPE	UNITS	CAPACITY (UNIT/HR)	LIMITATION(
Wood Pellets	ODT	80	Cantorna	oninning
10001 (1000	001	00		
	-			
MATERIALS ENTERING PROCEES - BATCH OPERAT TYPE	1	MAX. DESIGN	REQUESTED	
	UNITS	CAPACITY (UNIT/BATCH)	LIMITATION (U	NIT/BATCH)
MAXIMUM DESIGN (BATCHES / HOUR):				
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/	(R):		
FUEL USED: N/A	TOTAL MAX	MUM FIRING RATE (MILLION I	BTU/HR): N/A	
MAX. CAPACITY HOURLY FUEL USE: N/A	REQUESTED	CAPACITY ANNUAL FUEL US	E: N/A	
COMMENTS:				

		FO	RM	B6				
	EMIS	SION SOURCE	E (ST	ORAGE	SILO	/BIN	S)	
REVISED 09/22/16 NCDEC	/Divisio	n of Air Quality - Ap	plicatio	n for Air Peri	mit to C	onstru	ct/Operate	B6
EMISSION SOURCE DESCRIPTION: T	vo (2) Pe	ellet Loadout Bins		EMIS	SION SC	OURCE	EID NO: ES-PB1 and 2	
				CONT		EVICE	ID NO(S): CD-FPH-BH	
OPERATING SCENARIO:	1	OF1		EMIS	SION PO	DINT(S	TACK) ID NO(S): EP-16	
DESCRIBE IN DETAIL THE PROCESS (Pellet loadout bins are used to store p			re then	loaded from	the bin:	s into	closed top hopper rail cars.	
MATERIAL STORED: Pellet Product				DENSITY OF	MATER	RIAL (L	.8/FT3): TBD	
CAPACITY CUBIC FE	ET:		r	TONS:	_	_		
DIMENSIONS (FEET) HEIGHT:		DIAMETER: TBD	(OR)	LENGTH:		WIDTH	H: HEIGHT:	
ANNUAL PRODUCT THROUGHPUT (TONS)	ACTUAL:			MUM DE	SIGN	CAPACITY: 80 ODT/hr	
PNEUMATICALLY FILLED		MECHANIC	Ceremon Ora	ILLED			FILLED PRON	
		SCREW CONVEYO	R				RAILCAR	
		BELT CONVEYOR				Ц	TRUCK	
		BUCKET ELEVATO	R				STORAGE PILE	
		OTHER:				\checkmark	OTHER: Conveyor	
NO. FILL TUBES: TBD								
MAXIMUM ACFM: TBD								
MATERIAL IS UNLOADED TO:								
BY WHAT METHOD IS MATERIAL UNLO	DADED F	ROM SILO?						
MAXIMUM DESIGN FILLING RATE OF N	IATERIA	L (TONS/HR):						
MAXIMUM DESIGN UNLOADING RATE	OF MAT	ERIAL (TONS/HR):						
COMMENTS:								

EVISED 09/22/16 CONTROL DEVICE ID NO: CD-FBH-BH	100	of Air Quality - Applic LS EMISSIONS FROM				S-FPH, ES	-PB-1 and 2	
MISSION POINT (STACK) ID NO(S): EP		IN SERIES OF CONT		_	NO.	1 OF		NITS
OPERATING SCENARIO								
	<	P.E. SEAL REC	UIRED (PER 2	n 011217	<u>ارت</u>	s		NO
ESCRIBE CONTROL SYSTEM:					E.			
his baghouse controls particulate from the finit	ned product nand	lling pellet conveyers	and screens.					
OLLUTANTS COLLECTED:		PM	PM ₁₀)	PM _{2.5}			
EFORE CONTROL EMISSION RATE (LB/HR):								
APTURE EFFICIENCY:		%		%	%		%	I
ONTROL DEVICE EFFICIENCY:		<u>99.9</u> %	<u>، </u>	-99.9 %	<u>~99.9</u> %			1
ORRESPONDING OVERALL EFFICIENCY:		%	<u> </u>		~%		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	9
FFICIENCY DETERMINATION CODE:								
OTAL AFTER CONTROL EMISSION RATE (LB/H	R):	See calculation	ıs in Appendix	c		<u>.</u>		
RESSURE DROP (IN H ₂ 0): MIN: MAX: TBI	D GAUG	SE? VES	N	0	Warning A	larm 🔽	Yes	
ULK PARTICLE DENSITY (LB/FT ³): TBD		INLET TEMPER						
OLLUTANT LOADING RATE: 0.004	.B/HR₽R/FT ³	OUTLET TEMP	'ERATURE (°F)	TBD				
ILET AIR FLOW RATE (ACFM): 8,500		FILTER OPERA	ATING TEMP (°	F): N/A				
O. OF COMPARTMENTS: TBD NO	OF BAGS PER C	OMPARTMENT: TBD		LEN	STH OF BAG	(IN.): TBD		
	TER SURFACE AF	REA PER CARTRIDGE	(FT ²); TBD	DIAN	IETER OF BA	G (IN.): TBI	D	
OTAL FILTER SURFACE AREA (FT ²): TBD	AIR TO CI	LOTH RATIO: TBD						
RAFT TYPE: INDUCED/NEGATI	VE CORCEDI	POSITIVE	FILT	ER MATERIAL	: 🗆	OVEN	📝 FE	ELTED
ESCRIBE CLEANING PROCEDURES:				178	PA	RTICLE SIZ	E DISTRIBL	JTION
AIR PULSE	SONIC				SIZE	WEIGHT	F %	CUMULATI
REVERSE FLOW	SIMPLE B	AG COLLAPSE		(MI	CRONS)	OF TOT	AL	%
	ERING BAC	G COLLAPSE		7	0-1		Unknow	with
OTHER:					1-10			
ESCRIBE INCOMING AIR STREAM:					10-25			
he air stream contains wood dust particules.					25-50			
				5	0-100			
					>100			
							TOTAL =	100
							I GIAL	.44
IN A SEPARATE PAGE, ATTACH A DIAGRAM SI OMMENTS:	Howing the rel	ATIONSHIP OF THE C	ONTROL DEV	ICE TO ITS EI	AISSION SOL	IRCE(S):		

SPECIFIC EMISSION	SOURCE	INFORM.	ATION (REQUIRE	D FOR /	ALL SOU	RCES)		
REVISED 09/22/16 NCD	EQ/Division of	Air Quality • A	pplication	for Air Permit	to Construc	t/Operate	2	E	3
EMISSION SOURCE DESCRIPTION:				EMISSION S	OURCE ID I	NO: ES-DWH		-	
Dried Wood Handling				CONTROL D	EVICE ID N	O(S): CD-DW	H-BH-1 and	2	
OPERATING SCENARIO1	OF1			EMISSION P	OINT (STAC	K) ID NO(S):	EP-17 and	18	
DESCRIBE IN DETAILTHE EMISSION SOURCE	PROCESS (AT	TACH FLOW	DIAGRAM):						
There are several transfer points comprising en completely enclosed with only two (2) emission	points that are	controlled by	individual	baghouses (C	D-DWH-BH-	1 and 2).		ources ar	'e
TYPE OF EMISSION SOURCE Coal,wood,oil, gas, other burner (Form B1)	(CHECK AND		king (Form I			OLLOWING		e (Eorm E	971
Int.combustion engine/generator (Form B2)				ting (Form B5)		ration (Form B	+	sų oni E	51)
Liquid storage tanks (Form B3)			ilos/bins (Fo			(Form B9)	0)		
START CONSTRUCTION DATE: TBD				UFACTURED:		(rom bo)			
MANUFACTURER / MODEL NO.: TBD				O OP. SCHEDU			DAY/WK	52 M	/K//R
	SPS (SUBPART	C21.	CAFEGIEL		AP (SUBPA		DATIWIN	_JZ 11	NIR
PERCENTAGE ANNUAL THROUGHPUT (%): DE								_	
CRITERIA AIR I							the second second		-
GATLAA AIAT	OLLOTAN	r			JAN ITUS .			S. M.	
		SOURCE OF		ED ACTUAL	7	POTENTIAL		-	
		EMISSION		TROLS / LIMITS)		TROLS / LIMITS)	+		
		FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons	s/yr
PARTICULATE MATTER (PM)		See Emissio	n Calculatio	ons in Append	ix C			-	
PARTICULATE MATTER<10 MICRONS (PM1D)									
PARTICULATE MATTER<2.5 MICRONS (PM2.5)								-	_
SULFUR DIOXIDE (SO2)								-	
NITROGEN OXIDES (NOx)									-
CARBON MONOXIDE (CO)				-				-	
VOLATILE ORGANIC COMPOUNDS (VOC)			_			ļ			
LEAD									
OTHER									
HAZARDOUS AIR	POLLUTAI	VT EMISSIO	DNS INFO	DRMATION	FOR THIS	SOURCE		unhe	
		SOURCE OF	EXPECT	ED ACTUAL		POTENTIAL	EMISSION	5	
		EMISSION	(AFTER CON	TROLS / LIMITS)	(BEFORE CON	ITROLS / LIMITS)	(AFTER CON	TROLS / LI	MITS)
HAZARDOUS AIR POLLUTANT	CAS NO.	FACTOR	lb/hr	tons/yr	lb/hr	tons/yr	ib/hr	tons	s/yr
N/A									
					j				
	1			1	1				
					1				
TOXIC AIR PC	LLUTANT	MISSIONS	INFORM	ATION FOR	R THIS SC	DURCE			
		OF	EXPEC	TED ACTUAL	EMISSIONS	AFTER CON	TROLS / LIN	ITATION	IS
TOXIC AIR POLLUTANT	CAS NO.	FACTOR		b/hr	lb	/day		b/yr	
N/A					12			- 1	
		·			1				
								_	_
								_	-

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

FORM B9 EMISSION SOURCE (OTHER)

REVISED 09/22/16 NCDEQ/Division of Air Quality -	Application	for Air Permit to Construct/Ope	erate	B9		
EMISSION SOURCE DESCRIPTION: Dried Wood Handling	EMISSION SOURCE ID NO: ES-DWH					
	CONTROL DEVICE ID NO(S): CD-DWH-BH-1 and 2					
OPERATING SCENARIO:1 OF1	EMISSION POINT (STACK) ID NO(S): EP-17 and 18					
DESCRIBE IN DETAIL THE PROCESS (ATTACH FLOW DIAGRAM There are several transfer points comprising emission source E sources are completely enclosed with only two (2) emission poi	S-DWH that					
MATERIALS ENTERING PROCESS - CONTINUOUS PRO	CESS	MAX. DESIGN	REQUESTED	CAPACITY		
ТҮРЕ	UNITS	CAPACITY (UNIT/HR)		UNIT/HR)		
Dried Wood	ODT	80				
MATERIALS ENTERING PROCESS - BATCH OPERAT TYPE	ION UNITS	MAX. DESIGN CAPACITY (UNIT/BATCH)	REQUESTED			
MAXIMUM DESIGN (BATCHES / HOUR):						
REQUESTED LIMITATION (BATCHES / HOUR):	(BATCHES/	YR):				
FUEL USED: N/A	(IMUM FIRING RATE (MILLION BTU/HR): N/A					
MAX. CAPACITY HOURLY FUEL USE: N/A	D CAPACITY ANNUAL FUEL USE: N/A					
COMMENTS:						

REVISED 09/22/16 NCDE	Q/Division of Air	Quality - Appl	ication f	or Air Permit to	Construct/Ope	rate			
CONTROL DEVICE ID NO: CD-DWH-BH-1 and 2	MISSIONS FRO	SIONS FROM WHICH EMISSION SOURCE ID NO(S); ES-DWH							
EMISSION POINT (STACK) ID NO(S): EP-17 & 18	POSITION IN S	ERIES OF CO.	NTROLS	5	NO	. 1 OF	- 11	UNITS	
OPERATING SCENARIO:									
		P.E. SEAL R	EQUIRE	ED (PER 2q.011	2)? 🔽	YES		NQ	
DESCRIBE CONTROL SYSTEM: Iwo (2) baghouses are used to create a slight negative p handling.	ressure on the d	riad wood har	ıdling. T	he baghouses (collects dust fr	om the air v	olume presen	it in the dried woo	
POLLUTANTS COLLECTED:		РМ	_,	PMas	PM _{2.5}				
BEFORE CONTROL EMISSION RATE (LB/HR):					e —	- 12-			
CAPTURE EFFICIENCY:			-%		%	%		ж	
CONTROL DEVICE EFFICIENCY:		-99.9	%	~99,9	% -99.9	- %		ж	
CORRESPONDING OVERALL EFFICIENCY:		<u></u>	~		%	. %		%	
EFFICIENCY DETERMINATION CODE:			-	i					
TOTAL AFTER CONTROL EMISSION RATE (LB/HR):		See calculat	ions In	Appendix C					
PRESSURE DROP (IN H ₂ 0): MIN: MAX: TBD	GAUGE?	⊡YES		NO					
BULK PARTICLE DENSITY (LB/FT ²): TBD		INLET TEMPERATURE ("F): TBD							
POLLUTANT LOADING RATE: 0.004	[∠] _{PR} FT ³	OUTLET TE	WPERA	FURE (°F) TBD					
NLET AIR FLOW RATE (ACFM): 1,000				TEMP (°F): N/	\				
	GS PER COMPAI				LENGTH OF B	AG (IN.): TB	D		
	RFACE AREA PE		E (FT ²):	TBD	DIAMETER OF	BAG (IN.):	TBD		
TOTAL FILTER SURFACE AREA (FT ²): TBD	AIR TO CLOTH	RATIO: TBD	_						
DRAFTTYPE: ✓ INDUCED/NEGATIVE	FORCED/POSI	TME		FILTER MATE	Rial:	WOVEN	2 F	ELTED	
DESCRIBE CLEANING PROCEDURES:						PARTICLE	SIZE DISTRIB	UTION	
AIR PULSE	SONIC				SIZE	WEI	GHT%	CUMULATIVE	
REVERSE FLOW	SIMPLE BAG C	OLLAPSE			(MICRONS)	OF	TOTAL	%	
MECHANICAL/SHAKER	RING BAG COL	LAPSE			0-1		Unkn	own	
OTHER:					1-10				
DESCRIBE INCOMING AIR STREAM:					10-25				
ihe air stream contains additive dust particles.					25-50				
					50-100	1			
					>100				
							TOTAL	= 100	
ON A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING COMMENTS:	THE RELATIONS	HIP OF THE C	ONTRO	L DEVICE TO IT	S EMISSION S	DURCE(S):			

SPECIFIC EMISSION			•				RCES)	
	Q/Division of	Air Quality - A	Application f	or Air Permit	to Construct	/Operate		В
EMISSION SOURCE DESCRIPTION:			EMISSION S					
Additive Handling and Storage			CONTROL)-BH				
	DF1			EMISSION P	POINT (STAC	K) ID NO(S):	EP-19	
DESCRIBE IN DETAILTHE EMISSION SOURCE F Bulk additive material will be delivered by truck a from the storage silo to the milled fiber conveyor by a baghouse.	and pneumatic	ally unloaded	l into a stora					
TYPE OF EMISSION SOURCE (CHECK AND	OMPLETE A	PPROPRIAT	E FORM B1-	B9 ON THE F	OLLOWING P	PAGES):	
Coal,wood,oil, gas, other burner (Form B1)		Woodwa	rking (Form E	34}	Manuf.	of chemicals/	coatings/ink	s (Form B7)
Int.combustion engine/generator (Form B2)		Coating/f	inishing/printi	ing (Form 85)	Inciner	ation (Form Ba	8)	
Liquid storage tanks (Form B3)		Storage s	ilos/bins (Fo	rm B6)	COther (Form B9)		
START CONSTRUCTION DATE: TBD			DATE MAN	JFACTURED:				
MANUFACTURER / MODEL NO.: TBD			EXPECTED	OP. SCHEDU	JLE: 24 H	R/DAY 7	DAY/WK	52 WK/YF
	PS (SUBPART	S?):			AP (SUBPA			
PERCENTAGE ANNUAL THROUGHPUT (%); DE			5% .JUN-A					
CRITERIA AIR P	OLLUTANT	EMISSIO	S MEOR	MATION F	OR THIS S	OURCE		14 (CH134)
		SOURCE OF		D ACTUAL		POTENTIAL	EMISSION	9
÷.		EMISSION		ROLS / LIMITS)	(REFORE CON	TROLS / LIMITS)	1	TROLS / LIMITS)
AIR POLLUTANT EMITTED		FACTOR	lb/hr	tons/vr	lb/hr	1	lb/hr	1
						tons/yr	10/10	tons/yr
PARTICULATE MATTER (PM)		See Emissio	n calculatio	ns in Append				
				· · · · · · · · · · · · · · · · · · ·				
						<u> </u>		
SULFUR DIOXIDE (SO2)						L		
NITROGEN OXIDES (NOx)								
CARBON MONOXIDE (CO)								
VOLATILE ORGANIC COMPOUNDS (VOC)								
LEAD								
OTHER				1		l		
HAZARDOUS AIR	POLLUTAN	NT EMISSIO	ons info	RMATION	FOR THIS	SOURCE	4	10
		SOURCE OF EMISSION	EXPECTE	EXPECTED ACTUAL		POTENTIAL	EMISSION	5
			(AFTER CONT	ROLS / LIMITS)	(BEFORE CON	TROLS / LIMITS}	(AFTER CON	TROLS / LIMITS)
HAZARDOUS AIR POLLUTANT	CAS NO.	FACTOR	ib/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
N/A								
				1				
				1				1
TOXIC AIR PO	LLUTANT E	MISSIONS	INFORM	ATION FO	R THIS SC	URCE	- Contraction	
		OF	(TED ACTUAL			ROLS / LIM	ITATIONS
TOXIC AIR POLLUTANT	CARNO	EMISSION	п.	Jhe		dov		b/yr
	CAS NO.	CAS NO. FACTOR		lb/hr		lb/day		
N/A								
		-		_				
Attachments: (1) emissions calculations and supporting dox	umentation: (2) i	ndicate all reque	sted state and	federal enforces	able permit limit	s (e.o. hours of a	peration, emi	ssion rates) an

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

		FO	RM	B6				
E	MISS	SION SOURCE	E (ST	ORA	GE SILO.	/BIN	S)	
REVISED 09/22/16 NCDEQ/	Divisio	n of Air Quality - App	licatio	n for Aiı	r Permit to C	onstru	ct/Operate	B 6
EMISSION SOURCE DESCRIPTION: Add	ditive H	andling and Storage	•	E	EMISSION SO	OURCE	ID NO: ES-ADD	
					CONTROL DE	EVICE	ID NO(S): CD-ADD-BH	
OPERATING SCENARIO:	_1	OF1			EMISSION PO	DINT(S	TACK) ID NO(S): EP-19	
DESCRIBE IN DETAIL THE PROCESS (A Bulk additive material will be delivered l screw conveyor from the storage sllo to additive handling are controlled by a ba	by truck the mi	k and pneumatically lled fiber conveyor v						
MATERIAL STORED: Additive				DENSI	TY OF MATE	RIAL (L	.B/FT3): TBD	
CAPACITY CUBIC FEE	Г:			TONS:				
DIMENSIONS (FEET) HEIGHT:		DIAMETER: TBD	(OR)	LENGT	Ή:	WIDT	H: HEIGHT:	
ANNUAL PRODUCT THROUGHPUT (T	ONS)	ACTUAL:				SIGN	CAPACITY: TBD	
PNEUMATICALLY FILLED		MECHANIC	ALLY F	ILLED			FILLED FROM	
		SCREW CONVEYO	R				RAILCAR	
		BELT CONVEYOR					TRUCK	
OTHER:		BUCKET ELEVATOR	R				STORAGE PILE	
		OTHER:					OTHER: Conveyor	
NO. FILL TUBES: TBD								
MAXIMUM ACFM: TBD								
MATERIAL IS UNLOADED TO:								
BY WHAT METHOD IS MATERIAL UNLO. Conveyed via screw conveyor to the mil			ansfere	; milled	wood to the	Pellet	Presses.	
MAXIMUM DESIGN FILLING RATE OF M	ATERIA	L (TONS/HR):						
MAXIMUM DESIGN UNLOADING RATE C	F MAT	ERIAL (TONS/HR):						
COMMENTS:								

	TION IN SE	RIES OF CO		H EMISSION :	SOURCEI	D NO(S NO.	ES-ADD	1	UNITS
OPERATING SCENARO: OF ESCRIBE CONTROL SYSTEM:			NTROLS			NO.	1 OF	1	
OF ESCRIBE CONTROL SYSTEM:									UNITS
ESCRIBE CONTROL SYSTEM:									
		P.E. SEAL R	EQUIRE	D (PER 2q.01	12)7	7	YES		NO
	VE.								
OLLUTANTS COLLECTED:		PM	-	PM ₁₀		PM _{2.5}	_		0
EFORE CONTROL EMISSION RATE (LB/HR):			_				-		
APTURE EFFICIENCY:			.96		%	-	%		%
ONTROL DEVICE EFFICIENCY:		99.9	- %	99.9	- %	99.9	%		%
ORRESPONDING OVERALL EFFICIENCY:			**	<u>19</u>	_%		*		%
FFICIENCY DETERMINATION CODE:		<u></u>	-		-		-		
DTAL AFTER CONTROL EMISSION RATE (LB/HR):		See calculat	ions in .	Appendix C					
RESSURE DROP (IN H ₂ 0): MIN: MAX: TBD C	AUGE?	√ YES		NO					
ULK PARTICLE DENSITY (LB/FT ³): TBD		INLET TEMP				_			
OLLUTANT LOADING RATE: 0.004 DE/HR				URE (°F) TOD					
LET AIR FLOW RATE (ACFM): 1,000 each			RATING	TEMP (°F): N	1				
O. OF COMPARTMENTS: TBD NO. OF BAGS PER							G (IN.): TBD		
O, OF CARTRIDGES: TBD FILTER SURFACE OTAL FILTER SURFACE AREA (FT ²); TBD AIR T			= (-1-):	BD	DIAMET	EROFE	BAG (IN.): TI	3D	
		RATIO: TBD							
RAFT TYPE; INDUCED/NEGATIVE FORG	CED/POSIT	IVE		FILTER MAT	ERIAL:		NOVEN	5111101	FELTED
	-				-	1		IZE DISTRIE	
AIR PULSE SONI	U LE BAG CÇ				\$IZ		WEIG		CUMULATIVE
			(MICRO		OF TO		%		
	BAG COLL	APSE			0-*			Unkn	ÓWI
					1-1		1		
ne air stream contains wood dust particules.					25-6				
					50-1				
					>10	-			
					- 10	- 1	_	TOTAL	= 100
								TOTAL	- 100
N A SEPARATE PAGE, ATTACH A DIAGRAM SHOWING THE RE OMMENTS:	ELATIONSH	IIP OF THE C	ONTRO	. DEVICE TO I	TS EMISS	ION SO	JRCE(S):		

Figure 2. Process Flow Diagram Enviva Pellets Hamlet, LLC – Richmond County, NC

